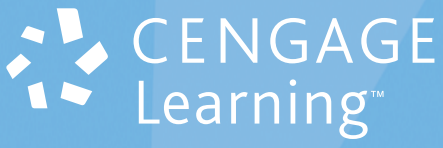
# FOOD by DESIGN

## EDITION 4 FOR YEARS 7 TO 10

GLENIS HEATH • HEATHER MCKENZIE • LAUREL TULLY • MICHELLE DOWNIE



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GLENIS HEATH • HEATHER MCKENZIE • LAUREL TULLY • MICHELLE DOWNIE

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# CONTENTS



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# ABOUT THIS BOOK

## WORKING WITH *FOOD BY DESIGN*

*Food by Design* has been written to foster lifelong skills and enthusiasm for cooking, nutrition and general wellbeing.

Covering Years 7–10, this new edition has been comprehensively updated to reinforce the relationship of the text with the Australian Government's evidence-based Australian Dietary Guidelines. All Australians should be eating within the guidelines for optimum health and *Food by Design* has been redesigned with that goal in mind.

New extensively trialled recipes have been included, along with professional food photography that presents an achievable model for students. As ever, there is a wealth of learning experiences for students to meet high standards of achievement, develop design thinking and provide solutions to authentic problems. *Food by Design* is designed to stimulate students' interest in Food Technology and to help them develop the relevant knowledge and skills required for VCE-level studies.


EAT WELL, BE WELL

4

KEY KNOWLEDGE
- Food and me
- What is food?
- Nutrients in food
- Digestion
- Selecting food wisely
- The *Australian Dietary Guidelines*
- The *Australian Guide to Healthy Eating*
- Water

KEY TERMS

***Australian Guide to Healthy Eating*** a food model that is a pictorial representation of *Dietary Guideline 2* – enjoy a wide variety of foods from the five food groups each day

**digestion** the breakdown of large pieces of food into smaller components that can be absorbed into the bloodstream

**food** any substance that we eat or drink that provides the body with chemical substances called nutrients

**food models** food selection guides that present a summary of the key information in the *Australian Dietary Guidelines* in a pictorial format

**nutrients** chemical substances in food that are broken down during digestion including protein, carbohydrate, fat, vitamins and minerals

VICTORIAN CURRICULUM LINKS

DESIGN AND TECHNOLOGIES
- Technologies contexts
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

HEALTH AND PHYSICAL EDUCATION
- Personal, social and community health

CAPABILITIES
- Critical and creative thinking

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**CHAPTER OPENERS introduce the content of each chapter, featuring key knowledge, key terms and links to the Victorian Curriculum**

### FEATURES

Each chapter has been carefully constructed to ensure students are meeting the achievement standards of the Victorian Curriculum.

**ACTIVITY 4.1**

**THE *AUSTRALIAN DIETARY GUIDELINES* QUIZ**

**Goal**

Create a quiz to help revise and test your knowledge and understanding of the key features of the *Australian Dietary Guidelines*.

1. Your quiz should be suitable to share with other class members to test their knowledge of the *Australian Dietary Guidelines*.
2. Your quiz should include eight quiz questions and answers to demonstrate your thinking. For example:
   - remembering – list, state, define
   - understanding – classify, describe, explain, identify, select or locate.

**ACTIVITIES provide practical learning opportunities that allow students to build food skills and address general capabilities in a fun and engaging manner**

**THINKING SKILLS**

**Healthy eating for teens**

Work with a partner to prepare an animation or video clip to highlight the importance of one of the five food groups in the *Australian Guide to Healthy Eating*. Your animation or video clip should be appropriate to include in a health promotion campaign aimed at teenagers.

1. Make a list of the main points to be included in your animation or video clip.
2. Storyboard the key scenes of your video or animation.
3. Make a list of any props required for your video or animation.

**THINKING SKILLS ensure students are developing higher-level critical and creative thinking in a food technology context**

**TESTING KNOWLEDGE**

21. What is the *Australian Guide to Healthy Eating*? Why is this food model divided into five food groups?
22. Explain how consuming foods from the 'grain (cereal) foods, mostly wholegrain and/or high fibre cereal varieties' category can help improve your long-term health.
23. Sketch a carrot and annotate it to show the main nutrients found in vegetables.
24. Why should we try to eat fish or seafood meals at least twice a week?
25. What nutrients would you find in a glass of milk?
26. Explain why fats from plant sources are

**TESTING KNOWLEDGE questions provide regular opportunities to check student knowledge and comprehension**


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## Design activity 4.1

**WELLNESS BOWL**

Wellness bowls, poké bowls or Buddha bowls are a trend that has the tick of approval from nutritionists and dietitians. These bowls, based on plant foods, are colourful, have a range of flavours and textures and provide a balanced meal. Most importantly, wellness bowls are far more interesting than a traditional green salad with a mix of raw and cooked vegetables.

Use the specifications in the design brief to develop five criteria suitable for evaluating the success of the finished product.

### Investigating

1 What is the history of poké bowls?
2 List the ingredients that usually make up a poké bowl.
3 Explain why the specific key ingredients are featured in poké bowls.

**DESIGN ACTIVITIES provide scaffolded opportunities for students to follow a design process to solve food problems**

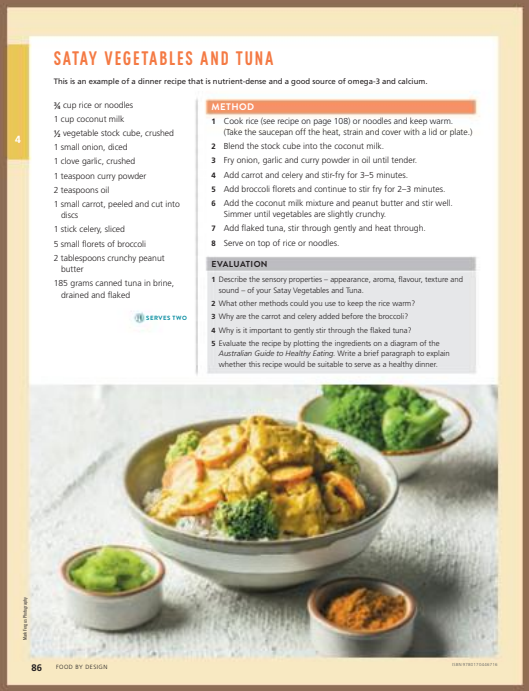
## 4.1 Case study

1 a Before you read the article below, record the foods you eat and drink in a 24-hour period in a table similar to the one below.

b From the list of foods you have eaten during the day, identify those foods that are classified as 'discretionary' according to the *Australian Guide to Healthy Eating*. List these foods in the right-hand column.

| | Food eaten | Discretionary foods |
|---|---|---|
| Breakfast | | |
| Lunch | | |

**CASE STUDIES provide contextual information on the real-world application of concepts with questions to extend student knowledge and skills**



SATAY VEGETABLES AND TUNA

This is an example of a dinner recipe that is nutrient-dense and a good source of omega-3 and calcium.

¾ cup rice or noodles
1 cup coconut milk
½ vegetable stock cube, crushed
1 small onion, diced
1 clove garlic, crushed
1 teaspoon curry powder
2 teaspoons oil
1 small carrot, peeled and cut into discs
1 stick celery, sliced
5 small florets of broccoli
2 tablespoons crunchy peanut butter
185 grams canned tuna in brine, drained and flaked

SERVES TWO

METHOD

1 Cook rice (see recipe on page 108) or noodles and keep warm. (Take the saucepan off the heat, strain and cover with a lid or plate.)
2 Blend the stock cube into the coconut milk.
3 Fry onion, garlic and curry powder in oil until tender.
4 Add carrot and celery and stir-fry for 3–5 minutes.
5 Add broccoli florets and continue to stir fry for 2–3 minutes.
6 Add the coconut milk mixture and peanut butter and stir well. Simmer until vegetables are slightly crunchy.
7 Add flaked tuna, stir through gently and heat through.
8 Serve on top of rice or noodles.

EVALUATION

1 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Satay Vegetables and Tuna.
2 What other methods could you use to keep the rice warm?
3 Why are the carrot and celery added before the broccoli?
4 Why is it important to gently stir through the flaked tuna?
5 Evaluate the recipe by plotting the ingredients on a diagram of the *Australian Guide to Healthy Eating*. Write a brief paragraph to explain whether this recipe would be suitable to serve as a healthy dinner.

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**Clear and extensively tested RECIPES provide enriching practical experiences for students to develop skills to prepare healthy and nutritious dishes**

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# PREPARING FOOD SAFELY

# 1

## KEY KNOWLEDGE

- Safety in the kitchen
- Fire safety
- Personal hygiene
  - Personal hygiene rules
- Kitchen hygiene
  - Washing-up techniques
- Food poisoning
- Preventing food poisoning
  - When storing food
  - When preparing food
  - When cooking food
  - When shopping for food
- Safe use of knives
- Stoves, ovens and cooktops
  - Electric ovens
  - Gas ovens
  - Cooking in an oven
- Using small appliances
  - Using small appliances safely
  - Small appliances and safety

## KEY TERMS

**cross-contamination** the transfer of harmful bacteria from uncooked food to food that has been cooked or prepared

**danger zone** the temperature – between 5°C and 60°C – at which bacteria can multiply quickly

**electric oven** an oven that uses radiant and convection heat produced by electricity to cook food

**fire blanket** an insulated blanket used to extinguish small fires in the kitchen

**food poisoning** an illness caused by eating food that has been contaminated with harmful bacteria

**food spoilage** the deterioration in the physical, sensory and chemical properties of food over time

**gas oven** an oven that uses radiant and convection heat produced by gas to cook food

**small appliance** equipment such as toasters, food processors, handheld beaters or blenders

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking





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# SAFETY IN THE KITCHEN

Just like the home kitchen, the school kitchen is usually a busy place. Whether you are preparing food at home or at school, you use a range of tools and equipment that, if not handled with care, have the potential to cause accidents. Workspaces can be dangerous places because of the equipment used in them.

## ACTIVITY 1.1

### RISK AREAS IN THE KITCHEN

1 With a partner, make a list of the main risk areas you can see in your school kitchen.

2 Draw up a risk and safety table for your school kitchen, using the one below as an example. Suggest a simple rule that should be followed to avoid accidents occurring in each risk area that you identify.

| Risk area | Safety rule |
|---|---|
| Floor | Wipe up all spills immediately. |
| | |
| | |
| | |
| | |
| | |

3 Using the information from your risk and safety table, design and produce a safety poster for one of the risk areas – for example, floors, stoves, electrical appliances, or use of equipment or utensils. Use multimedia software to develop the poster.

- Your poster should be bright and eye-catching.
- Make sure that the appropriate safety rule for the risk area is highlighted on the poster.
- Design a symbol to use on your safety poster to highlight the risk area.

4 As a group, look at all the safety posters produced by the class.

a Discuss the key features of each poster and the way each highlights a specific risk area.

b Does the safety symbol on each poster stand out?

c How could these symbols be used in other areas of the school?

5 Display each poster in your school kitchen, near its relevant risk area. Laminate your poster so that it can be part of an ongoing health and safety campaign at school.

6 Write an item for your school bulletin or website to highlight a safety issue in a food preparation area.

# FIRE SAFETY

The possibility of fire is a major safety concern in the kitchen. The most common cause of kitchen fires is a piece of equipment, such as a frying pan or a wok, catching alight. If a fat fire occurs in the kitchen, it is important to smother the fire – this will stop oxygen from feeding the fire. To do this, you can use a **fire blanket**, which is extremely effective in extinguishing small kitchen fires.

Following these simple rules is important when installing and using a fire blanket:

- the fire blanket should be attached to the kitchen wall just above waist height, so that it is easy to access
- pull down firmly on the tabs of the fire blanket to remove it from its cover
- if possible, gently place the fire blanket over the fire. Throwing it on the fire may spread the fire further.
- turn off the gas or electricity heat source under the fire
- leave the fire blanket over the source of the fire until it has been extinguished and the equipment that contained the fire has cooled
- a fire blanket can also be used to extinguish fire on a person's clothing. Place the blanket over the person and wrap it around them; the person should roll on the ground to extinguish the fire as soon as possible
- replace a fire blanket after it has been used. You should never re-use a fire blanket
- small fire extinguishers can be purchased for use in the home. A dry chemical powder extinguisher can be used to extinguish a fat fire, which is the most common fire to occur in a home kitchen.



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Mark Fergus Photography

**Fire blanket and fire extinguisher**

If you do not have a fire blanket or an extinguisher, the best method of putting out a fat fire is to cover it with a large saucepan lid or to pour flour or sand onto it. You should never pour water on a fat fire, as this will only cause the fire to spread.

## ACTIVITY 1.2

### FIRE SAFETY IN THE KITCHEN

1. Check to see if your school kitchen has any fire safety equipment, such as a fire blanket or fire extinguisher. If it does, where are they located?
2. Are the instructions on how to use the fire safety equipment easy to read?
3. Ask your teacher to demonstrate how to use a fire blanket.
4. Look at the fire evacuation plan for your classroom. Is it clear and easy to follow?
5. Write a short article for your school bulletin or website about the effectiveness of your current school fire evacuation drill.

# PERSONAL HYGIENE

Preparing food hygienically to avoid food contamination is just as important as taking care when working with equipment in the kitchen. Bacteria that can cause **food poisoning** thrive on the warmth and moisture that the human body produces. They live on and in all parts of the body; the hands, fingernails, skin, hair, nose, mouth and even ears all provide a wonderful home for bacteria to thrive. The clothes you wear are also contaminated by the bacteria that naturally occur in the environment. When you sit down at home or when you are out, bacteria transfer from the environment onto your clothes. Following the personal hygiene rules on the opposite page helps to ensure the food that you prepare is safe to eat.

# KITCHEN HYGIENE

Working in a clean environment and using hygienic practices in the kitchen are as important as following the rules for personal hygiene.

- Make sure that you use clean tea towels when drying dishes. Tea towels should not be used to wipe up spills from the floor, flung over your shoulder while you are cooking or used for drying hands.
- Like tea towels, dishcloths must be kept clean. Replace your dishcloth regularly or soak and sanitise it if it is re-usable.
- Keep the food preparation area clean and tidy while you work. Clean the work area after each process of production by stacking and washing the dishes you have just used.
- Sanitise your work bench thoroughly.

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**Sanitising the bench after food preparation**

## Washing-up techniques

Thoroughly washing and drying dishes is another important aspect of kitchen hygiene. Today, many families wash most of their dishes in a dishwasher and handwash only a few items, such as saucepans. The tables on pages 5 and 6 summarise some key points about using dishwashers and handwashing.


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## Personal hygiene rules

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1 Thoroughly wash hands with soap and water before preparing food. This prevents disease-carrying bacteria that live in all sorts of places (including the handles of school bags, on lockers, on the handrails of buses, trains and trams, and on desks, tables and chairs) from transferring to food.

2 Make sure that you wash your hands after using the toilet. Harmful bacteria live in faeces, and they can be passed onto toilet paper and hands when you use the toilet.

3 Make sure you wash your hands after you blow your nose; bacteria can pass onto your hands from the handkerchief or tissue.

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4 Do not sneeze or cough over food; bacteria can easily be transferred through the air.

5 Do not wear nail polish while you are preparing food – chips of nail polish can fall into food.

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6 Take off rings and bracelets before you begin to prepare food – these can also be hiding places for bacteria.

7 Cover cuts with a clean, waterproof covering. If you cut yourself while preparing food, remember to sanitise the cut with disinfectant before you cover it.

8 Wear a clean apron to cover your street clothes. Clothes pick up dirt and dust and can therefore transfer bacteria onto food.

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9 Tie back your hair to make sure that any loose strands do not fall into the food.

10 Use a clean teaspoon to taste food and do not lick your fingers. Bacteria that live in your mouth can easily be passed onto the food from your fingers or a dirty spoon.

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| Using a dishwasher | Washing dishes by hand |
|---|---|
| 1 Scrape the food scraps from the dishes and rinse the dishes well. | 1 Scrape the food scraps from the dishes. Rinse the dishes and carefully stack them into piles of similar kinds. |
| 2 Stack the cutlery container so that the eating surfaces of the knives, forks and spoons are facing up. | 2 Fill the sink with hot, soapy water. Grease will not come off in cold or lukewarm water. |
| 3 Make sure glasses are carefully stacked and unlikely to tip over during the washing cycle. | 3 Wash the glassware first, then rinse it in hot water. Allow to drain and air-dry, if possible. |
| 4 Place heavy items on the lower shelf. Stack all plastic items so that they cannot flip over and fill with water. | 4 Cutlery should be washed after the glassware. Carefully rinse. Remember not to put sharp knives into a sink filled with soapy water, as they may become hidden from view. |
| 5 Do not over-stack the dishwasher; if you do, some items may not be properly washed. | 5 Next, wash all crockery and then rinse in hot water. Allow to drain. |
| 6 Regularly clean the filter. Secure the detergent's childproof lock and store detergent away from children. | 6 Finally, wash the mixing bowls and saucepans. Rinse well. |

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| Advantages of washing dishes in a dishwasher | Advantages of washing dishes by hand |
|---|---|
|  |  |
| • Dishwashers can save the family time. | • You can use eco-friendly detergent. |
| • Dishwashers dry the dishes at a much higher temperature, and therefore more thoroughly disinfect the dishes. | • Handwashing dishes is often quicker than using a dishwasher, which can have a long washing and drying cycle. |
| • Dishwashers are convenient and allow you to wash a large number of dishes at once. | • You can wash the dishes as you use them, and therefore may not need as much crockery and glassware. |
| • Using a dishwasher once a day can be more water-efficient than washing dishes by hand after every meal. | • Handwashing dishes with family members provides opportunities for family conversation. |

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## TESTING KNOWLEDGE

1. Describe the correct procedure for using a fire blanket.
2. Outline the best procedure for extinguishing a fire in a frying pan or wok if you do not have a fire blanket.
3. Explain why it is important to wash your hands before preparing food.
4. Why should jewellery be removed before preparing food?
5. At school, before production begins, everyone puts on a clean apron. Why?
6. Discuss why 'double-dipping' is considered to be a health hazard.
7. Explain one environmental advantage of using a dishwasher to wash dishes and one environmental advantage of washing dishes by hand.
8. List what you think are the three most important rules when using a dishwasher.
9. Explain why a dishwasher may be considered a hazard for children.
10. Explain why you should wash glassware first when washing up by hand.

# FOOD POISONING

Food poisoning is an illness caused by eating food that has been contaminated with harmful bacteria. It can occur when bacteria, which are invisible to the naked eye, are transferred onto food, often unknowingly, because of poor personal hygiene or poor food handling. One of the most common causes of food poisoning is **cross-contamination** of food. This occurs when harmful bacteria from uncooked food are transferred to food that has been cooked or prepared. For example, if raw chicken was cut on a chopping board, and salad ingredients were then cut on the same board without it being washed, harmful bacteria could be transferred. Washing the chopping board in hot, soapy water between cutting the raw chicken and cutting the vegetables will prevent the transfer of bacteria.

On the other hand, **food spoilage** is the deterioration in the physical, sensory and chemical properties of food over time. Food that has 'spoiled' may be attacked by yeast, moulds or the natural enzymes present in the food, such as when a cut apple begins to brown. However, while the appearance, aroma, flavour or texture of the food might have deteriorated during storage, spoiled food will not usually be harmful to eat.


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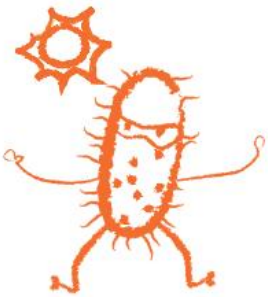
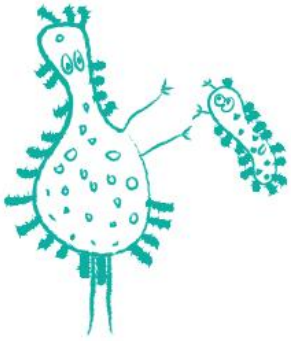
To minimise the risk of food poisoning, it is important to keep hot food hot (above 60°C) and cold food cold (below 5°C) to keep it out of the temperature range in which bacteria thrive. Between 5°C and 60°C is described as the **danger zone** because in this temperature range, one bacterium can multiply into approximately 17 million bacteria within eight hours. Bacteria that cause food poisoning also need a moist environment, time to grow, a food supply and a low-acid environment; many bacteria also need oxygen.

A moist environment



Warm temperatures – the danger zone is between 5°C and 60°C



Sufficient time to grow

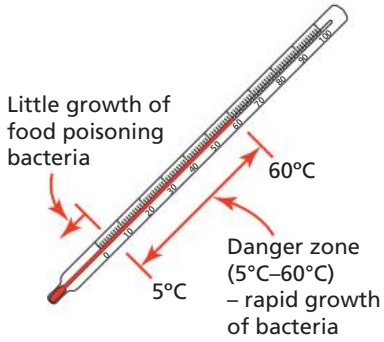

A food supply – foods such as milk, cream, meat, poultry and rice


A low-acid environment

Oxygen (for many)

**The conditions bacteria need for growth**

It is important to note that poisoned food may look, smell and taste just like normal food. Symptoms of food poisoning can appear almost as soon as food is eaten (that is, within one hour) or take up to 36 hours to develop. Food poisoning symptoms can include diarrhoea, stomach cramps and vomiting. In severe cases, food poisoning can cause death.




**The danger zone**

# PREVENTING FOOD POISONING

The main thing to do when working with food is to prevent it from being contaminated in the first place, therefore reducing the risk of bacteria in the food growing and multiplying. When storing, preparing, cooking and buying food, there are some strategies to follow to minimise the risk of food poisoning.

## When storing food

- Keep raw food separated from cooked food and store raw food at the bottom of the fridge to avoid juices dripping onto and contaminating other food.
- Check that the temperature of the refrigerator is below 5°C.
- Allow cooked foods to cool to room temperature (about 21°C) before storing in the refrigerator. (This should not take more than two hours – cooling will occur more quickly if you put the hot food into a number of smaller containers rather than leaving it in one large one.) This prevents the refrigerator temperature from rising and reduces the risk of bacterial growth in all food stored in the fridge.



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- Cover all food with lids, foil or plastic wrap.
- Do not store food in opened tin cans.

## When preparing food

- Always wash your hands with soap in warm water before touching the food.
- Do not cut salad ingredients on the same cutting board as raw meat without first washing the board in hot, soapy water. This rule also applies to chopping boards that are used to cut raw meat before being used for cooked meat; thoroughly cleaning the board between uses reduces the chances of cross-contamination.

## When cooking food

- Most food should be cooked to a temperature of at least 75°C. If you do not have a cooking thermometer, make sure to cook poultry until the meat is white, particularly near the bone. When cooking hamburgers, mince and sausages, the juices will run clear when they are ready; white fish will easily flake apart with a fork.

## When shopping for food

- Keep potentially high-risk foods outside the temperature danger zone.
- Keep hot foods and cold foods separate and buy them at the end of your shopping trip.
- Always check labels and do not buy food that is past its use-by or best-before date.
- Avoid food in swollen, dented, leaking or damaged cans, containers or other packaging.
- Check that serving staff use separate tongs when handling separate food types, such as meats and vegetables.
- Take your shopping home quickly and store it immediately.

## TESTING KNOWLEDGE

**11** Explain the meaning of the term 'food poisoning'.

**12** List the causes of food poisoning.

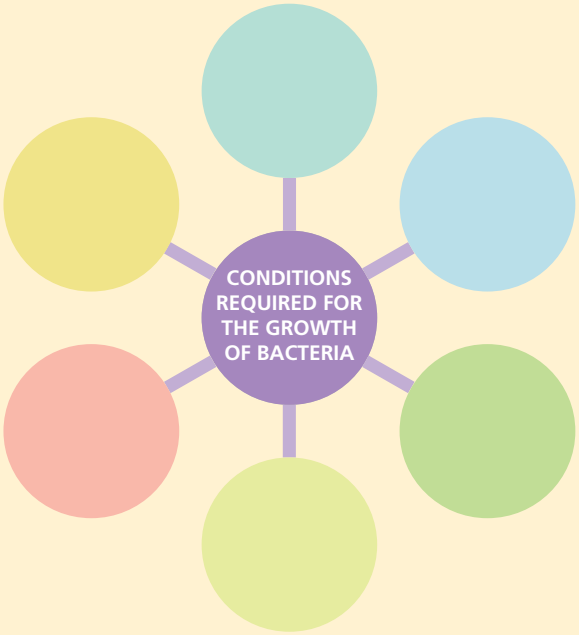
**13** What is the relationship between food poisoning and food spoilage?

**14** What physical symptoms might a person with food poisoning display?

**15** Explain the meaning of the term 'cross-contamination' and outline two strategies that can be used to avoid it.

**16** What is the temperature range of the 'danger zone'?

**17** Annotate the diagram below to highlight the environmental conditions that bacteria need for growth.




**18** Outline two strategies to follow to ensure food is stored safely.

**19** When cooking food, how can you tell if it is out of the danger zone?

**20** List two safety strategies to follow when shopping for food.

# SAFE USE OF KNIVES

- Knives are among the most frequently used pieces of kitchen equipment and are essential for cutting, slicing, dicing and peeling a wide range of foods. Although knives seem simple to use, it is important to use them safely to minimise the risk of injury.
- Select the most appropriate knife for the food you are preparing – for example, a cook's knife for large pieces of food or a vegetable knife for small pieces of fruit or vegetables.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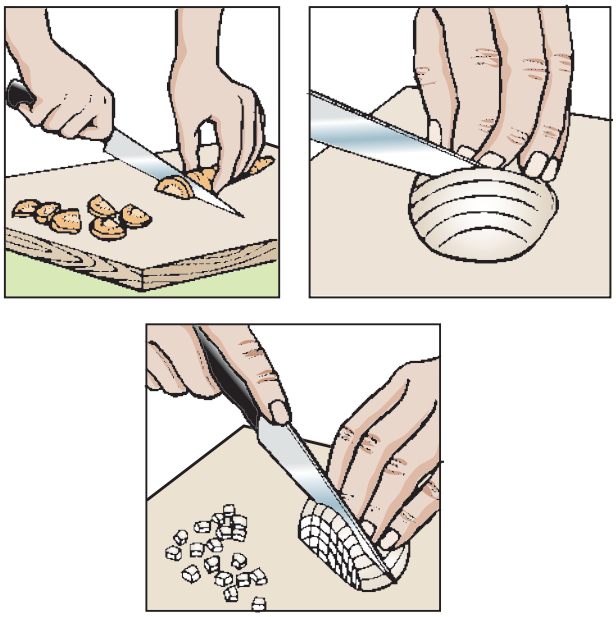
- Keep your fingertips tucked under while using the 'spider' position.
- Make sure you keep the knife sharp. Sharper knives are safer because they cut through the food more easily and require less pressure to be used.
- Never run your finger along the cutting edge of the knife to test its sharpness.
- Make sure the handle of the knife is clean and dry, not greasy, so that the knife does not slip.
- Always cut food on a chopping board made from wood or polyethylene; this will help to protect the sharp edge of the blade. Do not use knives on glass boards, metal or plates, as these materials will blunt the knife.
- Make sure knives are kept away from the edges of benches and out of reach of small children.
- When passing a knife to someone else, remember to pass the handle of the knife, not the blade.
- If you need to move around the kitchen with a knife, hold it close to the side of your body with the blade pointing down.
- Do not put knives in a sink filled with hot, soapy water, as they may become hidden from view.
- Store knives in a knife block or a wall-mounted magnetic rack, not in a drawer with other kitchen utensils.



**Using the 'claw' position for cutting and dicing**

# STOVES, OVENS AND COOKTOPS

In the past, the only option for a stove was an all-in-one cooker that consisted of an oven, a griller and cooktop. Today, there are many choices, which include built-in or freestanding ovens, internal or external grillers, and wall or under-bench ovens. Multifunction electric ovens are popular because they allow the cook to use a combination of top and bottom racks, griller and sometimes, a back element, as well as a fan, to achieve optimum results from their cooking. Combination ovens with convection heat and microwave options are also popular in some homes. Induction cook tops and steamer ovens are other options for home cooking.

Ovens are used to bake, roast, casserole and reheat food. Traditional ovens use radiant heat and convection heat to cook food and include a thermostat that measures the temperature in the oven. Convection ovens have a fan, which moves the heat around the oven using convection currents to ensure an even temperature throughout. If the fan does not come on automatically, you can turn it on after the temperature has been set.

## Electric ovens

An **electric oven** has a coil that heats when the oven is turned on. The switch or dial is turned to the required temperature setting; an indicator will show when the oven reaches the desired temperature. Most electric ovens take between five and 10 minutes to heat to the set temperature. Preheating the oven before cooking ensures that food does not dry out and that cakes, scones, muffins and bread rise to maximum size during cooking to achieve a light texture.

## Gas ovens

When using a **gas oven**, light the oven according to the instructions, which are usually on the oven's doorplate. Set the oven to the correct temperature; when the fog has cleared from the glass, the oven is ready to use. Preheating a gas oven takes about 10 minutes.



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**Cooktop**
- Saucepans should fit the hot plate or burner
- Saucepan handle should be turned out of the walkway

**Wok burner**
- Two rings of flame to produce intense heat
- Suitable only for woks, large saucepans or frying pans

**Oven griller**
- Preheat griller with door closed
- Place food on the cooking tray then return it to the grilling compartment
- Grill food with oven door closed

**Oven**
- Arrange oven racks before preheating
- Preheat to recommended temperature before cooking food
- Stand to the side when opening oven door
- Always open door fully before removing food
- Always use oven mitts to carry hot food from the oven

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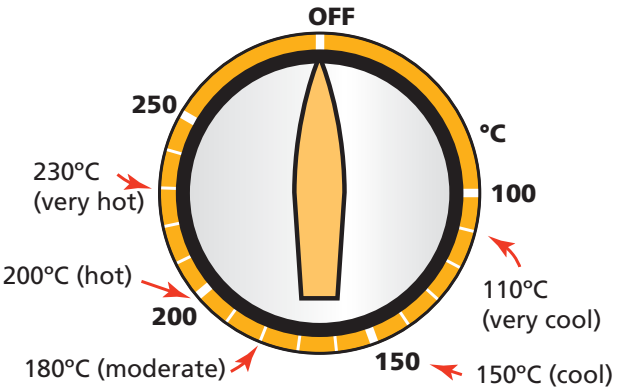
**Using an oven and cooktop safely**

## Cooking in an oven

The oven is a versatile appliance that is used to cook a wide variety of recipes. The dry heat of the oven can produce beautiful cakes, biscuits, scones, crisp roast potatoes, golden roast chicken or delicious pastries.




**Oven temperatures**

## ACTIVITY 1.3

## MAKING TIGER TOAST

### Aim

To use the grilling function safely when cooking food.

### Ingredients

- 1 slice square bread
- 1 teaspoon Vegemite
- 1 slice melting cheese

Mark Fergus Photography

### Method

1. Preheat griller on high.
2. Place bread under griller and cook until pale gold. Turn bread over and cook the other side to pale gold.
3. Spread the Vegemite over one side of the toast.
4. Cut the cheese into 5-millimetre strips and arrange over the Vegemite, leaving 5 millimetres between each strip.
5. Return to griller and cook until cheese has melted.
6. Admire the stripes and enjoy!

### Analysis

1. Why was the griller preheated before toasting the bread?
2. Why should you leave the door of an external griller open during the preheating and cooking of the tiger toast?
3. Explain how you safely removed the cooked toast from the griller.
4. Describe the process of safely cutting the cheese.
5. List some other foods that can be heated in the griller for a quick snack.

### Conclusion

After using the griller to make tiger toast, list three safety points that you could teach another person who is new to working in the kitchen about using the griller to cook food.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# USING SMALL APPLIANCES

**Small appliances** are used in the preparation of many food products. Most households have some small appliances, whether a toaster, a food processor, handheld beaters, a juicer, a blender, a sandwich maker, an electric kettle, an electric wok, a crepe maker or a coffee maker.

## Using small appliances safely

Most small appliances are electrically powered and many have sharp components. Therefore, considerable care is needed when using, cleaning and storing small appliances.

### Food processors

Food processors are popular small appliances that come in many varieties, mainly because they can be used in a wide variety of ways: to chop, slice or shred vegetables; to puree soups; to make pastry; to prepare breadcrumbs; to mix a 'quick-mix' cake; or to blend ingredients. However, different brands of food processors usually have slightly different features so each one will operate in a slightly different way.

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**Food processor**

It is important to follow the manufacturer's safety instructions when using a food processor. It is particularly important to make sure that you use the food plunger that is supplied with the machine for pushing food through the feeding tube (see page 12), rather than a knife or your fingers. Food processors are designed so that they will not turn on unless the lid switch is in the safety position.

### Handheld beaters

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**Handheld beaters**

Handheld beaters are another useful small appliance. They are generally simple to use, since they are light to hold and have a series of speeds that can be easily adjusted, even while running. Handheld beaters can be used to cream butter and sugar when making cakes or biscuits, to beat egg whites to a stiff foam for meringues or to make batters for pancakes. Observe the following safety precautions when using handheld beaters:

- always make sure that the power is turned off when putting the beaters into the machine
- make sure the beaters are securely pushed into the machine
- do not operate the beaters near water
- remember to turn off the power and remove the beaters before washing
- remove the beaters and wash them in hot, soapy water. Thoroughly wipe the machine, wind up the cord and store it with the beaters in a clean, dry place.

### Electric juicers

Electric fruit juicers have grown in popularity because people have become more aware of the importance of fresh fruit and vegetable juices. Juicing one variety of fruit, such as apples or oranges, can make a beautifully refreshing drink for



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breakfast. Some people prefer to make an exotic 'fruit combo' by juicing a range of their favourite fruits, such as oranges, pineapple and mangoes. Equally delicious is a vegetable juice made by combining a variety of vegetables, such as carrot, celery and capsicum. You can even combine fruits and vegetables.

When using an electric juicer, remember to follow the same safety procedures as you do with a food processor.



## Small appliances and safety

**1** Carefully read through the instruction manual so that you understand how to correctly use the appliance.


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**2** Do not use the appliance near water or a stove.

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**3** Ensure that you have dry hands before plugging in, unplugging or operating an appliance.

Mark Fergus Photography

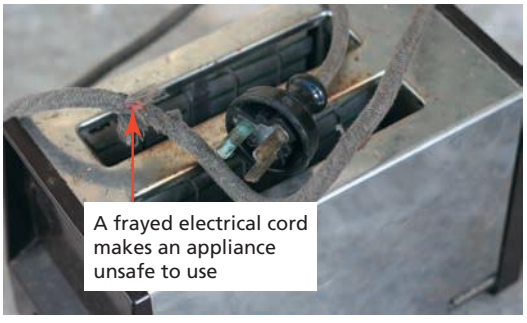
**4** Make sure you use the plunger supplied with a food processor for pushing food through the feeder tube – do not use your fingers, a knife or other utensil.

**5** Carefully wash the blades of the food processor. Do not put them into a sink filled with water.

**6** Never try to remove toast from a toaster with a knife, fork or other metal utensil.

**7** Make sure the appliance is unplugged before you begin to clean it.

**8** Store small appliances in a clean, dry place away from moisture and dust.

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**9** Check appliances frequently to make sure electrical cords do not become frayed. A frayed electrical cord makes an appliance unsafe to use


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# ACTIVITY 1.4

## TASTE TESTING APPLE JUICES

### Aim

To compare the sensory properties of fresh apple juice made in an electric juicer with commercial apple juices.

### Method

1 Collect a sample of each of the following:
   - fresh apple juice from Granny Smith apples, made in a fruit juicer
   - a clear commercial apple juice
   - a cloudy commercial apple juice.

2 Place a small amount of each juice into a glass.

3 Draw a table similar to the following. Taste test each of the apple juices. Record the ingredients, your description of the sensory properties, and use hedonic faces (page 45) to rate each juice.

### Results

| Property | Fresh apple juice made from Granny Smith apples | Clear commercial apple juice | Cloudy commercial apple juice |
|---|---|---|---|
| Appearance | | | |
| Aroma | | | |
| Flavour | | | |
| Texture | | | |
| Ingredients | | | |
| Overall rating | | | |

### Analysis

1 Describe what is left in the fruit juicer after juicing the apples. Does this substance have any nutritive value?

2 Compare the level of sweetness of each fruit juice. Which was the sweetest and which was the least sweet?

3 Which fruit juice had the most intense apple aroma?

4 Which fruit juice had the most appealing appearance?

5 Did any of the apple juices contain additional ingredients such as preservatives? Why would these ingredients be included in this product?

6 Name one advantage and one disadvantage of using an electric fruit juicer for producing apple juice.

7 What is one environmental disadvantage of using commercial apple juice?

### Conclusion

Which apple juice did you prefer as a refreshing drink? Discuss the sensory properties of each juice tested to explain your preference.

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## TESTING KNOWLEDGE

21 Describe the best method of safely dicing an onion.

22 Explain why it is recommended to store knives in a knife block or a wall-mounted magnetic rack, rather than in a drawer with other kitchen utensils.

23 Outline the best way to safely wash a cook's knife.

24 Identify two safe work practices you should follow when cooking food in a saucepan on a cooktop.

25 Describe the steps involved in safely removing food from an oven once it is cooked.

26 List two important safety rules to observe when using the griller function.

27 Describe how to safely clean and store handheld beaters.

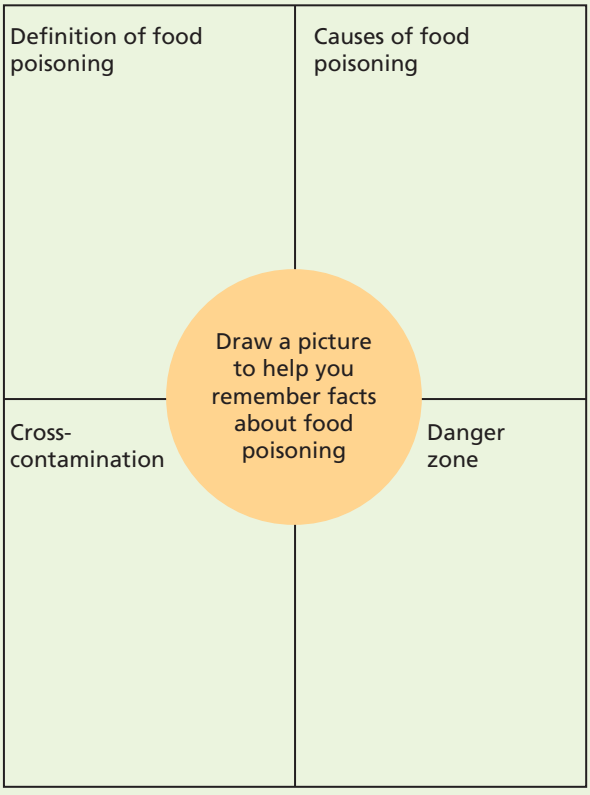
28 The electric toaster is one of the most commonly used small appliances. Briefly explain three important rules for safely using a toaster.

29 Identify one of the most essential safety rules to follow when using a food processor.

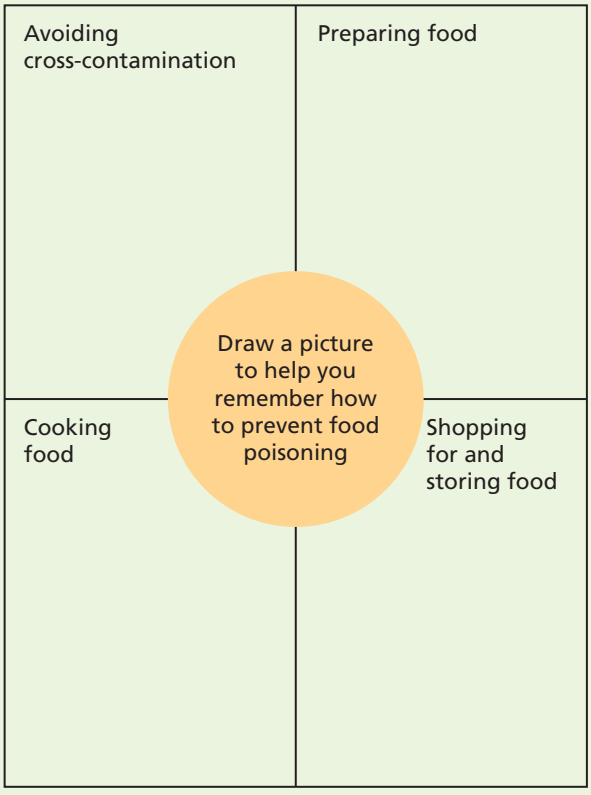
30 List two rules for safely using an electric juicer.

## THINKING SKILLS

Complete the summary frames for the causes of food poisoning and for strategies to prevent food poisoning.




**Causes of food poisoning**




**Preventing food poisoning**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# Design activity 1.1

## SWIRLY SCONES

Scones are enjoyed in many parts of the world and are usually cooked in an oven. They are thought to have originated near Scone, a village in central Scotland, in the early 16th century. Scones were originally made in a triangular shape to represent the Stone of Scone (or the Stone of Destiny), a red sandstone block that was traditionally used when Scottish kings were crowned. The first scones were made from oats and cooked on a griddle.

Today, scones are usually made from flour, and can be either plain or flavoured with a wide range of ingredients to make a sweet or savoury snack. They are a popular treat for morning or afternoon tea because they are quick to prepare and can be made and baked in the oven within 20 minutes. They are the major component of the well-known English Devonshire tea, which consists of warm scones, whipped cream and berry jam, served with a cup of tea.

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**Devonshire tea, dressed using the Devon method (with jam on top)**

### Design brief

Start with a basic scone, and then create a new swirly scone that has a sweet or savoury filling as the swirl. It could also have a healthy focus.

1 When writing your design brief, you should include:
   - a description of the occasion at which the scones will be served
   - who will be eating the scones
   - where the scones will be served
   - whether a sweet or savoury filling is required, and whether it needs to be healthy.

2 After writing your design brief, develop four evaluation criteria questions from the specifications to help you judge the success of your product.

### Investigating

1 Undertake a recipe search and make a list of ingredients that could be used to flavour a scone dough. Organise the information on a mind map, separating sweet and savoury filling ideas.

2 Sketch some ideas for shaping the flavoured scones, showing how the final product will be presented.

### Generating

1 Create two ideas for your scone fillings using the recipe map table on page 16. Remember each ingredient in the swirly filling has a specific function so you will need at least one ingredient in each functional role for the recipe to be successful:
   - ingredients that melt will help to separate the layers in the swirl and provide moisture to the filling
   - ingredients that are a contrasting colour to the dough will ensure the filling will be visible in the swirl pattern
   - flavouring ingredients will add to the sensory appeal of the swirly scones
   - glaze will assist the scone dough to become a golden colour during baking.

2 Mix and match ingredients from your recipe map table to design two options that could be a solution to the design brief.

3 Sketch on a separate piece of paper how you intend to arrange or shape the scones for baking to make sure the swirl is visible.

4 Explain how you made your decision for the final design.

### Planning and managing

1 After selecting the filling option for your scones, write out the recipe for your swirly scones. It should include the ingredients for the basic scone dough and the swirly filling, the method you will use to prepare the filling ingredients as well as the basic scone dough.



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## Recipe map table for filling of swirly scones

| Functional role in the recipe | Quantity of ingredient | Filling ingredients option 1 | Filling ingredients option 2 |
|---|---|---|---|
| Ingredient that melts | 40 grams butter | | |
| Contrasting colour to dough | ⅓–½ cup | | |
| Flavouring ingredients | • 4 tablespoons sugar or sweetening *or*<br>• 1 teaspoon dried spice *or*<br>• 4 tablespoons fresh herbs | | |
| Glaze or topping | 1 tablespoon milk | | |
| Selected option: | | | |
| Explanation for selection: | | | |

## Producing

1. Preheat oven to 210°C.
2. Prepare the filling ingredients for your scones.
3. Make up the Basic Scones recipe on page 19, from steps 2–8.
4. Instead of patting the dough, roll it out to a rectangle (30 × 20 centimetres) and use the ingredients from your preferred option for the filling.
5. Gently spread the ingredient that melts over the dough, leaving a 2-centimetre strip on one long side uncovered.
6. Evenly sprinkle over the ingredients that will provide contrast in colour and flavour.
7. Brush the 2-centimetre strip with milk, then roll the dough from the opposite side.
8. Cut the roll into equal portions and arrange with the swirl visible, on a greased oven tray. Glaze before baking.
9. Bake for 12–15 minutes or until golden brown.

## Evaluating

1. Answer the four criteria for success questions you developed earlier.
2. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your scones. Share your scones with two other people and record their comments.
3. Explain why it is important to have an ingredient in the filling of the scone that melts during baking.
4. List three health and safety practices you followed while preparing or baking the scones.
5. Discuss your organisation during production. Identify things that went well and areas for improvement.
6. If you were to make your scones again, what changes would you make to either the ingredients or the method?
7. Write a paragraph to explain why a swirly scone is a healthier option than a cupcake for afternoon tea.

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# SEASONAL FRUIT KEBABS WITH YOGHURT AND COCONUT DIP



### FRUIT KEBABS

4 or 5 seasonal fruits

summer fruits: peach, nectarine, grapes, melon, pineapple, strawberries

or

winter fruits: orange, mandarin, apple, pear, kiwifruit, banana

1 teaspoon lemon juice

bamboo skewers

SERVES TWO

### YOGHURT AND COCONUT DIP

1 tablespoon shredded coconut

1 tub (200 grams) fruit yoghurt

## METHOD

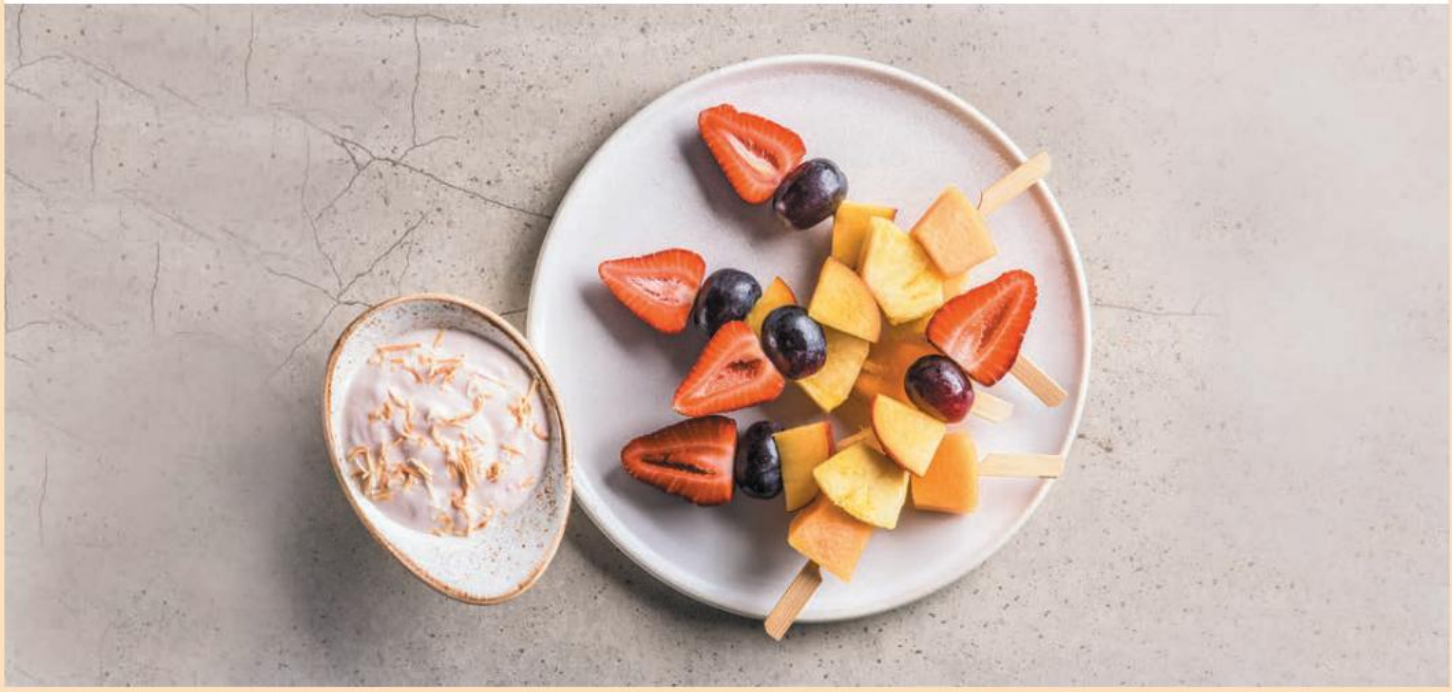
1. Cut the fruit into bite-sized pieces.
2. Sprinkle with small amount of lemon juice to prevent browning.
3. Thread onto the bamboo skewers.
4. Serve with yoghurt and coconut dip.

### YOGHURT AND COCONUT DIP

1. Place the coconut on an oven tray.
2. Toast the coconut in the oven at 200°C for approximately 2–3 minutes. Remove and check if it is pale gold in colour. Alternatively, toast the coconut under a griller or in a dry, non-stick frying pan.
3. Allow the coconut to cool.
4. Stir the coconut through the yoghurt.

## EVALUATION

1. Explain how you would safely use a vegetable knife when cutting the fruit.
2. Describe two safety rules you observed when using the oven, griller or frying pan to toast the coconut.
3. If you needed to substitute canned fruit for some of the fresh fruit in the kebab, list two canned fruits that would be most suitable to use.
4. If you were to make this recipe again, what changes would you make to the ingredients you selected or the processes you used to improve the finished product?
5. Fruit is one of the main food groups identified in the *Australian Guide to Healthy Eating*. Research how many serves of fruit per day are recommended in this food model and discuss how well your fruit kebabs rated.



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# FROZEN BANANA WHIZ

1 very ripe banana
1 cup milk
1 scoop vanilla ice-cream
2 tablespoons vanilla yoghurt
pinch cinnamon or nutmeg (optional)

SERVES ONE

## METHOD

1. Slice the banana into 5-millimetre slices and seal in a freezer bag in a single layer.
2. Freeze overnight.
3. Place frozen banana, milk, ice-cream and yoghurt in a food processor and process until smooth.
4. Pour into a tall glass and sprinkle with a pinch of cinnamon or nutmeg.

# MICROWAVED BANANA

1 ripe banana
2 teaspoons unsalted butter
1 tablespoon brown sugar
pinch cinnamon

SERVES ONE

## METHOD

1. Peel and slice banana into 2-centimetre chunks.
2. Place in a microwave-safe bowl with other ingredients. Do not mix.
3. Cover the bowl and microwave on high for 1–1½ minutes.
4. Allow the dish to stand for 1½ minutes before serving.
5. Serve with custard, on pancakes or with ice-cream.

# BANANA TOAST

1 slice fruit bread
½ ripe banana, sliced
pinch cinnamon
2 teaspoons honey

SERVES ONE

## METHOD

1. Preheat griller and toast one side of the fruit bread.
2. Arrange the banana slices on the uncooked side of the fruit bread, sprinkle with cinnamon and then drizzle with honey.
3. Return to griller for 3 minutes or until the bananas are just warm and the honey has caramelised.
4. Remove from the griller and stand for 2 minutes to allow the honey to cool before eating.

Mark Fergus Photography

## EVALUATION

1. Why is it important that ripe bananas are used for these recipes?
2. In the Frozen Banana Whiz, why is it advisable to freeze the banana in a single layer?
3. Identify one safety consideration when using a food processor.
4. Identify a safety issue you should be aware of when using a:
   - **a** microwave oven
   - **b** griller.
5. Explain why bananas are one of the most popular fruits parents/carers pack in a school lunch box for students.



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# BASIC SCONES

2 cups self-raising flour
1 tablespoon butter
1–1¼ cup milk (approximately)
1 tablespoon milk, for glazing

MAKES 12 SCONES

## METHOD

1. Arrange oven shelves and preheat oven to 230°C.
2. Collect ingredients.
3. Grease an oven tray.
4. Sift the flour into a large bowl.
5. Rub the butter into the flour using your fingertips until the mixture resembles fresh breadcrumbs.
6. Add 1 cup of milk all at once. Mix with a spatula until a soft dough is formed. Add a little extra milk if the dough is too dry.
7. Turn onto a lightly floured board and lightly knead for 30 seconds. Handle the dough as little as possible to prevent it becoming tough.
8. Gently pat out the dough to 2.5-centimetre thickness and cut scones out.
9. Place scones on the oven tray and glaze with milk.
10. Bake for 10–12 minutes or until golden brown.
11. Remove from oven and wrap in a clean tea towel to cool.

## EVALUATION

1. How did you know when the butter was sufficiently rubbed into the flour?
2. Why are the scones patted out rather than rolled with a rolling pin?
3. Why were the scones glazed before going into the oven?
4. Identify two safety rules you followed when baking your scones in the oven.
5. Classify the scone ingredients on a diagram of the *Australian Guide to Healthy Eating* and comment on whether you would rate them as very healthy, healthy or not very healthy. Explain how the rating you gave them might change if you were to serve them with jam and cream for afternoon tea.

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# FOOD-PROCESSOR SWEET SHORTCRUST PASTRY

1 cup plain flour

1 cup self-raising flour

2 tablespoons caster sugar

125 grams butter, directly from the refrigerator

1 teaspoon lemon juice

⅓ cup cold water (approximately)

SERVES FOUR

## METHOD

1. Place the flours and sugar in the bowl of the food processor and pulse five times.
2. Chop the butter into small pieces and add to the dry ingredients in the food processor.
3. Process until the mixture resembles fine breadcrumbs.
4. Add the lemon juice and water and blend for a further minute or until the mixture just comes together.
5. Remove from the food processor and place on a lightly floured board. Bring together into a ball.
6. Wrap in plastic wrap and refrigerate for 20 minutes.

## EVALUATION

1. Why is a mixture of plain flour and self-raising flour used to make this pastry?
2. Explain why it is important to pulse the flour and sugar before adding the butter.
3. Why is lemon juice added to this recipe?
4. What is the purpose of wrapping the pastry and resting it in the refrigerator for 20 minutes before rolling out?
5. Explain why pastry is classified as an 'only sometimes and in small amounts' food in the *Australian Guide to Healthy Eating*.

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# APPLE AND CINNAMON TURNOVERS

½ quantity food-processor sweet shortcrust pastry

⅔ cup pie apples or 1 apple, peeled and sliced

2 teaspoons caster sugar

¼ teaspoon cinnamon

2 tablespoons sultanas

1 tablespoon milk

1 tablespoon icing sugar

MAKES 2 TURNOVERS

## METHOD

1. Preheat oven to 200°C.
2. Roll out the pastry to a square of approximately 24 × 24 centimetres. Cut the pastry in half so that you have two rectangles, each 24 × 12 centimetres. Place on a baking tray.
3. Mix the pie apples, caster sugar, cinnamon and sultanas together in a small bowl.
4. Divide the apple mixture in half.
5. Place one portion of the apple mixture on the lower half of each rectangle of pastry.
6. Brush the edges of the pastry with milk.
7. Turn the top half of the pastry over the apple mixture and press the edges together firmly. Trim the edges of the pastry if necessary.
8. Use a fork to decorate the edges of the pastry. Cut a small steam vent in the top of the turnover.
9. Glaze the pastry with the milk.
10. Bake in oven for 15 minutes.
11. Remove from the oven and dust lightly with the icing sugar. Return to the oven and continue to bake for a further 5 minutes.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your turnovers.
2. Explain why it is necessary to make an air vent in the top of the turnover.
3. Identify two safety rules you followed when baking your turnovers in the oven.
4. Explain why the pastry is glazed with milk before baking.
5. Classify the ingredients of your Apple and Cinnamon Turnovers on a diagram of the *Australian Guide to Healthy Eating* and decide if they are a healthy dessert. Justify your answer.

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# 2 RECIPE BASICS

## KEY KNOWLEDGE

- Tools of the trade
  - Processes and tools of the cooking trade
- Making sense of a recipe
- Abbreviations in recipes
- Measurement in recipes
  - Measurement by weight
  - Dry ingredients
  - Liquid ingredients
- Commonly used food preparation terms
- How food is cooked
  - Conduction
  - Convection
  - Radiation
- Techniques for cooking food
  - Dry methods of cooking food
  - Moist methods of cooking food
  - Microwave cooking

## KEY TERMS

**baking** cooking food in an oven without the addition of fat or oil

**blanching** a method of partly cooking food by plunging it briefly into boiling water

**boiling** cooking food in water at 100°C

**conduction** when heat is transferred from one molecule to another by collision or movement

**convection** when the molecules in liquids or gases move from a warmer area to a cooler one

**cooking** the transfer of energy from a heat source to food

**frying** a method of cooking food by total or part immersion in fat or oil that is heated to between 150°C and 220°C

**grilling** a fast, dry method of cooking that uses intense heat radiated by an electrical element, a gas flame, glowing charcoal, or an open wood fire

**metric measuring tools** spoons, cups, jugs and scales that have been calibrated to accurately measure ingredients by weight and volume using the metric system

**poaching** a method of cooking delicate foods in liquid at a temperature just below simmering point (85°C)

**radiation** the transmission of heat energy in the form of rays, as occurs during grilling.

**recipe** a list of ingredients and instructions for preparing food

**roasting** a method of cooking food in an oven using a minimum amount of fat or oil

**steaming** cooking food in the steam made from boiling water

**stewing** a long, slow method of simmering food in a small amount of liquid

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking





ISBN 9780170446716

# TOOLS OF THE TRADE

Every skilled tradesperson has their own special tools of trade that are specifically designed for working with particular materials, such as wood, fabric, metal or clay. Working with food requires specialist tools too. Many of the tools used for preparing food are small pieces of equipment called utensils, and each utensil usually has a specific task. Utensils are often grouped with other pieces of equipment that perform similar functions, such as cutting, peeling or measuring. The table below will help you to identify some of the tools required for working with food.

## ACTIVITY 2.1

### USING TOOLS SAFELY

1. Read the recipe for Spaghetti Bolognese on page 335. List all the equipment that would be needed to produce this recipe.
2. Draw up the Spaghetti Bolognese recipe as a flow chart, highlighting the main stages in the recipe. Annotate the flow chart with the safety issues involved in each stage.

Getty Images/Zero Creatives

**Peeling a carrot**

## Processes and tools of the cooking trade

| Process | Tools of the trade | Use and safety |
|---|---|---|
| Cutting and peeling | • Knives:<br>– cook's<br>– vegetable<br>– serrated | • Always cut downwards onto a chopping board.<br>• Wash knives separately – never put knives into a sink of soapy water.<br>• Carry knives close to your side.<br>• Pass the handle of the knife, never the blade. |
| Measuring | • Spoons • Jugs<br>• Cups • Scales | • Measure accurately – level dry ingredients with a spatula.<br>• Measure liquid ingredients at eye level.<br>• Reset the scales between ingredients. |
| Grating and crushing | • Meat mallet • Grater<br>• Garlic crusher • Ricer<br>• Potato masher<br>• Food processor | • Keep your fingertips away from the cutting edge on the grater.<br>• Remove grated food with a pastry brush.<br>• Always use a 'pusher' when feeding food through the feed tube of a food processor.<br>• Rinse the equipment immediately after use. |
| Mixing and beating | • Wooden spoon<br>• Whisk<br>• Handheld electric beater<br>• Stick mixer<br>• Food processor | • Follow the manufacturer's safety instructions when using electrical equipment.<br>• Switch off the power supply and unplug before cleaning.<br>• Wash the equipment thoroughly in hot soapy water immediately after use. |
| Sieving and straining | • Colander • Sieve<br>• Slotted spoon | • Use oven mitts to hold equipment when straining hot food.<br>• Thoroughly dry equipment for sieving before storing. |
| Lifting | • Tongs • Wire skimmer<br>• Egg lifter | • Do not rest the handles of tools onto hot saucepans or frying pans – heat may be transferred and cause burns. |

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# MAKING SENSE OF A RECIPE

A **recipe** is a list of ingredients and instructions for preparing food. A recipe has several components:

- a name
- a list of ingredients, including quantities and, sometimes, details about preliminary preparation
- a method that explains how to prepare the ingredients and the order in which the processes should be completed

This method of writing a recipe gives the following information:

- an indication of cooking temperature and time
- a list of any special equipment required
- an indication of the number of serves the recipe makes.

Ideas for garnishes or decorations are sometimes included in the recipe, or other foods that will be complementary to the finished product are suggested. Photographs indicate how the finished product will look.

## Minestrone Soup

**Recipe name**

**Quantities of ingredients**

½ onion, diced
⅓ carrot, diced
½ potato, diced
½ stick celery, sliced
4 green beans, sliced
⅓ zucchini, sliced
½ cup cabbage, shredded
1 tablespoon oil
1 clove garlic, crushed
1 tablespoon tomato paste
100 grams diced canned tomatoes
1 cup beef stock
1½ cups water
1 tablespoon canned cannellini beans
1 tablespoon small pasta (for example, rigatoni)
1 tablespoon grated parmesan cheese, for serving
salt and pepper

**Some processes that need to be completed before starting the 'method'**

**Order in which the ingredients should be put together**

**Suggestion for complementary food**

Mark Fergus Photography

### Method

1. After cutting, place each vegetable in a separate pile, as they will be cooked at different times.
2. Heat the oil in a large saucepan. Add onions and cook over medium heat until transparent.
3. Add carrot and cook for 1–2 minutes. Stir occasionally and take care not to brown the vegetables.
4. Repeat this process, adding the celery, then the green beans, zucchini and potato.
5. Add the cabbage and cook until it wilts.
6. Add garlic, tomato paste, diced tomatoes, stock and water, and bring to boil.
7. Reduce heat to simmer and cover saucepan with lid. Cook for 15–20 minutes until vegetables are soft.
8. Add cannellini beans and pasta, and cook for another 10 minutes.
9. Adjust the amount of liquid if necessary. Season with salt and pepper.
10. Serve and garnish with parmesan cheese.

Minestrone soup goes well with fresh, crusty bread.

**Serves two.**

**Cooking time**

**Number of serves**

Mark Fergus Photography

## Chicken and Sweet Corn Soup

Finely dice half an onion and one quarter of a green capsicum. Then slice one stick of celery into thin pieces. Take a large saucepan and sauté the onion, capsicum and celery in one tablespoon of vegetable oil over medium heat. Do not brown. Open a 220-gram can of creamed corn and add to saucepan. Stir in two cups of water and half a packet of chicken noodle soup. Simmer for 15 minutes. Serve and garnish with a finely sliced spring onion.

Serves two


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## ACTIVITY 2.2

### RECIPE FORMATS

Compare the formats of the two recipes on the previous page (Minestrone Soup and Chicken and Sweet Corn Soup).

1. If you were preparing a shopping list in a hurry, which recipe format would be easier to work from? Why?
2. What are the advantages of working from the recipe format used for Minestrone Soup?
3. What are the advantages of working from the recipe format used for Chicken and Sweet Corn Soup?
4. Reorganise and rewrite the Chicken and Sweet Corn Soup recipe so that it is in the same format as the Minestrone Soup recipe.
5. Collect two examples of recipes from product labels, magazines or promotional leaflets. Draw up a table like the one below and identify the features of each recipe.
6. After comparing the features of each recipe, identify which one you would be most likely to make, and explain why.

#### Recipe comparison

| | Recipe 1 | Recipe 2 |
|---|---|---|
| Name | | |
| Photograph | | |
| Format of recipe | | |
| Number of ingredients | | |
| Number of steps to complete recipe | | |
| Time it will take to prepare and cook recipe | | |
| Equipment required | | |
| Number of serves | | |
| Garnishes or decorations | | |
| Serving suggestions | | |

# ABBREVIATIONS IN RECIPES

Measurements are usually given in recipes to ensure that a successful product can be made, eaten and enjoyed. To make recipes easier to read and quicker to write, some aspects of the recipe are often abbreviated. Some of the most common abbreviations are shown in the table below.

| | |
|---|---|
| g | gram |
| kg | kilogram |
| mL | millilitre |
| L | litre |
| °C | degrees Celsius |
| tsp | teaspoon |
| tbsp | tablespoon |
| c | cup |
| SR flour | self-raising flour |
| cm | centimetre |
| min | minutes |

# MEASUREMENT IN RECIPES

Accurate measurement in food preparation is important to ensure success in recipes and to allow the same product to be made again. Correctly calibrated **measuring tools** are essential for accurate measurement. In Australia, we use the metric measurement system, so ensure that your tools are labelled according to this system.

## Measurement by weight

| Method to accurately measure ingredients | Measuring tools | Ingredients measured by weight |
|---|---|---|
| Check that the scales are set to zero before starting to measure ingredients. | Kitchen scales are graduated in either 1-gram or 5-gram measures. | • Butter<br>• Cheese<br>• Meat<br>• Whole nuts<br>• Fresh fruit and vegetables |

## Dry ingredients

| Method to accurately measure ingredients | Measuring tools | | Dry ingredients measured by spoons and cups |
|---|---|---|---|
| | Spoons | Cups | |
| Measuring spoons and cups. The holding capacity of the item should be written on its handle. Dip the spoon or cup into the ingredient, slightly overfilling, then level off with a spatula. | • 1 tablespoon = 20 mL<br>• 1 teaspoon = 5 mL<br>• ½ teaspoon = 2.5 mL<br>• ¼ teaspoon = 1.25 mL | • 1 cup = 250 mL<br>• ½ cup = 125 mL<br>• ⅓ cup = 80 mL<br>• ¼ cup = 60 mL | • Flour<br>• Sugar<br>• Cocoa<br>• Coconut<br>• Spices |



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## Liquid ingredients

| Method to accurately measure ingredients | Measuring tools | Liquid ingredients measured by volume |
|---|---|---|
| Measuring jugs. Place the jug on a level surface, pour in the liquid and read the quantity at eye level. | Measuring jugs with cup and millilitre measurements are most useful. | • Milk<br>• Stock<br>• Water<br>• Cream |

Mark Fergus Photography

**Measuring liquid ingredients**

## ACTIVITY 2.3

### MEASUREMENT REVISION

1. Describe the method used to accurately measure dry ingredients using a measuring spoon or cup.
2. List three liquid ingredients other than those included in the table above.
3. List four dry ingredients other than those included in the table on page 25.
4. Describe the method used to accurately measure liquid ingredients using a measuring jug.
5. What are the benefits of using measuring scales rather than measuring spoons and cups to measure meat or cheese?
6. When measuring dry ingredients, why is it more accurate to dip and level off with a spatula than to pack the ingredients into the measuring spoon or cup?
7. Describe one important rule to follow when using scales.
8. Explain how you would accurately measure the following ingredients:
   - ⅓ cup wholemeal flour
   - 150 millilitres milk
   - 1½ teaspoons curry powder
   - 100 grams mushrooms.
9. Draw up the following table in your workbook and fill in the equivalent measures.

#### Equivalent measures

| | |
|---|---|
| 1 tablespoon = ? millilitres | 1 tablespoon = ? teaspoons |
| 1 teaspoon = ? millilitres | 1 cup = ? millilitres |
| ½ teaspoon = ? millilitres | 1 litre = ? cups |
| ¼ teaspoon = ? millilitres | 1 kilogram = ? grams |

## TESTING KNOWLEDGE

1. Identify the piece of equipment you would use if you wanted to cut or chop:
   a stewing steak
   b celery
   c apples
   d whole pumpkin.
2. Identify the equipment you could use to cream butter and sugar for a cake mixture.
3. List the information you would expect to find in a recipe.
4. List the abbreviations that are sometimes used in recipes for gram, litre, teaspoon, tablespoon, cup and degrees Celsius.
5. Describe the method you would use to measure 1 tablespoon of cocoa for a biscuit recipe.
6. List how many millilitres there are in 1 tablespoon, 1 teaspoon, 1 cup and 1 litre.
7. Describe the process of accurately measuring liquid ingredients.
8. Why is it more accurate to measure liquids in a metric measuring jug than in a cup?
9. Identify two ingredients that would be easier to measure with measuring scales than with cups.
10. Summarise the reasons why accurate measurement is important when following a recipe.


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# COMMONLY USED FOOD PREPARATION TERMS

The following table contains terms that you will frequently find in recipes, along with their definitions and information on foods and equipment relevant to each process.

| Food preparation process | Description of food preparation process | Appropriate equipment | Food examples |
|---|---|---|---|
| Bake | Cook food using dry heat in an oven. | Baking tray; cake tin | Bread; biscuits; cakes |
| Beat | Vigorously mix ingredients to incorporate air or combine. | Wooden spoon; handheld or electric beater; whisk | Cream; egg whites |
| Bind | Stir ingredients to combine. | Bowl; wooden spoon; spatula | Hamburger mixture |
| Blanch | Plunge food into boiling water for 30 seconds. Drain and refresh in iced water. | Saucepan; sieve or colander | Almonds; snow peas |
| Blend | Mix a dry ingredient with a moist ingredient until it forms a smooth paste. | Bowl; wooden spoon | Cornflour and water |
| Boil | Heat a liquid to 100°C or to boiling point. | Kettle or electric jug; saucepan | Water |
| Chop | Roughly cut food into small pieces. | Chopping board; cook's knife | Vegetables |
| Cream | Beat sugar and butter together until they resemble lightly whipped cream. The mixture will become lighter in colour. | Bowl; wooden spoon or electric beater | Butter cakes; biscuits |
| Dice | Cut food into small, even-sized cubes. | Chopping board; cook's knife | Onion |
| Fold | Gently combine a light, airy mixture into a heavier mixture; for example, beaten egg white into custard sauce. Use a metal spoon or spatula in short strokes to prevent loss of air or volume. | Bowl; metal spoon or spatula | Fluffy omelette; sponge |
| Fry | Cook food in hot fat or oil. Food may be deep-fried, shallow-fried or stir-fried. | Frying pan or wok; lifter | Potato chips; bacon and eggs |
| Garnish | Add edible decoration to a dish to enhance its appearance. | Vegetable knife | Fresh herbs such as parsley |
| Glaze | Brush a thin liquid such as milk or egg over food before baking to create a shiny, golden-brown surface. | Pastry brush; jug | Scones; pies; tarts |
| Grate | Reduce a piece of food into thin shreds by rubbing it against the serrated metal surface of a grater. | Grater or microplane grater | Cheese; vegetables |
| Grill | Cook small pieces of tender food using dry, radiant heat; for example, the griller in a stove or a barbecue. | Griller; barbecue | Small tender cuts of meat or poultry; kebabs; satay sticks |
| Julienne | Cut food into thin, matchstick-sized pieces. | Chopping board; cook's knife | Carrot; celery; capsicum |
| Knead | Mix and shape a flour dough by hand. In bread-making, this process strengthens the gluten. | Floured board | Bread; scones; pastry |
| Marinate | Soak foods such as meat or poultry in a seasoned liquid to improve its flavour and, sometimes, to tenderise. | Bowl | Meat strips for a stir-fry; tandoori chicken pieces |
| Mix | Combine ingredients so that they are evenly incorporated. | Bowl; spoon or spatula | Flour and sugar |
| Poach | Gently cook food in a simmering liquid. | Saucepan | Eggs; pieces of fresh fruit |



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| Food preparation process | Description of food preparation process | Appropriate equipment | Food examples |
|---|---|---|---|
| Purée | Make food into a smooth paste by passing through a sieve or by blending. | Sieve or food processor | Stewed apple; vegetable soups; tomato sauce |
| Roux | Mix melted butter or margarine and flour, blend, then cook. It is used to thicken a sauce. | Saucepan; wooden spoon | White sauce; gravy |
| Rub in | Mix butter or margarine through dry ingredients with fingertips until the mixture looks like breadcrumbs. | Bowl | Scones |
| Sauté | Lightly toss food in fat or oil in a frying pan over direct heat. The process assists in flavour development but does not brown. | Frying pan or saucepan; wooden spoon | Soups; casseroles |
| Sear | Brown food quickly over a high heat to seal in juices. | Frying pan | Steak; lamb chops |
| Shred | Cut food into thin strands using a knife, a grater or a shredding disc in a food processor. | Chopping board; cook's knife; food processor | Lettuce; cabbage; carrot |
| Sift | Pass dry ingredients through a fine mesh sieve to mix, aerate and remove lumps. | Sieve | Sponges; cakes |
| Simmer | Bring liquid to just below boiling point so that small bubbles appear on the surface of the liquid. | Saucepan, sometimes covered with a lid | Stock |
| Slice | Cut food into thin pieces. | Cook's knife or serrated knife; chopping board | Processed meats; salad vegetables |
| Steam | Cook food over boiling water on a rack or in a special basket in a covered pan. This retains the food's shape and minimises nutrient loss. | Saucepan with tight-fitting lid; steaming basket made of metal or bamboo | Pork buns; dim sims; vegetables |
| Stew | Simmer food covered in liquid for a long time. Used in dishes containing tough cuts of meat with vegetables. | Saucepan with tight-fitting lid | Lamb; root vegetables; fruit |
| Stir | Use a wooden spoon to lightly mix ingredients. | Wooden spoon | Custard sauce; gravy |
| Toss | Mix ingredients by lightly lifting and folding several times. | Wok; salad servers | Vegetables (stir-fried in a wok); salad ingredients |
| Whisk | Incorporate air into ingredients such as cream, egg whites and sauces. | Bowl; whisk | Souffle, sponge cake |

## ACTIVITY 2.4

### RECIPE TERMS

1. Read the recipe for Oriental Chicken Kebabs on page 81. Make a list of the terms from the table on page 27 and above that are used in this recipe.
2. List any other terms from the recipe that you think are important and write a definition for each of them.
3. Make a list of each of the ingredients in the recipe and write down the best method of storing them.
4. Select six other terms from the table on page 27 and above and find recipes in this textbook that use one of these terms. Use a table similar to the one below and write down a list of the terms and the matching recipe and page number.

#### Recipe key terms

| Term | Recipe name | Page number |
|---|---|---|
| Shred | Salad roll-up | 56 |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |


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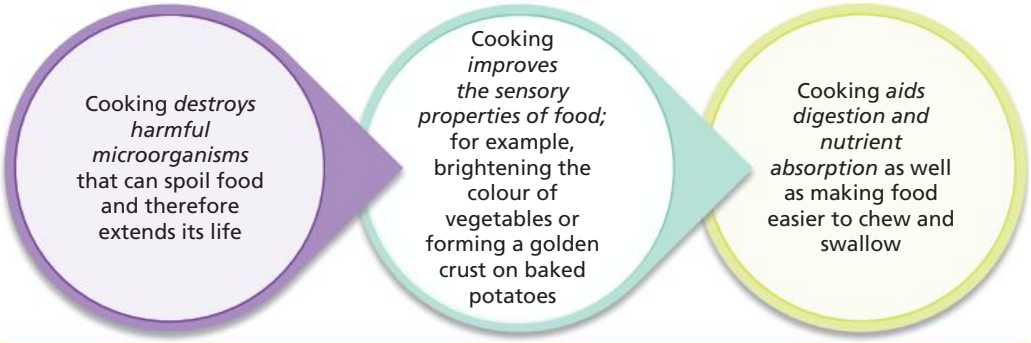
# HOW FOOD IS COOKED

**Cooking** food involves the application of heat, which brings about a range of physical and chemical changes to the food. We cook food for several reasons:

Different cooking methods achieve their results by transferring heat to the food using different mediums such as water, oil or air.




**Reasons for cooking food**

## Conduction

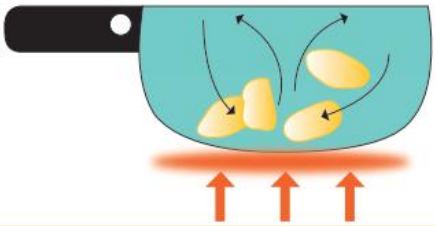
**Conduction** is a process of cooking food by direct heat. Heat is produced when energy is transferred from one molecule to another by collision or movement.

The base of the saucepan comes into direct contact with the heat source and heat is absorbed by the surface of the food and then transferred by conduction to the inside of the food, cooking it.

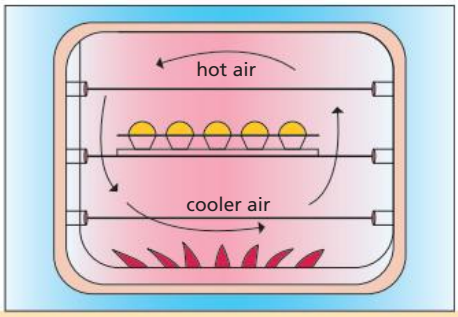
**The metal base of the saucepan conducts heat to the food**

## Convection

**Convection** is the transfer of heat in liquids and air that happens when the molecules from a warmer area move to a cooler area. For example, when an oven is heated, the hot air rises and forces the colder air down to the base of the oven where it is heated. This also occurs when you cook vegetables such as potatoes in boiling water or in steam. As the water in the saucepan is heated, the water molecules rise as they become hot and then sink again as they reach the surface and start to cool, creating a convection current.



**Convection currents in a liquid**




**Convection currents in a traditional oven**

## Radiation

Energy is transmitted by wave motion in the form of electromagnetic waves. Infrared **radiation** is used when grilling, barbecuing or toasting food. The heat waves fall on the food without coming in contact with it. The waves cause the molecules in the food to vibrate and heat up the food, cooking it.

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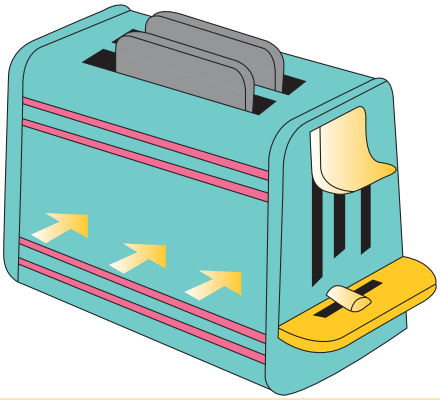


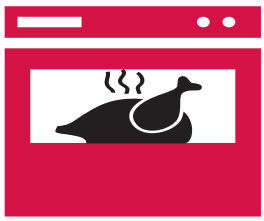
**Transfer of heat by radiation**

# TECHNIQUES FOR COOKING FOOD

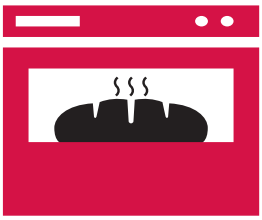
## Dry methods of cooking food

Dry methods of cooking include roasting, baking, grilling and frying. When food is cooked using dry methods, heat is transferred to the food by convection or radiation.


**Roasting** is a method of cooking food in the oven with a small amount of fat or oil. Food is cooked by convection heat and heat radiating from the oven walls. Roasting is used to cook meats such as chicken or pork and vegetables such as potatoes and pumpkin.



**Baking** is similar to roasting with heat provided by a combination of convection and radiated heat. Baked food is cooked without the addition of fat or oil. Foods that are baked include cakes, breads, pastries, egg custards and lasagna.



**Grilling** is a fast-dry method of cooking that uses intense radiated heat from a wood fire, gas or electric element. The surface of the food is cooked by radiation and the interior by conduction. It is a suitable method for cooking foods that are tender and require a short cooking time such as meats, fish, vegetables and fruit such as tomatoes and pineapple.

**Frying** is cooking food by total or part immersion in fat or oil, which is heated to 150°C–220°C. Convection currents in the oil heat the outer surface of the food and the heat is then transferred to the food by conduction. Foods suitable for frying are meats, vegetables, fish and eggs. Foods suitable for deep-frying include battered or crumbed foods such as fish, chips, battered bananas and spring rolls.

## Moist methods of cooking food

Moist methods of cooking include boiling, poaching, steaming and stewing. When food is cooked by moist cooking methods, heat is transferred through water or steam to the food by conduction and convection.



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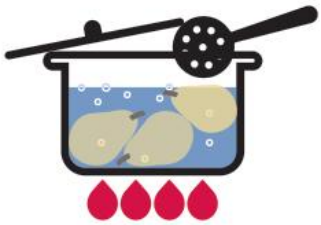
**Boiling** is cooking in water at 100°C. Rapid bubbling occurs over the surface of the saucepan and the whole surface of the food comes in contact with the water. Heat is transferred through convection currents. Foods suitable for boiling include soups, vegetables, pulses, cereals, pasta, red meat, poultry and jams.



**Poaching** is a method of cooking delicate foods in a liquid at 85°C. The surface of the water does not bubble but only trembles. Heat is transferred through convection currents. Foods suitable for poaching include fruits such as pears, meat such as chicken fillets, eggs and puddings.

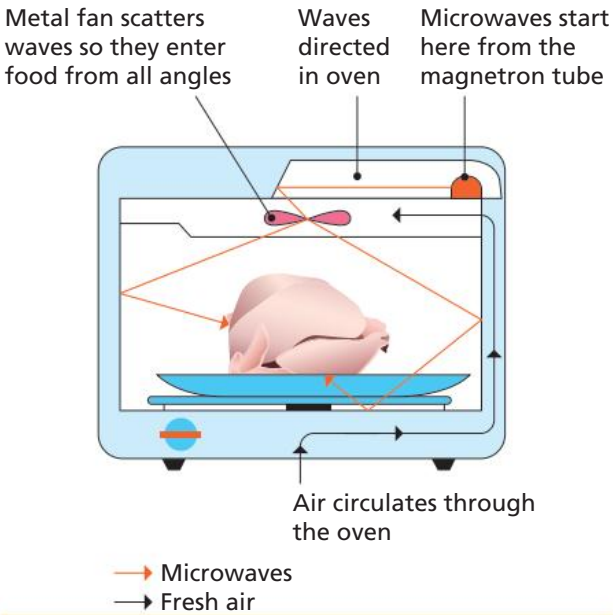
**Steaming** is cooking food by using the steam produced from boiling water. The food does not come into direct contact with the water. Convection currents carry the heat from the steam to the food's surface. This method is a healthier method of cooking because no fat or oil is used. Foods suitable for steaming include vegetables and fish as well as food placed in a closed container such as puddings.

**Stewing** is a slow method of simmering food in a small amount of liquid. The extended length of time and the moist environment help to break down the connective tissue in tough cuts of meat. The liquid absorbs flavours and retains all the nutrients and is served as part of the final dish. Heat is transferred by conduction and then convection. Foods suitable for stewing include tougher and cheaper cuts of meat and poultry and fruits.

## Microwave cooking

The microwave oven is an appliance found in many homes. Numerous families find a microwave oven useful for cooking a wide variety of foods, thawing frozen foods and reheating pre-cooked foods.

While electric and gas ovens are based on radiant heat, microwave ovens use high-frequency radio waves that enter the food and cause its water molecules to vibrate. This creates heat, which in turn cooks the food. Food is not cooked according to a selected temperature, but according to the number of watts the appliance has available; the power rating depends on the size of the microwave. The weight of the food, its water content and the power of the microwave all affect the cooking time required. Remember that the more food there is in a microwave oven, the longer the cooking time will be.




**How a microwave oven works**

It is important to allow standing time after cooking in a microwave, because the food continues to cook after the microwave has been switched off. A good rule of thumb is that the standing time should equal the cooking time. Note that food cooked in a microwave will not brown unless a browning plate is used.

### Using a microwave oven safely

- Always carefully follow the manufacturer's instructions.

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- Use dishes made of china, heat-resistant glass, ceramics, paper or appropriate plastics when cooking in a microwave.
- Do not use metal containers, as they may cause the microwave to arc and damage its magnetron. They also prevent the food from cooking because the microwaves are reflected away from the food.
- Do not turn a microwave on to cook if it is empty; this can damage its magnetron.
- Use only microwave-safe wrap or paper towel to cover food when cooking in a microwave. Never use aluminium foil, as this can cause the microwave to arc.
- Take care when removing plastic or other wrap from food after cooking – the escaping steam can cause a severe burn.
- Clean the microwave regularly by placing a small amount of detergent on a damp cloth. Heat the cloth in the microwave for one minute, then wipe clean.

## ACTIVITY 2.5

### MICROWAVED PAPPADAMS

#### Aim

To be able to operate a microwave oven safely when cooking food.

#### Method

1. Place one pappadam in a microwave.
2. Cook on high for 20 seconds. Observe the process but stand well clear of the microwave.
3. If more cooking is required, increase the cooking time by a few seconds at a time.

#### Analysis

1. Describe your observations of the cooking process in the microwave.
2. Where should you place food to achieve even cooking in the microwave?
3. Even though pappadams are not cooked in oil, they contain an ingredient that might cause some health concerns. Examine the information on the packaging and identify this ingredient.

#### Conclusion

Identify three safety considerations you could now teach other people when cooking food in a microwave oven.

## ACTIVITY 2.6

### HOW DIFFERENT COOKING METHODS USED TO COOK CARROTS PRODUCE DIFFERENT SENSORY PROPERTIES

#### Aim

To determine how different cooking methods produce distinctive sensory properties in carrots.

#### Equipment

- 3 medium size carrots
- Steamer
- Container suitable for use in the microwave
- Tray suitable for use in a conventional oven, sprayed with oil

#### Method

1. Preheat oven to 220°C and set up steamer and saucepan with boiling water.
2. Peel and cut each carrot into 2-centimetre cubes.


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3 Spray ⅓ of the carrot cubes with oil and roast until they are tender and golden brown.
4 Steam ⅓ of the carrot cubes until they are tender.
5 Place the remaining ⅓ of the carrot cubes in the microwave container and microwave until they are tender.
6 When all carrot cubes are cooked, place them on separate plates for a sensory evaluation.
7 Record your observations of the sensory properties of each carrot group in the chart below.

| Cooking method | Appearance | Aroma | Flavour | Texture | Sound |
|---|---|---|---|---|---|
| Roasting | | | | | |
| Steaming | | | | | |
| Microwaving | | | | | |

### Analysis

1 Compare the appearance of the carrots cooked by each cooking method.
2 Describe the aroma of each group of carrots. Why do you think they were different?
3 Taste each of the carrot groups. Describe the difference in flavour between each group.
4 Compare the texture of each group and explain why there are differences.
5 Outline the advantages of microwaving carrots.
6 Which carrots would you consider were cooked by the healthiest method? Justify your answer.

### Conclusion

Which method of cooking produced carrots with the most appealing sensory properties?

## TESTING KNOWLEDGE

11 List the pieces of equipment you would need when creaming butter and sugar for a cake mixture.
12 Explain the difference between chopping and dicing carrots.
13 Explain the meaning of the term sauté and why sautéing is considered to be an important cooking process.
14 Whisking is a term often found in many recipes. What does this term mean?
15 Use diagrams to demonstrate how cooking food by conduction differs from cooking food using convection heat.
16 Explain how heat is transferred when cooking sausages on a barbecue.
17 Describe how heat is transferred during boiling. Explain the difference between boiling and poaching.
18 Explain why steaming is recommended as a healthy method for cooking vegetables.
19 Why is stewing a suitable method for cooking tough, cheaper cuts of meat?
20 Use a diagram to explain how a microwave oven cooks food.

## THINKING SKILLS

### Compare tools that can be used to carry out specific food preparation processes

Use the chart of commonly used food preparation terms on pages 27–8 to select a food preparation process and compare suitable tools that could be used as part of that process. Alternatively, draw up a table like the one on the next page and complete the example shown in it.

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2

1 Describe the characteristics of each tool.

| Food preparation process: Bind | | |
|---|---|---|
| **Description of process:** | | |
| **Suitable tool/s to carry out process** | **Wooden spoon** | **Plastic spatula** |
| Sketch of tool | | |
| Properties of materials used in tool | | |
| Ease of use when carrying out the process | | |
| How well the tool completes the process | | |
| Ease of cleaning the tool | | |

2 Explain how the wooden spoon and plastic spatula are similar and different with respect to the characteristics you have observed.

3 Summarise your findings, including examples of food products for which you would use each tool.

# Design activity 2.1

## DESIGNER MUFFINS

### Design brief

The Parents' Association at your school is organising a 'bake-off' for junior school students. The aim is to encourage students to bring healthy snacks to school and to increase the consumption of vegetables and fruit by junior school students. Students are asked join in the fun of the school bake-off by designing and preparing a muffin that is suitable to bring to school as a healthy snack.

Develop four questions to evaluate the success of your finished product.

### Investigating

1 Research a variety of flours, sweeteners, flavouring ingredients such as fruit, vegetables, cheese, seeds and nuts that would be suitable to include in a healthy muffin.

2 Create a mind map with as many flavouring ingredients as possible that could be used in a muffin recipe.

3 Classify the flavours into 'sweet' and 'savoury'.

4 Complete the table opposite by describing the role of each ingredient and listing examples of each ingredient.

| Functional ingredient | Functional role of the ingredients in muffin recipes | Examples of types of ingredient |
|---|---|---|
| Flour | | |
| Sweeteners | | |
| Eggs | | Eggs |
| Flavourings | | |
| Liquids | | |
| Shortening | | |
| Raising agents | | |

5 Make a recipe such as the Cheese and Red Capsicum Muffins on page 38 or Spiced Apple Muffins on page 37 to explore the characteristic of the ingredients required in a muffin recipe.

### Generating

1 Use your knowledge of functional ingredients of muffins to design two distinctly different recipe options that meet the needs outlined in your design brief. If you are making a savoury muffin, remember to exclude the sweetener.


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2 The Cheese and Red Capsicum Muffin recipe (page 38) or the Spiced Apple Muffins (page 37) can be used as a starting point for your design.

## Recipe map table for muffins

| Functional ingredient | Quantity required | Option 1 muffin recipe | Option 2 muffin recipe |
|---|---|---|---|
| Self-raising flour | 2 cups | | |
| Baking powder | 1 teaspoon | | |
| Sweetener | ¾ cup | | |
| Eggs | 1 required | | |
| Flavouring | 1 cup | | |
| Liquid (usually milk) | ¾ cup | | |
| Shortening (usually oil) | ½ cup, 125 millilitres or 125 grams | | |
| Preferred option: | | | |
| Explanation for choice of preferred option: | | | |

3 Write out your new recipe, incorporating your ingredients into the method. Remember to give your recipe an appealing name.

## Planning and managing

1 Complete a food order for all the ingredients required for your recipe. Refer to page 51 for more information on food orders.

2 Make a list of the aspects of the production task that rely on you and your bench partner sharing and working collaboratively.

## Producing

Prepare your preferred option, recording any changes you make to the ingredients or method during production.

## Evaluating

1 Answer your four criteria for success questions in detail.

2 Describe the sensory properties – appearance, aroma, flavour and texture – of your muffins.

3 Share your muffins with two other people and record their comments.

4 Taking into account your tasters' comments and your own experience, suggest improvements you could make to the ingredients and/or method if you were to make the muffins again.

5 Discuss your level of organisation during production. Identify areas for improvement.

6 Plot the ingredients of your designer muffins on a diagram of the *Australian Guide to Healthy Eating* and decide whether they are healthy. Justify your answer based on the recommendations of this food selection model.

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# TOASTED MUESLI

Muesli is great served with milk or yoghurt or nibbled on as a snack, since it is a very nutritious food. This recipe uses all the types of measuring equipment used to prepare food.

1 cup rolled oats
45 grams shredded coconut
1 teaspoon sunflower seeds
2 teaspoons sesame seeds
¼ cup skim milk powder
¼ cup unprocessed oat bran
⅓ cup All-Bran
1 tablespoon peanuts, chopped
1 tablespoon vegetable oil
1 tablespoon golden syrup
2 teaspoons honey
2 dried apricots, chopped
½ cup sultanas

SERVES ONE

## METHOD

1. Preheat oven to 180°C.
2. In a large bowl, collect the rolled oats, shredded coconut, sunflower seeds, sesame seeds, skim milk powder, oat bran and All-Bran.
3. Add peanuts to other ingredients in the bowl. Mix well.
4. Place the vegetable oil, golden syrup and honey in a small saucepan. (Hint: measure the oil first then pour the golden syrup into the tablespoon you used for the oil; it will then come off the tablespoon easily.)
5. Over a medium heat, bring the liquid ingredients to the boil. Remove from heat immediately and pour over dry ingredients. Mix well.
6. Spread muesli in a thin layer on a baking tray. Bake for 5 minutes.
7. Remove from oven, stir carefully, then return to oven for another 5 minutes or until golden brown.
8. Remove from oven and cool.
9. Mix in chopped apricots and sultanas.
10. When completely cool, package in an airtight container.

## EVALUATION

1. Explain how you accurately measured the dry ingredients.
2. Which tool did you use to stir the muesli? Explain why it was the most suitable.
3. Why was it important to remove the liquid ingredients from the cooktop as soon as they boiled?
4. Describe the safest way to remove the hot tray of muesli from the oven.
5. Classify the ingredients for the Toasted Muesli on a diagram of the *Australian Guide to Healthy Eating* and comment on how well it meets the recommendations of this food selection model.

Mark Fergus Photography



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# SPICED APPLE MUFFINS

1 cup canned apple slices
2 cups self-raising flour
½ teaspoon bicarbonate soda
½ teaspoon cinnamon
1 teaspoon ground ginger
¼ teaspoon ground nutmeg
pinch ground cloves
¾ cup soft brown sugar
1 egg, lightly beaten
¾ cup milk
½ cup vegetable oil

### TOPPING INGREDIENTS

1 tablespoon caster sugar
½ teaspoon cinnamon
½ small red apple, cored and very thinly sliced

MAKES 12 MUFFINS

## METHOD

1. Preheat oven to 200°C. Grease or use patty papers to line a muffin tray (12 × ⅓ cup capacity).
2. Cut each of the canned apple slices into 3 pieces.
3. Sift dry ingredients into a large bowl.
4. Combine the egg, milk and oil and whisk together.
5. Make a well in the centre of the dry ingredients and add the sliced apple. Mix in the wet ingredients and stir to combine. Do not over-mix, otherwise the muffins will become tough.
6. Spoon mixture evenly into the prepared muffin tray.
7. Prepare the topping ingredients by combining the caster sugar and cinnamon.
8. Top each muffin with a thin slice of apple. Sprinkle with the sugar and cinnamon mixture.
9. Bake for 15–20 minutes.
10. Test the muffins to see if they are ready; leave longer if necessary. (The muffins are ready if they spring back when lightly touched with your finger, or if a fine skewer comes out clean and dry from the centre of a muffin.)
11. Cool in tray for 5 minutes. Remove from pan and place on cake rack.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Spiced Apple Muffins.
2. Explain why it is important to sift the dry ingredients in step 3 before mixing in the wet ingredients.
3. Identify another type of fruit you could use in the muffins if canned apple slices were not available.
4. Identify two safety rules you followed when baking your muffins in the oven.
5. Classify the ingredients of your Spiced Apple Muffins on a diagram of the *Australian Guide to Healthy Eating* and comment on the health rating you would give the muffins with reference to the amount of sugar and oil they each contain.

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# CHEESE AND RED CAPSICUM MUFFINS

½ cup coarsely grated tasty cheddar cheese
½ cup shredded parmesan cheese
¼ red capsicum, finely diced
2 tablespoons parsley
2 cups self-raising flour
½ teaspoon baking powder
1 egg, lightly beaten
¾–1 cup buttermilk
½ cup vegetable oil

**TOPPING**

¼ cup shredded parmesan cheese

MAKES 12 MUFFINS

## METHOD

1. Preheat oven to 200°C. Grease or use patty papers to line a muffin tray (12 × ⅓ cup capacity).
2. Combine the tasty cheese, parmesan cheese, red capsicum and parsley.
3. Sift dry ingredients into a large bowl.
4. Combine the egg, buttermilk and oil and whisk together.
5. Make a well in the centre of the dry ingredients and stir through the cheese mixture. Mix in the wet ingredients and stir to combine. Do not over-mix, otherwise the muffins will become tough.
6. Spoon mixture evenly into the muffin tray and sprinkle with parmesan cheese.
7. Bake for 15–20 minutes.
8. Test the muffins to see if they are ready; leave longer if necessary. (The muffins are ready if they spring back when lightly touched with your finger, or if a fine skewer comes out clean and dry from the centre of a muffin.)
9. Cool in tray for 5 minutes. Remove from pan and place on cake rack.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Cheese and Red Capsicum Muffins.
2. Why are the wet and dry ingredients kept separate and mixed just prior to baking?
3. Why is it important to have equal quantities of mixture in each muffin tin before baking?
4. Explain why muffins are cooked in a hot (200°C) oven rather than a cool oven.
5. Compare the ingredients for the Cheese and Red Capsicum Muffins to those of the Spiced Apple Muffins (page 37). Which muffin would you consider could be included as part of a healthy diet? Justify your decision with reference to the ingredients used in each type of muffin.

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# MINI QUICHES

**Pastry is traditionally used to encase an egg mixture in a quiche. In this recipe, bread replaces the pastry, because it has a much lower fat content and is quick and easy to prepare. During baking, the heat in the oven coagulates the egg and sets the filling.**

8 slices wholemeal bread
30 grams butter, melted
1 rasher bacon, finely diced
2 spring onions, finely sliced
30 grams tasty cheese, grated
2 eggs
⅓ cup milk

MAKES 8 MINI QUICHES

## METHOD

1. Preheat oven to 200°C.
2. Trim crusts from bread. Roll each slice flat with a rolling pin to compress the slice; ensure there are no holes in the slices of bread.
3. Brush one side of each slice of bread with melted butter.
4. Carefully place the bread butter-side down into small, greased muffin tins. Each slice will form a small cup with pleats in it.
5. Add bacon, spring onion and cheese to each bread case.
6. Lightly beat eggs and milk with a fork, then pour equal quantities of this mixture into the bread cases.
7. Bake for approximately 15–20 minutes or until golden brown and the filling has puffed.
8. Remove from muffin tins and serve.

## EVALUATION

1. Identify the process that the eggs undergo during baking.
2. Outline the main role that egg plays in the structure of a quiche.
3. Suggest some other ingredients that could be used to flavour the mini quiches.
4. Outline two rules for using the oven safely.
5. What are the nutritional benefits of using bread instead of pastry for the base of the quiche?

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# CUPCAKES

2

2 eggs
½ cup caster sugar
½ cup thickened cream
½ teaspoon vanilla essence
1 cup self-raising flour, sifted

MAKES 10–12 CUPCAKES

## METHOD

1. Preheat the oven to 200°C.
2. Lay out 12 cupcake papers in a patty cake tray – ⅓ cup size.
3. Place the eggs and cream in a medium bowl and beat with electric hand beaters until combined.
4. Add caster sugar and vanilla essence and beat on high speed for 4 minutes or until the mixture is light and fluffy.
5. Sift in the flour and gently fold in using a metal spoon until there are no lumps.
6. Spoon equal quantities of cake batter into the cupcake papers.
7. Bake for 15–20 minutes or until pale gold in colour and just firm to the touch.
8. Remove from oven and cool on a cake rack.
9. Decorate with glacé or butter icing.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the Cupcakes.
2. Explain how beating the eggs, cream, caster sugar and vanilla for 4 minutes contributes to the aeration of the Cupcakes.
3. Why is the flour folded into the recipe in step 5 instead of being beaten in?
4. Identify the processes that are responsible for the Cupcakes becoming golden during baking.
5. Identify the ingredients in the Cupcakes that place them in the 'only sometimes and in small amounts' component of the *Australian Guide to Healthy Eating*. Predict the outcome for your long-term health if you were to eat cupcakes on a regular basis.

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# DESIGNING WITH FOOD

# 3

## KEY KNOWLEDGE

- The role of food
- Describing food
- Tasting food
- Analysing the properties of food
  - Qualitative or sensory measures
  - Quantitative measures
- The design process
  - The design brief
  - Investigating
  - Generating
  - Planning and managing
  - Evaluating

## KEY TERMS

**considerations** factors in the design brief, such as the season of the year or the skills of the chef, that are more flexible than constraints but may also influence the design and development of the product

**constraints** factors in the design brief with which the product must comply

**design brief** specific information about the type of product to be developed and the audience at which the new product is aimed

**design process** the process of investigating, generating, planning and managing, producing and evaluating

**preferred option** the design option that best meets the requirements set out in the design brief

**qualitative or sensory analysis** the evaluation of the sensory properties of food, such as appearance, aroma, flavour, texture and sound

**quantitative measures** ways to measure the physical, chemical or nutritional properties of food

**sensory properties** the appearance, aroma, flavour, texture and sound of food

**specifications** the considerations and constraints within the design brief

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social, and community health

### CAPABILITIES

- Critical and creative thinking



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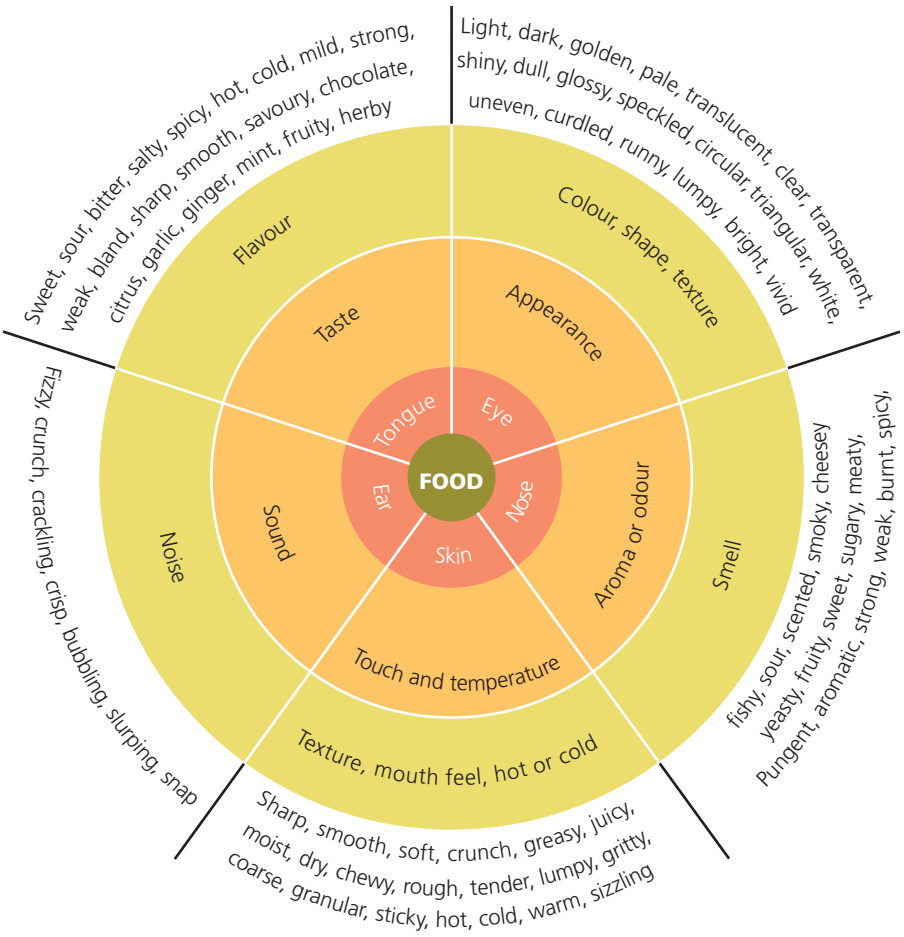
# THE ROLE OF FOOD

Food plays a vital part in our lives. It is the essential fuel that keeps us alive. Food is frequently the focal point of our social lives; we share food with family and friends in our homes, in restaurants, at school, at sporting events and in a variety of other venues. Because food is so fundamental, it is important for us to understand how to prepare it so that it will provide us with the essential nutrients needed to maintain good health, as well as be appealing to eat.

# DESCRIBING FOOD

To work successfully with food, it is necessary to develop an understanding of its characteristics or **sensory properties**: its appearance, aroma, flavour, texture and sound. You need to be able to describe food and to explain it to others. This is distinctly different from a subjective statement of your opinion about how much you like or dislike a particular food. We all have certain foods that we particularly enjoy, but what is it about these foods that makes us think of them as our 'favourites'?




**Sensory wheel**

## ACTIVITY 3.1

### FAVOURITE FOODS

1 Sketch four of your favourite foods.

2 Annotate each sketch to describe the food's appearance, aroma, flavour, texture and sound. Refer to the words in the sensory wheel to help you with descriptive words for each characteristic.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3 Look at the photographs of the chicken and noodle stir-fry and peach and apricot crumble. Write down as many words as you can to describe the appearance of each dish, and how you imagine the aroma, flavour and texture of each dish would be.

4 Which of the properties of each of the two dishes appeals to you most? Why?

Mark Fergus Photography

**Chicken and noodle stir-fry**

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**Peach and apricot crumble**

The body's senses of taste, smell, touch, sight and even hearing, are important in building up our knowledge of food. The eyes, nose, mouth, ears and skin send messages to the brain to tell us which foods give us pleasure and which foods we find unpleasant. The sweet, smooth taste of chocolate, the aroma of a roasting chicken or baking bread or the sound of a crisp apple being bitten can give us a sense of excitement and anticipation.

# TASTING FOOD

The sensory impression food creates every time we eat is essential as we build our memories of food. Many chemicals combine in a complex way to create different foods and we react as our senses experience every bite or sip we take. After we have looked at the food, our sense of taste and smell work together to determine the flavour of food. As food enters the mouth, the taste buds recognise the basic flavours of sweet, sour, bitter, salty and umami (savoury). You will have noticed that when you have a cold and a blocked nose, your food seems tasteless because your sense of smell is not working as well as it could.

Every food falls within one or more of the basic taste categories. Sweet foods that most people love include chocolate, strawberries, honey and ice-cream. Sour foods include vinegar and citrus fruits such as lemons and grapefruit. The pith of an orange, bitter melon, rocket and radicchio are examples of bitter foods. Bacon, potato chips, soy sauce, feta cheese and olives all have a salty flavour. Tomatoes and parmesan cheese are good examples of umami foods.

## ACTIVITY 3.2

### TASTE TEST

For this taste test, you will need the following equipment:

- two trays, labelled Tray A and Tray B
- 12 different food samples, six on each tray
- samples cut into small pieces; the trays should be covered so that the foods cannot be seen
- enough blindfolds for half of the class
- enough small plates, spoons and cups for every member of the class
- a copy of the following table for each class member to use to record the flavour, texture and identification of the food samples.

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3

### Food tasting table

| Sample | Flavour | Texture | What I think the food is | What the food really is |
|---|---|---|---|---|
| Sample 1 | | | | |
| Sample 2 | | | | |
| Sample 3 | | | | |
| Sample 4 | | | | |
| Sample 5 | | | | |
| Sample 6 | | | | |

1. Work with a partner to complete the taste test.
2. One partner should be blindfolded.
3. Begin with the six samples on Tray A. The blindfolded partner must not be told which foods are on that tray.
4. Use a spoon to feed the blindfolded partner one of the six samples.
5. Ask them to describe the sample's flavour and texture, and to name what they think it is.
6. Record their answers on the table.
7. Feed the blindfolded partner the remaining food samples on Tray A and record their answers.
8. Remove the blindfold and share the results.
9. Change places, and repeat the process using Tray B.

# ANALYSING THE PROPERTIES OF FOOD

After a food product is prepared and served, it is important to examine it closely to determine whether it was successful – that is, did people enjoy eating it and did the product meet the needs identified in the design brief? When evaluating the success of a food product, food manufacturers and cooks identify the ingredients used and how they worked together in a recipe and determine whether improvements should be made to the processes and equipment used in production. Measuring the size, weight, volume and nutrient content of food enables comparisons to be made between individual products. Most importantly, what people remember about food is whether eating it was a pleasurable experience; this hinges on the sensory analysis of appearance, aroma, flavour and texture.

## Qualitative or sensory measures

**Qualitative or sensory analysis** is used to evaluate the sensory properties of food such as appearance, aroma, flavour, texture and sound.

As consumers, we use all our five senses – sight, smell, taste, touch and sound – to form opinions about food products. This form of sensory analysis is subjective, since some foods are appealing to some people but not to others. However, in the food industry, specially trained testers carry out controlled sensory analysis tests on food to ensure that the end product will appeal to a wide range of consumers. Several systems are used to collect this data and collate it in the form of descriptors. Descriptors describe specific characteristics of the food – look at the sensory wheel on page 42 for some examples.

Facial hedonic descriptors enable the consumer to rate how much they like or dislike a food by using a scale based on a range of happy and sad faces.

Attitudinal descriptors indicate how people feel about a particular food. These descriptors provide more detailed statements about the food to allow the consumer to state their attitude to the product.


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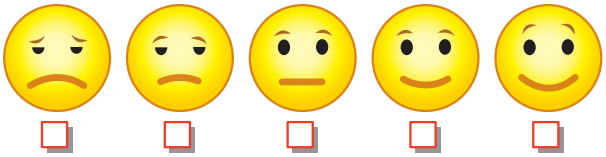

**Hedonic scale**

| Tick the statement that best describes your attitude to this product. | |
|---|---|
| I would eat this at every opportunity I had. | |
| I would eat this very often. | |
| I would eat this frequently. | |
| I like this and would eat it now and then. | |
| I would eat this if it was available but would not go out of my way for it. | |
| I don't like this, but I would eat it occasionally. | |
| I would hardly ever eat this. | |
| I would eat this only if there were no other food choices. | |
| I would eat this only if I was forced to. | |

**Attitudinal descriptors**

## Quantitative measures

**Quantitative measures** are ways of measuring the physical, chemical or nutritional properties of food. They enable consumers to compare similar food products. Features of food products that can be measured accurately using quantitative measures include:

- the ratio of ingredients
- the weight of the finished product
- microbiological content (to ensure that food is safe to eat and to determine the shelf life of the product)
- colour
- nutrient content
- volume
- consistency
- texture.

Recording this type of data is an important part of the quality control process for food manufacturers. Products are analysed to determine whether they meet Australian Standards set out in the Food Standards Code, to provide consumers with confidence about the food they purchase – that it is what the label says and is safe to eat – and to provide a basis upon which consumers can compare competitors' products.

## TESTING KNOWLEDGE

1. In one sentence, explain why food plays such an important part in our lives.
2. Name the sensory properties of food.
3. What is the purpose of people knowing and understanding the sensory properties of food?
4. Suggest some factors that can affect a person's ability to identify specific flavours when eating.
5. Explain the difference between qualitative analysis and quantitative analysis of food products.
6. Describe how hedonic and attitudinal descriptors assist food manufacturers in product development.
7. List four properties of food that can be accurately measured using quantitative measures.
8. Identify two other flavours you could add to the sensory wheel.
9. Explain why hedonic descriptors are a useful tool when analysing food products.
10. What is the relationship between using the sensory properties and the hedonic scale when discussing food?

# THE DESIGN PROCESS

Design involves thinking creatively to solve a problem or to meet a need or an opportunity. This means someone, or a group of people, has spent time, effort and money to design, create and produce something functional – in this case we are focusing on food.

New food products and meal ideas seem to appear in the supermarket on an almost weekly basis. Food manufacturers respond to consumers' needs by designing and producing new snack foods, instant meals, frozen foods, convenience foods and beverages.

Whenever a new food product is designed and produced, the manufacturer begins by developing a **design brief**. Once the design brief has been established, the manufacturer uses the



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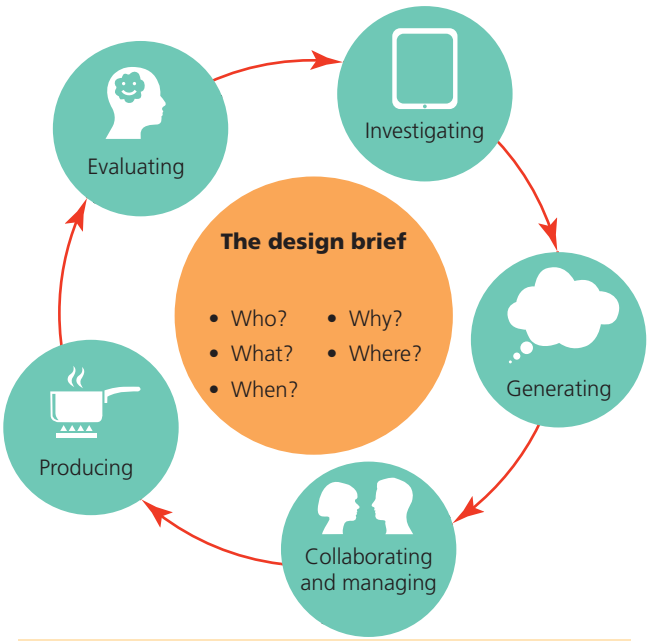
**design process**, which involves the key stages – investigating, generating, planning and managing, producing and evaluating – to enable them to design and make a product that best meets consumers' needs.

Eating food is an essential part of everyday life and although we may not be aware that we are doing so, we often use the design process to determine what we eat. Whether at home or school, in the hospitality or food manufacturing industry, we use a system or the design process to solve the problem of what to eat. We also take into account social, economic and environmental considerations about the food we grow, select, serve and eat. Look at the illustration below to see the way in which the design process can be used to develop recipes, either at school or at home.




**The design process**

## The design brief

The **design brief** is the focal point of the design process. It is written as a scenario and includes all the important information required when producing food for a specific need, want or opportunity. It may be a single food item such as a healthy snack for preschool children, a whole meal for a family, a treat to serve with coffee at the local café or a food manufacturer may be developing a breakfast cereal with more calcium to help consumers have healthier bones and reduce the risk of osteoporosis. Outlining the who, what, when, why and where – the '5 Ws' – is a strategy to identify different aspects of the problem to be solved. They are the **specifications** of the design brief.

Just like a food manufacturer, you too probably had to work through the development of a design brief this morning without realising it. For example, after waking up in the morning you must decide about breakfast:

- who – do I have to make my own breakfast?
- what – what food that I could eat for breakfast is in the pantry or refrigerator?
- when – how much time do I have to make and eat breakfast before leaving for school?
- why – why does the human body need food after waking up from a night's sleep?
- where – will I eat the breakfast at home or on the bus going to school?

When designers are developing a design brief, they also need to include information about the 5 Ws of the food. For example, the brief includes information about who the new product will be aimed at (for instance, children). It also provides information about what type of product is to be developed – for example, a new healthy snack food. These factors, or specifications, are often called **constraints**, because they are factors with which the product must comply, and the designer must include in their thinking when creating solutions for the problem.

Other factors, or specifications, included in the design brief may be **considerations**, such as the quality and sensory properties of the food, the season of the year, the skills of the chef, details about the consumer or the sustainability of the ingredients. These may also be included in the design brief because they may influence the design and development of the food to be produced.

Most importantly, the design brief does not include a solution for the problem to be solved.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| The stages in the design process | Thinking about the stage | An example of the design process |
|---|---|---|
| Design brief  | • The problem to be solved or the need to be met<br>• Specifications:<br>– Who<br>– What<br>– When<br>– Why<br>– Where<br>• Criteria for success | • Who: Year 9 students<br>• What: a food item that contains a protein ingredient, salad and bread product that can be hand-held<br>• When: lunch on a day out<br>• Why: cooked on a barbecue, convenient, individual choice<br>• Where: the beach foreshore |
| Investigating  | • Collect information from a wide range of resources<br>• Analyse the information to develop design options | • Student focus group<br>• Suggestions from Food Studies students<br>• Examples of suitable protein foods, salad ingredients and bread products<br>• Recrecipe books, food magazines, internet search |
| Generating  | • Use the ideas from the investigation to develop viable options<br>• Test the options to determine which one best meets the design brief specifications – this becomes the preferred option | • Possible solutions:<br>– Burger<br>– Souvlaki<br>– Burrito<br>– Steak sandwich<br>• PMI used to determine preferred option<br>• Recipe for the preferred option – souvlaki |
| Planning and managing  | • Identifying the steps to plan and manage production:<br>– Food order<br>– Production plan<br>– Working individually or collaborating as part of a team | • Complete a food order for ingredients for souvlaki<br>• Prepare a production plan<br>• Allocate tasks to team members |
| Producing  | • Production of the preferred option<br>• Use of appropriate tools and equipment<br>• Presentation of the finished product | • Collect ingredients<br>• Prepare the souvlaki, following health and safety guidelines<br>• Follow recipe accurately to maximise the sensory properties of the souvlaki |
| Evaluating  | • Sensory analysis<br>• Response to criteria for success | • Analyse the sensory properties of the souvlaki<br>• Respond to the criteria for success to evaluate success of the design solution<br>• Recommendations for improvement |

**Designing with food**

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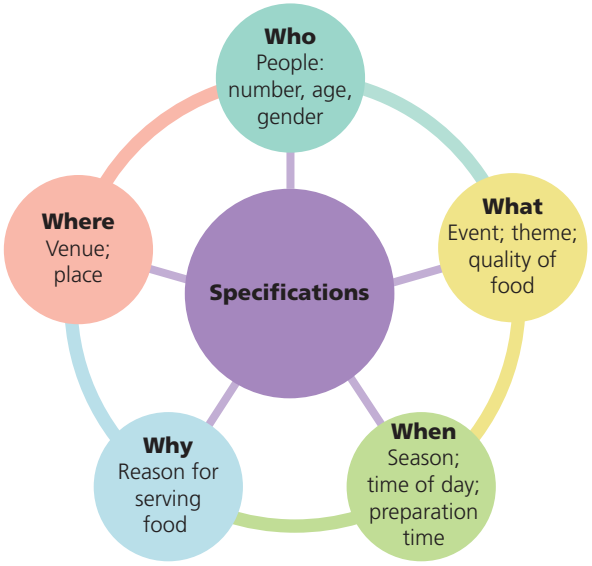


**Specifications of the design brief**

## Criteria for success

Once the design brief has been established, a series of **criteria for success** or relevant questions are developed. These criteria are used to make decisions after the food has been produced to determine if it successfully met the needs, wants and opportunities within the brief.

The specifications – that is, the constraints and considerations within the brief – provide a starting point for developing criteria for success, which in turn enables judgements to be made. Criteria for success questions that may be asked about the food produced include:

- was the food suitable for the people consuming it?
- did the food match the event or theme?
- were the quality and sensory properties of the food – appearance, aroma, flavour, texture and sound – appropriate to the needs of the design brief?
- were the food items appropriate for the season?
- was the food prepared and served within the timeframe specified in the design brief?
- did the food meet the needs of the design brief? What was the overall success of the product?

## ACTIVITY 3.3

### SPECIFICATIONS: CONSTRAINTS AND CONSIDERATIONS IN THE DESIGN BRIEF

Being able to identify the specifications – that is, the constraints and considerations – within a design brief is important so that you can then develop criteria for success.

Copy and complete the following table by including other examples of constraints and considerations that may affect the design of a food product or meal.

| Constraints | Considerations |
|---|---|
| • Nutrient requirements | • Food preparation knowledge and skill |
| • Age group of the people eating the food | • Trends in food |
| | |
| | |
| | |

## ACTIVITY 3.4

### DEVELOPING CRITERIA FOR SUCCESS

#### Design brief

You and your friends are planning a movie marathon for Saturday night. Your friends have nominated you to organise the food, as you are the expert in the kitchen. They have requested finger food that is easy to eat during the movies, but is not the usual salty, high-fat fast food. They would like two savoury products – one to be served hot – and one sweet treat. You will need to prepare the food before the evening, but you will be able to reheat it at the venue. There will be four others at the event apart from you.

1 Highlight the constraints and considerations in the design brief, like those in the brief on page 49. These will be the focus for the criteria for success.


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2 Develop a question you can use to evaluate each specification in the brief.

3 Select your own person/client or occasion (not the movie marathon) and develop a design brief that includes a range of constraints and considerations. Write out the criteria for success to cover all aspects of the brief.

Moomba food truck

Were there four savoury snack foods available for customers to purchase?

Was all of the food for sale in the food truck based on Mexican-style cuisine?

Moomba is a festival held annually in Melbourne that attracts large crowds, both to its street parade of floats and to the many activities that take place in the parklands around the Yarra River. It is a festival to which friends and families come to get together and have fun!

Melbourne City Council has granted permits for several food trucks to be positioned along the south walkway beside the Yarra River for the Moomba long weekend. One of the conditions of the permit is that each food truck should sell a different style of food. Maria and Joseph have been successful in their application to sell **Mexican-style food** from their food truck. Their menu will include **four savoury snack foods**. At least **one of the snack foods will include chicken, and another will be suitable for vegetarians**. Each of the snack foods will be **sold in individual serves** and **packaged in environmentally friendly material**. Maria and Joseph realise that they will have to compete for customers with all of the other food trucks, so their food must have **appealing sensory properties**.

Was there at least one chicken and one vegetarian food item on the menu?

Were all of the snack foods available for sale in individual serves?

Did Maria and Joseph package their snack foods in environmentally friendly materials?

Did the snack foods have appealing sensory properties?

**Example of an annotated design brief and criteria for success**

## Investigating

The first stage of the design process involves food designers collecting information from a wide range of sources, such as recipes, the internet, magazines, technical journals, primary producers and competing manufacturers. Surveying and holding focus groups with the target market helps to understand their needs, likes and dislikes in more detail. This provides designers with up-to-date information about consumer demands, new ingredients that are available, trends in flavours and presentation, new manufacturing techniques that have recently been developed, and even new types of packaging materials. Designers analyse this information to help them to develop a range of options that meet the specifications of the design brief, and to ensure that the design options are viable solutions to the problem to be solved.

When starting out as a food designer, using published recipes from a trusted source is a good place to start. As you build your skills and knowledge of food preparation and understand the sensory, physical, chemical and functional properties of ingredients, modifying and developing completely new recipes offers creative avenues.

## Generating

All the information that comes from the investigation is used to generate a range of possible options for new food products. All the options must be practical or viable solutions to the problem outlined in the design brief. At school, a simple method of developing design options is to begin with a published recipe, identify the key components such as functional ingredients, then represent it in a visual diagram like a mind map – in this text, this strategy is known as a 'recipe map'. For example, the recipe map for a Crustless Quiche on page 50 groups possible vegetables in the recipe by colour and flavour. Other considerations for change are the size of the baking dish, type of cheese and whether meat such bacon is included. The functional properties of eggs – that is, their ability to set and hold ingredients together – is critical to the structure of the quiche so should not be changed.



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Once the design options have been developed, the designer may outline the advantages and disadvantages of each option, showing how it meets the needs of the design brief. Finally, each of the design options is evaluated, and the designer decides on the best solution to the problem outlined in the design brief. This solution is called the **preferred option**.

## SWOT analysis

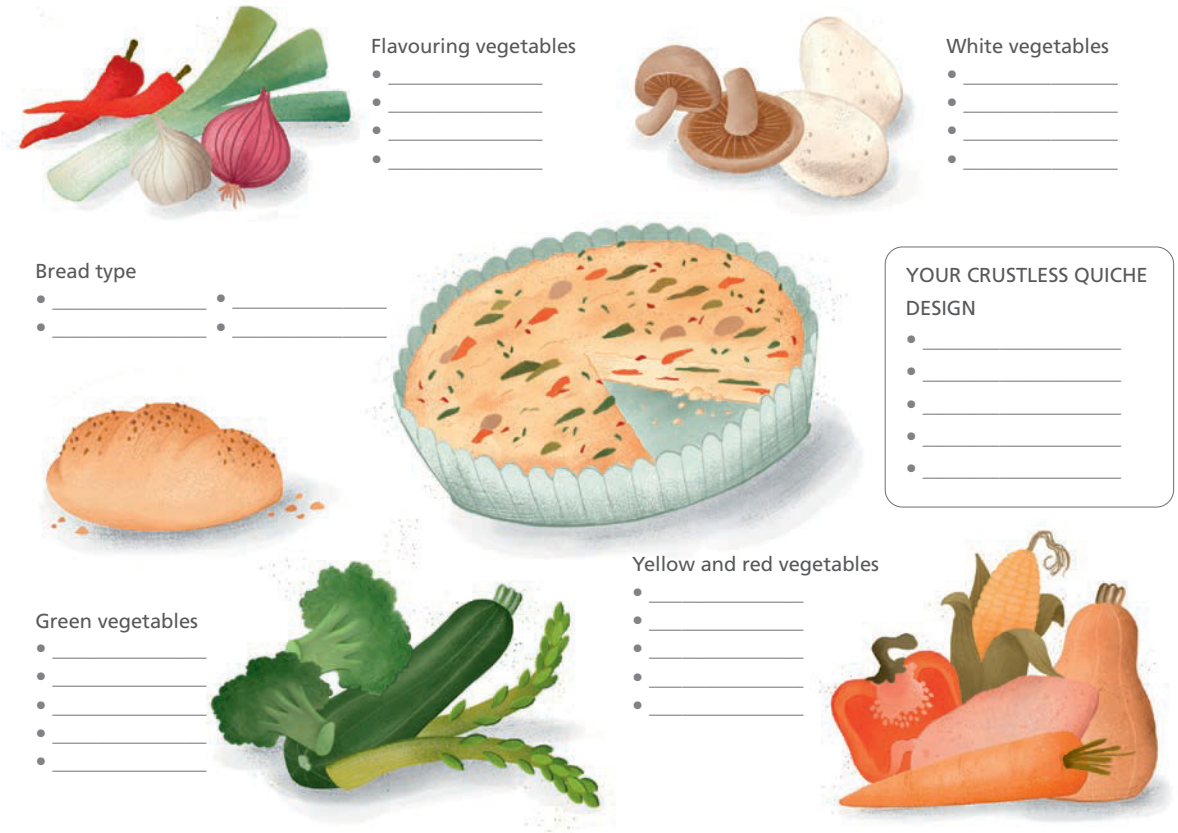
At school, a variety of strategies or thinking skills can be used to help you analyse and evaluate each option before deciding on the preferred option. For example, a 'strengths, weaknesses, opportunities, threats' (SWOT) analysis is a useful tool for evaluating various options.

## Decision table

Another useful strategy for helping you to evaluate each option is to use a decision table, which allows you to compare the advantages and disadvantages of various options.

| **Focus of design brief:** | |
|---|---|
| **Design possibility 1** | |
| Strengths: | Weaknesses: |
| Opportunities: | Threats: |
| **Design possibility 2** | |
| Strengths: | Weaknesses: |
| Opportunities: | Threats: |
| Preferred option: | |
| Justification: | |

**A SWOT analysis**




**Recipe map for a crustless quiche**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| Decision to be made | | |
|---|---|---|
| Option 1: | Option 2: | Option 3: |
| Advantages: | Advantages: | Advantages: |
| Disadvantages: | Disadvantages: | Disadvantages: |
| Preferred option: | | |
| Justification: | | |

**A decision table**

## Planning and managing

The ability to plan and effectively manage resources is critical for people who make decisions about the food we eat every day. In fact, working systematically through the design process when creating a meal or catering for a major event requires the same logical thinking of project management as is used in the food industry. In some stages of the process you may be working individually, for example, when generating new ideas and then collaboratively with a team in the production stage. Remember, good communication is also essential when working for or with others. Some of the resources you could consider are:

- knowledge of the relationship between nutrition and health
- skills and knowledge in food preparation
- access to appropriate ingredients
- tools and equipment needed to prepare and cook food
- health and safety requirements for food production
- skills in managing time efficiently to meet deadlines
- ability to manage a food budget.

Before producing the preferred option – the solution to the problem in the design brief – the home cook or food manufacturer must undertake considerable planning. Food orders and production plans are important planning steps for a home cook or food manufacturer.

### Food orders

A food order must be created for all the ingredients required to make the product so that they are all available at the time of production. Listing any specialist equipment that is required is also essential.

| Food order | | |
|---|---|---|
| Name: | | |
| Production date: | | |
| Recipe: | | |
| **Supermarket** | **Greengrocer (fresh fruit and vegetables)** | **Butcher** |
| | | |
| | | |
| | | |
| | | |
| Items not available at these suppliers: | | |
| Specialist equipment: | | |

**Food order for the home cook**

### Production plans

A production plan is another important tool that the home cook or food manufacturer can use to ensure that the product they plan to make is completed successfully and made within the time available. Production plans increase efficiency, eliminate time-wasting and identify areas of risk when working with food.

At school or at home, a production plan enables the cook to read the recipe carefully, think about which job needs to be done first and consider ways to organise tasks so that there will be a smooth workflow in the kitchen. They also help the cook to consider the health and safety issues in the production process to avoid risks.

A production plan should contain:

- information about materials or ingredients needed
- a list of all the tools and equipment required
- the sequence of steps or processes involved



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- an estimate of the time it will take to produce the product. At school or at home, it is important to note the time it will take to complete each of the steps, including the cooking of the product – you should break up these steps into 5–10-minute intervals – as well as the time needed to clean up
- information about all necessary health and safety regulations to be followed during the production phase.

During the production stage, the cook, chef or food manufacturer record any modifications or changes they have made to the production plan, so that they can consider these in future productions.

Below is an example of a simple production plan suitable for the home chef.

## ACTIVITY 3.5

### PREPARING A PRODUCTION PLAN

1. Read the recipe for a Salad Roll-up on page 56.
2. Draw up a table similar to the one below and prepare a production plan for the recipe. Remember to list all the important safety considerations for each process.
3. Share your production plan with a classmate and ask them to suggest ideas for processes, equipment or safety considerations you might have overlooked. Add these to your production plan.

**Name of recipe:**

**Cheese Omelette**
**(see recipe on page 260)**

**Ingredients:**
2 eggs
1 tablespoon water
2 shakes pepper
1 teaspoon butter
1 tablespoon parsley, finely chopped
¼ cup cheddar cheese, grated

*Serves one*

| Time (a.m.) | Important steps | Equipment required | Safety and hygiene considerations |
|---|---|---|---|
| 9.00–9.10 | Collect ingredients | Tray; bowls; spoons | Thoroughly wash hands. |
| 9.10–9.20 | Chop parsley; grate cheese | Cook's knife; grater | Keep fingers away from blade of knife while chopping. |
| 9.20–9.25 | Beat eggs and water | Bowl; whisk or fork | Make sure all equipment is clean and dry. |
| 9.25–9.30 | Prepare the omelette pan | Omelette pan | Use an oven mitt to handle the omelette pan. |
| 9.30–9.40 | Cook the omelette | Omelette pan; spatula | Do not leave the omelette pan unattended on the stove. |
| 9.40–9.50 | Serve and garnish | Clean serving plate | Place the hot pan in the sink so it cools before cleaning. |
| 9.50–10.00 | Clean up | Washing-up equipment | Do not put a sharp knife into a sink filled with soapy water. |

**Production plan**

## Evaluating

The final stage of the design process is to use the criteria for success to evaluate the food item or meal. During this stage, the designer will make judgements about whether the food product addresses the specifications of the design brief and therefore solves the design problem.

The evaluation of the product will also assess the sensory properties of the food. Descriptive words can be used to convey the characteristics of food. For example, the bread roll had a golden crispy crust and a slight yeasty aroma; the inside of the roll was soft and fluffy. Everyone has an opinion about how much they like a particular food and this is a subjective evaluation where food is rated against a 5-star chart. This will help the food designer to determine if any modifications are needed to the product if it is made again at home or will be something that the general public will buy.


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This stage is also an opportunity for you to reflect on your growth as a designer of food products and identify your strengths in the design process. If you collaborated with others, it is worth reflecting on how effectively you worked as a team to solve the design problem and then recommend strategies for improvement when you next undertake a design problem focusing on food.

## TESTING KNOWLEDGE

**11** Name the process that is used when new products are being designed and produced and explain why the design brief is essential in this process.

**12** Discuss the difference between a constraint and a consideration in a design brief.

**13** Explain why it is important for the designer to develop criteria for success.

**14** Outline the types of information that food manufacturers are likely to investigate before they begin to design new products.

**15** Identify one reason why the investigation stage is such a crucial step in the design process.

**16** Explain what happens during the design stage of the design process.

**17** Explain what is meant by the term 'preferred option'.

**18** List four types of information that a good production plan should contain.

**19** Explain why it is important to include health and safety issues in a production plan.

**20** Outline why it is necessary for food manufacturers to evaluate their product and identify three factors that are analysed during the evaluation process.

## THINKING SKILLS

### Compare the sensory properties of two popular pasta dishes

Describe in detail the sensory properties of both spaghetti bolognese and lasagne using a table like the one below. In your descriptions, consider all elements of the food product; for example, spaghetti bolognese has pasta and a meat sauce, while lasagne has pasta, meat and cheese sauce.

| **Sensory properties** | **Spaghetti bolognese**  iStock.com/alle12 | **Lasagna**  Shutterstock.com/vsl |
|---|---|---|
| Appearance | | |
| Aroma | | |
| Flavour | | |
| Texture | | |
| Sound | | |

**1** Discuss the similarities and differences of the sensory properties of spaghetti bolognese and lasagna.

**2** Identify the product that you like most and justify your answer.

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# Design activity 3.1

## PANCAKE STACK DESSERT

### Design brief

Design and produce a creative, exciting pancake stack dessert suitable for one person. The pancake base must include fruit and incorporate at least one additional ingredient to give the dessert a new flavour.

1 When writing your design brief, you should include:
- a description of the event at which the pancake stack will be served
- an explanation of who will be eating the pancake stack
- when the pancake stack will be served.

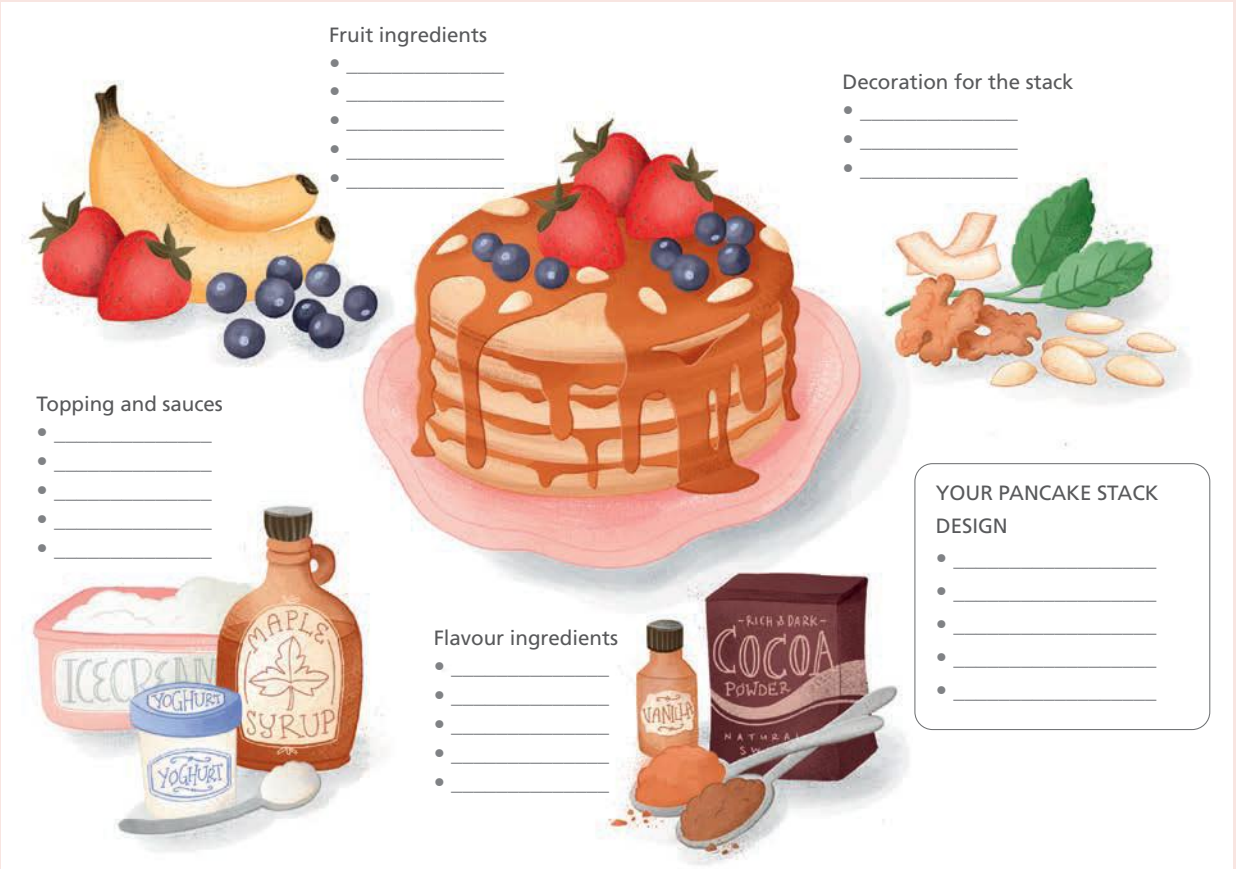
2 After writing your design brief, develop four criteria for success questions to judge if your pancake stack is a solution to the problem outlined.

### Investigating

1 Research ingredients that would be suitable to use:
- **a** as a type of fruit to include in a pancake stack
- **b** to add flavour to the pancake batter
- **c** as a topping or sauce for the stack
- **d** as a decoration on top of the stack.

### Generating

1 Use the information you have gained through your investigation to complete the recipe map for a pancake stack. Use the Pancakes recipe on page 59.




Nancy Chalmers Illustration

**Recipe map for pancake stack**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2 Draw up two possible design options for a pancake stack. Include:
   - **a** fruit suitable for the stack
   - **b** additional ingredient/s to add flavour to the pancake base
   - **c** topping and sauce ideas
   - **d** decoration ingredients
   - **e** a sketch of presentation ideas.

3 Select your preferred option and explain why you chose it.

| | Design option 1 | Design option 2 |
|---|---|---|
| Type of fruit in the batter or between or on top of the pancakes | | |
| Additional ingredient/s for pancake base | | |
| Topping and sauce ideas | | |
| Sketch of design option | | |
| Preferred option: | | |
| Why you selected this option: | | |

## Planning and managing

1 Write out your new recipe so that it is ready for production.

2 Sketch your presentation idea for the pancake stack.

3 Write up a production plan.

## Producing

1 Prepare the product.

2 Record any changes or modifications you made during production.

3 Photograph the final presentation of your pancake stack on a plate.

## Evaluating

1 Answer, in detail, the four criteria for success questions you developed earlier.

2 Annotate the photograph of your pancake stack – for example, including the fruit, the flavour ingredient/s added to the basic batter and the decoration. Use arrows to link the annotations with the photograph.

3 Taste test your pancake stack and describe its sensory properties. Record your descriptions of the sensory properties in the table below.

| | Sensory properties |
|---|---|
| Appearance | |
| Aroma | |
| Flavour | |
| Texture | |
| Sound | |

4 Rate the success of your pancake stack using the hedonic scale on page 45.

5 Describe how including other ingredients in the batter affected the flavour and texture of the pancakes.

6 Were you able to produce pancakes of a similar size? If so, explain how you achieved this.

7 How did you test whether the pancakes were cooked?

8 Discuss two safety rules that should be followed when using a frying pan.

9 Classify the ingredients of your pancake stack recipe on a diagram of the *Australian Guide to Healthy Eating*. Rate your product as:
   - very healthy (more than half of the ingredients come from the plant ingredients section)
   - healthy (half of the ingredients come from the plant ingredients section)
   - not very healthy (the majority of the ingredients are in the eat only sometimes section).

10 Would you make this dish again? What changes would you make if you were to repeat it?

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# SALAD ROLL-UP

1 egg, or a slice of ham or turkey loaf

1 teaspoon mayonnaise (optional)

1 large lettuce leaf

½ tomato

¼ cucumber

¼ carrot

30 grams cheese

1 pita bread or 2 slices mountain bread

2 tablespoons dip such as hommus or tzatziki

SERVES ONE

## METHOD

1. Hard-boil the egg by placing it in a small saucepan with enough warm water to just cover it. Bring to the boil, then simmer for 8 minutes. Shell and mash the egg with mayonnaise if desired.
2. Finely shred the lettuce and slice the tomato and cucumber very thinly.
3. Grate the carrot and cheese.
4. If using pita bread, split it into halves, so that you are left with two thin rounds of bread.
5. Spread the bread with the dip.
6. Place half of the topping ingredients over each slice of bread.
7. Roll up the bread tightly in plastic wrap. Allow to rest in the refrigerator for 10–15 minutes so that the roll-up will hold its shape when cut.
8. Cut into serving portions.

## EVALUATION

1. Explain why it is important to shred the lettuce and finely slice the tomato and cucumber for this recipe.
2. Describe how you would safely use the grater.
3. List three other ingredients you could use to spread over the bread instead of hommus or tzatziki.
4. Make a list of other ingredients you could use in the roll-up filling.
5. Write a paragraph to explain why the Salad Roll-up is a healthy snack or lunch food.

Mark Fergus Photography



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# CRUSTLESS QUICHE

2 slices wholemeal bread (does not need to be fresh)

2 rashers bacon, diced

½ onion, grated

1 small clove garlic, crushed

1½ cups vegetables – for example, sweet potato, carrot, pumpkin, zucchini, capsicum, celery or sweet corn

2 eggs

⅓ cup milk

¼ cup self-raising flour

½ cup cheese, grated

2 tablespoons oil

pepper

SERVES TWO

## METHOD

1. Preheat oven to 180°C.
2. Grease two small ovenproof dishes or foil takeaway containers.
3. Use a food processor to process the bread into breadcrumbs.
4. Place the breadcrumbs in the bottom of the ovenproof dishes.
5. Heat the oil in a small frying pan.
6. Place the diced bacon, grated onion and garlic in the frying pan and sauté gently until softened and lightly browned. Cool.
7. Grate or finely dice the vegetables into a medium bowl.
8. Add the sautéed bacon, onion, garlic, eggs, milk, flour, grated cheese, oil and pepper. Stir until well combined.
9. Pour the mixture over the breadcrumbs.
10. Place dishes on a baking tray.
11. Bake in the preheated oven for approximately 20 minutes or until the quiche is set.

## EVALUATION

1. Refer to the words for describing food on page 42. Use some of these words to help you describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Crustless Quiche.
2. If you were to make this recipe again, would you change it in any way to alter the flavour?
3. Make a list of the health and safety issues you needed to consider in the production of your Crustless Quiche.
4. Do you think your recipe is high in dietary fibre? What ingredients are included in your recipe that increase the dietary fibre content of this dish?
5. Classify the ingredients for the Crustless Quiche on a diagram of the *Australian Guide to Healthy Eating*. Explain how well this recipe meets the recommendations of this food selection model.

Mark Fergus Photography



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# CHICKEN SOUVLAKI

125 grams chicken thigh fillet

2 teaspoons olive oil (for frying)

### SOUVLAKI MARINADE

1 tablespoon lemon juice

2 teaspoons soy sauce

1 clove garlic, crushed

2 teaspoons olive oil

### TZATZIKI DIP

¼ cup plain yoghurt

1 clove garlic, crushed

½ Lebanese cucumber, coarsely grated and drained

½ teaspoon lemon rind, finely grated

### TO SERVE

2 lettuce leaves, finely shredded

1 pita or naan bread – commercial bread, or you could make your own using the recipes on page 113

SERVES ONE

## METHOD

1. Preheat the oven to 100°C.
2. Combine the ingredients for the marinade in a medium bowl.
3. Add the chicken thigh fillet and allow to marinate for 15 minutes.
4. Prepare the tzatziki dip by combining all ingredients and mixing well.
5. Chill the dip for 15 minutes to allow the flavours to develop.
6. Warm the pita or naan bread in the preheated oven for 5–10 minutes. Wrap in a clean tea towel to keep warm.
7. Heat the extra oil in a frying pan over a moderate heat.
8. Remove the chicken from the marinade and discard the remaining marinade.
9. Place the chicken thigh fillet in the hot frying pan and brown lightly. Turn to brown on the other side. Fry the fillet until golden brown and cooked through.

### ASSEMBLING THE SOUVLAKI

1. Slice the cooked chicken fillet thinly.
2. Place the lettuce in the centre of the warmed pita or naan bread and top with the sliced, cooked chicken thigh fillet. Spoon the tzatziki dip over the chicken.
3. Roll the pita bread over to enclose the filling.
4. Serve with dip.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Chicken Souvlaki.
2. Outline two health and safety steps you followed to prevent cross-contamination when cooking with raw chicken.
3. Identify the role of the lemon juice, soy sauce and oil in the marinade for the chicken.
4. What rules are important to remember when heating and cooking with oil?
5. Classify the ingredients for the Chicken Souvlaki on a diagram of the *Australian Guide to Healthy Eating*. Explain whether you think this recipe would be suitable to serve as a healthy evening meal.

Mark Fergus Photography



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# PANCAKES

¾ cup self-raising flour
2 teaspoons caster sugar
1 egg, lightly beaten
½ cup milk
extra milk (if required)
10 grams butter

SERVES ONE

## METHOD

1. Sift flour and sugar into a large bowl.
2. Make a well in the middle; stir in the egg and half of the milk.
3. Add the remainder of the milk and mix into a lump-free batter.
4. Allow the batter to rest for 10–15 minutes. Adjust consistency with extra milk if required.
5. Heat a frying pan. With a piece of paper towel, grease lightly with the butter.
6. Spoon the batter into the hot pan or use a ¼ cup measure. Allow space to turn the pancakes.
7. When bubbles appear on a pancake's surface, turn it over.
8. Stack finished pancakes on a wire rack, inside a tea towel, to cool.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Pancakes.
2. Why is it important to add only half of the milk with the egg in step 2 of the recipe?
3. Explain the importance of allowing the batter to rest for 10–15 minutes before making it into pancakes.
4. Briefly explain how you would use the frying pan safely.
5. Do you think that these pancakes would be suitable to include as part of a healthy diet? Justify your answer.

Mark Fergus Photography

ISBN 9780170446716

# EAT WELL, BE WELL

# 4

## KEY KNOWLEDGE

- Food and me
- What is food?
- Nutrients in food
- Digestion
- Selecting food wisely
- The *Australian Dietary Guidelines*
- The *Australian Guide to Healthy Eating*
- Water

## KEY TERMS

***Australian Guide to Healthy Eating*** a food model that is a pictorial representation of *Dietary Guideline 2* – enjoy a wide variety of foods from the five food groups each day

**digestion** the breakdown of large pieces of food into smaller components that can be absorbed into the bloodstream

**food** any substance that we eat or drink that provides the body with chemical substances called nutrients

**food models** food selection guides that present a summary of the key information in the *Australian Dietary Guidelines* in a pictorial format

**nutrients** chemical substances in food that are broken down during digestion including protein, carbohydrate, fat, vitamins and minerals

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking





ISBN 9780170446716

# FOOD AND ME

People, like plants, come in a variety of different shapes and sizes. To enable plants to grow and remain healthy, they need food, water, clean air and sunshine. People, too, need nutritious foods as well as plenty of clean water, fresh air, exercise and sunshine to maintain good health.

Every day you eat a variety of foods at various times, often in many different places. The reason you eat may be because you are hungry or because you always have something to eat at a particular time of the day, or you may be at a social occasion at which food is served.

# WHAT IS FOOD?

**Food** is any substance that we eat or drink that provides the body with chemical substances called **nutrients**. Nutrients from the food we eat enable us to grow and repair body tissue. Nutrients also produce energy to fuel activity and body processes.

Most of the food we eat comes from plants or animals. A wide variety of plants are eaten by people around the world, including cereals, vegetables, fruit, nuts and legumes. Animals that provide us with meat or dairy products include beef cattle, sheep, pigs, fish and seafood, goats, kangaroos, rabbits, crocodiles, deer and wild birds. Chickens, ducks and turkeys also provide eggs in addition to meat.

Because plants and animals provide a range of different nutrients, health experts recommend that you include food from both sources as a part of a healthy diet.

Shutterstock.com/Rodica Ciorba

**Food from plant sources**

# NUTRIENTS IN FOOD

The main nutrients found in food are protein, carbohydrates (including dietary fibre), fats, vitamins and minerals. The infographic on page 62 gives information about the different types of nutrients and their role in the body. During digestion, these nutrients are broken down into tiny molecules that are absorbed into the bloodstream and then into the cells of the body. The water in the food, although not a nutrient, is essential for life. The water we eat or drink is also absorbed into the bloodstream to provide the body with the fluid the cells need to process the nutrients.

Each type of food is made up of a different combination of nutrients, so it looks, tastes and feels different.

## TESTING KNOWLEDGE

**The following questions relate to the information on this page and the infographic outlining the nutrients in food on page 62.**

1. Write a definition for 'food'.
2. What are the two main sources of food? List three examples of foods from each source.
3. Why is it important to eat a variety of foods from both plants and animals?
4. Explain why the appearance, aroma, flavour, texture and sound of an apple is different from that of an orange.
5. Why is it important to include protein in our diet? Identify six foods that are a good source of protein then classify them according to their plant or animal origin.
6. Outline two main functions of carbohydrate in the body.
7. Explain why fats are considered to be a concentrated source of energy.
8. Discuss why is it important to include omega-3 fatty acids in our diet.
9. Explain why we need to include vitamins in our daily food intake.
10. Why is calcium considered to be such an important mineral to include in our diet? Identify two main sources of calcium in the diet.



ISBN 9780170446716


**Nutrients in food**

# DIGESTION

**Digestion** is the breakdown of large pieces of food into smaller components that can be absorbed into the bloodstream. The digestive system begins in the mouth and finishes at the anus. When you eat an apple or a ham and cheese sandwich, your teeth begin the process of digestion by grinding up the food. The saliva in your mouth contains the enzyme salivary amylase, which begins to break down the carbohydrates in the food into simple sugars. When you swallow the food, it is pushed down the oesophagus by a series of muscular contractions called peristalsis.

As the food enters your stomach, it passes through a sphincter, or valve, that stops it from going back up into the oesophagus. The muscles in the wall of your stomach churn and mix the food with acid and enzymes to break the food down into a thick liquid called chyme.

From your stomach, the food passes through the small intestine, which is like a long tube about six metres long that is loosely coiled in your abdomen. The first section of the small intestine is called the duodenum. In the duodenum, more digestive juices are added to


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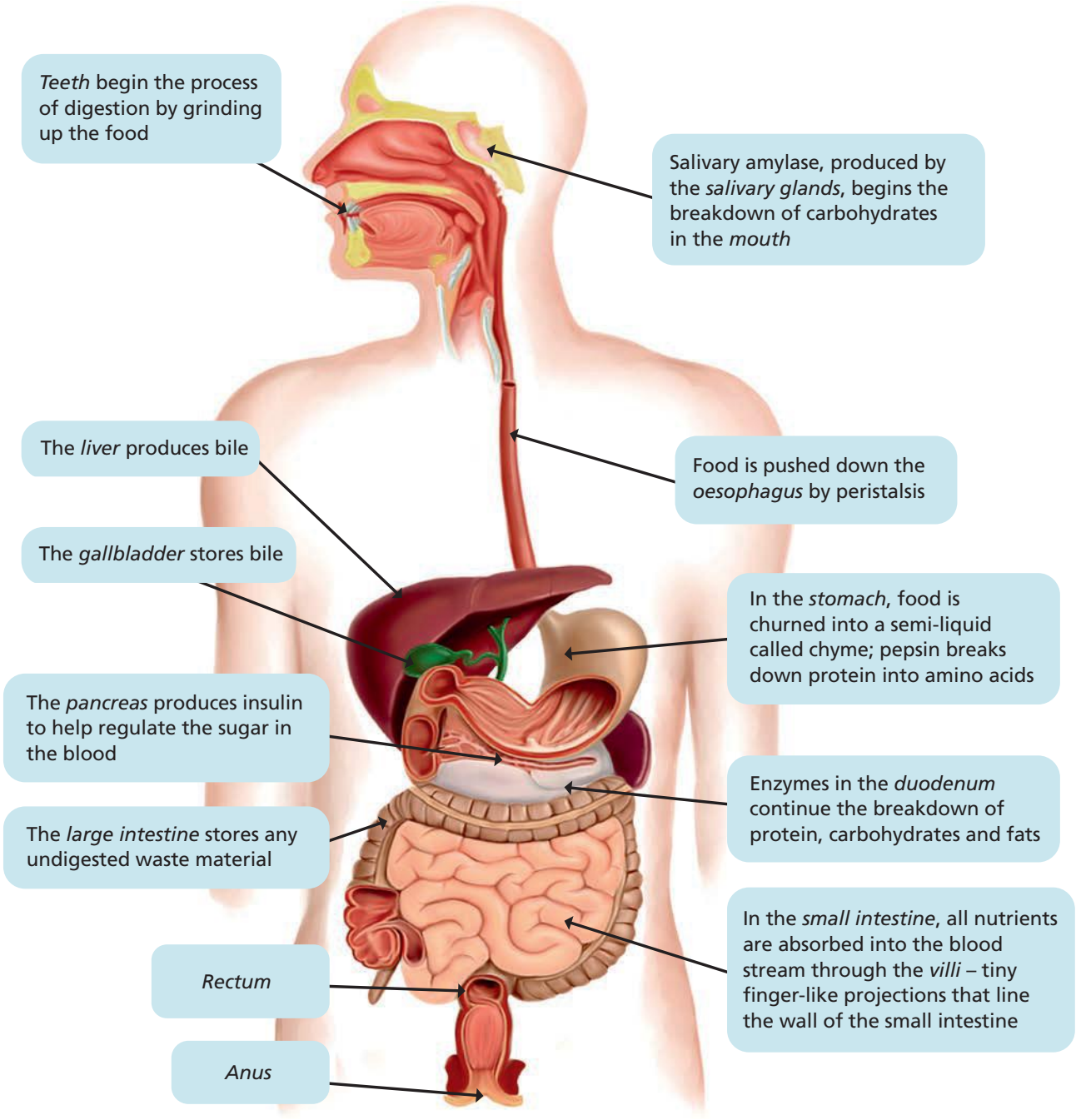


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**The digestive system**

the food from the pancreas and liver. These enzymes break down the food into even smaller particles. As the food moves through the rest of your small intestine, its nutrients are absorbed through the villi, or tiny finger-like projections that line the wall of the intestine.

Any material that is not absorbed in your small intestine is moved into the large intestine or bowel. Here, any water is removed and the waste material, called faeces, is then stored in the rectum before it is passed out of the body through the anus.

## SELECTING FOOD WISELY

Many factors influence our food choices, including our personal food preferences, or those foods we like most and those we like least. Our cultural and religious background can also influence food choices as can other factors such as ethical or environmental concerns or the cost of food. However, regardless of the factors that influence food choices, it is important to eat a wide variety of foods from a range of food

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groups to ensure that you obtain all the nutrients you require for good health.

To help us make healthy food choices, the Australian Government developed the Eat for Health Program that includes the *Australian Dietary Guidelines*. The *Australian Dietary Guidelines* provide a framework that applies to all Australians, including people with a common health risk such as being overweight or developing type 2 diabetes. Both the *Australian Dietary Guidelines* and the *Australian Guide to Healthy Eating* have been developed using the latest scientific evidence and expert advice.

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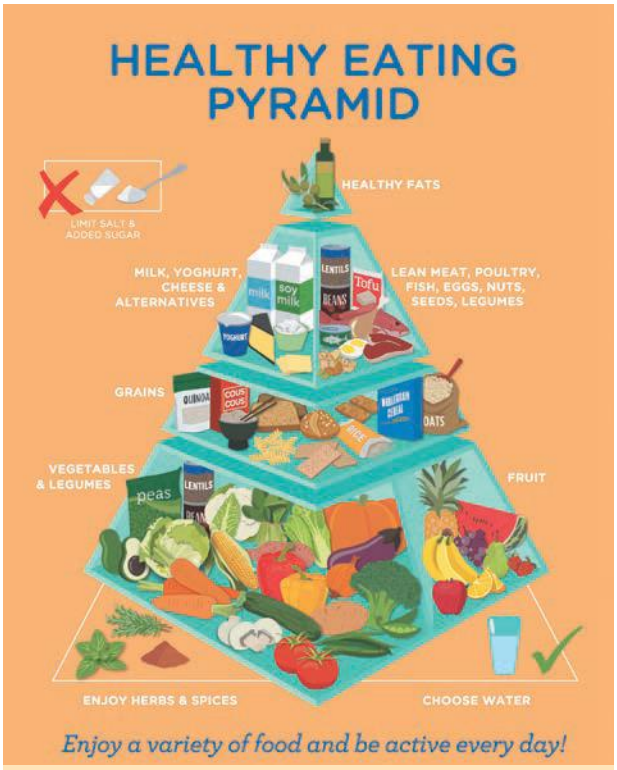
**Making healthy food choices**

## What is a food model?

The ***Australian Guide to Healthy Eating*** and the *Healthy Eating Pyramid* are two **food models** that have been developed, based on the information in the *Australian Dietary Guidelines.* They both present a summary of the key information in the *Australian Dietary Guidelines* in a pictorial format and are considered useful educational tools. The *Australian Guide to Healthy Eating* is a pictorial representation of Dietary Guideline 2 – enjoy a wide variety of foods from the five food groups each day. It visually represents the proportion of the five food groups recommended for daily consumption. This food model is presented as a plate divided into segments according to the five food groups.

The *Healthy Eating Pyramid*, developed by Nutrition Australia, is a food selection model where the shape indicates a hierarchy of the foods you should eat most to those you should eat least. It is a simple food model that is widely used in primary schools to help children understand the types and proportion of foods that we should eat every day for good health.






**The *Healthy Eating Pyramid* is a food model used in many primary schools**

## Why are food models useful?

The information contained in the *Australian Guide to Healthy Eating* and the *Healthy Eating Pyramid* will help you easily choose foods in the appropriate proportions each day for a healthy diet. By following these food models, the health and wellbeing of individual Australians and therefore the general population, will be improved. One clear advantage of following a food model is that you are more likely to maintain a healthy body weight. A healthy body weight will enable you to avoid many of the diseases associated with poor nutrition including overweight and obesity, cardiovascular disease, type 2 diabetes and some forms of cancer.

# THE *AUSTRALIAN DIETARY GUIDELINES*

The *Australian Dietary Guidelines* encourage you to select the types of nutritious food and amounts of foods you should consume each day to ensure good health. They are based on your age, gender and body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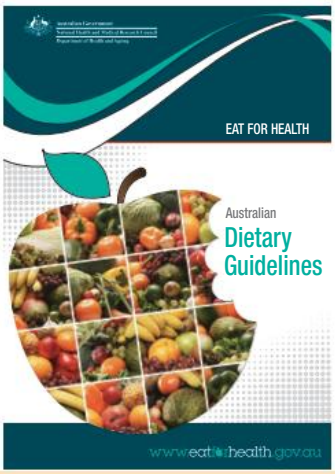
size and the levels of activity you are involved in each day. The guidelines also consider other factors such as whether a woman is pregnant or breastfeeding.






**The *Australian Dietary Guidelines***

# THE *AUSTRALIAN GUIDE TO HEALTHY EATING*

The *Australian Guide to Healthy Eating* is a visual representation of Guideline 2 of the *Australian Dietary Guidelines*: 'Enjoy a wide variety of nutritious foods from these five groups every day.' It provides a pictorial image of the foods in each of the five groups you should eat daily. The model is presented as a dinner plate containing the proportions of food from each group you should eat each day for good health.

The *Australian Guide to Healthy Eating* is based on eating a balanced diet that contains both plant and animal foods. However, it does contain alternatives for people who follow a vegetarian diet.

**GUIDELINE 1**

- To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs

**GUIDELINE 2**

- Enjoy a wide variety of nutritious foods from these five groups every day: vegetables; fruit; grain foods, mostly wholegrain; lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans; and milk, yoghurt, cheese and/or their alternatives, mostly reduced fat; and drink plenty of water

**GUIDELINE 3**

- Limit intake of foods containing saturated fat, added salt, added sugars and alcohol

**GUIDELINE 4**

- Encourage, support and promote breastfeeding

**GUIDELINE 5**

- Care for your food; prepare and store it safely



**The five Australian dietary guidelines**

Weblink

The *Australian Dietary Guidelines*



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Australian Government
National Health and Medical Research Council
Department of Health and Ageing

www.eatforhealth.gov.au

# Australian Guide to Healthy Eating

**Enjoy a wide variety of nutritious foods from these five food groups every day.**

**Drink plenty of water.**


Weblink

*Australian Guide to Healthy Eating*

## Use small amounts


## Only sometimes and in small amounts


***Australian Guide to Healthy Eating***





ISBN 9780170446716

## ACTIVITY 4.1

### THE AUSTRALIAN DIETARY GUIDELINES QUIZ

#### Goal

Create a quiz to help revise and test your knowledge and understanding of the key features of the *Australian Dietary Guidelines*.

1 Your quiz should be suitable to share with other class members to test their knowledge of the *Australian Dietary Guidelines*.

2 Your quiz should include eight questions and answers to demonstrate your thinking. For example:
   - remembering – list, state, define
   - understanding – classify, describe, explain, identify, select or locate.

Some examples of possible revision activities might be:

- an online quiz program
- a series of flash cards
- an origami fortune teller or paper fortune teller

## TESTING KNOWLEDGE

**11** Explain the first step in the process of digestion.

**12** What is the role of the enzyme 'amylase' in digestion?

**13** Explain the meaning of the term 'peristalsis'.

**14** Outline what happens to food when it enters the stomach.

**15** What is the duodenum? Explain the role of the duodenum in the digestive process.

**16** Why is the small intestine an important part of the digestive process?

**17** What happens to food once it reaches the large intestine?

**18** List four factors that can influence our food choices.

**19** Explain how the information in the *Australian Guide to Healthy Eating* and in the *Healthy Eating Pyramid* is presented. List one advantage of presenting the information in this format for each food model.

**20** Identify one major advantage of following a food selection model such as the *Australian Guide to Healthy Eating*. Discuss why this is important for our long-term health.

## The five food groups

To ensure we consume the amount and types of food and drink we require each day to achieve our optimal health and wellbeing, the *Australian Guide to Healthy Eating* is divided into five main food groups:

- grain (cereal) foods, mostly wholegrain and/or high fibre cereal varieties
- vegetables and legumes/beans
- fruit
- lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
- milk, yoghurt, cheese and/or their alternatives, mostly reduced fat.

The food within each of these groups provides a variety of nutrients needed for good health. The *Australian Guide to Healthy Eating* also makes recommendations about the amount of food within each of these groups that should be consumed each day, based on age and gender.

### Grain (cereal) foods, mostly wholegrain and/or high fibre cereal varieties

It is important to include a wide range of wholegrain cereal foods in your diet as they provide your body with its main sources of carbohydrate for energy. Approximately 55 per cent of your energy should come from foods in this group. Wholegrain cereals also provide a wide variety of other significant nutrients including protein, dietary fibre, and vitamins and minerals including folate, thiamin, riboflavin, niacin, vitamin E and iron. Consuming a variety of foods from this group may help to reduce your risk of developing heart disease, type 2 diabetes, excessive weight gain and some cancers. Because they are high in dietary fibre, wholegrain cereals assist in reducing the likelihood of developing colorectal cancer.

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**Select mostly grain foods made from wholegrain**



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## Vegetables and legumes/beans

Eating a wide variety of vegetables of different types and colours, and legumes/beans in your diet each day is highly recommended because they provide you with many important vitamins and minerals, as well as dietary fibre. Potatoes, sweet potatoes and peas are a good source of carbohydrate. Other vegetables including capsicum, broccoli and Asian greens are a valuable source of vitamin C. Folate is found in many green vegetables as well as in dried peas, beans and lentils. Legumes such as lentils, soybeans and chickpeas are an excellent source of protein and, when combined with grain foods, can be a good substitute for meat for people who adhere to a vegetarian or vegan diet. Legumes are also rich in carbohydrates and fibre but are low in fat and cholesterol.

Including a wide variety of vegetables in your diet is essential for maintaining good health as they are low in energy and can help you to maintain a healthy weight. This will therefore reduce the risk of becoming overweight and obese and some chronic diseases including heart disease and some cancers. It is also wise to limit the consumption of fried vegetables such as potato chips as these foods are high in fat and are classified as a discretionary food.

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**Select and consume vegetables and legumes of different types and colours**

## Fruit

Fruit contains a wide variety of nutrients including vitamin C and folate along with potassium and dietary fibre. Fruit also contains natural sugars and therefore can be a source of carbohydrate. Like vegetables, fresh fruit is high in dietary fibre and low in kilojoules. Incorporating fruit in the diet each day may help to reduce the risk of heart disease and some forms of cancer. If selecting canned fruit, make sure to choose those that are canned in fruit juice rather than in a sugar syrup. Limiting your consumption of fruit juice and fruit drinks is beneficial as they are high in kilojoules and only contain small amounts of dietary fibre.

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**Fruit contains a wide variety of nutrients**

## Lean meat and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans

When selecting foods from this group, it is recommended to choose lean cuts of meat and poultry. Lean red meat is a valuable source of iron, zinc and vitamin B12. All foods in this group are an excellent source of complete protein. However, foods from animal sources contain high levels of saturated fat and cholesterol, so you should select lean cuts of meat and serve poultry without the skin where possible. It is recommended that you should have two fish or seafood meals a week as these foods are an excellent source of omega-3 fatty acids. Consuming fish and seafood on a regular basis can help reduce the risk of developing heart disease, stroke and dementia. Processed meats such as sausages, salami, bacon and ham are not included in this group because their high fat and salt content means they are classified as discretionary choices.

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**Lean meat, poultry, fish and legumes are a good source of many nutrients**



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### Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat

A variety of foods from the milk, yoghurt, cheese and/or their alternatives group should be eaten each day because they are a valuable source of calcium, protein, iodine, riboflavin and vitamin B12. They also contain vitamin D and phosphorous, which help the body to utilise calcium and therefore contribute to the development of strong bones and teeth. Health experts suggest that regular consumption of foods in this group can help reduce the risk of developing high blood pressure, heart disease, stroke, type 2 diabetes and some cancers. However, it is advised to choose low-fat varieties of these foods to minimise your intake of saturated fat.

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**Milk, cheese and yoghurt help build strong bones and teeth**

## Foods outside the circle

Some foods, including butter, table spreads and oils, are in the 'use small amounts' category, outside the main circle of the *Australian Guide to Healthy Eating*. Other foods, classified as discretionary foods, are in the 'only sometimes and in small amounts' category.

### Use small amounts of unsaturated spreads and oils

It is important to include some fats in our diet because they provide us with essential fatty acids and the fat-soluble vitamins A, D, E and K. However, where possible, select unsaturated fats as they can help improve your blood cholesterol levels. Many foods within the main five food groups are good sources of essential unsaturated fatty acids. These include nuts, seeds, fish and avocado.

Monounsaturated and polyunsaturated oils and spreads used in cooking and dressings such as sunflower oil, canola oil, peanut oil and olive oil are all high in kilojoules and therefore should only be used in small amounts.

Getty Images/ValentynVolkov

**Unsaturated oils and spreads should only be used in small amounts**

### Discretionary choices

The foods and drinks that appear in the lower right-hand corner of the *Australian Guide to Healthy Eating* are classified as discretionary choices. This means that they should only be eaten sometimes and in small amounts because they are high in saturated fat, added sugar and/or added salt. They are high in kilojoules but low in essential nutrients and are not necessary for a healthy diet. An excessive consumption of discretionary foods can lead to becoming overweight or obese. In the future, this can result in the development of chronic diseases such as heart disease, stroke, type 2 diabetes and some forms of cancer. However, occasionally eating a small amount of discretionary food can add variety and interest to your diet and can add to the joy of eating.

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**Discretionary foods should only be eaten sometimes**

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# ACTIVITY 4.2

## TEST YOUR SKILL

### Goal


Answer the following 20 questions as true or false to test your knowledge and understanding of nutrition.

1. Wholegrain cereals are a good source of dietary fibre.
2. Plant foods such as potato, sweet potato and corn are good sources of energy because they are high in fat.
3. It is important to include legumes in your diet because they are rich in omega-3 fatty acids.
4. We should gain most of our energy needs from plant foods.
5. Capsicum, broccoli, oranges, kiwifruit and Asian greens are all good sources of vitamin C.
6. Iron is important in the body as it assists in forming healthy blood and in producing energy.
7. Calcium and phosphorus work together to build strong bones and teeth.
8. During digestion, fat is broken down into amino acids that are the building blocks for the growth and repair of all tissue.
9. Phosphorus, iron and calcium are all types of vitamins.
10. Fruit is low in sugar and dietary fibre.
11. Legumes are a good substitute for meat as they contain a high amount of protein.
12. It is best to select foods that contain saturated fats because these help to reduce blood cholesterol levels.
13. We should eat fish on a regular basis as it contains a large amount of omega-3, which is needed for the brain to function properly.
14. It is important to include lean meat in our diet because it has a high quantity of protein and iron.
15. Vitamin D and riboflavin help the body to utilise calcium.
16. Fat is a concentrated form of energy and provides four times as much energy per gram as carbohydrate.
17. You should have no more than one fish or seafood meal a week as these foods are high in cholesterol.
18. Consuming a wide variety of cereal foods each day will help you to maintain a healthy weight and reduce the risk of developing type 2 diabetes.
19. Canned soft drinks are good substitutes for water as they only contain small amounts of sugar.
20. Processed meats such as sausages, bacon and ham are not included in the lean meat section of the *Australian Guide to Healthy Eating* because they are high in fat and salt.

How did you score? Check your answers with your class teacher.

### Results

| | |
|---|---|
| **20** | Congratulations – what a star! You have learnt a lot about the nutrients in food. |
| **17–19** | A fantastic effort! Check the answers you did not get correct so that you get a perfect result next time. |
| **14–16** | A very good try. You have obviously learnt a great deal about the nutrients needed for good health. |
| **11–13** | You have learnt quite a lot about nutrition but there is still more to understand so that you can optimise your health. |
| **8–10** | You will need to work hard to learn more about the nutrients needed for a healthy diet and a healthy body. |
| **5–7** | You should recheck the information on the nutrients in food so that you are able to do better next time. |
| **0–5** | You have a lot of work to do to learn about the nutrients needed for a healthy diet and for good health. |


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# ACTIVITY 4.3

## EVALUATING MEALS

### Goal

To be able to use the *Australian Guide to Healthy Eating* to identify similarities and differences between the two meals.

WS Worksheet

| Meal 1 | Meal 2 |
|---|---|
| **Main course** | **Main course** |
| Crumbed and fried chicken nuggets<br>Fried potato wedges<br>Sweet and sour dipping sauce<br>½ tomato | Spaghetti bolognese<br>Green leafy salad dressed with olive oil |
| **Dessert** | **Dessert** |
| Apple pie and ice-cream | Strawberries and natural yoghurt |
| **Beverage** | **Beverage** |
| Glass of water | Can of soft drink |


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1. Classify the main ingredients of meal 1 and meal 2 onto the template of the *Australian Guide to Healthy Eating*.
2. Identify some features about the main ingredients and cooking methods used in meal 1 and meal 2 and where they are classified on the *Australian Guide to Healthy Eating*.
3. Describe how the main courses for meal 1 and meal 2 are the same or different, based on these features.
4. Describe how the dessert and beverages for meal 1 and meal 2 are the same or different based on these features.
5. Explain what you know about the two meals.
6. Comment on how the information will help you if you were creating your own evening meal.
7. Prepare the recipes for Oriental Chicken Kebabs (page 81) and Plain Rice (page 108). How does this meal rate according to the *Australian Guide to Healthy Eating*?

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# 4.1 Case study

**1 a** Before you read the article below, record the foods you eat and drink in a 24-hour period in a table similar to the one below.

**b** From the list of foods you have eaten during the day, identify those foods that are classified as 'discretionary' according to the *Australian Guide to Healthy Eating*. List these foods in the right-hand column.

| | Food eaten | Discretionary foods |
|---|---|---|
| **Breakfast** | | |
| **Lunch** | | |
| **Dinner** | | |
| **Snacks** | | |
| **Beverages** | | |
| **Total serves of discretionary foods eaten in 24 hours** | | |

**c** Discuss how your consumption of discretionary foods compare with the recommended 0–2.5 serves daily.

Now read the article.

## *A third of Australians' energy intake comes from junk: report*

A third of Australians' energy intake comes from junk food, a new government report has revealed.

According to the Australian Institute of Health and Welfare (AIHW)'s *Nutrition Across the Life Stages* report, released on Friday, a third of the average Australian's energy intake comes from so-called 'discretionary foods': foods which, according to the Australian Dietary Guidelines, are high energy foods 'not necessary to provide the nutrients the body needs'.

Discretionary food consumption is highest among teenagers, who receive 41 per cent of their energy intake from these foods.

The report found the types of discretionary food Australians consume change as we age. While the most common energy-dense junk foods consumed by children include cakes, muffins, sweet biscuits, chips and ice cream, alcoholic drinks formed one-fifth of discretionary consumption in the 51–70 age bracket.

Eating enough vegetables is a struggle for us all, with no age group of men or women successfully consuming an average of five serves of vegetables each day, as is recommended by the guidelines. Only one in 10 adults achieve this as part of their daily diet.

Notably, children fared even worse: ninety-nine per cent of Australians aged two to 18 are not eating enough vegetables.

However, younger children are leading the pack when it comes to eating the guidelines' recommended two serves of fruit, with the two to eight years bracket being the only group who achieve this, on average. Toddlers aged two to three were the only group consuming the required amount of dairy.

Women were more likely than men to fail to consume sufficient calcium and iron. This was particularly a problem for teenage girls (among the 14–18 age group, 90 per cent are not getting


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enough calcium and 40 per cent do not meet the recommended iron intake). Women over 50 also had low levels of calcium in their diet, while close to 40 per cent of those aged 19–50 were low on iron.

There is some good news, said AIHW spokesperson Claire Sparke, who noted Australians are 'generally getting enough of the nutrients we need' and our diets have slightly improved since comparable statistics were collected in the 1995 National Nutrition Survey.

Source: Mary Ward, *Sydney Morning Herald*, 26 October 2018. (The use of this work has been licensed by the Copyright Agency. Except as permitted by the Copyright Act, you must not re-use this work without the permission of the copyright owner or Copyright Agency.)

## Respond

1. Identify the proportion of the average Australian's energy intake that comes from discretionary foods.
2. Explain why the Australian Institute of Health and Welfare (AIHW) is concerned that the energy intake for many Australians comes from these foods.
3. How does the consumption of discretionary foods change as we age?
4. Outline two implications for your long-term health of consuming less than the recommended five serves of vegetables daily?
5. Describe two strategies you think could encourage children and teenagers to increase their consumption of vegetables.
6. Why do you think children aged 2–8 years are more likely to consume the recommended two serves of fruit each day?
7. Identify two health benefits of consuming the recommended two serves of fruit each day.
8. Explain why it is important for teenage girls to increase their consumption of foods high in calcium and iron in line with the recommendations of the *Australian Dietary Guidelines*.
9. Do you think that food manufacturers and supermarkets have a responsibility to promote healthy food? Justify your response.
10. After reviewing your consumption of discretionary foods and having read the article above, what advice would you give to a non-food technology student who wants to improve their overall diet?

# WATER

Water is an essential dietary component that you need to keep your body healthy. Water is a major component of every cell in the body – approximately 70 per cent of your body is composed of water. Water is also necessary in assisting in the digestion and absorption of other nutrients as well as helping in the removal of waste products from your body.

You lose water from your body every day through perspiration, tears, urine and faeces, as well as from the lungs when you breathe out. Therefore, you should drink at least six to eight glasses of water daily to replace the water you lose. Water is found in most foods, but is especially high in fruits and vegetables, as well as in milk and other liquids such as fruit juices.

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**Drink plenty of water**



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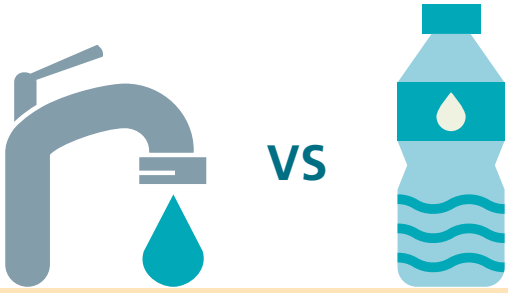
If you do not drink enough water or other fluids, your body gives you signals to let you know that you need to drink more to prevent dehydration. One of these signals is urine colour – a dark or yellow colour means that the urine is too concentrated and that you need to drink more fluid. Light-coloured or clear urine means that your body is hydrated and that fluid intake is adequate.

Drinking a large amount of tap water is also important because in many countries tap water contains fluoride, which helps to reduce the incidence of dental caries. In recent years, there has been a big increase in the popularity of drinking bottled water and dentists have seen evidence of an increase in the number of children who have tooth decay.

## Tap vs bottled water




**Tap or bottled water?**

Australia has some of the safest and best tap water in the world. However, in recent years, many consumers have turned away from drinking tap water and are choosing to purchase bottled water instead. Some reasons suggested for this increased consumption is that bottled water is more convenient, is easily accessible, has greater health benefits and tastes better than tap water. It is surprising then that blind taste testing experiments show that most people cannot tell the difference between tap and bottled water.

Health professionals have shown that bottled water is no more 'pure' than tap water. It is widely thought that all bottled water is sourced from 'natural springs' and other natural sources; however, some bottled water is simply treated or filtered tap water.

There are substantial economic advantages for families in using tap rather than bottled water. Bottled water is more expensive to purchase than milk or many soft drinks. Tap water costs a very small fraction of the cost of purchasing a bottle of water. It has been estimated that tap water costs less than one cent per litre in comparison with bottled water, which can cost between $1.00 and $6.50 per litre. Depending on the amount of bottled water a family purchases over a year, replacing with tap water can mean considerable savings.

### The environmental impact of bottled water

There are also significant environmental costs associated with the production and purchase of bottled water. In Australia, much of the water that is bottled comes from underground aquifers. This can have a detrimental impact on farming communities by lowering the water table that farmers rely on for their stock and crops.

Another major problem is that the production of polyethylene terephthalate (PET) bottles uses large amounts of energy and non-renewable resources including oil and water. According to the Pacific Institute, it takes twice as much water to produce one PET water bottle than the amount of water the bottle can contain. Non-renewable resources in the form of energy and petroleum are used when the water bottles are filled in the factory and when they are transported by road, rail, ship or air. Along the way, all these methods of transportation release greenhouse gas emissions, particularly carbon dioxide ($CO_2$), into the atmosphere. In addition, much of the bottled water is refrigerated so that it is cold when purchased and this too uses significant amounts of energy and adds to the production of greenhouse gases.

While many consumers attempt to recycle their plastic water bottles, most PET water bottles end up in landfill. Environmental pollution also occurs as a large number of the water bottles are simply discarded and end up polluting parks and waterways and can take hundreds of years to break down. The 2018 report from Clean Up Australia Day shows that PET plastic containers are one of the 10 most commonly collected forms of rubbish.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## HOW TO CUT DOWN ON YOUR USE OF BOTTLED WATER

Buy a reusable water bottle

Use a filter water jug to help remove the chlorine and any minerals

If you prefer cold water, keep your insulated water bottle in the fridge

Keep a jug of water in the fridge overnight to remove the chlorine taste

Check the location of public water refill stations so you can easily refill your water bottle

**Strategies to cut down on bottled water**

## TESTING KNOWLEDGE

**21** What is the *Australian Guide to Healthy Eating*? Why is this food model divided into five food groups?

**22** Explain how consuming foods from the 'grain (cereal) foods, mostly wholegrain and/or high fibre cereal varieties' category can help improve your long-term health.

**23** Sketch a carrot and annotate it to show the main nutrients found in vegetables.

**24** Why should we try to eat fish or seafood meals at least twice a week?

**25** What nutrients would you find in a glass of milk?

**26** Explain why fats from plant sources are considered better for your health than those from animal sources.

**27** What are 'discretionary food choices' and why do they appear outside the circle in the *Australian Guide to Healthy Eating*?

**28** What are the three main uses of water in your body? List four of the best food sources of water.

**29** Outline three environmental concerns associated with bottled water.

**30** Describe two ways in which you could reduce your use of bottled water.

## THINKING SKILLS

### Healthy eating for teens

Work with a partner to prepare an animation or video clip to highlight the importance of one of the five food groups in the *Australian Guide to Healthy Eating*. Your animation or video clip should be appropriate to include in a health promotion campaign aimed at teenagers.

**1** Make a list of the main points to be included in your animation or video clip.

**2** Storyboard the key scenes of your video or animation.

**3** Make a list of any props required for your video or animation.

**4** Create the animation or video clip using an appropriate app.

**5** Edit the animation or video clip to approximately 30 seconds viewing time.

**6** Present your animation or video clip to the class and obtain feedback on the positive aspects of the video and any areas for improvement.

**7** Evaluate your animation or video clip and its suitability to be included in a health campaign aimed at teenagers.

ISBN 9780170446716

# Design activity 4.1

## WELLNESS BOWL

Wellness bowls, poké bowls or Buddha bowls are a trend that has the tick of approval from nutritionists and dietitians. These bowls, based on plant foods, are colourful, have a range of flavours and textures and provide a balanced meal. Most importantly, wellness bowls are far more interesting than a traditional green salad with a mix of raw and cooked vegetables.

### Design brief

Design and produce a wellness bowl that will be used as part of the promotion for Healthy Eating week at your school to educate the community about the *Australian Guide to Healthy Eating*. The bowl should include wholegrains, raw and cooked vegetables, a protein ingredient and a dressing. The photograph and recipe for the wellness bowl will be on the school website to give families some new ideas for healthy meals.

Use the specifications in the design brief to develop five criteria suitable for evaluating the success of the finished product.

### Investigating

1. What is the history of poké bowls?
2. List the ingredients that usually make up a poké bowl.
3. Explain why the specific key ingredients are featured in poké bowls.
4. What is a Buddha bowl and how is it different from a poké bowl?
5. Research some of the key ingredients often found in a wellness bowl.
6. Explain why dietitians and nutritionist support the trend of Buddha and wellness bowls.
7. After researching the ingredients often used in poké, Buddha and wellness bowls, list five ingredients that could be used in each component of the recipe map below.
8. Practise your skills by preparing the recipe for a Wellness Bowl on page 88.

| Cooked wholegrains | Vegetables | Protein ingredients | Dressing | Extras to add 'crunch' and flavour |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**Recipe map for wellness bowl**


ISBN 9780170446716

## Generating

1. Collect three images that demonstrate the presentation of a range of wellness bowls.
2. Use a PMI chart to record your thinking around the presentation of these wellness bowls.
3. Explain why you would/would not use any of these design ideas in the presentation of your wellness bowl.
4. Use the ideas from your research and the information in your recipe map to generate two design solutions to meet the need identified in the design brief. The design for your wellness bowl should include the following five key components:
   - half a cup of cooked whole grains or slow-release carbohydrates
   - a variety of vegetables with different flavours, colours and textures
   - a protein to help keep you feeling full
   - a delicious dressing to bring everything together
   - extra ingredients that will make the bowl more interesting and delicious by adding crunch and flavour.
5. Design your final recipe – use recipe conventions when writing it so it is ready for production.

## Planning and managing

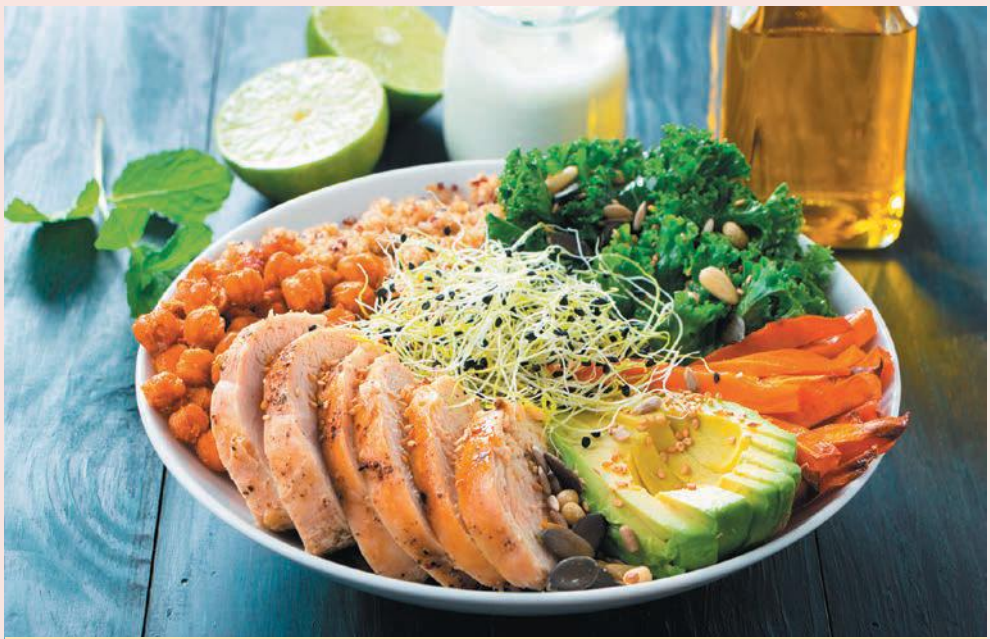
1. Complete a food order.
2. Develop a production plan for the recipe. Identify the key processes to be used and describe relevant safe work practices for each process.

## Producing

1. Prepare and present your wellness bowl.
2. Photograph your wellness bowl.
3. Record any changes you made during production.

## Evaluating

1. Evaluate the success of your wellness bowl using the criteria you developed.
2. Describe the sensory properties of the wellness bowl – consider the overall product rather than individual ingredients.
3. Classify the ingredients of your wellness bowl on a diagram of the *Australian Guide to Healthy Eating*.
4. Explain how well your wellness bowl reflects the recommendations of the *Australian Guide to Healthy Eating*.
5. Discuss any changes you would make to the ingredients or processes used to improve your recipe.
6. Describe how you and your partner worked collaboratively during production. You could comment on setting up your work bench, sharing the cooktop and oven, washing the dishes and cleaning your work area.



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**Wellness bowls are a very healthy food trend**

ISBN 9780170446716

# Design activity 4.2

## SUPER HEALTHY STIR-FRY

### Design brief

A major supermarket is planning to run a campaign to highlight the importance of eating a variety of cereal grains and vegetables. As a part of the campaign, it will include a range of recipes in its supermarket magazine for consumers to use when preparing food at home.

1 Use the following information to write a design brief for a new recipe for a super healthy stir-fry and an accompanying recipe. You will need to outline:
- who the new recipe will be targeted to
- a description of when the stir-fry could be served
- why the new recipe will help promote the importance of eating cereal grains and vegetables
- how the stir-fry will address Guideline 2 of the *Australian Dietary Guidelines* and the *Australian Guide to Healthy Eating*
- how the recipe leaflet will be a helpful guide to the preparation and cooking of the recipe.

2 Develop five criteria to evaluate the success of your stir-fry.

### Investigating

1 Use the internet and recipe books to research recipes for a super healthy stir-fry.

2 Research information on the way that recipes are presented in major supermarket magazines.


Nancy Chalmers Illustration

**Recipe map for a super healthy stir-fry**


ISBN 9780170446716

## Generating

1. Based on your research, develop a list of ingredients suitable to include in a super healthy stir-fry.
2. Use the recipe map on page 78 to generate two design solutions to meet the need identified in the design brief. Fill in the spaces in the recipe map.
3. Using the recipe map, design your own stir-fry.
4. Prepare a leaflet for the recipe incorporating the ingredients you have selected. Draw the recipe leaflet like the one illustrated below or design your own leaflet.

   Your recipe leaflet should include:

   - a title for your super healthy stir-fry recipe
   - an illustration
   - a list of ingredients
   - the cooking method
   - the estimated preparation and cooking time
   - a list of equipment required to prepare the recipe
   - serving suggestions
   - a top tip for preparing, cooking, serving or storing the recipe.

Preparation time: _____ Cooking time: _____

Equipment required:

_____

_____

_____

Serving suggestions:

_____

_____

Top tip for the cook:

_____

_____

Nancy Chalmers Illustration

**Super healthy stir-fry recipe leaflet**

## Planning and managing

1. Complete a food order for your product.
2. Develop a production plan for the recipe. Identify the key processes to be used and describe relevant safe work practices for each process.

## Producing

1. Prepare the stir-fry you have designed.
2. Photograph the completed dish to add to your recipe leaflet.

## Evaluating

1. Answer your five criteria for success questions in detail.
2. Describe the sensory properties of the completed stir-fry using the descriptors on page 42.
3. Identify the safety precautions that you followed when cooking the stir-fry.
4. Why is it important to store your cooked dish in the refrigerator if you do not want to eat it immediately?
5. Give the recipe leaflet to a friend and ask them to read through the recipe and cook it at home, if possible. Ask them to comment on whether they find it easy to follow and a helpful guide for the preparation and cooking of the recipe. Considering this feedback from your friend, what improvements could be made to the recipe leaflet?
6. Classify the ingredients for your healthy stir-fry on a diagram of the *Australian Guide to Healthy Eating*. Explain how well it meets the recommendations of this food selection model.
7. Annotate your photo and suggest ways you could improve the dish if you were to cook and serve it again.

iStock.com/AnnaPustynnikova

ISBN 9780170446716

# POTATO SALAD WITH EGG AND TUNA

6 chat potatoes

2 eggs

1 carrot

50 grams snow peas

¼ green capsicum

¼ yellow or red capsicum

1 large ripe tomato

6 black olives

1 tablespoon parsley

1 small clove garlic, crushed (optional)

juice of ½ lemon

3 tablespoons olive oil

salt and pepper

½ teaspoon sugar

100 grams lettuce, salad mix or rocket

170 grams canned tuna in oil, drained

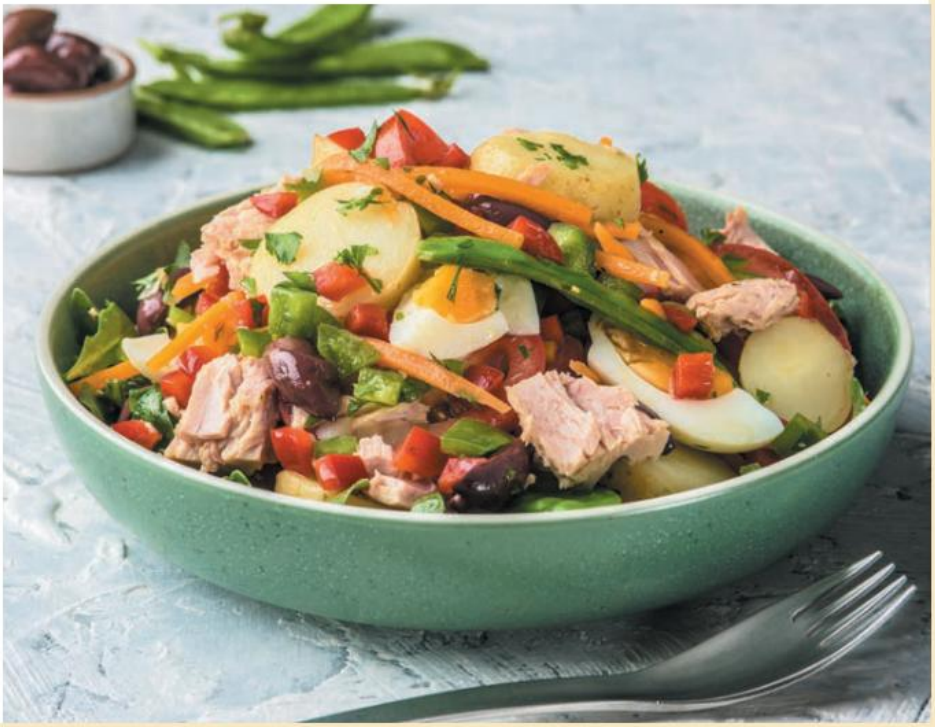
SERVES TWO

## METHOD

1. Steam the chat potatoes for approximately 20 minutes or until tender.
2. Place the eggs into a saucepan filled with warm water. Bring the water to the boil, reduce the heat to simmer and cook the eggs for exactly 8 minutes.
3. Remove the eggs from the heat and drop them into the sink to crack their shells. Place into a saucepan or bowl of cold water and allow to cool.
4. Shell the eggs, then slice into quarters.
5. Cut the potatoes into thick slices.
6. Cut the carrot into julienne sticks. Remove the tops from the snow peas.
7. Bring a small saucepan of water to the boil and blanch the carrots for 2 minutes. Add the snow peas and cook for a further 30 seconds. Drain and refresh.
8. Finely dice the capsicums.
9. Cut the tomato into wedges and the olives into halves.
10. Finely chop the parsley.
11. Crush the garlic into a smooth paste.
12. Mix the garlic, lemon juice, olive oil, sugar and salt and pepper together.
13. Mix chat potatoes, blanched carrots, snow peas, capsicum, olives and tomatoes together in a small bowl and toss with the dressing.
14. Place the salad mix or rocket into two containers, or onto serving plates, and top with the tuna, boiled eggs and finely chopped parsley.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Potato Salad with Egg and Tuna.
2. Explain why it is important to crack the shells of the eggs immediately after they are cooked.
3. Describe one safety rule to follow when blanching the snow peas.
4. Why does the recipe suggest cutting the chat potatoes into thick slices, rather than fine?
5. Evaluate the Potato Salad with Egg and Tuna by plotting its ingredients on a diagram of the *Australian Guide to Healthy Eating*. Discuss how well this recipe addresses the guidelines of this food selection model.



Mark Fergus Photography



ISBN 9780170446716

# ORIENTAL CHICKEN KEBABS

4 bamboo skewers
½ chicken breast fillet
½ clove garlic
½ teaspoon fresh ginger
1 tablespoon light soy sauce
4 small mushrooms, halved
4 cherry tomatoes
⅙ green capsicum, diced
¼ cup pineapple pieces
1 teaspoon oil
1 quantity boiled rice

SERVES ONE

## EVALUATION

1 Why does the recipe suggest soaking the bamboo skewers in water before using them?
2 Explain one important food safety rule to observe when preparing the chicken for the kebabs.
3 Explain the purpose of marinating the chicken in this recipe.
4 Why is it important to turn the kebabs several times while they are cooking?
5 Use your knowledge of nutrition to justify why this dish would be rated as a healthy meal.

## METHOD

1 Soak the bamboo skewers in water for about 30 minutes.
2 Cook rice (see recipe on page 108) and keep warm. (Take the saucepan off the heat, strain and cover with a lid or plate.)
3 Cut the chicken into 2-centimetre pieces.
4 Crush the garlic, grate the ginger and mix with the soy sauce.
5 Add the chicken pieces. Marinate in the refrigerator for as long as possible.
6 Cover the griller tray with foil and preheat the griller.
7 Thread the chicken, mushrooms, tomatoes, green capsicum and pineapple pieces onto the skewers, arranging the vegetables and chicken so that the colours are varied.
8 Brush the oil over the kebabs.
9 Grill the kebabs gently for approximately 3 minutes on each side. Remember to turn them several times while they are cooking.
10 Serve on a bed of boiled rice.

Mark Fergus Photography



ISBN 9780170446716

# FRIED RICE

4

4 cups water
⅔ cup rice
1 tablespoon oil
1 egg
1 rasher bacon, diced
1 clove garlic, crushed
½ onion, finely diced
¼ carrot, finely diced
¼ capsicum, finely diced
¼ stick celery, finely diced
¼ cup frozen peas
¼ cup corn kernels
1 tablespoon soy sauce
2 spring onions, finely sliced
¼ cup bean shoots

SERVES TWO

## METHOD

1. Bring water to the boil in a saucepan.
2. Add rice. Stir once or twice to separate the grains. Simmer 12–15 minutes until tender. Do not overcook.
3. Drain and spread rice in a thin layer on a tray covered with absorbent paper. Refrigerate uncovered until required. (This process helps to dry out the rice so the grains remain separated.)
4. Beat the egg with a fork in a small cup to combine the white and yolk.
5. Crush the garlic and prepare the vegetables.
6. Gently heat the oil in a wok. Add the beaten egg, tilt the wok to spread the egg into a thin layer and cook until set.
7. Remove the omelette from the wok and dice finely.
8. Add the diced bacon to the wok and stir-fry for 2–3 minutes. Drain on paper towel.
9. Add the onion, garlic, carrot, capsicum and celery to the wok and stir-fry 2–3 minutes until the onion is transparent. Add the frozen peas and cook for 1 minute.
10. Add the cooled rice, diced bacon, diced egg, corn kernels and soy sauce. Toss over heat until the ingredients are well combined and heated through.
11. Garnish with sliced spring onions and bean shoots and serve immediately.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Fried Rice.
2. Why is it important not to overcook the rice in step 2?
3. Explain why the rice is refrigerated after boiling.
4. Identify the safe work practices you followed when boiling and stir-frying the rice.
5. Plot the ingredients for the Fried Rice on a diagram of the *Australian Guide to Healthy Eating* and comment on the nutritional value of your fried rice.

Mark Fergus Photography


ISBN 9780170446716

# PRAWN AND VEGETABLE RICE PAPER ROLLS

**Rice paper is a delicate edible wrapper used to package delicious ingredients in a tasty low-fat snack. Roast pork, chicken or tofu could be used instead of the prawns for the protein component of this recipe.**

20 grams rice vermicelli
1 spring onion, finely julienned
¼ carrot, grated
1 tablespoon coriander, chopped
1 tablespoon mint, chopped
⅙ red capsicum, finely julienned
20 grams bean shoots
1 tablespoon cashews, finely chopped
3 teaspoons sweet chilli sauce
8 rice paper sheets
8 prawns, cooked, peeled, de-veined and halved lengthwise

### DIPPING SAUCE

½ lime, juiced
1 tablespoon sweet chilli sauce
1 centimetre lemongrass, finely chopped
2 teaspoons coriander, finely chopped
2 teaspoons fish sauce

MAKES 8 RICE PAPER ROLLS

## METHOD

1. Soak vermicelli in warm water for 10–15 minutes or until soft. Drain well.
2. Combine vermicelli with spring onion, carrot, coriander, mint, capsicum, bean shoots, cashews and sweet chilli sauce. Mix well.
3. Assemble rice paper rolls one at a time. Soak a rice paper sheet in warm water for about 30 seconds until just softened, then drain on a clean, dry tea towel.
4. Place a portion of the filling on one end of rice paper. Add prawn, then tuck in the ends and roll to enclose filling.
5. Cover with plastic wrap and repeat the process.
6. To make the dipping sauce, combine ingredients and mix well.
7. Serve rolls on a platter accompanied by a bowl of dipping sauce.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Prawn and Vegetable Rice Paper Rolls.
2. What are some other products that could be substituted for the prawns?
3. What cereal product is used in the recipe, and what is its function?
4. Discuss the nutritional advantages and disadvantages of including raw vegetables in snack foods.
5. Evaluate the recipe by plotting the ingredients on a diagram of the *Australian Guide to Healthy Eating*. Write a brief paragraph to explain whether rice paper rolls would be suitable as a healthy snack.

Mark Fergus Photography



ISBN 9780170446716

# RICEY LETTUCE PARCELS

2 slices lean bacon
1 cup cooked white or brown rice
1 celery stick, finely sliced
1 carrot, grated
1 tablespoon light soy sauce
lettuce leaves, washed, dried and chilled

SERVES TWO

## METHOD

1. Chop bacon and place between sheets of absorbent paper. Cook in microwave oven on high for 90 seconds to remove fat.
2. Mix bacon with rice, celery, carrot and soy sauce.
3. Heat rice mixture in a covered container in microwave oven on high for 1–2 minutes.
4. Place a heaped tablespoon of rice on the chilled lettuce leaf and fold into an envelope to serve.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Ricey Lettuce Parcels.
2. What are some other products that could be substituted for the lettuce leaf?
3. Suggest reasons why soy sauce is used in the recipe. Where does soy sauce appear in the *Australian Guide to Healthy Eating*? Why?
4. Suggest an alternative method for cooking the bacon if a microwave oven was not available.
5. Evaluate the recipe by plotting the ingredients on a diagram of the *Australian Guide to Healthy Eating*. Write a brief paragraph to explain whether the Ricey Lettuce Parcels would be suitable as a healthy snack.

Mark Fergus Photography



ISBN 9780170446716

# CREAMY CARROT AND TOMATO SOUP

½ white onion, finely chopped
250 grams carrots, thinly sliced
30 grams butter
225 grams canned tomatoes
2 cups chicken stock
pinch of salt, pepper and sugar
¼ cup milk
1 teaspoon parsley or chives, finely chopped

SERVES TWO

## METHOD

1. Sauté onion and carrot in the butter until lightly coloured.
2. Add tomatoes, chicken stock, salt, pepper and sugar.
3. Cover and cook gently for 20 minutes or until carrot is tender.
4. Remove from heat. Blend until smooth.
5. Reheat. Add the milk, taking care not to reboil.
6. Garnish with finely chopped parsley or chives.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Creamy Carrot and Tomato Soup.
2. Explain two important food safety rules to observe when preparing this recipe.
3. Make a list of other ingredients that could be used to vary this recipe.
4. Discuss the advantages and disadvantages of preparing your own soup rather than purchasing a commercial product.
5. Evaluate the recipe by plotting the ingredients on a diagram of the *Australian Guide to Healthy Eating*. Write a brief paragraph to explain whether this recipe would be suitable to serve as a healthy snack or light meal.

Mark Fergus Photography

ISBN 9780170446716

# SATAY VEGETABLES AND TUNA

This is an example of a dinner recipe that is nutrient-dense and a good source of omega-3 and calcium.

¾ cup rice or noodles
1 cup coconut milk
½ vegetable stock cube, crushed
1 small onion, diced
1 clove garlic, crushed
1 teaspoon curry powder
2 teaspoons oil
1 small carrot, peeled and cut into discs
1 stick celery, sliced
5 small florets of broccoli
2 tablespoons crunchy peanut butter
185 grams canned tuna in brine, drained and flaked

SERVES TWO

## METHOD

1. Cook rice (see recipe on page 108) or noodles and keep warm. (Take the saucepan off the heat, strain and cover with a lid or plate.)
2. Blend the stock cube into the coconut milk.
3. Fry onion, garlic and curry powder in oil until tender.
4. Add carrot and celery and stir-fry for 3–5 minutes.
5. Add broccoli florets and continue to stir fry for 2–3 minutes.
6. Add the coconut milk mixture and peanut butter and stir well. Simmer until vegetables are slightly crunchy.
7. Add flaked tuna, stir through gently and heat through.
8. Serve on top of rice or noodles.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Satay Vegetables and Tuna.
2. What other methods could you use to keep the rice warm?
3. Why are the carrot and celery added before the broccoli?
4. Why is it important to gently stir through the flaked tuna?
5. Evaluate the recipe by plotting the ingredients on a diagram of the *Australian Guide to Healthy Eating*. Write a brief paragraph to explain whether this recipe would be suitable to serve as a healthy dinner.

Mark Fergus Photography



ISBN 9780170446716

# CHICKEN AND VEGETABLE STIR-FRY

1 chicken fillet, sliced in strips
2 teaspoons lemon juice
1 tablespoon soy sauce
1 tablespoon oil
½ onion, cut in wedges
1 garlic clove, sliced
1 centimetre fresh ginger, diced
¼ red capsicum, sliced
4 baby sweetcorn, halved lengthwise
6 green beans, sliced
1 bok choy, sliced coarsely
1 tablespoon vegetable oil
¼ cup chicken stock
1 tablespoon sweet chilli sauce
1 tablespoon soy sauce (extra)
160 grams egg noodles

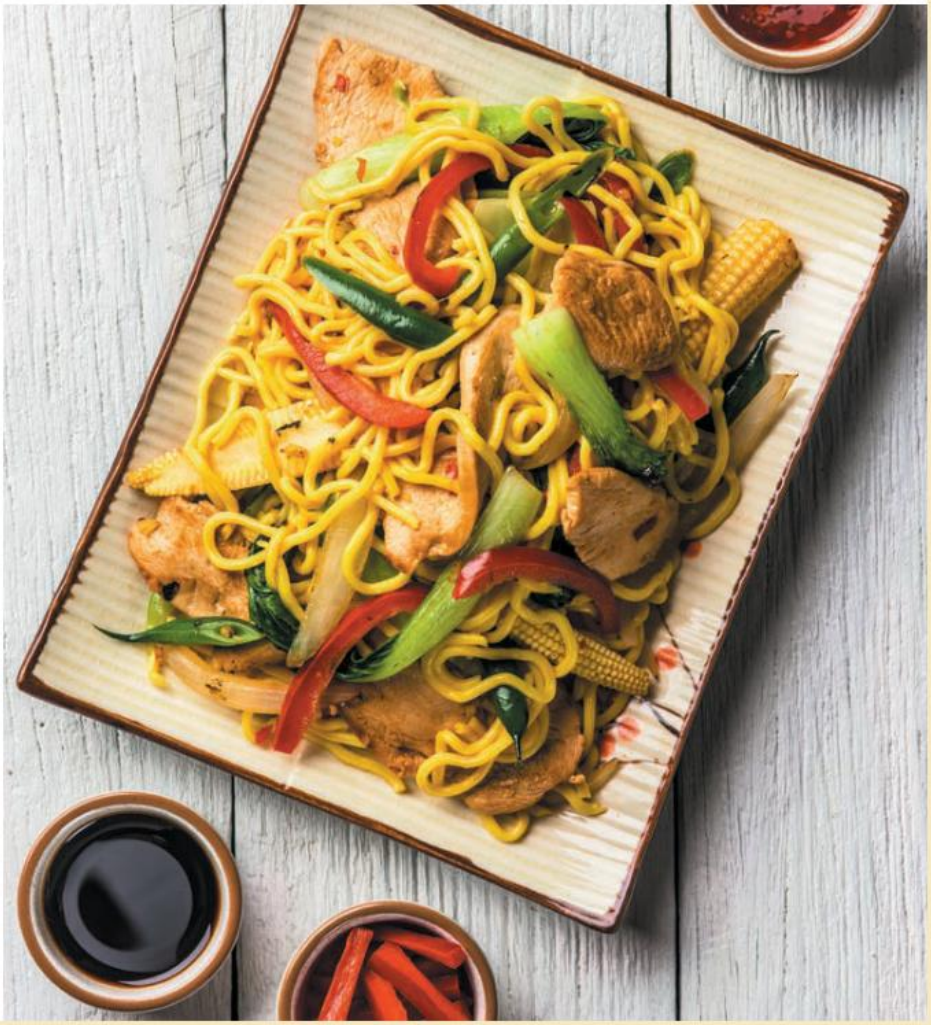
SERVES TWO

## METHOD

1. In a small bowl, combine the lemon juice, soy sauce and oil to make a marinade.
2. Slice the chicken fillet across the grain into thin strips and mix into the marinade. Cover and refrigerate.
3. Prepare the vegetables. (Remember to keep them separate, since they have different cooking times and will be added at different times.)
4. Boil water in a medium saucepan and pour over noodles to soak while the chicken and vegetables are cooking.
5. Heat oil in the wok. Add onion, garlic and ginger. Stir-fry for 30 seconds.
6. Drain the chicken from the marinade and add to the wok. Stir-fry for 2 minutes or until the chicken changes colour.
7. Add the vegetables separately to the wok, starting with the vegetable that takes the longest to cook.
8. Pour in the chicken stock and cook for a further 2 minutes.
9. Drain the noodles and toss through the chicken and vegetables. Add the sweet chilli sauce and extra soy sauce.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Chicken and Vegetable Stir-fry. Rate to success of your product using a hedonic scale (see page 45).
2. What is cross contamination? How did you prevent cross contamination from occurring when preparing the ingredients for this recipe?
3. How did you decide on the order in which the vegetables were added to the stir-fry during the cooking process?
4. Describe how you worked safely when cooking the stir-fry in the wok.
5. Plot the ingredients for the recipe on a diagram of the *Australian Guide to Healthy Eating* and comment on the nutritional value of your meal.



Mark Fergus Photography



ISBN 9780170446716

# WELLNESS BOWL

¼ cup brown rice
½ cup canned chickpeas, drained and rinsed
¼ teaspoon ground cumin
¼ teaspoon ground coriander
¼ teaspoon ground sweet paprika
olive oil spray
2 stems broccolini
1 egg
2 radishes
2 cherry tomatoes
½ cup baby spinach leaves
1 tablespoon flat leaf parsley, finely chopped

### AIOLI DRESSING

1 tablespoon mayonnaise
1 tablespoon lemon juice
2 teaspoons extra virgin olive oil
¼ teaspoon crushed garlic

SERVES ONE

## METHOD

1. Rinse the rice in cold water then place in medium saucepan. Add 2 cups of cold water and bring to the boil.
2. Stir once or twice and then reduce heat to simmer and cook for 25 minutes. Drain before serving.
3. Preheat oven to 200°C. Line an oven tray with baking paper. Combine the cumin, coriander and sweet paprika in a small bowl.
4. Pat the chickpeas dry with paper towel and spread onto the lined baking tray. Spray lightly with olive oil spray and sprinkle with the spice mix. Roast for 15 minutes or until the chickpeas are golden.
5. Cut the broccolini stems into four equal pieces. Place 4 centimetres of water in a small saucepan and bring to boil. Add broccolini and cook for 1 minute. Drain, rinse under cool water and drain again.
6. Place the egg in a small saucepan and cover with cold water. Bring to a boil then reduce to simmer and cook for 4–6 minutes, depending on how soft you like the yolk. Drain the egg then refresh in cold water. Peel the egg and cut in half.
7. Slice the radish thinly and cut the cherry tomatoes in half.
8. To make the dressing, combine the mayonnaise, lemon juice, olive oil and crushed garlic in a small bowl and mix well.
9. To serve, arrange the brown rice, chickpeas, broccolini pieces, spinach leaves, radish slices and tomato pieces in individual sections in the serving bowl. Arrange the egg halves on the top with the yolk visible. Sprinkle with chopped parsley and drizzle over the aioli dressing.

Mark Fergus Photography

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Wellness Bowl.
2. Describe one safety rule to follow when cooking the rice on the cooktop.
3. Explain why the broccolini is only cooked for 1 minute in step 5 of the recipe rather than for 5 minutes. Why is it important to rinse the broccolini under cool water after cooking?
4. Classify the ingredients of the recipe on a diagram of the *Australian Guide to Healthy Eating*. How many serves of grains and vegetables does this recipe provide?
5. Explain whether you would rate this recipe as healthy or very healthy, based on the recommendations of the *Australian Dietary Guidelines*. Justify your rating.


ISBN 9780170446716

# GRAIN FOODS

# 5

## KEY KNOWLEDGE

- Grain foods in the *Australian Guide to Healthy Eating*
  - Grains for good health
  - Types of grain foods
  - The structure of a cereal grain
- Rice
  - Rice for good health
  - Types of rice
  - Top tips for cooking rice
  - Sustainable rice production: water-efficient farming
- Wheat
  - Wheat production: from paddock to plate
  - Sustainable wheat production: no-till farming
  - Types of wheat flour in Australia
  - Gluten: the protein in wheat flour
- Yeast
  - Preparing yeast doughs
  - Types of yeast
  - Processes in yeast baking
  - Top tips for baking yeast doughs
- Bread
  - Flatbreads
  - Labelling of bread
- Couscous
  - Couscous for good health

## KEY TERMS

**dextrinisation** the process that occurs when the starch in flour is exposed to dry heat and is broken down into dextrin, resulting in a change in colour to golden brown

**fermentation** the process of yeast growing and reproducing by budding, then converting carbohydrates into carbon dioxide, alcohol and water

**gelatinisation** the process that occurs when starch granules in the endosperm of cereals absorb liquid in the presence of heat and thicken the liquid

**gluten** the main protein in wheat flour

**grain (cereal) foods** edible seeds of certain grasses, including wheat, oats, rice, rye, barley, millet, quinoa and corn

**kneading** a process in which air bubbles are evenly distributed and the gluten strengthened in a yeast dough

**no-till farming** a farming practice where the stubble from last year's crop is left in the soil to enrich and stabilise it

**proving** a process in which a yeast dough is rested to allow time for fermentation to take place

**yeast** a single-celled, microscopic fungus

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food and fibre production
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking

### CROSS-CURRICULUM PRIORITIES

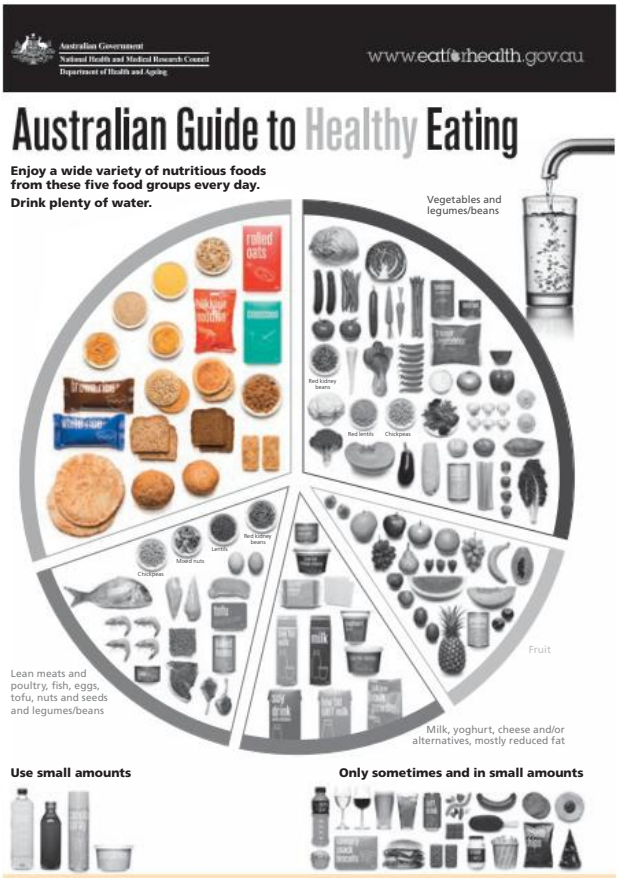
- Sustainability



ISBN 9780170446716

# GRAIN FOODS IN THE *AUSTRALIAN GUIDE TO HEALTHY EATING*

The message from nutritionists is to eat more **grain (cereal) foods**, with a stipulation for mostly wholegrain sources. Grains and cereals are plant foods and make up one of the largest segments of the *Australian Guide to Healthy Eating*. The grains in this group include wheat, oats, rice, rye, barley, millet, quinoa and corn.




**The place of grain foods in the *Australian Guide to Healthy Eating***



## Grains for good health

All cereal grains, whether wheat, rice or corn, all provide a similar range of important nutrients. The nutrient value of the end product will largely depend on the amount of processing involved. For example, the removal of the bran and germ layer during milling to produce white flour or white rice reduces the end product's vitamin, mineral and fibre content.

The most nutritious cereals are wholegrain cereals, which are an excellent source of carbohydrates and dietary fibre yet are low in fat. Wholegrain cereals also provide your body with small amounts of protein, B group vitamins and minerals. The bran of cereal grains is made up almost entirely of dietary fibre. Dietary fibre is important in the diet because it absorbs water, and therefore adds bulk and helps food to move through the digestive tract. Consuming a variety of mostly wholegrain or high-fibre cereals may help you to reduce the risk of developing diseases such as heart disease, type 2 diabetes and some cancers, and will assist you to avoid gaining excessive weight.

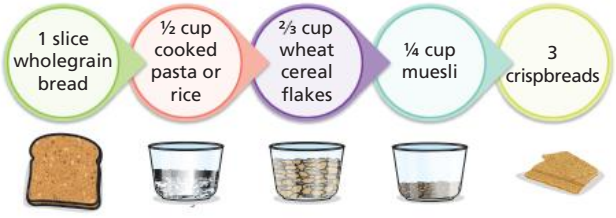
### Carbohydrates

According to health professionals, 50 to 60 per cent of our daily energy needs should come from carbohydrates. Carbohydrates are classified according to the number of molecules they contain. Monosaccharides are the simplest form of carbohydrate; disaccharides contain two monosaccharide molecules and polysaccharides contain many monosaccharide molecules. Monosaccharides and disaccharides are both forms of sugar, whereas polysaccharides are found in the form of starch and cellulose in fruit, vegetables and wholegrain cereals. Health experts recommend that we select nutrient-dense carbohydrates such as pasta, wholegrain breads, fruit and vegetables as our sources of carbohydrate, rather than energy-dense foods containing sugars.

### How much of the grain foods group is needed?

| | Serves per day | |
|---|---|---|
| | 12–13 years | 14–18 years |
| Boys | 6 | 7 |
| Girls | 5 | 7 |

### What is a serve?





ISBN 9780170446716

## Types of grain foods

Grains or cereal foods, which are the edible grains or seeds of grasses, have been important as a source of food throughout the world since the earliest origins of humankind. Wheat, rice, barley, oats, rye and maize (corn) are all grains that are processed in some way for us to eat. Specific varieties of grains are cultivated in each of the world's regions as they are better suited to the climate and soil of particular areas. Due to their wide availability, grain foods are the staple foods of many regions and are often eaten several times a day. Some 'ancient grains' such as quinoa, freekeh, farro, teff and buckwheat are becoming more popular with some consumers as they often marketed as being more nutritious than other grains.

### Grain foods and their uses


**Wheat** is used for bread, pasta, noodles, cakes, biscuits, extruded snack foods, bulgur and thickening agents.


**Rice** is used as cooked grains in savoury dishes, puddings, breakfast foods, biscuits, rice cakes and extruded snack foods.


**Maize (corn)** is used as a fresh vegetable; the kernels can also be canned, frozen or dried. Maize is also used in breakfast cereal, polenta, tortillas, corn oil, corn syrup and popcorn.


**Barley** is used in breakfast cereal and as a thickening agent in soups and casseroles.

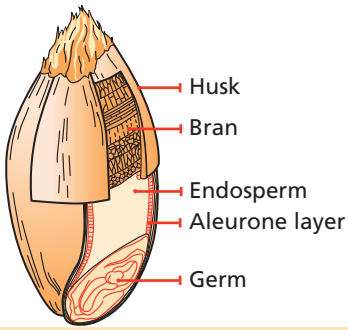

**Oats** are used as porridge (rolled oats, oatmeal), in muesli and oatcakes.


**Quinoa** is used as a whole or flaked cereal grain or as a flour. Breakfast cereals, biscuits, pasta and snack foods can also be made using quinoa.

## The structure of a cereal grain

All cereal grains are made up of three main parts:

- the bran, the cover or outer layer of the grain, which is made up mainly of dietary fibre
- the endosperm, the main body of the cereal grain, which is composed almost entirely of starch
- the germ or embryo, which contains the nutrients needed for a new plant to grow – protein, fat, and some vitamins, and minerals and carbohydrates.




**Cross-section of a cereal grain**

ISBN 9780170446716

# RICE

Rice is one of the most important staple foods eaten throughout the world. More than half the world's population eats rice daily. Rice has been harvested for thousands of years, and recent archaeological finds indicate that rice was present in China from around 3000 BCE. Rice is particularly important in many Asian cultures, where it often forms the focal point of every meal. In Japan, many shrines to the rice god, Inari, dot the countryside, and in India and China, when young couples are married, they are showered with rice to ensure fertility. The custom of throwing confetti at weddings stems from this tradition.

Approximately 40 000 varieties of rice are grown throughout the world. The main rice-growing areas are found in South-East Asia, Africa, the Middle East, Australia, North America, South America and Europe. In Australia, the main rice-growing areas are in the Murrumbidgee and Riverina regions of southern New South Wales as well as in north-eastern Victoria. These regions are most suitable for rice growing because there are extensive areas of flat land, suitable clay-based soils and available irrigated water supplies.

## Rice for good health

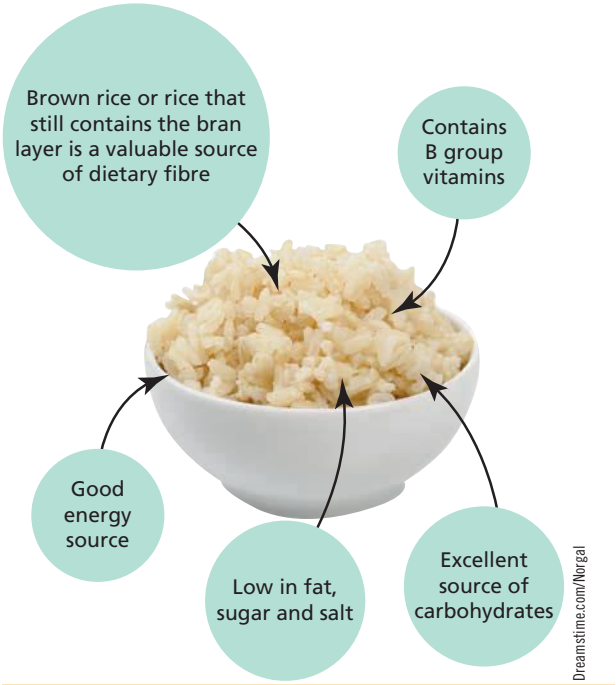
Rice is high in carbohydrates, low in fat, sugar and salt, is a good source of B group vitamins and is gluten-free. Rice is found in the cereals section of the *Australian Guide to Healthy Eating*.

## Types of rice

Rice is sometimes classified according to its colour. Brown rice has had its outer husk removed, but retains the bran, while white rice has undergone more processing stages, has been polished during milling, and has had its bran and germ removed.

There are thousands of different varieties of rice, but these are usually classified into three main groups.

1 **Long-grain rice**: the grains remain separate when cooked and are light and fluffy in texture. Long-grain rice such as basmati and jasmine are generally used for savoury dishes such as pilafs and as accompaniments to curries. They may be either polished (white) or unpolished (brown or wholemeal).
2 **Medium-grain rice**: the grains are slightly rounder in shape than long-grain rice, stick together when cooked and are moist in texture. The grains of rice cling together more than long-grain rice but are still separate when cooked. Medium-grain rice is widely used in Chinese cuisine. Arborio rice is a medium-grain rice that is soft in texture; it is ideal for preparing risotto because it can absorb a lot of liquid, such as stock, without becoming gluey.
3 **Short-grain rice**: the grains are much rounder in shape than long- and medium-grain rice. Short-grain rice is moist, tender and sticky when cooked. Traditionally, short-grain rice is used in Japanese cuisine for making sushi, and in Spanish cuisine for paella. Classic rice puddings are also prepared using short-grain rice.




**Nutrient value of rice**

Wild rice is not a true rice but is the seed of an aquatic North American grass. It is not cultivated in the same way as traditional rice and is expensive to harvest. It ranges in colour from dark brown to black and has a very nutty flavour. Wild rice is often combined with other rice varieties to add colour and flavour to a dish.


**Three types of rice (left to right): brown rice, arborio rice and basmati rice**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## Top tips for cooking rice

Rice is a versatile food that can be cooked in a variety of ways. In South-East Asia, India and China, rice forms the main part of most meals and is frequently served as an accompaniment to other, much spicier foods.

When rice cooks, it undergoes **gelatinisation**. This is the process that occurs when starch granules in the endosperm of rice absorb liquid in the presence of heat, thickening the liquid and softening and swelling the grain.

During cooking, rice increases in volume; one cup of uncooked rice will produce approximately three cups of cooked rice. Allow approximately one third of a cup, or 70 grams of raw rice, per person.

Care must be taken when using cooked rice because bacteria quickly multiply in warm rice if it is not stored in the refrigerator. Sushi and rice salads must always be refrigerated after preparation and not left in a warm atmosphere. When using cooked rice in a recipe such as fried rice, always reheat the cooked rice until it is very hot to prevent bacterial growth.



## ACTIVITY 5.1

### COMPARING METHODS OF COOKING RICE

#### Aim

To compare the sensory properties, cooking time and volume of rice cooked by a range of methods.

#### Equipment

- 2 saucepans (one with a tight-fitting lid)
- Rice cooker
- Microwave-safe bowl
- 4 × ¼ cup Calrose rice

#### Method

1. Using the information on methods of cooking rice on page 108, cook a quarter of a cup of rice by each of the four methods.
2. After you have cooked and drained each batch of rice, record the volume produced.
3. Record your results in a table similar to the one below.

| | Rapid boil | Absorption | Microwave | Rice cooker |
|---|---|---|---|---|
| Cooking time | | | | |
| Volume | | | | |
| Texture | | | | |
| Flavour | | | | |
| Separation of grains | | | | |

#### Analysis

1. Were there differences between the four methods in the times required to cook the rice until it was tender? Which method had the shortest cooking time? Which method took the longest?
2. How would you account for the increases in volumes of the rice when cooked?
3. Was there a significant difference in the volumes of rice produced using each cooking method? Explain.
4. Which cooking method produced the rice with the best texture and flavour?
5. Identify the method/s of cooking that produced grains of rice that were clearly separated.

#### Conclusion

If you were going to cook rice for a meal, which method of cooking would you recommend? Why?

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## Sustainable rice production: water-efficient farming

Today, Australian farmers are also competing on the world market with small quantities of top-quality rice. One of the key issues facing sustainable rice production in Australia is that rice farmers use large volumes of water to irrigate their rice paddocks. In recent years, Australian rice growers have become aware of the importance of developing environmentally sustainable systems to produce rice. To overcome many of the environmental problems they face, rice growers have developed a variety of strategies to improve water efficiency on their farms. The latest research shows that Australian-grown rice now requires 50 per cent less water than rice grown by other major rice producers. Some of the strategies rice producers have introduced to improve the sustainability of their farming practices are to:

- move towards irrigation systems that use less water than flood irrigation. The reduction in flood irrigation also has the effect of lowering water tables and minimising salinity, as less water is used. Greenhouse gas emissions that are linked to flood irrigation are also reduced with more efficient watering systems
- introduce laser levelling technology to level the ground where rice is to be grown, ensuring that water is evenly distributed
- use new technology to measure the amount of water that the rice crop requires, so that water is only released to the crop as it is needed. This gives farmers precise control of water both on and off the paddock, and has led to a 60 per cent reduction in the amount of water used in rice production
- develop closed rice production systems that recycle water and keep the water and nutrients on the property
- use high-yielding, shorter-season rice varieties that require less water to grow.

## ACTIVITY 5.2

### RICE VARIETIES

Visit the websites of the Ricegrowers' Association of Australia (RGA), Sunrice and Tilda and complete the following research about rice varieties.

Weblink
RGA
Sunrice
Tilda

1 Explain why brown rice is considered to be a better food choice than white rice.

2 Copy and complete the following table, giving an example of each rice variety and a summary of its properties.

| Rice variety | Properties of the grain | Uses in food preparation |
|---|---|---|
| **Long-grain** | | |
| Jasmine | Tender texture; fragrant aroma | Asian dishes: stir-fries; fried rice |
| **Medium-grain** | | |
| | | |
| **Short-grain** | | |
| | | |

3 Using information from the websites, list examples of rice that have been processed so that they cook or reheat quickly.

4 Rice is used to produce a wide range of processed foods. List four processed rice food products widely available in the supermarket.

5 Environmental sustainability is an important issue for Australian rice growers.

- **a** Outline two strategies Australian rice growers are implementing to reduce chemical spray drift on their properties.
- **b** Describe two management practices Australian rice growers use to improve habitat and biodiversity on their farms.


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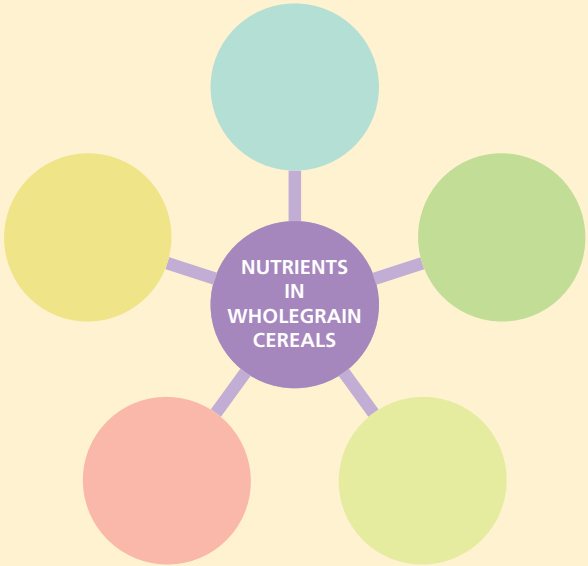
Fairfax Syndication/Nic Walker

Rice growing in New South Wales

## TESTING KNOWLEDGE

1 Draw a diagram like the one below to identify the main nutrients found in wholegrain cereals.




2 Outline the health benefits of including wholegrain or high-fibre cereals in your diet.

3 Explain the difference between monosaccharides, disaccharides and polysaccharides.

4 What are grain foods? Explain why different types of cereal grains are staple products of particular regions of the world.

5 Explain why, from a nutritional perspective, it is better to eat wholegrain cereals rather than refined or 'polished' cereals.

6 Develop a concept map that includes the different varieties of rice, as well as dishes made from each variety.

7 What is wild rice and how does it differ from other types of rice?

8 Identify the process that describes the changes in starch when rice is cooked. Explain how this process makes rice more palatable to eat.

9 List the different methods that can be used to cook rice. Which method would require the most accurate timing to prevent the rice from overcooking?

10 Outline three strategies rice growers are using to improve the sustainability of their farms.

# WHEAT

Wheat covers more of the earth's surface than any other grain crop, and it is the staple grain food for much of the earth's population. Australian wheat farmers have an international reputation for producing top-quality wheat that is in high demand throughout the world. The main wheat growing areas in Australia are Western Australia, New South Wales, South Australia, Victoria and Queensland.

Wheat is processed into flour and is used to make a wide range of products including bread, cakes, biscuits, pastries, pasta and breakfast cereals. Wheat grain is also used as stock feed.

## Wheat production: from paddock to plate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Ploughing – the soil in the paddock is ploughed in preparation for sowing the crop in autumn.

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Sowing – the grains are sown evenly and efficiently using large machinery. Sowing usually takes place in autumn after rain.


Shutterstock.com/Todd Klassy

Spraying – the crop is sprayed to reduce the growth of weeds and fungi that reduce the final yield.


Shutterstock.com/Kletr

Harvesting – the growing season is completed by early summer, when farmers harvest the crop. The harvester strips the head off the wheat stalks and separates the grains from the chaff.


Shutterstock.com/Kletr

Augering – the wheat is augured into trucks ready for transporting to the silo.


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Storage – the grain is trucked to large silos or country receival sites, where it is weighed, and the quality of the grain is measured for moisture content and protein quality. The amount of broken grain is also calculated.


Shutterstock.com/Hitdelight

Milling – in flour mills, the grains are crushed and processed to different degrees to produce ingredients such as white flour, wholemeal flour and semolina.


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Products made from wheat flour include breads, cakes, biscuits, pastry, pasta, scones, noodles, breakfast cereals, pizza crusts, crumpets and snack foods such as pretzels.

## Sustainable wheat production: no-till farming

In recent years, many wheat farmers have worked towards developing strategies to make their cereal production more sustainable and environmentally friendly. Sustainable farming involves farming practices such as **no-till farming** that maintain the land's productivity so that it will be available for future generations. No-till farming is a method of producing cereal crops such as wheat and canola that has significant environmental advantages. This method of farming also provides economic advantages for farmers, who state that when using it, their crops provide higher yields, especially during dry years.

No-till farming involves leaving the stubble from the previous year's crop to enrich and stabilise the soil. The new crop is planted by direct drilling in between the rows of the previous crop, without tilling the soil.


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This differs from conventional farming methods that involve ploughing or tilling the land, which are the first stages in preparing the soil before the crop is planted.



**Planting seed by direct drilling**




**Retaining stubble after the harvest**

Leaving the stubble from the previous crop in the soil after harvest holds significant benefits for soil health. 'Stubble' refers to the stalks of the cereal crop, which are left once the heads have been cut off during harvesting. As the remaining stubble breaks down, the nutrients it contains are returned to the soil. The stubble also provides a layer of mulch on the surface of the soil, ensuring that moisture is retained, especially in dry years. A further advantage of retaining stubble on the land is that the roots of the stubble hold the soil in place, minimising wind erosion.

Along with leaving stubble in the soil, no-till farmers use GPS technology to establish a system of controlled traffic lanes, or 'tramlines', that their large machinery follow when sowing and harvesting crops. Using designated traffic lanes for machinery means that the soil is not crushed or compacted but remains moist. GPS also enables farmers to use precision sowing; that is, to sow crops in between rows from the previous year's crop.

## Types of wheat flour in Australia


**Types of wheat flour in Australia**

5

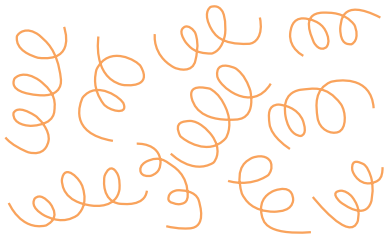
## Gluten: the protein in wheat flour

*Gluten* was originally a Latin word meaning 'glue'. Wheat flour has two major components, starch and protein, and its main protein is **gluten**. Gluten in wheat flour is made up of two component proteins, glutenin and gliadin.

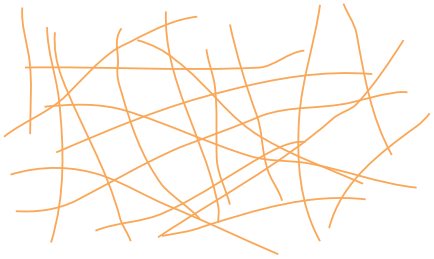
The protein gluten is primarily found in wheat, although there is also some gluten in other cereal grains such as rye, barley and oats. Gluten is the component of flour that helps to form the structure of bread and other cereal products. In the bread-making process, the gluten in the dough stretches to form a skin that holds the bubbles of carbon dioxide (just like bubblegum) that are formed by the action of yeast. Without gluten, the carbon dioxide would escape, and the dough would not rise.

Hard or strong wheats contain the most gluten, and so are best for making bread. Gluten flour can be purchased at health food stores and added to other flours to make a strong dough. It is a creamy, greyish powder that has been separated from wheat endosperm and is made up of strands formed by about 20 different amino acids. Each strand has a helix formation, which makes it look like a tiny spring, and after water is added, a complex three-dimensional network is formed.

When bakers mix and knead a bread dough, they are said to be 'developing the gluten', because the strands of gluten are being straightened and overlapped. This means the 'springs' of gluten must be uncoiled, and the resulting straightened strands must then be recombined into a continuous, overlapping mesh. The new structure forms a three-dimensional network capable of retaining the carbon dioxide produced by the yeast during fermentation.



**Random gluten in flour before hydration**



**Three-dimensional network of hydrated gluten in dough**

# YEAST

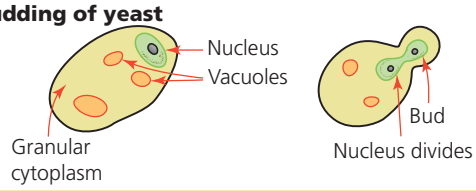
**Yeast** is used as a leavening agent in many food products. To leaven a mixture means to add an ingredient such as yeast, baking powder, bicarbonate of soda or beaten egg white to make it rise. Yeast is used in the dough of bread, buns, pizzas and some batters to make them rise, so that the end product has a light, cellular texture.

Yeast is neither a plant nor an animal, but a single-celled microscopic fungus. As yeast grows, it reproduces by budding; during this **fermentation**, the yeast converts the carbohydrates in the dough to a gas called 'carbon dioxide', plus alcohol and water.

**Fermentation is utilised in bread-making to produce carbon dioxide, which raises bread.**

$C_6H_{12}O_6$ (glucose) + yeasts $\rightarrow$ $2CO_2$ (carbon dioxide) + $2C_2H_5OH$ (alcohol) + energy

**Budding of yeast**




**Reproduction of yeast cells**

## Preparing yeast doughs

Three essential conditions are needed to allow fermentation of a yeast dough: warmth, moisture and food. It is also important to cover the dough with plastic wrap or a damp tea towel when the dough is proving, to prevent the dough from drying out and forming a crust as it ferments.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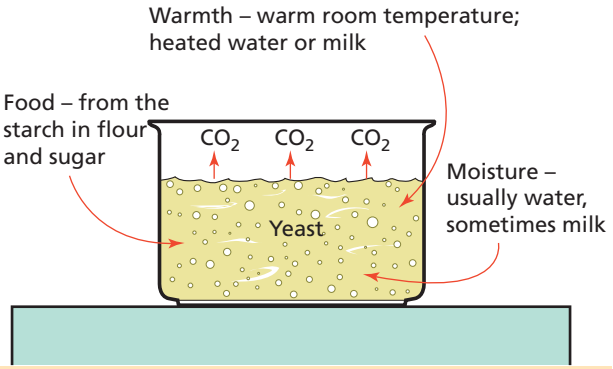


**Ideal environment for the growth of yeast**

The carbon dioxide aerates the dough by forming bubbles that stretch the gluten in the flour to create the structure of the dough. The alcohol and water evaporate during baking.

Shutterstock.com/Madlen

**Yeast fermenting**

## Types of yeast

| Active dry yeast | Compressed fresh yeast |
|---|---|
|  Shutterstock.com/Anton Starikov |  Shutterstock.com/Madlen |
| • Looks like tiny, dehydrated granules<br>• Available in sachets or large packets<br>• Stored in the refrigerator or freezer<br>• The yeast cells are alive but dormant, because of the lack of moisture<br>• When mixed with a warm liquid, the cells are activated and begin to grow and produce alcohol and carbon dioxide | • Has a creamy colour, is firm but with a moist texture, and has a sweet aroma<br>• Purchased in blocks<br>• Must be stored in an airtight container in the refrigerator because it becomes stale quickly<br>• Loses its ability to leaven a dough as it becomes stale |

## ACTIVITY 5.3

### THE GROWTH OF YEAST

Try these tests to determine the ingredients and environment that yeast requires to grow and produce good bread. You will need:

- 8 test tubes
- 8 balloons
- 8 × 1 teaspoon yeast
- 6 × ½ teaspoon sugar
- 4 × 1 teaspoon flour
- 2 × 1 teaspoon bread improver
- 4 × 50 millilitres warm water
- 4 × 50 millilitres iced water.

### Method

1. Put 1 teaspoon of yeast, then 100 millilitres of iced or warm water, into each test tube, according to the diagram on page 100.
2. Follow the diagram to add the other ingredients to each of the test tubes. Stir each test tube well.
3. Stretch a balloon over the neck of each test tube and watch what happens after 5, 10, 15 and 30 minutes.

### Results

Record your results.

### Conclusion

1. After observing each test, determine the ingredients and environments in which yeast grows best.
2. What implications can you draw from the results about the temperature of the environment required for making bread?

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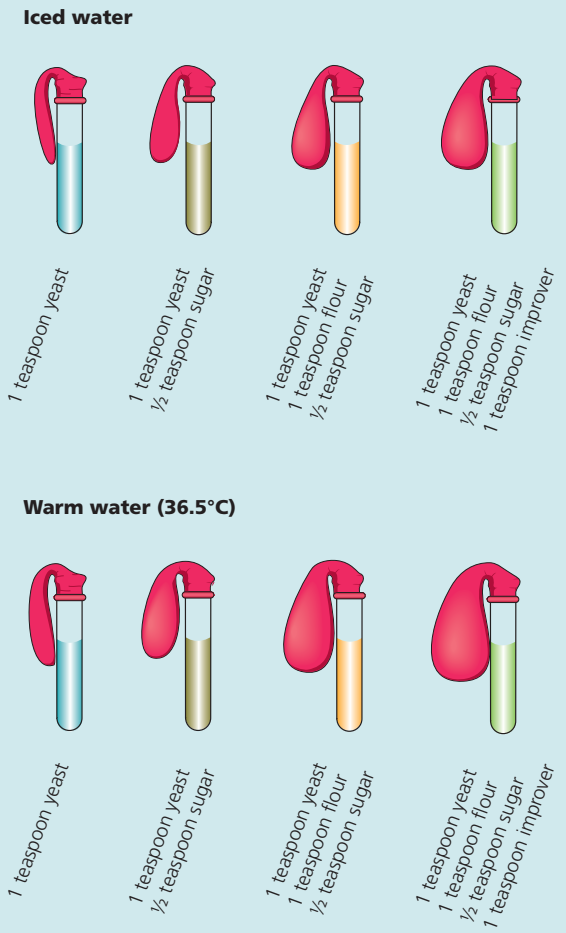


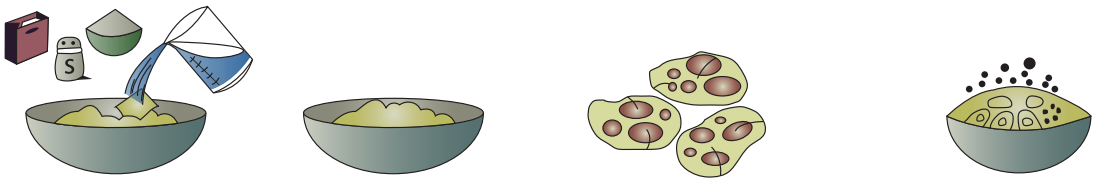

**The growth of yeast**

## Processes in yeast baking

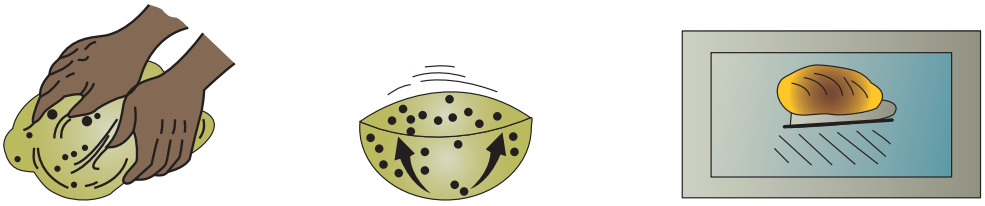
- **Fermentation** – sugars and some of the starch are converted to alcohol and carbon dioxide as the yeast ferments.
- **Kneading** – makes the gluten (the protein in wheat flour) more elastic and stronger so that it can begin to stretch and capture the carbon dioxide bubbles.
- **Proving** – gas bubbles are trapped in the structure of the dough. Gluten from the flour stretches as the yeast grows and the size of the dough increases.
- Shaping and second proving – the dough is knocked back and kneaded again to evenly distribute the air cells to make an even-textured end product. The dough is formed into the desired shape before proving for a second time.
- Baking – the high temperature kills the yeast and evaporates the alcohol. The structure of the dough is set, and the outside becomes golden brown.

## Top tips for baking yeast doughs

1. Use flour with a high gluten content so that the dough can capture all the bubbles of carbon dioxide produced by the yeast during fermentation.
2. Prove the dough in a warm environment that is free from draughts. Cover with oiled plastic wrap or a damp tea towel to prevent the surface of the dough drying out and forming a crust.



1. Water is added to a mixture of flour, salt, sugar, fat, yeast and bread improver.
2. Water is absorbed by the starch and protein in the flour.
3. Gluten in the flour gives the dough elasticity by forming elastic films around tiny gas pockets, stopping them from combining.
4. The leavening (fermenting) of dough occurs when carbon dioxide is released from the sugars by yeast.



5. Kneading, stretching and folding develop the gluten.
6. Proving allows the yeast to ferment. The carbon dioxide increases and the dough rises as the gluten allows the dough to stretch.
7. The heat of the oven causes the expanded dough to become self-supporting and dextrinisation to occur.

**Stages in the preparation of a yeast dough**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3 Prove shaped rolls close to each other on the tray so that they can support one another and not collapse during proving.
4 Spray the dough with water just before it goes into the oven – this helps the dough to stay moist so it can expand at the start of baking.
5 Cook yeast doughs in a hot oven.
6 The dough is cooked if it is golden brown and sounds hollow when tapped. The browning on the outside of the loaf occurs as a result of **dextrinisation**. This is the process that occurs when the starch in the flour is exposed to dry heat and is broken down into dextrin, resulting in a change in colour to golden brown.

# BREAD

Bread is one of the oldest and most diverse foods. Throughout the ages, bread has been an important staple food for many people and has often been referred to as 'the staff of life'. Many types of flour have been used to make bread throughout the centuries. However, only the flour from wheat and, to a lesser degree, from rye, can produce dough that is capable of holding the leavening gases produced by yeast well enough to yield well-risen loaves with a fine, soft cellular structure.

The physical properties – that is, the shape, size and texture – of bread made from wheat flour are the result of the presence of gluten in the flour. All the processes of bread-making – fermenting, kneading and proving – involve changing and improving the natural properties of gluten to make the dough strong enough to hold the bubbles of carbon dioxide that are produced during fermentation.

Alamy Stock Photo/Chuck Place

**Various types of bread**

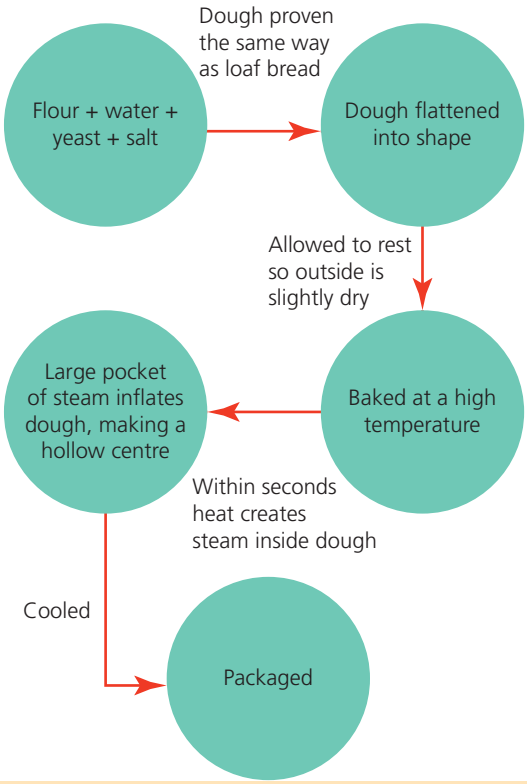
In traditional bread-making methods, this gluten modification occurs over several hours during fermentation of the dough. A 12-hour fermentation period may be required when yeast activity is low. Modern bread-making processes rely on other means of modifying the gluten and enable good-quality bread to be made in two hours.

Dough development can be hastened by the presence of very small quantities of oxidising agents known as bread improvers. Some flours contain gluten that is too tough and strong. If this is the case, improvers are added to soften the flours in order to make a loaf with soft texture.

## Flatbreads

Some of the world's oldest and simplest breads are flatbreads. Flatbreads are usually quick to make, and are cooked either on a stovetop, under a griller or in a hot oven. They may not use yeast as a raising agent.

Many different baking techniques are used to make flatbreads, although the basic steps are the same as for loaf bread. The formula is very basic, using flour, water and salt.




**Production of pocket bread**



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Flatbreads can be crisp or chewy, plain or rich. Traditional flatbreads come in many shapes, sizes and flavours. In some cultures, they are used to wrap around food and replace plates and cutlery. For example, in Greece, pita bread is used as a wrap for meat kebabs, and in India, naan and chapatti are designed so that people can scoop food from their plates to their mouths.

### Types of flatbreads

| Name | Country/region | Type of flour |
|---|---|---|
| Pita | Middle East | Wheat |
| Lavash | Middle East | Wheat |
| Naan | India | Wheat |
| Chapatti | India | Wheat |
| Puri | India | Wheat |
| Pappadam | India | Lentils; rice; potato |
| Tortilla | Mexico | Corn |
| Branch bread | Scandinavia | Wheat; rye |
| Griddle oatcake | Scotland | Oats |
| Roti | Malaysia | Wheat |

iStock.com/kjohansen

**Naan is an Indian flatbread**

## Labelling of bread

Food Standards Australia New Zealand (FSANZ) requires all food manufacturers to comply with food labelling laws for bread. There are two main methods of date-marking that food manufacturers are required to use:

1. use-by date – for foods that should not be consumed after a certain date for health and safety reasons
2. best before date – for foods that have a shelf life of less than two years but may still be safe to eat after this date, even though they may have lost some quality or nutrient value.

Because the freshness of bread is important to consumers, FSANZ has developed additional standards for marking the date on bread labels. Along with a use-by or best before date, bread and other baked products can also be labelled with two other dates if the bread has a shelf life of less than seven days:

- 'baked for' date – for bread that has been baked up to 12 hours before the marked date
- 'baked on' date – for bread that has been baked on the marked date.

## ACTIVITY 5.4

### TASTE TESTING DIFFERENT TYPES OF BREAD

1. Taste test a range of different types of bread, including:
   - white
   - wholemeal
   - multigrain
   - rye blend
   - sourdough
   - flatbread.

   Focus on the sensory properties – appearance, aroma, flavour, texture and sound – of each type of bread. Record your results in a table.
2. Rate the breads from the one you liked the most to the one you liked the least. Justify your ratings.
3. Predict which bread has the highest fibre content. Explain the criteria you used to make your decision.
4. With a partner, brainstorm and record why there is such a large variety of breads available today.
5. If you were responsible for buying bread for your family, which type would you choose? When writing your response, consider sensory properties, nutritional value and the way that bread is used in your home.


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# COUSCOUS

Couscous is a grain product made from semolina, the coarsely ground endosperm of wheat, with the addition of some wheat flour. It has been used as a staple food in North Africa and some Middle Eastern countries since the earliest times in recorded human history. Today, couscous is becoming more popular because it is a versatile food that makes a great alternative to pasta or rice. Couscous can be purchased as either a fine grain or as a larger pearl grain. The fine grain or 'instant' couscous is a light and fluffy grain that is perfect for serving with spicy foods or vegetable dishes and is equally delicious served as a pilaf. The precooked, instant form of couscous that is available in supermarket is much simpler to prepare than the traditional method, which involves hours of preparation.

Pearl couscous is similar to the fine grain couscous but is larger in size and the granules are slightly chewy in texture. Pearl couscous is often used as a substitute for pasta or rice and is perfect in salads and soups.

## Couscous for good health

Couscous is made from the endosperm of wheat; therefore, it is high in carbohydrate and is a good source of energy. Couscous is also high in vitamin B1 (thiamin) and vitamin B3 (niacin). Another advantage of incorporating couscous into the diet is that it is naturally low in fat.


dLibrary.com, iStockphoto/burwellphotography

**Instant couscous**


Mark Fergus Photography

**Pearl couscous**

## ACTIVITY 5.5

### GETTING TO KNOW COUSCOUS

1. Work with a partner to prepare one of the instant couscous packaged mixes available in supermarkets.
2. While the couscous is cooking, examine the packaging and record the ingredients that are included in the product.
   - a. What hints for serving have been included on the packaging?
   - b. In which country was the couscous made?
   - c. Why are the cooking instructions given in several languages?
3. Once your couscous is cooked, taste test the product. Rate the taste as excellent, very good, good, fair or unacceptable.
4. List the other ingredients that must be added to the couscous so that it cooks successfully.
5. Do you think the product would be improved by the addition of any other ingredients? What else could you add to improve the flavour of the couscous?

## TESTING KNOWLEDGE

11. Draw a flow chart that illustrates the stages in the primary and secondary processing of wheat.
12. What is no-till farming? Outline three reasons why farmers may use this method of producing grain crops.
13. Describe the main differences between wholemeal flour and cake flour.
14. What is 'gluten'? Explain why gluten is an important component of the flour that is used to make bread.
15. Outline the three aspects of the environment that need to be considered when fermenting yeast.
16. Develop a simple concept map that provides some tips for making a successful yeast dough.
17. What is bread improver, and why do many commercial bread manufacturers use it in their production process?
18. Explain why flatbreads are a popular food throughout the world.
19. Identify the type of information that is required to be included on the label of a loaf of bread to help consumers determine if it is fresh.
20. What is couscous? Identify the regions in the world where couscous is a staple food.



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## THINKING SKILLS

### Stages in producing a pizza dough

Draw a flow chart of the key steps in producing a pizza dough, including the process of fermentation.

### SWOT analysis of no-till farming

Complete a SWOT (strengths, weaknesses, opportunities and threats) analysis of no-till farming.

| Strengths | Weaknesses |
|---|---|
| Opportunities | Threats |

# Design activity 5.1

**PIZZA**

## Design brief

The school council has approached your Food Studies class to support its latest fundraising program by designing a pizza that can be sold in single portions. The school council wishes to sell the pizzas as a takeaway snack during the recess break in a few weeks' time. It has also requested that the pizza be packaged in an environmentally friendly container in support of the school's environment policy.

1 Use the information below to write a design brief for a pizza that can be served in single portions as a takeaway food item that is packaged in an environmentally friendly manner. Use the five Ws – who, what, when, where, why – as the basis of your design brief:
   - who – explain who will be purchasing the pizza
   - what – a single-portion pizza suitable to serve as a snack
   - when – describe when the pizza will be served
   - where – outline where the pizza will be sold
   - why – comment on why the pizza will help promote the school's environment policy
2 Based on the specifications in your design brief, develop five criteria to evaluate the success of your pizza.

## Investigating

1 Research recipe ideas for pizza toppings and shapes.
2 Investigate possibilities for suitable environmentally friendly packaging.

## Generating

1 Complete the recipe map that follows to design your pizza.
2 Sketch and annotate two ideas for the pizza – the toppings and the shape.
3 Select your preferred option.
4 Explain why each of your designs is appropriate to serve in single portions as a takeaway food.
5 Select an interesting name for your new pizza, and write out your recipe so it is ready for production.


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## Planning and managing

1 Write up a production plan.

2 Make a list of the aspects of the production task that rely on you and your bench partner sharing and working collaboratively.

## Producing

1 Prepare the product.

2 Record any modifications you made during production.

## Evaluating

1 Answer your five criteria for success questions in detail.

2 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your pizza. Share your pizza with two other people and record their comments.

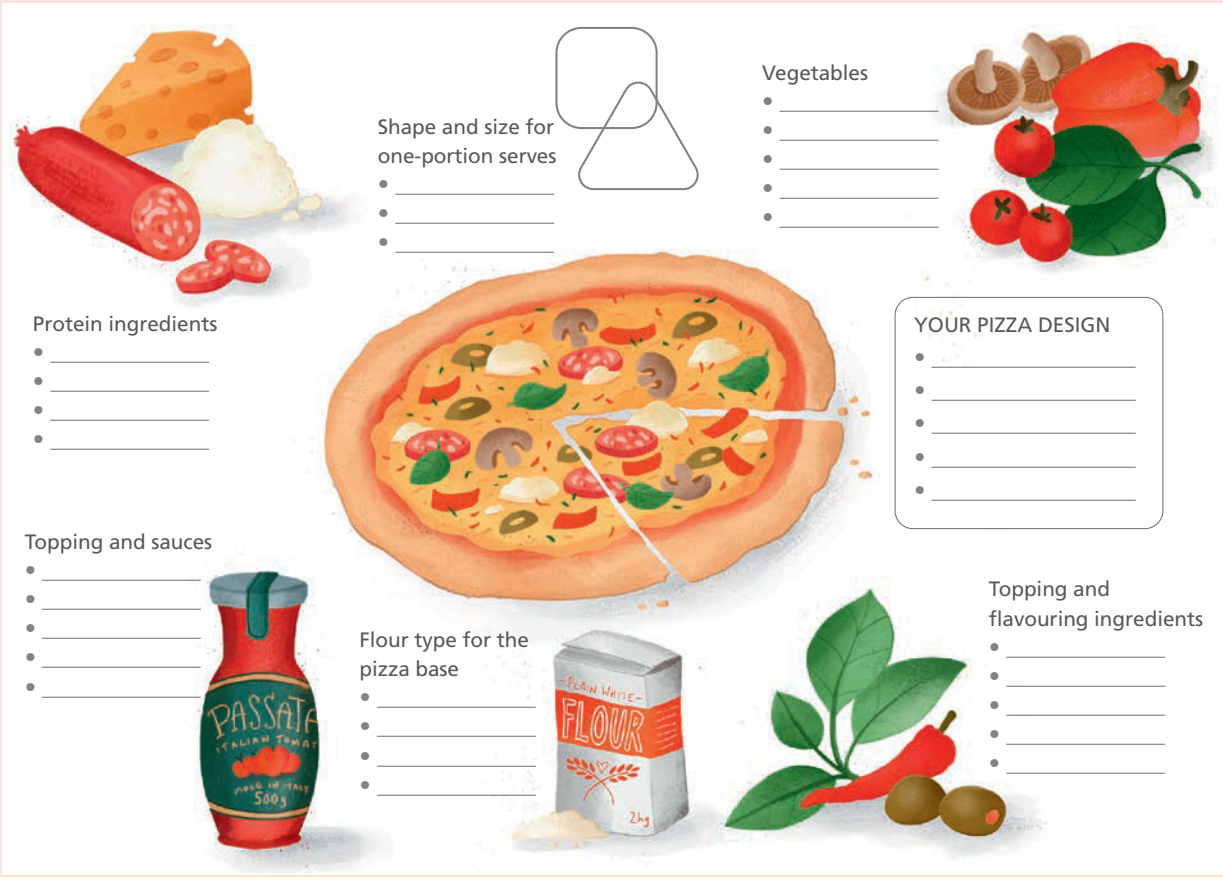
3 Was the dough base firm enough for you to eat a single serve of pizza without the topping spilling off it?

4 After the pizza was baked, was the arrangement of the topping ingredients successful, and did it look appetising?

5 Classify the ingredients of your pizza on a diagram of the *Australian Guide to Healthy Eating*. Comment on the nutritional value of your pizza.

6 Explain how the packaging for your pizza met the requirement to be environmentally friendly.

7 Based on your own experience and the comments of your two taste testers, discuss any improvements you would make to either the ingredients or the production process if you were to make the pizza again.




Nancy Chalmers Illustration

**Recipe map for pizza**

ISBN 9780170446716

# Design activity 5.2

## TEAR-AND-SHARE BREAD

### Design brief

A hand-shaped loaf of bread is often served as part of a lunch. People like sharing a pull-apart loaf because it is easy to break off a portion to eat.

1 Write a design brief based on the five Ws:
   - who – explain who will be eating the bread
   - what – a bread with a high-fibre content, an interesting flavour and a garnish
   - when – describe when the pull-apart loaf of bread will be served
   - where – outline where the bread will be served
   - why – comment on why it is important that the shape of the loaf indicates where each portion of the loaf can be torn apart.
2 After writing your design brief, develop five criteria questions from the specifications to evaluate the success of your tear-and-share loaf of bread.

### Investigating

1 Research a variety of flours, grains, vegetables, nuts and seeds that are high in dietary fibre and would be suitable to include in the bread mix.
2 Develop a list of the most desirable sensory properties of bread to help you evaluate the success and quality of your tear-and-share loaf.

Shutterstock.com/Brent Hofacker

**Tear-and-share bread**

3 Visit a local bakery, or use food magazines and recipe books, to investigate various bread shapes. Sketch loaf shapes that could be pulled apart in sections to be eaten. Evaluate how easy it would be to pull apart each loaf instead of slicing it. Rate each shape as either easy or difficult to pull apart.
4 Develop a list of ingredients that would be suitable to use as garnishes on loaves of bread.
5 Undertake a taste test of a range of bread loaves and rolls of different shapes. Rank each bread based on how easy it was to tear apart into individual serves. Record your results in a table similar to the one below.

| Type of loaf or roll | Appearance: sketch the shape and record the garnish | Texture | Flavour | Fibre content | Overall rating for tearing apart (1–5): 1 = poor; 3 = OK; 5 = excellent |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |


ISBN 9780170446716

## Generating

1. Use the Basic Bread recipe on page 111 as a starting point for your design.
2. Complete the recipe map to develop two design ideas for your high-fibre tear-and-share loaf. Sketch and annotate your designs, including a garnish for each loaf.
3. Decide which is your preferred option. Justify your selection.

## Planning and managing

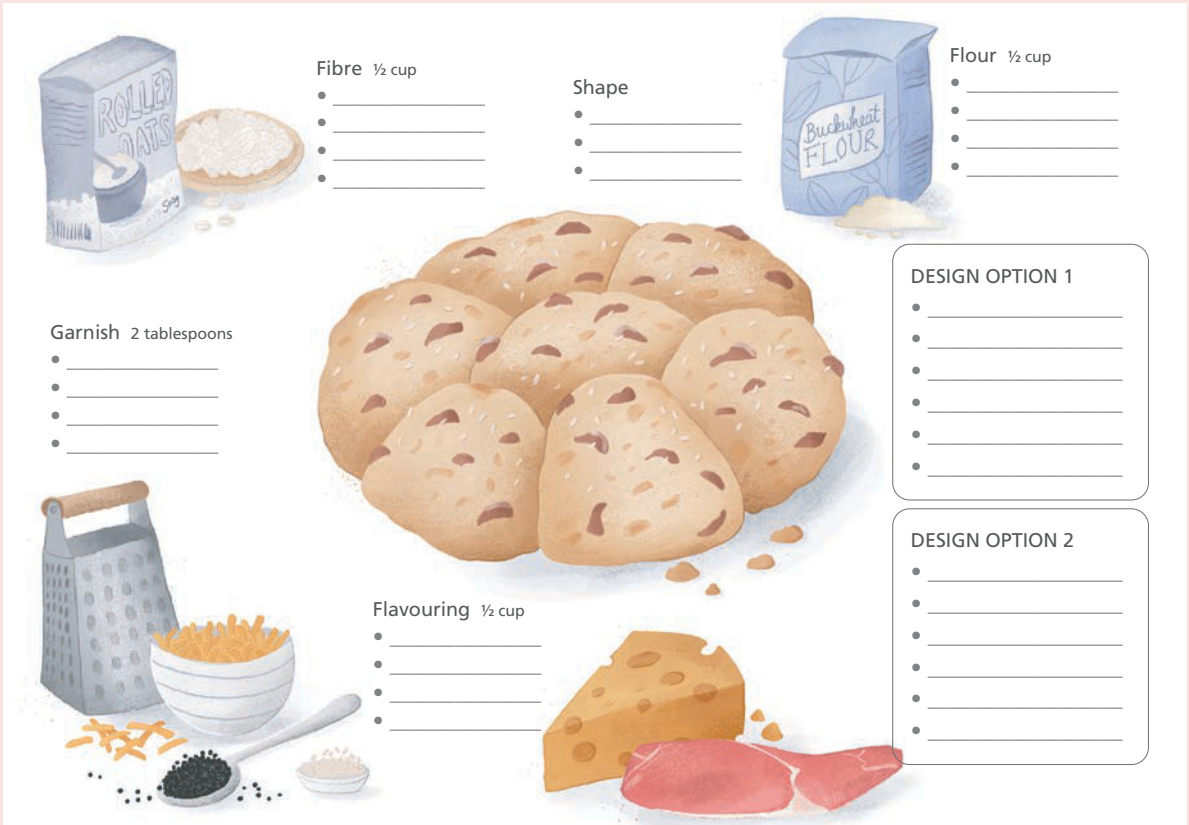
Using the information from your recipe map, prepare a food order and write up the method before making your product. Remember that the amount of moisture used in the recipe will need to be adjusted depending on which of the additional ingredients are used.

## Producing

Produce your preferred option.

## Evaluating

1. Answer your five criteria for success questions in detail.
2. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your tear-and-share loaf of bread.
3. Did the bread pull apart easily into equal portions?
4. What, in your opinion, was the most difficult aspect of the production of the bread? Explain.
5. Classify the ingredients for your pull-apart loaf on a diagram of the *Australian Guide to Healthy Eating*. Explain the health rating you would give your bread.
6. Describe a filling you could use to make an 'open sandwich' with your bread so that it better meets the recommendations of the *Australian Guide to Healthy Eating*.
7. What are some of the advantages and disadvantages of homemade bread?
8. Develop a class rating scale to evaluate the finish of students' loaves compared with those of a commercial bakery.




Nancy Chalmers Illustration

**Recipe map for a loaf of tear-and-share bread**

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# PLAIN RICE

There are four simple methods for cooking plain rice, which is ideal for serving as an accompaniment. Try each method to see which you prefer.

### RAPID BOIL

4 cups boiling water

⅔ cup long-grain rice

SERVES TWO

### ABSORPTION

1 cup water

½ cup long-grain rice

SERVES TWO

### RICE COOKER

Equal quantities of rice to water

### EVALUATION

1. Why is it necessary to stir the rice once or twice when you add it to the boiling water?
2. Explain why it is important to leave the lid on the rice when cooking by the absorption method.
3. Why is it necessary to allow the rice to stand for 5 minutes before serving when cooking by the absorption method?
4. Why does the rice increase in size once it has been cooked?
5. Describe how you can tell whether rice is cooked when using the rapid boil cooking method.

## RAPID BOIL METHOD

1. Bring the water to the boil.
2. Stir in the rice.
3. Rapidly boil uncovered for 12–15 minutes.
4. Test to see if the rice is tender by tasting a grain.
5. Drain in a strainer and serve.

## ABSORPTION METHOD

1. Bring the water to the boil.
2. Add the rice. Gently stir with a fork to separate the grains.
3. Place lid on the saucepan. Lower the heat and simmer for 12–15 minutes. Do not lift the lid during cooking.
4. Remove from heat. Keep covered with the lid and allow to stand for 5 minutes. Toss with a fork.

## RICE COOKER METHOD

1. Rinse the rice and place in the rice cooker, then add water and switch on.
2. The rice cooker will switch off when the cooking is complete. Allow the rice to rest for 10 minutes before serving. Some rice cookers have a warming element that will keep the rice warm for several hours.

## MICROWAVE METHOD

Read the instructions on the packet of rice, as cooking times vary for different varieties. Remember to check the instructions in your microwave manual, since power levels vary considerably between models.

Mark Fergus Photography



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# SUSHI ROLL



### SUSHI RICE

2 cups Koshihikari or sushi rice
2 cups water

### SUSHI SU

½ cup su (rice vinegar)
2 tablespoons sugar
pinch of salt
prepared sushi rice

### ASSEMBLING THE ROLL

ham
red capsicum
shredded egg
cucumber
avocado
pickled radish
prepared sushi su rice
4 sheets nori
wasabi paste
egg mayonnaise
soy sauce, for serving

MAKES 4 SUSHI ROLLS

## METHOD

### PREPARING THE RICE

1. Place the rice in a medium saucepan. Rinse several times with cold water until the water is clear. Drain thoroughly to remove excess starch.
2. Add the water to the rice. Stand for 10 minutes.
3. Bring to the boil. Boil for 1 minute. Turn the heat to low. Cover the saucepan tightly and simmer for 20 minutes.
4. Remove from the heat and allow to stand for 10 minutes. Do not uncover until ready; this will ensure the rice stays moist.

### PREPARING THE SUSHI SU

1. Mix all the ingredients well.
2. Transfer the freshly cooked rice to a large bowl and gently toss the rice with the sushi su. The rice is now ready to be used to fill the sushi rolls.

### ASSEMBLING THE ROLL

1. Cut filling ingredients into thin strips. Place half a sheet of nori onto a bamboo mat. Allow one edge to hang over the edge furthest away from you by about 1 centimetre.
2. Place a band of sushi rice in the centre of the nori. Spread evenly.
3. Place filling ingredients in layers across the centre of the rice to form a long band from left to right.
4. Use the mat to roll up the sushi, rolling away from you. Press down firmly.
5. Remove the mat from the roll. Leave whole or cut into equal-sized serving portions.
6. Serve with soy sauce.

### EVALUATION

1. Why is a short-grain rice used to prepare sushi?
2. Explain why you need to rinse the rice several times in cold water before using it in this recipe.
3. Why is it important to make sure the lid is not removed from the rice while it stands for 10 minutes after cooking?
4. What other ingredients could be used to fill the sushi other than those suggested in the recipe?
5. Discuss why sushi is considered to be a healthy snack or lunch food.

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# RED CABBAGE AND CASHEW BIRYANI

5

## SPICE MIX

1 teaspoon coriander seeds
1 teaspoon cumin seeds
½ teaspoon dried chilli flakes
½ teaspoon brown mustard seeds
½ teaspoon black peppercorns
2 cardamom pods, seeds extracted

## BIRYANI

200 millilitres coconut milk
400 millilitres water
1 tablespoon coconut oil
½ onion, finely sliced
2 cloves garlic, crushed
½ leek, white part only, thinly sliced
⅙ red cabbage, finely shredded
⅔ cup white basmati rice, rinsed and drained
⅓ cup cashew nuts
⅓ cup raisins
¼ teaspoon salt
black pepper

## TO SERVE

½ long red chilli, deseeded and finely sliced
1 tablespoon coriander, chopped
2 tablespoons plain Greek-style yoghurt

## METHOD

1. Preheat the oven to 210°C.
2. Place the spices in a small frying pan and toast them over a low heat for 2–3 minutes until fragrant. Remove from the heat and grind the spices coarsely using a pestle and mortar or spice grinder. Set aside.
3. Place the coconut milk and water in a small saucepan. Heat over a moderate heat until almost boiling. Remove from heat and stir until smooth.
4. Heat the coconut oil in a frying pan over a moderate heat.
5. Add the onion, garlic, leek and cabbage and sauté gently until tender, stirring frequently.
6. Add the ground spice mix and cook for a further 2 minutes until aromatic.
7. Spoon the vegetable and spice mixture into a casserole or oven-proof dish. Sprinkle the rice, cashews and raisins evenly over the vegetables. Season with salt and pepper.
8. Pour the hot coconut milk and water over the vegetables and rice. Ensure the vegetables and rice are covered with the liquid.
9. Cover tightly with a lid or foil. Place in the preheated oven and cook for 25 minutes.
10. Remove from the oven – make sure you do not lift the lid. Leave to stand for 5 minutes.
11. Remove the lid and fluff up the rice with a fork. Serve with sliced red chilli, coriander and plain Greek-style yoghurt.

**NOTE: You could use 1½ tablespoons of mild or medium commercial curry paste if you do not have time to make your own spice mix.**

Mark Fergus Photography

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the recipe.
2. Explain why it is necessary to leave the lid on the rice when cooking by the absorption method.
3. Why does the rice increase in size once it has been cooked?
4. Explain why foods in the grains and vegetable sections of the *Australian Guide to Healthy Eating* are considered to be an important part of a healthy diet.
5. Classify the ingredients for the recipe on a diagram of the *Australian Guide to Healthy Eating*. Explain how well it meets the recommendations of this food selection model.


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# BASIC BREAD

2½ cups bread flour
1½ teaspoons freeze-dried yeast
1¼ teaspoons bread improver
½ teaspoon salt
½ teaspoon sugar
½ teaspoon oil
200–250 millilitres warm to hot water
water spray
canola oil spray for greasing tray

MAKES 1 LOAF

## METHOD

1. Preheat oven to 230°C.
2. Sift all dry ingredients together. Mix in the oil and approximately two thirds of the hot water to make a moist dough. Gradually add the remaining water, if required.
3. Cover the surface with plastic wrap and leave in a warm place to prove and double in size.
4. Turn out onto floured board and lightly knead into a smooth dough.
5. Make into the desired shape and place on greased tray. Leave shaped loaf or rolls to double in size. Lightly cover with oiled plastic wrap.
6. Spray lightly with water.
7. Bake in a preheated oven for 15–20 minutes or until golden brown.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the bread you have produced.
2. List the three environmental factors that are essential to ensure that a yeast dough rises.
3. Why is it necessary to prove a yeast dough?
4. Explain why a yeast dough is kneaded before shaping.
5. Discuss why bread is classified into the grains (cereal) foods of the *Australian Guide to Healthy Eating*.

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# MULTIGRAIN BATARD

5

1½ cup white bread flour
½ cup multigrain flour
½ teaspoon salt
¼ teaspoon sugar
1 teaspoon dried yeast
1 cup warm water
canola oil spray for greasing tray
2 teaspoons milk for glaze
poppy or sesame seeds

MAKES 1 LOAF

## METHOD

1. Preheat oven to 220°C.
2. Sift flours, salt, sugar and yeast into a large bowl and make a well in the centre.
3. Add the warm water all at once and mix to a soft dough using a spatula.
4. Turn onto a lightly floured board and knead for 8–10 minutes, until dough is smooth and elastic.
5. Use the palm of your hand to form the dough into a rough oval.
6. Turn the dough so that the long edge is facing you; fold in one third of the dough towards the centre and gently press along the edge. Bring the opposite long edge of the dough to the centre so that it meets the first edge and press down gently.
7. Next, fold one half on top of the other and press the dough down gently to seal the edges.
8. Lightly flour your hands and gently pat the dough out to form a plump oval. Place the loaf on a baking tray with the seam side down.
9. Score the top once with a cut lengthwise. Lightly cover with a clean tea towel or oiled plastic wrap and allow to prove in a warm place for 20 minutes.
10. Carefully brush with the milk and sprinkle with topping seeds.
11. Bake in the preheated oven for 25–30 minutes or until loaf is golden brown and sounds hollow when tapped.

Mark Fergus Photography

## EVALUATION

1. Explain why it is important to sift the dry ingredients before mixing in the liquid.
2. What would happen if cold water was used instead of warm water when making the dough?
3. Explain why it is necessary to prove and knead the bread dough.
4. Describe the tests used to decide if the batard loaf was cooked.
5. Explain why the Multigrain Batard would be a better choice than a loaf of white bread according to the guidelines of the *Australian Guide to Healthy Eating*.


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# FLATBREADS

## PITA BREAD

1 cup unbleached flour

1 teaspoon freeze-dried yeast

½ teaspoon gluten flour

½ teaspoon salt

¼ teaspoon sugar

½ cup warm to hot water

MAKES 4

## NAAN

1 cup self-raising flour

1 tablespoon plain yoghurt (live if possible)

½ teaspoon salt

65 millilitres (approximately) lukewarm water

MAKES 4

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## METHOD

### PITA BREAD

1. Sift dry ingredients, add water and mix into a soft dough.
2. Cover surface of dough with plastic food wrap and rest in a warm place for 10–15 minutes to prove.
3. Turn onto a floured board and lightly knead. Divide into four portions.
4. Form each portion into a ball. Roll each ball into a circle approximately 14 centimetres in diameter. Allow to rest on the bench for 5 minutes so that a slight skin forms.
5. Preheat grill on high.
6. Cook pita bread, one at a time, under hot griller for approximately 1–2 minutes, until it puffs up and lightly browns.
7. Turn and cook other side.
8. Allow to cool, then fill with accompaniments.

### NAAN

1. Put the flour, yoghurt and salt into a mixing bowl. Add the lukewarm water, a little at a time, working the mixture into a soft, slightly sticky dough with your fingers.
2. Cover with a damp tea towel and leave in a warm spot for the dough to ferment for 30–45 minutes.
3. Divide dough into four pieces and roll each into a ball. Roll out each ball onto a floured surface into an oval 20–23 centimetres long and 0.8 centimetres thick.
4. Preheat the griller on high. Grill the naans until they puff up and are speckled with brown spots, then turn over and cook the other side. (Naans cook very quickly, so keep watching them.)
5. Serve warm.

## EVALUATION

1 Draw up a table similar to the one below to record the similarities and differences in the sensory properties of the homemade flatbreads and some commercial flatbreads.

| Type of flatbread | Appearance | Aroma | Flavour | Texture | Sound |
|---|---|---|---|---|---|
| Homemade pita bread | | | | | |
| Commercial pita bread | | | | | |
| Homemade naan bread | | | | | |
| Commercial naan bread | | | | | |

2 Discuss the skills involved in the production of the flatbreads you made. What aspects of the production were difficult?

3 What are the advantages of the homemade flatbreads?

4 Of all the flatbreads you tested, which product did you like best? Why?

5 Suggest a range of fillings or toppings that could be used with any of the flatbreads that you evaluated to enable the filled flatbread to successfully meet the recommendations of the *Australian Guide to Healthy Eating*.



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# PIZZA BASES

5

Pizza bases can be high and fluffy, like a bread crust, or thin and crisp. These recipes are for the thin, crispier style and have a higher fibre content than white, fluffier bases. Try one or the other with your favourite toppings.

### WHOLEMEAL PIZZA DOUGH

½ cup flour
½ cup wholemeal flour
1 teaspoon dried yeast
¼ teaspoon salt
¼ teaspoon sugar
1 teaspoon olive oil
100–125 millilitres warm water
1 tablespoon semolina

MAKES 1 MEDIUM PIZZA BASE

## METHOD

### WHOLEMEAL PIZZA DOUGH

1. Preheat oven to 210°C.
2. Sift the flours, yeast, salt and sugar into a medium bowl. Add the oil to the warm water, then mix into dry ingredients. Cover the surface of the dough with oiled plastic wrap and leave to prove for 10–15 minutes in a warm place.
3. Turn onto lightly floured board and knead lightly. Roll dough into the shape of the pizza tray.
4. Oil pizza tray and sprinkle with semolina then oil fingers and spread dough to fit the size of the tray.
5. Add toppings and bake in the preheated oven for 15–20 minutes.

### POLENTA (CORNMEAL) PIZZA DOUGH

1 cup flour
⅓ cup fine polenta (cornmeal)
2 teaspoons dried yeast
1 teaspoon sugar
1 teaspoon salt
⅓ cup warm milk
½ cup warm water
1 tablespoon olive oil

MAKES 1 MEDIUM PIZZA BASE

## METHOD

### POLENTA (CORNMEAL) PIZZA DOUGH

1. Preheat oven to 210°C.
2. Sift the flour, polenta, yeast, sugar and salt into a medium bowl. Mix in milk, water and oil. Cover the surface of the dough with plastic wrap and leave to prove for 10 minutes in a warm place.
3. Turn onto lightly floured board and knead lightly.
4. Oil pizza tray, then oil fingers and spread dough onto tray.
5. Add toppings and bake in the preheated oven.

## EVALUATION

1. What are the three ideal environmental conditions yeast requires to grow?
2. Describe the physical changes that occur to the dough during the proving process.
3. Why is it important to knead a yeast dough after the proving process?
4. Which ingredients in these pizza base recipes are good sources of fibre?
5. Describe the sensory properties of a 'good' pizza base.


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# NAPOLI SAUCE

Napoli sauce is a concentrated tomato sauce from Italy. This rich, flavoursome sauce is used as a base for many pizzas. It is spread over the dough base before other toppings are added. Traditionally, fresh tomatoes are used; if in season, they have wonderful colour and flavour. However, canned tomatoes are a suitable alternative. This recipe is suitable to spread on a pizza base or to serve with freshly cooked pasta.

2 teaspoons olive oil

½ small onion, finely diced

1 clove garlic, crushed

1 cup canned diced tomatoes or passata

½ teaspoon dried basil

¼ teaspoon salt

pepper

½ teaspoon sugar

MAKES SAUCE FOR 2 MEDIUM PIZZAS OR ONE SERVE OF PASTA

## METHOD

1. In a small saucepan, heat the oil and sauté or gently fry onion and garlic until they are transparent.
2. Add the tomatoes, basil, salt and sugar and cook in an uncovered pan until the sauce thickens.
3. Season with the salt and pepper, to taste.
4. Cool before spreading on pizza base.

## EVALUATION

1. Name the cooking process in which onion is fried until it is transparent.
2. Discuss two safety rules to follow when cooking on the stovetop.
3. What causes the sauce to thicken in step 2 of the recipe? Why is the Napoli Sauce cooled before it is spread on the pizza base?
4. What are some other herbs that could be used in this recipe?
5. Suggest some commercially available products that could be used on top of a pizza instead of making the sauce from scratch. Discuss the nutritional advantages of making a Napoli Sauce rather than using a commercial product.

Mark Fergus Photography



ISBN 9780170446716

# ROASTED VEGETABLE PIZZA

**Vegetables roasted in the oven develop a delicious brown crust, their flavour is intensified, and their texture is softened, making them a tasty topping for a pizza. Root vegetables such as potato, sweet potato and parsnip are particularly good roasted, and pumpkin, mushrooms, eggplant, zucchini and garlic contribute a range of colour, textures and flavours to the end product.**

½ potato
150 grams sweet potato
150 grams pumpkin
¼ parsnip
¼ zucchini
¼ red capsicum
⅙ eggplant
2 mushrooms
1 clove garlic, peeled
1 tablespoon olive oil
salt and pepper
1 quantity wholemeal or polenta pizza base
½ quantity Napoli sauce or ⅓–¼ cup commercial equivalent
60 grams cheddar cheese, grated

MAKES 1 MEDIUM PIZZA

## METHOD

1. Preheat oven to 210°C.
2. Wash all the vegetables except the mushrooms. Wipe the mushrooms with a clean, damp cloth.
3. Peel the potato, sweet potato, pumpkin and parsnip and cut into 1–2-centimetre cubes.
4. Cut the zucchini, capsicum and eggplant into similar-sized cubes. Cut the mushrooms in half.
5. Combine all the vegetables and the clove of garlic in a bowl and toss in the olive oil.
6. Cover a baking tray with a sheet of baking paper and lay out vegetables in a single layer. Season with salt and pepper.
7. Bake for 20–30 minutes or until vegetables are tender.
8. Roll out the pizza base thinly and spread with the tomato sauce.
9. Cover with a layer of roasted vegetables, then sprinkle on the cheese.
10. Bake in the preheated oven for 10–15 minutes or until the pizza crust is golden brown.

## EVALUATION

1. Identify the vegetables in the recipe that could be described as root vegetables.
2. What are the benefits of roasting vegetables rather than boiling them?
3. Explain why the Napoli sauce and grated cheese are essential in the making of the pizza.
4. Why are pizzas baked in a hot oven?
5. Discuss why the Roasted Vegetable Pizza would receive a better health rating than an Aussie pizza.

Mark Fergus Photography



ISBN 9780170446716

# CALZONE

A calzone, or Italian pocket pizza, is a half-moon-shaped pizza with the filling folded inside a pocket of pizza crust. It is usually made as an individual serve and with a range of filling ingredients such as meats, vegetables and cheese. The cheese is either bocconcini or mozzarella, both of which are stretchy cheeses when heated. A calzone can be baked or deep-fried.



## DOUGH

1 cup bread flour
1 teaspoon dried yeast
¼ teaspoon sugar
½ teaspoon salt
⅓ cup warm water
1 tablespoon olive oil

## FILLING

1 teaspoon olive oil
¼ medium onion, finely chopped
1 clove garlic, crushed
1 medium Roma tomato, chopped, or ⅓ cup diced, canned tomatoes
1 tablespoon fresh basil, chopped
2 slices mild salami, sliced
2 small bocconcini, sliced, or 2 slices mozzarella cheese
2 teaspoons milk for glaze

MAKES 2 CALZONES

## METHOD

1. Sift the flour, yeast, sugar and salt into a large bowl. Stir in oil and warm water and mix to a dough.
2. Knead dough on floured surface until smooth and elastic.
3. Place dough in an oiled bowl, cover with plastic wrap and stand in a warm place for 15–20 minutes.
4. Preheat the oven to 200°C.
5. Heat oil in a pan and fry onion and garlic until soft.
6. Add tomatoes and cook until the liquid has evaporated.
7. Remove from heat and add basil and salami. Allow mixture to cool.
8. Turn dough onto a floured surface, cut in half and roll each half into the shape of a dinner plate.
9. Cover half of the round with the filling mixture, top the mixture with cheese and fold the top half over to enclose the filling. Dampen one edge with a little milk or water to help keep the dough closed.
10. Roll and twist the edges closed to seal the calzone.
11. Place each calzone on a greased tray and glaze with milk. Cut two slits in the top to vent the dough. Bake in the preheated oven for 20 minutes or until well browned.

## EVALUATION

1. Why does the Calzone's design make it ideal as food to be eaten 'on the run'?
2. Explain why the filling is cooled before being wrapped in the dough.
3. What may happen if you forget to cut slits in the dough before baking?
4. Discuss any changes would you make to the filling ingredients if you made this recipe again.
5. Classify the ingredients for the Calzone on a diagram of the *Australian Guide to Healthy Eating*. Comment on the health rating you would give this recipe.

Mark Fergus Photography

ISBN 9780170446716

# 6 VEGETABLES AND LEGUMES

## KEY KNOWLEDGE

- Vegetables and legumes/beans in the *Australian Guide to Healthy Eating*
  - Vegetables and legumes for good health
  - How many vegetables and legumes should I eat?
- The importance of dietary fibre in your diet
- Classification of vegetables
  - Eating the rainbow
- Cooking vegetables
  - Top tips for cooking vegetables
- Orange vegetables: sweet potatoes
  - Nutrition
  - Storage
  - Selecting the best
- Green vegetables: green beans
  - Nutrition
  - Selecting the best
- White vegetables: potatoes
  - Nutrition
  - Selecting the best
  - Storage
  - Potato varieties and their uses
  - Characteristics of potatoes
  - Methods of cooking potatoes
- Preparing vegetables safely
- Pre-prepared vegetables and salad mixes
  - Packaging pre-prepared vegetables and salad mixes
  - What are the advantages and disadvantages for consumers in purchasing 'short cut' products?
  - Preventing kitchen leftovers from going to landfill
- Legumes
  - Nutrition
  - Growing legumes sustainably

## KEY TERMS

**cruciferous** a diverse family of vegetables that includes broccoli, cauliflower, cabbage, Brussels sprouts, bok choy, kale and spinach

**legumes** the seeds from the *Leguminosae* family. These vegetables are eaten in the immature form as green peas and beans, and in the mature form as dried peas, beans, lentils and chickpeas

**modified atmosphere packaging (MAP)** a system that changes or modifies the atmosphere or gas inside a package, in order to extend the shelf life of the food

**solanine** a toxin that develops when potatoes are exposed to light, resulting in a green colour on all exposed surfaces

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food and fibre production
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking

### CROSS-CURRICULUM PRIORITIES

- Sustainability





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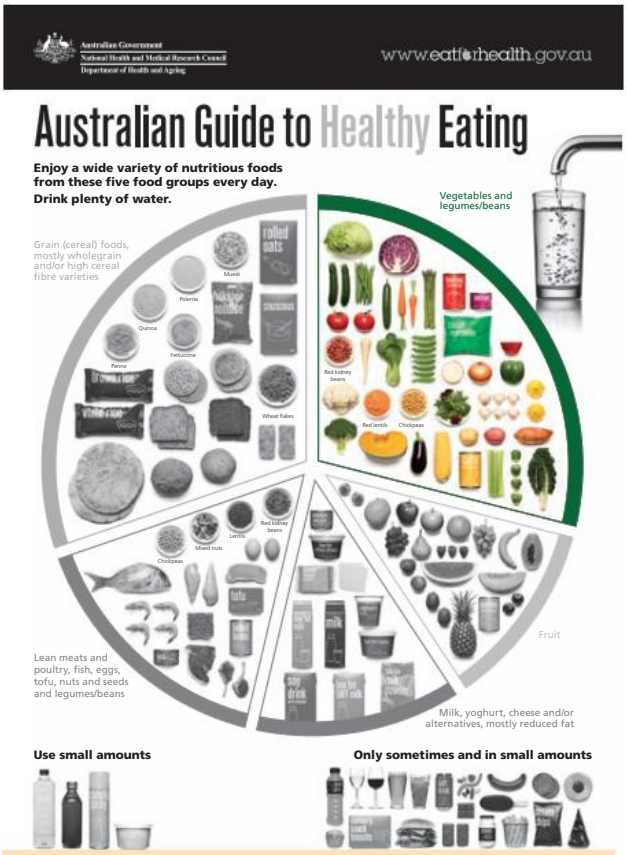
# VEGETABLES AND LEGUMES/BEANS IN THE *AUSTRALIAN GUIDE TO HEALTHY EATING*

Vegetables and legumes/beans is one of the largest segments of the *Australian Guide to Healthy Eating* and should make up most of your plate. They are nutrient-dense plants that can be eaten raw or cooked and help to make our daily diet interesting.




**The place of vegetables and legumes/beans in the *Australian Guide to Healthy Eating***



## Vegetables and legumes for good health

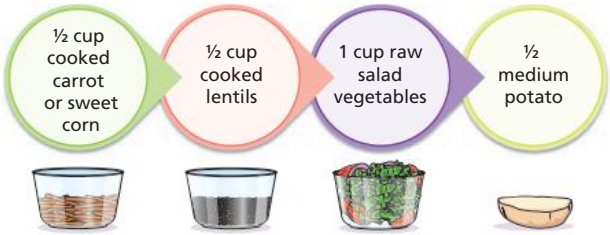
Vegetables and legumes are a valuable source of dietary fibre, which is necessary for a healthy digestive system. They are low in fat and high in vitamins and minerals. Legumes are rich in vegetable protein, carbohydrate, iron and zinc and therefore provide a great nutritional alternative to meat. Dark-green, leafy vegetables and orange and red vegetables supply vitamin A, which helps to repair and maintain tissue and assists with night vision. Dark-green vegetables, such as silverbeet and broccoli, provide some of the iron that the body needs to help transport oxygen. Green vegetables and dried peas and beans are good sources of folate. Vegetables also contain a range of other minerals, including magnesium, zinc and calcium. Vegetables are 70 to 95 per cent water, so most do not contribute many kilojoules to the daily energy intake. Legumes and vegetables such as potatoes and sweet potatoes are high in starch and are a good source of energy. However, when potatoes are cooked in a lot of fat, they soak it up like a sponge. Consequently, potatoes crisps and chips are concentrated sources of energy and should be eaten only occasionally.

Vegetables and legumes have a low energy density so a diet high in a variety of these important foods will assist with weight management and reduce the risk of obesity. Eating a variety of vegetables and legumes each day may help to prevent some chronic diseases such as heart disease and some cancers.

## How many vegetables and legumes should I eat?

| | Serves per day | |
|---|---|---|
| | **12–13 years** | **14–18 years** |
| Boys | 5.5 | 5.5 |
| Girls | 5 | 5 |

### What is a serve of vegetables?




### Are we eating enough?

Alarmingly, in 2017, a CSIRO survey of 180,000 people – the 'CSIRO Healthy Diet Score' survey – collected information on the number of serves of vegetables males and females ate on a regular basis. The results of this survey showed that only about 30 per cent of respondents ate at least five servings of vegetables daily in line with the recommendations of the *Australian Dietary Guidelines*.

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**Percentage of people who meet the requirements of the *Australian Dietary Guidelines* for vegetable consumption**

# THE IMPORTANCE OF DIETARY FIBRE IN YOUR DIET

Dietary fibre is a type of carbohydrate that is essential to good health. Foods that are high in dietary fibre have been shown to help lower blood cholesterol, reduce glucose absorption and prevent diseases of the bowel such as constipation and diverticulitis. High-fibre foods can also help you to control your weight because they provide greater satiety (that is, make you feel full for longer). Health professionals recommend that adults should consume approximately 25–30 grams of dietary fibre each day. Unfortunately, most Australians do not include enough dietary fibre in their diets, consuming only 18–25 grams of fibre daily.

Dietary fibre is found in the cell walls of all plant foods, such as fruits and vegetables, peas, beans and cereals. Foods that have a high level of dietary fibre are usually low in fat, salt and sugar.

There are two main types of dietary fibre: insoluble dietary fibre and soluble dietary fibre. The body is unable to digest or absorb insoluble dietary fibre, but it is nevertheless crucial to include it in your daily meals because it adds bulk to the diet and helps to eliminate the waste material from your body. By helping food pass through the digestive system more quickly, insoluble dietary fibre helps to maintain your bowel health and prevents you from becoming constipated. A diet high in insoluble dietary fibre is also known to increase the number of good bacteria, or intestinal flora, that live in your gut. These good bacteria help to prevent serious diseases of the bowel such as bowel cancer.

Insoluble dietary fibre is found in a wide range of vegetables. The table below lists the amount of insoluble dietary fibre found in some popular vegetables.

| Vegetable | Insoluble fibre (raw) per 100 grams (g) |
|---|---|
| Beans | 2.7 |
| Broccoli | 4.1 |
| Capsicum | 0.9 |
| Carrot | 3.3 |
| Cauliflower | 1.8 |
| Celery | 1.8 |
| Cucumber | 1.1 |
| Eggplant | 2.3 |
| Lettuce | 1.7 |
| Mushroom | 2.5 |
| Onion | 1.5 |
| Parsnip | 2.5 |
| Peas | 2.3 |
| Potato | 1.7 |
| Pumpkin | 1.5 |
| Spinach | 2.7 |
| Sweet corn | 4.5 |
| Sweet potato | 2.0 |
| Tomato | 1.2 |
| Zucchini | 1.6 |

Soluble dietary fibre is found in oatmeal, legumes and the bran from rice and barley. One of the most important functions of soluble dietary fibre is to help to reduce blood cholesterol levels. It has also been found to be helpful in managing diabetes by stabilising blood glucose levels.


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# CLASSIFICATION OF VEGETABLES

Vegetables can be classified according to either the way they grow, their structure or the part of the plant that is eaten.

## Eating the rainbow

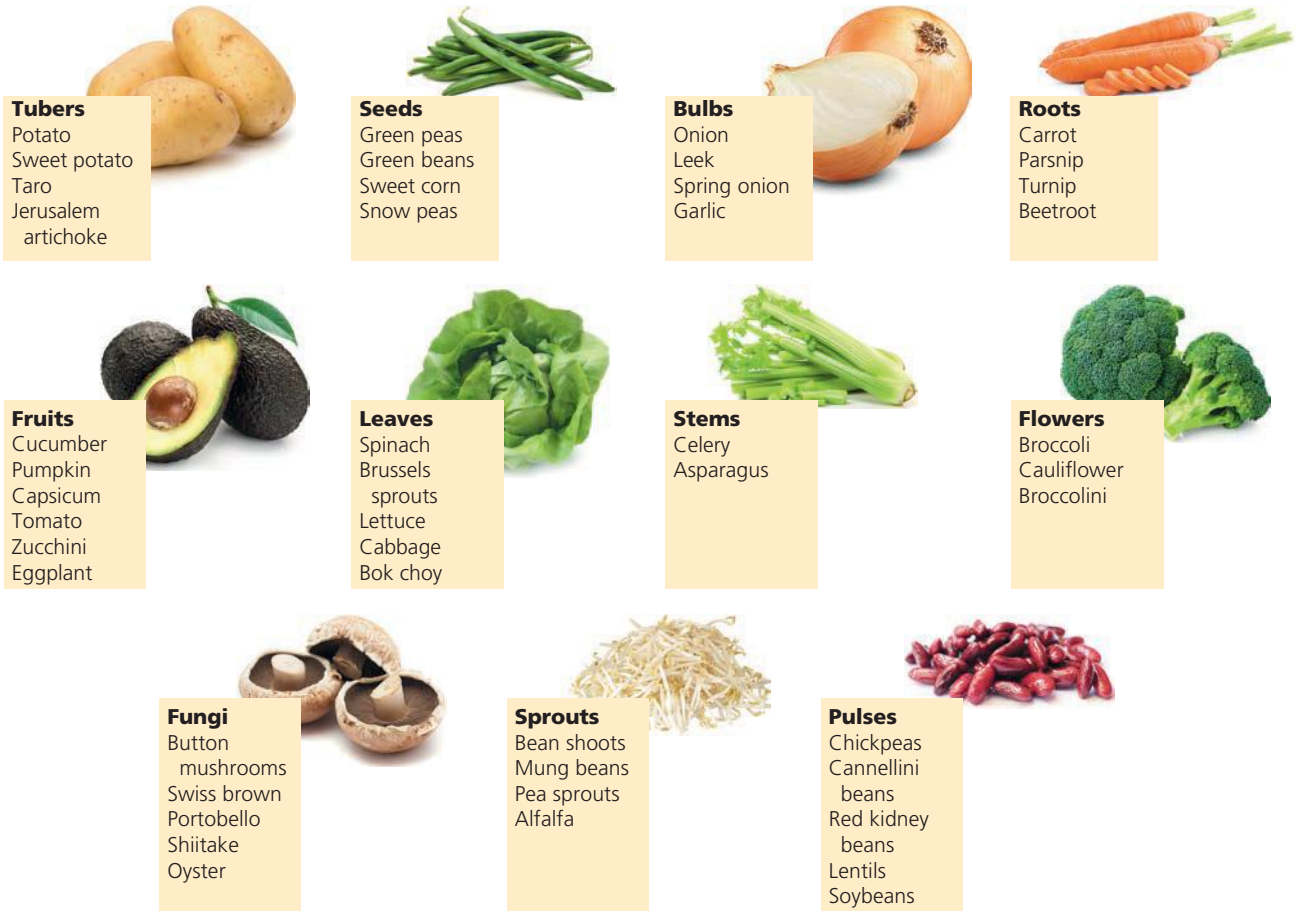
Vegetables can also be classified according to the colours of the rainbow. If you choose vegetables in all the colours of the rainbow, you will consume a wide range of nutrients that are essential for good health. Vegetables make meals more interesting because they contribute a variety of colours, flavours and textures. The varying colours in vegetables are due to different pigments, for example:

- *chlorophyll* produces a green colour
- *carotenoids* produce orange and yellow colours
- *anthocyanins* produce red, purple and blue colours
- *lycopene* produces red colours.

## What's in a colour?

Guideline 2 of the Australian Dietary Guidelines encourages us to enjoy 'plenty of vegetables, including different types and colours, and legumes/beans'. To achieve this, over one week you should try to include the following vegetables in your diet:

- dark-green or **cruciferous** vegetables such as broccoli, cauliflower, cabbage, Brussels sprouts, bok choy and spinach. They were originally named 'cruciferous' because their flowers have four petals in the shape of a cross
- orange vegetables such as sweet potato, pumpkin and carrots
- salad vegetables such as lettuce, tomato, cucumber and capsicum
- starchy vegetables such as potatoes, sweet potatoes, taro and corn
- legumes such as dried peas, beans, lentils and chickpeas.




**Classification of vegetables**





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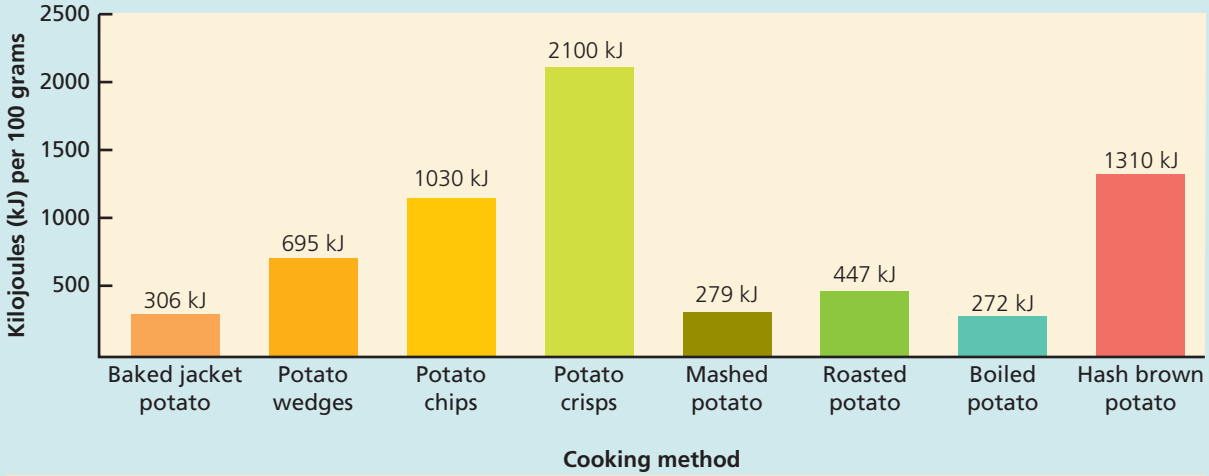
## ACTIVITY 6.1

### THINKING ABOUT VEGETABLES

Sketch and colour a food rainbow.

1 Annotate the rainbow with as many vegetables as you can think of for each colour.
2 Share your list of vegetables with other class members and add to your list after the discussion. Which colour had the greatest variety of vegetables?
3 Identify the two vegetables you like most and the two you like least. Compare your choices with those of other class members and then explain why there are similarities and differences in your choices.
4 Which vegetables can be eaten raw and which are more enjoyable cooked?
5 Which colour of vegetables would be a good source of iron in a diet?
6 Suggest some vegetables you could eat to boost vitamin A in your diet.

Look at the graph below to answer the following questions.




**Energy value for 100-gram portions of potatoes**

7 Why do you think potato crisps have such a high energy value?
8 Considering your answer to question 7 above, why should potatoes cooked this way be eaten only occasionally?
9 Baked potatoes have a lower energy value than roasted potatoes. Explain how the differences in the cooking methods of baking and roasting may account for this.
10 Why do mashed potatoes have a higher energy value than boiled potatoes?

# COOKING VEGETABLES

Preparing and cooking vegetables changes their appearance, aroma, flavour, texture and, sometimes, their nutrients.

## Top tips for cooking vegetables

1 After washing, vegetables should be peeled and trimmed lightly, because many nutrients are found just under the skin.
2 The heat applied during cooking can intensify flavours and soften the texture of vegetables so that they are more enjoyable to eat.
3 The processes of baking and frying cause some vegetables, such as onions and potatoes, to caramelise and coverts the starch to dextrin, making them more appealing to many people.
4 The processes of boiling and steaming should be carried out until the vegetables are just cooked to avoid loss of water-soluble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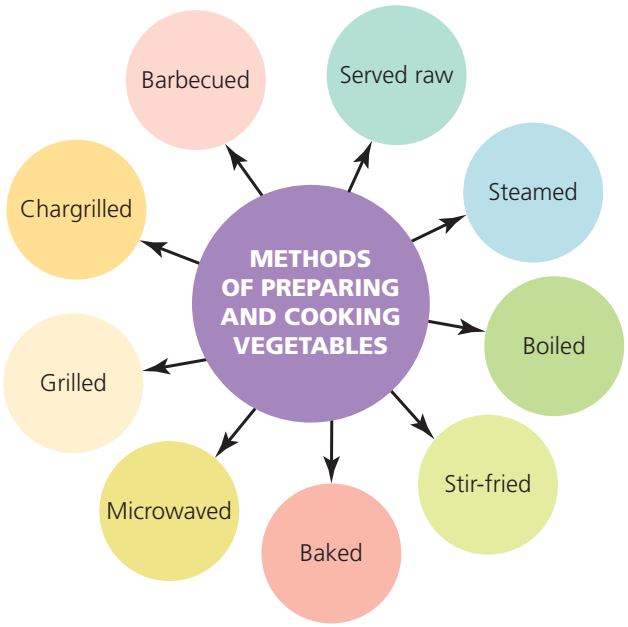
nutrients, such as vitamin C, and to prevent vegetables, particularly greens, from losing their colour.

5 Microwaving is a quick cooking process that minimises nutrient loss and allows vegetables to maintain their colour.




**Methods of preparing and cooking vegetables**

## ACTIVITY 6.2

### WHAT'S IN THE BOX?

1 Search the internet to find out at least 12 facts about a vegetable of your choice.

2 Your research should cover:
- growing the vegetable – how, where, season
- nutrient value – highlight the main nutrients
- sensory properties – raw and/or cooked
- suitable dishes/recipes using the vegetable
- other interesting facts.

3 Present your information on the six sides of a small box. Write at least two facts about your vegetable – without naming it – on each side of the box. Place a drawing or the name of your vegetable inside the box, where it cannot be seen.

4 With your class members as the audience, read out the information on your vegetable so they can guess what it is.

## TESTING KNOWLEDGE

1 Create a mind map to highlight the nutrients present in different types of vegetables.

2 Discuss why including vegetables in the diet helps with weight management.

3 How many serves of vegetables a day are recommended for your diet?

4 Suggest some reasons why research shows that only 34 per cent of adults meet the recommended serving suggestion in the *Australian Dietary Guidelines* for vegetable consumption.

5 Explain why dietary fibre is required for good health.

6 Explain the difference between soluble and insoluble fibre and the importance of each type for good health.

7 What creates different colours in vegetables? Provide two examples.

8 Discuss the reasons for cooking some vegetables.

9 Explain how baking and frying can improve the appeal of some vegetables.

10 Why is microwaving a good method of cooking vegetables?

# ORANGE VEGETABLES: SWEET POTATOES


iStock.com/fotogal

Sweet potatoes are native to Central America and were among the foods brought back to Europe by Christopher Columbus in the 15th century. They are now grown around the world. The sweet potato is a large, edible root or tuber with a lumpy, pale, pinky-yellow skin that hides delicious orange flesh. It can be baked, fried, mashed or combined with other ingredients to make interesting vegetable dishes.

## Nutrition

Sweet potatoes are high in carbohydrates and vitamins A and C.



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## Selecting the best

When buying sweet potatoes, select those that are small to medium in size with smooth, unbruised skin.

## Storage

Sweet potatoes should be stored in a similar way to potatoes – in a cool, dry, dark place. They will keep for three to four weeks.

# GREEN VEGETABLES: GREEN BEANS

iStock.com/loops7

The most common fresh bean varieties in supermarkets and markets are green beans, broad beans and runner beans. Snake beans, which are very long with dark-brown tips, are the most popular in Asian-style cooking. Some of the green bean harvest undergoes secondary processing so that consumers can purchase beans frozen, canned or dried.

## Nutrition

Fresh green beans should be cooked quickly to retain their vitamins A and C.

## Storage

Fresh green beans can be stored in a plastic bag in a refrigerator for up to four days.

## Selecting the best

Fresh green beans should have a bright green, slightly glossy appearance and snap cleanly when broken in half. Beans that bend, are wrinkled or have some discoloured spots have poor flavour and texture.

## ACTIVITY 6.3

### COOKING GREEN BEANS

#### Aim

To compare the flavour, texture and colour of fresh green beans cooked by different methods.

#### Ingredients

- 6 fresh green beans per test
- 1 teaspoon of oil

#### Equipment

Study the results table and determine the equipment list required for the test.

#### Method

1. Wash and cut the tops and tails of all the beans.
2. Use a vegetable knife to slice each bean on a 45° angle.
3. Prepare the cooking equipment for each test.

#### Results

| | Flavour | Texture | Colour |
|---|---|---|---|
| Boil beans in 2 cm water with lid on. Cook 4 minutes. | | | |
| Boil beans in 2 cm water with lid off. Cook 4 minutes. | | | |


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| | | | |
|---|---|---|---|
| Steam beans with lid on. Cook 4 minutes. | | | |
| Microwave beans with 1 tablespoon water in covered container. Cook 1 minute 30 seconds. | | | |
| Stir-fry beans in 1 teaspoon oil. Cook for 2 minutes. | | | |

### Analysis

1 Which cooking method produced beans with the best flavour?
2 Which cooking method produced beans with the best texture?
3 Which cooking method produced beans with the best colour?
4 Which cooking method would retain the most nutrients in the fresh beans?
5 Which cooking method would be the least healthy way of cooking fresh beans?

### Conclusion

What was the best cooking method to achieve good flavour, texture and colour in fresh green beans?

# WHITE VEGETABLES: POTATOES


Shutterstock.com/Robyn Mackenzie

Potatoes were grown by the ancient Incas in South America and introduced into Europe during the 16th century. They became the staple food of Ireland during the 17th century, and since that time have been grown and consumed in large quantities throughout the world. In Australia, potatoes have been one of the staple vegetables since the arrival of the Europeans. They are a nutritious food, a good source of carbohydrate and are fat-free. The potato is a tuber that grows underground on the roots of the plant. The leaves of the potato plant are poisonous. In Australia, potatoes come in many different skin colours, but the flesh inside the potato is usually white or cream in colour. In Europe, potatoes with a yellow flesh are more popular than the white potato.

## Nutrition

Potatoes are a good source of carbohydrates, vitamin C, potassium and dietary fibre. They also provide some magnesium, niacin and thiamine. Potatoes are fat-free, but the methods used to cook them can increase their energy value.

## Selecting the best

All potatoes should be firm, well-shaped for their variety and blemish-free. Avoid potatoes that are wrinkled and beginning to shoot. Greening of potatoes is caused by the development of a toxin called **solanine**, which develops when potatoes are exposed to light, either natural or fluorescent. Light causes chemical changes in the pigment chlorophyll, resulting in a green colour on all exposed surfaces. Potatoes that have a green tinge should be thrown away, because the toxin solanine can cause illness.

## Storage

Potatoes stored in a cool, dark, well-ventilated cupboard will keep for two to three weeks. Keeping them away from light will prevent them from greening and storing them separately from onions will maximise their storage life.



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## Potato varieties and their uses

### Coliban

- Round, white potato with smooth skin; floury flesh
- Suited to baking and mashing, but sometimes disintegrates with boiling

### Kipfler

- Small, long, oval; sometimes called the 'finger potato'; yellow skin and yellow, waxy flesh
- Best steamed

### Desiree

- Waxy, long, oval; pink skin with creamy yellow flesh
- Suited to baking, boiling and mashing, but not deep-frying

### Pontiac

- Round; red/pink skin with waxy, white flesh
- Denser than other varieties, so requires longer cooking
- All-purpose potato: good for baking, boiling and grating

### Dutch Cream

- Large, oval; yellow, rich, waxy flesh
- Roasts and mashes well

### Sebago

- Round/oval with white, dry flesh
- Ideal for baking, roasting, boiling, frying and mashing

Thinkstock/anopedesignstock (top left), AUSVEG Ltd. www.ausveg.com.au

**Potato varieties**

## Characteristics of potatoes

### New potatoes

- Dug early in the season; thin, papery skin and moist flesh

### Mature potatoes

- Dug three to four weeks later than new potatoes
- Skins have set, forming a protective coating, ensuring the potato's extended shelf life

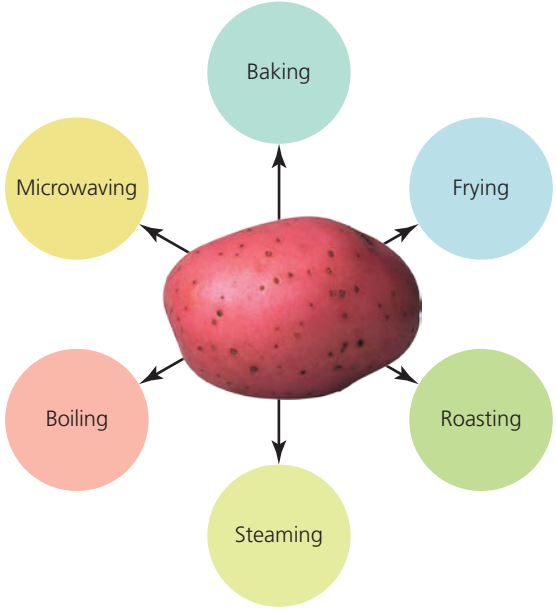
### Floury

- Low in moisture and sugar; high in starch
- Mash and bake well
- When fried, produce golden chips
- Tend to collapse when boiled because of low sugar content

### Waxy

- High in moisture; low in starch
- When boiled, hold their shape and remain firm
- Not suited to mashing or making chips

## Methods of cooking potatoes




Getty Images/Stockbyte

**Methods of cooking potatoes**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# ACTIVITY 6.4

## INVESTIGATING THE BEST COOKING METHOD FOR DIFFERENT VARIETIES OF POTATOES

### Aim

To determine the cooking method that produces the best eating properties in waxy and floury potatoes.

### Equipment

- 4 varieties of potatoes
- 1 steamer
- 1 saucepan with lid
- oven tray covered with baking paper
- 1 container suitable for use in microwave
- chopping board
- vegetable knife

### Method

1. Select four varieties of potatoes – two with waxy flesh and two with floury flesh. Refer to page 126 to help you in your selection.
2. Preheat oven to 220°C and set up steamer; fill saucepan with water and set to boil.
3. Peel and cut each of the varieties of potatoes into 1-centimetre cubes.
4. Divide the potato cubes of each variety between each method of cooking.
5. Brush the potato cubes to be baked with oil and bake until tender and golden brown.
6. Steam, boil and microwave the remaining potato cubes.
7. When cooked, present samples on plates for evaluation.
8. Record your results on the table.

### Results

Copy the table below and record your observations of the sensory properties – appearance, aroma, flavour, texture and sound – for each variety of potato.

| Potato variety | Baked | Steamed | Boiled | Microwaved |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

### Analysis

1. Which cooking method allowed the most varieties of potato to retain their shape?
2. Identify the varieties of potato that performed best for:
   - baking
   - steaming
   - boiling
   - microwaving.

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3 Consider the details about varieties of potatoes on page 126. Compare them with your results and identify those that were significantly different. If there were differences in your results, suggest reasons for this.
4 How does each cooking method affect the nutrient value of potatoes?
5 Suggest other foods that would complement each method of cooking potatoes to make up a main meal.
6 List a safety consideration for each method of cooking potatoes.

### Conclusion

1 Decide which cooking method produces the best eating properties for each variety of potato.
2 'The sensory properties of cooked potatoes will vary depending on whether the flesh is floury or waxy, and on the method used to cook them.' Do your results support this statement? Explain your answer.
3 Make recommendations about the selection of varieties of potatoes for future recipes you might prepare.

# PREPARING VEGETABLES SAFELY

- Select vegetables that are not damaged. Discard any produce that is mouldy.
- Use serving equipment when selecting produce from vegetable or salad displays.
- Packaged salads should be refrigerated.
- Refrigerate all cut and peeled vegetables within two hours of preparing.
- Wash leafy vegetables in plenty of clean, cold water.
- Store vegetables separately from meat, poultry and fish.

# PRE-PREPARED VEGETABLES AND SALAD MIXES

Consumers have changed the way they purchase vegetables and salads. Until recently, if a consumer wanted to make a salad at home, they would purchase a variety of individual salad ingredients, wash and dry them at home and then tear or slice them into a suitable serving size before tossing them in a salad bowl with a home-made dressing. Similarly, in the past, consumers would purchase a piece of pumpkin, several carrots, potatoes, red onions and zucchini to prepare at home as an accompaniment to the family roast. However, today's family members lead very busy lives, and so find purchasing pre-prepared, prepacked and ready-to-eat vegetables and salad ingredients from the supermarket a convenient and time-saving option. A mix of salad leaves are washed, cut and assembled in a bag containing enough salad for a family. The bag is ready to open – all the cook needs to do is to simply tip the contents into a salad bowl and add a splash of salad dressing! Consumers can also purchase a wide range of pre-prepared vegetables such as sweet potato or zucchini pre-cut into 'noodles', or cauliflower and broccoli processed into 'rice'. A few minutes tossed in a wok with a splash of oil and they are ready to eat as a quick and healthy vegetable for dinner.

For those families wanting to make healthy lunch boxes that are quick and easy to prepare, they can now purchase a variety of pre-prepared vegetables and fruit including carrot sticks, celery sticks and mini apple packs.

## Packaging pre-prepared vegetables and salad mixes

These pre-prepared vegetables and salad mixes are packaged using a system called **modified atmosphere packaging (MAP)**. MAP modifies the atmosphere or gas inside the package in order to extend the shelf life of a food. This packaging system alters the gas inside the package by adding carbon dioxide and reducing the level of oxygen. The bag that contains the vegetables or salad is made from a breathable film that also controls the flow of gases in and out of the bag.


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The MAP process benefits the consumer because it ensures there is little food wastage, since the vegetables or salad have a longer shelf life and stay fresh for longer. The producer also benefits, because fewer deliveries are needed and the ingredients are protected from contamination by insects and dust during delivery.


Mark Fergus Photography

**Salad mix**


Mark Fergus Photography

**Prepared vegetables that are ready to roast**

## What are the advantages and disadvantages for consumers in purchasing 'short cut' products?

A lack of time seems to be one of the main reasons many people do not include vegetables in their diet on a regular basis. Research in 2014/15 by the Heart Foundation shows that only 7 per cent of Australian adults eat the recommended five servings of vegetables a day. This view was supported by dietitian Kayla Dodd, who, in a 2018 *Choice* magazine article, stated that 'a common reason people give for not eating their vegies is that they don't have enough time to prepare and cook them.' Providing vegetables and salads in a pre-prepared form may have a positive outcome by encouraging more people to include them in a meal.

Another advantage of purchasing pre-prepared vegetables and salad mixes is that it can minimise food waste. Single people who live alone in an apartment, those in small households and older Australians, may for example purchase a cabbage to make a coleslaw for dinner, but may end up not being able to use it all and so throw out the leftovers. People who live in an apartment may not have access to composting facilities so vegetable peelings have to be put in the rubbish bin and consequently sent to landfill. The breakdown of this vegetable matter gives off methane, a greenhouse gas that contributes to global warming.

Consideration must also be given to the environmental impact of the packaging material used for these pre-prepared products as they are often packed in polystyrene trays, covered in plastic wrap or placed in plastic bags. Many of these materials are described as 'single-use' plastics and may not be biodegradable. As it degrades, plastic packaging gives off methane, further damaging the environment. Packaging material can also pollute the environment if not disposed of appropriately.

Another disadvantage for some consumers is that the cost of purchasing pre-prepared vegetables and salad mixes will be considerably more than preparing them yourself. This will impact on the family budget especially when there are many people in the family.

Research carried out by *Choice* magazine showed that 'the biggest mark-up was on corn cobbettes. A 425g pack cost $5.50, which is $4.50 more than what the same weight of corn cobs would cost if you bought them loose – although once you'd removed the husks and silk you'd be getting a bit less' (Convenience vegetables: Is pre-cut fresh veg worth buying?', 7 June 2018, © CHOICE).



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# ACTIVITY 6.5

## COMPARING PRE-PREPARED COLESLAW PRODUCTS

### Aim

To compare two different types of pre-prepared coleslaw products.

### Method

1 List the key ingredients you would expect to find in a coleslaw.

2 Describe the sensory properties of a good coleslaw.

3 Work with a partner to develop a vocabulary list of words you could use to describe the sensory properties of coleslaw.

4 Your teacher will provide samples of different types of pre-prepared coleslaw products. For example:
- a coleslaw mix pre-dressed with mayonnaise from the chiller cabinet of the supermarket
- a coleslaw salad kit that includes a salad dressing from the fresh vegetable section of the supermarket.

5 Prepare the coleslaw salad kit by tossing it in a bowl with the dressing.

6 Undertake a taste test of both salads. Record your results, using descriptive language, in the table that follows. Refer to the sensory wheel on page 42 to assist you.

| | Appearance | Aroma | Flavour | Texture | Sound |
|---|---|---|---|---|---|
| Coleslaw mix pre-dressed in mayonnaise | | | | | |
| Coleslaw salad kit | | | | | |

7 Refer to the labelling information on each product and record the nutrition information for 100 grams of each type of salad in the table that follows.

| Nutrition information | Coleslaw mix pre-dressed in mayonnaise | Coleslaw salad kit |
|---|---|---|
| Energy (per 100 grams) | | |
| Protein (per 100 grams) | | |
| Total fat (per 100 grams) | | |
| Carbohydrate (per 100 grams) | | |
| Sodium (per 100 grams) | | |

### Analysis

1 Which salad had the most appealing sensory properties? Justify your decision.

2 Which coleslaw provided the lowest amount of energy, total fat and carbohydrate per 100 grams?

3 Explain why it is important to minimise the amount of energy and fat we include in our diet.

4 Which coleslaw contained the highest level of sodium? How does the amount of sodium per 100 grams of this product compare with the amount of sodium a 15-year-old should consume daily?

5 What type of packaging material is used to contain each product? What impact will the use of these products have on the environment?


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## Conclusion

If you were going to buy pre-prepared coleslaw for a meal, which would you purchase? Justify your decision based on:

- the sensory properties of the two coleslaws you taste tested
- the nutritional properties of the two products
- the convenience and skill of the cook
- the type of packaging used for of each product
- whether the coleslaw products meet your expectations for a pre-prepared salad.

## Preventing kitchen leftovers from going to landfill

Almost half of all household garbage is made up of food and garden waste. As mentioned previously in the advantages and disadvantaged of short cut products, if food waste goes to landfill it breaks down and can create greenhouse gases, including methane, which affects air quality and contributes to climate change.

Most of this organic waste can be composted to provide fertiliser for home gardens. By composting the food scraps and turning them into organic waste it can then be used to improve the soil quality and release rich nutrients into the soil. When the compost is used as mulch it can trap moisture in the soil and save water.

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**Composting kitchen waste**

Worm farms are another way of preventing food scraps from entering the waste steam. The worms decompose food scraps, producing rich castings (vermin-cast) and liquid fertiliser. Worms can eat their own body weight in vegetable scraps within 24 hours.

## 6.1 Case study

Read the following case study and answer the questions that follow.

### *ShareWaste – Give your waste a second chance*

An option for people who want to minimise their environmental footprint and prevent food waste from going to landfill is to join an online group like ShareWaste. This group connects people who have kitchen scraps they cannot use or compost with neighbours who can use the scraps to feed their chickens, add to a worm farm or who have their own compost facility.


ShareWaste

**ShareWaste**

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6

Not everyone has the space for keeping a compost heap so sharing waste is a great way of helping your neighbours and the environment. Enriching the soil benefits the environment by reducing the need for chemicals and decreasing the methane emissions from landfill.

The website https://sharewaste.com/ can be used to sign up to connect with neighbours and choose whether you wish to donate scraps or to receive them.

If you are a *donor*, you can find a neighbour who has a compost bin, send them a private message and arrange to drop off your kitchen scraps.

In 2016, ShareWaste launched an app that allows users to access a map showing the locations of compost stations. The map uses three different icons: a chicken to identify a site that accepts scraps to feed animals, a flower to identify a larger community garden compost and a wooden compost bin to indicate a home-run compost heap.

If you are a *host* receiving scraps, you can add a marker to the map to show where your compost bin is located. Your neighbours will see the marker on the map and get in touch with you to arrange delivery of their scraps.

### Respond

1. Describe how the ShareWaste app connects donors and hosts in a community.
2. Explain how joining a group like ShareWaste can assist people who want to protect the environment.
3. How does this program assist those people who live in an apartment and do not have space for a compost heap?
4. What are the benefits to the environment, particularly the soil, of composting food scraps?
5. Download the ShareWaste app and check whether there are any opportunities in your area for members of the local community to share their waste with neighbours.

# LEGUMES

**Legumes** are the seeds from the *Leguminosae* family. Fresh green peas and beans are the immature form of vegetables in the legume family and are not classified as pulses because they have a much higher water content. The dried peas, beans, lentils and chickpeas that we normally refer to as legumes have been allowed to mature on the vine.

When the seedpods of these plants mature on the plant, they become dry and are then referred to as pulses. Legumes are much starchier than the younger fresh peas and beans.

## Nutrition

Legumes are rich in plant protein, dietary fibre, carbohydrates, B group vitamins, zinc, iron, potassium and folate. Legumes are rich in soluble fibre. They form a thick gel when eaten, which slows down the digestive process, reducing the absorption of 'bad cholesterol'. This process assists heart health and lowers blood sugar levels by slowing down the absorption of sugar. Insoluble fibre passes through the digestive tract, adding bulk, which keeps the colon healthy and reduces the risk of colon cancer.

Because of their nutritional properties, particularly their protein content, legumes are found in two segments of the *Australian Guide to Healthy Eating*:

- vegetables and legumes/beans
- lean meats and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans.

## Growing legumes sustainably

Growing legumes can play a valuable role in sustainable agriculture as they help farmers reduce water needs and the use of artificial or synthetic fertilisers.


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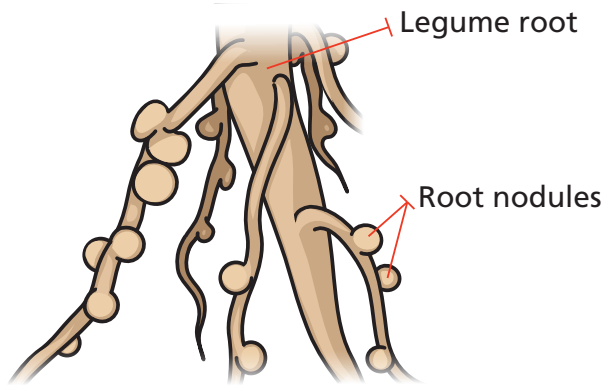
When farmers rotate their cereal crops, such as wheat, with leguminous crops (such as chickpeas or lentils), the soil is 'topped up' with nitrogen, which reduces the amount of synthetic nitrogen fertilisers required for farming. Overuse of these synthetic fertilisers pollutes the air and drinking water and can affect soil health by depleting other nutrients in the soil.

Legume crops have small nodules on their root systems that contain nitrogen-fixing bacteria. This bacterium uses the nitrogen from the air to 'fix' the nitrogen in the nodules for the plant's use while growing. When the plant dies, the fixed nitrogen is released into the soil, making it available to other plants and improving the health of the soil.

Recent research has shown that legume crops are not as heavily reliant on water as other crops, so these crops are more sustainable in low rainfall areas.




**Nitrogen-fixing bacteria on the roots of legume plants 'fix' nitrogen in the nodules**

Shutterstock.com/LIG7AGR

**Growing chickpeas**

## TESTING KNOWLEDGE

**11** Identify the nutrients present in sweet potatoes and explain how sweet potatoes can be stored to maintain best quality.

**12** Describe the features you should look for when selecting green beans to buy and the best method of storing them.

**13** Explain why it is important to include potatoes in a well-balanced diet.

**14** Create a mind map to highlight the features to look for when selecting potatoes to purchase.

**15** Discuss the best method for storing potatoes and explain why it is important.

**16** Explain two reasons why a consumer may purchase pre-prepared and packaged vegetable or salad mixes.

**17** Describe how modified atmosphere packaging (MAP) extends the shelf life of vegetables and salad mixes.

**18** Create a mind map to highlight the disadvantages of purchasing pre-prepared vegetable products.

**19** What are the benefits of composting vegetable waste at home?

**20** Write a short paragraph for a health magazine to promote the nutritional benefits of eating legumes.

## THINKING SKILLS

### Compare the nutrient content of fruit and vegetables

**1** Select four vegetables to compare. Each of the vegetables must be from a different classification.

**2** Identify the key vitamins and minerals each of the vegetables contains.

**3** Identify the amount of fibre present in each vegetable.

**4** Explain how the vegetables are similar and different with respect to the nutrients they contain.

**5** Make recommendations about how frequently people should eat the vegetables you have compared and explain why they are important for good health.



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# Design activity 6.1

## LOADED POTATOES

An outdoor musical festival – Music in the Garden – is to be held in your local region in a few months' time. Several food trucks will sell snacks and main meals to the public to enjoy while listening to music. One of these is 'Tasty Taters', a food truck specialising in stuffed baked jacket potatoes. Tasty Taters would like to extend the variety of loaded potatoes on its menu to include potatoes with flavours from different international cuisines. The aim is to appeal to people from various cultural backgrounds who live in the region. The owners of the food truck understand that many of their customers are looking for a healthy meal so the new menu options must meet the recommendations of the *Australian Dietary Guidelines*. The owners of the food truck also intend to serve their loaded potatoes in eco-friendly containers.

### Design brief

1 Identify the five Ws – who, what, when, where, why – in the design brief.

2 Develop five criteria, suitable for evaluating the success of the finished product – one criteria for each 'W'.

### Investigating

1 Research and describe three types of potato suitable for baking, loading and serving as a healthy meal. Describe the characteristics of each potato type that makes it suitable for baking and loading.

2 Use recipe books, magazines and the internet to research the flavours and ingredients traditionally associated with three different cultures. Record your results in a table similar to below.

3 Research types of eco-friendly serving trays and cutlery that would be suitable for the food truck to use to serve the loaded potatoes.

4 Practise your skills by preparing the recipe for Dressed Baked Potato on page 136.

### Generating

1 Select your preferred cultural theme that will be the focus of your design.

2 Complete the recipe map on page 135, incorporating ingredients and flavours typical of your preferred cultural theme to design your loaded potato.

3 Write out your new recipe so that it is ready for production.

### Planning and managing

1 Complete a food order.

2 Before producing your loaded potato, write up a production plan, noting any safe work practices to be followed, and identify the major processes to be used.

### Producing

1 Prepare the product.

2 Record any changes you made during production.

### Evaluating

1 Evaluate the success of your loaded potato using the criteria you have developed.

2 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your loaded potato.

| | Culture 1 | Culture 2 | Culture 3 |
|---|---|---|---|
| Vegetables or legumes | | | |
| Herbs and spices | | | |
| Dairy or dairy alternative | | | |
| Nuts or seeds | | | |
| Ingredients to provide 'crunch' | | | |


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3 How successfully did your loaded potato represent the ingredients and flavours typical of your selected cuisine?

4 Classify the ingredients of your loaded potato on a diagram of the *Australian Guide to Healthy Eating*.

5 Explain how well it meets Guideline 2 of the *Australian Dietary Guidelines*. What improvements could you make to your loaded potato to better reflect this dietary guideline?

6 How effective was the timing you outlined in your production plan? Justify your answer.

7 Describe how you worked cooperatively with your bench partner/s in:

- using the stove top
- using the oven
- washing up
- leaving your work area clean and tidy.

| Vegetables or legumes | Herbs and spices | Dairy or dairy alternative | Nuts or seeds | Ingredients to provide 'crunch' |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

**Recipe map table for loaded potatoes**

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# DRESSED BAKED POTATO

1 medium potato
1 rasher bacon, finely diced
1 spring onion, finely sliced
20 grams tasty cheese, grated
1 tablespoon milk
salt and pepper
1 tablespoon sour cream
1 teaspoon parsley, chopped

SERVES ONE

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Dressed Baked Potato.
2. Explain two rules to observe to ensure you use the oven safely.
3. Sketch a potato and annotate it to identify the key nutrients it contains.
4. Explain why a Dressed Baked Potato would be considered a healthier meal option than fried potato chips.
5. Evaluate the Dressed Baked Potato recipe by plotting its ingredients on a diagram of the *Australian Guide to Healthy Eating*.

## METHOD

### BAKING A WHOLE POTATO

1. Preheat the oven to 200°C.
2. Scrub the potato well and pierce the skin in several places with a skewer or a fork.
3. Place on the oven rack for 1–1½ hours. Alternatively, microwave the potato on high for 2 minutes. Once finished, crisp the skin by placing in a hot oven for 20–30 minutes or until tender.

### PREPARING THE FILLING AND TOPPING INGREDIENTS

1. Select the flattest side as the bottom of the potato. Cut the top off the cooked potato.
2. Carefully scoop the flesh out of the potato with a metal spoon and place in a bowl. Leave the skin intact.
3. Pan fry the bacon until lightly browned and beginning to crisp.
4. Combine the flesh with cooked bacon, spring onion, grated cheese, milk, salt and pepper and spoon into the potato skin.
5. Reheat before serving, if necessary. Garnish with the sour cream and chopped parsley and serve.

Mark Fergus Photography



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# PUMPKIN NOODLE SOUP WITH HERB AND GARLIC BREAD

400 grams butternut pumpkin (approximately 300 grams after peeling and seeding)
1 onion, diced
1 medium potato, peeled and diced
2 cups water
½ packet chicken noodle soup mix
ground pepper
½ tablespoon chopped parsley

SERVES TWO

## METHOD

1. Carefully peel the pumpkin and remove the seeds. Cut into small pieces.
2. Place the pumpkin, onion and potato in a saucepan with the water and bring to the boil.
3. Add the chicken noodle soup mix.
4. Simmer for approximately 30 minutes or until the pumpkin is tender.
5. Puree the soup in a blender or by using a stick mixer.
6. Season with pepper to taste.
7. Sprinkle with a little chopped parsley to garnish.
8. Serve hot with herb and garlic bread.

### HERB AND GARLIC BREAD

1 bread roll
1 teaspoon parsley
1 teaspoon chives
1 clove garlic
15 grams butter, softened

SERVES ONE

## METHOD

1. Preheat oven to 200°C.
2. Cut the bread roll into slices nearly all the way through.
3. Finely chop the parsley and chives.
4. Crush the garlic.
5. Mix the softened butter with the herbs and garlic.
6. Spread one side of each bread slice with the herb and garlic butter.
7. Wrap the bread in aluminium foil.
8. Heat through in the oven for approximately 10 minutes until warm.

Mark Fergus Photography

## EVALUATION

1. Describe how to peel the pumpkin safely.
2. How could you puree the soup if you did not have a blender or stick mixer?
3. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the Pumpkin Noodle Soup.
4. Outline two other accompaniments other than the herb and garlic bread you could serve with the soup to make it a more substantial meal.
5. Classify the ingredients of the Pumpkin Noodle Soup with Herb and Garlic Bread on a diagram of the *Australian Guide to Healthy Eating*. Explain how well this meal meets the recommendations of this food selection model.



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# SHEPHERD'S PIE

6

## FILLING

2 teaspoons oil
½ onion, finely diced
125 grams minced steak
⅓ carrot, grated
1 teaspoon parsley, finely chopped
1 tablespoon tomato paste
1 tablespoon tomato sauce
¼ cup beef stock
½ teaspoon Worcestershire sauce
¼ teaspoon mixed herbs
pepper

MAKES 2 PIES

## TOPPING

2 large potatoes
2 tablespoons milk
2 teaspoons butter
pinch salt
40 grams cheese, grated

**Mashed potato makes a delicious topping on this pie and is much lower in fat than traditional pastry.**

## METHOD

1. Peel potatoes and cut into even-sized pieces. Place in a saucepan with enough water to cover. Cook with lid on for approximately 15 minutes until tender.
2. Heat oil in a saucepan. Add onion and fry lightly.
3. Add the minced steak and cook until brown. Stir constantly to prevent the meat clumping together.
4. Add carrot, parsley, tomato paste, tomato sauce, stock, Worcester sauce, herbs and pepper. Simmer for approximately 5 minutes until the mixture thickens slightly.
5. Preheat oven to 200°C.
6. Drain the potatoes. Mash and add milk, butter and a pinch of salt.
7. Place meat mixture in foil containers and spread mashed potatoes on top. Sprinkle with grated cheese.
8. Place on a tray and bake for 10 minutes or until golden brown.

## EVALUATION

1. Why is it important to cut the potato into even-sized pieces when preparing it for mashed potatoes?
2. Why are milk and butter added to the potato mash?
3. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your finished pies.
4. Identify two safe work practices you followed during production.
5. Classify the ingredients for the Shepherd's Pie on a diagram of the *Australian Guide to Healthy Eating*. Comment on the health rating you would give this recipe. What are the health benefits of using potato rather than pastry in this pie?

Mark Fergus Photography



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# SWEET POTATO PARCEL

150 grams sweet potato
¼ leek
10 grams butter
2 teaspoons flour
¼ teaspoon mustard powder
pinch of cinnamon
½ cup milk
4 sheets filo pastry
2 teaspoons oil
1 teaspoon sesame seeds

MAKES 2 PARCELS

Mark Fergus Photography

## METHOD

### STEAMING THE SWEET POTATO

1. Half-fill the base of the steamer with hot water. Place steamer on top of the base and put on lid. Bring to the boil.
2. Wash and peel the sweet potato. Cut out any blemishes and cut into 2-centimetre chunks.
3. Place in the steamer, cover with the lid and steam for 10–15 minutes or until just tender, so the potato holds its shape.
4. Cool.

### MAKING THE SWEET POTATO PARCEL

1. Preheat oven to 200°C.
2. Wash and trim the leek, discarding the green leaves, as they have a bitter flavour. Finely dice.
3. In a small saucepan, melt the butter, then sauté the leek until it is transparent. Do not brown.
4. Add flour, mustard powder and cinnamon, stirring over heat for 30 seconds.
5. Remove from heat and stir in milk gradually.
6. Return to heat. Bring to boil, stirring constantly. Cook for 1 minute or until the mixture thickens. Remove from heat and add cooked sweet potato. Cool.
7. Carefully brush one sheet of filo pastry with the oil, then lay the next sheet of filo pastry on top of the first. Repeat with the other two sheets of pastry.
8. Divide the sweet potato mixture into two.
9. Spread one half of the sweet potato mixture along the one short end of the pastry.
10. Fold in the two long edges and roll into a parcel. Brush with oil and sprinkle with sesame seeds.
11. Repeat with the other two sheets of pastry and the remaining filling.
12. Bake in the preheated oven for 15 minutes or until golden brown. Serve with green vegetables or a salad.

## EVALUATION

1. Identify an alternative method of cooking the sweet potatoes so they retain their shape.
2. Identify two safety considerations when using a steamer.
3. Why was it important to make sure you do not brown the ingredients in step 3 of the recipe?
4. Why do you have to work quickly when using filo pastry?
5. Classify the ingredients of the Sweet Potato Parcels on a diagram of the *Australian Guide to Healthy Eating*. Comment on the health rating you would give this recipe when served with green vegetables or a salad.



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# SPICY POTATOES WITH CHICKPEAS

This recipe served with rice is high in complete protein and makes a delicious meal for vegetarians.

1 medium waxy potato (150 grams)
150 grams sweet potato
1 tablespoon oil
½ onion, finely diced
1 clove garlic, crushed
1 teaspoon ground cumin
½ teaspoon garam masala spice mix
½ teaspoon ground coriander
½ teaspoon ground fennel
¼ teaspoon ground turmeric
pinch of cayenne pepper
220-gram can chopped tomatoes
½ cup vegetable stock
⅓ cup frozen peas
½ cup chickpeas, rinsed and drained

SERVES TWO

## METHOD

1. Peel the potato and sweet potato and cut into 2-centimetre cubes.
2. Heat the oil in a medium saucepan and sauté the onion and garlic until soft but not brown.
3. Add the spices and cook for 30 seconds.
4. Add the diced potato and sweet potato and lightly toss to coat in the spices.
5. Stir in the undrained tomatoes and vegetable stock.
6. Bring to the boil. Reduce the heat and simmer for approximately 30 minutes or until the potato is tender.
7. Stir in the peas and chickpeas and heat through.
8. Serve the Spicy Potatoes with Chickpeas with Plain Rice (page 108) accompanied by Pappadams (page 32) and Tzatziki Dip (page 58).

## EVALUATION

1. What is the purpose of frying the spices for 30 seconds in step 3?
2. Identify the ingredients in the Spicy Potatoes with Chickpeas and the rice that are good sources of protein for vegetarians.
3. Why are the frozen peas and canned chickpeas only heated through in step 7 and not added with the potatoes in step 4?
4. Which part of the production was the most successful, and which part did you find the most challenging? Why?
5. Classify the ingredients of the Spicy Potatoes with Chickpeas, Plain Rice, Pappadams and Tzatziki Dip on a diagram of the *Australian Guide to Healthy Eating*. Comment on the nutritional value of your meal.

Mark Fergus Photography



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# CARROT CAKE

1 large carrot, grated
½ cup walnut pieces or sultanas
½ cup oil
¾ cup brown sugar
2 eggs
1 cup self-raising flour
½ teaspoon cinnamon or mixed spice
icing sugar for dusting

**The recipe for Lemon Cream Cheese Icing on page 240 could be used instead of icing sugar.**

## METHOD

1. Grease and line a 20-centimetre ring tin or small loaf tin. Preheat oven to 180°C.
2. Grate the carrot and roughly chop the walnut pieces. Place in a large mixing bowl.
3. Add the oil, sugar and eggs to the mixing bowl and stir the ingredients.
4. Sift in the self-raising flour and spice and mix well with the other ingredients.
5. Spoon the mixture evenly around the ring tin or into a loaf tin.
6. Place the carrot cake in the oven and bake for 20 to 25 minutes. The cake is ready when it has turned a pale golden colour, it has begun to shrink away from the tin and a skewer comes out clean and dry.
7. Turn the cake onto a cake cooler.
8. Dust with icing sugar. Alternatively, ice with lemon cream cheese icing when cool, and if time allows.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Carrot Cake.
2. Why is it important to sift the flour and spice?
3. Outline three other tests you could use to check if the cake is done other than testing it with a skewer.
4. Explain why the oil that is used in this recipe is considered to be a 'healthier' fat than butter.
5. Classify the ingredients of the Carrot Cake on a diagram of the *Australian Guide to Healthy Eating*. Explain why, according to the Eat for Health program, carrot cake is not considered a healthy snack even though it contains some vegetables.

Mark Fergus Photography

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# LEAN MEATS, POULTRY, FISH, EGGS AND THEIR ALTERNATIVES

# 7

## KEY KNOWLEDGE

- Lean meats, poultry, fish, eggs and their alternatives in the *Australian Guide to Healthy Eating*
  - The lean meats group of foods for good health
- Meat
  - Meat for good health
  - Beef: from paddock to plate
  - Sustainable farming of cattle and sheep
  - Processing of meat
  - The structure and characteristics of meat
  - Selecting meat
  - Packaging meat for sale
- Poultry
  - Poultry for good health
- Fish
  - Fish for good health
- Sustainable fishing
  - Aquaculture
  - Choosing sustainable seafood
- Preparing to cook meat, poultry and fish
  - Marinating
  - Crumbing
- Cooking meat, poultry and fish
  - Changes that occur during cooking
  - How to tell if it is cooked
  - Top tips for grilling
  - Top tips for stir-frying
  - Top tips for frying
- Eggs
  - Eggs for good health
  - Components and structure of an egg
  - Methods of eggs production
  - Ethical issues in egg selection
  - Purchasing eggs
  - Cooking with eggs
- Nuts and seeds
  - Classification of nuts
  - Nuts and seeds for good health
  - Nut spreads and milks
- Legumes and beans

## KEY TERMS

**aquaculture** the breeding, rearing and harvesting of fish and shellfish in coastal marine waters, open oceans and freshwater systems

**bycatch** fish or other marine animals that are caught unintentionally by commercial fishing operations

**connective tissue** the tissue in meat that links and holds together muscles

**marbling** the even distribution of fat cell deposits in red muscle tissue

**marinate** to soak meat or other food in a liquid with an acid food ingredient to tenderise and/or enhance the flavour

**muscle fibres** the cells that are bound into thin sheets of connective tissue; these bundles then form groups to create muscles

**sustainable fishing** the practice of leaving enough fish in the ocean so that the fish population can remain productive and healthy

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food and fibre production
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking

### CROSS-CURRICULUM PRIORITIES

- Sustainability





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# LEAN MEATS, POULTRY, FISH, EGGS AND THEIR ALTERNATIVES IN THE *AUSTRALIAN GUIDE TO HEALTHY EATING*

This segment of the *Australian Guide to Healthy Eating* includes a wide variety of foods, including all types of lean meats, poultry, fish, eggs, tofu, nuts, seeds and legumes/beans. The foods in this group are a rich source of many nutrients and are important for good health.




**The place of lean meats, poultry, fish, eggs and their alternatives in the *Australian Guide to Healthy Eating***

## The lean meats group of foods for good health

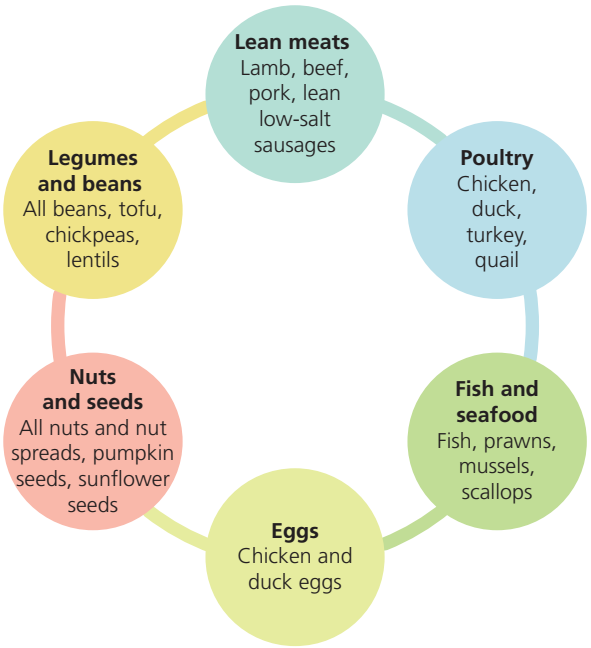
The foods in the lean meats, poultry, fish, eggs and their alternatives group are protein rich and are a good source of B group vitamins and minerals such as iron and zinc.

The *Australian Guide to Healthy Eating* recommends that meat or meat alternatives should be eaten three to four times per week.

Fish and seafood, especially oily fish such as salmon, trout, sardines and mackerel, provide a valuable source of long chain omega-3 polyunsaturated fatty acids.

Legumes contain many of the nutrients found in animal sources and therefore have been placed in this group as well as in the vegetables group. For those people who do not wish to consume animal foods, including legumes, tofu, nuts and seeds in their diet is a cost-efficient means of obtaining an adequate intake of protein and other nutrients.

Nuts and seeds provide protein, essential fatty acids and a range of minerals and vitamins, especially vitamin E. However, smaller serving sizes are recommended due to their more concentrated kilojoule content.




**Foods in the lean meats segment of the *Australian Guide to Healthy Eating***

### How much of the lean meat group is needed?

| | Serves per day | |
|---|---|---|
| | 12–13 years | 14–18 years |
| Boys | 2.5 | 2.5 |
| Girls | 2.5 | 2.5 |



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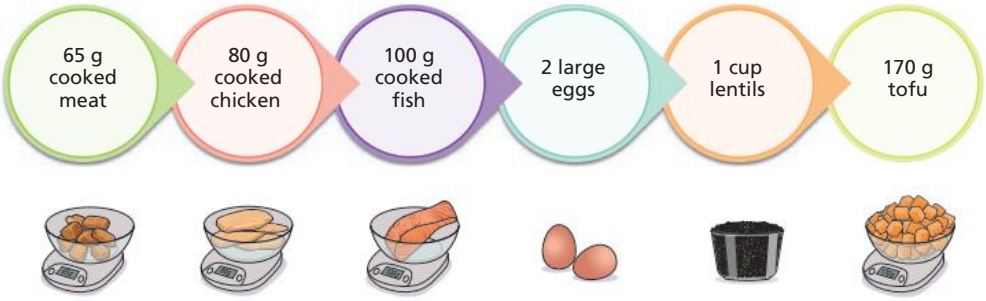
## What is a serve?






# MEAT

Meat refers to the body tissues of animals, eaten as food. Early humans were hunter-gatherers, dependent on their immediate environment for food, and so meat became an important part of their diet.

Today, meat continues to be an important part of the diets of many Australians. The meat we eat generally comes from cattle (beef and veal), sheep (lamb), pigs (pork) and poultry (chicken, turkey and duck). Beef, lamb and pork are often described as 'red meat' and poultry as 'white meat'.

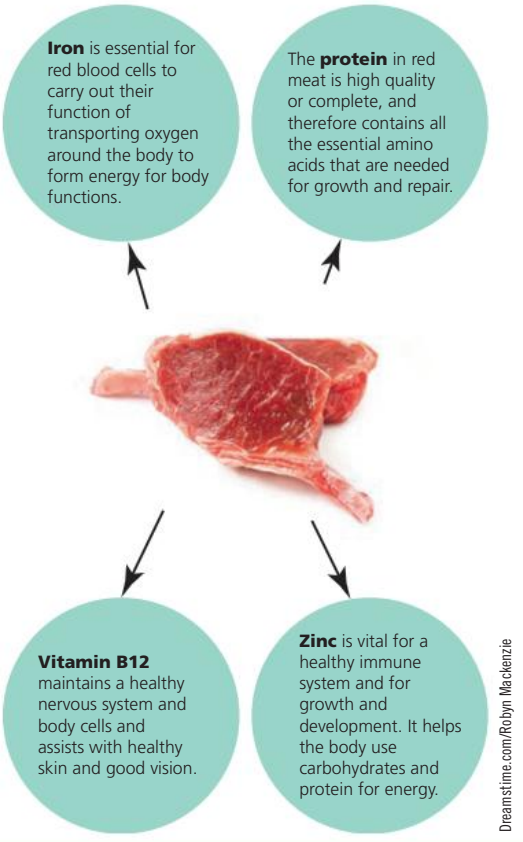
## Meat for good health

Lean meat is an important food as it contains a high proportion of protein, which is essential for growth and repairing and maintaining body tissue in active people. A 100-gram serving of lean meat – which is about the size of the palm of your hand – gives your body over half the protein it needs each day. The protein found in all meat, such as beef, lamb and poultry, is 'complete'; that is, it has all the essential amino acids needed by the body in the correct proportions required for growth and tissue repair.

Red meat, especially lean cuts, contain readily absorbed forms of iron (specifically, haem iron) and zinc. Iron helps oxygen to move around the body and is necessary for producing energy. Zinc is vital in helping your body utilise carbohydrates and protein, and to heal wounds. Meat is also a good source of niacin, riboflavin and some thiamine. These B group vitamins are essential for your body to utilise nutrients in food.

In August 2019, the Heart Foundation released updated dietary advice about how much red meat you should eat. It recommended limiting the amount of unprocessed beef, lamb, pork and veal you eat to less than 350 grams or 1–3 lean red meat meals a week. This new advice is based on research that demonstrates a link between consuming red meat and the development of cardiovascular disease.

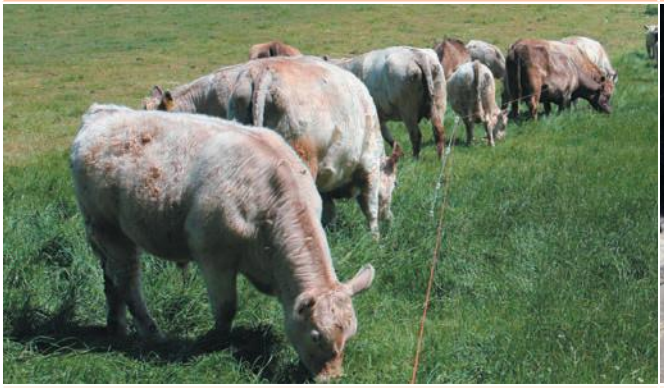
Diets rich in lean red meat can still be low in saturated fat and not adversely affect plasma cholesterol levels. Try to choose lean cuts of meat that have little or no visible fat. Meats that have a high fat content, such as bacon and some sausages, are in the 'only sometimes and in small amounts' section of the *Australian Guide to Healthy Eating*.




**Nutrients in red meat**


ISBN 9780170446716

## Beef: from paddock to plate

| Pasture-fed cattle | Feedlot cattle |
|---|---|
|  |  |
| The cattle are kept on farms and graze on pasture in paddocks. | The cattle are kept in pens. |
| Cattle grazing in northern Queensland is undertaken on large cattle stations, where the cattle graze on native pasture.<br>In the southern states, cattle graze on smaller farm holdings that are often sown with introduced pasture and fodder crops. | The cattle are fed in feedlots instead of grazing on pasture.<br>Their diet is grain-based, high in energy and consists of wheat, barley, sorghum and canola seed. |
| The supply of pasture is dependent on rainfall and irrigation. Pasture is often not available during the winter months, which affects meat supplies. | A supply of high-quality beef is available all year, particularly during winter. |
| There is little control over how much the cattle eat. Their weight and growth depend on the season and the amount of feed available. The meat produced is not as marbled. | The controlled diet means that the farmer can control the growth and weight of the cattle.<br>Cattle remain in the feedlot for 180–360 days and produce meat that is marbled – that is, meat that contains fat that is evenly distributed throughout the muscle. |
| This method dominates the Australian industry. | This method ensures the continuous production of a consistent supply of high-quality beef for export – particularly to Japan – and for domestic markets. |

Alamy Stock Photo/Auscape International Pty Ltd

Shutterstock.com/Han maomin

## Sustainable farming of cattle and sheep

As caretakers of the land, Australian cattle and sheep farmers, like dairy farmers, are committed to producing beef and lamb sustainably. They work hard to leave the land, waterways, vegetation and soils in a better condition for future generations.

Meat & Livestock Australia is working towards a sustainable future for Australia's cattle and sheep industry, by supporting farmers in reducing their environmental impact and developing sustainable farming practices. The issues surrounding the environmental impact of dairy production, discussed in chapter 9 (pages 194–8) are also relevant to cattle and sheep production.

## Processing of meat

After cattle are sold, they are transported to the abattoir for slaughter. Carcasses are cooled at the meat works in large refrigerators or chillers. The carcass is cut in half or quarters and hung on large hooks. After the carcass is chilled overnight, it is ready to be sold to butchers, supermarkets, wholesalers or other processors, or to be shipped overseas. Live animals are also exported, to be slaughtered in the destination country.

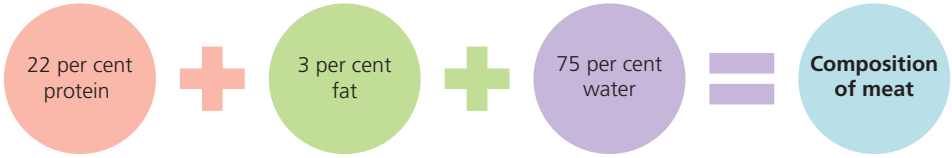
### Meat Standards Australia

Meat Standards Australia (MSA) was developed by the Australian red meat industry to improve the eating quality consistency of beef and sheep meat. The system is based on 800 000 consumer taste tests and takes into account all factors that affect eating quality, from paddock to plate.

Meat Standards Australia

**Grading and tracking beef from paddock to plate**

ISBN 9780170446716




**The composition of meat**

7

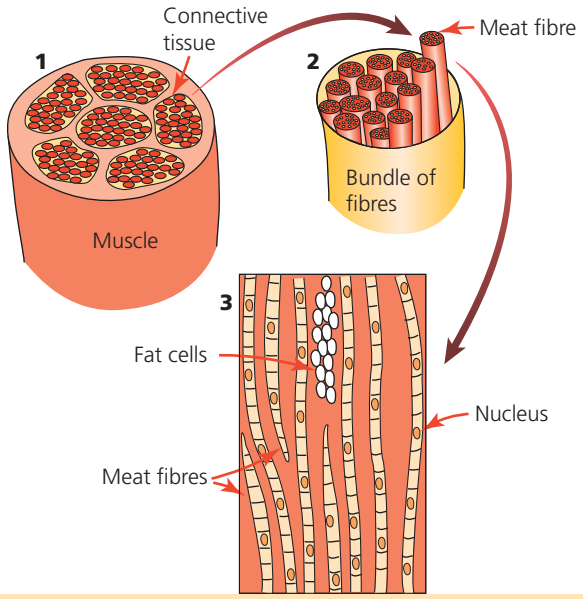
The program accurately predicts the eating quality of individual beef cuts. Retail labels advise the correct cooking method for every cut, alleviating the need for specialist knowledge among consumers to choose and cook beef that meets their expectations.

## The structure and characteristics of meat

Meat is made up of 22 per cent protein, 3 per cent fat and 75 per cent water. The **muscle fibres** that form meat are cells bound by thin sheets of connective tissue. The bundles are organised in groups to form individual muscles, which are anchored to the bone by connective tissue. The longitudinal structure forms the grain of meat. Muscle fibres are small when the animal is young, and the muscles are not yet well developed. As the animal grows and exercises, the muscles enlarge, particularly those that are most frequently used, such as in the neck and legs.

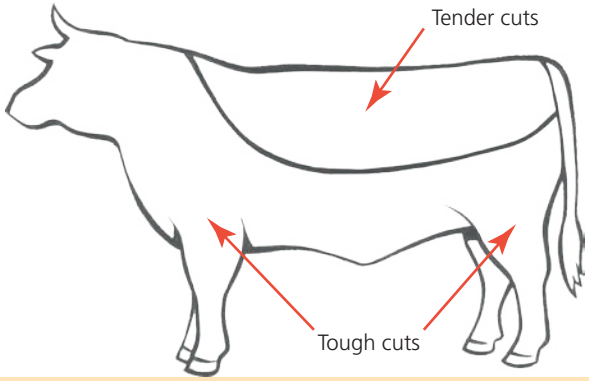
**Connective tissue** links the muscles and holds them together. It is found between muscle fibres and between whole muscles. The more connective tissue the meat cut contains, the tougher the meat will be. Tougher cuts of meat usually come from the leg, shoulder and forequarter of the animal, because these are the parts of the animal that receive the most exercise. When connective tissue is heated in a liquid, the insoluble collagen becomes gelatin, and becomes tender to eat. Cuts of meat with a lot of connective tissue are best if they are cooked slowly in a moist environment, because this softens the meat. Moist methods of cooking, such as stewing, braising and casseroling, tenderise tougher cuts of meat.

Fat tissue surrounds muscle tissue and is also incorporated in it. **Marbling** is the term used to describe the deposit of fat cells in the red muscle tissue. Fat has an important role in the sensory properties of flavour and texture when meat is cooked.



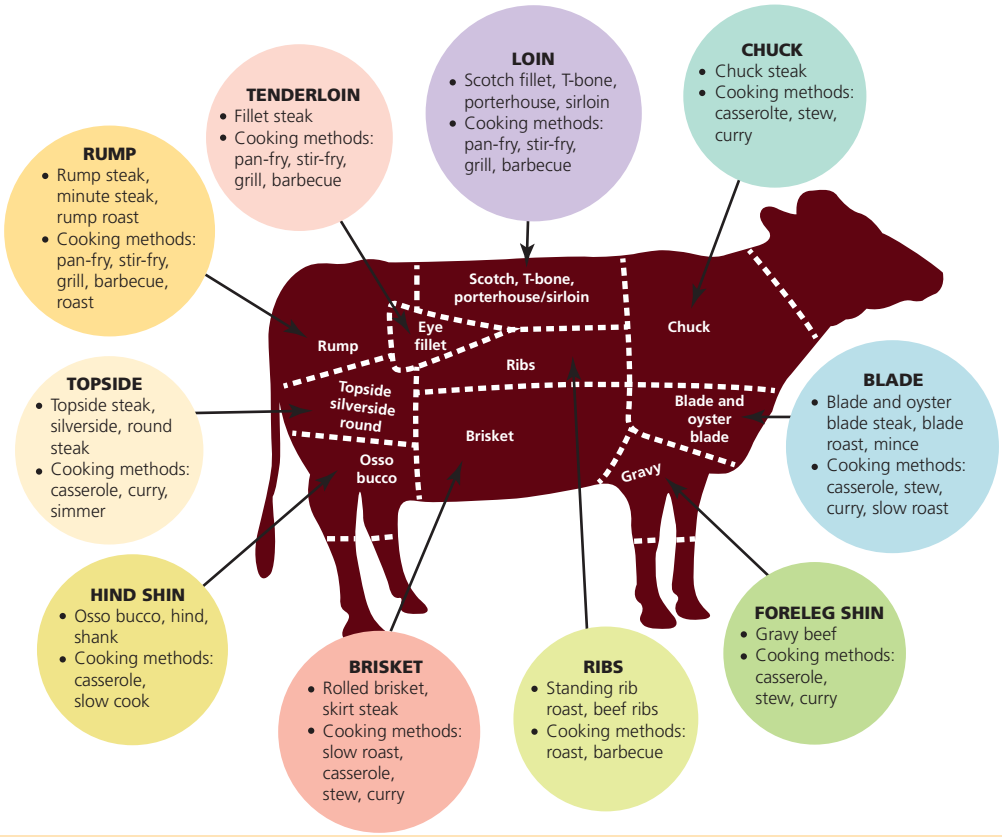

**The structure of meat**

More tender cuts of meat are found around the ribs and back of the animal. These cuts have little connective tissue and can therefore be cooked by dry radiant heat methods such as grilling, frying, roasting and barbecuing. Tender cuts of meat are easiest to use for quick and easy everyday meals. The meat is most tender if it is carved across the grain so that the muscle bundles are short and therefore easier to chew.

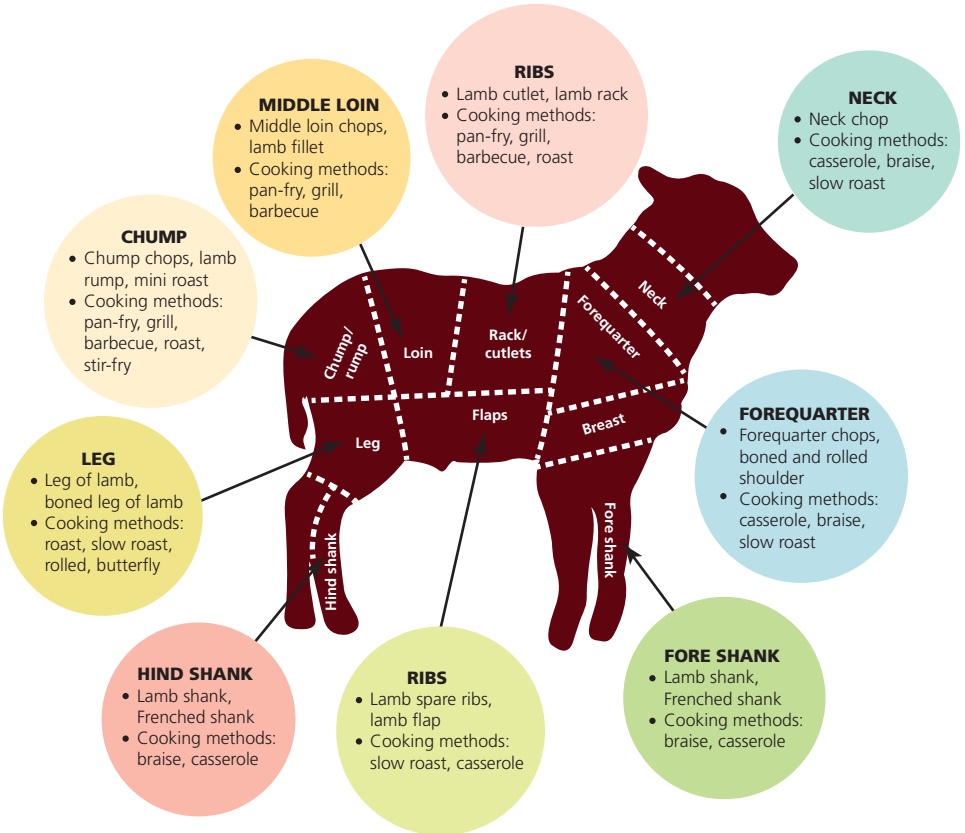



**Tender and tough cuts of meat**


ISBN 9780170446716




**Basic cuts of beef**




**Basic cuts of lamb**

## ACTIVITY 7.1

### CUTS OF LAMB AND BEEF

Refer to the diagrams 'Basic cuts of beef' and 'Basic cuts of lamb' on page 147 and answer the following questions.

1. Identify three possible cuts of beef that are suitable to cook on a barbecue.
2. Explain why meat from the shin is unsuitable for grilling.
3. Name a cut of boneless beef suitable to roast for a family of four.
4. Identify the cut or portion of beef you would purchase to prepare a stir-fried beef and vegetable dish.
5. You have purchased a jar of curry simmer sauce to make a beef curry. Which beef cut would you purchase to prepare this dish? Explain why.
6. Discuss the advantages of roasting and serving an easy carve leg of lamb compared with a traditional leg of lamb containing the bone.
7. Why is the Frenched rack of lamb a popular item on many restaurant menus?
8. Describe a suitable cooking method or recipe for lamb shanks.
9. Outline the nutritional advantages of serving a trim lamb butterfly steak rather than a loin chop.
10. Which lamb cut would you choose to make a lamb casserole?

## Selecting meat

Meat should be moist, have a fresh smell and be slightly springy to the touch. Good-quality beef will have bright-red flesh and creamy, yellow fat. The flesh of good-quality lamb is a pink–brown colour with a creamy-coloured fat. The flesh of good-quality pork is pale pink and the fat has a bright-white colour.

## ACTIVITY 7.2

### MARKETING RED MEAT

Visit the Meat & Livestock Australia (MLA) and Australian Beef websites to complete the following activity.

Weblink

MLA Australian Beef

1. Find information about the red meat industry. List five new things you have learnt about the production of lamb and beef.
2. Find information about the nutrients in meat. Identify four significant nutrients in meat and describe the health benefits of each of them for the human body.
3. Find information about the marketing of red meat around the world and answer the following questions.
   a. How many countries import Australian red meat?
   b. Explain why so many countries import Australian red meat.
4. Find information about the marketing campaigns for beef and lamb that have been used for television or in magazines in Australia. Select two such campaigns and complete the following table.

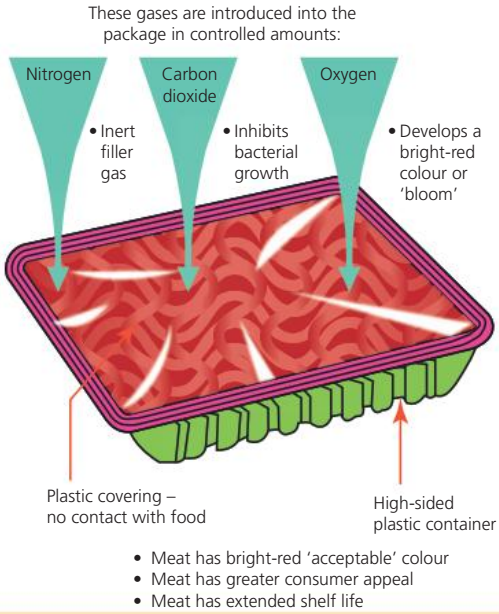
| | Advertisement 1 | Advertisement 2 |
|---|---|---|
| Identify the title of the advertisement. | | |
| Did the theme use fact, fiction or fear to attract consumers' attention? | | |
| Outline the message about red meat in the advertisement. | | |
| Identify the advertisement's target market or audience. | | |
| Did the advertisement make you want to eat red meat? If so, why? | | |
| Had you seen the advertisement before today? | | |

5. After completing your analysis of the two campaigns, identify which one you think will best help to increase the sales of red meat. Discuss and justify your decision.


ISBN 9780170446716

## Packaging meat for sale

Modified atmosphere packaging (MAP) is widely used to package meat in the chiller cabinets of retail outlets, particularly supermarkets. This packaging method modifies the levels of oxygen, nitrogen, carbon dioxide and water vapour inside a package in order to extend the food's shelf life. Meats packed this way look more acceptable in the chiller displays of supermarkets, because they retain their bright-red colour.




**Modified atmosphere packaged minced beef**

# POULTRY

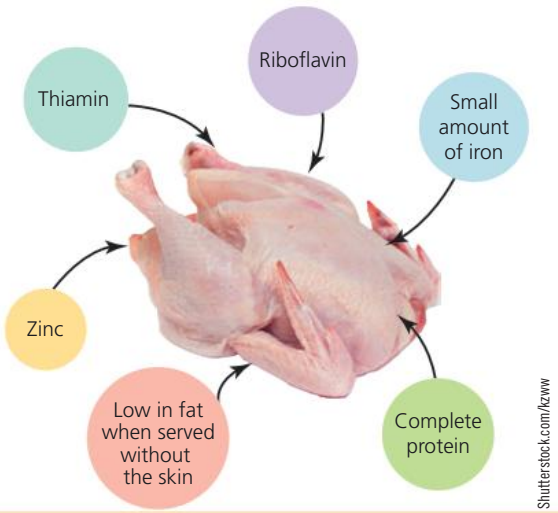
Poultry is the term used to describe any domesticated birds that are used as food. Chicken, turkey, duck, quail and pheasant are all part of the poultry group, of which chicken is the most popular to eat. Today's chickens are descendants of wild fowl that roamed the dense jungles of primeval Asia. It was only after the Second World War that chicken became reasonably priced – before this, it was expensive and was served as a roast meal only on special occasions. Modern production methods have reduced the cost of this versatile food, and today, it is readily available in food stores. Poultry consumption in Australia has risen considerably over the last few decades due to its affordability, its availability, growing awareness of its nutrient value and its convenience, as it requires little preparation.

## TESTING KNOWLEDGE

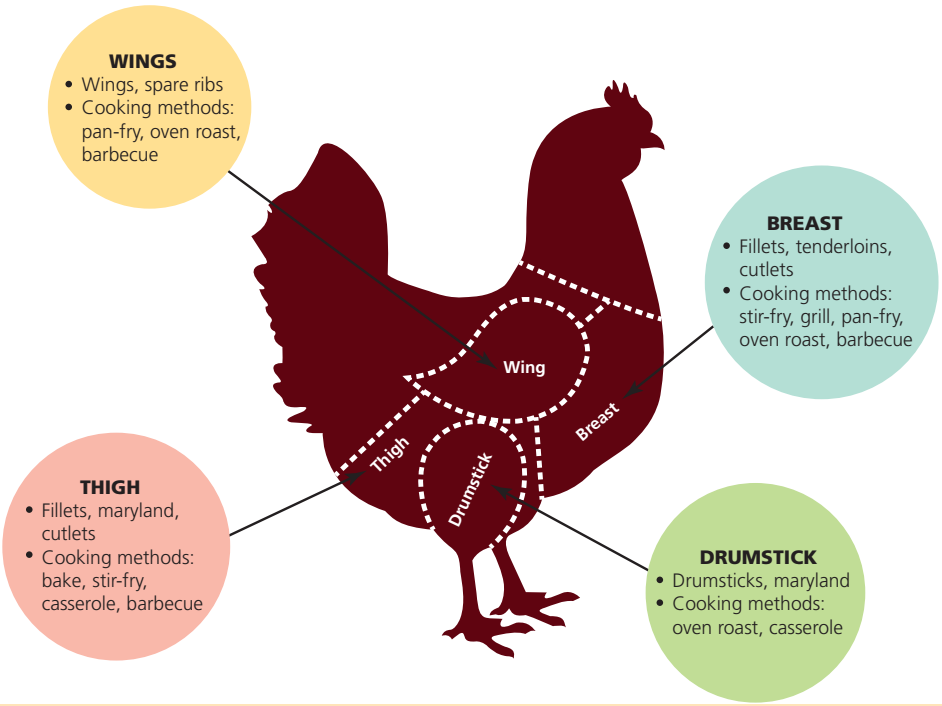
1. Create a mind map to highlight the nutrients in this food group that are considered important for good health.
2. Outline the recommended amount of meat or meat alternatives that should be consumed each week according to the *Australian Guide to Healthy Eating*.
3. Identify the key nutrients in red meat and explain their functions in the body.
4. Explain why in 2019, the Heart Foundation recommended limiting the amount of unprocessed red meat we consume each week.
5. Why is it important to avoid eating meat that has a high fat content?
6. Explain the main differences in the way pasture-fed and feedlot cattle are raised and fed.
7. Which method of feeding cattle ensures that the meat is marbled?
8. Explain how the new meat grading system developed by MSA benefits the consumer.
9. Discuss the differences between muscle fibres, connective tissue and fat tissue in meat.
10. What is modified atmosphere packaging (MAP)? Explain why this packaging system is used for packaging fresh meat.

## Poultry for good health

Like other meats, chicken is a great source of complete protein, and therefore helps to build and repair body tissue. However, it contains marginally less iron than




**Nutrients in poultry**




**Chicken portions**

red meats such as beef and lamb. Chicken also contains the B group vitamins, thiamine and riboflavin, as well as some zinc. It has the same amount of protein as red and other white meat, but less saturated fat and more polyunsaturated fat. Chicken is often thought to be a good substitute for red meats because, if it is prepared without the skin, it is low in fat.

Chicken can be purchased whole for roasting or in portions such as breast fillets, thighs, drumsticks, wings, chicken chops, drumettes and winglets. Minced chicken is another option for preparing quick, simple everyday meals.

Today, there is a great variety of convenient products available for sale to add to chicken to make an easy, flavoursome meal. Jars of sauces and packets of flavourings not only line supermarket shelves but are also widely advertised on television and in magazines.

## ACTIVITY 7.3

### USING CHICKEN IN EVERYDAY MEALS

Undertake an internet search using the keywords 'how to cut and joint a chicken'. (Taste has a useful 'how to' video.) Review the information you find to answer the following questions.

Weblink
*Taste*

1. Select two cuts of chicken. Describe their physical properties and recommended cooking methods.
2. Search for recipes that use the chicken cuts you have selected.
3. Draw a table like the one below and complete it using information from the website/s.

| | Chicken cut 1 | Chicken cut 2 |
|---|---|---|
| Description of the cut | | |
| Physical properties of the cut | | |
| Name of a recipe that uses this cut | | |
| Main cooking method used in the recipe | | |
| Four main pieces of equipment required to complete the recipe | | |
| One health and safety issue to consider in the preparation or production of the recipe | | |


ISBN 9780170446716

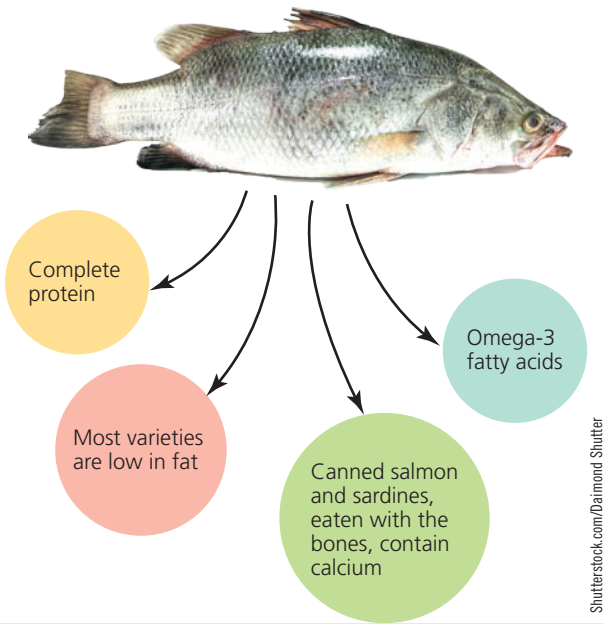
# FISH

Fish is a great ingredient for everyday meals because it contains a small amount of connective tissue with short muscle fibres, so it cooks very quickly and is usually tender. Because fish has such delicate flesh, it is best to cook it just before you want to serve it. Fish can be purchased in a variety of ways, such as whole, as fillets, as cutlets or canned. Fish is quick and easy to cook, and can be baked, grilled, pan-fried, deep-fried, poached, steamed, stewed, stir-fried, microwaved, barbecued or cooked in foil. Be mindful when cooking fish that too many strong flavouring ingredients can overpower its delicate flavour.

## Fish for good health

Health professionals encourage us to include up to two fish meals in our diets each week. Fish is a very healthy choice for meals because it is an excellent source of complete protein and most varieties are naturally low in fat. Fish also provides important omega-3 fatty acids, which are essential for brain and eye development. Eating fish on a regular basis is also thought to reduce the risk of childhood asthma and to help halve the likelihood of heart attack. However, fish does not contain any calcium, unless you eat the bones in canned fish such as salmon or sardines.

It is now recognised that, due to the pollution present in many of the world's rivers and oceans, larger fish may be contaminated with heavy metals such as mercury, so it is wise to minimise the consumption of fish such as shark (flake), swordfish and barramundi.

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**Nutrients in fish**

# SUSTAINABLE FISHING

Australia has established a reputation as a supplier of safe, high-quality seafood that is produced using environmentally sustainable fishing practices. **Sustainable fishing** means leaving enough fish in the ocean so that the fish population can remain productive and healthy. It also means respecting aquatic habitats so that other species of marine animals can remain alive and healthy, and ensuring people who depend on fishing can maintain their livelihoods.

## Aquaculture

As the world's population grows, traditional methods of catching wild fish cannot meet the increase in global demand. **Aquaculture** involves breeding, rearing and harvesting fish and shellfish in coastal marine waters, open oceans and freshwater systems.

Two main types of aquaculture are carried out in Australia: marine and fresh water. The marine fish industry is carried out mainly in South Australia and Tasmania in in-shore and off-shore sea cages or sea pontoons. The main species farmed are blue fin tuna, Atlantic salmon, yellowtail kingfish and barramundi. The freshwater fishing industry has many small farms throughout Australia and uses intensive tank rearing systems and pond and dam systems. The main species farmed are Murray cod, silver perch and eels.

While aquaculture practices are seen to be the solution to overfishing of some endangered species, they do have negative impacts. Raising many fish in an enclosed space may cause water pollution caused by the fish waste or spread marine diseases to native fish. The feedstock used to grow farmed fish species comes from wild-caught fish and this could severely reduce native fish stocks.

Tassal, a company that produces Tasmanian salmon from six marine farms in southern Tasmania, has made a strong commitment to environmental sustainability. It is endeavouring to reduce the amount of wild-caught fish used to feed salmon by using a mixture of grain and chicken meal as an alternative food.



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Fiona Ewing, Tassal Group

**Aquaculture sea cages**

## Choosing sustainable seafood

The Australian Maritime Conservation Society has produced an online resource and app for consumers seeking to purchase sustainable seafood. The guide considers stock status, **bycatch** and discards, habitat and ecosystem and how the seafood is caught, giving each seafood one of three 'traffic light' ratings: 'Better choice', 'Eat less' and 'Say no'.

*A better choice* indicates that the species is not overfished and has been caught using techniques that have a low-environmental impact. Species in this category include whiting, yellowfin bream and farmed barramundi.


GoodFish – Australian Marine Conservation Society

**Sustainable seafood guide**

*Eat less* indicates wild-caught species that have been caught using methods that damage the habitat and produce bycatch. Wild-caught snapper and blue grenadier are in this group as their fishing grounds cover areas of sensitive corals and sea sponges.

*Say no* indicates wild-caught species that may be overfished, and their capture involves significant bycatch of threatened or protected species. Wild-caught barramundi and prawns and farmed Atlantic salmon are in this category.

## ACTIVITY 7.4

### USING AUSTRALIA'S SUSTAINABLE SEAFOOD GUIDE

#### Aim

To use the online Sustainable Seafood Guide to make a responsible choice of tinned tuna.

Weblink

GoodFish: Australia's Sustainable Seafood Guide

#### Method

1. Download the app for the Sustainable Seafood Guide on your device.
2. Select four tins of tuna, each of a different brand.
3. Look up the species of the fish listed on the label of each tin.
4. Check its assessment using the traffic light system:
   - *green* – better choice
   - *amber* – eat less
   - *red* – say no.

#### Analysis

1. Were any of the species overfished?
2. Were any of the fish caught using destructive fishing methods?
3. If farmed, which aquaculture method was used in each brand?
4. Rank the tuna brands from 1–4, with 1 being the most recommended by the guide.

#### Conclusion

Which brand had the 'better choice' rating? Explain why this brand will have less impact on the environment and the fish species will be more sustainable.


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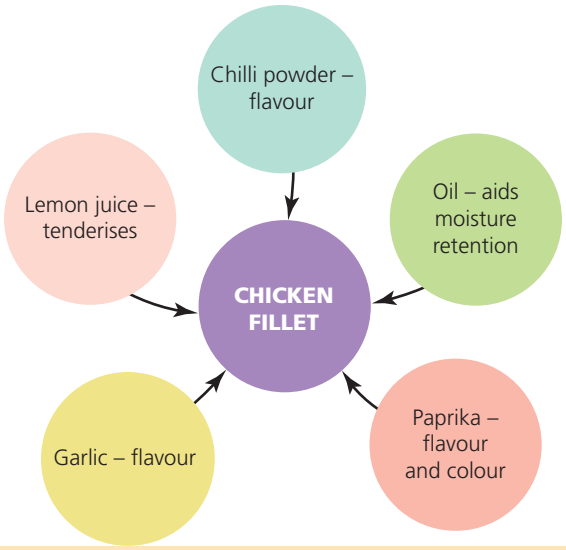
# PREPARING TO COOK MEAT, POULTRY AND FISH

## Marinating

A marinade is a flavoursome liquid in which meat, poultry or fish may be soaked to enhance its flavour. **Marinating** is a method used to tenderise and/or enhance the flavour of meats or other foods. The acid ingredient – either lemon juice, wine or vinegar – breaks down the structure of the muscle bundles so that the food becomes softer and easier to chew. If meat is not tenderised, its muscle fibres begin to shrink and toughen when they are subjected to dry heat. Red meat and poultry can be marinated for several hours or overnight, whereas fish only requires a short period of marinating, because it has very little connective tissue. Keep meat, poultry or fish in the refrigerator while it is marinating to prevent the growth of spoilage microorganisms. When selecting ingredients for a marinade, avoid those with a high sugar or thickener content, since they will burn during stir-frying. These ingredients can be added later in the production process.




**Functional ingredients in a marinade**



## ACTIVITY 7.5

### UNDERSTANDING MARINADES

1 Use recipe books, food magazines or websites to complete the research for this activity.
   - **a** Select four recipes that involve the process of marinating.
   - **b** Record the functional ingredients for each product in a table similar to the following.

Weblink
FSANZ

| Recipe and reference | Ingredient being marinated | Acid for tenderising and flavour | Oil for moisture | Flavourings |
|---|---|---|---|---|
| Beef Noodle Stir-fry, Food by Design, page 166 | Beef | Rice wine vinegar | Oil | Oyster sauce; soy sauce |

2 Go to the Food Standards Australia New Zealand website and investigate the product MSG (monosodium glutamate). What is this ingredient, and what is its number under the Food Standards Code?

3 Explain why MSG is sometimes included in a marinade for meat.

4 Outline the effect that MSG can have on some people.

5 Some restaurants advertise that their food is MSG-free. Discuss why they might do this.

6 Analyse the label on a commercial meat-tenderising product. Predict which of its ingredients have a tenderising effect on the connective tissue in meat.

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Place flour on paper towel. Coat fish patty in flour.

Beat together egg and milk. Place patty on a flat plate. Brush egg mixture over floured patties.

Place breadcrumbs on paper towel. Firmly press crumbs onto the patties with metal spatula.

Mark Fergus Photography

**Crumbing fish patties**

## Crumbing

Crumbing is a process that can be used with meat, poultry and fish to create a crisp, golden-brown coating on the outside of the food. The process is best suited to small, tender pieces of food that can be cooked quickly. The food is first dipped in seasoned flour to create a dry surface, and is then dipped into or brushed with beaten egg mixture, which makes a sticky surface for the breadcrumbs to adhere to. The crumbed food should be rested in the refrigerator for 30 minutes before cooking. This allows the moisture to be evenly distributed in the crumbing mixture and helps to prevent it from falling off the food during cooking. Finally, the crumbed food is fried in hot oil to create a crunchy, golden crust; the heat inside the crumb coating steams the food. Some examples of protein foods that can be crumbed and fried are lamb cutlets, beef schnitzel, chicken fillets and fillets of fish.

# COOKING MEAT, POULTRY AND FISH

Meat, poultry and fish are cooked in order to make them safe to eat and easier to chew and digest, and to destroy any harmful microorganisms. Methods of cooking can be divided into two groups – dry methods and moist methods.

The dry method of cooking is a fast way of cooking meat that is best suited to tender cuts. These cuts of meat, poultry or fish have enough water in their tissue to enable the conversion of the protein collagen to gelatin. Therefore, this cooking method uses little to no liquid, and the time taken to cook the meat depends on the size and thickness of the cut. Examples of this method are pan-frying, stir-frying, grilling, barbecuing and oven roasting.

The moist method of cooking is a slower way of cooking meat that is suitable for less tender cuts. These cuts do not have enough water in their tissues to convert collagen to gelatin. Therefore, the long, slow, moist cooking softens the connective tissue that makes meat tough. Examples of this method are casseroling, pot-roasting, braising and stewing.

## Changes that occur during cooking

During the cooking process, several changes occur to the physical and sensory properties of meat, poultry and fish.

### Texture

- When heat is applied, the protein in the meat, poultry or fish is denatured by coagulation. The protein food shrinks as some of the water is expelled and the texture becomes firm.
- Cooking improves the palatability of meat, poultry and fish by making it easier to chew.
- Connective tissue is tenderised and the collagen is converted to gelatin, if moisture is present. This method breaks down the protein in the muscle and connective tissue.
- Fat melts, giving meat a crisp, brown surface.

### Colour

- The colour of meat changes from red to brown.
- Poultry changes from pale pink to white; the flesh of fish becomes white and opaque once it is cooked.


ISBN 9780170446716

### Flavour and aroma

- Flavour or extractives are squeezed out of meat and onto the surface, giving meat its flavour and aroma.
- Fat also adds flavour when meat, poultry and oily fish are cooked.

### Nutrient value

When meat, poultry and fish are cooked, a number of changes occur to their nutritive value:

- if overcooked, the protein becomes tough and indigestible
- fat-soluble vitamins A, D, E and K are not affected by cooking
- water-soluble vitamins (B group) are lost when meat is cooked.

## How to tell if it is cooked

### Meat

The meat should be browned on the outside. Pierce the meat with a skewer – the juices should be pinkish to clear.

### Poultry

Pierce the poultry with a skewer in the thickest part of the flesh – the juices should run clear. The chicken meat should no longer be pink. The skin should be golden brown and slightly crispy.

### Fish

The fish should turn white and flake apart easily with a fork.

## Top tips for grilling

Grilling is a quick and healthy method of cooking and is ideal for preparing family meals in a hurry.

1. For a griller separate to the oven, leave the griller door open during cooking to prevent heat building up inside the appliance. For a griller inside the oven, grill with the door closed or follow the manufacturer's instructions.
2. Trim visible fat from the meat or poultry.
3. Use tongs for turning food during grilling.
4. If meat starts to curl while it is cooking, cut the curled-up edges with the point of a sharp knife.
5. Test to see if meat or poultry is cooked by gently pressing with blunt tongs. Do not cut the meat or poultry, as this allows the meat juices to escape. Fish will flake apart with a fork.
6. Soak bamboo skewers for kebabs in water before threading to prevent them from burning during grilling.
7. If meat or poultry is marinated with honey or sauces containing sugar, heat the griller to medium rather than high to prevent the marinade from burning.

## Top tips for stir-frying

Stir-frying is a quick method of cooking in a wok over intense heat. Tender cuts of meat and/or vegetables should be cut into equal bite-sized pieces before cooking. Meat and chicken can be marinated before stir-frying, but the marinating liquid should be drained off before cooking to prevent stewing.

1. Prepare meat strips by trimming off any fat and slicing across the grain. Strips should be 5–8 centimetres long. Cut chicken pieces in equal sizes so they cook evenly.
2. Add a small quantity of oil to the wok and swirl to coat its sides and base. Heat oil until smoke point is almost reached.
3. Drain off excess marinade, add the strips and stir-fry for two to three minutes. The meat strips should sizzle when added to the hot oil. Sear in small batches to prevent the meat from shedding its juices and stewing, and consequently toughening. Allow the wok to heat up again between batches.
4. Remove meat from the wok and stir-fry vegetables separately – firm vegetables first, then softer or leafy varieties. Return everything to the wok to warm before serving.

## Top tips for frying

1. Always have the oil hot enough so that when the food is added, it sizzles. Test with a cube of bread – it should turn golden in 30 seconds. Food soaks up cold oil like a sponge.
2. Make sure all portions of food are dry before placing them in hot oil. This prevents spitting.
3. Fry only small portions of food – they will cook quickly and more evenly.
4. Drain fried food well before serving.
5. Take care when frying because hot fat and oil reach very high temperatures. Use oven mitts to protect your hands.



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**Stir-fry cooking**

## ACTIVITY 7.6

### COOKING SAFELY WITH MEAT, POULTRY AND FISH

Work in small teams to prepare a digital notice board or fact sheet to inform consumers how to cook safely with protein foods such as meat, poultry and fish. Brochures or fact sheets will be available in supermarkets and most butchers. Your brochure or fact sheet should include:

- appropriate headings
- information about how to select good-quality meat, poultry or fish
- information about safely transporting meat, poultry or fish home
- information about strategies for storing meat, poultry or fish safely
- instructions for preparing and cooking meat, poultry or fish
- diagrams or photos, to help make the message clear.

# EGGS

Eggs are defined as the reproductive cell of a female bird that contains nutrients to support the development of the new embryo.

Eggs can form the basis of a cooked breakfast or a quick and easy family meal. They are also an important ingredient in many recipes, assisting with multiple processes used in food preparation.

## Eggs for good health

Eggs are another source of animal protein; they are low in cost and easy to prepare. Like other sources of animal protein, eggs are rich in vitamins and minerals – most notably vitamin D. One egg fulfils 40 per cent of your daily vitamin D requirement, which is essential for calcium absorption. However, eggs do not contain any vitamin C, and the amount of carbohydrate they contain is also minimal. The fat and cholesterol that are present in eggs are only found in the egg yolk. Because eggs are such a nutritious food, the Heart Foundation states 'that the latest evidence shows that eating them as part of a heart-healthy dietary pattern does not affect the risk of developing heart disease for healthy people' (New diet recommendations matter to your heart', Heart Foundation, 23 August 2018, https://www.heartfoundation.org.au/). The Heart Foundation has also stated that there is no longer a limit to the number of eggs healthy people should eat. However, people with type 2 diabetes should eat no more than seven eggs per week.


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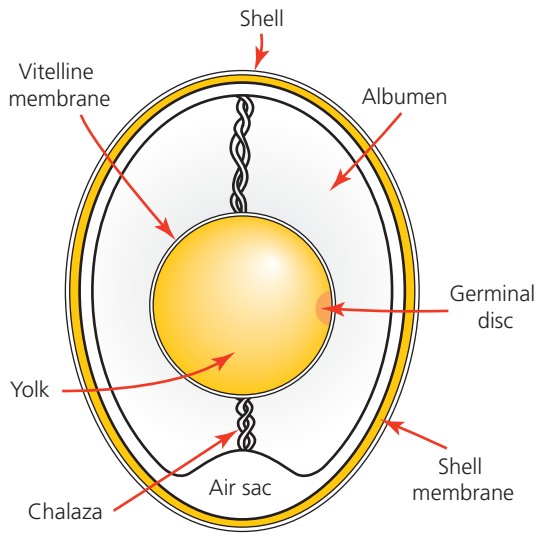
| Approximate nutrient content of a 55-gram egg | |
|---|---|
| Energy | 297 kilojoules |
| Water | 37.7 grams |
| Protein | 6.35 grams |
| Fat | 5.05 grams |
| Carbohydrate | 0.15 grams |
| Cholesterol | 187.5 milligrams |
| Sodium | 66.5 milligrams |
| Potassium | 57 milligrams |
| Calcium | 19.5 milligrams |
| Iron | 0.8 milligrams |
| Zinc | 0.45 milligrams |

## Components and structure of an egg

The structure of an egg is complex. It has an external shell and an inner membrane to protect the developing embryo from changes in the external environment. The yolk containing the egg cell is surrounded by both thin and thick albumen, or egg white. The chalaza or cord anchors the yolk to the shell and keeps it centred. The air sac is important as it will provide the hatching chicken with its first gulp of air.




**Components of an egg**

## ACTIVITY 7.7

### INVESTIGATING THE STRUCTURE OF EGGS

1. Collect an egg, a small plate and a skewer.
2. Break the egg onto the plate, making sure not to break the yolk.
3. Carefully examine both the shell and the egg.
4. See if you can locate all the components of the egg shown the diagram opposite. Place a tick next to each component as you identify it.
5. What do you think is the purpose of the shell membrane?
6. Carefully pierce the egg yolk with your skewer. What happens to the yolk?
7. Explain how the yolk keeps its round shape.
8. What do you think is the role of the chalaza in an egg?
9. What is the purpose of the germinal disc in an egg?

### Testing the freshness of eggs

Eggs can be tested for freshness by filling a bowl with cold water and gently lowering the egg into the water. The egg:

- is fresh if it stays on the bottom of the bowl
- is stale if it floats to the surface of the bowl.

Science Photo Library/Cordelia Molloy

**Testing the freshness of eggs: fresh eggs sink and stale eggs float**

## Methods of eggs production

Egg farming is the process of raising hens to produce eggs for human consumption. Australian egg farmers produce 16.9 million eggs every day. In Australia, there are four egg farming systems.



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### Free-range eggs

The hens are free to roam outside in the sunshine during the day. The hens' food, water and nests are housed in sheds where they are protected from predators.

Alamy Stock Photo/Chris Putnam

**Free-range hens can roam outside during the day**

### Barn-laid or cage-free eggs

The laying hens are free to roam in a shed and can spread their wings to stretch out, but they do not have access to the outdoors. They have nest boxes to lay their eggs in.

iStock.com/daseaford

**Hens confined to a barn do not have access to the outdoors**

### Cage eggs

The laying hens are confined to small wire cages in large sheds. Each hen has only the space of approximately an A4 sheet of paper. The cages are stacked in sheds that may contain up to 100 000 birds.

Shutterstock.com/Fotos593

**Caged hens are confined to small wire cages**

### Organic eggs

Hens that produce organic eggs are able to roam in paddocks and consume feed that is free from pesticides, herbicides and synthetic fertilisers. They do not receive any antibiotics.

## Ethical issues in egg selection

Sound animal welfare standards are critical to ensure the sustainability of the egg industry. Hens are clever, inquisitive and social animals and need to be free to roam and spread their wings. Ideally, they should have access to the outdoors to socialise, scratch, dust, bathe and have a perch to roost at night. Hens kept in barren, wire battery cages cannot express their natural behaviour as they have little to no space to move or stretch their wings. Because of their lack of space, they cannot escape the aggression of other hens.

In recent years, consumers have become increasingly concerned about animal welfare issues including battery cage egg production systems. As a result, many consumers are purchasing free-range and barn-laid or cage-free eggs with lower hen density production ratios, rather than eggs produced using intensive production systems. Egg producers have responded to this demand by moving to barn-laid or cage-free systems and providing hens with furnished cages with a perch, a nest and increased space. Supermarkets have also responded to consumer demand, so now more free-range and cage-free eggs are available on the supermarket shelves.


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For many years, the RSPCA has been advocating for an end to battery cage egg production. Its current campaign, 'Cage Free & Proud' celebrates companies that have committed to phasing out the use of cage eggs, with the intention to encourage other companies to also go cage free. More recently, several large food catering companies (including Spotless) have also signed up to the 'Cage Free & Proud' campaign.


RSPCA Australia

**RSPCA's 'Cage free & proud' campaign**

## Purchasing eggs

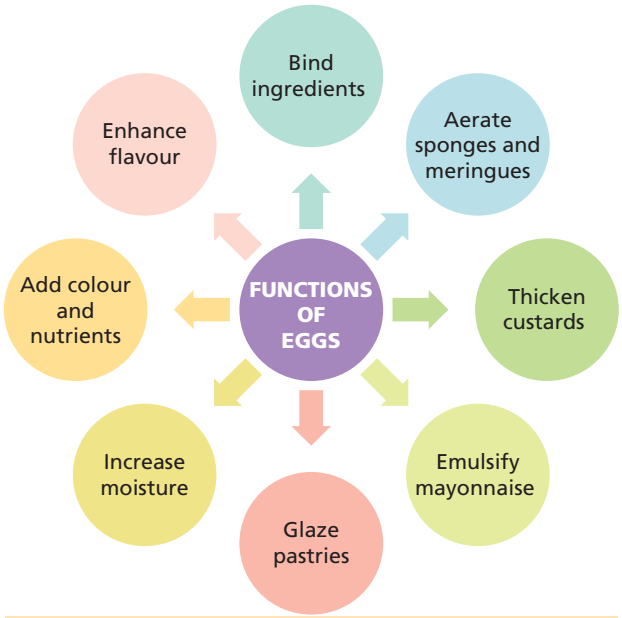
When purchasing eggs, always check the best before date to ensure that the eggs you purchase are fresh. Eggs are usually purchased in a carton, where they sit in individual spaces, point-down so that the yolk remains in the centre of the white. Remember that eggs are a perishable food, so it is best to store them in the refrigerator to maximise their keeping qualities.


Mark Fergus Photography

**Always check the 'Best before' date on an egg carton to ensure you buy eggs that are fresh**

## Cooking with eggs

Eggs are a versatile ingredient with characteristics that enable them to perform many functions in food products.




**Functions of eggs in cookery**

Protein is one of the major nutrients in eggs, and it can be changed by heat or mechanical methods. Coagulation is the permanent change to the physical and chemical structure of protein. The texture of the egg protein is changed from a liquid into a thick mass as a result of heat or the addition of acids. As the egg is heated, the protein begins to set. When eggs are cooked, the white cooks first and sets, or coagulates. In other words, the egg white forms a soft gel that no longer flows. The yolk takes slightly longer to set to a paler yellow, slightly firmer gel. If eggs are overcooked, they become tough and rubbery and the yolk becomes dry.

# NUTS AND SEEDS

Nuts and seeds are nutritious foods that should be included as a part of a well-balanced diet. Nuts are the edible kernel of dried fruits from some trees and plants. They are really the seeds of a plant enclosed in a hard, brittle or woody tough shell. Similarly, many vegetables and plants produce edible seeds such as pumpkin seeds, chia seeds, sesame seeds and sunflower seeds.

Both nuts and seeds can be eaten as a snack food or used as a garnish or flavouring ingredient. Nuts can be tossed through a salad or stir-fry, used ground as a substitute for flour in a cake, while seeds can



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be used as a nutritious addition to muesli and fruit smoothies or as a topping on muffins and bread rolls.

Nuts and seeds can add variety and a concentrated source of nutrients to everyday meals and should be included as a part of a well-balanced diet.

## Classification of nuts

Nuts are grouped or classified according to how they grow, for example, on a tree, under the ground or as a seed of fruit.

**Tree nuts**

Almonds, cashews, coconuts, macadamias, pecans

**Ground nuts**

Peanuts

**Seeds**

Brazil nuts, bunya nuts, pine nuts

**Nuts are classified according to how they grow**

## Nuts and seeds for good health

Nuts are a healthy plant food as they provide protein, healthy monounsaturated and polyunsaturated fats and a range of minerals, vitamins and phytochemicals. They are also a good source of fibre and are naturally low in sodium. Because of their nutritional properties, nuts are often eaten by people who follow a vegetarian or vegan diet and do not wish to eat meat, fish, dairy foods or eggs. It is recommended that we include a handful (about 30 grams) of nuts in our diet every day. Nuts are best enjoyed raw or toasted and unsalted, as too much salt can increase blood pressure. A small proportion of people are allergic to nuts and should they ingest them the consequences can be life threatening. They may be allergic to one or more tree nuts, peanuts only or both tree nuts and peanuts. Further information on nut allergies can be found in chapter 12.

Like nuts, seeds provide a concentrated source of important nutrients. Sesame seeds are a good source of protein, omega-6, vitamins and fibre while chia seeds are renowned for their high concentration of omega-3 fatty acids, dietary fibre, protein and calcium. Recent research suggests that including chia seeds in the diet has many health benefits, especially in helping to reduce cholesterol levels and the risk of cardiovascular disease.

## 7.1 Case study

Read the article below and answer the questions that follow.

### *Nutty snacks can keep us slim*

Adults put on almost half a kilo a year but scientists have found the way to break the unhealthy, accumulative weight gain – and it's nuts.

By substituting just one low-nutrition snack with nuts a day, Australians could control their long-term body weight and boost their health.

Researchers from Harvard define one serve as 28 grams of whole nuts or two tablespoons of nut butter.

'There is a misconception that nuts put weight on but a handful a day actually helps to starve off overeating,' dietitian Kate Di Prima told the *Herald Sun*.

'Nuts are highly nutritious and full of good fats, which sit in the stomach and keep hunger pangs away. Substitute the biscuit at 3 p.m. with a few nuts and there will be benefits.'

Some fat is trapped in the fibrous structure of nuts, which means it passes through the body undigested.

Australian Dietary Guidelines include nuts in the same group as meat, fish, poultry, eggs and legumes due to the protein content, but they are also all full of nutrients and fibre. Eating 30 grams of nuts a day is also believed to reduce the risk of heart disease by 30–50 per cent.




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## Analysis

1. Predict the health outcome for many Australians if they were to include a handful of nuts into their diet each day.
2. Hypothesise why eating a small amount of nuts can help stave off hunger pangs.
3. Explain why nuts are considered a highly nutritious food and are included in the same food group of the *Australian Guide to Healthy Eating* as meat, fish, poultry, eggs and legumes.
4. Develop a logical argument that could be used in a promotional campaign to encourage people to include a handful of nuts in their diet every day.


NUTS FOR LIFE

**Include a handful of nuts in your diet every day**

## Nut spreads and milks

Nuts are commonly used to make spreads such peanut butter, cashew butter and almond butter. They are also widely used as an alternative to milk made from dairy cows. Plant-based milks such as almond milk, coconut milk, macadamia milk and cashew milk are growing in popularity and supermarkets and health food stores now stock a wide range of these milks for sale, both fresh and in long-life varieties.

Plant-based milks have become more popular as they are dairy-free and suitable for people who are allergic to cow's milk, lactose intolerant or those following a vegan diet.


Mark Fergus Photography

**Plant-based milks are growing in popularity**

When choosing a plant-based milk, analyse the label to ensure it has similar nutritional properties to dairy milk. This will mean checking the product has been fortified with calcium and has adequate protein if you are a vegan. Also be aware that many of these milks contain added sugar or sugar syrup; aim to purchase unsweetened or organic varieties.

# LEGUMES AND BEANS

Legumes have many of the same nutritional properties as meats, poultry, fish, eggs and nuts, so they have been placed in this section of the *Australian Guide to Healthy Eating* as well as in the vegetables group. Legumes such as chickpeas and lentils are often made into burger patties and used as a substitute for similar meat products. More detailed information on legumes and beans can be found in chapter 6.

## TESTING KNOWLEDGE

11. What is poultry, and why is it a valuable food to include in the diet?
12. List two popular cuts of chicken and identify one method of cooking each cut.
13. Explain why fish can be cooked quickly and is a good food to eat regularly.
14. What is meant by the term sustainable fishing? Provide one example of how this can be achieved.
15. What is a marinade, and why is it sometimes used in the preparation of meat, poultry and fish?
16. Prepare a diagram to demonstrate the changes that occur to meat and poultry when it is cooked.
17. Explain why eggs should be included as part of a well-balanced diet.
18. Compare the production methods of cage eggs and free-range eggs.
19. Create a mind map to highlight the changes that occur when the protein in an egg coagulates.
20. Explain why people are encouraged to include a handful of nuts in their diet every day.

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## THINKING SKILLS

### Analyse the two methods of beef production

1 Refer to table on pasture-fed and feedlot cattle on page 145.

2 Summarise the similarities and differences between the two meat production systems. In your analysis, consider the quality of the meat produced, animal welfare issues and the impact on the environment from the farming practice.

7

# Design activity 7.1

## A GOURMET BURGER

Burgers are a popular food that are quick to prepare and can be eaten without cutlery. Preparing a burger from scratch allows you to incorporate different types of protein and interesting vegetables and flavouring ingredients to make a unique, gourmet product.

### Design brief

Design a gourmet burger that incorporates a protein ingredient and a range of vegetables and flavourings that would be suitable to pan fry or barbecue when friends come to visit.

1 Write a design brief that includes the following information.
   - Who – who will be eating the gourmet burger?
   - What – a gourmet burger featuring a protein ingredient, a variety of vegetables and flavourings.
   - When – when will the barbecue take place?
   - Where – where will the barbecue be held?
   - Why – why will you include a range of vegetables and flavourings in the burger?
2 After writing your design brief, develop five evaluation criteria that cover the specifications outlined in your design brief to evaluate the success of your gourmet burger.

### Investigating

1 Undertake an internet search of ingredients that could be included in burger recipes. Complete the table on the opposite page by identifying four ingredients suitable to include in each category.
2 Use the internet to find a recipe for barbecuing burgers. List three important tips for successfully barbecuing burgers.

### Generating

1 Using the information you have gained from your research into ingredients, select the ingredients for your new burger.
2 Using the recipe for Zucchini Burgers (page 167) as a guide to the proportion of ingredients required, write out the recipe for your new burger.

### Planning and managing

1 Prepare a food order.
2 Write up a production plan for your burger.

### Producing

Produce the burger you have designed.

### Evaluating

1 Answer your five evaluation questions in detail to determine the success of your gourmet burger.
2 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your burger.
3 Evaluate the flavour of your burger. Did the flavours complement each other?
4 Identify two safety issues to consider when preparing and cooking the burger.


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5 What changes or modifications would you make to your recipe if you were to make the burger again?

6 Classify the ingredients for your burger onto a diagram of the *Australian Guide to Healthy Eating*.

Discuss whether your burger met the guidelines of this food selection model and was a healthy meal option.

| Protein ingredient | Vegetables | Flavourings | Herbs | Garnishes | Breads |
|---|---|---|---|---|---|
| | | | | | |

**Burger ingredient table**

# Design activity 7.2

## MEALS USING MINCED MEAT

Beef, lamb, pork and chicken can all be minced to create a versatile ingredient that can be used in sauces, as a filling in pies, pastries, crepes and pasta, and in balls, patties and loaves. Minced meat can be fried, baked, grilled, steamed or stewed to make many recipes suitable for serving as a meal.

1 Write your own design brief based on the five Ws. The theme is a main meal in which minced meat is the hero.
   - Who – who will be eating the main meal?
   - What – outline the occasion at which the main meal will be served, and the time available to prepare and serve it.
   - When – the time of day or season in which the main meal will be eaten.
   - Why – why the main meal will be eaten.
   - Where – where the main meal will be served.

2 Use the specifications – that is, the constraints and considerations in your brief – to develop five criteria questions to evaluate the success of your main meal.

### Investigating

Research and select two recipes that use minced meat that are suitable for a main meal and can be prepared in the time identified in your brief.

### Generating

1 Sketch, in colour, the serving and presentation of each menu option. Annotate each option to include:
   - **a** a recipe title
   - **b** list of main ingredients
   - **c** major cooking methods
   - **d** major processes
   - **e** references.

2 Use a decision table similar to the one below to select your preferred option. Justify your choice.

### Planning and managing

1 Calculate the ingredients required to prepare the recipe for the number of people you are serving.

2 Write up your new recipe.

3 Write up a production plan, including relevant health and safety considerations.



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| Decision table | |
|---|---|
| Decision to be made: | |
| **Option 1** | **Option 2** |
| Advantages: | Advantages: |
| | |
| Disadvantages: | Disadvantages: |
| | |
| Decision (preferred option): | |
| Justify your decision based on the specifications in your design brief: | |

**Decision table**

## Producing

1. Prepare the product.
2. Note any modifications or changes you made during the production of the recipe.

## Evaluating

1. Answer your evaluation criteria questions in detail to determine the success of your meal.
2. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your recipe.
3. What was the most challenging part of the production? Outline how you managed this challenge.
4. Comment on your overall management of time for this activity, including both your designing and planning and the production of the meal.
5. Classify all the ingredients of your meal on a diagram of the *Australian Guide to Healthy Eating*. Comment on the nutritional value of this meal.
6. If you were to produce this meal again, what changes would you make to improve it?


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# BAKED MEATBALLS AND SPAGHETTI

140 grams spaghetti

### MEATBALLS

1 slice stale bread
2 tablespoons milk
200 grams minced beef or chicken
¼ onion, grated
½ egg, lightly beaten
1 tablespoon grated parmesan
pinch of cayenne pepper
pinch of salt and pepper

### TOMATO SAUCE

1 cup tomato passata or sugo sauce
1 cup canned diced tomatoes
¼ cup water
2 teaspoons sugar
2 teaspoons basil, finely chopped
2 teaspoons parsley, finely chopped
2 tablespoons parmesan cheese (extra as required)

SERVES TWO

## METHOD

### SPAGHETTI

1 In a large saucepan, boil the water, then cook spaghetti until al dente. Drain. While the spaghetti is cooking, prepare the meatballs.

### MEATBALLS

1 Preheat oven to 200°C. Lightly oil baking tray.
2 Trim the crusts from the bread and tear into small pieces. Place in a small bowl, add the milk and allow the bread to soak for 5 minutes. Squeeze out excess milk.
3 Combine the minced meat, onion, egg, parmesan cheese, cayenne pepper, salt and pepper and the soaked bread. Mix well.
4 Using about 2 teaspoons of the meat mixture per meatball, shape into small balls and place on baking tray. Bake for approximately 15 minutes or until firm and lightly browned.

### TOMATO SAUCE

1 Combine the passata, canned tomatoes, water, sugar, basil and parsley in a saucepan and simmer for 10 minutes so the sauce can thicken a little.

### COMPLETING THE DISH

1 Add the cooked spaghetti, tomato sauce and meatballs into a small casserole dish. Gently stir to mix the sauce through the dish.
2 Sprinkle with extra parmesan and bake for 10–15 minutes until a light golden brown.

### EVALUATION

1 What is the role of the soaked bread in the meatballs?
2 Discuss the preparation and nutritional benefits of baking the meatballs instead of frying them.
3 Describe a test you could use to determine whether the meatballs were cooked.
4 If you were to make the Baked Meatballs and Spaghetti to serve at a later time, describe how you would store and reheat them safely.
5 Write a critique of the Baked Meatballs and Spaghetti recipe to justify its inclusion on the National Healthy School Canteens list of recommended menu items.

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# BEEF NOODLE STIR-FRY

200 grams rump steak, thinly sliced

### MARINADE

2 teaspoons oil

1 tablespoon oyster sauce

1 tablespoon soy sauce

1 tablespoon dry sherry or rice wine vinegar

### STIR-FRY

½ onion, cut into wedges

1 piece broccoli, cut into florets

⅓ carrot, julienned

4 snow peas

¼ red capsicum, julienned

½ zucchini, cut into batons

1 tablespoon bamboo shoots

1 tablespoon water chestnuts

200 grams fresh Hokkien noodles

2 tablespoons oil, for frying

3 centimetres fresh ginger, finely sliced

1 clove garlic, finely sliced

¼ cup water or stock

1–2 tablespoons satay sauce or sweet chilli sauce, to serve

SERVES TWO

### METHOD

1. Combine the steak, oil, oyster sauce, soy sauce and dry sherry or vinegar and marinate in the refrigerator for 20–30 minutes.
2. Cut all the vegetables into the appropriate sizes.
3. Place the noodles in a large bowl, cover with boiling water and leave to stand for about 5 minutes.
4. Drain marinade from steak and heat one tablespoon of oil in wok on high.
5. Fry onion for 30 seconds then add half of the meat strips. Cook for 1 minute, then add the remainder of the meat. Stir-fry until almost cooked. Remove from heat and keep warm.
6. Wipe out the wok and heat the remaining oil on high.
7. Add the ginger and garlic, then the carrot, broccoli, capsicum, zucchini and snow peas, allowing 30 seconds between the addition of each ingredient.
8. Add the water or stock, bamboo shoots and water chestnuts. Cook until vegetables are just tender.
9. Drain noodles.
10. Return the meat and onion to the wok, then stir through the noodles and satay or sweet chilli sauce.

### EVALUATION

1. Describe the best way to cut meat to ensure it is tender and easy to chew after being stir-fried.
2. Explain why the beef strips were marinated and describe the functional role of each ingredient in the marinade.
3. Why is the meat cooked in two batches rather than all at once?
4. Identify two safety factors you took into consideration when preparing the stir-fry.
5. Classify the ingredients for the Beef Noodle Stir-fry on a diagram of the *Australian Guide to Healthy Eating* and explain how well it meets the guidelines of this food selection model.

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# ZUCCHINI BURGERS

¼ medium zucchini, grated
100 grams lean minced steak
¼ onion, grated
½ small clove garlic, crushed
½ teaspoon soy sauce
2 teaspoons beaten egg
2 tablespoons fresh breadcrumbs
1 tablespoon flour
2 tablespoons oil, if frying
2 hamburger buns
2 lettuce leaves
½ tomato, sliced
2 slices cheese
tomato sauce

MAKES 2 BURGERS

## METHOD

1. Grate the zucchini and allow to stand for 5–10 minutes. Squeeze the zucchini to remove as much moisture as possible.
2. Combine the zucchini, minced steak, onion, garlic, soy sauce, egg and breadcrumbs. If the mixture is too wet, add extra breadcrumbs.
3. Shape into two round patty shapes and dust with flour.
4. Barbecue on an oiled plate or fry in a frying pan until meat juices run clear.
5. Assemble on buns and garnish with lettuce, tomato slices, cheese and tomato sauce.

## EVALUATION

1. Describe the sensory properties –appearance, aroma, flavour, texture and sound – of your burger.
2. Why is it important to squeeze the moisture from the grated zucchini before adding it to the hamburger mixture?
3. Why is the onion grated and not diced in this recipe?
4. Explain the function of the egg in the hamburger mixture.
5. Explain why, according to the *Australian Guide to Healthy Eating*, we should eat burgers 'only sometimes and in small amounts'.

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# SPICY STIR-FRIED PORK AND GREEN BEANS

250 grams green beans, topped and tailed
2 tablespoons vegetable oil
4 spring onions, thinly sliced on an angle
2 tablespoons ginger, finely grated
2 garlic cloves, crushed
250 grams minced pork
3 tablespoons soy sauce
3 tablespoons Shaoxing wine or mirin
2 teaspoons caster sugar
2 teaspoons chilli bean sauce
90 millilitres chicken stock
3 teaspoons rice vinegar
3 teaspoons sesame oil
⅔ cup jasmine rice to serve

SERVES TWO

## METHOD

1. Cook the jasmine rice by the absorption method according to the instructions on page 108. Keep covered with the lid to keep warm.
2. Half-fill the base of a steamer with water and place on low heat.
3. Heat the oil in a wok or large frying pan.
4. When the oil has reached medium to high heat, add the spring onions, (retaining a small portion for serving), ginger and garlic and stir-fry for approximately 30 seconds.
5. Add the pork and fry, breaking up any clumps with a wooden spoon.
6. Continue to cook the pork for 2–3 minutes or until it is no longer pink.
7. Combine the soy sauce, Shaoxing wine, caster sugar and chilli bean sauce in a small bowl and stir to remove any lumps in the sauce. Add to the pork mixture and stir through.
8. Bring the water in the steamer to the boil, add the beans and steam for 4 minutes or until just tender.
9. Add the chicken stock to the pork mixture and simmer for 3–4 minutes until the sauce has reduced by half.
10. Add the steamed beans, vinegar and sesame oil to the pork mixture and toss quickly to combine.
11. To serve, place the cooked jasmine rice in the base of a bowl and top with the spicy stir-fried pork and green beans. Sprinkle with the remaining spring onions.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the Spicy Stir-Fried Pork and Green Beans.
2. What other green vegetables could replace the green beans in this recipe?
3. Outline two safety rules to follow when cooking on the stove top.
4. Suggest cereal-based foods other than rice that could be served with the Spicy Stir-Fried Pork and Green Beans.
5. Classify the ingredients for the Spicy Stir-Fried Pork and Green Beans served with rice on a diagram of the *Australian Guide to Healthy Eating*. Explain how well this meal meets the recommendations of this food selection model.

Mark Fergus Photography



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# SPICY 'SHAKE AND BAKE' CHICKEN WITH POTATO LATKES

This recipe incorporates baking, frying and steaming in the preparation of this delicious meal.



### SPICY 'SHAKE AND BAKE' CHICKEN

3 tablespoons rice flour
2 teaspoons Cajun spice
2 teaspoons olive oil
2 teaspoons soy sauce
8 chicken drumettes
olive oil spray

SERVES TWO

### METHOD

1. Preheat oven to 180°C. Cover a baking tray with baking paper.
2. Place the rice flour and Cajun spice in a plastic bag.
3. Mix together the oil and soy sauce and lightly brush over the chicken drumettes.
4. Place the drumettes in the plastic bag with the rice flour and Cajun spice. Shake well to coat.
5. Place the coated chicken drumettes onto the baking tray. Lightly spray with the olive oil spray.
6. Bake in the preheated oven for 20–25 minutes or until tender and juice runs clear when a skewer is placed in the thickest part.

### POTATO LATKES

2 large potatoes
¼ onion
2 tablespoons plain flour
1 egg
salt and pepper
15 grams butter
2 tablespoons oil

SERVES TWO
SERVE WITH STEAMED BROCCOLI OR GREEN BEANS.

### METHOD

1. Peel and grate the potatoes. Firmly squeeze the potatoes to remove as much water as possible.
2. Peel and grate the onion and mix with the grated potato.
3. Add the flour and egg, then season with salt and pepper. Mix until smooth.
4. Heat the butter and oil in a frying pan over medium heat. Test the heat by dropping a small cube of bread into the pan – if the butter and oil mix is hot, the bread will sizzle and brown immediately.
5. Place ¼ cup of the potato mixture into the hot frying pan and pat down with a fork to form a small latke. Repeat with remaining potato mixture – it should make about four latkes.
6. Lightly fry for approximately 8 minutes until brown on one side and the bottom of the latke is crisp. Gently turn over and cook the other side for a further 8 minutes until brown and crisp and the potato is cooked through.
7. Remove from the frying pan and drain on absorbent paper.

### EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your meal.
2. Why are oil and soy sauce brushed over the chicken drumettes before they are coated in the rice flour and Cajun spice?
3. List one important safety rule to observe when frying the latkes.
4. Which part of this production was the most successful, and what did you find the most challenging about this production?
5. Classify the ingredients for the recipe on a diagram of the *Australian Guide to Healthy Eating*. Discuss how well your meal meets the recommendations of this food selection model.

Mark Fergus Photography

ISBN 9780170446716

# FISH PATTIES WITH COLESLAW

Fish patties with coleslaw make a delicious light meal to serve in spring or summer and are made using ingredients that are readily found in the pantry or refrigerator.

## FISH PATTIES

2 medium potatoes
220 grams canned tuna or salmon
1 tablespoon parsley, chopped
2 teaspoons lemon juice
salt and pepper
2 tablespoons plain flour
1 egg
1 tablespoon milk
⅓ cup dry breadcrumbs
2 tablespoons oil

SERVES TWO

**Hint: Check the information on crumbing on page 154. Refrigerate the patties for 15–30 minutes before frying; this helps the crumbs to stay attached to the patty.**

## COLESLAW

⅛ cabbage
½ carrot
¼ red capsicum
½ stick celery
1 spring onion
1 tablespoon coleslaw dressing
1 tablespoon French dressing

SERVES TWO

## METHOD

1. Peel and quarter the potatoes.
2. Half-fill the base of a steamer with water and bring to the boil.
3. Place the potatoes into the top of the steamer and steam for 10–15 minutes until cooked.
4. Mash the potatoes with a fork or potato masher.
5. Drain the tuna or salmon and flake well with a fork. If using salmon, finely crush the bones and mix well through the salmon.
6. Add the flaked tuna or salmon, parsley, lemon juice and salt and pepper to the mashed potato. Mix well.
7. Form into four even-sized patties.
8. Beat together the egg and milk. Place the patties on a flat plate.
9. Coat the fish patties in flour, then brush with the egg and milk mixture and coat in the breadcrumbs. Press the crumbs on firmly.
10. Heat the oil in a frying pan over a low heat. Place the patties in the hot oil and cook for approximately 3–4 minutes or until brown on the bottom.
11. Carefully turn over the patties and cook on the second side for a further 3–4 minutes or until brown.
12. Drain on paper towel.

## COLESLAW

1. Finely shred the cabbage and place in a large bowl.
2. Grate the carrot and finely dice the capsicum and celery. Mix with shredded cabbage.
3. Toss the coleslaw and French dressings through the prepared vegetables.
4. Serve the coleslaw with the fish patties.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your meal.
2. Why are the patties coated in flour before being brushed with the egg and milk?
3. List two safety rules to follow when frying the fish patties.
4. Discuss the part of this production that was the most successful and the part you found most challenging.
5. Classify the ingredients for the Fish Patties with Coleslaw on a diagram of the *Australian Guide to Healthy Eating*. Discuss how well your meal meets the recommendations of this food selection model.

Mark Fergus Photography



ISBN 9780170446716

# 8 FRUIT

## KEY KNOWLEDGE

- Fruit in the *Australian Guide to Healthy Eating*
  - Fruit for good health
  - How much fruit should I eat?
  - Adding more fruit to your diet
- Classification of fruit
  - Buying fruit in season
- Apples
  - Apple varieties
  - Commercial storage
  - Nutrition
  - Selecting the best
  - Storage
  - Cooking with apples
- Oranges
  - Orange varieties
  - Nutrition
  - Selecting the best
  - Storage
- Fruit juices and drinks
  - Comparing whole fruit and fruit juice
- Bananas
  - Growing bananas using sustainable practices
  - Nutrition
  - Selecting the best
  - Storage
- Minimising food waste

## KEY TERMS

**enzymatic browning** a process that occurs when the enzymes in cut or peeled fruits cause browning when exposed to oxygen in the air

**in season** the time of year when a fruit or vegetable has its best sensory properties

**pome fruit** fruit that has crisp, juicy flesh surrounding a core that contains seeds, for example, apples and pears

**sustainable farming** farming practices that maintain the land's productivity so that it will be available for future generations

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food and fibre production
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking

### CROSS-CURRICULUM PRIORITIES

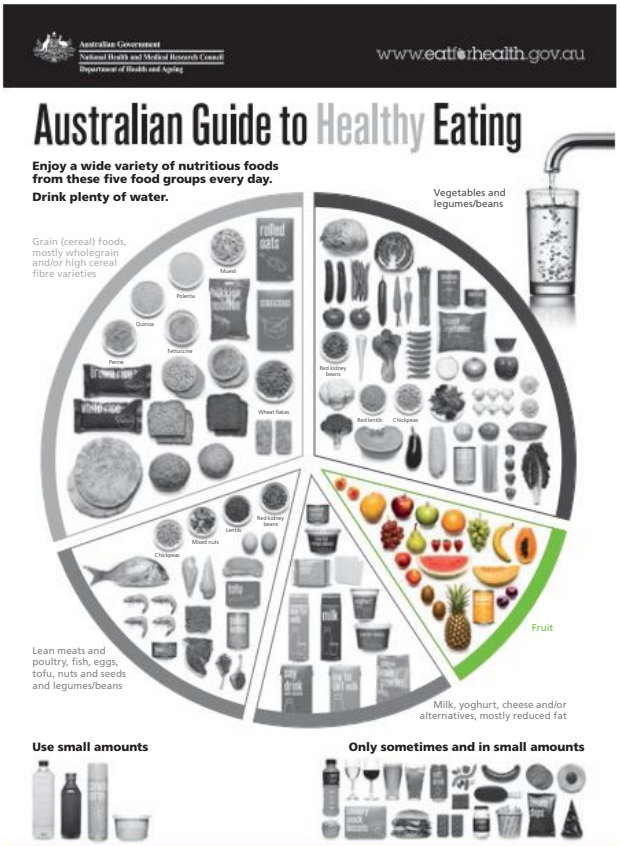
- Sustainability



ISBN 9780170446716

# FRUIT IN THE *AUSTRALIAN GUIDE TO HEALTHY EATING*

Fruit is often described as a perfect snack food. It comes in its own biodegradable package; it is convenient to eat; there are many varieties; it is a good source of a wide range of nutrients and for this reason it represents a significant proportion of the *Australian Guide to Healthy Eating*.




**The place of fruit in the *Australian Guide to Healthy Eating***



## Fruit for good health

Fruit is a great source of a wide range of nutrients.

- *Carbohydrates* – fruits contain sucrose and simple sugars such as glucose and fructose, which provide their sweet taste. Unripe fruits contain starches and as the fruit ripens the starch is converted to sugars. Ripe fruits have a higher concentration of sugars. Dried fruit is more energy dense than fresh fruit and may also stick to teeth, increasing the risk of dental decay.
- *Vitamins* – fresh fruits, particularly citrus fruits, berries and some tropical fruits, are rich in vitamin C and folate. Vitamin C is valuable in normalising immune system function. Orange/yellow fruits provide carotene (vitamin A), which is thought to enhance immune function.
- *Minerals* – potassium and magnesium are found in fruit and are linked to lower blood pressure. Magnesium is also necessary for normal muscle function.
- *Dietary fibre* – fruit provides a valuable source of dietary fibre, both in the flesh and particularly when the edible skins are eaten. The fibre in fruit helps food move through the digestive tract and reduces constipation and the risk of some cancers, particularly colorectal cancer.

Fruit is a valuable food to be eaten each day as it may help to reduce the risk of chronic diseases such as heart disease, stroke and some cancers. There is also evidence that minerals such as potassium and magnesium found in fruit are linked to lower blood pressure.

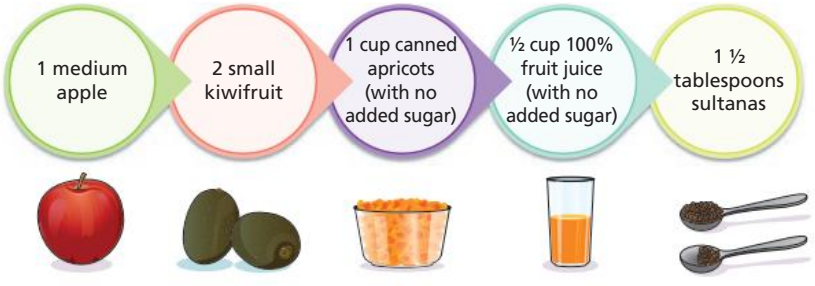
Overall, fruit is low in energy (kilojoules) and people who consume fruit will feel fuller for longer because fruit has a high fibre and water content. The inclusion of fruit in a daily diet reduces the risk of overeating, which can cause weight gain.

## How much fruit should I eat?

The *Australian Guide to Healthy Eating* recommends that we eat a variety of fruit each day.

| | Serves per day | |
|---|---|---|
| | 12–13 years | 14–18 years |
| Boys | 2 | 2 |
| Girls | 2 | 2 |

### What is a serve?

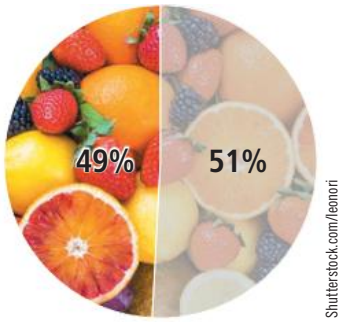




ISBN 9780170446716

### Are we eating enough fruit?

In May 2015, the CSIRO and SP Health launched a CSIRO Healthy Diet Score survey. Disturbingly, the results of this survey showed that about only half of the sample consumed enough fruit to meet the recommendation of the *Australian Dietary Guidelines*.

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**Percentage of the sample who met the *Australian Dietary Guideline* for fruit consumption**

## 8.1 Case study

Read the article below and answer the questions that follow.

### *Explainer: Sweet truths about fruit*

The rising level of sugar in fruit is not a concern for human health, experts say.

Fruit might be sweeter than it was 200 years ago, but it still contains vitally important nutrients.

So, how much sugar is in my fruit?

An unpeeled Fuji apple has 12.1 grams of total sugars per hundred grams as edible weight, according to Food Standards Australia New Zealand's food nutrient database.

A peeled banana has 12.8 grams. A sweet mango has 12.1 grams. An orange has 8 grams, a yellow peach 7.4, a green pear 9.7.

That means they have similar levels of sugar on a gram-for-gram basis as some soft drinks, like Red Bull (10.8 grams) or Coca-Cola (10.6).

But in fruit, that sugar comes with a range of valuable compounds including vitamins, minerals and probiotics. 'There are a whole host of beneficial compounds that we still don't really understand that is in a piece of fruit,' says Rebecca Stiegler, a dietitian at the Baker Heart and Diabetes Institute.

#### Is all that sugar bad for me?

Sugar in fruit is very different from sugar in Coca-Cola.

In Coca-Cola, the sugar has been removed from its natural source and inserted into the drink – that's why it's called 'free sugar'. That means it is digested faster and enters your bloodstream quicker.

Free sugar is strongly linked to health problems such as tooth decay, obesity, diabetes.

Natural sugar is not.

'If you are a healthy person and you eat fruits, you will receive not only the sugars but minerals, micronutrients and fibre. And that's good for you,' says Associate Professor Sof Andrikopoulos, CEO of the Australian Diabetes Society.

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8

**So, should I keep eating fruit?**

Yes. In fact, you should eat more.

Less than half of Australians eat the two of pieces of fruit a day recommended by the Australian Dietary Guidelines.

Why should you eat that much fruit? Because there is strong scientific evidence showing increased fruit consumption cuts your risks of bad health outcomes.

According to the best research we have, each additional serve of fruit reduces your risk of coronary heart disease, stroke, gastric cancer, lung cancer, and cuts your risk of being obese.

**What about fruit juice?**

If there is anything to worry about with sugar and fruit, it is fruit juice, which has all the sugar and few of the nutrients of whole fruit.

'If you squeeze an orange of its juice, and simply drink the juice without the pulp and all the rest of the fruit that has the fibre and macronutrients, that may not be as good for you,' says Professor Andrikopoulos.

Source: Liam Mannix, *Sydney Morning Herald*, 1 October 2018 (adapted). 

## Respond

1. Draw conclusions about why the *Sydney Morning Herald* would publish an article like this titled, 'Explainer'.
2. Construct a bar graph of the sugar content of the fruit and cola based drinks listed in this article.
3. What is 'free sugar'? Why do health professionals recommend that we minimise the amount of free sugar we consume?
4. What type of sugar is found in fruit? Refer to the information on page 172 to clarify this information.
5. Explain why the sugar in fruit is considered to be a healthier option than 'free' sugar.
6. How many serves of fruit do you eat on most days of the week? Compare your fruit consumption with the recommendations of the *Australian Dietary Guidelines*.
7. Why is it better to eat a piece of whole fruit rather than drinking a glass of fruit juice?
8. Formulate an argument to include on the website of the Apple & Pear Growers Association (APAL) to encourage both children and adults to increase their fruit consumption.

Weblink
APAL

## Adding more fruit to your diet

Fruit is best and most nutritious when eaten fresh and raw. It can be added to cereal for breakfast, added to salads for lunch or eaten at the end of a meal. Fruit can be used as a base for desserts such as baked apples or fruit crumbles and can be stewed or poached. Fruit such as strawberries, blueberries and raspberries can be added to pancakes or drop scones, and grated apple or banana can be added to scones or low-fat muffins.

Frozen or canned fruit can often be used to provide greater convenience and variety; however, if choosing processed fruit, choose canned fruit that is canned in fruit juice without any added sugar. Dried fruit may be eaten but it is higher in kilojoules and may stick to the teeth and increase the risk of tooth decay.


ISBN 9780170446716

# CLASSIFICATION OF FRUIT

Most fruit originates from flowers that contain the seeds of the plant.

## Buying fruit in season

Fruit matures with the seasons; as the weather changes – for example, from summer to autumn – some fruits reach their peak. Because they are **in season**, they have their best flavour, texture and aroma, and, because they are plentiful, are available at the best price.

## TESTING KNOWLEDGE

1. Explain why eating fruit assists with maintaining a healthy weight.
2. Why is eating dried fruits likely to increase the risk of tooth decay?
3. Many fruits contain vitamin C. What value does this nutrient have for the body?
4. Which fruits supply vitamin A?
5. What parts of fruit contain the most dietary fibre?
6. Explain why dietary fibre is important for the body.
7. According to evidence-based research, eating the recommended number of fruit servings decreases the risk of developing which chronic diseases?
8. How do most fruits originate?
9. Give an example of a fruit that fits into the following categories:
   - **a** pome
   - **b** tropical
   - **c** vine.
10. Give two reasons why it is best to buy fruits in season.


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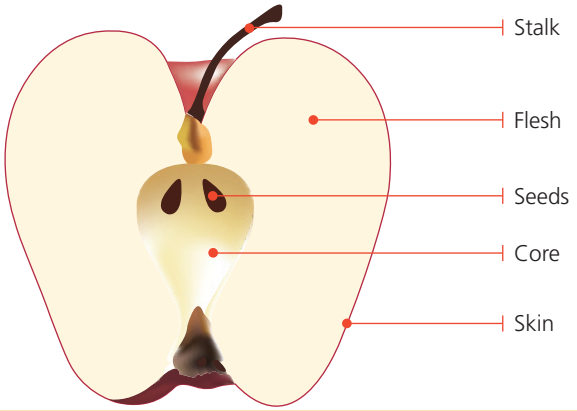
**The classification of fruit**

ISBN 9780170446716

# APPLES

There are more than 7000 varieties of apple grown throughout the world. Along with pears, apples are a member of the **pome fruit** family, which means they have a compartmentalised core that contains seeds and their flesh is crisp and juicy.

Australia is one of the world's healthiest fruit-growing environments. It is protected from acid rain and industrial pollution, which cause problems in Europe, where apples are a significant crop. Australia is also free from several the world's pests and diseases because of its isolation. Apples are grown in all states of Australia, with Victoria as a leading producer.




**Cross-section of an apple**

## Apple varieties

Two major varieties of apples are grown in Australia: Red Delicious and Granny Smith. In the past, these two varieties accounted for over 75 per cent of the total volume of apples grown in Australia. However, consumer demand for more choices has led to an increase in plantings of new varieties, such as Australian Fuji, Royal Gala and Pink Lady.

The Royal Gala originated in New Zealand and is an early-season apple, usually available from February onwards. It has a dense, crisp texture and is sweeter than Red Delicious. The Australian Fuji was bred in Japan and is a late-season apple, available from April onwards. It has a dense flesh and a sweet, distinctive flavour, and its skin is a blushed pink-and-red colour.

The Pink Lady was bred in Western Australia and is available late in the season. Its flesh is crisp and firm and has a flavour similar to that of Golden Delicious.

The Australian Granny Smith apple was first grown in New South Wales by Maria Ann Smith in 1860 and is now popular all over the world. It has a green, 'greasy' skin and a tart flavour. It is popular for cooking and for processing into apple products.

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**Apples growing**

## Commercial storage

Australians like to eat apples all the year round so growers use cold storage to allow supply to continue between harvests. Cold storage is a form of refrigeration that maintains the fruit between 0–1°C, with humidity around 85 per cent. This system prevents over ripening and maintains the freshness of the apples.


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| | Royal Gala | Golden Delicious | Jazz® |
|---|---|---|---|
| |  |  |  |
| **Flesh** | Firm, crisp, sweet, juicy | Crisp, creamy, flavoursome, sweet, juicy | Firm, dense, crunchy with a tangy, sweet flavour, similar to peaches and melon |
| **Colour** | Red blush to solid red over golden background | Greenish to golden yellow, occasionally with a slight pink blush | Pink/red flush over a light green background |
| **Size** | Medium | Medium | Small to medium |
| **Availability** | Early March–September | Late March–July | April–October |
| **Comments** | Very attractive apple of excellent eating quality | Internationally popular apple, always in demand | Distinct variety, a cross between Royal Gala and Braeburn |
| | **Red Delicious** | **Granny Smith** | **Fuji** |
| |  |  |  |
| **Flesh** | Medium sweetness, crisp, juicy, white | Hard, crisp, tart flavour, white | Very sweet, firm, crisp, juicy |
| **Colour** | Solid bright red with slight stripe, attractive | Green to greenish yellow, occasionally with a slight pink blush | Predominantly blushed dull pink/red, some russet evident |
| **Size** | Medium to large | Medium round | Medium, but can be small |
| **Availability** | March–December | Harvest March–April, available all year | April–October |
| **Comments** | Internationally popular apple, always in demand | Australia's own and world-renowned green apple | Very sweet 'honey core' is preferred by some customers |
| | **Pink Lady™** | **RockIt™** | **Kanzi™** |
| |  |  |  |
| **Flesh** | Firm, sweet, crisp, juicy, flavoursome | Sweet, juicy, crisp texture | Crisp, juicy, sweet and tangy |
| **Colour** | Pink or light red blush over yellow-green background | Deep pink colour over a yellow background | Bright red skin over a cream background |
| **Size** | Large, uniform | Small | Medium to large |
| **Availability** | Late April–February | April–late August | April–late August |
| **Comments** | Unique and very popular apple that eats exceptionally well | Small, thin-skinned apple that is perfect for school lunch boxes; sold in recyclable tubes | Kanzi means 'hidden treasure' in Swahili; developed in Belgium and now grown in all Australian apple producing states |

**Apple varieties grown in Australia**

Apple and Pear Australia Ltd.

ISBN 9780170446716

# ACTIVITY 8.1

## VARIETIES OF APPLES

### Aim

To compare the sensory properties of different varieties of apples.

### Method

1 Select four different varieties of apples. Wash and dry them before the comparison.

2 Draw up the following table in your workbook and record the appearance of each variety of apple before slicing it for the taste testing.

### Result

| Apple variety | Appearance | | Aroma | Flavour | Texture | Sound | Rating |
|---|---|---|---|---|---|---|---|
| | Colour | Shape | | | | | |
| | • Red<br>• Yellow-green<br>• Pink<br>• Mottled<br>• Striped<br>• Speckled | • Round<br>• Oval<br>• Flat<br>• Big<br>• Small<br>• Uneven | • Sweet<br>• Tart<br>• Fruity<br>• Tangy<br>• Fresh | • Sweet<br>• Sour<br>• Sharp<br>• Tart<br>• Bland | • Crisp<br>• Crunchy<br>• Soft<br>• Floury<br>• Firm<br>• Juicy<br>• Dry | • Crunchy<br>• Crisp<br>• Dull<br>• Juicy<br>• Brittle | 5 = like a lot<br>4 = like<br>3 = OK<br>2 = dislike<br>1 = dislike a lot |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Sensory properties of apple varieties**

### Analysis

1 Why is it always advisable to wash fruit before eating?

2 Which variety of apple did you like best? Why?

3 Which variety of apple did you like least? Why?

4 Which sensory property is the most important to you when selecting an apple to eat raw?

5 Which qualities would be the most important if you wanted to cook with an apple? Why?

6 Why have apple growers begun to supply the market with a greater variety of apples?

7 What is meant by the term 'in season' when discussing fruit?

8 Record the months when the apple varieties you compared are in season.

9 How may the sensory properties of a fruit change when it is not in season?

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### Conclusion

Which variety of apple do you prefer to eat raw? Justify your answer.



ISBN 9780170446716

## Nutrition

Apples are one of nature's best snacks. The firm skin keeps the crisp, juicy flesh in good condition for days and ensures that the apple is easily transported in a lunch box or bag without refrigeration. The saying 'an apple a day keeps the doctor away' reflects the fact that apples are a very healthy food, as they are high in dietary fibre in the form of a soluble dietary fibre called pectin. There are also a small number of vitamins and minerals available in apples.

A medium-sized eating apple contains about 270 kilojoules and is a filling snack. In an apple:

- 10 per cent is carbohydrate
- more than 80 per cent is water
- approximately 4 per cent is vitamins and minerals
- approximately 6 per cent is dietary fibre.

Dietary fibre is important for good health because it helps to keep the digestive system working. Apples also contain some dietary fibre in their skin.

## Selecting the best

Apples are at their best during autumn and winter. Choose firm fruit with brightly coloured skin and no blemishes.

## Storage

Apples lose their crispness when they are stored at room temperature. For a longer life, store apples in a sealed plastic bag in the crisper of a refrigerator for up to three weeks.

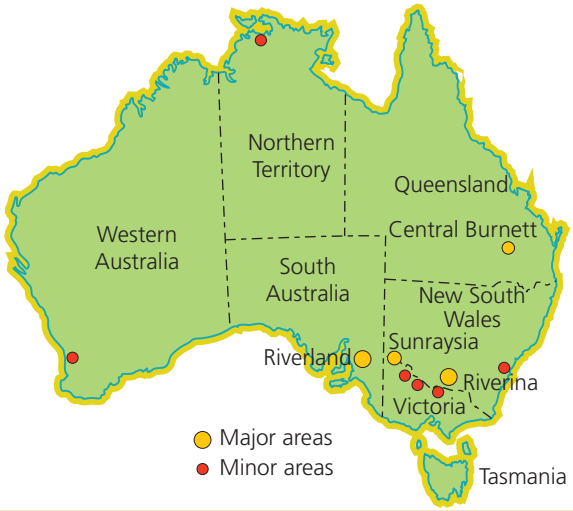
## Cooking with apples

When apples are peeled and prepared for cooking, they can sometimes turn brown. This is called **enzymatic browning**. Enzymatic browning is a process that occurs when the enzymes in cut or peeled fruits cause browning when exposed to oxygen in the air. This browning can be prevented by covering the cut fruit with water or sprinkling it with lemon juice.


**Cooking with apples**

# ORANGES

Oranges, along with lemons, mandarins, grapefruit, limes, cumquats and pomelos are part of the citrus family. Citrus fruit trees are evergreen trees that grow in subtropical climates. They were introduced into Australia in the late 18th century. To grow, they require rich, well-drained soil with a good water supply. The most suitable citrus-growing areas in Australia are in the irrigation regions of the Murray and Murrumbidgee rivers, on the plains in New South Wales, central Queensland and on the outskirts of Perth in Western Australia.




**Citrus-growing areas in Australia**

## Orange varieties

The two most commonly available varieties of orange in Australia are the Valencia and the navel. Valencia oranges are considered best for juicing and are available throughout summer and autumn. They have a smooth skin, which often has a green tinge. The navel orange is the most popular orange to eat fresh because it is almost seedless and is easy to peel and break into segments. It is available from May to December.

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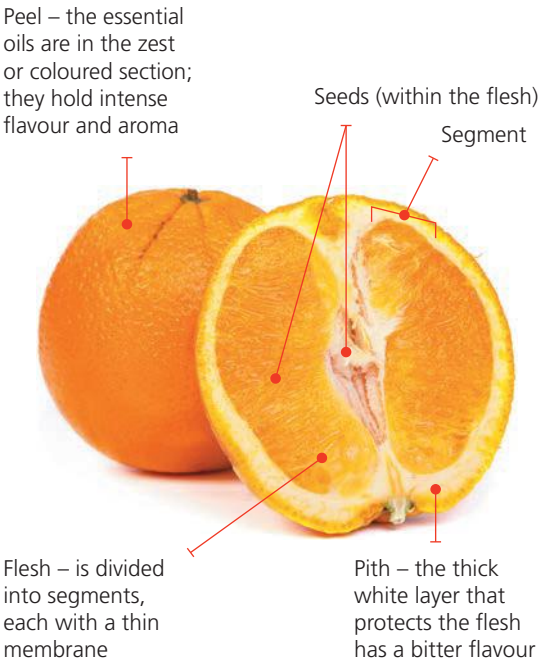


**Parts of an orange**

## Nutrition

Oranges are naturally high in vitamin C as well as being a good source of folic acid, potassium and dietary fibre. Vitamin C helps in the healing process if you have been ill or injured, helps to strengthen body tissues and bones and assists in the absorption of iron.

## Selecting the best

Unlike some other fruits, oranges do not continue to ripen once they have been picked, so colour, juice content, sugar and acid levels are measured carefully before harvesting begins. An orange should feel heavy for its size when held in the hand. The fruit should have a fresh, sweet, citrus aroma with no mouldy smell. The skin should not be wrinkled or have any soft patches.

## Storage

Oranges can be stored for two weeks at room temperature, and for longer in the refrigerator.

# FRUIT JUICES AND DRINKS

Many people find that fruit juice is a tasty and refreshing drink; however, there are many disadvantages of consuming fruit juice on a regular basis. When fruit is juiced, the cell structure of the fruit is broken down and most of the dietary fibre is removed. Therefore, a valuable component of fruit is lost when it is juiced rather than eaten whole. Another problem with consuming fruit juice on a regular basis is that it is very acidic and can lead to the breakdown of tooth enamel, which results in tooth decay.

While many beverages are sold as fruit drinks, a large number of these products only contain a small percentage of real fruit juice. Many also have artificial colouring and flavourings added to them along with added sugar to make them resemble real fruit juice. It is important to read the label carefully when choosing fruit juices and drinks.

## Comparing whole fruit and fruit juice

When we eat an orange, we eat the highly fibrous inner membrane and pulp. These sections are the primary source of the orange's flavonoids. These flavonoids work together with various nutrients such as vitamin C. When an orange is juiced, these sections, and consequently the flavonoids, are lost.

Biting into a crisp apple involves us eating the skin of the apple as well as the flesh. The skin of the apple is exposed to the sun and, because of this, various coloured pigments, such as carotenoids, anthocyanins and flavonoids, are formed. As well as giving an apple its characteristic colours, these pigments have valuable nutritional properties.

In addition to the skin, the apple pulp is a valuable source of fibre and contains phytochemicals. When an apple is juiced the fibre is removed. Three apples are needed to produce one glass of apple juice. The resulting juice has the fibre removed and a clear, slightly coloured juice remains. This juice is a concentrated form of energy and it is easy to consume too much.

One apple weighs approximately 200 grams and contains 3 grams of fibre and approximately 200 kilojoules. It takes about 10 minutes to eat a whole apple.

One 250 millilitre glass of apple juice contains 0 grams of fibre and approximately 520 kilojoules. It is equivalent in energy value to three apples but only takes about two minutes to drink as it has no skin and no flesh to chew.


**Apple juice**


ISBN 9780170446716

## TESTING KNOWLEDGE

11 Which classification of fruit do apples belong to and why are they classified in this way?

12 How does the old saying 'an apple a day keeps the doctor away' still relate to good health today?

13 Explain the best way to store apples to maintain their quality.

14 What is enzymatic browning and how can it be prevented?

15 Why are Granny Smith apples popular for cooking and processing into apple products?

16 Outline the three main parts of an orange and describe the features you would look for when selecting good-quality citrus fruits.

17 Oranges are high in vitamin C. Why is this vitamin of value to the body?

18 Why do the dietary guidelines for Australians warn of the dangers of frequent consumption of fruit juices?

19 Explain why it is preferable to eat an apple or an orange rather than drink the juice made from the fruit.

20 Why is the skin of fruit considered to have valuable nutritional properties?

# BANANAS

Bananas are another of nature's cleverly packaged, healthy snacks. In fact, they are sometimes described as 'brain food' because bananas are high in potassium, which is a major nutrient required in the process of carrying the trillions of messages that nerves move around the human body. Foods that are good sources of potassium help your concentration at school and home and assist your performance in physical activities.

## Growing bananas using sustainable practices

Bananas grow in tropical regions on large, palm-like plants. The banana palm is not a tree, because it does not have a woody trunk. The banana palm develops a flower stem containing female flowers, from which the bananas grow. A single banana is called a 'finger', several bananas – about 12 – makes a 'hand', and several hands form a bunch of bananas. The most popular variety of bananas grown in Australia is the Cavendish, which is long and thin. Lady Finger bananas are short and plump and have a distinctive flavour and texture.

Some farmers are now producing bananas using **sustainable farming** practices. These practices maintain the land's productivity so it will be available for future generations. When growing bananas in a sustainable manner, farmers use reduced amounts of fertilisers and pesticides on their crops, which has considerable benefits for the environment and reduces production costs. Instead of using chemicals to increase production, sustainable methods use a more natural growing cycle, which in turn improves and maintains the quality and fertility of the soil. Banana crops are also watered by efficient drip systems that prevent run-off and protect water quality.

dLibrary.com

**Red wax-tipped bananas**

While these sustainable farming practices slow down the growing process, producers believe that bananas grown in this way have a firmer texture, a sweeter flavour and an extended shelf life. Before the bananas are sent to market, farmers dip their ends in red wax to indicate that they have been grown using sustainable farming practices.

Shutterstock.com/Lifestyle Travel Portrait

**Bananas growing**

## Nutrition

Bananas are low in fat and a good source of kilojoules, making them a great high-energy food. As bananas ripen, their starches are converted to sugar, which the body can turn into energy quickly. Bananas are an excellent source of the minerals potassium, calcium, magnesium, phosphorus and iron. They are also high

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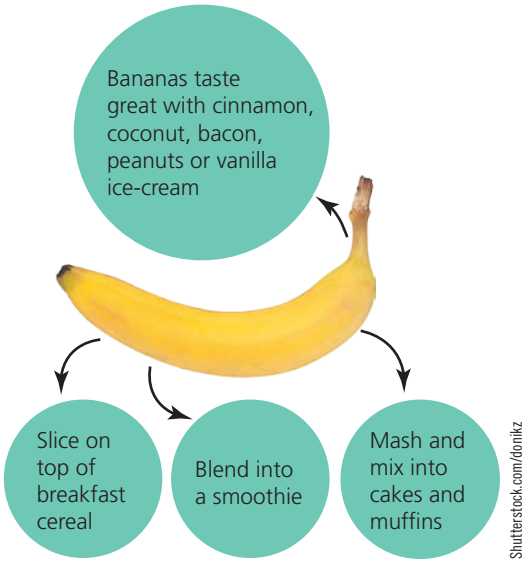
in vitamins A, B and C. Bananas are rich in dietary fibre, which means you feel full after eating them, so you will not feel like eating unhealthy, sweet, fatty foods. The other benefit of dietary fibre is that it helps to absorb water in the intestines, so the digestive process is more efficient.

## Selecting the best

Bananas are at their best in autumn and winter. Select fruit that is firm, bright yellow in colour and free from bruises. As soon as bananas are peeled or cut, they begin to discolour as a result of enzymatic browning. This can be prevented by a squeeze of lemon juice.




**Banana recipe ideas**

## Storage

Allow bananas to ripen at room temperature out of direct sunlight.

Once ripe, bananas can be wrapped in a brown paper bag and stored in the crisper of a refrigerator for two to three days. Even though this turns the skin black, the flesh inside will remain delicious to eat.

# MINIMISING FOOD WASTE

*Love Food Hate Waste* is a campaign promoted by the Victorian Government and delivered by Sustainability Victoria. It aims to raise awareness and educate Victorian households about avoidable food waste.

Each year Victorian households send over 250 000 tonnes of avoidable food waste, much of it fruit and vegetables, to landfill. This is often because the fruit is not stored correctly, or the householder does not use it as planned. The result is that the fruit spoils; that is, it may become soft, withered or have brown spots or bruises. As a result, it is then thrown out.

When fruit is thrown in the bin, it is sent to landfill, where it breaks down, creating methane, which is a greenhouse gas. These gases can lead to environmental and public health risks as they can leach into the surrounding soil and air.

Sustainability Victoria offers householders hints on how to save food and reduce food waste.

## ACTIVITY 8.2

### MINIMISING FOOD WASTE

Create an infographic on minimising food waste. The Sustainability Victoria website has a range of strategies for you to consider.

Weblink
Sustainability Victoria

Your infographic should include information on:

- the environmental importance of minimising food waste
- strategies families could implement to minimise food waste at home.

## ACTIVITY 8.3

### FRUITY SNACKS

1. Develop a list of foods that students in your class eat as snacks.
2. Position each item on a template of the *Australian Guide to Healthy Eating*. How many items are fruit-based and in the fruit section of the *Australian Guide to Healthy Eating*? Explain why it is a good thing if many of the snacks are in this section.
3. Explain why fruit is an excellent snack food in terms of nutrition and convenience.
4. List four examples of processed drinks and foods that contain fruit and could be consumed as snacks.
5. Are any of the items you selected in Question 4 high in fat or sugar? How do you know this? Where would you place them on the *Australian Guide to Healthy Eating*?
6. Crunching and chewing on an apple helps to reduce dental plaque. What other health benefits are there to eating an apple?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## TESTING KNOWLEDGE

**21** Why are bananas classified as tropical fruit?

**22** Explain the benefits to the environment of farmers using sustainable methods to grow bananas.

**23** How can sustainable farming practices benefit the farmer?

**24** Outline three important nutritional facts about bananas.

**25** Suggest two recipes that you could prepare to use over-ripe bananas.

**26** Explain how bananas should be stored to maintain peak quality.

**27** Why are the Victorian Government and Sustainability Victoria concerned about food waste?

**28** Explain the environmental hazards of sending food waste to landfill.

**29** Why is careful planning of household meals important in minimising food waste?

**30** Suggest three ways households can dispose of food waste instead of throwing it in the bin.

## THINKING SKILLS

### Comparing fruit

Select two fruit types to compare from two different classifications.

**1** List the characteristics of each type of fruit including:

- its physical structure
- sensory properties
- nutrient value
- storage requirements
- seasonality of the fruit.

**2** Discuss the similarities and differences between the two fruits you have compared.

## Design activity 8.1

### MARKETFRESH

MarketFresh is a website developed by the Melbourne Market Authority (MMA). The aim of MarketFresh is to educate and inform consumers about the benefits of consuming fresh produce, including fruit. The website provides a range of resources for children and adults including recipes and information about a wide variety of fruit and vegetables. The MMA is currently reviewing the recipes on its website to ensure they meet one of its key aims: to promote healthy eating. The MMA is looking for new savoury or sweet recipes that contain fruit to showcase the wide variety of fresh fruit available in Australia. It also wants to be able to link the new recipes to the information section on the website and to highlight the nutritional properties and characteristics of fruit.

### Design brief

**1** Design and produce a recipe to include on the MarketFresh website that contains fresh fruit that could be used as a component of a family lunch. The recipe must promote healthy eating and contain ingredients from the fruit section of the *Australian Guide to Healthy Eating* and at least two other sections of this food model.

**2** Prepare an accompanying simple infographic about the nutritional properties and characteristics of your chosen fruit that is suitable to include on the website.

**3** Develop five criteria questions to evaluate the success of your family fruit lunch recipe.

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8

## Investigating

1 Use recipe books, magazines and the internet to research two types of fruit from different classifications suitable to include as a component of a family lunch.

2 Investigate the features of each type of fruit you have chosen above by researching:

- the physical and sensory characteristics of the fruit
- the history of the fruit in Australia
- where the fruit is grown in Australia
- the nutritional properties of the fruit
- if the fruit waste such as peel, pith or core can be made into a by-product so that it can be reused in another area of the food industry.

3 Practise your skills by preparing the recipe for Fruity Couscous Salad on page 185.

## Generating

1 Select your preferred fruit that will be the focus of your design.

2 Complete the decision table below. Identify the two focus areas of the *Australian Guide to Healthy Eating* and classify the ingredients of your recipe into these and the 'Only sometimes' group.

3 Prepare an infographic to include on the MarketFresh website to inform children and consumers about the characteristics and nutritional properties of your selected fruit.

## Planning and managing

1 Complete a food order.

2 Before producing your new recipe containing fruit, write up a production plan, noting any safe work practices to be followed, and identify the major processes to be used.

## Producing

1 Prepare the product.

2 Record any changes you made during production.

## Evaluating

1 Use the questions you developed to evaluate the success of your product.

2 Discuss the most challenging part of the production. Outline how you managed this challenge.

3 Comment on your overall management of time for this production – discuss your designing and planning as well as the production of the meal.

4 Classify the ingredients of your fruit-based recipe on a diagram of the *Australian Guide to Healthy Eating*. Assess how well your recipe met the guidelines of this food model.

5 Make recommendations about a suitable accompaniment you could serve with your recipe so that together they make a complete meal and address all five food groups of the *Australian Guide to Healthy Eating*.

| | ***Savoury*** **recipe that incorporates your fruit** | ***Sweet*** **recipe that incorporates your fruit** |
|---|---|---|
| **Recipe title** | | |
| **Source of the recipe** | | |
| **Section of the AGTHE .....**<br><br>**Ingredients in the recipe from this section** | | |
| **Section of the AGTHE .....**<br><br>**Ingredients in the recipe from this section** | | |
| **Ingredients in the 'Use small amounts' or 'Only sometimes' sections of the AGTHE** | | |
| **Advantages of the recipe** | | |
| **Disadvantages of the recipe** | | |
| **Preferred option:** | | |
| **Justification of preferred option:** | | |

**Decision table**


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# FRAGRANT, FRUITY COUSCOUS SALAD

½ onion
¼ red capsicum
½ stick celery
1 spring onion
2 tablespoons dried apricots
½ apple
1 teaspoon oil
1 teaspoon ground cumin
1 teaspoon ground coriander
¾ cup vegetable stock
½ cup couscous
¼ cup peanuts
¼ cup sultanas

SERVES TWO

## METHOD

1. Finely dice the onion and capsicum and slice the celery and spring onion.
2. Dice the dried apricot and apple and keep these separate.
3. Sauté the onion, capsicum and celery in the oil for 2 minutes, without browning.
4. Add the spices and cook for a further 30 seconds.
5. Add the vegetable stock and bring to the boil. Reduce heat to simmer and stir in the couscous.
6. Cover the couscous and turn off the heat. Allow to stand for 5 minutes with the lid on.
7. Fluff the couscous with two forks.
8. Stir through the peanuts, sultanas, dried apricots, apple and spring onion and serve immediately.

Mark Fergus Photography

## EVALUATION

1. Explain what it means to 'finely dice'. Why is it important to dice the onion, apple and capsicum finely?
2. Explain the meaning of the term 'sauté'.
3. Why is it important to allow the couscous to stand, covered, for 5 minutes in step 6?
4. Describe how you could garnish or decorate the finished dish.
5. Complete the below table of the key nutrients in your couscous salad.

| Ingredient | Nutrients | Importance of nutrients for good health |
|---|---|---|
| Onion | | |
| Capsicum | | |
| Celery | | |
| Dried apricots | | |
| Apple | | |
| Oil | | |
| Couscous | | |
| Peanuts | | |
| Sultanas | | |



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# CHERRY, SPINACH AND BEAN SALAD

Cherries are a delicious and versatile fruit that can be used in both sweet and savoury dishes, or simply enjoyed eaten fresh. They are a good source of vitamins A and C and dietary fibre. Australian cherries have a short season that lasts for just 100 days from November to February. When selecting cherries, choose ones that are plump and shiny with green stems. It is best to store cherries in the refrigerator with their stalks intact.

¼ cup brown basmati rice
¼ cup black rice
5 cups water
¼ red onion, finely sliced
pinch salt
½ lemon, juiced
100 grams green beans
2 tablespoons walnuts
2 tablespoons mint, roughly torn
1 cup cherries
2 cups baby spinach
60 grams Greek feta, crumbled

### VINAIGRETTE

1½ tablespoons olive oil
1 tablespoon lemon juice
1 teaspoon Dijon mustard
2 teaspoons honey
¼ teaspoon salt
freshly ground black pepper

SERVES TWO

## METHOD

1. Place the brown basmati and black rice in a large saucepan with the water and bring to the boil. Gently stir with a fork to separate the grains. Cook over a medium heat for 30 minutes.
2. When the rice is cooked, rinse under cold running water. Drain well and set aside to cool.
3. Preheat the oven to 180°C.
4. Sprinkle the salt over the red onion. Dress the onion with 2 teaspoons of the lemon juice and set aside. Reserve the remainder of the lemon juice for the vinaigrette.
5. Trim the stems from the beans. Bring a medium saucepan of water to the boil and blanch the beans for 2 minutes. Drain and refresh under cold water and re-drain. Dry on paper towel.
6. Place the walnuts on a baking tray and toast in the pre-heated oven for 6 minutes.
7. Cut the cherries into halves and remove the stones.
8. To prepare the vinaigrette, place all the ingredients into a screw top jar and shake well to form an emulsion.
9. Place the cooked rice in a serving bowl. Top with the baby spinach, red onion, blanched beans, walnuts, mint and halved and pitted cherries. Pour the vinaigrette over the salad and toss lightly to combine. Garnish with the crumbled Greek feta.

Mark Fergus Photography

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your finished Cherry, Spinach and Bean Salad.
2. List three types of fruit you could use in this salad if you wanted to make it when cherries are not in season.
3. Identify two safe work practices you followed when using the stove top.
4. Explain why the vinaigrette used to dress this salad is described as a temporary emulsion.
5. Classify the ingredients for the Cherry, Spinach and Bean Salad on a diagram of the *Australian Guide to Healthy Eating*. Explain how well it meets the recommendations of this food selection model.


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# STEWED APPLES

2 Granny Smith apples

¼–⅓ cup water

1 tablespoon sugar

1 clove

SERVES TWO

## METHOD

1. Wash and peel apples and cut into quarters.
2. Remove cores and slice apples thinly.
3. Place all ingredients in a small saucepan. Stir to coat the apple with all the ingredients.
4. Bring to boil, place lid on saucepan and reduce heat to simmer. Stir occasionally.
5. Cook until apple is tender.

# FRUIT CRUMBLE

### FRUIT CRUMBLE

1 cup fruit – stewed, canned or freshly sliced

### CRUMBLE TOPPING

2 tablespoons caster sugar or brown sugar

2 tablespoons coconut or almond slivers

2 tablespoons rolled oats or fresh breadcrumbs

pinch each of nutmeg and cinnamon

2 tablespoons self-raising flour (white or wholemeal)

20 grams butter

SERVES TWO

## METHOD

1. Preheat oven to 180°C. Grease two ovenproof ramekins.
2. Divide the fruit evenly between the two ovenproof dishes.
3. Mix all dry ingredients in a bowl.
4. Either melt butter in microwave and stir into dry ingredients or, using fingertips, rub butter into dry ingredients until the mix resembles fresh breadcrumbs.
5. Sprinkle the fruit with crumble topping. It should have a rough surface, not smooth.
6. Bake for 15–20 minutes until golden brown.

Mark Fergus Photography

## EVALUATION

1. List four examples of fresh fruits that would be suitable to use in a crumble recipe.
2. Why is it important to keep a lid on when stewing apples?
3. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your finished crumble.
4. Identify two safe work practices you followed when using the oven.
5. Classify the ingredients for the Fruit Crumble on a diagram of the *Australian Guide to Healthy Eating*. Rate your crumble as healthy, reasonably healthy or not very healthy. Justify the rating you have given this dessert.



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# SWIRLING TWIRL DESSERT IN A GLASS

Several cooking methods are used to create the components of the Swirling Twirl Dessert in a Glass. Poaching is a moist method of cooking while frying the sweet, crunchy crumbs is a dry method. The preparation of the custard demonstrates the process of gelatinisation of starches.

8

### POACHED PEARS

1 cup water
¼ cup sugar
1 cinnamon stick
2 pears
¼ teaspoon vanilla

### SWEET, CRUNCHY CRUMBS

1 cup fresh, dry breadcrumbs
1 tablespoon sugar
20 grams butter

### CUSTARD POWDER SAUCE

1 tablespoon custard powder
1–2 teaspoons sugar
200 millilitres milk

Directions to make this product are on the powder packet. However, if the packet has been disposed of, use this recipe as a guide. Depending on the brand, the consistency may vary. Add more or less custard powder if a thicker or thinner custard is required.

MAKES 1 CUP

## METHOD

### POACHED PEARS

1. Combine the water and sugar in a saucepan and stir over low heat until the sugar dissolves.
2. Add the cinnamon stick and bring to boil. Reduce to simmer and cook uncovered for 5 minutes.
3. Peel, core and halve the pears.
4. Add the pear halves to the syrup and gently cook for 5 minutes or until tender.
5. Remove from heat, stir in vanilla and allow to cool.

### SWEET, CRUNCHY CRUMBS

1. Combine the breadcrumbs and sugar.
2. In a frying pan, melt the butter over medium heat. Do not brown.
3. Add the breadcrumb mixture and fry until golden brown. Stir the crumbs so they brown evenly.
4. Remove from pan and allow to cool before use.

### CUSTARD POWDER SAUCE – ON THE STOVETOP

1. In a small bowl, blend the custard powder and sugar with 2 tablespoons of the milk.
2. In a small saucepan, heat the remaining milk until simmering. Remove from heat.
3. Pour hot milk into the blended custard powder and stir until combined.
4. Transfer custard mixture to the saucepan, then return to heat. Bring to boil, stirring constantly.
5. Cook for 1 minute and remove from heat.

### CUSTARD POWDER SAUCE – IN A MICROWAVE

1. In a microwave-safe bowl, blend the custard powder and sugar with 2 tablespoons of the milk.
2. Gradually add remaining milk. Whisk well.
3. Microwave on high for 2 minutes. Remove and whisk well.
4. Microwave on high for another 1–2 minutes or until the mixture thickens.
5. Remove from the microwave and whisk again.


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### ASSEMBLING THE DESSERT

1 Select a special glass or use a plastic take-away 'glass'.

2 Cut the pears into large cubes.

3 Layer the pears, custard and crumbs into the glass. Repeat until all the ingredients are used.

## EVALUATION

1 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Swirling Twirl Dessert in a Glass.

2 Suggest a product you could use if you were too busy to poach the pears.

3 Describe what would happen if the sweet crumbs were not continuously stirred during frying.

4 Why is the custard powder blended with some milk before the heating process begins? Explain why the custard is stirred during heating.

5 Classify the ingredients for the Swirling Twirl Dessert in a Glass on a diagram of the *Australian Guide to Healthy Eating*. Rate your dessert as healthy, reasonably healthy or not very healthy. Justify the rating you have given this dessert.

Mark Fergus Photography

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# FREE-FORM FRUIT TART

**Light, buttery pastry filled with a luscious fresh fruit makes a beautiful dessert.**

½ cup self-raising flour
2 tablespoons plain flour
30 grams butter, chilled and cubed
2 teaspoons caster sugar
¼ teaspoon cinnamon
1–2 tablespoons iced water

### FILLING

½ egg white, lightly beaten
2 teaspoons fine polenta or semolina
200 grams fresh fruit – apricots, nectarines or peaches
or
1 Granny Smith apple
2 teaspoons sugar
extra sugar

SERVES TWO

## METHOD

### PASTRY

1. Process the flour, butter, sugar and cinnamon until the mixture resembles fine breadcrumbs.
2. Add iced water and process until the mixture starts to come together.
3. Turn the dough onto a lightly floured bench and bring together until smooth. Do not over-knead.
4. Flatten into a disc, cover with plastic wrap and rest in the refrigerator for 20–30 minutes.
5. Roll the disc into a 3-millimetre-thick round, approximately 20 centimetres in length. Turn the pastry as you roll so that it does not stick. Transfer to a lightly oiled tray.

### FILLING

1. Preheat oven to 200°C.
2. Brush the pastry with egg white and sprinkle with polenta.
3. Prepare fruit. If using apples, peel, core and thinly slice.
4. In a bowl, toss fruit in the sugar.
5. Place fruit in centre of pastry, leaving a 4 to 5-centimetre border.
6. Fold pastry over the fruit, pleating to fit.
7. Brush pastry with egg white and sprinkle with extra sugar.
8. Bake at 200°C for 15–20 minutes.
9. Serve warm with cream or ice-cream.

Mark Fergus Photography

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Free-form Fruit Tart.
2. What are the advantages and disadvantages of making a free-form tart compared with a tart in a traditional flan or pie tin?
3. What are the advantages and disadvantages of using a food processor to make the pastry?
4. Why is the pastry rested in the refrigerator?
6. Classify the ingredients of your Free-form Fruit Tart on a diagram of the *Australian Guide to Healthy Eating*. Explain how well it meets the recommendations of this food selection model.


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# 9 MILK, YOGHURT, CHEESE AND THEIR ALTERNATIVES

## KEY KNOWLEDGE

- Milk, yoghurt, cheese and their alternatives in the *Australian Guide to Healthy Eating*
  - Milk, yoghurt, cheese and their alternatives for good health
  - Lactose intolerance
  - How much of the milk, yoghurt and cheese group is needed?
- Milk
  - The characteristics of milk
  - Milk processing
  - Types of milk
  - Challenges facing Australian dairy farmers
  - The environmental impact of milk production
  - Sustainable milk production
- Milk alternatives
- Yoghurt
  - Nutritional properties of yoghurt
  - Labneh
- Cheese
  - Classification of cheese
- Osteoporosis
  - Healthy bones
  - Selecting foods high in calcium

## KEY TERMS

**casein** the protein present in the curds of milk

**cheese** a by-product from the curds of milk that are separated from the water and lactose or whey

**homogenisation** process by which the globules of fat within the milk are broken into minute particles so that the cream does not rise to the surface

**lactose** the sugar (carbohydrate) present in milk

**lactose intolerance** the reduced ability to digest milk sugars, due to insufficient amounts of the enzyme lactase

**osteoporosis** a medical condition that occurs when calcium is lost from the bones, making them fragile and easily broken

**pasteurisation** process that destroys pathogenic, or disease-causing bacteria and extends the shelf life of milk

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food and fibre production
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking

### CROSS-CURRICULUM PRIORITIES

- Sustainability



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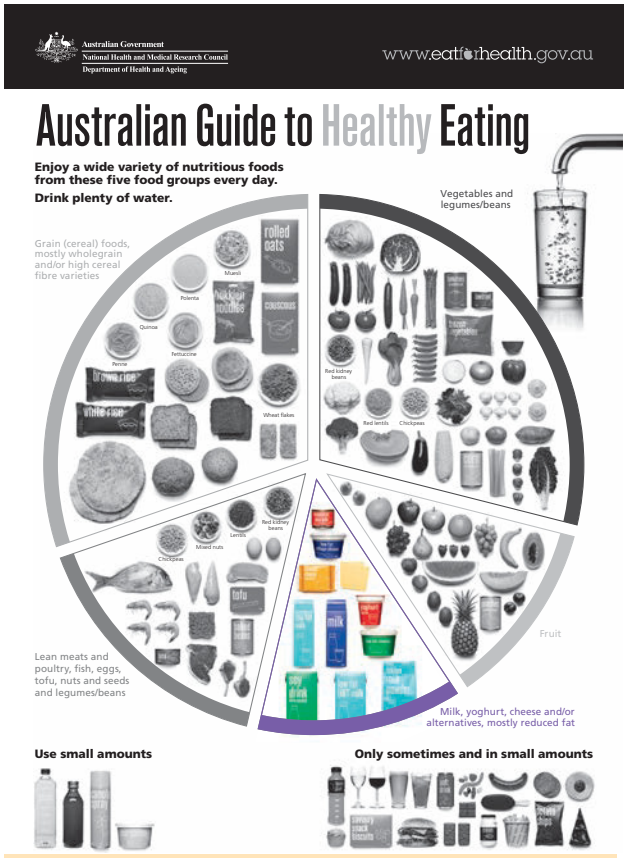
# MILK, YOGHURT, CHEESE AND THEIR ALTERNATIVES IN THE *AUSTRALIAN GUIDE TO HEALTHY EATING*

Health professionals recommend that we include a variety of dairy products such as milk, yoghurt and cheese or their alternatives in our diet each day as they are essential for good health. Due to this advice, these food products make up a significant proportion of the *Australian Guide to Healthy Eating*.






**The place of milk, yoghurt, cheese and their alternatives in the *Australian Guide to Healthy Eating***

## Milk, yoghurt, cheese and their alternatives for good health

The inclusion of milk, cheese and yoghurt (or their alternatives) in your diet each day is important as they are an excellent source of a wide range of nutrients. Milk is high in the mineral calcium, which is essential for bone development, and is a much higher source of this nutrient than most other foods. Milk, cheese and yoghurt also contain a wide range of other necessary nutrients including protein, fat and carbohydrates (lactose). Apart from being a major source of calcium, milk is a source of other vitamins and minerals especially the vitamins A, B1 (thiamine), B2 (riboflavin) and B12 (cobalamin). Milk also provides the minerals phosphorus and magnesium, which help calcium to be absorbed in the body. Milk is composed of 87 per cent water. Health professionals recommend we consume low fat milk products because full cream milk contains saturated fat and is high in energy.

Including a variety of milk, cheese and yoghurt products in your diet each day can help to reduce the risk of developing health conditions including high blood pressure, heart disease, stroke, type 2 diabetes and some types of cancer.

Dietary advice released by the Heart Foundation in August 2019 is that healthy Australians – those people who do not have any risk factors for heart disease – can choose to eat unflavoured full-fat milk, yoghurt and cheese rather than reduced-fat options if they prefer. However, the Heart Foundation states that we should all avoid eating butter, cream and ice-cream as these products are more likely to increase the level of LDL (low-density lipoprotein) or 'bad' cholesterol in our blood.

The new dietary advice from the Heart Foundation supports the recommendations of the *Australian Dietary Guidelines*. Based on the high incidence of overweight and obesity within the Australian population, the *Australian Dietary Guidelines* recommend that people over two years of age should choose low or reduced-fat varieties of milk, yoghurt and cheese. Therefore, it is important that people who have high cholesterol or have been diagnosed with heart disease continue to select unflavoured reduced-fat milk, yoghurt and cheese products.

## Lactose intolerance

Approximately four per cent of the Australian population suffer from a **lactose intolerance**. Far more women than men have an intolerance to lactose. People who have a lactose intolerance lack the enzyme lactase, or have it in insufficient quantities in their system, and are unable to digest **lactose**, which is the sugar in milk. The result is that the bacteria that live in the colon cause the lactose to ferment and to produce carbon dioxide. This causes the bowel to retain water and leads to symptoms including bloating and diarrhoea.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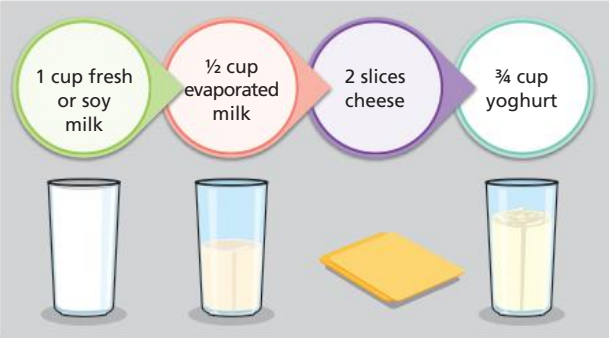
## How much of the milk, yoghurt and cheese group is needed?

What is a serve of milk, yoghurt, cheese and/or their alternatives *for good health*?

| | Serves per day | |
|---|---|---|
| | 12–13 years | 14–18 years |
| Boys | 3.5 | 3.5 |
| Girls | 3.5 | 3.5 |

### What is a serve?




# MILK

## The characteristics of milk

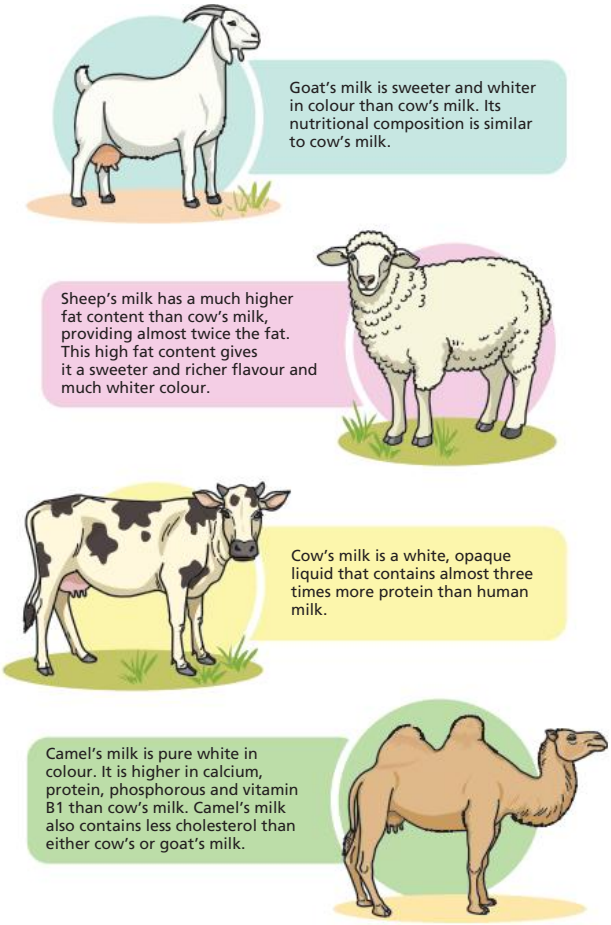
Cow's, goat's and sheep's milk are most commonly consumed by human beings. Cow's milk is the most popular source of milk in Australia – we consume approximately 98.6 litres per person each year.

## Milk processing

Before milk can be sold on the commercial market, it undergoes pasteurisation to make it safe. It may also be homogenised.

### Pasteurisation

**Pasteurisation** destroys all pathogenic, or disease-causing bacteria. Milk is the perfect medium for the growth of microorganisms and is therefore easily contaminated. The most common method of pasteurising milk is to heat the milk to 72°C for 15 seconds and then to cool it rapidly to 4°C. This process is called high-temperature short-time pasteurisation. The process of pasteurisation, developed by Louis Pasteur in the 1860s, destroys all disease-causing bacteria and extends the shelf life of milk, while having a limited effect on the flavour.




**Nutrient compositions of different animal milks**

### Homogenisation

**Homogenisation** of milk involves breaking the globules of fat into tiny particles so that the cream does not rise to the surface of the milk. The process of homogenisation involves forcing the milk through a very fine nozzle at a high pressure. Homogenisation breaks the fat molecules into uniform particles that are about one-quarter of their original size.

Fat globules before homogenisation

Fat globules after homogenisation

**Fat globules before and after homogenisation**



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### UHT (long-life milk)

**UHT milk** has undergone ultra-high-temperature processing that involves heating the milk to approximately 135°C for 2 to 3 seconds. It is then packaged using an aseptic system. UHT milk has similar sensory properties to regular milk and can be stored for 3–6 months without refrigeration.

## Types of milk

A wide variety of milk is available to consumers.

- Full-cream milk contains approximately 4 per cent fat.
- Reduced-fat milk contains about half the fat (less than 2 per cent) of full-cream milk. Reduced-fat milk has the fat-soluble vitamins A and D added to it to replace the nutrients that are lost when the fat is removed during processing.
- Low-fat milk contains less than 1.5 per cent fat.
- Skim milk has the lowest proportion of fat (no more than 0.15 per cent). Skim milk, too, has the fat-soluble vitamins A and D added to it to replace the nutrients that are lost when the fat is removed during processing.


Mark Fergus Photography

**A variety of milk is available to consumers**

## TESTING KNOWLEDGE

1. Create a mind map to highlight the nutrients found in milk products.
2. Explain the long-term health benefits of including dairy products or their alternatives in your diet.
3. Summarise the latest advice from the Heart Foundation about including full-fat dairy products in the diet.
4. Explain the meaning of the term 'lactose intolerance' and the impact of this condition on people's health.
5. Design a breakfast menu for a 12–13-year-old boy or girl to demonstrate how they could consume at least two serves of dairy foods.
6. Describe the main differences in the nutritional composition of milk produced from cows and camels.
7. Outline the process used to pasteurise milk and explain why pasteurisation is an important process in milk production.
8. Describe how milk is homogenised and explain why milk undergoes homogenisation before being sold to consumers.
9. Outline the process that milk undergoes to extend its shelf life to 6 months.
10. Discuss how skim milk differs from full-cream milk.

## Challenges facing Australian dairy farmers

Australia has approximately 5200 individual dairy farms, most of which are concentrated in the high rainfall coastal areas and irrigated areas of Victoria, New South Wales, Tasmania and south-eastern Queensland. Some dairying also takes place in South Australia and Western Australia. However, the sustainability of many of these dairy farms is becoming increasingly challenging given the ongoing drought conditions, increasing production costs and milk processing costs that are well below the cost of production.

## The environmental impact of milk production

The dairy industry is Australia's third largest rural industry and, like other forms of primary food production, it has an impact on the environment.


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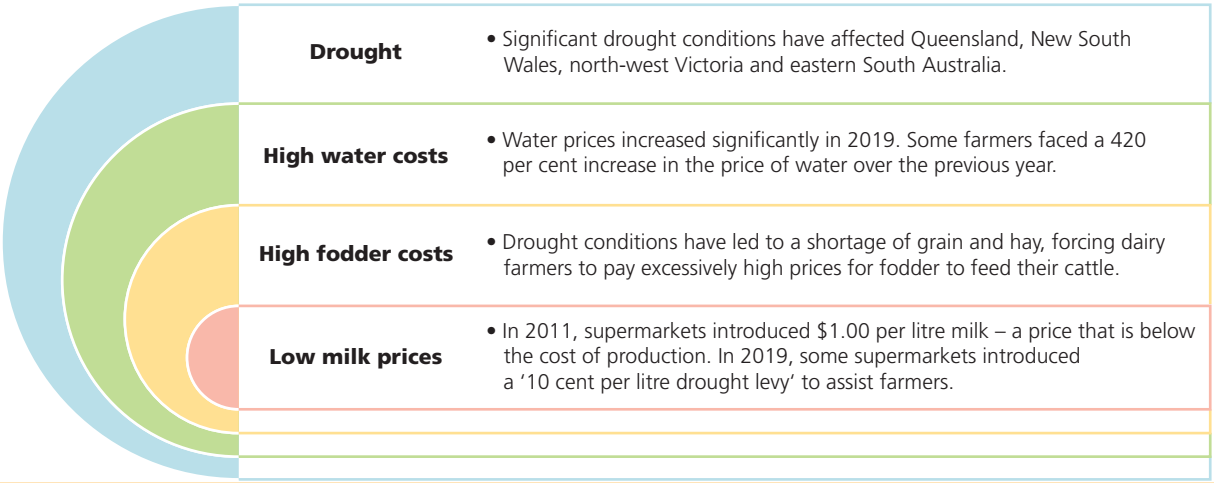

| | |
|---|---|
| **Drought** | • Significant drought conditions have affected Queensland, New South Wales, north-west Victoria and eastern South Australia. |
| **High water costs** | • Water prices increased significantly in 2019. Some farmers faced a 420 per cent increase in the price of water over the previous year. |
| **High fodder costs** | • Drought conditions have led to a shortage of grain and hay, forcing dairy farmers to pay excessively high prices for fodder to feed their cattle. |
| **Low milk prices** | • In 2011, supermarkets introduced $1.00 per litre milk – a price that is below the cost of production. In 2019, some supermarkets introduced a '10 cent per litre drought levy' to assist farmers. |

**The challenges facing Australian dairy farmers**

# 9.1 Case study

Read the article below and answer the questions that follow.

## *Farmers in crisis*

In the past week, 2000 dairy cows have left the Cohuna area alone.

Desperate farmers are exiting the dairy industry or downsizing herd numbers at an alarming rate.

And there are real fears this is just the beginning.

Dry conditions, high water prices, expensive input costs and a milk price that is nowhere near the cost of production has forced the hand of the region's already stressed farmers.

Cohuna dairy farmer Nathan McGann said five years ago there were 62 dairy farms between Cohuna and Gunbower; now there are just 17.

He is one of the statistics, having sold his entire dairy herd at the start of February.

Young dairy farmer Miriam Crane has sold the majority of her dairy herd and parked the nucleus in southern Victoria in a desperate bid to stay in the industry she loves.

Leitchville farmers Sue and Mark Woods were going to milk 400 cows this autumn, but there is a very real possibility that number could fall as low as 100 if conditions stay dry and next season's allocations remain low.

This is just a snapshot of the pain dairy farmers across the region are feeling.

Cohuna stock agent Brock Fletcher said 2000 dairy cows went through their books last week.

'People have just had enough,' Mr Fletcher said.

'They are making no money and can't keep increasing their debt; no-one is listening and they are just going backwards at 100 miles an hour.'

Mr Fletcher said some of the cows had gone to dairying areas in southern Victoria and to a few local dairies that have bore water, but the rest are being sent to the abattoir.

'The bulk of dairy farmers are just done in and it is a very sad world where a litre of water costs more than a litre of milk.'

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> Greenham group livestock manager Graeme Pretty said cull numbers were up 30 per cent.
>
> 'Normally we have a cull in spring and a cull again in autumn but numbers haven't slowed down at all this season,' he said.
>
> Mr Pretty has been in the abattoir game since 1970 and he said this was by far the worst period he has ever experienced.
>
> 'To see what has happened just breaks your heart and I really feel for the farmers. Northern Victoria was such a productive dairy area but even the strongly held family areas are shutting down. Milk has been far too cheap for far too long and it won't be long before we are facing a chronic milk shortage.'
>
> Source: Sophie Baldwin, *Country News*, 21 May 2019

## Respond

1. Evaluate the validity of the article. Consider the reliability of the sources of information used in the article, the context and presentation of evidence.
2. Draw conclusions about why the author published this article.
3. Hypothesise the impact of the information presented in this article on the future of the Australian dairy industry.
4. Formulate two recommendations you could present to the Federal Minister for Agriculture or Dairy Australia to ensure the sustainability of the Australian dairy industry.

### Greenhouse gas emissions

One of the most significant ways in which the dairy industry affects the environment is through the production of greenhouse gases that contribute to climate change. Dairy cows add significant amounts of greenhouse gases to the atmosphere because when cows digest their food, they produce methane ($CH_4$). Of all the emissions from dairy farms, 60–70 per cent are methane. The dung and urine dairy cows excrete contain high levels of nitrous oxide ($N_2O$), a greenhouse gas that is known to be far more harmful to the environment than carbon dioxide.

### Water use

Dairy farms use large amounts of water – approximately 12 per cent of our national water consumption – to produce the milk we all enjoy. Dairy farmers use water to irrigate the pasture and grow the grain that they need to feed their dairy cows as well as to provide their animals with drinking water. Water is also essential to ensure the milking sheds are kept clean and hygienic. According to Sustainable Table, an environmental not-for-profit organisation, it takes approximately 800 litres of irrigated water to produce 1 litre of milk.

Weblink

*Sustainable Table*

### Soil health

While organic and biodynamic dairy farmers use natural methods such as compost and manures to improve the health of the soil and to grow the pasture they need to feed their animals, most dairy farmers rely on synthetic fertilisers and herbicides to improve their soils. However, the use of artificial fertilisers and herbicides can affect soil health by destroying many of the microbes that live in the soil, reducing the ability of the soil to trap carbon and to grow healthy pasture and crops.

Another concern is that unless well managed, the soil can be compacted by overgrazing. This reduces the soil's capacity to grow healthy crops and to prevent erosion if pasture cover is reduced. Dairy farmers must also be aware of the importance of carefully managing the waste stream, especially the dung and urine produced by their dairy herd, as the synthetic fertilisers it contains can wash or leach into rivers and streams, polluting the waterways.

## Sustainable milk production

Dairy farmers and dairy food processors have been aware for years of the necessity to develop more sustainable industry practices in the face of


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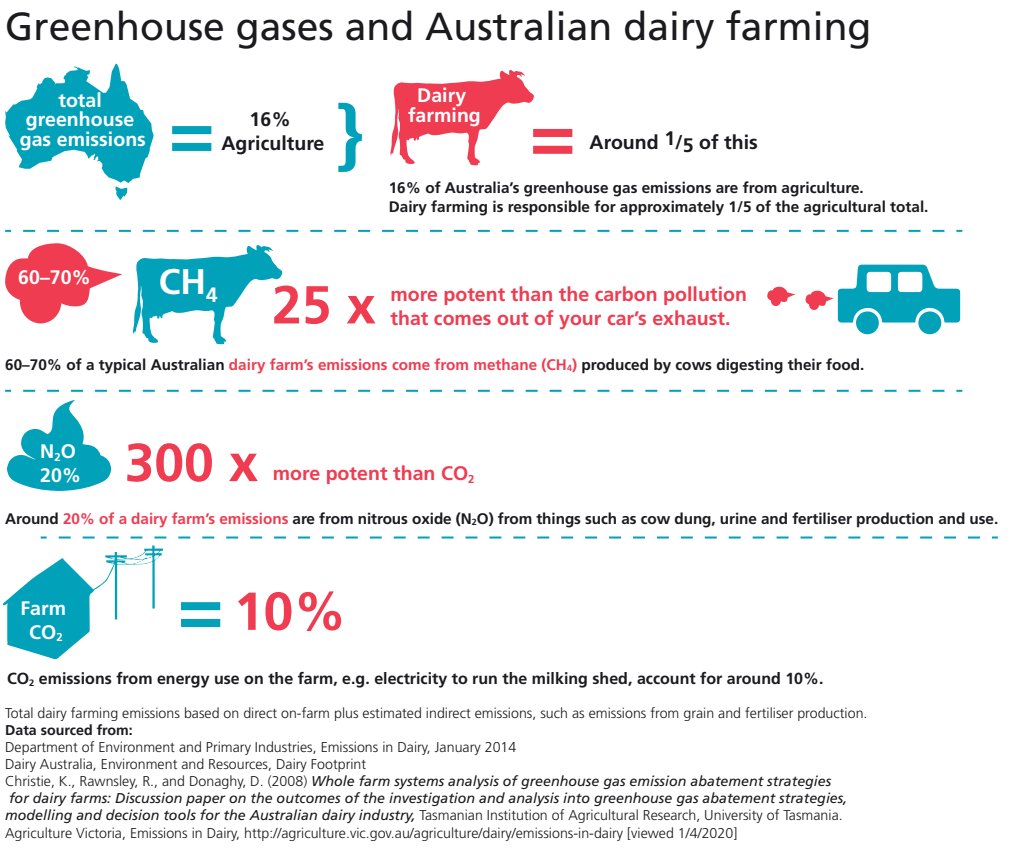


**The environmental impact of dairy farming in Australia**

a changing climate. A 2016 report titled 'Dairy's (climate) changing future' prepared by University of Melbourne, highlights the way Australia's changing climate will affect the dairy industry. According to this report, 'by 2040, farmers will have to deal with warmer temperatures and more extreme weather events, while more variable rainfall will see seasons shift and feeding strategies altered. Summers will extend well beyond the usual summer period and dry spells will last longer'. (This article was first published by Lauren Hull on Pursuit. Read the original article at https://pursuit.unimelb.edu.au/articles/dairy-s-climate-changing-future.) This will affect animal welfare and pasture growth and, as a result, milk production.

In an effort to address the issue of sustainability, the Australian dairy industry developed the Australian Dairy Industry Sustainability Framework. One of the key features of this framework is the establishment of a series of goals and strategies to reduce the impact of the dairy industry on the environment.


Based on Australian Dairy Industry Sustainability Framework, www.sustainabledairyoz.com.au

**Australian Dairy Industry Framework goals to reduce environmental impact**

## Improved land management strategies

- Exclude all stock from waterways
- Manage and maintain the riparian vegetation along riverbanks

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- All dairy farmers to complete and implement a soil and nutrient management plan
- Ensure no further net deforestation occurs
- Implement and document a biodiversity action plan

### Strategies to increase water efficiency

- Reduce the amount of water consumed by dairy companies by 30 per cent
- Recycle water from the dairy sheds
- Have all farmers monitor their water consumption
- Have all farmers establish and implement a water security risk management plan

### Strategies to reduce greenhouse gas emissions intensity

- Aim to reduce greenhouse gas emissions across the industry by 30 per cent
- Breed dairy cows that produce lower levels of methane in their gut
- Improve the variety of grains and pastures used to feed animals to reduce methane and nitrous oxide the animals excrete
- Provide tools such as the 'Dairy Climate Toolkit' for dairy farmers so that they become more informed and can measure and reduce the emissions on their farms
- Use environmentally-friendly sources of electricity, such as wind power, where possible
- Convert organic waste from dairy processing into power and treated water

### Waste reduction strategies

- Aim by dairy processors to divert all waste sent to landfill by 2030
- Recycle all polyethylene material used to wrap the silage or fodder used to feed dairy cows
- Ensure packaging for all dairy products is compostable, reusable or recyclable by 2025. For example, the polyethylene plastic lining in milk cartons could be replaced with cartons made from renewable resources, including wood fibers and sugar cane

## MILK ALTERNATIVES

For people who have an allergy or intolerance to dairy products, or for those who wish to avoid consuming animal products for ethical or environmental reasons, there are now a wide range of plant-based products available on the supermarket shelves. These alternatives include soy, almond, coconut, rice and oat 'milk'.

- Soy milk: has a high protein content and is quite high in fat. Many soy milks are fortified with calcium.
- Almond milk: contains monounsaturated fats rather than saturated fat. It is low in kilojoules and contains a moderate amount of protein. However, unlike cow's milk, almond milk does not contain any calcium.
- Coconut milk: is very high in saturated fat but does not contain any protein or calcium.
- Rice milk: is suitable for most people with allergies. It contains little fat and no saturated fat. It is low in protein but may be fortified with calcium. Rice milk has a naturally high sugar content.
- Oat milk: contains only small amounts of fat and saturated fat with a medium level of protein. However, not all oat milk products are fortified with calcium. People who are gluten intolerant may be allergic to oat milk.


Mark Fergus Photography

**Plant-based 'milk' products**


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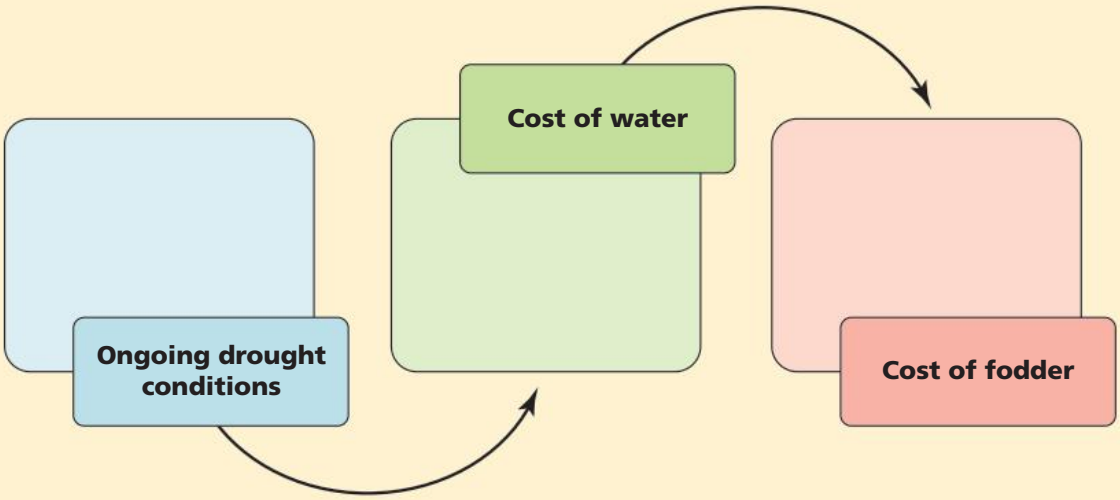
## TESTING KNOWLEDGE

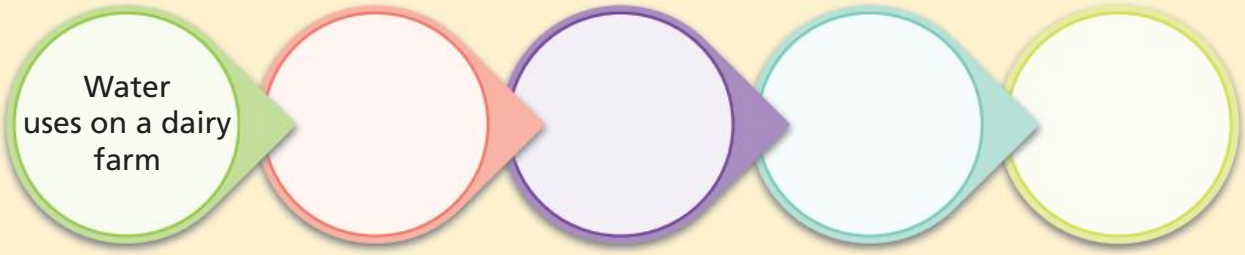
**11** Discuss the relationship between ongoing drought conditions and the cost of water and fodder for dairy farmers.




**12** Explain how low supermarket milk prices affected the sustainability of dairy farms.

**13** Describe how dairy cows can contribute to greenhouse gas production.

**14** Complete the diagram below of the uses of water on a dairy farm.




**15** Outline two strategies dairy farmers can use to improve the soil health on their farms.

**16** What is methane and how is it produced on dairy farms?

**17** Create a mind map to highlight the impact that Australia's changing climate will have on the dairy industry.

**18** Explain how dairy farmers could increase the sustainability of their industry by introducing strategies to:

- reduce their greenhouse gas emissions
- reduce waste.

**19** Select two different milk alternatives and explain why some consumers would prefer to consume these rather than cow's milk.

**20** Explain why coconut milk may have a detrimental impact on the health of some consumers.

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# YOGHURT

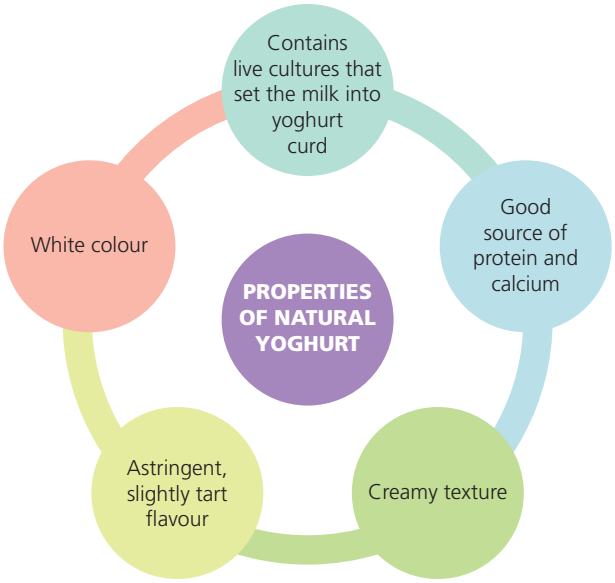
The word 'yoghurt' is thought to have originated from the Turkish word *yoghurmark*, which means 'to thicken'.

In most countries throughout the world, yoghurt is made from cow's milk, but it can also be manufactured from the milk of other animals, especially goat's and sheep's milk. Today, dairy-free yoghurt-style products made from soy and coconut milk are also available.

To make yoghurt, two cultures are added to whole or skim milk to begin the fermentation process: *Lactobacillus bulgaricus* and *Streptococcus thermophilus*. These cultures convert the lactose (the sugar in milk) to lactic acid, which coagulates the protein and creates the thick consistency typical of yoghurt.

## Nutritional properties of yoghurt

Yoghurt is considered to be a highly nutritious food as it provides an excellent supply of protein and calcium. While most dairy products are not considered suitable for people who are lactose intolerant, the bacteria that is used to set the milk or create the yoghurt 'curd' converts the sugar in milk (lactose) to lactic acid, making it suitable for people who are lactose intolerant. Yoghurt, which contains the probiotic cultures acidophilus, Bifidus and Lactobacillus casei, is often described as a 'probiotic' food as it is thought to promote health by increasing the level of intestinal flora that live in the 'gut'.




**Properties of natural yoghurt**

## ACTIVITY 9.1

### TASTE TESTING YOGHURT

**1** Taste test a range of different types of vanilla yoghurt. Select four different types of yoghurt such as:

- full-fat
- reduced-fat
- soy milk
- coconut milk
- goat's milk
- sheep's milk
- almond milk
- yoghurt in a pouch.

Focus on the sensory properties – appearance, aroma, flavour, texture and sound – of each type of yoghurt. Record your results in a table.

| Yoghurt type | Appearance | Aroma | Flavour | Texture | Sound |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

**2** Rate the yoghurt from the one you liked the most to the one you liked the least. Justify your ratings using your analysis of your sensory properties.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3 Examine the label of each yoghurt and record the kilojoule, fat, sugar and calcium content per 100 grams of each type of yoghurt.

| Yoghurt type | Energy (kJ) (content per 100 grams) | Fat (content per 100 grams) | Sugar (content per 100 grams) | Calcium (content per 100 grams) |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |

4 Draw conclusions about the yoghurt with the highest energy content per 100 grams and the yoghurt with the lowest energy content and the amount of fat and sugar present in each yoghurt.

5 Compare the calcium content of each type of yoghurt. Develop a logical argument to explain the variation in the calcium content you have observed in each type of yoghurt.

6 With a partner, brainstorm and record why there is such a large variety of yoghurts available today.

7 If you were responsible for buying yoghurt for your family, which type would you choose? When writing your response, consider the sensory properties, nutritional value and the way that yoghurt is used in your home.

## Labneh

Labneh is a delicious soft cheese that is made by straining yoghurt through fine muslin. It originated in the Middle East, and is low in kilojoules, spreads easily and is a great substitute for cream cheese. While it is widely available in markets and supermarkets, labneh is easy to make at home. If you prefer a thicker labneh, allow the yoghurt to strain for a longer period. The longer you let it strain, the thicker the labneh will be until it has a consistency like that of cream cheese.

### ACTIVITY 9.2

### MAKING YOUR OWN LABNEH

#### Ingredients

- 1 kilogram Greek-style natural yoghurt
- 300 millilitres olive oil
- 3 garlic cloves, bruised
- 3 x 2-centimetre-thick strips lemon rind
- 2–3 small sprigs fresh rosemary

#### Method

1 Spoon the yoghurt into a fine sieve and place over a bowl.

2 Cover the bowl with plastic wrap and place in the fridge overnight to drain.

3 Roll the yoghurt into walnut-sized balls.

4 Place in a jar or serving bowl. Cover with the oil and add the garlic, lemon rind and rosemary.

# CHEESE

**Cheese** is made from **casein**, the protein present in the curds of milk that are separated from the water and lactose or whey. It is a concentrated form of milk, taking one litre of milk to make 100 grams of cheese. Like milk, cheese is considered to be an important food to include in your diet because it contains a wide variety of essential nutrients, particularly calcium, protein, iodine, vitamin A, vitamin D, riboflavin, vitamin B12 and zinc.

The most commonly used milk for cheese making in Australia is that from cows and goats. In other cultures, the milk from animals that are better suited to the harsher climatic conditions and terrain – such as reindeer, yak, horses and water buffalo – is frequently used. Australians consume approximately thirteen kilograms of cheese per person a year, the majority of which is cheddar-style cheese.

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## Classification of cheese

Like most other food types, cheese can be classified in a variety of ways. It can be classified according to the type of milk used to make the cheese, for example, cow's, goat's or sheep's milk. Another classification method used is the way in which the cheese has been ripened, that is, whether the cheese has been surface-ripened or interior-ripened.

Sometimes cheese is categorised according to its fat content, which is either full-cream or low-fat. However, the most common method used is based on the firmness or texture of the cheese, which classifies the cheese as either a hard cheese, semi-soft or fresh cheese. The texture or firmness of cheese is determined by water content with fresh and soft cheeses having a moisture content of up to 80 per cent and hard cheeses as little as 30 per cent.

| | |
|---|---|
| **Fresh cheeses** | Cream cheese, cottage, ricotta, mozzarella, bocconcini and mascarpone |
| **Soft white cheeses** | Brie, Camembert |
| **Washed rind cheese** | King River Gold, Top Paddock washed rind |
| **Semi-soft cheeses** | Edam, Havarti, Colby |
| **Hard cheeses** | Cheddar, Jarlsberg, Gouda, Gruyère, Emmenthal, Parmesan and Romano |
| **Processed cheeses** | Cheese slices, cheese sticks, flavoured cheeses |
| **Goat's milk cheese** | Soft, surface-ripened or unripened |

## ACTIVITY 9.3

### TASTE TESTING CHEESE

Cheese is a great source of calcium. For example, as shown in the table on page 205, 30 grams of cheddar or tasty cheese contains approximately 240 milligrams of calcium. Your teacher will arrange to have a variety of different types and brands of cheddar cheese products for your class to test, such as a block of tasty cheese, tasty cheese slices, cheese sticks or cheese wedges and tasty cheese dip and crackers.


Mark Fergus Photography

**Tasty cheese products**

### Aim

To compare the sensory properties and calcium and sodium content of a variety of tasty cheese products.

### Method

1. Place labelled samples of each cheese product on a small plate.
2. Taste test each cheese and fill in a table similar to the one below.
3. Read the label on each of the cheese packets to find out how much calcium and sodium is contained in each type of cheese.
4. Complete the table.


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## Results

| Sample number | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Type of tasty cheese product | | | | |
| Colour (e.g. dark, light, bright, dull) | | | | |
| Flavour (e.g. salty, strong, weak) | | | | |
| Mouth feel or texture (e.g. smooth, creamy, granular) | | | | |
| Comment (e.g. what you thought of the flavour) | | | | |
| Milligrams of calcium per 100 grams | | | | |
| Milligrams of sodium per 100 grams | | | | |
| Your rating (e.g 7/10) | | | | |

## Analysis

1. Which cheese had the best flavour?
2. In your opinion, which cheese had the best mouth feel?
3. Which cheese contained the highest amount of calcium?
4. Which cheese had the lowest sodium content and which cheese had the highest? How did the sodium content affect the sensory properties of the cheese?
5. Compare the packaging used for each type of cheese product. Which products used the most packaging? Discuss the impact of this packaging on the waste stream and the environment.
6. Which cheese did you prefer overall? Why did you choose this one?

## Conclusion

1. Which of the cheese samples would you recommend to your friends to eat as a morning or afternoon snack? Justify your decision – remember to refer to both the calcium and sodium content of the products as well as the packaging used.
2. Make recommendations about two other foods people who do not like cheese could eat for a snack that are high in calcium.

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# OSTEOPOROSIS

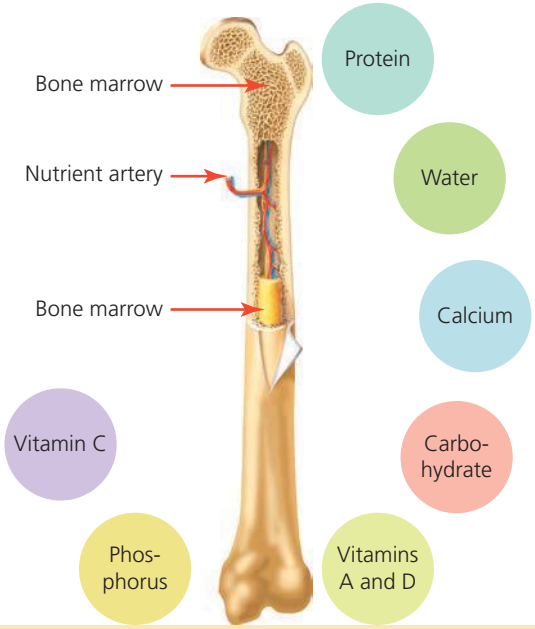
Osteoporosis is a major health concern for the Australian population. Like many other health issues, it is a condition that typically becomes evident in the later stages of life. Osteoporosis affects over one million Australians and is more common in both women and men over the age of 50.

**Osteoporosis** occurs when calcium is lost from the bones, making them fragile and easily broken. A normal bone has a strong outer shell, but osteoporosis causes the outer shell of the bone to become thin. The internal structure of the bone is also affected, and instead of having a strong, mesh-like structure, the bone develops large holes, making it thin and weak. The most common osteoporosis-related fractures occur in the hips, spine, pelvis and wrists. People who have osteoporosis often suffer from severe pain, especially in their backs. Height loss and a stooped appearance are other side effects of osteoporosis.

## Healthy bones

While osteoporosis does not usually become evident until late adulthood, it is during adolescence and early adulthood that you can take steps to avoid developing this debilitating condition. To minimise your risk of developing osteoporosis, it is essential to develop peak bone mass during your teenage years. Peak bone mass can be achieved by combining a diet high in calcium with significant weight-bearing exercise during adolescence, when you are rapidly growing. Peak bone mass is usually achieved by the age of 18, but you can continue to gain bone mass until the age of around 30.

Protein, calcium, phosphorus and vitamin D are the nutrients that are essential for healthy bones. During adolescence, you need larger amounts of calcium to provide for the considerable increase in the bone structure of your body. Boys aged eight to 11 need approximately 800 milligrams of calcium daily, but between the ages of 12 and 15, their need for calcium increases by approximately 50 per cent, to 1200 milligrams daily. This is greater than the amount of calcium needed by girls, mainly because boys will generally grow to be taller than girls. Girls aged eight to 11 need slightly more calcium than boys of the same age (900 milligrams daily) because they start their growth spurt earlier; however, they need only 1000 milligrams daily between the ages of 12 and 15.




**Nutrient needs for bone growth**

## Selecting foods high in calcium

Many adolescents and older Australians do not consume enough calcium to meet their daily needs. Calcium is found in a wide variety of foods, but some calcium sources are better than others. Remember that some foods and additives work against the absorption of calcium, preventing it from passing from the food during digestion. The foods most likely to work against calcium absorption are fats, the fibre in cereals, and some green, leafy vegetables. Salt, caffeine (in cola soft drinks, tea and coffee) and phosphates (which are added to processed foods and drinks) also increase the amount of calcium that is lost through urine.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## The best food sources of calcium

| Food source | Amount required | Milligrams of calcium |
|---|---|---|
| Whole milk | 1 cup (250 mL) | 310 |
| Fortified milk | 1 cup (250 mL) | 438 |
| Evaporated milk | 1 cup (250 mL) | 658 |
| Skim milk | 1 cup (250 mL) | 310 |
| Chocolate-flavoured milk | 1 small carton (300 mL) | 348 |
| Fortified soy drink | 1 cup (250 mL) | 295 |
| Yoghurt | 1 small carton (200 g) | 255 |
| Cheddar or tasty cheese | 1 slice (30 g) | 240 |
| Edam cheese | 1 slice (30 g) | 288 |
| Swiss cheese | 1 slice (30 g) | 320 |
| Parmesan cheese | 40 grams | 460 |
| Chocolate (milk) | 6 squares (30 g) | 73 |
| Canned salmon (eaten with the bones) | ½ cup (125 mL) | 325 |
| Sardines | 5 small | 285 |
| Dried figs | 5 | 150 |
| Baked beans | ½ cup (125 mL) | 47 |
| Carrot | ½ cup (125 mL) | 23 |
| Spinach or silverbeet | ½ cup (125 mL) | 40 |
| Parsley | 1 tablespoon (15 mL) | 20 |
| Honeydew melon | 1 cup (250 mL) | 64 |
| Almonds | ¼ cup (60 mL) | 95 |

iStock.com/piotr_malczyk

**Foods high in calcium**

## TESTING KNOWLEDGE

**21** Outline the key steps used in the production of yoghurt.

**22** Why is yoghurt considered to be a food suitable for people who are lactose intolerant?

**23** What is labneh and why is it considered to be a good substitute for cream cheese?

**24** Write a definition of cheese.

**25** Why is cheese considered to be a valuable food to include in our diet?

**26** Explain the key differences between fresh cheeses and hard cheeses. Give two examples of each type of cheese.

**27** Describe the effect of osteoporosis on the bones.

**28** What is 'peak bone mass', and how is it achieved?

**29** Why do boys who are 12–15 years old need more calcium than girls of the same age?

**30** Make a list of the factors that stop the body from absorbing calcium properly. Identify three foods that are the best sources of calcium.

## THINKING SKILLS

### Milk, water and almonds

**1** Develop a logical argument for an increase in the price of milk compared to bottled water.

**2** Prepare a SWOT analysis (strengths, weaknesses, opportunities and threats) of almond milk. Consider the environment, health and economic impacts of the production and use of almond milk.



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# Design activity 9.1

## DAIRY DELICIOUS

International Dairy Week (IDW) is an event held each January to celebrate the importance and diversity of Australia's dairy industry. One of the most popular features of IDW is the program of cooking demonstrations that allow dairy producers to showcase the amazing array of milk, cheese and yoghurt products they produce. This year the organisers want to include a variety of family-friendly meals into their food and cooking demonstrations.

### Design brief

The organisers of IDW are asking their Facebook and Instagram followers to send in recipe ideas for a meal that will showcase a variety of dairy products that reflect the principles of the *Australian Guide to Healthy Eating*. The recipes should also incorporate pasta, as their research shows this is always popular with families, and feature a range of different-coloured vegetables to produce a nutritious meal. It must be possible to prepare the recipe in 80–100 minutes or be suitable to be reheated when the family comes home from work. The recipes selected to be included in their cooking demonstrations will be photographed and feature on their Facebook and Instagram pages during IDW.

1 Write a design brief based on the five Ws – who, what, when, where, why.

2 Develop four or five questions to evaluate the success of your new recipe.

### Investigating

1 Research a variety of recipes that incorporate cheese as well as pasta and vegetables into a family-friendly meal. Your recipe research should focus on:

- the type/s of cheese used in each recipe
- how the vegetables are prepared in each recipe
- the type of pasta used.

Remember to include a bibliography or source for each recipe.

2 Research the variety of cheeses suitable for including in a cheese, pasta and vegetable-based dish.

| Type of cheese | Characteristics of this cheese | Examples of cheese suitable to include in dish |
|---|---|---|
| Fresh cheeses | | |
| Cheeses that melt | | |
| Cheeses for finishing and garnishing | | |

3 Research the variety of pasta suitable for including in a cheese, pasta and vegetable-based dish.

| Type of pasta | Characteristics of this pasta | Examples of pasta suitable to include in dish |
|---|---|---|
| Long pasta | | |
| Pasta sheets | | |
| Shaped pasta | | |

4 List two vegetables for each of the colours below that could be used in a family-friendly cheese, pasta and vegetable-based dish.

| Type of vegetables | Characteristics of the vegetables | Examples of suitable vegetables |
|---|---|---|
| Orange/yellow vegetables | | |
| Red vegetables | | |
| Green vegetables | | |
| White/brown vegetable | | |


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5 Prepare a recipe containing dairy products, pasta and vegetables such as Vegetable Lasagna (page 211), Light Spinach and Ricotta Cannelloni (page 208) or Cheesy Pasta and Broccolini Bake (page 209) to help you explore the variety of flavours and textures you could incorporate in your own recipe.

## Generating

1 Use the recipe for Vegetable Lasagne, Light Spinach and Ricotta Cannelloni or Cheesy Pasta and Broccolini Bake you have previously prepared and your research to complete the following recipe map table.

| Cheese component | Pasta component | Vegetable component |
|---|---|---|
| • | • | • |
| • | • | • |
| • | • | • |
| • | • | • |
| • | • | • |

**Recipe map table for a family-friendly cheese, pasta and vegetable-based dish**

2 Using the information in your recipe map table, develop two design options for your family-friendly cheese, pasta and vegetable-based dish.

3 Construct a decision table. Select the option you would prefer and explain your choice.

## Planning and managing

1 Complete a food order.

2 Before producing your family-friendly cheese, pasta and vegetable-based dish, write up a production plan, noting any safe work practices to be followed, and identify the major processes to be used.

## Producing

1 Produce your preferred option.

2 Style and photograph your completed meal.

## Evaluating

1 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your completed dish.

2 Use the questions you developed to evaluate the success of your product.

3 Discuss the most challenging part of the production. Outline how you managed this challenge.

4 Comment on your overall management of time for this production – discuss your designing and planning as well as the production of the meal.

5 Classify all the ingredients of your family-friendly cheese, pasta and vegetable-based dish on a diagram of the *Australian Guide to Healthy Eating*. Analyse how well your meal met the guidelines of the food model.

ISBN 9780170446716

# LIGHT SPINACH AND RICOTTA CANNELLONI

### TOMATO SAUCE

¼ onion, finely diced

2 cloves garlic, crushed

1 tablespoon olive oil

200 millilitres tomato passata, tomato sugo or tomato puree

¼ teaspoon sugar

pinch of salt

### SPINACH AND RICOTTA FILLING

50 grams frozen spinach, defrosted

120 grams ricotta

1 tablespoon grated parmesan cheese

⅛ teaspoon grated nutmeg

black pepper

### WHITE SAUCE

10 grams butter

15 grams cornflour

150 millilitres low-fat milk

½ cup flat leaf parsley, finely chopped

2 fresh lasagne sheets

1 tablespoon grated parmesan cheese

SERVES TWO

## METHOD

1 Preheat oven to 180°C.

### TOMATO SAUCE

1 In a small saucepan, sauté the onion and garlic in one tablespoon of olive oil.

2 Add the tomato passata, sugar and salt to the saucepan. Simmer for 3 minutes then remove from heat. Pour into an ovenproof dish or foil container (20 x 16 x 5 centimetres).

### SPINACH AND RICOTTA FILLING

1 Squeeze the moisture out of the defrosted spinach.

2 Combine the spinach, ricotta, grated parmesan, nutmeg and pepper and mix well.

### WHITE SAUCE

1 In a small saucepan, melt the butter over low heat, add the cornflour and stir for 30 seconds. Remove from the heat and gradually stir in the milk, ensuring all the lumps have been removed.

2 Return the saucepan to the heat and bring to the boil, stirring all the time. Remove from heat and stir through the chopped parsley. Set aside.

### ASSEMBLING THE LIGHT SPINACH AND RICOTTA CANNELLONI

1 Cut the lasagne sheets in half and divide the spinach and ricotta filling between the four pieces of pasta. Spread the filling and roll. Place the four filled cannelloni onto the tomato sauce in the ovenproof dish.

2 Pour over the white sauce and sprinkle with parmesan cheese.

3 Bake for 20 minutes.

Mark Fergus Photography

## EVALUATION

1 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the Light Spinach and Ricotta Cannelloni.

2 Describe two safety rules to observe when using the stove top while preparing this recipe.

3 Identify the ingredients in this recipe that are a good source of calcium.

4 Classify the ingredients for the Light Spinach and Ricotta Cannelloni on a diagram of the *Australian Guide to Healthy Eating*. Explain how well it meets the recommendations of this food selection model.

5 Recommend accompaniments that could be served with the Light Spinach and Ricotta Cannelloni to make a substantial family meal. Justify your recommendations with reference to the *Australian Guide to Healthy Eating*.



ISBN 9780170446716

# CHEESY PASTA AND BROCCOLINI BAKE

150 grams penne pasta
½ onion, finely diced
2 rashers bacon, finely diced
3 stems broccolini, cut into 3-centimetre lengths
250 grams ricotta cheese
1 egg
125 millilitres evaporated milk
¼ cup parmesan cheese
1 tablespoon parsley, chopped
salt and pepper
40 grams cheddar cheese, grated

SERVES TWO

## METHOD

1. Preheat oven to 180°C.
2. Lightly grease two small ovenproof dishes or foil containers.
3. Bring a large saucepan of water to the boil.
4. Add penne to boiling water. Stir once or twice. Cook the penne for approximately 12 minutes or until al dente. (To test for al dente, bite a piece of pasta. It should be firm, but not hard. You should not be able to feel or see the hard centre.) Drain and keep warm.
5. Cook the finely diced onion and bacon in a non-stick frying pan for 4–5 minutes or until soft and just beginning to brown.
6. Half-fill the base of a steamer with water and bring to the boil. Place the broccolini into the top of the steamer and steam for 4 minutes.
7. Mix the ricotta, egg, evaporated milk, parmesan cheese, parsley and salt and pepper in a bowl until well combined.
8. Place a quarter of the pasta in the base of each of the two ovenproof dishes. Spread with half the onion and bacon and broccolini.
9. Top with a quarter of the ricotta and egg mixture. Add the remaining pasta. Pour the remaining ricotta and egg mixture over the top.
10. Sprinkle with the cheddar cheese.
11. Bake in the preheated oven for 20–25 minutes or until golden on the top.

Mark Fergus Photography

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the Cheesy Pasta and Broccolini Bake.
2. Why is it important to add the penne to boiling water?
3. Describe two safety rules to observe when using the oven.
4. Refer to the table on page 205 that shows sources of calcium. Calculate the amount of calcium this recipe would provide for one person.
5. Evaluate the Cheesy Pasta and Broccolini Bake by classifying its ingredients on a diagram of the *Australian Guide to Healthy Eating*.



ISBN 9780170446716

# LAMB KOFTA WRAP WITH HERBED YOGHURT

9

## LAMB KOFTA

2 tablespoons fine burghul
1 tablespoon olive oil
¼ red onion, finely diced
1 garlic clove, crushed
200 grams lean minced lamb
½ egg
½ teaspoon ground cumin
½ teaspoon ground coriander
½ teaspoon dried mint
¼ teaspoon chilli flakes
½ lemon, rind and juice
pinch salt
small quantity of olive oil, for frying
wholegrain flat bread, to serve
Lebanese cucumber, sliced
iceberg lettuce, shredded

MAKES 10–12 MEATBALLS

## HERBED YOGHURT

2 tablespoons mint leaves
2 tablespoons coriander leaves
2 tablespoons flat leaf parsley
½ clove garlic, crushed
2 teaspoons extra-virgin olive oil
1 tablespoon tahini paste
60 grams Greek yoghurt
½ lemon, juiced
salt and pepper

## METHOD

1. Place the burghul in a small bowl, cover with cold water and soak for 10 minutes. Drain well through a fine sieve.
2. Add the olive oil to a small fry pan and sauté the diced onion and crushed garlic over medium heat for 3–4 minutes or until softened. Do not brown. Cool.
3. Combine the minced lamb, egg, drained burghul, cooked onion and garlic, cumin, coriander, mint, chilli flakes, lemon rind and juice and salt. Mix well.
4. Shape the lean lamb mixture into walnut-sized oval balls. Cover and refrigerate for 15–20 minutes.
5. Heat oil in the frying over medium heat and fry the lamb kofta, turning regularly to brown evenly. Drain on paper towel.

## HERBED YOGHURT

1. Roughly chop the herbs, then add them along with the garlic and extra-virgin olive oil to a small food processor and process to combine.
2. Add the tahini, yoghurt and lemon juice and pulse to combine.
3. Season with salt and pepper and serve with the lamb kofta.

## TO SERVE

Serve the lamb kofta with wholegrain flat bread, herbed yoghurt, Lebanese cucumber and shredded iceberg lettuce.

Mark Fergus Photography

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the Lamb Kofta Wrap with Herbed Yoghurt.
2. What is tahini paste and why is it included in the meat section of the *Australian Guide to Healthy Eating* (AGTHE)?
3. List the ingredients in this recipe that are found in the 'milk, yoghurt and cheese' section of the AGTHE. Identify one other ingredient from this food group that could be incorporated into the kofta component of this recipe. Predict the impact this would have on the sensory properties of the finished dish.
4. Explain why foods in the 'milk, yoghurt and cheese' section of the AGTHE are considered to be an important part of a healthy diet.
5. Classify the ingredients for the recipe on a diagram of the AGTHE. Explain how well it meets the recommendations of this food selection model.


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# VEGETABLE LASAGNA

### VEGETABLE SAUCE

2 teaspoons olive oil

½ onion, finely diced

1 clove garlic, crushed

100 grams mushrooms, sliced

½ zucchini, grated

200-gram can diced tomatoes

1 tablespoon tomato paste

¼ carrot, grated

¼ cup celery, finely diced

¼ red capsicum, finely diced

¼ Granny Smith apple, peeled and grated

¼ teaspoon each dried oregano, basil and rosemary

### WHITE SAUCE

1½ cups milk

⅛ onion, finely diced

1 clove

pinch of nutmeg

30 grams butter

2 ½ tablespoons flour

salt and pepper

### ASSEMBLING THE LASAGNA

3 vacuum-packed sheets of fresh lasagne pasta

2 slices mozzarella cheese

1 tablespoon parmesan cheese, grated

MAKES ONE LARGE OR TWO SMALL PORTIONS

## METHOD

### VEGETABLE SAUCE

1. Heat oil over medium heat and sauté the onion and garlic. Cook for 1 to 2 minutes but do not brown. Add the mushrooms and cook until soft.
2. Add the remaining ingredients to the saucepan, cook for 3 minutes and remove from heat. The sauce will be sloppy.

### WHITE SAUCE

1. Place the milk, onion, clove and nutmeg in a small saucepan and heat until simmering. Remove from heat and allow to cool.
2. Strain and retain the cooled, flavoured milk.
3. Melt butter in small saucepan and blend in flour. Cook for 30 seconds, taking care not to brown. Remove from heat.
4. Gradually stir in flavoured milk. When blended and lump-free, return to heat, stirring constantly. Cook until boiling, then remove from heat.
5. Season with salt and pepper.

### ASSEMBLING THE LASAGNA

1. Preheat oven to 180°C.
2. Line the baking dish with one pasta sheet, then alternately layer the vegetable sauce, white sauce, mozzarella and more pasta. Finish with the white sauce and sprinkle with parmesan cheese.
3. Bake for 20 minutes or until golden brown.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Vegetable Lasagna.
2. Describe the benefits of using the vacuum-packed fresh lasagne sheets over traditional dried pasta sheets.
3. Define the cookery term ‘to infuse’. In which step in the recipe was this process used?
4. Identify the steps in the recipe that help to ensure the white sauce is lump-free.
5. Write a paragraph that outlines why the Vegetable Lasagne would be considered a healthy meal.

Mark Fergus Photography



ISBN 9780170446716

# CHEESE AND SPINACH PASTRIES

2 spring onions
60 grams frozen spinach, defrosted
50 grams ricotta cheese
50 grams feta cheese
1 egg
pinch of nutmeg
4 shakes black pepper
8 sheets filo pastry
¼ cup olive oil

MAKES 8

## METHOD

1. Preheat oven to 200°C. Brush an oven tray with melted butter.
2. Finely slice the spring onions and mix with spinach, ricotta cheese, feta cheese, egg, nutmeg and black pepper.
3. In the bowl, divide the mixture into 8 portions.
4. Lay one piece of filo pastry on the bench and brush lightly with oil. Fold into thirds, lengthways.
5. Place one portion of the filling on the lower edge of the pastry. Fold up the pastry to form a right-angled triangle then continue to fold the triangles the length of the pastry.
6. Place the finished pastry on the oven tray and brush with oil. Repeat the folding process to make 8 cheese and spinach pastries.
7. Bake for approximately 10 minutes or until a pale golden colour.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Cheese and Spinach Pastries.
2. How were you able to prevent the filo pastry from drying out while you were preparing the Cheese and Spinach Pastries?
3. Explain the function of the egg in the filling of the Cheese and Spinach Pastries.
4. Discuss three safe work practices you followed when using the oven to bake the filo triangles.
5. Classify the ingredients of the Cheese and Spinach Pastries on a diagram of the *Australian Guide to Healthy Eating*. Explain why this recipe would be a better choice as a healthy snack than a sausage roll.

Mark Fergus Photography



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# ONLY SOMETIMES!

# 10

## KEY KNOWLEDGE

- Only sometimes and in small amounts in the *Australian Guide to Healthy Eating*
  - Why use small amounts or only sometimes?
  - How much of the unsaturated spreads and oils can be included in a healthy diet?
  - How much of the discretionary foods can be included in a healthy diet?
- Fat
  - Monounsaturated fats
  - Saturated fats
  - Trans fats
- Sugar
- Fat or sugar: what's the difference?
- Salt
- LiveLighter® campaign
- Preparing your own snacks and baked products
- Ingredients in baked products
  - Flour
  - Sugar
  - Eggs
  - Butter
  - Other ingredients
- How baking works
  - Aeration in baked products
  - Processes used to make baked products
  - Top tips for making cakes
  - Top tips for making biscuits
- Pastry
  - Functional ingredients in pastry
  - Types of pastry
  - Top tips for making pastry
- Chocolate
  - Characteristics of cooking chocolates
  - Fairtrade chocolate
  - Top tips for cooking with chocolate

## KEY TERMS

**aeration or leavening** to trap air in a mixture that then expands as the product cooks, and causes the product to rise and be light in texture

**caramelisation** the process that sugars undergo when heated to high temperatures to develop a golden brown colour

**fructose** a natural sugar found in fruit and honey

**glucose** a simple sugar that is found in some vegetables and sweet fruits

**Maillard reaction** a browning reaction that occurs when sugar or starch and a protein are present during baking

**monounsaturated fats** fats found in olives, olive oil, avocados and nuts that have been shown to reduce blood cholesterol levels

**saturated fats** fats found mainly in foods of animal origin such as meat, cheese and butter that are linked to raised cholesterol levels; coconut oil and palm oil are also high in saturated fats

**trans fats** bad fats that can lead to serious health concerns and should be avoided; they are found mainly in hydrogenated vegetable oil used by food manufacturers in processed and fast foods

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking



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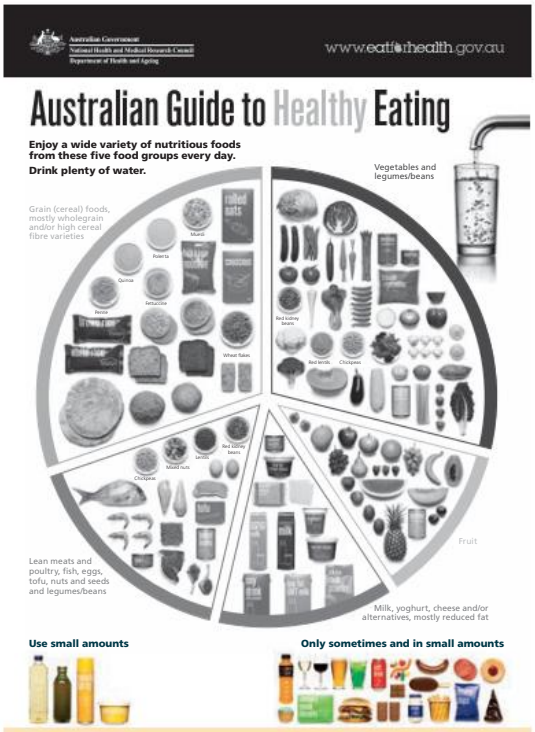
# ONLY SOMETIMES AND IN SMALL AMOUNTS IN THE *AUSTRALIAN GUIDE TO HEALTHY EATING*

Foods that are high in saturated fats, added sugar or salt are often described as discretionary foods because they are not essential to good health. As a result, they are placed at the bottom of the *Australian Guide to Healthy Eating* underneath the five key food groups needed for good health.






**The place of discretionary foods in the *Australian Guide to Healthy Eating***

## Why use small amounts or only sometimes?

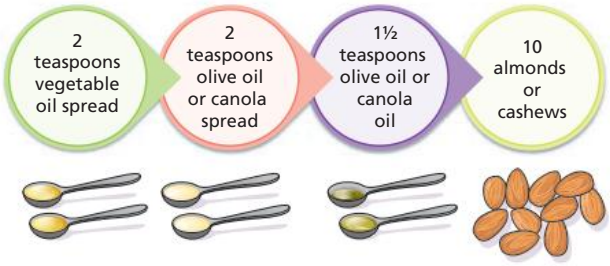
Australian Dietary Guideline 3 states that you should limit foods 'containing saturated fats, added salt [and] added sugars.' However, including some unsaturated fats in your diet is important because they are a source of essential fat-soluble vitamins. The *Australian Guide to Healthy Eating* recommends you use small amounts of polyunsaturated and monounsaturated spreads and oils in your diet as a source of these important nutrients.

According to the Eat for Health program, it is necessary to limit the amount of 'discretionary' foods you include in your diet as they are high in kilojoules and do not provide any of the essential nutrients that you need for good health. Another major concern is that discretionary foods such as cakes, biscuits, doughnuts, soft drinks and burgers often displace other more nutritious foods from the diet. Research shows that many children get almost 41 per cent of their energy needs from discretionary foods.

## How much of the unsaturated spreads and oils can be included in a healthy diet?

| | Serves per day |
|---|---|
| Adolescents 14 –18 years | 2 |
| Children 12 –13 years | 1½ |
| Children 3 –12 years | 1 |

### What is a serve?




## How much of the discretionary foods can be included in a healthy diet?

| | Serves per day |
|---|---|
| Children up to 8 years | No more than ½ serve |
| Children and adolescents who are more active | 0–2½ |
| Older adolescents who are still growing and/or are very active | 0–3 |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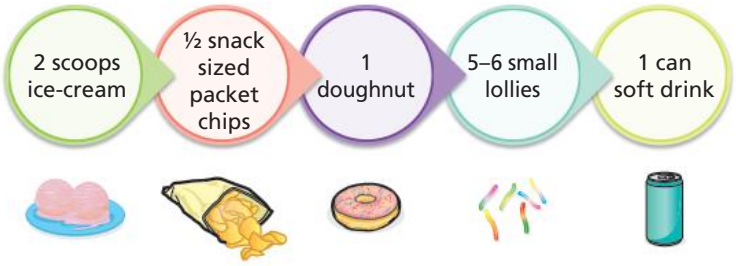
### What is a serve?




# FAT

Fat is one of the main nutrients that provides you with energy. While it is true that you should limit the amount of fat you consume, not all fats are bad. You need some fat in your diet, because it provides the essential fat-soluble vitamins A, D, E and K. These vitamins are vital for many aspects of good health, including encouraging healthy skin and bone growth and preventing blood clotting. Rather than eliminating fat completely from your diet, it is more important to select foods that contain good fats.

## Monounsaturated fats

**Monounsaturated fats** are the 'good' fats. They can be found in olives, olive oil, avocados and nuts. Consuming foods such as oily fish, like tuna, is also encouraged because they contain the essential fatty acids omega-3 and omega-6.

## Saturated fats

You should try to limit the amount of **saturated fat**, or 'bad' fat, that you consume. Saturated fats are found in animal foods such as meat and dairy products, as well as in palm oil and coconut oil. Saturated fat is a problem in the diet because it is high in cholesterol and can lead to heart disease. Many processed foods and fast foods including biscuits, cakes, pastries, burgers, pizza, fried foods, potato chips and processed meats are extremely high in saturated fat, and if eaten in excess, can lead to overweight and obesity.

## Trans fats

Like saturated fats, **trans fats** are bad fats that can lead to serious health concerns and should be avoided. Trans fats increase the level of the bad low-density lipoprotein (LDL) cholesterol in your bloodstream. However, they also have the added problem of reducing the body's good high-density lipoprotein (HDL) cholesterol, which helps to protect you from heart disease. While trans fats are found naturally in small amounts in dairy products and meat, their main source in our diet is from the hydrogenation of vegetable oils. Food manufacturers use these oils in the manufacture of processed foods and fast foods such as pastries, chicken nuggets, hamburgers and fried foods.

### Characteristics, sources and health impacts of fats and oils

| Monounsaturated fats | Saturated fats | Trans fats |
|---|---|---|
| **Characteristics** | | |
| • Liquid at room temperature<br>• Mainly vegetable sources<br>• Fat-soluble vitamins A, D, E and K | • Solid at room temperature<br>• Animal and vegetable sources<br>• Concentrated energy source: 1 g = 37 kJ | • Semi-solid at room temperature<br>• Unsaturated fat that behaves like saturated fat because of its chemical structure |
| **Sources** | | |
| • Olive oil; peanut oil; canola oil | • Butter; cheese; cream; egg yolks; fat on meat<br>• coconut and palm oil; chocolate; hydrogenated fats | • Hydrogenated vegetable oils; processed foods |
| **Health impacts** | | |
| • Lowers levels of blood cholesterol | • Cardiovascular disease<br>• Raises levels of blood cholesterol | • Raises levels of blood cholesterol by increasing bad LDL cholesterol<br>• Reduces good HDL cholesterol, increasing the risk of heart attack and heart disease |

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# SUGAR

Sugar, like other forms of carbohydrate, is one of the body's main sources of energy. Sugar can occur naturally in foods, for example, as **fructose** in fruit and as lactose in milk. Some vegetables also contain sugar in the form of **glucose**. However, most of the sugar that Australians consume is added as 'free' sugar during food processing.

Shutterstock.com/Kolpakova Svetlana

**Fruit contains the natural sugar, fructose**

Food manufacturers add sugar to many food products to improve flavour and colour and to increase the product's bulk and viscosity. Highly processed foods such as cakes, biscuits, ice-creams, pastries, flavoured yoghurts, breakfast cereals and soft drinks all contain high levels of added sugar. Even savoury products like tomato sauce, frozen meals, pasta sauces and canned soups contain significant amounts of added sugar.

Consumers often find it difficult identify whether sugar has been added to a processed food, making it difficult to make healthy and informed food choices. There are over 40 names that can be given to sugar in processed food, including agave nectar, barley malt, cane sugar, caster sugar, demerara, fruit juice concentrate, palm sugar, panela, powdered sugar and rapadura. Therefore, it is important to read the food labels on processed foods carefully and check the amount of sugar in a product before placing it in your shopping trolley.

While the *Australian Dietary Guidelines* state that it is essential to limit foods containing sugar, a small amount of sugar can add interest, variety and enjoyment to the daily diet. Eating foods that contain natural sugars such as fruit and milk provide the body with additional nutrients and are called 'nutrient dense' foods. In contrast, many highly processed snack foods that contain 'free' sugar provide little nutritional benefit and contain only 'empty kilojoules'.

Health professionals recommend that only 10 per cent of your total energy intake should come from sugar. Excess consumption of processed foods containing 'free' sugar can contribute to excess weight gain and lead to obesity and tooth decay.

## 10.1 Case study

Read the media release below and answer the questions that follow.

### *Sugar, Sugar or Honey, Honey? Health Agencies Call for Clearer Labelling of 'Added Sugar'*

A coalition of leading health agencies, the Obesity Policy Coalition, has written to the state and territory health ministers who make up the Australia New Zealand Ministerial Forum on Food Regulation calling on them to urgently adopt a recommendation to identify 'added sugars' on food labels when they meet later this month.


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According to Jane Martin, Executive Manager of the Obesity Policy Coalition (OPC), it is critical for Australian consumers to be aware of the amount of added sugar (where sugars are added as a separate ingredient to a food product) in packaged foods, to allow them to make informed choices about the products they buy.

'On average Australian adults consume around 15 teaspoons of added sugar per day, with some teenage boys devouring 38 teaspoons a day – the World Health Organization's strong recommendation is less than 10% of energy from added sugar a day and ideally 5% (6 teaspoons) for optimal health.

'It's no coincidence that while our added sugar intake remains so high, our waistlines have ballooned and nearly half of our 9–10-year olds have had tooth decay.

'Clearly urgent action is required to help Australians to lower their intake of added sugars.

'Research has shown if consumers were able to identify added sugars on packaged foods, they could avoid up to 38.3 kg a year of added sugar by making more informed food swaps each day. However, in Australia it is currently impossible for consumers to know whether there is added sugar in the foods they buy, from reading product labels,' said Ms Martin.

While the ingredients list names sugar included in the product, added sugars can be called by more than 40 different names, a number of which consumers might not be familiar with such as maltodextrose and agave nectar, making it difficult to even identify what might be a sugar.

Similarly, the nutrient information panel records the amount of total sugar in the product, but does not specify what amount is naturally occurring (for example, lactose in dairy which does not adversely impact on health) and what amount has been added by the manufacturer.

'A particularly concerning example is toddlers' and children's snack foods where consumers might think, based on labels, that they are choosing a healthy option but in fact are feeding their toddlers and children high-sugar foods. More than 30% of toddler products in a recent survey contained added sugar in the form of fruit juice concentrate, which is high in sugar, but has none of the goodness of fruit, while the labels made claims such as "naturally sweetened with fruit ingredients" or "made with real fruit" making them sound much healthier than they actually are,' said Ms Martin.

Source: Obesity Policy Coalition media release, 21 November 2017 (adapted)

## Respond

1. Evaluate the validity of the article. Consider the reliability of the sources of information used in the article, the context and presentation of evidence.
2. Explain why the OPC is urging state and territory health ministers to ensure 'added sugars' are identified on food labels.
3. Compare the amount of sugar consumed by many Australian adults and teenage boys with the recommendations of the World Health Organization.
4. Explain why Jane Martin is concerned about the labelling of snack foods designed for toddlers and children.
5. Predict the outcome for the overall health of Australian adults and children if food manufacturers were required to identify 'added sugar' on their food labels.

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# FAT OR SUGAR: WHAT'S THE DIFFERENCE?

Many people are confused about whether there is a difference between fat and sugar and seem to think that they are the same thing! The truth is, they are completely different. Fat and sugar come from different food sources, have different functional properties and flavours. Fat is a lipid (which is another name for fat), while sugar is a form of carbohydrate. Carbohydrates (including sugars) are more easily absorbed into the body, but any that are not used to produce energy are stored in the body as fat.

Food manufacturers often combine fat and sugar in food products to make them more appealing to consumers. If you tried to eat a tablespoon of fat or sugar on its own, you would find it very unappetising. But when fat and sugar are combined, they become highly palatable – and in some cases quite blissful. (Just think about eating chocolate!) Food manufacturers combine fat and sugar in many food items, such as chocolate, sweet biscuits, cakes or muffins, and even hamburgers, to make them appealing to consumers. This means that the sales of these items increase, and as a result, so do the manufacturers' profits. However, the problem for the consumer is that eating too many foods that are high fat and sugar can add a large number of unwanted kilojoules to your daily intake.

# SALT

Salt is a mineral that is made up of sodium and chloride. These two electrolytes are important for good health as they help to regulate the amount of blood circulating in your body and the fluids moving in and out of your tissues. They also help your nerves to transmit messages. Children aged 9 to 13 years need 400–800 milligrams of sodium per day while adolescents aged 14 to 18 years need 460–920 milligrams per day. However, sodium can be bad for your health if you consume more than your body needs.

The average Australian consumes approximately 10 grams, or more than two teaspoons, of sodium per day. The problem with consuming too much sodium is that it can lead to poor health outcomes including increased blood pressure and therefore increased risk of developing a stroke. A high sodium intake can also lead to heart and kidney disease and increase your risk of developing osteoporosis. More Australians are likely to die after suffering a stroke than almost any other cause.

Most people are unaware of the amount of salt or sodium they consume as it can be 'hidden' in many of the processed foods we enjoy. Some of the processed foods that are high in added salt include bread and bread rolls, processed meat such as ham and bacon, canned soups and vegetables, frozen meals, pizza, tomato sauce, soy sauce and some breakfast cereals. The 'Eat for Health' program recommends that you should always read the label on processed foods and select those that have no more than 120 milligrams of sodium per 100 grams and definitely no more than 400 milligrams per 100 grams.

Eating out can also be a problem as many of the foods you buy in fast food restaurants such as hamburgers, pizza, pasta, fish and chips and some Asian foods can be especially high in sodium.

## 10.2 Case study

Read the article below and answer the questions that follow.

### *The 'staggering' amount of salt in Australian kids' fast food meals*

Most parents know fast food restaurants are not a healthy choice. However, what many may not know is that some children's meals contain more than an entire day's recommended salt intake, and most contain nearly half of this.


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Salt levels in Australian fast food meals are as much as double those in the UK, a new report by The George Institute for Global Health, VicHealth and the Heart Foundation has found.

The research examined the salt in 66 items on the children's menus at Hungry Jacks, KFC, McDonald's and Subway.

The saltiest meal on the menu was the Hungry Jacks six chicken nugget pack which contained 108 per cent of a four- to eight-year-old child's recommended daily salt intake.

The McDonald's Cheeseburger Happy Meal with fries contained almost two thirds of the daily intake, while the KFC Kids Meal Snack Popcorn contained almost half a day's salt. The Subway Kids Paks were least salty item of them all, with about 16 per cent of a day's salt.

Across all four fast food outlet menus, the average salt content of children's meals was 45 per cent of a child's recommended daily salt intake.

'It's pretty staggering,' says Clare Farrand, public health nutritionist at the George Institute and the report's lead author. 'It's a significant amount of salt you are adding to the diet.'

Farrand warns children are eating double the amount of salt they need.

'Four to eight-year-olds need less than 3.5 grams of salt per day – that's about half a level teaspoon. Research suggests they are eating about six grams a day.'

Most of the salt we consume is already added to the foods we buy and often doesn't taste overly salty because it is balanced out with high levels of sugar and fat, Farrand explains. This is how 80 per cent of Australian children are unwittingly eating too much salt, acquiring a lifelong taste that is putting them at risk of high blood pressure, strokes and heart attacks later in life.

Some of the same meals in UK outlets contained about half the amount of salt, which may be the result of the successful UK salt reduction programme, and which shows it is possible for manufacturers to make them with less salt.

'What our study really unveils is [these meals] don't need to contain these salts,' Farrand says.

'For parents, do make sure it's an occasional thing and when you're faced with billboards and meal deals, it's easy to be upsold. Stick to small portion sizes and stick to the vegie options instead of the fries where possible,' Farrand urges. 'We want you to have the information to make healthier choices.'

Source: Sarah Berry, *Sydney Morning Herald*, 5 March 2019. 

## Respond

1. Evaluate the validity of the article. Consider the reliability of the sources of information used in the article, the context and presentation of evidence.
2. Predict the health implications for their long-term health if children continue to eat fast food meals high in salt on a regular basis.
3. Explain why some of the high-salt food we buy may not taste excessively salty.
4. Outline three strategies parents should adopt when purchasing food from a fast food restaurant for their children to minimise their salt intake.
5. Examine the website of one of the fast food chains mentioned in this article and recommend two items from their takeaway menu that would meet the 'Eat for Health' program's recommendation of consuming no more than 400 milligrams of sodium per 100 grams.
6. Hypothesise why the salt levels in Australian fast foods are almost double those of similar foods in the United Kingdom.

ISBN 9780170446716

# LIVELIGHTER® CAMPAIGN

LiveLighter® is a healthy lifestyle promotion and education program developed in Western Australia. The LiveLighter® campaign has been delivered in Western Australia since 2012 through a partnership between the Heart Foundation (WA Division) and Cancer Council Western Australia, with funding from the Western Australian Department of Health. In 2014, the campaign extended to Victoria, where it is delivered by Cancer Council Victoria.

The aim of the LiveLighter® campaign is to encourage Australian adults to live healthier lives. A major focus of the campaign is to encourage healthy eating and to highlight the health consequences of carrying excess weight, being inactive and not eating well. In addition to mass media advertising, LiveLighter® engages with Australian adults through social media and provides a range of information tools and resources including 'facts about junk food' and online calculators to calculate the amount of fat, salt and sugar they consume.

## ACTIVITY 10.1

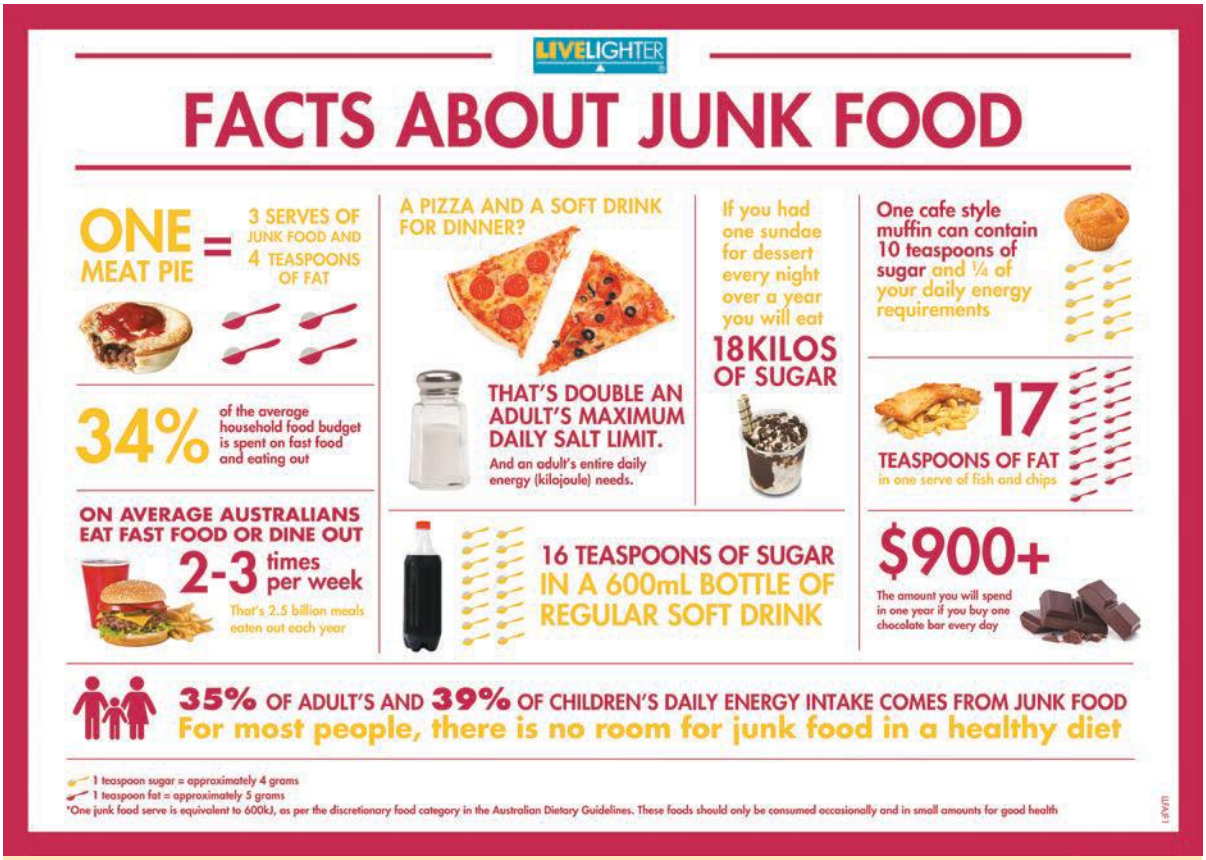
### HOW MANY OF THESE JUNK FOODS DO YOU CONSUME ON A TYPICAL DAY?

Weblink
LiveLighter®

Visit the website of the LiveLighter® campaign and access the junk food calculator.

Complete the calculator for the amount of snack/junk food you would consume on a typical school day.

1. Record the amount of fat, sugar and salt you consume each day in snack foods. Compare your snack food consumption with the recommendations of the *Australian Dietary Guidelines*.
2. Draw conclusions about the impact on your long-term health of continuing to consume this level of snack foods daily with reference to the amount of fat, salt and sugar they contain.
3. Examine the recipes for healthy snacks and drinks on the LiveLighter® website. Select one recipe and explain why this would be considered a healthy snack.






**The LiveLighter® campaign: Facts about junk food**


ISBN 9780170446716

# ACTIVITY 10.2

## COMPARING A COMMERCIALLY PROCESSED FAST FOOD AND AN EQUIVALENT HOMEMADE PRODUCT

### Aim

To compare the physical and sensory characteristics and nutritional properties of a commercially processed fast food and an equivalent homemade product.

### Equipment

- 1 quantity of homemade sausage rolls
- commercial sausage rolls
- 2 oven trays

### Method

1. Prepare the sausage rolls from the recipe on page 234. Note: the sausage rolls should be approximately the same size as the commercial sausage rolls.
2. Place the commercial sausage rolls on an oven tray and heat according to the manufacturer's instructions.
3. Complete a comparison of the energy, fat, sugar and sodium content and the physical and sensory properties of both types of sausage rolls. Use a table similar to the one below. Refer to the sensory wheel on page 42 for additional words to assist you.

### Results

| Physical and sensory characteristics | Homemade sausage rolls | Commercial sausage rolls |
|---|---|---|
| **Quantitative measures** | | |
| Weight (in grams) of one sausage roll | | |
| Height and length (in centimetres) of one sausage roll | | |
| Colour of cooked product | | |
| Preparation time | | |
| **Nutritional properties per 100 grams** | | |
| Energy (kJ) | | |
| Total fat, grams | | |
| Sugar, grams | | |
| Sodium, milligrams | | |
| **Qualitative measures** | | |
| Appearance | | |
| Aroma | | |
| Flavour | | |
| Texture or mouth feel | | |
| Sound | | |
| Overall appeal<br>5 = like a lot<br>1 = dislike a lot | | |

### Analysis

1. Describe the similarities and differences in the height, weight and colour of the homemade and commercial sausage rolls.
2. Did the time involved in the preparation of the homemade sausage rolls detract from their overall appeal?
3. Which sausage roll had the most appealing appearance?
4. Which sausage roll had the most appealing aroma?
5. Which sausage roll had the most appealing flavour?
6. Which sausage roll had the most appealing texture or mouth feel?
7. Which product was highest overall in energy, that is, fat and sugar?
8. Which product was highest overall in salt?
9. Which product is more likely to be higher in dietary fibre? Why?
10. Which product would be preferable to include in a healthy diet? Why?

### Conclusion

After analysing your results, which product would you prefer to use again? Justify your decision with reference to the physical and sensory characteristics and nutritional properties of each product.

Mark Fergus Photography

**Homemade sausage rolls**

ISBN 9780170446716

## TESTING KNOWLEDGE

1 Outline the place of discretionary foods in the *Australian Guide to Healthy Eating*.

2 Create a mind map to highlight the reasons you should limit the amount of discretionary foods you include in your diet.

3 Explain why it is important to include some fat in your diet. List four sources of monounsaturated fats.

4 Outline the problems associated with eating foods such as cakes, pastries, burgers, pizza, fried foods and potato chips.

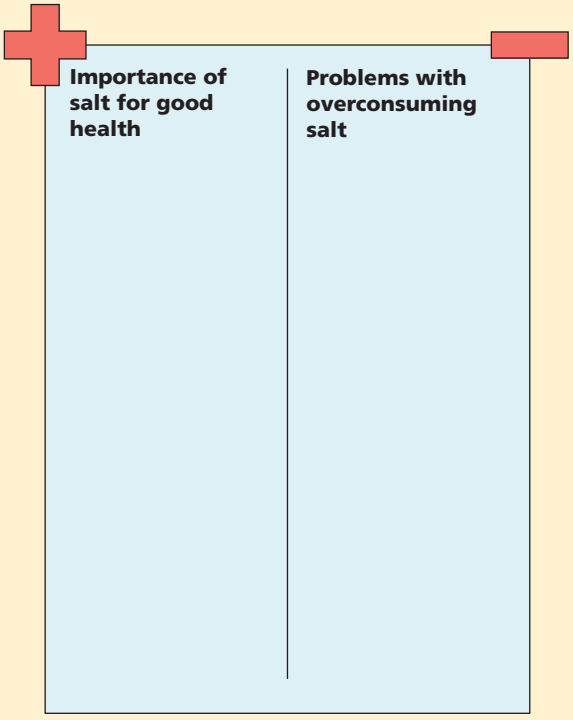
5 What are trans fats and why are they considered to be bad for our health?

6 Identify the two main types of sugar that can occur naturally in food.

7 Explain why food manufacturers add sugar to many food products. List six names that can be given to sugar added to processed food.

8 Outline the main differences between fat and sugar.

9 Summarise the important functions of salt in the body and the problems associated with an overconsumption of salt.




10 Explain the key health messages that the LiveLighter® campaign aims to send to consumers.

# PREPARING YOUR OWN SNACKS AND BAKED PRODUCTS

We all enjoy eating snacks and baked foods, which are often shared when we get together with family members and friends. Many families have recipes such as cakes and biscuits that have been handed down over generations and are lovingly prepared for special family celebrations. These foods are usually sweet in nature – although some have a savoury flavour profile – and are often high in fat and/or sugar, so they should only be eaten as special treats or indulgences, and for celebrations. The main ingredients used in these foods are flour, sugar, eggs and butter.

Making your own baked products at home means that you can adjust the recipe to:

- reduce the sugar content or change the type of shortening to a vegetable-based spread to make a healthier option
- increase the fibre content by substituting one ingredient for another in the recipe that has a similar function, for example, by using wholemeal flour instead of white flour
- alter the texture, for example, by cooking vegetables for less time so that they will be crunchier
- alter the flavour, for example, by adding more herbs and spices for a stronger flavour.

# INGREDIENTS IN BAKED PRODUCTS

Baking is the process used to produce a range of cakes, biscuits, slices, sweet treats and pastries. Baked products are cooked in an oven and exposed to dry heat, which is circulated around the food by convection currents.

## Flour

Flour is an essential ingredient in baked products because it provides volume and structure to the end product. Flour can absorb milk, eggs, water or butter during the mixing process to form batters and doughs. When flour is exposed to heat in an oven, the protein or gluten in it sets, preventing the final product from collapsing when it is cooled. Two other processes that involve flour in baked products are dextrinisation and the Maillard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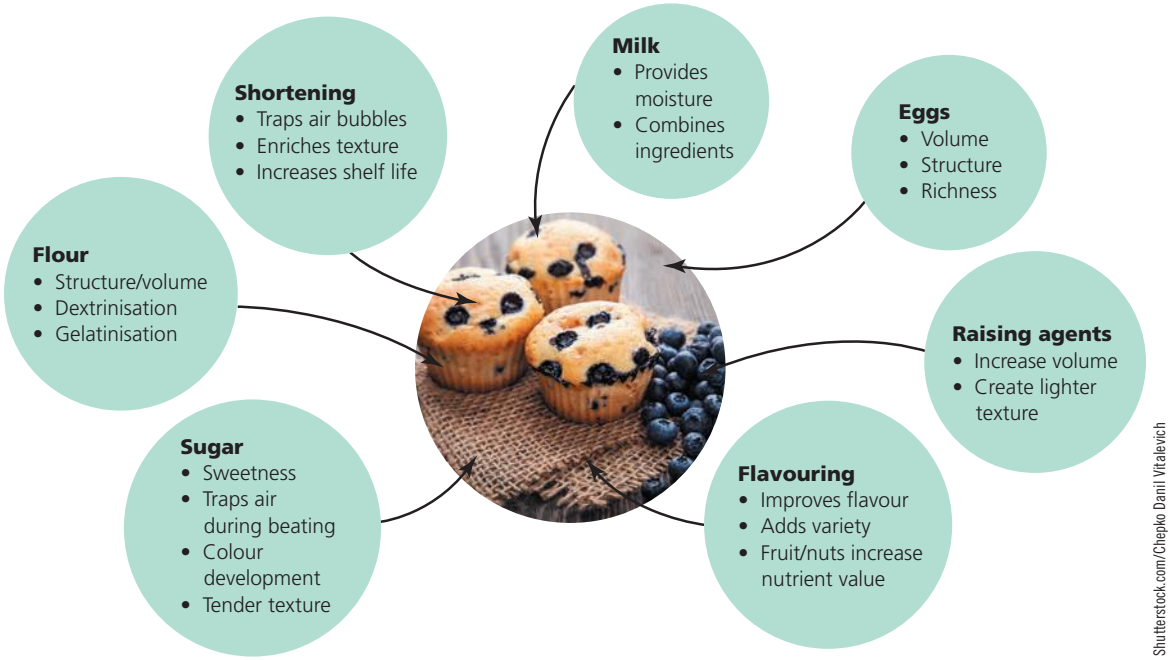


**Characteristics of ingredients in baked products**

reaction. Dextrinisation occurs when the dry heat in an oven causes the starch in flour to dextrinise, contributing to the browned surface and delicious aroma that develops during baking. The **Maillard reaction** also assists in colour development of baked products; it occurs when starch from the flour, and/or the sugar and the protein from the eggs, are exposed to heat in the oven, and creates a golden-brown colour.

Flours that are made from soft wheats, which are low in gluten and sometimes known as cake flour, are most suitable for baked products because they produce a soft texture. White, wholemeal or self-raising flour can be used to make cakes, biscuits, slices and pastries.

## Sugar

In food preparation, different types of sugars have been designed for specific purposes and to create different sensory properties in food products.
Sugar can:

- caramelise or brown during baking and contribute to the golden colour
- provide a sweet flavour
- improve texture by creating a tender crumb
- aerate or increase volume when creamed with butter
- act as a preservative
- help yeast ferment in bread-making.

A1, white or granulated sugar is the most common form of sugar, and is sometimes called table sugar. It has medium-sized crystals. Caster sugar has finer, smaller crystals than A1 sugar, and is often used in cakes, biscuits and desserts because it dissolves more effectively into the mixture and gives a more even appearance and texture. Icing sugar looks and feels like a white powder and is usually used to ice cakes and biscuits. Soft icing sugar has an anti-caking agent added to prevent lumps. Brown sugar is a soft, moist sugar with fine crystals. Its distinctive flavour and colour are usually made by adding molasses to white sugar. Raw sugar is the sugar crystals before the refining process takes place. Demerara sugar, used for baking, has a pale-golden colour and slight toffee flavour. Golden syrup is a golden-coloured, thick, sweet syrup made by processing molasses.


**Types of sugar**

ISBN 9780170446716

## Eggs

Eggs fulfil many complex functions in baked products. They assist flour in building the structure of a product when they coagulate, or become firm, during baking. During the mixing process, eggs trap bubbles of air, which then expand in the heat of the oven and aerate the mixture to produce a lighter texture. Separating, then beating or whisking egg whites enables a large volume of air to be incorporated into the mixture, creating the light texture that is the feature of products such as sponge cakes and meringues. The yolk of the egg gives the baked products a rich, yellow colour. Most recipes featuring eggs are based on eggs weighing 55–60 grams.

## Butter

Butter is a type of shortening that is made from the fat component of milk being separated and churned. Salted butter is used in most recipes because the salt helps to balance the overall flavour of the product. Unsalted, or cultured butter, has a slightly softer flavour. In cakes and muffins, butter creates a moist, tender texture. In biscuits and pastry, it is responsible for the characteristic short, crumbly texture and delicate flavour. In baked products made by the creaming method, butter helps to aerate the mixture and lighten the texture. During the creaming process, beating causes fat from the butter to trap small bubbles of air around the individual crystals of sugar, and so increase the volume of the mixture.

Butter is a perishable food and should be stored in the refrigerator to prevent the fats becoming rancid or 'going off'. Margarine or blends of butter and margarine can be used as an alternative to butter in most recipes but may slightly alter the flavour and texture.

## Other ingredients

### Milk

Milk is a liquid or wet ingredient that is used in cake batters to help combine dry ingredients. The small fat component of milk contributes to the tender texture of cakes. In cakes made by the melt-and-mix method, milk keeps the batter soft and moist, allowing it to be beaten to incorporate air.

### Raising agents

Raising agents are the ingredients responsible for the **aeration or leavening** in many doughs, cakes and biscuits. During baking, they give lift to a dough or cake batter to produce a light, airy texture in the final product. Baking powder is a white powder that, when it comes in contact with moisture and heat, releases carbon dioxide. Bicarbonate of soda looks like baking powder. Because it is alkaline, it must be combined with an acidic ingredient as well as moisture and heat before it produces the gas carbon dioxide. As the bubbles of carbon dioxide are produced in a mixture, it begins to rise and its volume increases.

### Spices

Spices are flavouring ingredients made from the buds, bark, roots, berries or aromatic seeds of certain plants. In baking, they are usually used in their dry form and ground into a powder. Vanilla is a spice with a warm, floral aroma that is often used to flavour baked products. It is available in liquid form as vanilla essence, or as a paste. Some other examples of spices often used in baked products are cinnamon, nutmeg and ginger.

### Honey

Honey is a sweet, thick, sticky liquid made by bees from the nectar of flowers. It can be used to bind and sweeten baked products. The flavour and colour of honey depends on the flowers from which the nectar was collected. In Australia, some flowers used as a source of honey include clover, which is a grass, and flowering trees such as orange blossom, yellow box and leatherwood. Honey is judged by its aroma, flavour and density (how long it takes an air bubble to travel from the bottom to the top of an upturned jar).


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## ACTIVITY 10.3

### GETTING TO KNOW HONEY

1 Select three varieties of honey, for example, pure honey, bush honey, mountain honey, river red gum or floral honey. Local producers such as Beechworth Honey and Capilano Honey produce a range of different honey varieties.

2 Draw up a table to record the following properties of honey.

- **a** Before opening the jar, test for density. Record the time (in seconds) that it takes for an air bubble to travel from the bottom of the upturned jar to the top.
- **b** To check the colour, hold up the container to the light so that it is easier to record the colour differences.
- **c** Spread a teaspoon of honey on a small, plain piece of white bread, then taste test. Record the flavour in a table similar to the one below.

| Variety | Density | Colour | Flavour |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |


Mark Fergus Photography

**Honey varieties**

3 Rank the honey varieties according to density, from most dense to least dense (the longer the air bubble takes to rise to the top, the denser the honey).

4 Rank the honey varieties according to colour, from darkest to lightest.

5 Rank the honey varieties according to flavour, from strongest to most delicate flavour.

6 Record the variety of honey you preferred. Justify your answer.

## TESTING KNOWLEDGE

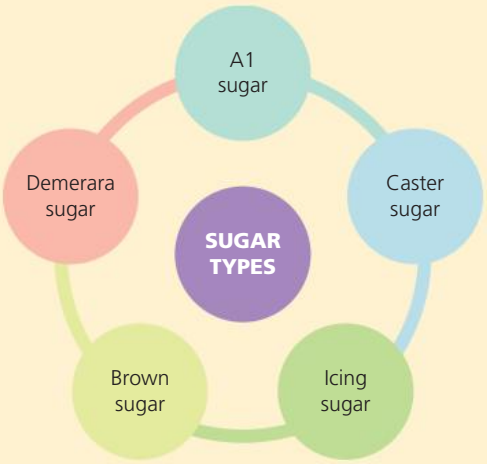
11 List three strategies you could use to increase the health profile of baked products.

12 Create a mind map to identify the roles that flour plays in baked products.

13 Describe the two processes that occur during baking that cause browning in baked products.

14 Outline the different roles sugar may have in a product that is baked in the oven.

15 Annotate the diagram below to highlight the characteristics of different types of sugar.




16 Explain how eggs can contribute to the aeration of a cake.

17 Describe the way butter helps to aerate cakes made by the creaming method.

18 List three important roles of milk in a cake batter.

19 Explain how chemical raising agents aerate cakes.

20 Why are spices included in recipes for baked products? Give two examples of spices that are often used in cake and biscuit recipes.

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# HOW BAKING WORKS

During baking, exposure to dry heat in the oven causes many chemical changes to the ingredients of cakes, biscuits and pastry. The firm structure of baked products is formed when the protein in the egg becomes solid as it begins to coagulate, and the gluten – the protein in flour – sets to form a framework around the air bubbles. The starch in the flour of baked products undergoes the process of dextrinisation. The dry heat in the oven breaks down the starch molecules and creates a brown crust on the outside of the product. This chemical change also causes the development of the delicious aromas of cake- and bread-baking. Sugar also combines with the protein and starch in the baked product to assist with the development of the crust and the golden-brown colour of a cooked product. This process is known as the Maillard reaction. Sugars also undergo the process of **caramelisation** when heated to high temperatures and, as a result, develop a golden brown colour.

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**Baking enables us to create delicious cakes**

## Aeration in baked products

Sifting, creaming butter and sugar together, whisking and beating are all processes that mechanically trap bubbles of air within a cake batter in order to create a light, airy texture in the finished product. Including chemicals that are food-safe, such as bicarbonate of soda and baking powder, or using self-raising flour, is another way to aerate a batter to achieve a good-quality cake. Sometimes, both chemical and mechanical raising agents are combined in the production so that tiny air bubbles can be created and then trapped and held by specific ingredients within the structure of a cake.

When using a chemical raising agent, it is important to work quickly and bake the product as soon as possible, because the raising agent is activated as soon as the mixture becomes moist. When you work efficiently, you maximise the agent's aeration capacity, and the mixture is pushed up and out to increase the product's volume. When using bicarbonate of soda, accurately measuring the raising agent is crucial since too much will cause the baked product to taste bitter. To overcome the bitter after-flavour, bicarbonate of soda is used in combination with sweet ingredients, such as brown sugar or golden syrup, which have a strong, distinctive flavour that masks the bitterness. In contrast, baking powder, which has a mild flavour, is used in scones and muffins, as it does not affect their delicate flavour.

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**Beaten egg whites can help to aerate a mixture**

The chemical and mechanical processes used to combine ingredients in baking are summarised in the following table.

| | Method | Ingredients | Process | Products |
|---|---|---|---|---|
| **Chemical** | Bicarbonate of soda | Alkaline white powder with a bitter flavour | • Becomes effervescent when mixed with a liquid<br>• Often combined with golden syrup or brown sugar to balance flavours | • Anzac biscuits<br>• Gingerbread<br>• Steamed puddings |
| | Baking powder | Combination of:<br>• bicarbonate of soda<br>• an acid (either tartaric acid or cream of tartar)<br>• starch filler | When mixed with wet ingredients, produces carbon dioxide to create a leavening action | • Scones<br>• Muffins |


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| | Method | Ingredients | Process | Products |
|---|---|---|---|---|
| **Mechanical** | Sifting | Dry ingredients | Air is incorporated by passing dry ingredients through a sieve | • All cakes and biscuits |
| | Creaming | Butter or margarine combined with sugar | • Air bubbles are trapped by the fat and sugar crystals<br>• Bubbles expand during cooking, causing the cake to rise | • Butter cakes<br>• Fruit cakes<br>• Patty cakes<br>• Puddings |
| | Whisking | • Eggs and sugar<br>• Egg whites<br>• Egg whites and sugar | Protein in egg white stretches and traps tiny air bubbles | • Sponge cake<br>• Meringue<br>• Pavlova |
| | Beating | Dry and wet ingredients in a cake | Air bubbles are introduced into the mixture using a circular motion | • Quick mix cakes |

## Processes used to make baked products

The processes used to combine the key ingredients in cakes directly affects the size of the air bubbles, the tenderness of the cake crumb and the final sensory properties of the baked product. Common methods used to make baked products are:

- creaming – the butter and sugar are beaten together, then the egg is added and, finally, the dry and wet ingredients are folded in alternately
- quick mix – the butter is melted and added with other wet ingredients; together, they are stirred through the dry ingredients
- beating – whole or separated eggs are beaten until they are light and fluffy; the dry ingredients are then incorporated into the mixture
- rubbing in – the butter is rubbed into the flour until it resembles fresh breadcrumbs; the wet ingredients are then stirred through.

## Top tips for making cakes

1. Accurately measure ingredients, as the ratio between butter, sugar, flour and eggs has been carefully calculated for success.
2. Grease and line cake tins before starting to mix ingredients to minimise loss of volume.

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3. Sift flour and dry ingredients such as cocoa and spices before adding them to the mixture. This removes lumps and incorporates air into the dry ingredients to help create a light texture and combines all the ingredients.
4. Do not over-mix a cake batter; this causes the gluten to form long strands that will make the cake dense and heavy. Just mix until all the ingredients are combined and the batter is smooth.
5. In quick mix recipes, melt the butter over low heat to prevent it from burning.
6. In recipes where the butter and sugar are creamed together, remove the butter from the refrigerator a few hours before creaming so that it will be at room temperature; alternatively, soften it in a microwave for 10 to 15 seconds.

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7 When you cook a sponge, it is important to be well organised and to have all ingredients measured and tins prepared before you start to mix the sponge. The mixture can lose volume if the procedure takes too long before baking.
8 Check cakes at least five minutes before the end of the specified cooking time to prevent overcooking.

## Top tips for making biscuits

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**Biscuits**

1 Allow space for the biscuits to spread when you place them on the baking trays.
2 Bake biscuits at a low temperature so that they can cook through without burning on the bottom.
3 If baking more than one tray of biscuits, swap the trays halfway through baking and turn the trays around, front to back. This helps to achieve even cooking if the oven being used has 'hot spots'.
4 After removing biscuits from the oven, loosen them with a metal spatula and allow them to cool on the tray.
5 Store biscuits in an airtight container so they retain their crisp texture.

# PASTRY

Pastry is a simple mixture of flour, fat, salt and a small amount of water. Flexible sheets of raw pastry can be used to wrap or contain single ingredients or fillings with a mixture of ingredients. The golden crust of pastry has a crisp or flaky texture, and usually provides contrast to the soft filling it protects. Pastry products are filling and satisfy hunger because they are high in fat. Pastry contains carbohydrates, from the flour, and a high proportion of fat, which places it in the 'Eat only sometimes and in small amounts' group of foods in the *Australian Guide to Healthy Eating*.

## Functional ingredients in pastry

Pastry is a mixture of flour, fat and liquid. Plain flour with a low gluten content is generally used for making pastry. Minimising the amount of gluten helps to prevent the pastry from becoming tough. Butter is considered to be the best form of fat to use in pastry because it has good flavour and keeping qualities. It is usually rubbed into the flour so that it coats the granules of starch, resulting in a crisp, textured pastry. A small amount of water is used in most pastry types; this should always be added cold to avoid causing the fat to melt. An egg yolk or a squeeze of lemon juice is added to some pastries to make them more tender. Savoury pastry products are glazed with egg and milk while sweet pastries are glazed with sugar syrup to create a shiny, brown finish when cooked.

| Wrap a filling | Cover a filling | Contain a filling |
|---|---|---|
| • pasties<br>• sausage rolls<br>• spinach triangles | • chicken and leek pie<br>• apple pie<br>• cherry pie | • quiche Lorraine<br>• meat pie<br>• lemon tart |

**Functions of pastry**

Shutterstock.com/Anna Shepulova

**Savoury tarts make a delicious lunch**

## Types of pastry

The ratio, or amount, of butter or fat to flour varies depending on the type of pastry being made. The method used to combine the ingredients in pastry also influences the sensory properties of the final product.


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### Characteristics of different types of pastry

| Shortcrust pastry | Puff pastry |
|---|---|
| • Contains flour and shortening, usually butter<br>• Butter is added by rubbing into the flour<br>• Has a short, crumbly texture<br>• Used for making pasties and meat and fruit pies | • Contains flour and shortening, usually butter<br>• Butter is added by rubbing in and layering<br>• Has a light, flaky texture and rich, buttery flavour<br>• Used for sausage rolls, pies and vanilla slices |
| **Filo pastry** | **Choux pastry** |
| • Contains very thin layers of flour and water dough<br>• Each layer is brushed with melted butter or oil<br>• Has a dry, flaky texture<br>• Used for spinach triangles and apple strudel | • Contains flour, water, butter and eggs<br>• Dough is cooked, and then the eggs are beaten in<br>• Has a crisp, light texture<br>• Puffs up and increases in volume during baking<br>• Used for eclairs, profiteroles and cream puffs |

## Top tips for making pastry

1. Prepare pastry in a cool environment to prevent the butter from melting.
2. Knead pastry dough only lightly and as little as possible to minimise the development of gluten.
3. Add liquid only gradually, because the amount required will vary depending on the flour's ability to absorb moisture.
4. Rest pastry in the refrigerator to allow it to become more evenly hydrated and for the gluten to relax. This process makes the pastry easier to roll out and prevents it from shrinking during baking.
5. If the pastry becomes too soft to work with, simply return it to the refrigerator until it becomes firm again.
6. Pastry is cooked at a high temperature (200°C) to ensure that the fat is quickly absorbed into the flour.

# CHOCOLATE

The word 'chocolate' comes from the Aztec language and means 'bitter water'. Chocolate is produced from cocoa beans, which are picked then fermented, dried, roasted and cracked to remove the cocoa butter from the shell. This is then refined into chocolate liquor. Other ingredients such as sugar and milk powder are added to the liquor to make the product we know as chocolate. There are many grades of chocolate and, usually, the higher the percentage of cocoa butter, the better the texture, aroma and flavour. In compound chocolate, vegetable oils are substituted for cocoa butter. This product has different sensory properties from chocolate that contains cocoa butter but is sometimes easier to use when preparing decorations.

## Characteristics of cooking chocolate

| Chocolate type | Characteristics and uses |
|---|---|
| Chocolate melts | Can be melted and set hard at room temperature. Used for making decorations, dipping strawberries, coating biscuits and moulding. |
| Chocolate bits | Chocolate bits hold their shape when baked. Add to products that are baked in the oven such as chocolate chip biscuits, chocolate cakes and muffins. They are not suitable to melt on the stove top or in the microwave. |
| Block cooking chocolate (e.g. Plaistowe) | Melts to a smooth, silky texture. Used for making cakes, desserts, biscuits and coating and decorating. |

## Fairtrade chocolate

Cocoa is grown throughout the world, especially in the tropical climates of West Africa, South America and Asia. Most (73 per cent) of the world's cocoa crop is grown in Africa. However, many small cocoa farmers find it almost impossible to compete with large multinational producers and often struggle to sell enough cocoa beans to make a sustainable living. They face a wide range of problems, mainly that the low prices they receive for their crops may not even cover their costs of production. Farmers need to purchase tools, fertilisers and pesticides, as well as provide food and clothing for their families. Many farmers lack the education or financial stability to be able to work in other, more lucrative occupations. An increase in child and slave labour in cocoa-producing West African countries is another major problem facing many communities.

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The introduction of the Fairtrade movement has meant that many small farmers can now make a real living and plan for their future. There are now more than 140 000 cocoa farmers around the world involved in the Fairtrade movement. This movement enables farmers and workers in the developing world to achieve better prices and decent working conditions, to ensure the sustainability of their environment and to receive fair terms of trade. Buying Fairtrade products also assists many families by giving them access to education, a safer environment, improved healthcare and improved nutrition.


Mark Fergus Photography

**Fairtrade chocolate**

## ACTIVITY 10.3

## SENSORY AND CHEMICAL COMPARISON OF COMMERCIAL CHOCOLATE

### Aim

To analyse the sensory and chemical properties of various types of dark chocolate to determine the best-quality product.

### Ingredients

- Dark compound chocolate
- Dark couverture (cooking) chocolate
- Dark eating chocolate

### Method

1 Draw the table below and record the ingredients listed on the label of each product.

| | Compound chocolate | Couverture (or cooking) chocolate | Dark eating chocolate |
|---|---|---|---|
| Ingredients | | | |
| Gloss | | | |
| Snap | | | |
| Mouthfeel | | | |
| Flavour | | | |
| Overall rating:<br>5 = excellent<br>3 = OK<br>1 = unsatisfactory | | | |

2 Record a description of the gloss for each sample.

3 Break a sample of each chocolate and record the sound of the snap. Was the sound sharp or dull?

4 Taste a sample of each chocolate. Remember to let the sample melt on your tongue rather than chew it to experience all its sensory properties.

5 Give each chocolate an overall rating.

### Analysis

1 Discuss the similarities and differences between the ingredients in each type of chocolate.

2 What information does the order in which the ingredients appear on the food label provide? Identify the ingredients that appear in some products but not in others. What reasons can you suggest for this?

3 How much fat is in each type of chocolate? What type of fat is it?

4 Which chocolate scored highest in terms of its sensory properties? Why?

5 Compare the sensory properties of a high cocoa butter chocolate and a compound (vegetable fat) variety.

### Conclusion

With other members of the class, develop a list of characteristics that denote good-quality chocolate and explain which properties influenced your decision.


ISBN 9780170446716

## Top tips for cooking with chocolate

1. When melting chocolate, grate or chop the chocolate into small pieces first.
2. Make sure there is no water in the bowl before melting chocolate; water or steam will affect the chocolate's consistency and may cause it to 'seize'.
3. Keep the heat as low as possible when melting chocolate to prevent it from becoming granular in texture.
4. Do not overheat or heat the chocolate for longer than necessary, as it may burn.
5. Melt only small quantities of chocolate at a time.
6. Do not wash chocolate moulds in hot water – rinse them in warm water and polish them with a clean, dry tea towel.
7. Set and store at room temperature. Do not refrigerate; this will cause the chocolate to sweat and lose its gloss.
8. Store chocolate away from direct heat as this causes blooming – a white discolouration on its surface.

Alamy Stock Photo/Dorling Kindersley Ltd

**Melt chocolate in a bowl over simmering water**

## TESTING KNOWLEDGE

**21** Create an annotated diagram to demonstrate the chemical changes that occur to products when they are baked in the oven.

**22** Sifting, creaming, whisking and beating are processes that incorporate air into a cake. Describe how each process achieves aeration.

**23** Outline why dry ingredients are sifted before being added to a cake or biscuit mixture.

**24** Explain why it is important for butter to be at room temperature before creaming.

**25** When making biscuits, explain why it is recommended to:

- **a** swap trays around in the oven halfway through baking
- **b** store biscuits in an airtight container.

**26** Explain why pastry products are included in the 'only sometimes' section of the *Australian Guide to Healthy Eating*.

**27** Flour, butter and liquid are the key ingredients in pastry. Draw a diagram that demonstrates each of their functional roles.

**28** Explain why it is important to:

- **a** rest pastry in the refrigerator before rolling out and/or baking
- **b** bake pastry at a high temperature.

**29** Identify the ingredient in chocolate that is a key indicator of quality.

**30** Create a mind map to demonstrate the benefits to small farmers of belonging to the Fairtrade movement.

## THINKING SKILLS

**1** Design an infographic to demonstrate the importance of Dietary Guideline 3: 'limit intake of foods containing saturated fat, added salt [and] added sugars'.

**2** Develop a graphic organiser to identify the functional properties of ingredients used in making cakes and biscuits. Include an illustration that demonstrates each property.



ISBN 9780170446716

# Design activity 10.1

## SAVOURY SNACKS

### Design brief

A coding club, #appsandgames, is starting up an after-school program at your school. The club is aimed at Year 7–9 students and will run for two hours one afternoon a week during terms two and three. The organisers of the coding club know that students will be hungry at the end of the day and have decided to provide some warm savoury snacks for students to eat when they arrive. As your school is part of the Healthy Schools Achievement Program, the organisers realise that any snack food they provide must be healthy and meet the recommendations of the *Australian Guide to Healthy Eating*. The warm savoury snacks must contain some vegetables and be wrapped or cut into portions so that they can be eaten with fingers. They are asking students to upload suggested recipes for a savoury snack food that can be served warm onto their Instagram page.

Use the specifications in the design brief to develop five criteria suitable for evaluating the success of the finished product.

### Investigating

1 Use recipe books, food magazines or the internet to research a variety of recipes that could be served as a warm, healthy, savoury snack.

2 Following your research, identify five recipes that could be suitable design options for your warm savoury snack.

3 Complete a table similar to the one below to record the type/s of vegetables used, method of serving and appealing features of each recipe.

| Recipe idea | Vegetables included | Wrapped or cut into portions | Appealing features of the recipe |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

### Generating

1 Select the two recipes you think would best meet the specifications in the design brief. Construct a decision table. Select the option you would prefer and explain your choice.

2 Write up your new recipe ready for production.

### Planning and managing

1 Complete a food order.

2 Before producing your warm savoury snack food, write up a production plan, noting any safe work practices to be followed, and identify the major processes to be used.

### Producing

1 Produce your preferred option.

2 Style and photograph your warm savoury snack food ready to be uploaded onto the club's Instagram page.

### Evaluating

1 Answer your five criteria for success questions in detail.

2 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your savoury snack food.

3 Share your savoury snack food with two other people and record their comments.

4 What modifications would you make to the recipe if you were to make it again?

5 Classify the ingredients of your warm savoury snack food on a diagram of the Australian Guide to Healthy Eating. Comment on how well it meets the recommendations of this food selection model.

iStock.com/vaasenaa

**Mini spinach falafel are a delicious savoury snack food**


ISBN 9780170446716

# CORNISH PASTIES



## SHORTCRUST PASTRY

1 cup plain flour
1 cup self-raising flour
pinch of salt
125 grams butter
¼ teaspoon lemon juice
⅓–½ cup water

## FILLING

250 grams lean minced beef
1 medium onion, finely chopped
1 medium potato, grated
½ carrot, grated
2 tablespoons frozen peas
2 teaspoons parsley, chopped
salt, pepper

## GLAZE

1 small egg
2 tablespoons milk

MAKES 6 PASTIES

## EVALUATION

1. How will you know when the butter is rubbed into the flour sufficiently? Explain what could happen if too much water was added to the flour.
2. Why is it important to knead the pastry lightly?
3. Explain how you would test the pasties to tell if they were cooked.
4. Examine the recipe for the shortcrust pastry and calculate the amount of butter that would be consumed per pasty.
5. Classify the ingredients of your Cornish Pasties on a diagram of the *Australian Guide to Healthy Eating* and comment on the health rating you would give the pasties with reference to the amount of butter they each contain.

## METHOD

1. Sift flours and salt.
2. Chop the butter into small pieces and rub into the flour, using fingertips, until the mixture resembles breadcrumbs.
3. Make a well in the centre of the mixture and add lemon juice and enough water to make a firm dough. Use a spatula or knife to carry out this process. Note: if time is short, steps 1, 2 and 3 can be completed in a food processor.
4. Place the dough on a bench sprinkled with flour and knead lightly until smooth.
5. Press the dough into the shape of a disc and cover with plastic wrap until the filling is complete.
6. Preheat oven to 200°C.
7. Prepare the glaze by beating the egg and milk together. This mixture can also be shaken in a lidded jar.
8. Break up the meat with a fork and add the prepared vegetables, parsley, salt and pepper.
9. Divide the pastry into six equal portions and roll out each to the size of a saucer.
10. Divide the filling into six portions and place one portion in the centre of each circle of pastry.
11. Using a pastry brush, brush the edges of one half of each circle of pastry with the egg and milk glaze.
12. Pick up both sides of each circle and draw up so that they meet at the top. Pinch the edges together to create a seal and place on an oven tray.
13. Prick the side of the pasty with a fork to form a small vent. Glaze with the egg and milk, avoiding the frilled edge.
14. Bake at 200°C for 10 minutes, then reduce the oven to 180°C for 30–35 minutes.

Mark Fergus Photography

ISBN 9780170446716

# SAUSAGE ROLLS

10

1 slice bread, crumbled
2 tablespoons milk
200 grams sausage mince
½ onion, finely diced
½ medium carrot, grated
½ zucchini, grated
1 sheet puff pastry
2 tablespoons flour
1 tablespoon milk, for glazing

MAKES 6 LARGE OR 12 SMALL SAUSAGE ROLLS

## METHOD

1. Preheat oven to 200°C.
2. Soak the bread in the milk for 10 minutes, then squeeze out the excess liquid. Combine the sausage mince, diced onion, grated carrot, grated zucchini and soaked bread. Mix thoroughly.
3. Cut the sheet of pastry in half lengthwise.
4. Sprinkle a board with flour. Roll the sausage mixture into two rolls the same length as the pastry.
5. Place one of the rolls of sausage mixture along the edge of one half of the pastry. Moisten the edges of the pastry with water.
6. Roll the pastry over the meat with the fold side under. Repeat with the second pastry sheet.
7. Cut the rolls into even-sized pieces. Place on the baking tray and mark with a knife.
8. Glaze with milk and bake at 220°C for 10 minutes, then at 190°C for a further 10–15 minutes.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the Sausage Rolls.
2. Discuss the benefits of adding carrot and zucchini to the Sausage Rolls.
3. Explain why the Sausage Rolls are initially cooked at 220°C and then with the temperature reduced for the remainder of the cooking time.
4. List the important health and safety steps to follow when preparing the Sausage Rolls.
5. Classify the ingredients for the Sausage Rolls on a diagram of the *Australian Guide to Healthy Eating*. Comment on how well the Sausage Rolls meet the requirements of this food selection model and why it is recommended they should only be eaten sometimes and in small amounts.

Mark Fergus Photography



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# CHOCOLATE SPONGE

**Sponge cakes are light, delicate cakes that are often cooked for a special afternoon tea or as a celebration cake such as a birthday cake. A 'sponge sandwich' refers to two layers of sponge cake that have been filled, or 'sandwiched', with whipped cream, jam or lemon filling.**

spray oil and extra flour, for preparing the tins
½ cup cornflour
1 teaspoon plain flour
½ teaspoon bicarbonate soda
½ teaspoon cream of tartar
1 tablespoon cocoa powder
1 tablespoon golden syrup
3 eggs (60–70 grams), at room temperature
½ cup caster sugar

## EVALUATION

1. Why were the dry ingredients sifted twice before being folded into the egg mixture?
2. Explain the role of the bicarbonate of soda, the cream of tartar and the golden syrup in the mixture.
3. Identify all the processes you followed when preparing and beating the egg whites to maximise the volume of the sponge cakes.
4. Describe the tests you used to determine when the sponge cakes were cooked.
5. Classify the ingredients for the Chocolate Sponge on a diagram of the *Australian Guide to Healthy Eating*. Explain why foods such as the Chocolate Sponge are included in the 'only sometimes and in small amounts' section of the *Australian Guide to Healthy Eating*.

## METHOD

1. Cut two circles of greased paper and line two 20-centimetre round cake tins. Lightly grease with spray oil and dust with plain flour, tapping to remove extra flour.
2. Preheat oven to 180°C. Check the racks to make sure both tins can sit side by side on shelves near the centre of the oven.
3. Sift the flours, bicarbonate of soda, cream of tartar and cocoa twice.
4. Slightly warm the golden syrup in a microwave before measuring. (This makes it easier to fold through the mixture.)
5. Separate the egg whites from the yolks, placing the whites in a large, clean, dry bowl and retaining the yolks.
6. Beat the egg whites until stiff, then beat in the egg yolks one at a time.
7. Gradually add the sugar and then the golden syrup and beat until combined.
8. Add the sifted dry ingredients and lightly fold through with a metal spoon.
9. Divide the mixture between the two greased and lined tins; tap lightly to remove any air bubbles.
10. Bake for 15–20 minutes. When cooked, the cakes will begin to leave the sides of the tins and will spring back when lightly touched with the fingers.
11. When cooked, turn out each cake onto a sheet of greased paper and remove the paper lining. Quickly turn the cakes over and allow to cool.
12. The cakes can now be filled with whipped cream. The tops can be spread with cream and topped with strawberries or iced with chocolate icing.

Mark Fergus Photography



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# WHOLEMEAL BISCUITS

10

½ cup plain wholemeal flour
¾ cup plain flour
½ teaspoon bicarbonate of soda
⅓ cup soft brown sugar
⅔ cup rolled oats
½ teaspoon sea salt flakes
90 grams cold unsalted butter, diced
75 millilitres (⅓ cup) milk
2 teaspoons honey
½ teaspoon vanilla extract

MAKES APPROXIMATELY 16 BISCUITS

NOTE: Wholemeal biscuits are delicious with cheese or they can be lightly coated with dark or milk chocolate to serve as a sweet treat.

## METHOD

1. Preheat oven to 180°C. Line a baking tray with baking paper.
2. Place the flours, bicarbonate of soda, brown sugar, oats and salt in a food processor and pulse a few times to combine.
3. Add the butter and process until the mixture resembles coarse breadcrumbs.
4. Tip the mixture out into a large mixing bowl and add the milk, honey and vanilla. Use your hands to bring the dough together into a firm ball.
5. Wrap the biscuit mixture in cling wrap, then flatten into a disc. Refrigerate for 15 minutes.
6. Lightly flour the workbench, remove the dough from the refrigerator and roll out to about 3-millimetre thickness. Brush off any excess flour.
7. Use a fork to prick holes all over the dough.
8. Cut out circular biscuits using a 7-centimetre cutter. Place on the lined baking tray, leaving a little space between biscuits to allow them to spread. Re-roll the leftover dough and cut more biscuits until all the dough is used.
9. Bake the biscuits for approximately 15 minutes or until they are golden brown and firm to touch. Allow to cool for 5 minutes before transferring them to a cooling rack.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Wholemeal Biscuits.
2. Explain why it is important to use cold butter for rubbing into the dry ingredients.
3. Why is the biscuit mixture refrigerated in step 5 of the recipe?
4. Describe one safety rule you observed when using the oven to bake the biscuits.
5. Compare the ingredients for the Wholemeal Biscuits to those of the Anzac Biscuits (page 237). Which biscuit could be included as part of a healthy diet? Justify your decision with reference to the ingredients used in each type of biscuit.

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# ANZAC BISCUITS

1 cup flour
¾ cup caster sugar
1 cup rolled oats
1 cup coconut
125 grams butter
2 tablespoons golden syrup
1 teaspoon bicarbonate of soda
3 tablespoons boiling water

MAKES 12–16 BISCUITS

## METHOD

1. Preheat oven to 180°C.
2. Sift flour into a bowl; add the sugar, rolled oats and coconut.
3. Melt the butter and golden syrup in a small saucepan.
4. Dissolve the bicarbonate of soda in boiling water and add to the melted butter and syrup. Allow the mixture to froth up.
5. Add the melted mixture to the dry ingredients and mix well.
6. Roll into 3-centimetre balls and place on an oven tray. Flatten with a fork or spatula.
7. Cook for 15–20 minutes in the preheated oven.
8. Allow to cool for 5 minutes on the tray and then lift onto a cooling rack.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Anzac Biscuits.
2. Why is it important to heat the golden syrup with the butter in this recipe?
3. What is the purpose of the rolled oats in these biscuits?
4. What would be the effect of cooking the biscuits at 220°C rather than 180°C?
5. Identify the ingredients in this recipe that are classified in the 'only sometimes and small amounts' section of the *Australian Guide to Healthy Eating*. Explain why these ingredients should not be included as part of a person's daily diet.

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# VANILLA BISCUITS

10

½ cup plain flour

½ cup self-raising flour

60 grams butter, at room temperature

¼ cup caster sugar

1 egg, lightly beaten

1 teaspoon vanilla essence

MAKES 12–18 BISCUITS, DEPENDING ON THE SIZE

## EVALUATION

1 What tools and small electrical equipment can be used to cream butter and sugar?

2 Why is the biscuit dough kneaded in step 6?

3 What are the benefits of using a cutter to shape the biscuits?

4 How can you test the Vanilla Biscuits to check if they are cooked?

5 Explain why health professionals recommend eating an apple as a snack rather than a vanilla biscuit.

## METHOD

1 Preheat oven to 160°C. Grease an oven tray.

2 Sift together flours.

3 Cream butter and sugar until light and creamy in colour.

4 Add the egg and vanilla and beat well.

5 Add sifted flour and mix to a firm dough.

6 Lightly flour the bench and knead the dough until it is smooth.

7 Roll out the dough to 3–5 millimetres in thickness and cut into shapes. Re-roll the leftover dough and cut more shapes until all the dough is used.

8 Bake biscuits on the baking tray at 160°C for 10–15 minutes, or until a pale-golden colour.

9 Allow to cool on tray for 5 minutes, then place on a cooling rack until cold.

## VARIATIONS

1 To make chocolate biscuits, replace 1½ tablespoons of the plain flour with 1½ tablespoons of cocoa. Sift the cocoa with the flours.

2 To make lemon and coconut biscuits, add 1 teaspoon of grated lemon rind and 1 tablespoon of desiccated coconut to the creamed mixture before adding the flours.

3 To decorate with colours, lightly whisk ½ an egg white and remove the biscuits from the oven after 10 minutes. Brush the egg white over the biscuits in a thin layer and sprinkle with ¼ cup of hundreds and thousands. Return biscuits to the oven and continue baking until the base is pale gold.

Mark Fergus Photography



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# GINGERBREAD

**This ginger-spiced biscuit mixture can be cut into a range of shapes and decorated with piped icing and/or sweets. The best-known shapes are gingerbread people.**

90 grams butter
½ cup soft brown sugar
1 egg, lightly beaten
1 tablespoon golden syrup
¼ teaspoon bicarbonate of soda
1 teaspoon milk
1¾ cups plain flour
½ teaspoon cinnamon
½ teaspoon ground ginger
glacé cherries, nuts, currants, chocolate buds, lollies, for decoration

MAKES 10–12 PEOPLE-SHAPED BISCUITS

## METHOD

1. Preheat oven to 180°C.
2. Cream the butter and sugar.
3. Add the beaten egg and golden syrup.
4. Dissolve the bicarbonate of soda in milk and add to the mixture.
5. Add sifted flour and spices.
6. Flour the bench, then lightly knead the mixture. Roll out to a 3–5 millimetre thickness, then cut out shapes.
7. Re-roll the leftover dough and cut more shapes until all the dough is used. Add decorations such as currants or chocolate buds.
8. Bake for 10–15 minutes or until just beginning to brown on the edges. Remove from oven, then cool on a tray for 5 minutes.
9. Lift onto a rack to cool completely before decorating.

## EVALUATION

1. Why is bicarbonate of soda used in this recipe?
2. Why are the flour and spices sifted before they are added to the mixture?
3. How do you prevent the dough sticking to the bench when you roll it out into a thin layer?
4. Describe two safety rules to follow when baking biscuits in an oven.
5. Explain why, according to the Australian Dietary Guidelines (Guideline 3), you should limit the amount of discretionary foods such as gingerbread biscuits you eat.

Mark Fergus Photography



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# ICINGS



## BUTTER ICING

2 tablespoons milk
50 grams butter, softened
1 teaspoon vanilla essence
2 cups icing sugar
food colouring

MAKES ENOUGH TO ICE 18 CUPCAKES

## LEMON CREAM CHEESE ICING

125 grams cream cheese, at room temperature
60 grams butter, at room temperature
½ lemon, zest and juice
½ teaspoon vanilla
125 grams soft icing sugar

MAKES ENOUGH TO ICE 24 MUFFINS

## CHOCOLATE ICING

1 cup icing sugar
1 tablespoon cocoa
10 grams (roughly 2 teaspoons) butter
1–2 tablespoons boiling water

MAKES ENOUGH TO DECORATE 1 20-CENTIMETRE CAKE OR 9–12 PATTY CAKES

## ORANGE ICING

10 grams (roughly 2 teaspoons) butter
¾ cup soft icing sugar
1 tablespoon orange juice

MAKES ENOUGH TO ICE 6–9 PATTY CAKES

Either soft or pure icing sugar can be used for these recipes. Soft icing sugar is more convenient because it is lump-free and so does not require sifting before use.

Butter icing is often used as a filling for biscuits or for piping onto cakes.

## METHOD

### BUTTER ICING

1. Warm the milk in a microwave for 20 seconds.
2. Cream the butter for 1–2 minutes or until soft and smooth.
3. Add half the icing sugar and the warm milk and vanilla and beat for approximately 3 minutes or until the mixture is pale and fluffy.
4. Add the remaining icing sugar and beat for a further 2–3 minutes until the mixture is fluffy and of a smooth spreading consistency.
5. Add a little food colouring a few drops at a time until you reach the desired colour.

Note: If you do not wish to use the icing immediately, place plastic wrap directly on the surface of the icing and press down lightly to form a seal.

### LEMON CREAM CHEESE ICING

1. Whip together the cream cheese and butter in a food processor until light and fluffy.
2. Add the lemon zest, lemon juice and vanilla and mix well.
3. Keep the processor running and slowly add the icing sugar.
4. Use as a topping for muffins.

Lemon cream cheese icing is a smooth, creamy topping with a tangy flavour. A spoonful served on top of a muffin makes the muffin a little bit more special.

### CHOCOLATE ICING

1. Sift the icing sugar and cocoa into a medium-sized bowl.
2. Add the melted butter to a well in the centre, and then a very small quantity of boiling water until a spreading consistency is reached. Be careful to add the boiling water in very small amounts – only a small quantity is needed.
3. Using a small spatula or palette knife, spread the icing over the top of a cake and smooth. The knife can be dipped into hot water if the icing is difficult to smooth.
4. The top can be decorated with chocolate sprinkles or nuts.

### ORANGE ICING

1. Melt the butter in the microwave for 10–20 seconds.
2. Combine all the ingredients and mix until combined.
3. Spread onto cooled cakes.



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# CITRUS CORDIAL

1 orange
1 lemon
½ cup sugar
300 millilitres water

## METHOD

1. Wash and dry the orange and lemon.
2. Remove the zest from the orange and lemon using the smallest section of the grater. Use a pastry brush to remove the zest, not a knife or metal spatula.
3. Juice the fruit and mix with the zest and sugar.
4. Bring the water to the boil and pour over the fruit mixture. Stir until the sugar has dissolved.
5. Cool for 15 minutes, then strain through a fine sieve. Store in the refrigerator for up to one week.

# FRUIT PUNCHES

### RASPBERRY PUNCH

100 grams raspberries (fresh, frozen or canned)
200 millilitres raspberry cordial
½ lemon, juiced
1 litre soda water

SERVES FOUR

## METHOD

1. Combine raspberries, cordial and lemon juice and chill.
2. Just before serving, place soda water and other ingredients in a large jug.

### SPARKLING PINEAPPLE PUNCH

1 orange
1 lemon
2 tablespoons crushed pineapple
2 cups lemonade
1 cup pineapple juice

### GARNISH

½ lemon, sliced
1 tablespoon sugar coloured with 1 drop of green colouring
4 ice cubes
2 glacé cherries
2 toothpicks

SERVES TWO

## METHOD

1. Rub the rims of two tall glasses with a slice of lemon and dip in the coloured sugar. Allow to dry.
2. Juice the orange and half the lemon and place juice in a jug.
3. Add crushed pineapple, lemonade and pineapple juice to the jug.
4. Place two ice cubes in each glass and pour in the mixture from the jug. Take care not to dissolve the frosted rim of the glass.
5. Spear a cherry with the toothpick, attach it to a slice of lemon and hang it on the side of the glass.

## EVALUATION

1. Why is raspberry cordial added to the raspberry punch?
2. What effect does the lemon juice have on the flavour of the punches?
3. How would crushed ice change the texture of the sparkling pineapple punch?
4. Suggest other fruits that could be used in place of the pineapple in the Sparkling Pineapple Punch.
5. Explain why a glass of freshly squeezed orange juice would be a healthier option than a glass of Sparking Pineapple Punch.

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# BREAKFAST

# 11

## KEY KNOWLEDGE

- The role of breakfast
  - Skipping breakfast
  - Breakfast eating habits
- Health Star Rating system
- Oats
  - Types of oat cereals
- Processed breakfast cereals
- Breakfast biscuits
- Breakfast drinks
- Eggs
  - Cooking eggs for breakfast

## KEY TERMS

**breakfast** the first meal you eat soon after waking up from your night's sleep.

**coagulation** the permanent change of the physical and chemical structure of protein

**fast** a period of time during which nothing is eaten

**glycogen** energy stored in the muscle, tissue and liver

**Health Star Rating** a front-of-pack labelling system that rates the overall nutritional profile of packaged food

**processed breakfast cereals** grains such as corn, wheat and rice that have been softened by precooking and then dried; most are fortified or have had vitamins and minerals added during processing

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking





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# THE ROLE OF BREAKFAST

According to nutritionists, **breakfast** it is the most important meal of the day, and it should supply your body with one-third of your daily food intake. When you eat breakfast, you are 'breaking the fast' by supplying your body with its first food for the day after eight to 12 hours of sleep. A **fast** is a period of time during which we eat nothing. Eight to 12 hours is a long time to go without food – equivalent to at least a full day at school – and people of all ages and occupations need a healthy, adequate breakfast to refuel the body.

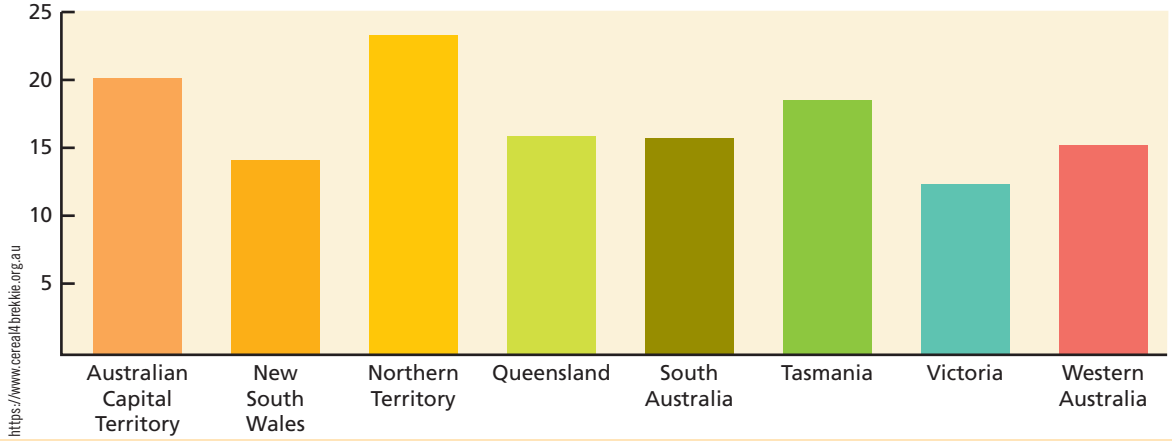
When you are asleep, your body is resting and does not require as much energy or kilojoules as when you are active during the day. The body uses the glucose produced from the carbohydrates you eat during the day and stores it in the muscle tissue and liver as **glycogen**. During the night, these glycogen stores are slowly released into the bloodstream to keep your blood sugar levels stable. When you eat breakfast, your body is able to replenish these stores of glycogen and provide a store of energy for the day's activities, as well as boost your metabolism.

Research has shown that eating breakfast helps to improve mental and physical performance and contributes important nutrients to the diet. It boosts concentration, problem-solving ability, memory and mood, and enables people to think more quickly and clearly. Nutritionists recommend that breakfast be based on carbohydrates, preferably from fruits, wholegrain breads, cereals and grains or vegetables.

## Skipping breakfast

The Australian Bureau of Statistics released the results of the 2013 'CensusAtSchool' survey that found an average of 14.8 per cent of Australian school children skip breakfast. This voluntary survey included responses from 23 700 school children across Australia. The survey was carried out by the Australian Breakfast Cereal Manufacturers Forum (ABCMF), an organisation that provides practical, evidence-based information about the value of eating breakfast and the benefits of breakfast cereal. When the latest survey results were released, Ms Leigh Reeve, the director of ABCMF and an accredited practising dietitian, reported 'this is the fourth year in a row breakfast skipping among school children has increased. It's now up to 14.8 per cent of children skipping breakfast compared to 10.8 per cent five years ago. It's a concerning trend' (https://www.cereal4brekkie.org.au).

Skipping breakfast does not help people to lose weight, since it often leads to overeating later in the day. In fact, in 2019, international research concluded that eating breakfast is one of the main lifestyle factors linked to less body fat and better academic results in adolescent students. The studies were undertaken in Brazil, the United States of America and Japan. Results from these studies showed that skipping breakfast as little as once per week has been associated with a higher level of body fat in teenagers regardless of how active they were and increased the risk of childhood overweight and obesity. One cross-sectional study in Nevada, USA, found students who ate breakfast every day were more likely to achieve higher grades than those who did not eat breakfast every day.




**Percentage of Australian school students who skip breakfast**

ISBN 9780170446716

## Breakfast eating habits

Many teenagers go to school in the morning without eating breakfast or having drunk only fluids such as cordial, soft drink, tea or coffee, all of which have very little nutritional value. Research shows that during the school or working week, breakfast cereals, milk and bread are the most popular breakfast foods, and only a small number of people eat a cooked breakfast before going to school or work.

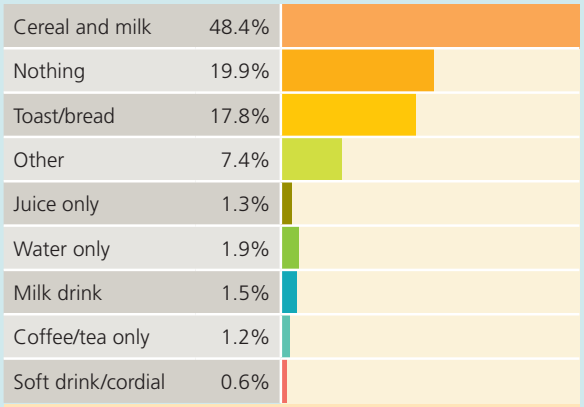
Getty Images/Steve Hix

**Eating breakfast**

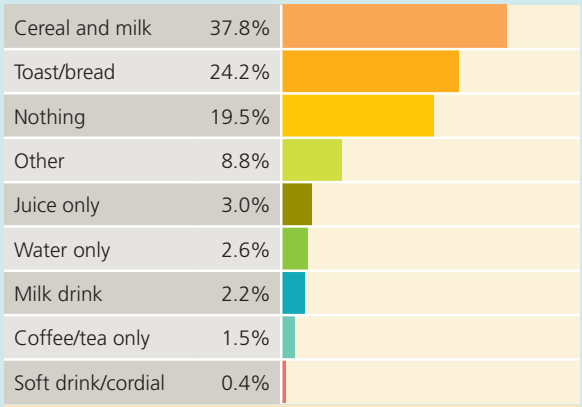
## ACTIVITY 11.1

### BREAKFAST EATING HABITS

The following graphs summarise the key findings from the *Australian Children's Nutrition and Physical Activity Study*.




**Boys' breakfast eating habits**




**Girls' breakfast eating habits**

1. Which group consumed the most breakfast cereals?
2. What percentage of boys and what percentage of girls ate nothing for breakfast?
3. Give two reasons why girls and boys are likely to eat nothing for breakfast.
4. What was the most popular breakfast drink for boys and for girls?
5. Which group was most likely to eat toast or bread for breakfast?
6. What factors are likely to influence breakfast food choices for boys and girls?
7. If parents laid out fruit, cereal, milk and juice, do you think boys and girls who currently eat nothing would be encouraged to eat a healthy breakfast? Why or why not?
8. What other strategies do you think could be used to encourage children to eat a healthy breakfast?
9. Explain the effect that missing breakfast is likely to have on a student's performance at school.
10. What are the health concerns for those who drink soft drink and cordial for breakfast?

## ACTIVITY 11.2

### WHAT DO YOU EAT FOR BREAKFAST?

1. Did you eat breakfast before coming to school this morning? If so, what foods did you eat?
2. How many times per week do you eat breakfast?
3. Do you prepare your own breakfast?
4. If you skip breakfast, what is the reason for this?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5 Are the breakfast foods you eat on the weekend different from those you eat during the week?

6 If someone else was going to prepare your breakfast, what would you order?

7 Suggest two ways of improving your breakfast.

8 What foods are available at your school cafeteria that would be suitable for a healthy breakfast?

9 Make a list of other suitable breakfast foods for teenagers that could be added to your school's cafeteria menu.

10 Access the Victorian Government's Better Health Channel website. Search the site using the keyword 'breakfast' to respond to the following questions.

Weblink
Better Health Channel

- **a** Explain why it is important for children to develop good breakfast eating habits when they are young.
- **b** Suggest three reasons why breakfast is often skipped.
- **c** Explain how eating a healthy breakfast can reduce the risk of illness.
- **d** Identify why skipping breakfast can lead to snacking later in the day, and how this can affect your nutrient intake and health.
- **e** Many breakfast cereals are high in fibre. Explain why this nutrient is important in a healthy diet.

## TESTING KNOWLEDGE

1 What percentage of the day's food intake should breakfast provide?

2 Explain what the term 'fast' means in relation to eating habits.

3 Describe what happens to the body's energy store during sleep.

4 What are the benefits to students in eating breakfast?

5 Explain why Ms Leigh Reeve's comments about school children skipping breakfast would be reliable.

6 Describe the patterns in the percentage of Australian school children who miss breakfast.

7 List the main lifestyle benefits linked to eating breakfast identified in international research. Would you expect similar results for Australian children? Why/why not?

8 Why are processed breakfast cereals a popular food for breakfast?

9 Discuss why wholegrain cereals are recommended as a good breakfast food.

10 List two recommendations you would give to a person trying to choose a healthy breakfast cereal.

## 11.1 Case study

Read the article below and answer the questions that follow.

### *'Some of the worst offenders': Sugary cereals targeted under Health Star proposal*

Sugary breakfast cereals that seem healthy could lose up to two and a half stars if the ministers reviewing the Health Star Rating system adopt a proposal to differentiate between naturally occurring sugars and added sugar.

New modelling from consumer advocacy group Choice shows how the proposed change to the system's algorithm would penalise products such as Kelloggs' Nutri-Grain and Nestle's Milo cereal, while increasing ratings for 'healthier' products that contain naturally occurring sugars, such as yoghurt and fruit.



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Choice's food expert Linda Przhedetsky said the group's assessments of popular supermarket products found breakfast cereals are 'some of the worst offenders' when it comes to making health claims while containing large amounts of added sugar.

The system, which is being reviewed, 'doesn't distinguish between the extra sugar that's added to foods like breakfast cereals and the naturally occurring sugars in dairy or fruits,' Ms Przhedetsky said.

Nestle's Milo cereal and Uncle Tobys Plus would also lose two and a half stars, while Lowan's original muesli would gain a half star and achieve five stars.

The Federal Minister for Youth and Sport, Richard Colbeck, said the health star system was generally working well but noted a review is underway.

'The publicly available draft review noted a number of potential changes to the system, including for the algorithm itself,' Senator Colbeck said.

A spokeswoman for Nestle said the company has made changes to Milo cereal since 2007 to improve its nutritional value, but as people choose chocolate cereals for the taste, 'there comes a point where you can't reduce sugar without significantly affecting the flavour.'

A Kellogg's spokesman said 'from the research we've seen, the Health Star Rating system is working as it was designed to, to help consumers make healthier choices within the same food category.'

Matt Golding

But nutritionist Rosemary Stanton, who was on the original technical advisory working group for the system, said products like Nutri-Grain should 'absolutely not' have a fourstar health rating.

Natural sugars don't have the same negative health effects as added sugar because they are bound to other nutrients that change how the sugar is absorbed, Ms Stanton said.

'So if it's in fruits and vegetables it comes with dietary fibre, if they're in milk they come with high calcium and protein levels. Both of those factors change the way the sugars are digested in the body.'

Ms Przhedetsky said for the star rating system to be effective it must be made mandatory, because companies are currently using it more like a marketing tool and preventing customers from 'comparing like with like'.

Source: Jenny Noyes, *Sydney Morning Herald*, 25 June 2019 (adapted). 

## Respond

1. Why was a new modelling system introduced to calculate the Health Star Rating used on processed foods?
2. Identify the food products that the new modelling system may affect the most and explain why.
3. Discuss how the changes to the Health Star Rating system may affect some manufacturers of processed breakfast cereals.
4. Do you support Ms Stanton's point of view on the Health Star Rating system? Justify your answer.
5. Explain why Ms Przhedetsky said the star rating system must be made mandatory for it to be effective.
6. Discuss how the Health Star Rating would influence your choice of food products you eat for breakfast.


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# HEALTH STAR RATING SYSTEM

The Health Star Rating system was developed by the federal, state and territory governments in collaboration with industry, public health and consumer groups. It is one of the strategies designed to be used alongside the *Australian Dietary Guidelines* to help Australians reduce their risk of diet-related diseases. It is a voluntary system.

The **Health Star Rating** is a front-of-pack labelling system that rates the overall nutritional profile of packaged food and assigns it a rating from half a star to five stars. It provides a quick, easy, standard way to compare similar packaged foods. The more stars a product has, the healthier the choice is for consumers.


Health Star Rating

**The Health Star Rating system can provide key information about nutrients in packaged products**

Although most packaged food products in supermarkets have a nutrition information panel that provides details of the nutrient content, it takes time to compare the nutrient values in similar products before deciding which one to purchase. The benefit to consumers of the Health Star Rating system is that while shopping, they only need to glance at the front of the package to determine which item will help them make a healthy food choice.

# OATS

Oats are often acknowledged as a healthy breakfast food because they are the complete whole grain – meaning the bran, endosperm and germ are still intact – so they include valuable vitamins, minerals and dietary fibre. To make wholegrain cereals such as oats easier to digest they are often cooked in water, milk or a combination of both.

Shutterstock.com/Vladislav Noseek

**Porridge made with rolled oats makes a healthy breakfast**

Oats are a valuable breakfast food as they:

- are high in soluble fibre, which helps reduce blood cholesterol
- have a low glycaemic index, which means their carbohydrate is slowly absorbed into body systems, providing energy long after eating
- are a good source of B vitamins, vitamin E, protein and minerals
- are associated with protective effects against heart disease in adults.

## Types of oat cereals

- Rolled oats that are used to make porridge, as an ingredient in muesli and some biscuits, are processed by steaming and rolling so individual grains are flat and thin.
- Quick oats are chopped up after steaming and rolling so they are quicker to cook.
- Steel cut oats are made by removing the outer husk then cutting the whole oat into several pieces using steel discs. They take longer to cook than the other varieties and have a nuttier flavour but are more palatable when made into a porridge rather than eaten raw.

Regardless of the method of processing, all plain oat products have similar nutritional properties. However, flavoured oat products often have a lower Health Star Rating due to the added sugar from extra ingredients such as dried fruit.

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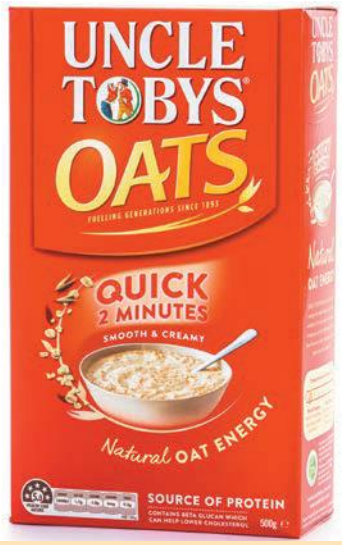


Mark Fergus Photography

**Quick cook oats are a delicious start to the day**

# PROCESSED BREAKFAST CEREALS

**Processed breakfast cereals** are grains such as corn, wheat and rice that have been softened by precooking and then dried, which enables the cereals to be eaten with cold milk. Most of these cereals are fortified or have had vitamins and minerals (for example, iron) added during processing.

Australia's most popular breakfast cereal is Sanitarium Weet-Bix. It is said that if the total number of Weet-Bix eaten in Australia each year was laid end to end, they would circle the equator 2.8 times!

The best choice of breakfast cereal is one high in carbohydrates and fibre and low in fat, salt and sugar.

## ACTIVITY 11.3

## TOP-SELLING PROCESSED BREAKFAST CEREALS

A survey by *Choice* magazine identified the top-selling breakfast cereals in Australia. The nutritional information of each of the four top-selling processed breakfast cereals is shown below. Carefully analyse this information and then answer the questions that follow.

### Sanitarium Weet-Bix

Nutrition information per 100 grams of major ingredients

- Energy: 1490 kilojoules
- Dietary fibre: 11 grams
- Fat: 1.4 grams
- Sugar: 3.3 grams
- Salt: 2.9 milligrams

### Kellogg's Nutri-Grain

Nutrition information per 100 grams of major ingredients

- Energy: 1550 kilojoules
- Dietary fibre: 5.1 grams
- Fat: 0.6 grams
- Sugar: 26.7 grams
- Salt: 360 milligrams

### Kellogg's Corn Flakes

Nutrition information per 100 grams of major ingredients

- Energy: 1550 kilojoules
- Dietary fibre: 4.1 grams
- Fat: 0.2 grams
- Sugar: 7.7 grams
- Salt: 525 milligrams

### Kellogg's Coco Pops

Nutrition information per 100 grams of major ingredients

- Energy: 1600 kilojoules
- Dietary fibre: 1.7 grams
- Fat: 0.4 grams
- Sugar: 36.5 grams
- Salt: 425 milligrams

**Top-selling processed breakfast cereals**

1. Which cereal has the most fibre?
2. Explain why this cereal is likely to contain the most fibre.
3. Why should we try to consume foods with a high fibre content?
4. Which cereal would people who wish to reduce the fat in their diet be advised to choose?
5. Which cereal is highest in sugar? What health concerns are associated with consuming cereals that are high in sugar?
6. Which cereal is lowest in salt?
7. Why is it important to read the labels when making cereal choices?
8. Which cereal would nutritionists be most likely to recommend, and for what reasons?
9. Identify a television advertisement for a breakfast cereal. Describe the way that the advertisement promotes the cereal product. Which age group is it aimed at?
10. For further information about cereals and good health, visit the websites of companies such as Kellogg's, Uncle Tobys and Sanitarium, or the Go Grains website.


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## ACTIVITY 11.4

### TASTE TESTING BREAKFAST CEREALS

#### Aim

To determine which cereal is most suitable as a breakfast food for adolescents.

#### Method

1. Conduct a taste test of four breakfast cereals. You may eat them either with milk or dry. Whichever method of tasting you choose, you must taste each cereal in the same way.
2. Wash and dry your bowl between samples.
3. Record your impressions of each cereal in the following table.

#### Results

| Cereal type | Appearance | Texture | Flavour |
|---|---|---|---|
| Sanitarium Weet-Bix | | | |
| Kellogg's Nutri-Grain | | | |
| Kellogg's Corn Flakes | | | |
| Kellogg's Coco Pops | | | |

#### Analysis

1. Which cereal had the sweetest flavour?
2. Does your sensory test for sweetness agree with the information gained from the label analysis in Activity 11.3?
3. Which cereal took the longest to chew and swallow?
4. Suggest a reason why the textures of each cereal are different.
5. Was the cereal with the highest amount of dietary fibre the hardest to chew?
6. Which cereal had the most appealing appearance, and which the least appealing? Why?

#### Conclusion

Based on the information from the taste test you have just completed and the information in Activity 11.3, which cereal would you recommend as a healthy breakfast food for a teenager? Justify your answer.

# BREAKFAST BISCUITS


Mark Fergus Photography

**Breakfast biscuits are becoming a popular breakfast food**

Breakfast cereal food manufacturers have picked up on the need to provide a wholegrain product that consumers can eat on the go when they do not have time to sit down, even for a bowl of breakfast cereal, before leaving home for school or work. Breakfast biscuits are shelf-stable and do not require refrigeration so they can be stored in a school bag or locker. They are packaged individually so they stay crisp and crunchy. While most breakfast biscuits are a good source of dietary fibre, they are generally high in sugar.

## ACTIVITY 11.5

### COMPARING THE NUTRITIONAL VALUE OF BREAKFAST BISCUITS

| **Uncle Tobys Breakfast Bakes Honey & Roasted Almond** |
|---|
| Nutrition information per 100 grams of major ingredients |
| Energy: 1690 kilojoules |
| Dietary fibre: 11.4 grams |
| Fat: 15.7 grams |
| Sugar: 11.6 grams |
| Salt: 64 milligrams |

| **Sanitarium Weet-Bix GO, Honey & Oat Crunch Breakfast Biscuits** |
|---|
| Nutrition information per 100 grams of major ingredients |
| Energy: 1750 kilojoules |
| Dietary fibre: 11.0 grams |
| Fat: 14.5 grams |
| Sugar: 17.1 grams |
| Salt: 263 milligrams |

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| Kellogg's Date & Apple Baked Muesli Breakfast Biscuits (Gluten free) |
|---|
| Nutrition information per 100 grams of major ingredients |
| Energy: 1800 kilojoules |
| Dietary fibre: 5.3 grams |
| Fat: 12.6 grams |
| Sugar: 23.9 grams |
| Salt: 250 milligrams |

1 Read the food labels of each product you are analysing with a focus on the ingredients list and nutrition panel.

2 Record the breakfast biscuit with the highest values per 100 grams for each nutrient.

| Nutrient | Type of breakfast biscuit |
|---|---|
| Energy | |
| Dietary fibre | |
| Fat | |
| Sugar | |
| Salt | |

3 Which breakfast biscuit had the highest rating across all nutrients?

4 Is this the result you would expect after analysing the ingredients in each product? Explain why?

5 Review the design of the packaging for each breakfast biscuit. Consider the size and position of text and images. Create a Plus Minus Interesting (PMI) table for each breakfast biscuit and briefly record your ideas.

| | Plus | Minus | Interesting |
|---|---|---|---|
| Uncle Tobys Breakfast Bakes Honey & Roasted Almond | | | |
| Sanitarium Weet-Bix GO, Honey & Oat Crunch | | | |
| Kellogg's (Gluten Free) Date & Apple Baked Muesli | | | |

6 Identify the dominant features of the label for each product. Are the designs of the labels consumer friendly and ethical?

7 How significant is the Health Star Rating in the designs? Do you think having this information influences consumers' decisions to purchase a particular breakfast biscuit?

## ACTIVITY 11.6

## COMPARING THE CHARACTERISTICS OF BREAKFAST BISCUITS

### Aim

To compare nutritional and sensory properties of different types of Australian-made breakfast biscuits.

### Method

1 Conduct a taste test of the three breakfast biscuits discussed in Activity 11.5.

2 Remember to sip some water between each sample to cleanse the palate.

3 Record your descriptions of the sensory properties of each breakfast biscuit in the following table.

### Results

| Breakfast biscuit type | Appearance | Aroma | Flavour | Texture | Sound | Sensory rating (1 = poor; 5 = great) |
|---|---|---|---|---|---|---|
| Uncle Tobys Breakfast Bakes Honey & Roasted Almond | | | | | | |
| Sanitarium Weet-Bix GO, Honey & Oat Crunch | | | | | | |
| Kellogg's (Gluten Free) Date & Apple Baked Muesli | | | | | | |


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## Analysis

Use the information from Activities 11.5 and 11.6 to answer the following questions.

1. Explain why it is essential to drink water between each taste test for the breakfast biscuits.
2. Which breakfast biscuit had the most appealing appearance and which the least appealing? Why?
3. Did the aroma of each breakfast biscuit influence your sensory rating of the product?
4. Describe the similarities and differences in the flavours and textures of the breakfast biscuits.
5. Compare the amount of sugar and fat in the breakfast biscuits tested. Explain how the sugar and fat content of the breakfast biscuit relates to their energy value.
6. Which breakfast biscuit was the hardest to chew? What ingredient in the breakfast bar may have affected the texture of the product?

## Conclusion

Based on the information from the taste test you have just completed and the information in Activity 11.5, which breakfast biscuit would you recommend as the best alternative if breakfast must be eaten on the run? Justify your answer.

# BREAKFAST DRINKS

Nutritious drinks have become a popular breakfast food. Fruit drinks are often included on breakfast menus, and dairy drinks such as flavoured milk or breakfast replacement drinks are also popular.

One of the most nutritious breakfast drinks is freshly squeezed orange juice, which has a delicious flavour and the benefit of being full of vitamin C. You can also make a beautiful breakfast drink by blending oranges, fresh strawberries, a banana and even some pineapple. Alternatively, you can purchase juices in a wide range of flavours. However, you must remember that many commercial juices are high in sugar and contain less fibre than a piece of fresh fruit. Consequently, fruit juices are less filling than whole fruit, and it is easy to drink more of them than we really need as part of a healthy diet. Milk-based breakfast drinks, too, can be high in sugar, so they should only be consumed occasionally.

Mark Fergus Photography

**Freshly squeezed orange juice is one of the most nutritious breakfast drinks**

## ACTIVITY 11.7

### COMPARING THE NUTRIENT CONTENT OF BREAKFAST DRINKS

#### Aim

To compare the nutrient content of three breakfast drinks.

#### Method

1. Select three different breakfast drinks from each of the following categories:
   - fruit juice
   - breakfast replacement drink
   - flavoured milk drink.
2. Read the nutrition panels provided with each drink and record the information in a table similar to the one below.

| Nutritive value per 100 mL | Fruit juice | Breakfast replacement drink | Flavoured milk drink |
|---|---|---|---|
| Protein | | | |
| Fat | | | |
| Sugar | | | |
| Vitamin C | | | |
| Calcium | | | |

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3 Sample each drink. Using the sensory descriptors on page 42, record the results in the table below.

| | | | |
|---|---|---|---|
| **Appearance** | | | |
| **Aroma** | | | |
| **Flavour** | | | |
| **Texture/mouthfeel** | | | |

### Analysis

1 Which drinks contained vitamin C?
2 Why is vitamin C an important nutrient for the body?
3 List the drinks in order of their fat content, from highest to lowest.
4 Why is it important to have some fat in the diet?
5 Which drink contained the most protein?
6 What role does protein play in a healthy diet?
7 Which drink contained the most sugar? Compare this with your sensory test for the sweetest-tasting drink.
8 Which of the drinks contained calcium? Which ingredient is a source of calcium? Why is it important to include calcium in the diet?

### Conclusion

Which drink would you choose as the most nutritious breakfast drink? Justify your decision.

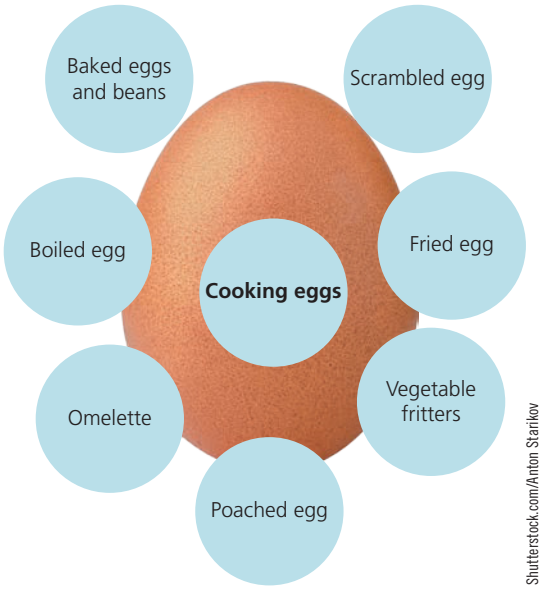
# EGGS

Eggs can form the basis of a cooked breakfast or a quick, easy family meal. A special breakfast on Saturday or Sunday morning can be a time when families relax and enjoy being together.

## Cooking eggs for breakfast

Eggs are a fantastic source of protein with a range of vitamins and minerals as well as being a versatile ingredient that can be cooked in a variety of ways. When heat, either moist or dry, is applied during cooking, there is a permanent change in the physical and chemical structure of the protein molecules within the egg as **coagulation** takes place.

One of the simpler methods of serving an egg is to have it either soft- or hard-boiled. Soft-boiled eggs are delicious when served with fingers, or 'soldiers', of toast that can be used to dip into a runny yolk. Fried eggs and bacon are another popular breakfast or brunch food; eggs can also be served scrambled or poached. Making an omelette is slightly more challenging but allows you to add a range of other ingredients to the eggs to make a more substantial dish. Another delicious way to serve eggs for breakfast or brunch is on top of fritters or baked nestled within a spicy bean mix.




**Methods of cooking eggs for breakfast**

## TESTING KNOWLEDGE

11 Who developed the Health Star Rating system?
12 What are the main goals of the Health Star Rating system?
13 How does the Health Star Rating system benefit consumers?
14 Explain why nutritionists recommend oats as a breakfast grain.
15 Create an annotated diagram of the benefits of consuming oats for breakfast for young Australians.
16 Identify and describe the different methods of processing oats.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17 Develop a PMI table of consuming breakfast biscuits for breakfast on a regular basis.

18 Explain why consuming only fruit juice for breakfast is not recommended.

19 Why are eggs a popular food for breakfast?

20 List the different styles of serving eggs for breakfast. Which one is your favourite? Justify your answer.

## THINKING SKILLS

Create a promotional poster to advertise a new breakfast club that will be starting next term at your local primary school. Your goal is to promote the benefits of eating breakfast to students and to encourage them to come along.

### Preparing a breakfast foldable

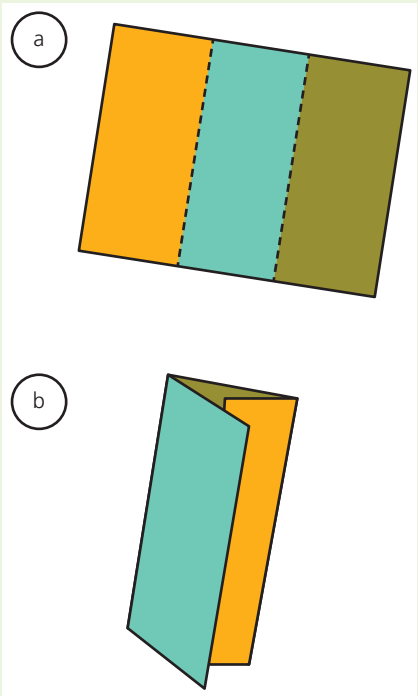
1 Using an A4 sheet of paper, prepare a tri-fold book foldable that summarises the key information about breakfast.

Prepare the foldable using the following headings:

- 'Breakfast heading and definition'
- 'Why breakfast is important and what the research says about breakfast'
- 'Breakfast eating habits: boys compared to girls'
- 'My dream breakfast' (divide this section in half).

List the menu, including drinks for your dream breakfast, on the left-hand side. On the right-hand side, classify the food items you have included on a diagram of the *Australian Guide to Healthy Eating*. Write a comment on the nutritional value of your dream breakfast.

2 Glue the completed foldable into your workbook.




**Breakfast foldable**

## Design activity 11.1

### A SPECIAL BREAKFAST

### Design brief

1 Design a healthy breakfast suitable for a special occasion that includes eggs on the menu and serves one person. You should also present a 'Welcome to breakfast' menu card to give to your guest when you serve.

2 Write a breakfast design brief that includes the following information:

- who – who is the breakfast for?
- why – why is the special breakfast being served?
- what – what will the menu include (for example, an egg, fruit and a wholegrain cereal product)?
- when – when will you be serving the special breakfast?
- where – where will you prepare and serve the breakfast?

3 Using the design brief, develop five criteria questions to evaluate the success of your special breakfast.

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## Investigating

1 Research the *Australian Dietary Guidelines* and list the guidelines that will be important to consider in designing a healthy breakfast.

2 Use the recipe index at the back of this book or search the internet to assist with your research for:

- two recipes that contain fruit and are suitable to serve for breakfast
- two ideas for using wholegrain cereal products in the menu
- two methods of cooking eggs for breakfast
- two suggestions for a suitable breakfast beverage; this could include some of the key ingredients identified in the design brief.

## Generating

1 Use the ideas from your research to develop two menu options for your breakfast.

2 Select your preferred option and justify your decision in relation to the specifications in your design brief.

3 Design a creative 'Welcome to breakfast' menu card that includes the food items that are to be served at your special breakfast.

## Planning and managing

1 Prepare a food order for your breakfast.

2 Prepare a production plan for the breakfast menu. See pages 51–2 for an example of how to prepare a production plan.

## Producing

1 Produce the breakfast menu you have planned.

## Evaluating

1 Evaluate your breakfast for a special occasion using your evaluation criteria and feedback from your guest to determine the success of your breakfast.

2 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of each dish on your breakfast menu.

3 If you prepared a hot dish, were you able to prepare the breakfast so that it was still warm when it was served? How did you present the food so that it encouraged a cheerful start to the day?

4 Explain two safety rules you needed to consider when preparing the breakfast.

5 Analyse your breakfast menu by classifying all the ingredients on a diagram of the *Australian Guide to Healthy Eating*. Comment on the nutritional value of your breakfast.

6 If you were to prepare the breakfast again, would you make any changes to the menu or to your production plan? Consider how well your menu met the requirements of the design brief.

iStock.com/martinturzak

**A special breakfast**


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# STRAWBERRY AND BANANA SMOOTHIE

½ very ripe banana
4 large strawberries
½ cup milk, chilled
1 tablespoon vanilla yoghurt
1 teaspoon honey

SERVES ONE

Other soft fruit could be used in the smoothie. Remember seasonal ripe fruit has the best flavour.

## METHOD

1. Peel and slice the banana.
2. Rinse and pat dry the strawberries. Remove the green leaves then slice each strawberry.
3. Combine the sliced banana, strawberries, milk, yoghurt and honey in a tall jug or measuring container. Blend the ingredients with a stick mixer until smooth.
4. Pour the smoothie into a tall glass and serve immediately.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the Strawberry and Banana Smoothie.
2. Why are the strawberries rinsed before being sliced?
3. List the safety steps followed when using a small knife to cut the fruit for the smoothie.
4. Identify two safety procedures to follow when using electrical appliances such as a stick mixer.
5. Explain why nutritionists recommend having a fruit smoothie for a breakfast drink instead of a glass of apple juice.

Mark Fergus Photography



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# QUICK APPLE MUESLI

11

1 teaspoon lemon juice
1 large, crisp apple, grated
2 tablespoons rolled oats
1 tablespoon sultanas
2 tablespoons yoghurt
2–3 teaspoons honey

SERVES ONE

For added flavour, garnish with chopped nuts and cinnamon.

## METHOD

1 Pour lemon juice over the grated apple to prevent it from going brown.
2 Mix in rolled oats, sultanas, yoghurt and honey.
3 Place in serving bowl.
4 Serve immediately.

## EVALUATION

1 Explain the best way to safely use the grater to prepare the apple for this recipe.
2 Why should lemon juice be poured over the grated apple?
3 How are the rolled oats softened during the preparation of the muesli?
4 List other fresh and dried fruits that could be added to the muesli.
5 Based on the guidelines of the *Australian Guide to Healthy Eating*, evaluate whether the Quick Apple Muesli is a healthy breakfast.

Mark Fergus Photography



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# BOILED EGG

1 egg

SERVES ONE

If the egg is taken straight from the refrigerator and placed into boiling water, its shell can crack as a result of the sudden, drastic change in temperature. Placing the egg into cold or warm water can overcome this problem.

## EVALUATION

1. Why is it important to put eggs in cold or warm water before boiling them?
2. Describe how you can tell if water is boiling.
3. Explain the differences in the textural properties of the yolk of a soft- and a hard-boiled egg.
4. Explain the reason for cracking the shell of a boiled egg immediately after removing it from the boiling water and rinsing it under cold water.
5. Explain why eggs are included in the same section of the *Australian Guide to Healthy Eating* as meat, poultry and fish.

## METHOD

1. Place egg into a small saucepan and cover with cold or warm water.
2. Bring water to the boil.
3. Turn the heat to low.
4. If you like your egg soft, cook for 2–3 minutes. For hard-boiled eggs, cook for 8 minutes once the water has boiled. (An egg is hard-boiled if its shell dries quickly when it is lifted from the water.)
5. Carefully remove the egg from the boiling water.

To serve a soft-boiled egg, place in an egg cup, cut the top off and serve with fingers of warm toast. To serve a hard-boiled egg, drain the water from the saucepan and immediately run cold water over the egg. Crack the shell against the edge of the sink, or a bench, and remove the shell once it is cool enough to handle. Cracking the eggshell will prevent a green-grey ring from forming around the yolk. This ring is formed when eggs that are not fresh are heated; the iron in the yolk and the sulphur in the egg white react to form ferrous sulphide on the surface of the yolk.

Stocksy United/DOBRANSKA RENATA



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# POACHED EGG

1 egg
1 teaspoon vinegar
½ avocado, smashed (optional)
squeeze of lemon juice (optional)
hot, buttered toast (optional)
salt and pepper to serve (optional)

SERVES ONE

**For a delicious breakfast, mix half a smashed avocado with a squeeze of lemon, salt and black pepper. Spoon the avocado mixture on a slice of hot, buttered toast and top with the poached egg.**

## METHOD

1. Crack the egg into a jug or cup.
2. Fill a frying pan with water to about 3 centimetres deep. Add a teaspoon of vinegar. The vinegar will lower the temperature at which the protein in the egg coagulates and help to set the egg.
3. Bring the water to the boil. Once boiling, stir briskly with a wooden spoon to create a whirlpool.
4. Gently pour the egg into the centre of the swirling water. (The swirling water helps to keep the egg in a round shape.)
5. Turn down the heat so that the water is just simmering.
6. Gently cook the egg for 2–3 minutes or until just set.
7. Carefully lift the egg from the water using an egg lifter.

## EVALUATION

1. What is the purpose of adding vinegar to the water when poaching the egg?
2. What does the swirling water do to the egg during poaching?
3. Describe how you can tell if water is simmering.
4. List one safety rule to consider when cooking a poached egg.
5. Explain why, from a nutritional perspective, poaching is a better method of cooking eggs for breakfast than frying.

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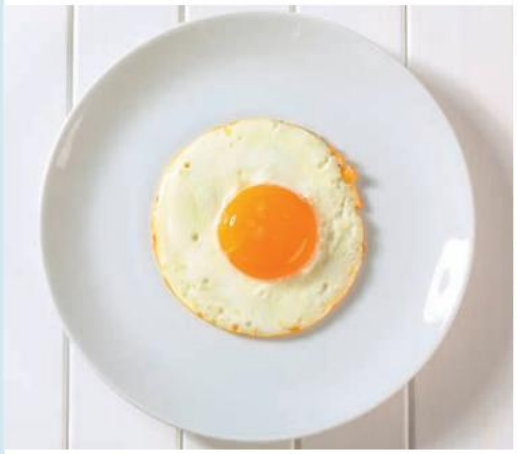
ISBN 9780170446716

# FRIED EGG

1 tablespoon vegetable oil
cube of bread (to test the oil)
1 egg

SERVES ONE



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## METHOD

1. Add the oil to a small frying pan and place over medium heat for approximately 30 seconds.
2. Add the cube of bread to the oil. Once it becomes golden brown, the oil is hot enough to cook the egg. Remove the cube of bread from the fry pan.
3. Carefully crack the egg into the hot oil.
4. Cook for 2–3 minutes or until the white is set and the yolk slightly set.
5. Use an egg slice to remove the egg from the frying pan. Drain it on paper towel before serving.
6. Allow the frying pan to cool before washing.

## EVALUATION

1. Why is it important to preheat the oil in the frying pan before adding the egg?
2. Why is it desirable to drain the egg on paper towel before serving?
3. List one safety rule to consider when cooking a fried egg.
4. Discuss why nutritionists recommend boiling and poaching eggs as the preferred methods of cooking over frying.
5. Suggest some foods to serve with the Fried Egg to make a delicious meal that includes at least four of the recommended *Australian Guide to Healthy Eating* food groups.

# SCRAMBLED EGGS

2 eggs
4 tablespoons milk
pinch of salt
pepper
1 teaspoon butter
1 teaspoon parsley, chopped

SERVES ONE

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## METHOD

1. Whisk the eggs, milk, salt and pepper until well combined.
2. Melt the butter in a small frying pan.
3. Pour in the egg mixture and gently stir over a low heat until the mixture thickens but is still soft. Do not overcook the eggs.
4. Serve with warm toast and sprinkle with the chopped parsley.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the Scrambled Eggs.
2. Why is it important to stir the eggs while they are cooking?
3. Identify the process that causes eggs to thicken and explain how this occurs when cooking the scrambled egg mixture.
4. What effect would overcooking have on the texture of the eggs?
5. Would serving scrambled eggs on toast be considered a healthy breakfast? Justify your answer.

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# CHEESE OMELETTE WITH BACON

11

2 eggs
1 tablespoon water
2 shakes pepper
1 teaspoon butter
1 tablespoon parsley, finely chopped
¼ cup cheddar cheese, grated

SERVES ONE

## EVALUATION

1 Why is it important to beat the eggs and water until they are well combined?
2 Explain what happens to the texture of the egg as it cooks in the hot pan.
3 Discuss why is it important to lift the edges of the omelette and allow the uncooked mixture to cover all the pan's base.
4 Outline two advantages of cooking bacon in the microwave and why is it important to drain bacon on absorbent paper after cooking.
5 Classify the ingredients for this recipe on a diagram of the *Australian Guide to Healthy Eating*. Explain why the Cheese Omelette with Bacon should only be eaten for breakfast occasionally.

## METHOD

1 Add water to the eggs and gently beat with a fork until well combined.
2 Season with the pepper.
3 Melt the butter in a non-stick frying pan over medium heat until it is foaming, but not brown.
4 Pour the egg mixture into the frying pan. Gently shake to ensure the omelette mixture covers the base of the pan.
5 Carefully lift the edges of the omelette with a spatula so that the mixture can run to the edges and set.
6 When the mixture is almost set, sprinkle the grated cheese and chopped parsley over the front half of the omelette.
7 Carefully lift the back half of the omelette over the top of the cheese and parsley.

Turn onto a warmed plate and serve immediately. Serve with bacon (see below).

### COOKING BACON IN THE MICROWAVE

Dice two rashers of bacon. Place a sheet of absorbent paper on a plate. Spread the diced bacon over the paper and cover with another sheet of absorbent paper. Microwave on high for 1–2 minutes or until crisp.

### FRIED BACON

Place bacon in a frying pan and fry over medium heat until the bacon is crisp and lightly browned. Drain on absorbent paper.

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# SAVOURY EGG ROLL

1 round wholemeal bread roll
1 spring onion
1 rasher bacon
10 grams butter
1 egg
1 tablespoon cheese, grated

SERVES ONE

## METHOD

1. Preheat the oven to 200°C.
2. Cut the top from the bread roll and keep aside – this will form the lid for the savoury egg roll.
3. Using a teaspoon, scoop out a small amount of bread from the inside of the bread roll to make a hollow case. Take care not to make holes in the outside of the roll.
4. Finely slice the spring onion. Dice the bacon.
5. Melt the butter in a small frying pan and sauté the spring onion and bacon until just beginning to brown.
6. Spoon the bacon and spring onion mixture into the bread roll case.
7. Break the egg into the bread roll.
8. Sprinkle with the grated cheese. Place the lid on the top.
9. Wrap the roll in aluminium foil and place on an oven tray.
10. Bake in the preheated oven for approximately 15 minutes or until the egg is almost set.
11. Remove the roll from the oven and turn back the foil. Return to the oven for a further 5 minutes to allow to crisp.

## EVALUATION

1. Why is it important to cook the bacon and spring onion before adding them to the bread roll case?
2. List one safety rule to consider when cooking the spring onion and bacon in the frying pan.
3. Explain how the physical properties of the egg change once it is baked. Identify the term that describes this change.
4. What is the purpose of wrapping the Savoury Egg Roll in aluminium foil before it is baked?
5. Classify the ingredients of the Savoury Egg Roll on a diagram of the *Australian Guide to Healthy Eating* and suggest improvements to ensure the meal would meet Australian Dietary Guideline 2.

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# CORN FRITTERS WITH TOMATO AND AVOCADO SALSA

11

### CUMIN SALT

1 teaspoon salt flakes

½ teaspoon cumin seeds

### SALSA

½ ripe avocado

6 cherry tomatoes or ½ tomato, chopped

⅛ red onion, finely diced

1 tablespoon coriander, chopped

1 tablespoon lime juice

¼ green chilli, seeds removed, finely chopped

⅛ teaspoon cumin salt

### CORN FRITTERS

2 cobs fresh corn

¼ red capsicum, finely diced

2 spring onions, finely sliced

⅔ cup plain flour

½ teaspoon baking powder

⅛ teaspoon cumin salt

1 tablespoon finely grated parmesan cheese

50 grams tasty cheese, coarsely grated

2 tablespoons flat leaf parsley, chopped

1 egg

70 millilitres milk

fresh pepper

2 tablespoons olive oil

SERVES TWO – MAKES 6 FRITTERS

**To serve: arrange three or four corn fritters on a plate and top with salsa. Serve with extra cumin salt on the side. Top the fritters with a poached or fried egg and rashers of bacon to make a more substantial meal.**

## METHOD

1. To make the cumin salt, place the cumin seeds and salt flakes in a dry frying pan and warm over medium heat until fragrant. Remove from heat, tip into a mortar and grind into a coarse powder.
2. To make the salsa, peel the avocado, dice into 1-centimetre cubes and combine with tomato, red onion, coriander, lime juice, green chilli and cumin salt. Gently combine the ingredients and set aside.
3. Boil the corn cobs for 6 minutes. Drain. Slice the kernels from the husk and break up into small pieces.
4. Sift the flour, baking powder and cumin salt into a large bowl. Stir through the corn kernels, finely grated parmesan, grated cheese and chopped parsley.
5. Whisk the egg and milk together, add the fresh pepper and stir into the flour mixture to form a thick batter.
6. Heat one tablespoon oil in a fry pan over medium heat. When hot, add two tablespoons of batter to form one fritter. Make another two fritters and cook for approximately 3–4 minutes on each side or until golden. Add the remainder of the oil and cook another three fritters.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the Corn Fritters with Tomato and Avocado Salsa.
2. Explain the safety procedures you followed when cutting and cleaning the knives used to prepare the ingredients.
3. Explain why frying is a cooking method that should be used occasionally.
4. List the ingredients in the recipe that contain starch and those that contain protein. Identify the processes that cause the changes to the structure of starch and protein when the fritters are cooked.
5. Classify the ingredients of the Corn Fritters with Tomato and Avocado Salsa on a diagram of the *Australian Guide to Healthy Eating* and explain how well it meets Australian Dietary Guideline 2.

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# SPICY BAKED BEANS AND EGGS

2 tablespoons olive oil
1 leek, white part only, thinly sliced
2 garlic cloves, crushed
½ green chilli, seeds removed, thinly sliced
1 teaspoon coriander seeds
½ teaspoon ground allspice
400 grams canned cannellini beans, rinsed and drained
1½ cups diced canned tomatoes
1 tablespoon tomato paste
½ teaspoon sugar
¼ teaspoon salt
pinch of pepper
200 millilitres water
3 teaspoons lemon juice
2 eggs
1 tablespoon flat leaf parsley, chopped
4 slices sourdough bread, toasted

SERVES TWO

## METHOD

1. Preheat oven to 200°C. Grease two ovenproof ramekins to about 1½ cup capacity.
2. In a medium saucepan, sauté the leeks, garlic and chilli over medium heat for about 5 minutes or until softened.
3. Roughly crush the coriander seeds in a mortar.
4. Smash half of the cannellini beans with the back of a wooden spoon.
5. Add the diced tomatoes, tomato paste, crushed coriander seeds, allspice, crushed beans, sugar, salt, pepper and water to the leek mixture. Bring to the boil then reduce heat to simmer for 10–12 minutes until the mixture is thick. Remove from heat and stir in the remainder of the beans.
6. Stir through the lemon juice. Divide the bean mixture between the two ramekins.
7. Make a shallow hole in the centre of the bean mixture in each ramekin. Crack an egg into each hole. Bake for 10–15 minutes or until the egg is cooked to your liking.
8. Remove from the oven and top with chopped parsley.
9. Serve with toasted sourdough bread.

## EVALUATION

1. Describe the sensory properties of the Spicy Baked Beans and Eggs. Consider each element of the recipe in your discussion of appearance, aroma, flavour, texture and sound.
2. Describe how the cooking method of sautéing changes the characteristics of leeks, garlic and chilli in step 2.
3. In step 5 of the recipe, the vegetables are boiled then simmered. Explain how these cooking methods influence the final sensory properties of the recipe.
4. Identify the process that occurs when the eggs are baked.
5. Classify the ingredients of the Spicy Baked Beans and Eggs on a diagram of the *Australian Guide to Healthy Eating* and discuss how well the recipe meets the recommendations of Australian Dietary Guideline 2.

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# 12 EATING WELL FOR THE FUTURE

## KEY KNOWLEDGE

- Nutrition throughout life
  - Lifespan stages
- Influences on food choices
  - Adolescent food choices
- The influence of marketing on food choice
- Eating for good health
- Obesity
  - Sources of energy
  - Energy balance
- Cardiovascular disease
- Diabetes
  - The glycaemic index
- Strategies to enhance good health
  - Go for a walk
  - Say 'no' to sugary drinks
  - Reduce your portion size
  - Choose healthy snack foods
- Specific dietary needs
  - Food allergies
  - Food intolerance or food hypersensitivity
- Vegetarian diets
  - Complementing proteins
  - Plant-based meat alternatives
  - Top tips for vegetarian eating

## KEY TERMS

**cardiovascular disease** a general term used to describe a range of diseases, including heart disease, stroke and blood vessel disease

**coeliac disease** a disease of the small intestine associated with permanent intolerance or hypersensitivity to gluten

**diabetes** a disease where the pancreas is unable to produce sufficient insulin to enable the glucose produced during digestion to be absorbed into the bloodstream

**food allergy** an abnormal immunological reaction to food

**food intolerance** a reaction to food that is of a similar type to food allergies, but generally less severe

**glycaemic index (GI)** a ranking of carbohydrate foods based on the immediate effect they have on blood sugar levels

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food and fibre production
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking





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# NUTRITION THROUGHOUT LIFE

Regardless of our age, we all need the same basic nutrients to enable growth and repair of body tissues, to regulate all our life processes and to provide us with energy. However, our age and stage of life does affect the amount of each of the nutrients our bodies need to meet its specific requirements for growth and development.



## Lifespan stages

**Pregnancy**

- During pregnancy, there is an increased need for protein, B group vitamins, vitamin C, folate, calcium and iron to meet the needs of the developing foetus.

**Adolescence (12–18 years)**

- There is an increased need for all nutrients to meet the needs of rapid growth.
- A growth spurt occurs and continues until adult height is reached.
- Nutrient-dense, rather than energy-dense, foods are important.
- There is an increased need for calcium and exercise to maximise peak bone mass.
- Adolescence is often a period of intense physical activity.

**Infancy and early childhood (0–2 years)**

- This is a period of rapid growth – infants double their birth weight in the first six months of life.
- Infants and young children require a diet that is high in energy, protein and calcium to support rapid growth of bones and soft tissue.

**Adulthood**

- A well-balanced diet is needed to provide all essential nutrients for energy needs and growth and repair of body tissues.
- Activity levels may decrease, so energy-dense foods should be limited.
- Women continue to need a high intake of calcium as they reach menopause.

**Childhood (approximately 2–11 years)**

- Height and weight increase steadily.
- Childhood is often a period of intense physical activity.
- Only a gradual increase in nutrients is required.
- Nutrient-dense foods should be consumed.

**Late adulthood**

- Energy needs reduce by 15 to 20 per cent in response to reduced levels of activity.
- Weight increase may occur, so it is important to consume nutrient-dense foods and restrict energy-dense foods.
- A well-balanced diet containing carbohydrates (from wholegrains and vegetables), protein, vitamins and minerals is important, although in smaller amounts.
- Smaller, regular meals are important.

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# INFLUENCES ON FOOD CHOICES

The range of foods available to consumers today is remarkably wide, far greater than at any other time in human history. Fresh food markets, supermarkets, cafes, restaurants and fast-food outlets are full of exciting food options. Deciding which foods to choose from such a wide selection is often very difficult.

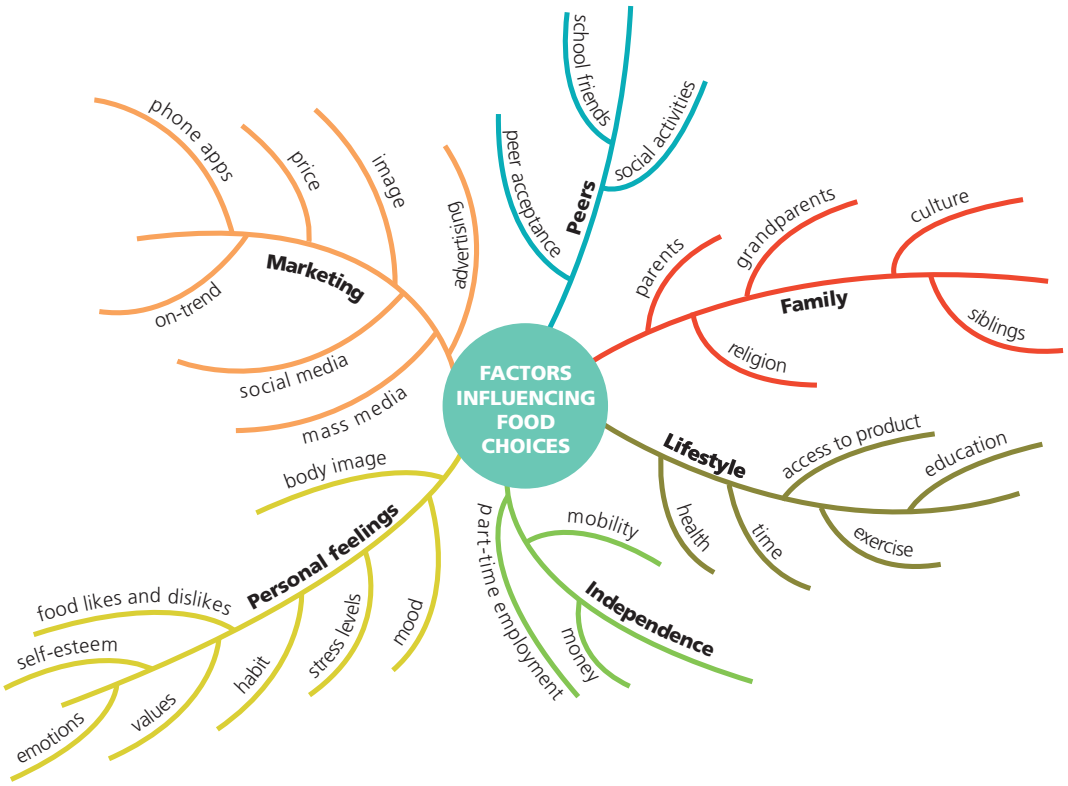
Your family, culture, personal likes and dislikes and mood can often be the deciding factors when you are selecting food. However, other influences, such as your concern for good health, your peers, advertising or accessibility to food outlets, may also help to determine which foods you choose to eat.

## Adolescent food choices

One of the most important aspects of adolescence is the development of independence. This striving for independence can be reflected in many ways, one of which is in the selection of food. While parents and family are still important in the lives of most young people, adolescence does provide an opportunity for young people to make many of their own decisions regarding the types of foods they will eat and when they will eat them.

Just as the influence of family begins to diminish during adolescence, the role of the peer group becomes far more important and can have a significant impact on the types of foods that young people consume. Some foods or food outlets are seen by adolescents to be more acceptable than others, and so can become a meaningful part of their social lives. The increased mobility of young people, too, has had an impact on their ability to select and eat the types of foods that appeal to their age group. This appeal is often influenced by advertising and other marketing strategies employed by food producers. Many food advertisements are targeted at adolescents, highlighting issues such as lifestyle, self-image, the peer group and income.

The price of a food item is another influential factor in the decision by young people to select particular foods. Most young people have limited incomes, derived mainly from allowances provided by their parents or part-time employment. Therefore, food needs to be relatively inexpensive and to represent good value for money.




**Influences on food choices**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## ACTIVITY 12.1

### WHAT INFLUENCES YOUR FOOD CHOICES?

1 Create your own 'spider map' like the one on page 266 to demonstrate the factors that influence your food choices. Your map should include the main branches of:
   - family
   - lifestyle
   - independence
   - peers
   - personal feelings
   - marketing.

2 Along each branch of the map, give specific examples of the main factors that influence your food choices. For example:
   - for 'Family', you might be influenced by your Asian, African or European culture, or by the favourite family dishes prepared by your parents or grandparents
   - for 'Marketing', you might include specific examples of food marketing that influence your food selection, such as a television advertisement or 'branding' at a sporting event
   - for 'Lifestyle', you could include your desire to make healthy food choices or the location of food outlets that you like near your school or on your way home.

3 Based on the information in your map, classify the four personal and community factors that affect the foods you select to eat most.

| Most important personal factors | Most important community factors |
|---|---|
| *Foods I eat with friends need to be cheap, because I have a limited income.* | *I only go to those food outlets that are within walking distance of my home or accessible by public transport.* |
| | |
| | |
| | |
| | |

4 Write a paragraph to explain why these four factors influence your food selection more than other factors identified in your map.

# THE INFLUENCE OF MARKETING ON FOOD CHOICE

While there are many factors that can affect your food choices, one of the most influential is marketing. Food manufacturers use a wide variety of strategies such as advertising, development of cartoon characters, giveaways, two-for-one deals and inducements such as free toys or 'collectible' cards to encourage you to purchase their products. Today, advertising through various forms of social media such as Facebook, Instagram, mobile games (also known as 'advergames'), online activities, apps, YouTube, email and SMS has become prevalent. Food manufacturers also promote their products by sponsoring sporting events in which children participate. When combined with other, more traditional forms of advertising – on television and radio, in children's magazines, through direct mail, on food packaging or on outdoor media such as billboards – it is difficult to avoid.

Food manufacturers are highly strategic in their placement of advertising, aiming for the greatest impact on their target audience. Research shows that many children watch three hours or more of television daily. Evidence clearly shows that food manufacturers target children's viewing times to advertise their products, showing more than 70 advertisements for food products each week. Alarmingly, most of these advertisements are for foods such as highly processed breakfast cereals, confectionery, chocolate, soft drinks and snack foods, all of which provide little nutrient value. Constant repetition of these advertisements means that children are encouraged to pester their parents into purchasing the desired product. 'Pester power' has become one of the most influential marketing strategies.

Advertising can also highlight a particular property of a product that may be of interest to consumers. Many consumers today are keen to select foods that they think will provide them with a health benefit, such as those that are low in fat. However, while many products may have a lower fat content than similar traditional products, they may also be higher in sugar and, consequently, the product may not contain fewer kilojoules. This type of advertising is described as being a 'health halo'. Consumers therefore need to carefully read food labels so that they can analyse the nutritional information provided.



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# 12.1 Case study

Read the media release below then complete the activity that follows.

## *Cleaning Up Junk Food In Sport – It's Just Not Cricket*

Public health groups are calling on elite sporting clubs to clean their act up as new research shows mums and dads are sick of major sports codes partnering with junk food companies that put profits before health.

KFC is currently heavily promoting across multiple channels via sponsorship of The Big Bash, Australia's Twenty20 cricket league. Its 'The One Box' costs just $12.95 and contains 50% of the maximum daily recommended saturated fat intake (11.8g), 160% of the maximum daily recommended salt intake (3197 mg) and almost two-thirds of an adult's energy needs for the day (5795 kJ).

The junk food industry spent around $45 million in Victoria alone last year on mass media advertising. With these aggressive marketing strategies, combined with next to no regulation on how the fast food industry is allowed to market itself, our kids don't stand a chance at maintaining healthy diets.

Research from LiveLighter shows the majority of people have had enough of the aggressive promotion of junk food in sport. An in-depth study of more than 2000 participants has revealed:

- 68% percent of parents say elite sporting groups should focus on healthy sponsorships.
- 70% of people agree companies advertising junk food in sports settings care more about making money than the public's health.
- More than half believe current restrictions on advertising don't go far enough to protect children being exposed to junk food marketing.

LiveLighter Campaign Manager and Dietitian Alice Bastable said that the association with junk food and sport impacts children's diets, making them more susceptible to ongoing health problems as adults.

'Overweight and obese children have a much greater chance of becoming obese adults and face increased risks of developing chronic conditions later in life such as type 2 diabetes, heart disease and 13 types of cancer.'

Poor diet is also a significant problem for children, with around 40% of the energy in children's diets coming from unhealthy foods and only one in 17 children eating the recommended daily amount of fruit and vegetables.

'Early life experience has been shown to influence the weight gain of children through to adult life. Once these patterns are set they are very difficult to change, which is why we need to protect children from the promotion of junk food, which is all around them,' Ms Bastable said.

The Obesity Policy Coalition's Executive Manager Jane Martin said that when over 26% of Australian children are overweight or obese, and nearly 31% in Victoria, it's time sporting bodies call time and source healthier sponsors.

'The Big Bash is saturating an event, it promotes as family friendly, with junk food undermining parents' efforts to create healthy habits for their kids. Whether it's KFC banners around the pitch or the cheap meal deal promotions during the ad breaks, it's impossible to avoid,' Ms Martin said.

'We know that marketing influences what children want to eat, creating pester power and contributing to weight gain. Junk food brands are taking full advantage and bombarding kids with junk food marketing during their favourite sporting matches.'


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'Children are particularly susceptible to hero-worship. Junk food advertising during sporting matches builds positive associations between their sporting heroes and unhealthy food and drink brands.'

Source: Obesity Policy Coalition media release, 10 January 2019 (adapted)

## Respond

1 Working with a partner, complete a summary framework for the media release, based on the one below.

| | | |
|---|---|---|
| What is the issue outlined in the article? | | |
| What is the Obesity Policy Coalition? Why would this group be concerned about this issue? | | |
| Outline the two main arguments used in this article.<br>Argument 1:<br><br>Argument 2: | | |
| Plus (positives/supporting points): | Minus (negatives/concessions): | Interesting: |

2 Individually, write a paragraph outlining what you think about the issue discussed in the media release.

## TESTING KNOWLEDGE

1 List five nutrients that are required in increased amounts during pregnancy.
2 Describe the similarities and differences between the nutrients needed during infancy and childhood.
3 Why is an increased intake of calcium and exercise important during adolescence?
4 Outline two key issues associated with nutrient intake during adulthood.
5 Explain why men and women in late adulthood should try to decrease their intake of energy-dense foods.
6 List five factors that may influence the foods we select to eat.
7 Explain why peers can influence the foods some adolescents choose to eat.
8 Why is the price of food an important factor in selecting food?
9 How do food manufacturers use social media to promote their products?
10 Explain why 'pester power' is considered to be an effective marketing tool.

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# EATING FOR GOOD HEALTH

Good health is something we all aim to achieve so that we can enjoy life. Unfortunately, obesity, type 2 diabetes and heart disease are some of the major health concerns that may confront many of us at some stage in our life. According to 2017–18 data from the National Health and Medical Research Council (NHMRC), 67 per cent of Australian adults and one in four children are overweight or obese. In addition, more than 1.2 million Australians have been diagnosed with type 2 diabetes and a further 500 000 are thought to be undiagnosed. Given that these health concerns have such a major impact on the lives of individuals in the community, health professionals have looked at ways of providing up-to-date advice on the amounts and types of food we should eat for good health. As a result, a range of tools to help us to wisely select food have been developed, including the *Australian Dietary Guidelines* and the *Australian Guide to Healthy Eating*. A detailed discussion of these food selection models can be found in Chapter 4: Eat well, be well.

# OBESITY

It is clear from the latest medical research that the spike in the number of Australian adults and children who are now overweight or obese is a direct result of the foods we consume. Overweight and obesity are major health concerns because they are linked to the development of a range of serious health problems including type 2 diabetes, heart disease and some cancers.

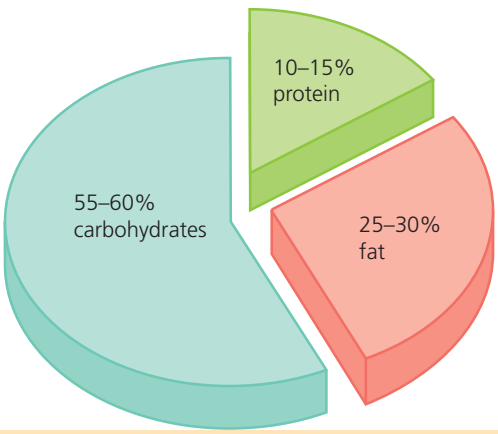
The level of overweight and obesity in Australian children has risen sharply and is now among the highest in the world, with more than 25 per cent of young people being overweight or obese. If current trends continue, the Victorian Department of Human Services estimates that by 2025, 30 per cent of Australian 5–19-year-olds will be overweight or obese. As in other stages of life, obesity in childhood and adolescence can have a major impact on the health of young people. Type 2 diabetes and high blood pressure, once only seen in late adulthood, are now becoming more prevalent in young people who are overweight.

Much of the increase in the incidence of overweight and obesity in childhood is linked to the changing diets of Australian children. Although the amount of food young people eat has remained much the same as it was in the past, the energy density of the food being eaten has increased by approximately 11–15 per cent, resulting in a far higher kilojoule intake. This, combined with the fact that children today are far less physically active than children in past generations, has led to an increase in the numbers of children who are overweight or obese.

## Sources of energy

To enable your body to function, you need energy. The body uses two main nutrients to generate energy – carbohydrate and fat. If these stores are depleted, the body uses its stores of protein to provide a secondary energy source. During digestion, carbohydrate is broken down – initially into glucose, and later into glycogen – and is stored mainly in the muscles of the body. Fat is broken down into fatty acids and stored as adipose tissue or fatty tissue if it is not required for energy production. Protein is broken down into amino acids and used for energy if all other sources have been exhausted.

The body can produce 16 kilojoules of energy from every gram of carbohydrate, 37 kilojoules of energy from every gram of fat and 17 kilojoules of energy from every gram of protein. Nutritionists recommend that we obtain 55–60 per cent of our energy from foods that are high in carbohydrates, such as cereals, grains, breads, fruits and vegetables. Only 30 per cent of our energy should come from fats, and 10 per cent from protein. Detailed information on carbohydrates can be found in Chapter 5: Grain foods and a discussion of fats can be found in Chapter 10: Only sometimes!




**Main energy sources in the diet**

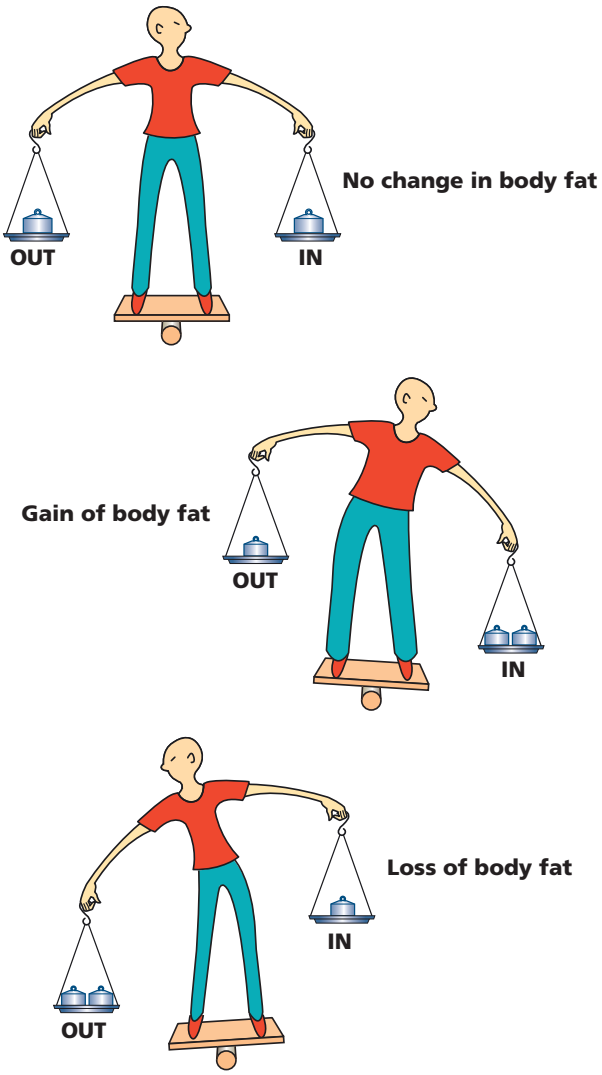

ISBN 9780170446716

## Energy balance

To maintain a healthy weight, it is necessary to achieve an energy balance, so that the energy you expend is equal to the energy you take in from food. However, sometimes your body requires energy in addition to that supplied by the food you have just eaten. In these circumstances, your body needs to call on its reserves, which are stored in the fat tissue. If more energy is expended than is taken in, even over a fairly short period of time, weight loss may be the result. Alternatively, if you consume more food than your body can use in the form of energy, excess energy will be stored as fat tissue, leading to weight gain.

Although it would seem logical that two people who eat the same meals for breakfast, lunch and dinner would produce the same amounts of energy, this is in fact most unlikely. Each person's energy requirement is unique to them. However, there are several factors that influence the amount of energy each person requires.

- The basal metabolic rate (BMR), or the amount of energy the body requires to function, varies according to a person's build. The greater the person's size, and the more muscle than fat they have, the higher their BMR will be.
- Generally, the younger a person is, the more energy they require.
- Gender is a factor in determining energy needs – males have a higher BMR than females.
- Children and adolescents who are rapidly growing have a higher BMR. Pregnant women, too, have an increased need for energy.
- People involved in heavy manual labour or athletes with intense training schedules also have an increased need for energy.




**Energy balance**

## TESTING KNOWLEDGE

**11** Explain why the National Health and Medical Research Council developed the *Australian Dietary Guidelines* and the *Australian Guide to Healthy Eating*.

**12** What percentage of Australian children are considered to be overweight or obese?

**13** Outline two factors that have led to an increase in the incidence of overweight and obesity in childhood.

**14** Identify the two main nutrients used in energy production.

**15** What is glycogen, and where is it stored in the body?

**16** Explain what happens to fat during digestion and how fat is stored in the body for future use.

**17** How many kilojoules of energy are provided by one gram of fat and by one gram of carbohydrate?

**18** Explain the change in energy balance that can lead you to lose weight and to put on weight.

**19** What is the meaning of the term 'basal metabolic rate'?

**20** List four factors that influence the amount of energy an individual requires.

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# CARDIOVASCULAR DISEASE

**Cardiovascular disease (CVD)** is one of the major causes of death in Australia. CVD is a general term that is used to describe a range of diseases, including heart disease, stroke and blood vessel disease. Approximately one in six, or 4.2 million Australians, have some form of CVD. In 2017, 43 477 Australians died of CVD – 30 per cent of all deaths during that year. It has been calculated that one Australian dies of CVD every 12 minutes.

Like other 'lifestyle' diseases, many deaths that result from CVD could have been prevented. The main risk factors associated with the development of CVD are smoking, high blood cholesterol, physical inactivity, obesity, diabetes and high blood pressure. Therefore, to minimise the risk of developing CVD, it is important to follow a healthy diet, exercise on a regular basis and maintain a healthy weight.

# DIABETES

**Diabetes** is the fastest-growing health condition affecting the Australian population. Diabetes occurs when the pancreas is unable to produce sufficient insulin to enable the glucose produced during digestion to be absorbed into the bloodstream.

There are two types of diabetes. Type 1 diabetes affects about 10–15 per cent of all people who suffer from diabetes. It occurs when the immune system damages the pancreas, making it unable to produce the hormone insulin. People who suffer from type 1 diabetes require several injections a day of insulin to break down the glucose in their bloodstream.

Type 2 diabetes is a far more common condition, accounting for 85–90 per cent of all diabetes cases. This type of diabetes occurs when the pancreas does not produce sufficient insulin to enable glucose to be absorbed into the bloodstream. The main risk factors for type 2 diabetes are being overweight or obese, being physically inactive and having another family member who has diabetes. Aboriginal and Torres Strait Islander people are much more likely to suffer from diabetes than other members of the Australian population.

The number of Australians who are suffering from diabetes has doubled in the past 20 years. If the current trend continues, approximately three million people over the age of 25 will have developed type 2 diabetes by 2025. This increase in the incidence of diabetes is mainly a result of the increasing number of people in the community who are overweight or obese. Another major concern is that type 2 diabetes is being diagnosed in young people, rather than being confined to older adults, as was the case in the past.

Type 2 diabetes is often referred to as the 'silent killer', because some people who have it do not show any symptoms of the disease, leading to significant under-reporting of the condition. It has been suggested that the real number of people suffering from type 2 diabetes is likely to be double the number diagnosed with it. Diabetes can lead to CVD, severe kidney damage and eye disease, and can even require the amputation of toes and limbs. The most effective way for people with type 2 diabetes to control their condition is through managing their food intake and exercise.

## The glycaemic index

The **glycaemic index (GI)** was developed to enable people with diabetes to better manage their blood sugar levels. The GI ranks carbohydrate foods based on the immediate effects they have on blood sugar levels. Carbohydrate foods that release energy into the bloodstream over a prolonged period have a low-GI rating. Carbohydrate foods that break down quickly during digestion, and therefore give an almost instant energy boost, have a high GI rating. All foods are ranked from 0 to 100:

- 55 or less = low GI
- 56–69 = moderate GI
- 70 or more = high GI.

Today, the GI is utilised by people who wish to lose weight or manage heart disease. Professional athletes also use the GI to enable them to develop their glycogen stores more effectively before competition, and to recover quickly after an event.


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However, one of the most important benefits of a low-GI diet is that it makes you feel full for longer. This means that a diet based on low-GI foods will reduce the likelihood that you will become hungry between meals, meaning you will be less likely to feel tempted to indulge in snack foods. Changing to a low-GI diet is not difficult – it simply involves swapping carbohydrate foods with a high GI for those with a low GI. Examples include selecting wholegrain or sourdough bread instead of white bread, including a cereal such as muesli that is made of oats and bran and serving it with fruit for breakfast, or cutting down on potatoes and selecting pasta instead.

## GI rating of foods

| Food | GI rating |
|---|---|
| Prunes | 29 |
| Dried apricots | 31 |
| Fettuccini | 32 |
| Yoghurt (low-fat) | 33 |
| Chickpeas | 33 |
| Mixed-grain bread | 34 |
| Spaghetti | 37 |
| Apples | 38 |
| Sustagen (250 mL) | 40 |
| All-Bran breakfast cereal | 42 |
| Porridge | 42 |
| Oranges | 44 |
| Baked beans | 48 |
| Peas | 48 |
| Carrots | 49 |
| Bananas | 55 |
| Basmati rice | 58 |
| White bread | 70 |
| French fries | 75 |
| Corn Flakes | 84 |
| Potato (baked) | 85 |


Mark Fergus Photography

**Helga's Low-GI 5 Seeds bread**

## ACTIVITY 12.2

### THE GLYCAEMIC INDEX

Access the Victorian Government's Better Health Channel website. Search the site using the keyword 'GI' and use the information you find to answer the following questions.

Weblink
Better Health Channel
Diabetes Australia
taste.com.au

1. Explain why the GI is seen to be an important tool in selecting food, particularly for people who have been diagnosed with type 2 diabetes.
2. List three factors that influence the GI ratings of food.
3. What is the meaning of the GI symbol that is found on some foods?
4. Using the information on the GI ratings of foods in the table opposite or on the Diabetes Australia website, design a two-course meal that has a low-GI rating. The taste.com.au website may also be helpful.

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## TESTING KNOWLEDGE

21 Explain why cardiovascular disease is a major health concern in Australia.

22 List five of the main risk factors for developing cardiovascular disease.

23 Explain how diabetes occurs and how many people in the community are affected by this condition.

24 Create a mind map of the main risk factors for developing type 2 diabetes.

25 Explain why type 2 diabetes is often described as the 'silent killer'.

26 Describe the impact that type 2 diabetes can have on the health of individuals if it is not effectively managed.

27 What is the glycaemic index and why was it originally developed?

28 Why are some foods classified as having a low GI and others as having a high GI?

29 Outline the main benefits of a low-GI diet.

30 List three foods that have a low GI and three foods that have a high GI.

# STRATEGIES TO ENHANCE GOOD HEALTH

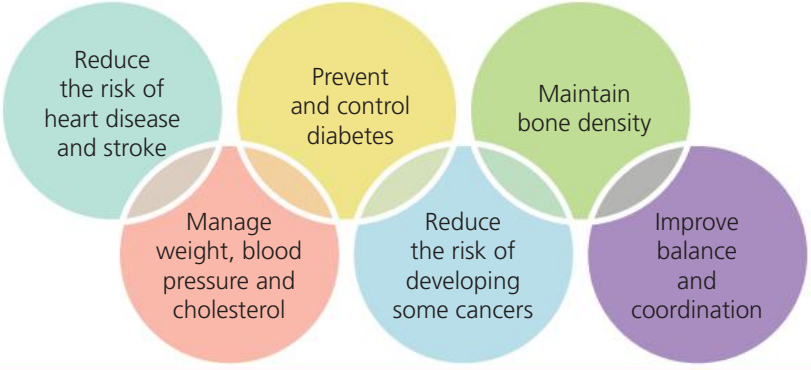
One of the keys to good health is to maintain a healthy weight range throughout life. However, given the ready availability of a wide variety of processed foods that are high in fat and sugar, the extra-large portion sizes commonly presented to us by food manufacturers and food retailers, and the impact of food marketing, this may be easier said than done. Two of the most important strategies in maintaining a healthy weight are to make sure you select food to minimise the intake of energy-dense rather than nutrient-dense foods, such as snack foods, and to keep physically active. This will mean that your energy intake and energy output are more likely to be in balance, and weight gain will be minimised.

## Enjoy a walk

Health professionals constantly remind us that being involved in some physical activity each day is essential for good health. The federal Department of Health recommends that you should try to participate in 30 minutes of moderate-intensity activity on most days of the week. When combined with a healthy diet, regular exercise such as walking each day will enable you to maintain a healthy weight and to minimise other lifestyle diseases such as CVD and diabetes.

There are many types of wearable technology such as smart watches as well as smartphone apps that allow users to track their exercise regime in real time. To encourage particularly older Australians to become more active, the Heart Foundation has developed an app to record and monitor the number of steps participants take or kilometres they walk each day. Users of the Heart Foundation app can either walk individually and track their own journey or they can link up with a group of like-minded walkers in their local area.

According to the Heart Foundation, walking can be a fun activity that improves your overall health, increases bone density and general body strength.




**The benefits of walking**


ISBN 9780170446716


Heart Foundation

**The Heart Foundation Walking App**

In order to maintain a healthy weight, it is important to be mindful that we must not only participate in regular exercise but also consume a nutrient-dense rather than an energy-dense diet. While we all occasionally enjoy indulging in a delicious treat, such as a chocolate bar, a packet of crisps, a doughnut or muffin, eating them comes at a price. These snacks are energy-dense and consuming them on a regular basis can lead to weight gain. For example, a 60-kilogram person would need to walk 50 minutes to burn the 1020 kilojoules of energy provided by a regular-sized (53-gram) Mars Bar.

## Say 'no' to sugary drinks

As discussed in chapter 10 'Only sometimes!', the LiveLighter campaign is an online resource that has been developed to encourage Australians to eat well and to maintain a healthy weight by becoming more physically active. One of its key campaigns is to highlight the health problems associated with consuming sugary drinks. The aim of the campaign is to stress that sugary drinks contain almost three times the recommended daily sugar intake outlined by the World Health Organization while providing no nutritional value for consumers.

## ACTIVITY 12.3

### LIVELIGHTER® CAMPAIGN

1. Access the LiveLighter® campaign website.
2. Review two television advertisements produced for the LiveLighter® campaign.
3. Identify the techniques used in this campaign to highlight the issue of excess body fat.
4. Do you think this campaign is an effective approach to addressing this important health issue? Justify your answer by explaining why or why not.
5. Read the fact sheet 'Facts about sugary drinks' on page 276.
   a. Are you surprised by some of the facts presented about sugary drinks?
   b. Explain why this is seen as an important issue by the LiveLighter® campaign.
6. Complete the 'Sugary drinks calculator' to find out how much sugar you are drinking.
   a. Based on your results, do you think you need to reduce the amount of sugary drinks you consume each week?
   b. Draw a conclusion about how the results you have calculated will affect on your life, both now and in the future.

Weblink
LiveLighter®
LiveLighter® sugary drinks calculator

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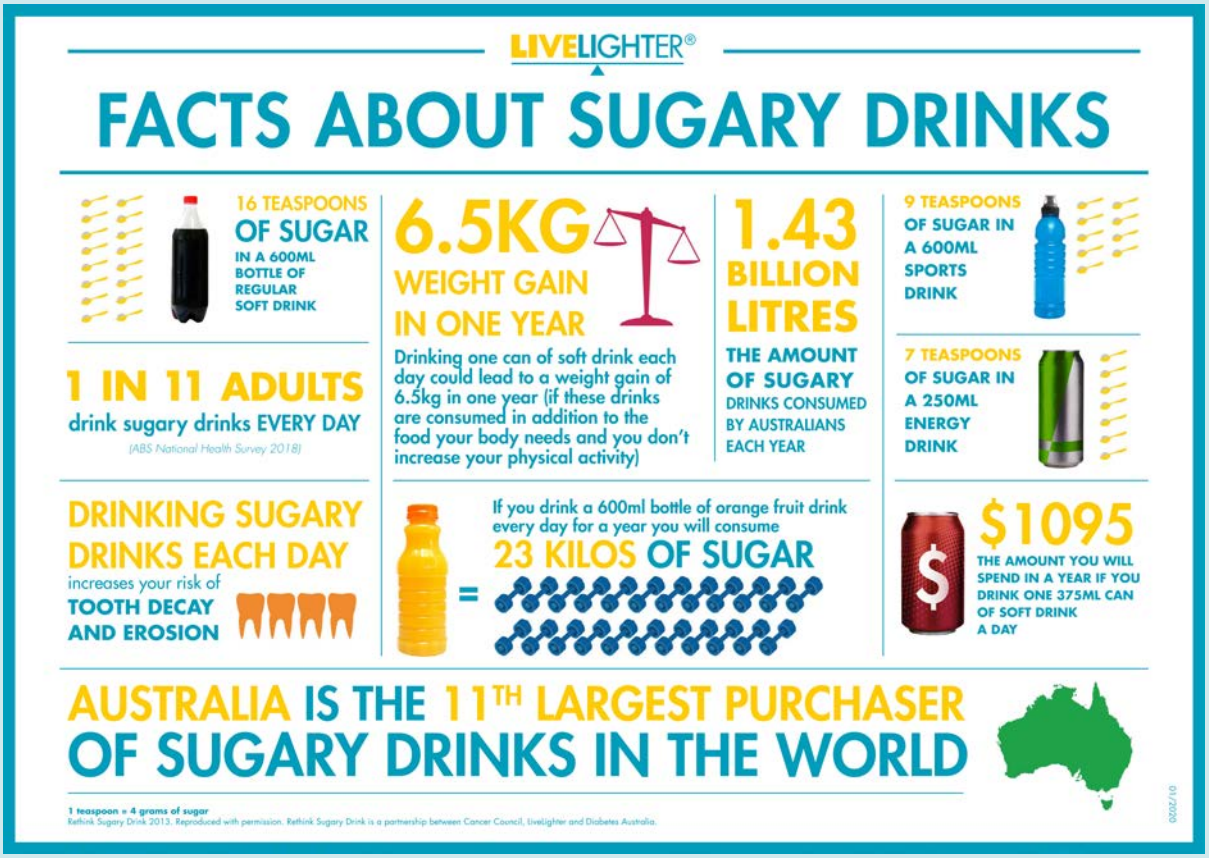
7 The LiveLighter® campaign's website provides consumers with a range of 'top tips' for improving their health and wellbeing.

**a** Examine two of these tips and discuss how easy they would be for members of the public to implement in their daily lives.

**b** Draw a conclusion about whether these tips could be effective in improving health.






**LiveLighter® fact sheet on sugary drinks**

## 12.2 Case study

Read the article below then answer the questions that follow.

### *Taxing sugary drinks will save lives and cut obesity*

Soft drinks, sports drinks, fruit drinks: they're packed full of sugar, heavily promoted to kids, easy to buy and often cheaper than water and milk. Sugary drinks are also the biggest source of added sugar in the diets of Aussie kids and teens, and are responsible for tooth decay in half our 12-year-olds. Time and again, sugary drinks have been shown to lead to weight problems and obesity.

We're seeing a disturbing trend where obesity rates have doubled in very young children (2–5 year olds) over the last 20 years. When we consider that 63 per cent of adults and 27 per cent of children are overweight or obese, the lack of a national strategy to address obesity is all the more disappointing.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A health levy alone won't 'magically make Australians skinny', as the Coalition has defensively stated. But along with better labelling, regulating marketing, and more effective education, a health levy on sugary drinks is another sensible measure to improve diets and reduce obesity in Australia. More than 25 jurisdictions around the world now have proposed or implemented a levy on sugary drinks, including Mexico, where it's been shown to be effective in encouraging people away from sugary drinks.

Sugary drinks are responsible for around half of Australia's already too-high sugar intake – and they're the single largest source of added sugar in our diet. A third of Aussies are regularly drinking these, with the average Australian soft drink consumer drinking a can a day. Perhaps most concerning, though, is that nearly half of Aussie kids aged 2–16 drink sugary drinks every day.

The World Health Organization recommends consuming no more than six teaspoons of added sugar in an entire day. A 375ml can of Coke has 10 teaspoons, and a Sprite has 13. When it comes to our obesity epidemic, it isn't hard to see why health bodies around the country are pointing the finger at sugary drinks.

Most sugary drinks have absolutely zero nutritional value. They don't fill you up, and they're extremely high in kilojoules: a recipe for weight gain and obesity. And obesity is a risk for type 2 diabetes, heart and kidney disease, stroke and 13 types of cancer.

Price is a powerful tool. Increasing the price of sugary drinks would be effective in nudging people to cut down; helping to tackle our growing waistlines and prevent tooth decay.

Over 25 years, a 20 per cent price increase for soft drinks and sweetened mineral waters alone could save 1600 Australian lives. It would also reduce obesity and prevent 4400 heart attacks and 1100 strokes. Overall, the savings to the health-care system would add up to A$609 million.

To change the society we live in and embed healthier choices, we need to listen to the advice coming from established groups who have the health of the public at heart. This includes the World Health Organization, which recommends a price rise of at least 20 per cent. This policy is supported by more than 36 consumer, public health, academic and medical groups, including the AMA. The Coalition and Labor parties also need to listen to their voters (many taxpayers) who have said they support this health levy.

Source: Jane Martin, *Sydney Morning Herald*, 29 January 2018. 

## Respond

1. Explain why the Australian Government is being urged to introduce a tax on sugary drinks.
2. According to the article, sugary drinks are consumed by nearly half of Aussie kids aged 2–16. Do you think this is true of you and your friends? Justify your answer.
3. What message do you think supporters of a sugar tax are trying to send to children and parents through highlighting this issue?
4. Do you think the strategy will be valuable in addressing the issue of childhood obesity? Why or why not?
5. Hypothesise whether a tax on soft drinks would be a successful strategy in reducing the consumption of sugar drinks if it was introduced into your school. What barriers might there be to its successful implementation? Explain.

## Reduce your portion size

Another reason why people's waistlines have expanded in recent years is because we are now eating far more than we used to – and far more than we really need to. Food portions have dramatically increased in the past few decades, and, as the amount of food we eat has risen, so too has the number of kilojoules we consume. In the 1980s, individual serves

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of soft drink were sold in 237-millilitre containers, whereas today, their usual size is between 500 and 600 millilitres. Equally, cupcakes and scones have doubled in average size over the same period from 40 grams to 80 grams.

King-sized, or 'Texas' muffins, have become the norm. Cakes, slices and biscuits sold in bakeries and cafes are now so big that they are in fact large enough for two or three people to share. Similarly, a giant serve of popcorn at the movies is enough for the whole family. Many other treats such as chocolate bars are now sold in king-sized packets or twin packs. 'Super-sized' meals and 'meal deals' available in fast-food outlets also provide far more food (and, therefore, kilojoules) than we really need. This is sometimes called 'portion distortion'.

How has this happened? The food industry has been eager to increase serving sizes, which they dub 'upsizing'. Food manufacturers know that customers like to feel that they are getting value for money, and so will be happier to pay a little more for a larger serve than to pay what seems to be a high price for a smaller portion. Another strategy manufacturers use is to bundle together food items to make a 'combo pack' or 'meal deal'. In such cases, the manufacturer wins, because the profit margin they make from the additional items, such as drinks or fries, is usually high, so the actual cost to them is almost negligible. Another problem is that in Australia, serving sizes listed on packages of food are often inconsistent, and the serving size is determined by the food manufacturer rather than by regulation.

Evidence clearly suggests that making even a small reduction in the amount of food you eat can make a big difference in managing your weight. So, one of the best strategies is to resist king-sized treats and meal deals, and to only order small portions when eating out. Alternatively, share a sweet treat such as a muffin or cake with a friend. Eating more slowly will also enable your brain to register when you have had enough. Finally, only eat enough to satisfy your hunger – you can always leave some food on your plate!

## Choose healthy snack foods

One of the common characteristics of being an adolescent is that you can constantly feel hungry. Adolescence is one of the periods of most rapid physical growth, during which your body demands food to satisfy its need for energy. (Sometimes, having three meals a day is just not enough!)

iStock.com/fotogal iStock.com/foktak_kondesign

**Differing portion sizes of muffins**

One of the food habits that is common with many teenagers is the need to regularly snack. The problem is that snack foods may come to replace more nutritious foods in the diet. Snack foods and fast foods are generally low in important nutrients, but are usually high in fat, salt and/or sugar, and consequently provide a poor source of fuel for the body. These snacks are also high in kilojoules and can contribute to an increase in your weight. Therefore, it is important to remember that snack foods should be considered as 'extra foods' that should only be eaten sometimes.

While it may seem that eating fast food can be a health hazard, it is possible to choose foods that are lower in fat, sugar and salt such as a piece of fruit, a handful of nuts, rice paper rolls or a salad wrap.

Dreamstime.com/Nataliya Arzamasova

**Rice paper rolls are a delicious and healthy snack choice**



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## ACTIVITY 12.4

### WHAT'S IN SNACK FOOD?

Many snack foods that students eat during study breaks are high in fat, sugar and salt. These ingredients can come in many forms and are included in countless manufactured products. The inclusion of the following terms on a label shows that the food contains these ingredients, or equivalents.

| Fat | Sugar | Salt |
|---|---|---|
| Beef fat | Aspartame | Baking power |
| Coconut | Brown sugar | Booster |
| Coconut oil | Corn syrup | Celery salt |
| Copha | Dextrose | Garlic salt |
| Cream | Fructose | Meat extract |
| Dripping | Glucose | Onion salt |
| Lard | Golden syrup | Monosodium glutamate (MSG) |
| Mayonnaise | Honey | Rock salt |
| Sour cream | Lactose | Sea salt |
| Nuts | Malt | Sodium |
| Oil | Maltose | Sodium bicarbonate |
| Palm oil | Mannitol | Sodium metabisulfite |
| Vegetable oil | Maple syrup | Sodium nitrate/ nitrite |
| | Molasses | Stock (cubes) |
| | Monosaccharides | Yeast extract |
| | Raw sugar | |
| | Sorbitol | |
| | Stevia | |
| | Sucrose | |
| | Xylitol | |

Source: Government of South Australia: Department of Health (adapted)

1. Collect a range of snack foods such as single serves of potato crisps, savoury shapes, muesli bars, chocolate bars, noodles and yoghurt.
2. Analyse each product's label and record the following information in a table like the one below.

**Name of snack food:**

**Serving size:**

| | Types of fat | Types of sugar | Types of salt |
|---|---|---|---|
| Total per serve | | | |
| Total per 100 grams | | | |

3. Identify the types of fat, sugar and salt most commonly used in all the snack foods you investigated.
4. Discuss why food manufacturers use a wide range of fats, sugars and salts in the preparation of snack foods.
5. Explain why it is important that consumers look at the total amount of these ingredients, rather than rely on their identification in the ingredients list.
6. When comparing the fat, sugar and salt content of snack foods, explain why it is recommended to refer to the amount per 100 grams, rather than rely on the amount per serve.
7. Why is it essential to look at the nutrient content of the whole food, rather than make your decision based on one nutrient alone?
8. Draw conclusions about whether including information about the different names for fat, sugar and salt on a label is a useful tool for consumers when selecting snack foods in the future. Justify your answer.

## ACTIVITY 12.5

### COMPARING SNACK FOODS

#### Aim

To compare the nutrient content of a range of snack foods.

#### Method

1. Identify three different snack foods that you enjoy. You can select any of the items from the diagram below or any other foods that you like to snack on.

12

2 Identify a commercial brand of each of the snack foods you have selected.

3 Research the company's website/s for information on each of the ingredients listed in the table on page 279. Alternately, use the Australian Food Composition Database developed by Food Standards Australia New Zealand (FSANZ) for information.

Weblink
Australian Food Composition Database

4 Draw the following table and record your findings.

## Results

**Comparison matrix for snack foods**

| Characteristics | Items to be compared | | |
|---|---|---|---|
| | Snack food 1: | Snack food 2: | Snack food 3: |
| Fat content | | | |
| Salt content | | | |
| Sugar content | | | |
| Kilojoule content | | | |

## Analysis

1 When comparing the nutrient content of foods, is it more accurate to compare the portion size or the content per 100 grams of each food? Justify your answer.

2 Discuss the similarities and differences for each characteristic of the three snack food items you have compared.

3 Explain the implications for your long-term health of consuming each of these snack foods on a regular basis.

## Conclusion

After comparing the fat, salt, sugar and kilojoule content of the three snack foods, what recommendations would you make to consumers about selecting these types of snack foods for their long-term health?

## TESTING KNOWLEDGE

31 Describe two key strategies an individual can use to help them maintain a healthy weight.

32 What is the key message from the federal Department of Health about physical activity and why is this message considered to be so important?

33 Write a simple slogan that could be included on the Heart Foundation walking app to promote two benefits of walking.

34 Explain why it is better to eat a piece of fruit or a few nuts after exercising rather than a chocolate bar.

35 Explain why soft drinks, sports drinks and energy drinks are included in the 'only sometimes' section of the *Australian Guide to Healthy Eating*.

36 Outline two key health concerns associated with consuming sugary drinks on a regular basis.

37 Explain how the portion sizes of food sold to consumers have changed in recent decades, and why this change has occurred.

38 Outline two strategies manufacturers have used to increase the serving size of food products.

39 Explain why snack foods are often considered to be a poor source of fuel for the body.

40 Create an infographic to inform consumers about six types of fat, sugar and salt that may be 'hidden' in processed foods.

# SPECIFIC DIETARY NEEDS

There are many people who need to manage their diets to avoid particular foods to which they may be allergic, such as peanuts, eggs or shellfish. Other people may have a hypersensitivity or intolerance to a food – for example, wheat or certain fruits – and so must also be careful about the foods they select to eat. Some people choose to follow a vegetarian or vegan diet; they too have individual dietary needs that must be planned for.

## Food allergies

A **food allergy** is an abnormal immunological reaction to food. A foreign substance, usually a protein, enters the bloodstream, and an antibody is


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produced to fight it. Each time the foreign substance enters the body again, more antibodies are produced.

The reaction caused by a food allergy is usually physical and occurs within an hour of exposure to the food. Symptoms such as hives, rashes, hay fever, asthma, stomach pain or diarrhoea, headache or swelling of the face or eyelids may occur. In some cases, the physical symptoms of a food allergy can become more severe with each exposure and can even be life-threatening (known as anaphylaxis). There is no cure for a food allergy, so the treatment is simply to avoid the problem food. It is recognised that the risk of developing an allergy is much higher if another member of your family also has an allergy. Foods that can cause allergies in some people include milk, fish, shellfish, peanuts, eggs and legumes. Many children grow out of food allergies. However, peanuts are an exception, and this allergy is often severe and lifelong.

People with food allergies must read and understand food labels to ensure they do not eat foods that are toxic to their bodies. FSANZ aims to assist people with a food allergy by requiring food manufacturers to include information on food labels if the food contains an ingredient that may cause a severe allergic reaction, such as anaphylaxis, regardless of how small the amount added. People involved in food preparation, either in the home or in the hospitality industry, should also take particular care when preparing and serving food to people with allergies to ensure their food is not contaminated.

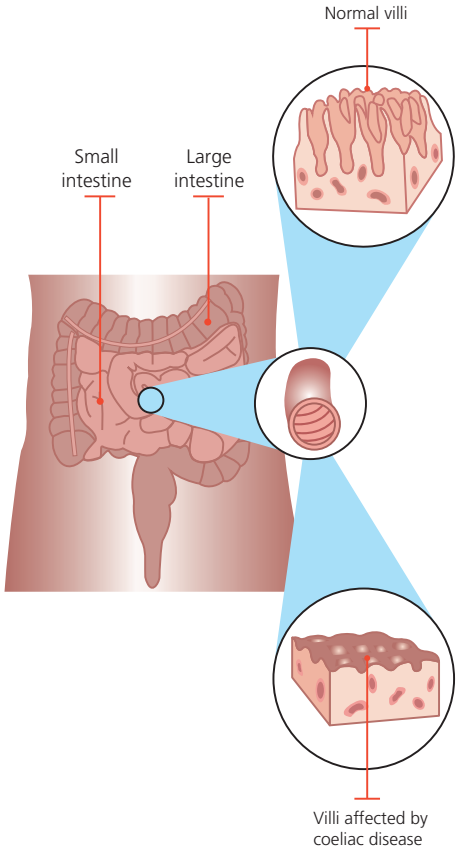
## Food intolerance or food hypersensitivity

Some people are born with a condition that makes it impossible for them to metabolise a particular food or nutrient. A **food intolerance** is not an immune response like a food allergy but is a chemical reaction to particular foods. The people who are affected may lack an enzyme or be unable to produce an enzyme in sufficient amounts to digest certain foods. Food intolerance or hypersensitivity reactions are similar to food allergy symptoms but are generally less severe. The reactions are delayed for 24 to 48 hours after exposure to the food, and the severity of the symptoms usually decreases the more the food is avoided. Foods that may cause hypersensitivities include chocolate, wheat, cola, eggs, garlic, cucumbers and certain fruits (for example, oranges, strawberries, pineapples and tomatoes).

Food hypersensitivities that are relatively common in our society include lactose intolerance and gluten intolerance. Lactose is the sugar (carbohydrate) found in milk and milk products. People who are lactose intolerant lack the enzyme lactase in their system or have it in insufficient amounts. They suffer from bloating of the stomach, abdominal cramps and diarrhoea when they eat dairy products.

### Coeliac disease

**Coeliac disease** is a disease of the small intestine associated with permanent intolerance or hypersensitivity to gluten, the protein in wheat. According to Coeliac Australia, approximately one in 70 Australians are affected by coeliac disease. However, it seems that almost 80 per cent of people who have the disease remain undiagnosed.




**The effect of coeliac disease on the digestive system**

When someone who has a predisposition to coeliac disease eats foods containing gluten, damage occurs to the lining mucosa of the small intestine. Normally, food passes from the stomach through the duodenum and into the small intestine, where it is gradually



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digested and absorbed into the system. Leftover material passes into the large intestine (colon) and is eventually passed out of the body as faeces. The small intestine is a long tube lined by folds called villi. These 'villi' project into the intestine, like fingers, and increase the surface area of the intestine to around the size of a tennis court. In untreated coeliac disease, these villi are damaged by gluten, and the mucosa becomes flat and inflamed so that the area available for absorption is reduced (to the size of a card table). Because of this, unabsorbed food passes down to the large intestine and out in the bowel motions. Diarrhoea is often quite severe, and the abdomen may be bloated or distended by gas and undigested food. Poor growth and weight loss may result from the malnutrition caused by loss of food material.

The removal of gluten from the diet allows the lining of the intestine to return to normal. The diet must be gluten-free, rather than just low in gluten, and must be maintained for life. Gluten occurs in wheat, rye, oats, triticale and barley. Therefore, gluten is present in a range of commonly eaten foods such as breads, pizza, pasta, cereals, cakes, biscuits and pies. It is also used as a thickener in processed food.

### Cereal foods suitable for people with coeliac disease

The following foods are made from cereals that do not contain gluten:

- rice and rice products, including rice pasta, rice cakes, rice crackers, puffed rice, baby rice cereal, rice noodles and rice bran
- buckwheat and sorghum
- maize (corn) and related products, including polenta, maize cornflour, pure corn chips, taco shells and popcorn
- sago, tapioca and arrowroot
- lentils and chickpea flour
- soy and soy products, including soy bran and potato flour
- gluten-free mixes for bread, pastry, pizza, cakes and biscuits.

# VEGETARIAN DIETS

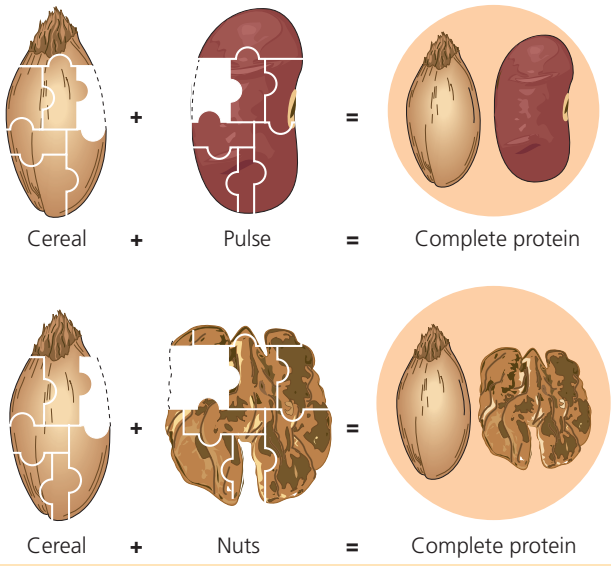
There are some people who, because of their ethical or religious beliefs, are opposed to the killing of animals for food or who, because of their views on health or the environment, follow a vegetarian diet. There are two main types of vegetarians:

1. lacto-ovo-vegetarians, who do not eat meat or fish but do eat dairy products and eggs
2. vegans, who do not eat meat or any other product that comes from animals.

## Complementing proteins

It is essential that vegetarian diets provide an adequate supply of complete protein. Soybeans and soybean products such as soy milk, tofu and textured vegetable protein are good sources of complete protein. Quinoa also contains high levels of complete protein.

While some plant foods contain protein, they are generally lower in one or more of the essential amino acids that make up complete protein. To overcome this problem, it is important to complement proteins from plant sources to make up a complete protein. This is done by combining foods from cereals such as wheat, rice and pasta with pulses such as dried beans (soy, haricot or cannellini beans), lentils, chickpeas or nuts in the one meal.




**Complementing proteins**

Because vegetarians do not eat meat, they may also struggle to include adequate amounts of iron in their diets. They need to make sure they eat lots of green, leafy vegetables, wholegrain cereals, dried fruit and legumes that contain non-haem iron. They should also eat foods high in vitamin C at the same time, because this vitamin helps the body to absorb the iron from these plant sources.


ISBN 9780170446716

Red kidney beans 2.19 mg

Baby spinach 1.75 mg

Tofu 2.9 mg

Unsalted cashew nuts 5 mg

Boiled egg 1.63 mg

Quinoa 3.85 mg

**Some of the best vegetarian sources of iron per 100 gram serve**



## Plant-based meat alternatives

Food manufacturers are now producing a wide range of meat-free products to appeal to consumers who follow a vegetarian or vegan diet, are looking to reduce their consumption of meat based on the latest health advice or who are trying to reduce the impact that a meat-based diet has on the environment. Many of these new products are produced from plants, high in complete protein and are formulated to look, smell, taste and cook just like beef or chicken. A wide variety of plant-based meat alternatives are now available to consumers, including mince, burgers, sausages, meatballs, nuggets and fillets. However, according to the Heart Foundation, many of these products are high in salt so it is crucial to read the label carefully and to choose low-salt options.


Mark Fergus Photography

**Plant-based burger patties**

## 12.3 Case study

Read the article below then answer the questions that follow.

### *Looks like chicken, feels like chicken and even tastes like chicken – but it's not*

It's the chicken that's fooling everyone – but people are embracing it.

At first glance, it's easy to think this cult 'Chicken Free Chicken' product is the 'real' deal and that's because the texture is almost, if not fully, the same as chicken.

It cooks, feels and tastes like chicken meat, but without an animal in sight – and New Zealanders can't get enough of it.

It's made from yellow peas using clean energy and is the only plant-based chicken product on the market, consistently selling out in New Zealand since it launched back in 2017.

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Shama Sukul Lee of Sunfed, who is the brainchild of the popular product, told news.com.au Aussies can now experience what all the fuss is about after the product hit Coles shelves nationally a week ago.

'It has a higher nutritional value than chicken; double the protein of chicken and triple the iron of beef – drawn directly from yellow peas, without compromising on the real taste of chicken,' Ms Lee said.

'It has the same long, meaty fibres as real chicken. It acts just like the real thing: it cooks the same as chicken, tastes the same and has exactly the same texture.'

Admittedly, the software-programmer turned entrepreneur, didn't know if the product was going to be a success – but she knew there was a gap in the market.

'We are trying to offer a solution to mainstream consumers – we're not niche vegan or vegetarian, but just acting as an option for people looking for a clean source of protein.'

'I'm seeing that people want to eat more protein while reducing meat consumption and that's the dilemma they're in.'

'Chicken production is extremely intensified and there's a lot of issues with it – and that's happening because there is no choice in the market.'

Ms Lee said she gravitated to using yellow peas because of the high yield in protein that can be extracted from such a small portion.

'They are regenerative which means you don't need much fertiliser. There is also very minimal water used and they are drought resistant.'

Using her background in engineering, Ms Lee uses purpose-built hardware her company has built over five years to make the 'hunky, tasty chunk of "meat"'.

'It has the added bonus of not having the risks associated with animal chicken meat and is free from antibiotics, hormones and animal bugs such as campylobacter and salmonella,' she said.

A recent Roy Morgan report found that 2.5 million Australians – 12.1 per cent of the population – eat meals that are all 'or almost all' vegetarian, up from 2.2 million in 2014.

'Ultimately people are just looking for a clean source of protein that makes them feel good, and that's our goal,' Ms Lee said.

Source: Shireen Khalil, *News.com.au*, 29 June 2019. 

## Respond

1. Explain why consumers are likely to believe that the new 'chicken free chicken' is conventional fresh chicken.
2. Identify the main ingredient that the 'chicken free chicken' is made from and explain why this ingredient was chosen.
3. Describe the physical and sensory properties of Sunfed 'chicken free chicken'.
4. Explain why, in terms of food safety, 'chicken free chicken' could be a more desirable product for consumers to use rather than conventional fresh chicken.
5. Draw conclusions about the impact of 'chicken free chicken' on:
   - **a** the health of consumers
   - **b** the environment
   - **c** global food security.


Mark Fergus Photography

**Unreal chick'n sliders are another plant-based chicken substitute for vegetarians**


ISBN 9780170446716

## Top tips for vegetarian eating

### Meal planning

1. Try to maintain your energy levels by frequently eating small meals and snacks during the day.
2. Eat a wide variety of foods to obtain all the nutrients needed for good health.
3. Remember to base everyday meals on cereals such as rice, pasta or bread, and to include a plant-based meat alternative like tofu, nuts or pulses (such as lentils and soybeans) so that you have a complete source of protein.
4. Have a glass of freshly squeezed orange juice for breakfast or include capsicum or tomato in a salad for lunch or dinner; the vitamin C in these foods can help to increase the amount of iron the body absorbs from each meal.
5. Make sure you still include lots of dairy products such as milk, cheese and yoghurt in your daily meals to provide sufficient supplies of calcium.

### Food preparation

1. Dried legumes such as chickpeas need to be soaked overnight and then cooked for several hours to make them soft enough to eat.
2. Canned chickpeas and beans are a great alternative to using dried beans in vegetarian recipes.
3. Overcooked lentils become mushy. Red lentils take about 20 minutes to become soft. Green or brown lentils need to be cooked for approximately one hour.
4. Tofu is a good source of protein and iron, but it has a delicate texture, so it is important to prepare and cook it with care.

## ACTIVITY 12.6

### SELECTING VEGETARIAN MEALS

Access the Sanitarium website and search for information about vegetarian diets.


1. Explain three health benefits of following a vegetarian diet.
2. Record three food and nutrition tips for people who follow a vegetarian diet. Ensure these tips are different from those listed in this chapter.
3. Examine two recipes on the Sanitarium website and identify the ingredients in each of them that would provide a source of complete protein.
4. Using the information from the website, list four ways you could increase your consumption of wholegrain cereals.
5. Create a one-day eating plan for a vegetarian that includes breakfast, lunch, dinner and snacks based on the information you have discovered on the website.

## TESTING KNOWLEDGE

41. Explain the meaning of the term 'food allergy'. List the foods most likely to cause food allergies.
42. Identify some of the physical symptoms that may occur if a person has a food allergy.
43. Explain how a food intolerance or food hypersensitivity differs from a food allergy.
44. List some of the main foods that may cause a food intolerance or food hypersensitivity.
45. What is coeliac disease, and how does it affect the human body?
46. Create a mind map to highlight some key cereal foods that are suitable for people living with coeliac disease.
47. Explain the difference between a lacto-ovo-vegetarian and a vegan.
48. Define the term 'complementing protein'.
49. Discuss how vegetarians can make sure they obtain an adequate supply of iron in their diet.
50. Explain why it is important for someone choosing to eat a meat-free diet to include foods such as orange juice or capsicum in their meals.

## THINKING SKILLS

'The youth of today need to take greater responsibility for their health and future wellbeing.'

Work in small teams to develop arguments for the affirmative and negative in response to this statement.



ISBN 9780170446716

# Design activity 12.1

## RISOTTO

### Design brief

Coeliac Australia is about to update the recipe section of its website. The organisation is looking for new and exciting recipes for risotto that are suitable for people who have coeliac disease.

1 Write your own design brief for a risotto dish based on a classic risotto recipe. Develop your own specifications based on the five Ws:
   - who – for whom will the risotto be suitable?
   - what – the risotto must reflect the latest trends in ingredients and flavours
   - when – in what season will you serve the risotto?
   - where – will the risotto be served as a home-style meal or as a cafe meal?
   - why – why will the risotto be useful to include on the Coeliac Australia website?
2 Format sentences or statements based on each of the above specifications into a paragraph that will become your design brief.
3 Based on the specifications in your design brief, develop four to five criteria by which you can judge the success of your finished product.

### Investigating

1 Prepare a recipe for risotto such as the Mushroom and Pea Risotto (page 289) to develop an understanding of the ingredients and processes involved in preparing a risotto.
2 Research a variety of food magazines and websites to identify current trends in ingredients and flavours. Make a list of the most popular flavouring ingredients.
3 Look at a recipe website or the SunRice website to answer the following questions.
   - **a** What information is provided about the different rice varieties?
   - **b** What are the main nutritional benefits of rice?
   - **c** List the main uses of arborio rice.
   - **d** List four important tips for cooking rice.
   - **e** List the important tips for cooking with arborio rice.
   - **f** Risotto is a traditional Italian dish. List three other rice dishes that are traditional in other cultures' cuisines.
   - **g** Examine recipes for risotto on the website/s and note their combination of flavour and textural ingredients. Identify the order in which the ingredients are added to the risotto.

Weblink
SunRice

### Generating

1 Develop two design options based on the specifications in your design brief. Use the recipe map in on page 287 as a guide. Select the flavouring and complementary ingredients to develop your own design.
2 Use a decision table (see example on page 164) to help you select your preferred option.

### Planning and managing

1 Prepare a food order.
2 Before producing your risotto, write up a production plan, noting any safe work practices to be followed, and identify the major processes to be used.

### Producing

1 Prepare the product.
2 Note any modifications or changes you made during the production of the recipe.

### Evaluating

1 Evaluate the success of your risotto using the previously established criteria.
2 Was the flavour of the product appetising? In your opinion, does the recipe require any further modification to enhance the product's flavour? Would you add or omit some ingredients if you were to make this product again?
3 What aspect of the production did you find most challenging? Outline how you managed this challenge.
4 Comment on your overall management of time for this task – discuss your designing and planning as well as the production of the meal.
5 Classify all the ingredients of your risotto on a diagram of the *Australian Guide to Healthy Eating*. Comment on how well it meets Dietary Guideline 2.


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**Recipe map for risotto**

# Design activity 12.2

## DINNERMAGIC

DinnerMagic is an online food ordering company that delivers boxed meal-kits to the consumer's doorstep. Each food box contains all the fresh ingredients and a recipe to prepare the chosen meal. The only ingredients the consumer may need to provide are pantry staples such as olive oil, eggs or salt and pepper.

## Design brief

You have been asked to design a healthy main course meal and recipe card that can be included in the new DinnerMagic range of spring recipes. The new recipes must support the guidelines of the *Australian Guide to Healthy Eating*, use seasonal ingredients and be suitable for a weeknight dinner. All DinnerMagic recipes must be able to be prepared in 30 minutes and serve two people.

The recipe card must include:

- a list of all the pre-measured ingredients provided in the meal-kit
- a list of any additional pantry items required
- a list of all the utensils needed to prepare the recipe
- no more than six, easy to follow steps in the method
- photographs of each step in the method
- a photograph of the finished meal
- a brief description of the meal.

Use the specifications – that is, the constraints and considerations in the brief – to develop five evaluation criteria questions that will allow you to judge the success of your boxed meal-kit.

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## Investigating

1 Use the internet to research the types of meals suitable to include in a boxed meal-kit.

2 With other members of your class, create a short survey to give to teachers at your school to determine the popularity of home-delivered boxed meal-kits. Focus your questions on:
   - the number of days each week they use home-delivered boxed meal-kits
   - preferred recipes.

3 Based on the results of the survey, develop a list of the most popular meal-kit recipes.

## Generating

1 Use a range of recipe books, magazines or a website such as taste.com.au to develop a list of four recipes that could be included in the new range of DinnerMagic spring recipes.

2 Complete a decision table similar to the one below.

| DinnerMagic home-delivered boxed meal-kit | | |
|---|---|---|
| **Recipe name** | **Advantages** | **Disadvantages** |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |

- Decision made (preferred meal):
- Justify your decision – use the information in your advantages and disadvantages in your discussion.

**Decision table**

## Planning and managing

1 Prepare a food order for your preferred recipe.

2 Before producing your meal-kit recipe, write up a production plan, noting any safe work practices to be followed, and identify the major processes to be used.

## Producing

1 Prepare the recipe for the meal-kit you have designed. Remember to photograph each of the six key steps in the method.

2 Photograph the completed dish to add to your recipe leaflet.

3 Note any modifications or changes you made during the production of the recipe.

4 Prepare your recipe card, including photographs of each step in the method and the photograph of the finished dish.

## Evaluating

1 Evaluate the success of your meal-kit and recipe using the previously established criteria.

2 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your meal-kit.

3 Give the recipe card to a friend and ask them to read through the recipe and method and, if possible, cook the recipe at home. Ask them to comment on whether they find it easy to follow and a helpful guide to the preparation and cooking of the recipe. Considering this feedback from your friend, what improvements could be made to the recipe leaflet?

4 Share your completed meal with a friend and ask them to write a review of the meal-kit that could be posted on the company website.

5 Classify all the ingredients of your meal-kit on a diagram of the *Australian Guide to Healthy Eating*. Comment on how well it meets Dietary Guideline 2.

Shutterstock.com/Studio Aubergine

**A delicious mid-week family meal**


ISBN 9780170446716

# MUSHROOM AND PEA RISOTTO

15 grams butter
2 spring onions, diced
¼ red capsicum, diced
⅓ cup arborio rice
1½ cups chicken stock
4 mushrooms, diced
⅓ cup peas
black pepper
2 tablespoons parmesan cheese

SERVES ONE

## METHOD

1. Sauté the spring onion and capsicum in butter until soft and lightly coloured.
2. Add the rice and cook for a further minute or until the rice becomes opaque.
3. Bring the chicken stock to the boil, then reduce to a simmer. Add ½ cup of the hot stock to the rice.
4. Cover with a tight-fitting lid and simmer very gently until the rice has absorbed the stock.
5. Add a further ½ cup of chicken stock and continue to simmer gently until the rice has absorbed the stock.
6. Add the remaining stock and stir gently to loosen the rice from the bottom of the saucepan. Add the diced mushrooms and peas. Season with a little black pepper. Cover with the lid.
7. Continue to very gently simmer until all the stock has been absorbed and the rice is plump and creamy. The risotto should take approximately 20–25 minutes to cook.
8. Add parmesan cheese and serve immediately.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Mushroom and Pea Risotto.
2. Why are the onion and capsicum sautéed before the rice is added?
3. Explain why it is important to barely simmer the risotto during the cooking process, rather than boil it quickly.
4. List the important health and safety steps to follow when preparing a risotto.
5. Classify the ingredients for the Mushroom and Pea Risotto on a diagram of the *Australian Guide to Healthy Eating*. Explain how well it meets the recommendations of this food selection model.

Mark Fergus Photography



ISBN 9780170446716

# MARGHERITA PIZZA WITH A CAULIFLOWER CRUST

12

½ small cauliflower (approximately 300 grams), cut into florets

⅔ cup gluten-free plain flour

⅓ cup parmesan, finely grated

1 egg, lightly beaten

salt and pepper

2 tablespoons Napoli sauce (see page 115)

½ cup mozzarella, grated

6 basil leaves

MAKES 2 × 16-CENTIMETRE PIZZAS

**This recipe for pizza is a great alternative to traditional pizza for someone who has coeliac disease. Instead of using wheat flour to make the pizza base, it uses finely chopped cauliflower and gluten-free flour or ground almonds to give structure to the pizza base.**

## METHOD

1. Preheat the oven to 200°C. Draw a 16-centimetre circle onto two sheets of baking paper. Turn the paper upside down and place each sheet on a baking tray.
2. Place the cauliflower in a food processor and process until it resembles couscous. You will need approximately two cups of 'cauliflower couscous'.
3. Combine the cauliflower in a bowl with the gluten-free plain flour, parmesan, cheese and egg. Season to taste with salt and pepper.
4. Place half the cauliflower mixture onto each sheet of paper and shape each into a 5-millimetre-thick pizza base.
5. Bake the pizza bases for 20 minutes or until dark, golden and firm.
6. Spread two tablespoons of Napoli sauce over each pizza base. Top with the mozzarella cheese.
7. Bake for a further 5 minutes or until the cheese is browned and melted.
8. Take care when transferring the pizza to a serving plate; the base will be more delicate than that of a traditional pizza.

**Note: you can substitute the gluten-free plain flour with ⅔ cup of ground almonds to give a slightly nutty flavour to the dough.**

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your pizza.
2. Explain why this recipe would be ideal to serve to someone who suffers from coeliac disease.
3. Describe some other ingredients that would make delicious toppings for the cauliflower base.
4. What aspect of this production did you find most challenging? Explain why.
5. Plot the ingredients for the recipe on a diagram of the *Australian Guide to Healthy Eating*. Comment on how well it meets the recommendations of this food selection model.

Mark Fergus Photography



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# BROCCOLI, CHICKPEA AND TOMATO SALAD

10 almonds

½ cup canned chickpeas

olive oil spray

200 grams broccoli, cut into small florets

1 tablespoon tahini

½ lemon, juiced

1 teaspoon olive oil

1 tablespoon coriander, finely chopped

1 tablespoon parsley, finely chopped

½ cup cherry tomatoes, halved

SERVES TWO

## METHOD

1. Preheat the oven to 180°C. Line a baking tray with baking paper.
2. Place the almonds on the baking tray and bake in the preheated oven for 6 minutes.
3. Remove from the oven tray and allow to cool. Chop roughly.
4. Rinse and drain the chickpeas. Pat dry thoroughly with paper towel.
5. Place on the lined baking tray. Spray lightly with the olive oil spray.
6. Roast in the preheated oven for 10 minutes or until crisp.
7. Bring a medium saucepan of water to the boil. Add the broccoli florets and cook for 2 minutes. Drain and refresh in cold water. Drain again.
8. Place the tahini, lemon juice, olive oil, coriander and parsley in a small food processor and blend until combined. Add 1 tablespoon warm water and process again until a smooth and creamy consistency is achieved.
9. Place the blanched broccoli, chickpeas and cherry tomatoes in a serving bowl and spoon over the tahini dressing. Season with salt and pepper and scatter with the chopped almonds.

## EVALUATION

1. Compare the sensory properties of the unroasted and roasted chickpeas.
2. Explain why it is important to refresh the broccoli florets in cold water.
3. What is tahini and why is it included in the lean meat and poultry section of the *Australian Guide to Healthy Eating*?
4. Why is it advised to 'dress' the salad and add the toasted almonds just before serving?
5. Classify the ingredients for the salad on a diagram of the *Australian Guide to Healthy Eating* and explain how well you think it meets the guidelines of this food selection model. Suggest a protein-based recipe you could serve to accompany the salad to make a healthy lunch or evening meal.

Mark Fergus Photography

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# CHICKEN LAKSA

1 tablespoon oil
2 tablespoons laksa paste
2 cups chicken stock
1 tablespoon fish sauce
200 millilitres low-fat coconut milk
1 kaffir lime leaf
100g hokkien noodles
½ chicken fillet, finely sliced
6 green beans, trimmed and chopped
4 baby corn, cut in half lengthwise
¼ red capsicum, cut into strips
½ lime
½ cup bean shoots
2 tablespoons peanuts, chopped (optional)
1 tablespoon roughly chopped coriander leaves

SERVES TWO

## METHOD

1. Heat oil in a saucepan and add laksa paste. Sauté for 2 minutes or until fragrant.
2. Add chicken stock, coconut milk, fish sauce and kaffir lime leaf and bring to the boil.
3. Add the noodles and simmer for 4 minutes, then the sliced chicken and simmer for a further 3 minutes.
4. Add the corn, green beans and capsicum and simmer for another 4 minutes.
5. Remove the kaffir lime leaf and serve the laksa in deep bowls. Add a squeeze of lime juice to each bowl and top with bean shoots, chopped peanuts and coriander.

## EVALUATION

1. How does sautéing the laksa paste in oil in step 1 of the recipe add to the sensory properties of the finished dish?
2. Explain the difference between the two cooking methods, boiling and simmering, used in this recipe.
3. Discuss two safety methods you observed when cooking the laksa on the stove top.
4. What are hokkien noodles? Explain how they add to the nutritional and sensory properties of the laksa.
5. Classify the ingredients for the Chicken Laksa on a diagram of the *Australian Guide to Healthy Eating* and explain how well you think this recipe meets the guidelines of this food selection model.

Mark Fergus Photography



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# GLUTEN-FREE PATTY CAKES

30 grams butter
½ cup gluten-free self-raising flour
¼ cup caster sugar
1 egg
1 tablespoon milk
½ teaspoon vanilla essence

MAKES 6 SMALL PATTY CAKES

## EVALUATION

1 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your Gluten-Free Patty Cakes.
2 Describe one safety rule you observed when using the oven to bake the patty cakes.
3 What would be the effect of cooking the Gluten-Free Patty Cakes at 230°C rather than 200°C?
4 How can you test if the Gluten-Free Patty Cakes are cooked?
5 Identify the ingredients in this recipe that are classified in the 'only sometimes and in small amounts' section of the *Australian Guide to Healthy Eating*. Explain why these ingredients should not be included as a regular part of a daily diet.

## METHOD

1 Preheat oven to 200°C. Grease a patty cake tray with butter or line with paper cups.
2 Melt the butter, either in the microwave for 30 seconds on high or over a gentle heat without browning.
3 Sift all the dry ingredients into a bowl and add the egg, milk and vanilla essence.
4 Stir in the melted butter.
5 Mix well and pour into prepared patty tray.
6 Bake in the preheated oven for 12 minutes. Do not overbake because this can cause the cakes to become dry.

## VARIATIONS

**You can make the gluten-free patty cakes into butterfly cakes for a perfect birthday party or afternoon tea treat. Alternately, you could decorate them with piped swirls of butter icing.**

To make butterfly cakes:

1 Once the cakes are cooled, use a sharp knife to cut a circular cone shape from the centre of each cake. Slice the cone into half. These will become the 'wings' of the butterfly.
2 Place a small teaspoon of raspberry or strawberry jam in the hole in the centre of each cake.
3 Spoon a teaspoon of thickly whipped cream on top of the jam. Gently press the cut wings into the cream to form the butterfly.
4 Dust with icing sugar to serve.

Mark Fergus Photography



ISBN 9780170446716

# INDIGENOUS FOODS

# 13

## KEY KNOWLEDGE

- Indigenous Australian farmers
  - Firestick farming
  - Aquaculture in Indigenous communities
  - Sources of food
  - Bush foods from plant sources
  - Bush foods from animal sources
- The diet of Aboriginal and Torres Strait Islander peoples
- The *Aboriginal and Torres Strait Islander Guide to Healthy Eating*
- Native foods in today's menus
  - Kangaroo meat
- Cooking with bush flavours
  - Aniseed myrtle
  - Bush tomato (or desert raisin/akudjura)
  - Finger lime
  - Lemon myrtle
  - Native pepper (or mountain pepper)
  - Wattleseed
  - Macadamia nuts

## KEY TERMS

**firestick farming** the practice undertaken by Indigenous Australians of using fire to burn vegetation to make animal hunting easier and to reorganise the composition of the plants and animals in the area

**wild bush foods** the huge variety of edible native Australian herbs, spices, mushrooms, fruits, flowers, vegetables, animals, birds, reptiles and insects

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food and fibre production
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking

### CROSS-CURRICULUM PRIORITIES

- Aboriginal and Torres Strait Islander histories and cultures
- Sustainability





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# INDIGENOUS AUSTRALIAN FARMERS

For many years, historians believed that, before European settlement, Indigenous Australians or Aboriginal and Torres Strait Islander peoples were nomads who relied on hunting and gathering to collect their food supplies. However, this view is now disputed.

In his book, *Dark Emu* (2014, Magabala Books), author Bruce Pascoe argues that Indigenous Australians were not merely hunter-gatherers, but practised complex land management and sustainable agriculture and aquaculture. For over 50 000 years, Australia's Indigenous people cared for their land using traditional methods that were sustainable and supplied them with all the food they needed. They considered the growth and regeneration cycles of plants, animals and birds, allowing them to sustain their food supply for thousands of years. Pascoe's research showed evidence that Aboriginal people used sophisticated systems including building dams and wells, planting, irrigating and harvesting crops. They also used sheds and secure vessels to store any surplus supplies for future use.

Evidence also shows that Indigenous Australians used hoe-like implements to break up and loosen the soil and they bundled the cut grasses in heaps or stooks. Pascoe states that this evidence reveals that far from being hunter-gathers, Indigenous Australians were 'farmers without fences'.

Evidence shows that Indigenous farmers grew various crops such as yams, native millet, macadamia nuts, fruits and berries. When yams were dug, a new 'crown' was always planted in the same place to ensure that the new crop would enable the food supply to be sustained. They also reared animals such as dingoes, possums and emus until they were strong enough to survive on their own. They moved caterpillars to new breeding areas where there was a better food supply and carried fish stock across the country, to new lakes and streams where they could thrive.

## Firestick farming

Fire was another tool used by Indigenous Australians to help them secure and sustain their food supply. Fire was used to open clearings of land so they could cultivate crops such as native millet, forming a patchwork of burnt and unburnt areas. Fire or **firestick farming** helped them to bring on new green grass that provided food for grazing animals such as kangaroos and lured them closer for hunting. Indigenous Australians also understood that many native plants require fire to stimulate flowering or seed germination. Most importantly, Indigenous Australians recognised that managing fire and making it work for them prevented uncontrolled fires that would wipe out their food supplies.

Alamy Stock Photo/Cavan

**Indigenous land management includes using fire to regenerate flora**

## Aquaculture in Indigenous communities

Aquaculture was an important part of Indigenous farm management, particularly in the formation of fish and eel traps. At Budj Bim near Lake Condah in western Victoria, evidence still exists of stone fish or eel traps and the wooden domed houses where Gunditjmara people once gathered. This area is significant because it contains evidence of early aquaculture and remains of a large eel and fish farming system built about 6600 years ago.



ISBN 9780170446716


**Location of the Budj Bim ancient Aboriginal aquaculture system**

The Lake Condah area experienced volcanic activity when Budj Bim (previously known as Mt Eccles) erupted. The resulting lava flow changed the course of creeks and rivers and created a rocky landscape of basalt rocks, forming a network of pools, canals and channels in the surrounding area. The Gunditjmara people used engineering methods to create banks, form walls and channel the water flow into the pools and lake. The eels were then trapped in these natural depressions or holding ponds, which were formed by the funnel-shaped rock structures. Fish traps made of woven sticks were placed over the pools and the eels were caught in hand-woven nets.

The eels provided a valuable and reliable source of food for the people in this area and oil for warmth. Indigenous people smoked eels in the tree hollows and traded the smoked eels with nearby clans.

AAP Image/Budj Bim

**Budj Bim eel traps**

## 13.1 Case study

Read the article below, and the previous information about Budj Bim, then answer the questions that follow.

### *Ancient Indigenous aquaculture site Budj Bim added to UNESCO World Heritage list*

After more than a decade of hard work and lobbying, the Budj Bim Cultural Landscape near Portland was accepted onto the list at a meeting in Baku, Azerbaijan on the weekend.

The site was created about 6600 years ago by the Gunditjmara people, who used stones to build an elaborate series of channels and pools to harvest eels from Lake Condah.

There is also evidence at the site of stone dwellings, and trees that may have been used to smoke or preserve the eels that were caught.

Not only does Budj Bim bust the myth that all Indigenous people were nomadic and not agriculturally inclined, it is also considered one of the oldest aquaculture sites in the world.

Denis Rose, project manager for Gunditj Mirring Traditional Owners Aboriginal Corporation, said it had been a long journey to UNESCO recognition, but a valuable one.


ISBN 9780170446716

'We first talked about this in 2002,' Mr Rose said.

'It's a very exhaustive process.

'We based it on a lot of evidence, and now that it's been decided, I'm extremely happy.'

He said the listing had three main benefits – recognition of Gunditjmara achievements on a global scale, increased protection for the site, and the potential tourism boost.

'There are a number of reports that say that once a place is declared as a world heritage site, tourism increases dramatically,' Mr Rose said.

The State Government has announced $8 million for a visitor centre and major works at the site to ready it for an expected visitor influx.

Glenelg Shire Mayor Anita Rank said the whole region would benefit from the UNESCO announcement.

Elevation to the World Heritage List means the site is recognised as having 'outstanding universal value'.

Mr Rose said he was delighted to think something the Indigenous people of south-west Victoria built now appeared on the same list as the pyramids, Stonehenge and the Acropolis.

'When I take people out to country I tell them this aquaculture system was first built 6600 years ago – there's not many things on the planet that still exist today that are older than that.'

Source: Matt Neal, ABC Victoria, 6 July 2019 (adapted and reproduced with permission of the Australian Broadcasting Commission – Library Sales, Matt Neal © 2019 ABC)

### Respond

1. Describe the way the Gunditjmara people were able to engineer the landscape to develop a sustainable aquaculture system at Budj Bim.
2. What techniques did the Gunditjmara people use to trap eels at Budj Bim?
3. Develop a logical argument to explain how this form of aquaculture management challenges the perception that Aboriginal people were only hunter-gatherers.
4. Explain the importance to the Gunditjmara people and to the local community of gaining world heritage listing for Budj Bim.

## Sources of food

The Australian environment supplies a wide range of foods, providing a nutritious diet for Aboriginal and Torres Strait Islander peoples. These foods are known as **wild bush foods**, a term that refers to the huge variety of edible native Australian herbs, spices, mushrooms, fruits, flowers, vegetables, animals, birds, reptiles and insects.

Every Aboriginal and Torres Strait Islander person was vitally involved in the business of food and required the ability to plan, an eye for detail and well-developed bush skills. Women learnt the locations of every yam patch and fruit tree in their territory and the times at which the trees bore fruit. Bees were followed to their hives and small animals were stalked. Men learnt from their elders to become clever hinterland hunters and to trap birds; they learnt the art of camouflage and were able to swim under water.

Detailed knowledge of the environment and careful planning were essential to ensure the

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sustainability of the environment. Different species of animals and plants were found in different climate zones and rainfall areas. Native flora and fauna were used as food in every area, and food collection, preparation, cooking and distribution were major daily activities. Generally, Aboriginal and Torres Strait Islander peoples collected sufficient foods for their needs at the time. They were always concerned to ensure that the animals and plants in an area could regenerate and replenish themselves naturally, and so continue to provide a wide range of foods into the future.

Aboriginal and Torres Strait Islander peoples divided their food into categories according to the way it was obtained:

| Method of obtaining food | Food type |
|---|---|
| Spearing | Animal foods – kangaroo; fish |
| Digging | Plant foods – grains; roots; edible grubs |
| Collecting in a dilly bag | • Plant foods – fruit; vegetables; seeds; kernels<br>• Sweet foods – nectar; honey ants<br>• Eggs |

## Bush foods from plant sources

| Fruits | Vegetables | Seeds | Roots | Nuts | Flowers |
|---|---|---|---|---|---|
| Bush tomato | Bulrushes | Wattle (acacia) | Yam | Bunya | Native fuchsia |
| Lilly pilly | Pigweed | Wild rice | Bush potato | Macadamia | Honey grevillea |
| Native passionfruit | Waterlily | Millet and grass seeds | Waterlily root | Kurrajong | Flowering gum |
| Bush banana | Mangrove | | | Moreton Bay chestnut | |
| Illawarra plum | | | | | |
| Quandong | | | | | |
| Nonda plums | | | | | |

**Quandong**

**Moreton Bay chestnut**

**Desert yam**

**Bush tomato**

**Wattleseeds**

**Lilly pilly**

**Bush banana**

**Bunya nuts**

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## Bush foods from animal sources

| Mammals | Birds | Insects | Reptiles and amphibians | Seafood |
|---|---|---|---|---|
| Kangaroo | Duck | Ant | Crocodile | Barramundi |
| Wallaby | Emu | Locust | Turtle | Crab |
| Koala | Pigeon | Witchetty grub | Snake | Eel |
| Wombat | Cockatoo | Honey bee | Goanna | Freshwater bream |
| Bandicoot | Parrot | Moth | Frog | Clam, pippie |
| Water rat | Mallee fowl | | | Oyster |
| | | | | Yabby |

**Witchetty grub**

**Water rat**

**Bandicoot**

**Wombat**

**Barramundi**

**Goanna**

**Mallee fowl**

**Crocodile**

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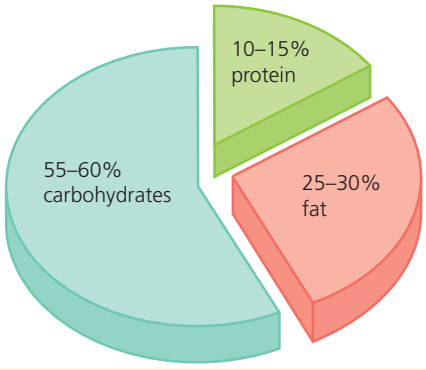
# THE DIET OF ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLES

A traditional Indigenous Australian diet consists mainly of plant foods that have had little or no processing, and which therefore supply high levels of fibre. These plants and fruits are very rich in nutrients, particularly vitamins and minerals. The seeds of many native grasses, in particular, often contain much higher levels of protein and fat than cultivated cereal crops. In a traditional Indigenous Australian diet, animal food, especially kangaroo and freshwater bream, contributed approximately 50 per cent of the total energy intake.




**Sources of energy in the Aboriginal and Torres Strait Islander peoples' diet**

ISBN 9780170446716

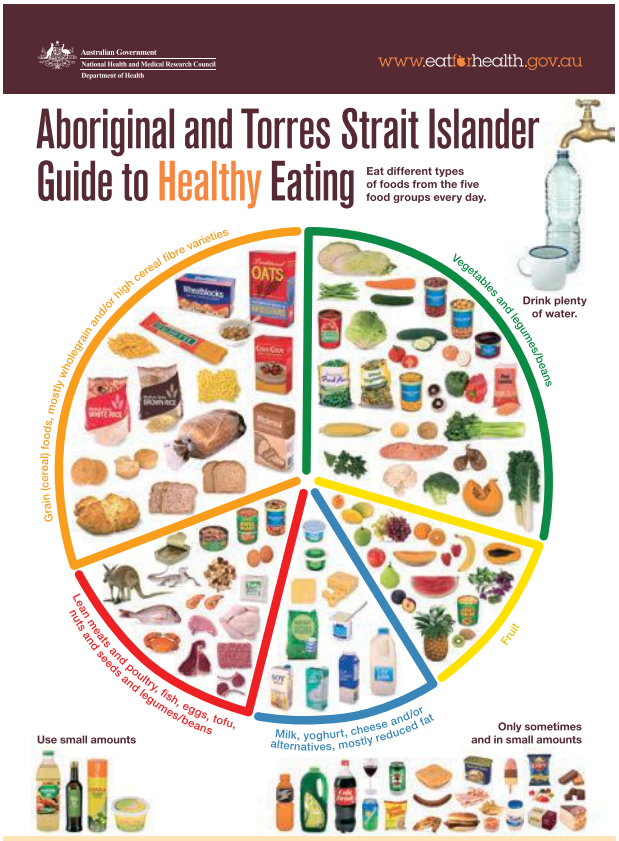
European settlement had a major impact on the diet and health of Aboriginal and Torres Strait Islander peoples and disrupted their food supply. Many Indigenous Australian people went to work on farms or to live in missions where the food supplied was highly refined and processed. Over the years, this new diet, based on white flour, white sugar, salt and tea, replaced traditional foods. As a result, many Aboriginal and Torres Strait Islander peoples suffered serious health problems; malnutrition was common.

The diet of Aboriginal and Torres Strait Islander peoples underwent a rapid change, from one containing high-protein, low saturated fat and fibre-rich foods to one dominated by refined carbohydrates and saturated fats. Their traditional lifestyle required high levels of physical activity to harvest and collect food, but this was largely replaced by a sedentary lifestyle often featuring little exercise. These changes in diet and lifestyle have led to high levels of obesity in Indigenous communities, resulting in poorer health than other Australians and lower life expectancy.

Indigenous Australians are more likely than non-Indigenous Australians to develop cardiovascular disease, type 2 diabetes and chronic kidney disease.

## THE *ABORIGINAL AND TORRES STRAIT ISLANDER GUIDE TO HEALTHY EATING*

The *Aboriginal and Torres Strait Islander Guide to Healthy Eating* provides information for Aboriginal and Torres Strait Islander peoples on the amount and types of foods that Indigenous Australians should be eating for better health and wellbeing. The guide is intended for use by health professionals and educators throughout Australia for use in a range of Aboriginal and Torres Strait Islander communities.




**The *Aboriginal and Torres Strait Islander Guide to Healthy Eating***

Weblink

*Aboriginal and Torres Strait Islander Guide to Healthy Eating*



## ACTIVITY 13.1

### COMPARING FOOD GUIDES

1. Describe the similarities between the *Australian Guide to Healthy Eating* on page 66 and the *Aboriginal and Torres Strait Islander Guide to Healthy Eating*. Consider the shape of the guides, food groupings and the proportion of each group.
2. Compare the main differences between the foods contained in the vegetables section of both guides. Hypothesise why there are differences in the types of vegetables included in these food selection models.
3. Analyse the differences between the meat sections of each guide.
4. Use a Venn diagram to compare the similarities and differences in the fruit sections of both guides.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5 Draw conclusions about why tinned, dried and long-life foods are included in most sections of the *Aboriginal and Torres Strait Islander Guide to Healthy Eating*.

6 Develop a logical argument to explain why it was necessary for the Australian Government to develop a separate guide to healthy eating for Aboriginal and Torres Strait Islander peoples.

## TESTING KNOWLEDGE

1 Create a mind map to demonstrate the complex agricultural and land management systems that were widely used by Australia's Indigenous peoples.

2 Describe how firestick farming was a valuable tool used by Indigenous Australians.

3 What do the remains of Indigenous aquaculture at Budj Bim illustrate about Indigenous farm management systems?

4 Make a list of the foods traditionally supplied by Aboriginal and Torres Strait Islander women and those supplied by Aboriginal and Torres Strait Islander men.

5 Discuss the impact that weather and the seasons had on the traditional diet of Aboriginal and Torres Strait Islander peoples. Explain why knowledge of the environment was essential for Aboriginal and Torres Strait Islander peoples in their search for food.

6 List the nutritional advantages of the traditional Indigenous diet.

7 What percentage of animal foods contributed to the traditional diet of Aboriginal and Torres Strait Islander peoples?

8 Describe how European settlement influenced the diet and health of Aboriginal and Torres Strait Islander peoples.

9 Explain the impact that a westernised diet has had on the health of Aboriginal and Torres Strait Islander peoples.

10 Describe the factors that have led to the increasing incidence of type 2 diabetes among Aboriginal and Torres Strait Islander peoples.

# NATIVE FOODS IN TODAY'S MENUS

Until recently, it has been difficult to find native Australian ingredients in our fresh food markets, on the supermarket shelves or on restaurant menus. However, they are now becoming more mainstream and many restaurants across Australia are experimenting with Indigenous ingredients and showcasing their unique flavours. In the early years the wild bush foods supplied to restaurants and food manufacturers were all gathered in the wild, but it soon became obvious that if the industry was to be more than a novelty, wild harvesting was unsustainable and the crops would have to be farmed. In recent years companies run by Indigenous Australians have used traditional knowledge, handed down from generation to generation, to produce sustainable, high quality, native produce such as salt bush, finger limes, warrigal greens and lemon myrtle for the consumer market and restaurant trade.


Mark Fergus Photography

**Connoisseur bush honey and nougat ice-cream includes bush honey and cinnamon myrtle sauce**

## Kangaroo meat

The kangaroo is a marsupial that is native to Australia and was one of the principal animals hunted and eaten by Indigenous Australians and the early European settlers. As more land was opened for grazing, beef and lamb replaced kangaroo meat. Wild meats such as kangaroo are lower in fat than the meat of domesticated animals. Wild animals must scavenge for food and move around the countryside in search of food. Their energy intake and expenditure are closely balanced, meaning fewer fat stores are accumulated.



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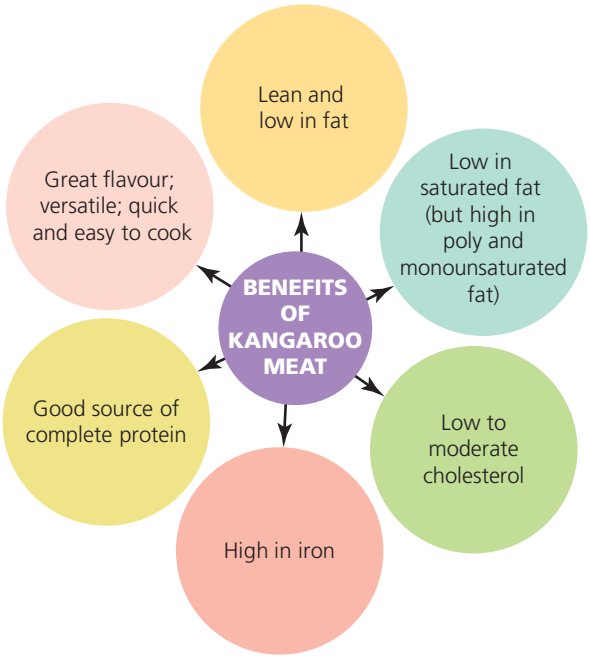
Kangaroo meat is cooked like any other game meat – that is, seared on a high heat to seal in meat juices, cooked lightly, and then rested to tenderise the meat. It is important not to overcook kangaroo meat as it is lean (low in fat) and quickly dries out and becomes tough. Kangaroo meat can be purchased as rump steak, loin fillets or it may be diced, minced or made into sausages.




Alamy Stock Photo/Dorling Kindersley ltd

**Kangaroo fillet, wilted greens and jus**

## ACTIVITY 13.2

## ANALYSING KANGAROO MEAT

### Kangaroo meat compared with other meats

Weblink

Kangaroo Industries Association of Australia

Examine the table on the opposite page and visit the Kangaroo Industries Association of Australia website.

Find information about different cuts of kangaroo meat and kangaroo recipes, and then answer the following questions.

1. Why does kangaroo meat have one of the lowest fat contents of any meat?
2. Compared with beef, what are the nutritional advantages of kangaroo meat?
3. Compared with chicken, what are the nutritional advantages of kangaroo meat?
4. With other members of your class, brainstorm answers to the following questions.
   - a. Do you believe that kangaroo meat is a viable alternative to other meats? Remember to think about cost, flavour, time of cooking, nutrient value, ethics and environment.
   - b. Why do you think kangaroo meat is not commonly seen on many menus?
   - c. Why are some consumers reluctant to eat kangaroo meat?
   - d. What strategies can you suggest to increase consumer awareness of the benefits of eating kangaroo meat?
5. Identify a cut of kangaroo meat that would be suitable to use in a stir-fry recipe.
6. What is the recommended cooking time for stir-fried kangaroo?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| | Protein (%) | Fat (%) | Iron (mg/100 g) | Cholesterol (mg/100 g) | Kilojoules (per 100 g) |
|---|---|---|---|---|---|
| Kangaroo | 24 | 1–3 | 2.6 | 56 | 500 |
| Lean lamb | 22 | 2–7 | 1.8 | 66 | 530 |
| Lean beef | 22 | 2–5 | 3.5 | 67 | 500 |
| Lean pork | 23 | 1–3 | 1.0 | 50 | 440 |
| Lean chicken breast | 23 | 2 | 0.6 | 50 | 470 |
| Rabbit | 22 | 2–4 | 1.0 | 70 | 520 |



# COOKING WITH BUSH FLAVOURS

## Aniseed myrtle

Ground aniseed myrtle has an aniseed/pernod flavour. It can be used to flavour cakes, muffins, biscuits and desserts, particularly ice-cream.

## Bush tomato (or desert raisin/akudjura)

One popular flavour is the fruit (about the size of a blueberry) of the small shrub known as the bush tomato. The fruit must be allowed to ripen on the bush; otherwise, it will be toxic. This fruit is a good source of carbohydrates and vitamin C. It is best used after being ground to a powder in a food processor. The ground bush tomato is also called akudjura and has an intense flavour.

The bush tomato can be:

- used to enhance the flavour of savoury dishes and give them a spicy, piquant taste
- added to soups, casseroles, pasta sauces, chutneys, relishes, pizzas, risotto or sauces – in fact, any dish that traditionally uses cultivated tomatoes.

## Finger lime

Finger limes, also known as citrus caviar, are an exquisite fruit grown in the rainforests of Queensland and New South Wales. Varieties include different skin and flesh colours, and each contains lime or pink 'pearl like' crystals that explode in the mouth, giving a lime taste sensation.

Finger limes can be:

- added to salads
- used with seafood
- used in desserts
- added to cocktails.

Shutterstock.com/Tommy Atthi

**Finger limes**

## Lemon myrtle

Lemon myrtle is derived from the aromatic leaf of a large tree found in Queensland. The leaf contains essential oils, which give it a wonderful perfume and spicy lemon flavours.

Alamy Stock Photo/Stephanie Jackson - Aust wildflower collection

**Lemon myrtle**

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Lemon myrtle can be:

- infused in hot liquids to release the oils and used in recipes in which dried herbs are not suitable
- used as a fresh herb – for example, draped over a fish or chicken fillets before baking, or as a substitute for kaffir lime leaves
- dried, crumbled and sprinkled over meats or fish before baking
- used to flavour tea, vinegar, oil dressing or a dessert
- added to breads, muffins, biscuits, sauces and mayonnaise
- used as an oil to flavour cream or yoghurt.

## Native pepper (or mountain pepper)

The large, aromatic leaves of the native pepper tree have a hot flavour, between a pepper and a chilli.

The native pepper can be:

- dried and then crumbled or ground into curries, dishes containing chilli, breads, pastries, or chutneys for use on meat or fish
- used as an infusion to make a refreshing herbal tea, vinegar, oil or dressing.

Alamy Stock Photo/blickwinkel

**Native pepper**

## Wattleseed

Wattleseed is one of the most popular and best known of all Indigenous Australian foods. The small, black seeds of the wattle are ground after dry roasting to produce grounds that contain coffee, chocolate and hazelnut flavours that can be used in a variety of ways. A small quantity of wattleseed is brought to the boil to soften the grounds. The liquid is then drained off and used as flavouring. The remaining solids (grounds) can also be used.

Wattleseed can be used:

- as a substitute for coffee to make 'wattlechinos' (wattle cappuccino); wattleseed is caffeine-free – use one teaspoon of ground seeds per cup



**Wattleseed**

- to flavour syrup to be poured over pancakes and puddings
- to flavour cream, ice-cream, mousses and meringues
- in biscuits and cakes (by using the grounds)
- in bread, muffins, pastry, pancakes and pasta; always add the wattleseed towards the end of the mixing, because it affects the gluten and toughens the flour.

## Macadamia nuts

The macadamia nut is an ingredient that is considered to be typically Australian. It is native to south-east Queensland and northern New South Wales, where it grows in the rainforests, close to streams. In 1881, Americans took the seeds of this nut to Hawaii, where it was originally used as an ornamental tree but was later grown in plantations.

The nut has a high oil content and is consequently high in fat and energy. The nuts can be purchased raw or oven-roasted. The raw nuts are best used in cakes, biscuits and puddings; the oven-roasted nuts are best in salads, ice-cream and mousses. Macadamia nuts can be used in recipes such as tarts, cakes and biscuits to replace walnuts, almonds and hazelnuts, or can be combined with breadcrumbs to cover fish or chicken. Macadamia nut oil can be extracted from the nuts; it can be used in place of other oils in salad dressings, for frying, or in cakes to replace butter.

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**Macadamia nuts**



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## ACTIVITY 13.3

### UNDERSTANDING BUSH FLAVOURS: BUSH CHIPS

#### Aim

To understand the sensory properties of bush flavourings.

#### Equipment

- 4 different ground bush flavourings such as aniseed myrtle, akudjura (ground bush tomato), lemon myrtle or native pepper
- 2 small pita breads, cut open
- macadamia oil or spray
- oven tray

#### Method

1. Preheat the oven to 180°C.
2. Lightly spray one side of the bread with macadamia oil, or brush on oil with a pastry brush.
3. Lightly sprinkle with ground flavouring – use one of the selected flavours per piece of pita bread.
4. Place on an oven tray and bake for approximately five to 10 minutes or until crisp and lightly browned.
5. Complete a taste test comparison using a table similar to the following. Refer to the sensory wheel on page 42 to assist you.

| Bush flavouring | Appearance | Aroma | Flavour |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

#### Analysis

1. Which flavour was the strongest?
2. Which flavour would, in your opinion, have the greatest consumer appeal?
3. Which flavour would be best to serve with each of the following foods: pasta, chicken, red meat, vegetables, and cheese?

#### Conclusion

Which bush flavour did you enjoy the most? Which bush flavour would be the easiest to identify?

Note: The pita wedges can be used to produce tasty alternatives to bread or crackers to serve with pâté or dips, or to accompany soup.

## TESTING KNOWLEDGE

11. Explain why kangaroo meat is considered to be a healthy food choice.
12. List three bush tucker flavours that complement savoury foods such as soups and fish.
13. Identify the traditional name given to the bush tomato. List three main uses of this Indigenous Australian food.
14. Explain why bush tomatoes would have been a good nutritional supplement in a traditional Indigenous Australian diet.
15. Describe the main flavour of wattleseed. List the steps you would need to take to prepare wattleseed for use in a recipe.
16. Why is it important to add wattleseed towards the end of mixing when adding it to bread or muffins?
17. Which bush tucker food can be used as an oil?
18. When are macadamia nuts harvested, and in what forms can they be purchased?
19. Identify the main nutrient content of macadamia nuts.
20. List five ways in which macadamia nuts can be used in cooking.

## THINKING SKILLS

### Kangaroo meat for everyday meals

1. Develop a promotional video clip or television advertisement to promote kangaroo meat as a viable ingredient in everyday meals. The promotional material should include the following information:
   - the nutrient value of kangaroo meat
   - why kangaroo meat is a versatile ingredient to use
   - recipe ideas
   - other relevant information.
2. Write a paragraph for a food website that discusses:
   - ethical issues that would support kangaroo meat production as a food source
   - arguments against the use of kangaroo meat as an ingredient in meals.

   Suggest an appropriate platform to post your arguments.



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# Design activity 13.1

## 'GOING WILD' FOR BUSH FOOD

### Design brief

'Going Wild' is an Indigenous nursery in the Grampians that grows a range of native ingredients. The Going Wild café, attached to the nursery, is about to update its spring lunch menu by including several new warm savoury dishes with a suitable accompaniment to make a complete meal. The new menu items should reflect the Indigenous nature of the nursery by having a subtle bush food twist.

1 Develop five criteria to judge the success of your finished product.

### Investigating

1 Use recipe books, food magazines or the internet to research savoury recipes and an accompaniment suitable for a light lunch that could incorporate a subtle bush food twist.

2 Following your research, identify four recipes that could be suitable design options for the warm lunch menu.

3 Complete a table similar to the one below to record the type/s of Indigenous ingredients used, a suitable accompaniment and appealing features of each recipe.

| Recipe idea | Indigenous ingredient included | Accompaniment | Appealing features of the recipe |
|---|---|---|---|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |

4 Prepare a recipe containing Indigenous flavours such as Calzone with Silverbeet and Indigenous Flavours (page 307) or Kangaroo Meatballs (page 309), to explore the variety of flavours and textures you could incorporate into your own recipe.

### Generating

1 Construct a decision table. Select the option you would prefer and explain your choice.

2 Write up the new recipe for your warm savoury lunch dish and accompaniment with a subtle bush food twist.

### Planning and managing

1 Prepare a food order.

2 Before producing your warm savoury lunch dish and accompaniment with a subtle bush food twist, write up a production plan, noting any safe work practices to be followed, and identify the major processes to be used.

3 Make a list of the aspects of the production task that will rely on you and your bench partner sharing and working collaboratively.

### Producing

1 Prepare the product.

2 Note any modifications made to the recipe during production.

### Evaluating

1 Answer in detail your five criteria to evaluate the success of your warm savoury lunch dish and accompaniment with a subtle bush food twist.

2 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your dish.

3 What, in your opinion, was the most difficult aspect of the production? Explain.

4 Discuss any improvements you would make if you were to make the recipe/s again.

5 Classify the ingredients for your recipe/s on a diagram of the *Australian Guide to Healthy Eating* and discuss how well it meets the recommendations of this food selection model.


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# CALZONE WITH SILVERBEET AND INDIGENOUS FLAVOURS



## DOUGH

1 cup bread flour

1 teaspoon dried yeast

¼ teaspoon sugar

½ teaspoon salt

⅓ cup warm water

1 tablespoon olive oil

## FILLING FOR CALZONE

6 stalks of silverbeet

30 millilitres olive oil, plus extra for drizzling

1 garlic clove, chopped

pinch of dried chilli flakes, plus extra for sprinkling

½ teaspoon Indigenous flavoured salt and freshly ground pepper

semolina, for dusting

½ lemon, cut into wedges to serve

MAKES 2 CALZONES

Mark Fergus Photography

## METHOD

### CALZONE DOUGH

1. Sift flour, yeast, sugar and salt into a large bowl. Stir in oil and warm water and mix to a soft dough.
2. Knead the dough on a lightly floured surface until smooth and elastic.
3. Place in an oiled bowl, cover with plastic wrap and stand in a warm place for 15–20 minutes until doubled in size.

### CALZONE FILLING

1. Preheat oven to 200°C.
2. Wash the silverbeet and shred into 5-millimetre pieces.
3. Fill a large saucepan with water and bring to the boil. Blanch the silverbeet in the boiling water for 2 minutes or until wilted. Drain then immediately plunge into ice-cold water. Drain well and spread onto kitchen paper or clean tea towel to dry.
4. Heat the olive oil and garlic over medium heat. Add the chilli flakes and the blanched greens and season with Indigenous flavoured salt and pepper. Cool for 10 minutes, stirring occasionally, until the leaves are dark green and the stalks are tender. Set aside.
5. Divide the dough into half and knead lightly.
6. Lightly dust a clean surface with semolina, then roll out each dough ball into a 15-centimetre round that is about 3 millimetres thick. Transfer the discs of dough to the baking tray before filling.
7. Divide the silverbeet filling between the two discs of dough and spread over one side of each base, leaving a 2-centimetre border. Fold the other side over the filling, pinch the edges together and pleat to prevent the mixture from escaping.
8. Drizzle with extra olive oil and sprinkle with the extra chilli flakes. Bake the calzone in the oven for 5–10 minutes or until golden brown.
9. Transfer the calzone to a serving board or plate. Serve with a squeeze of lemon.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your calzone.
2. What is the purpose of covering the dough with plastic wrap and standing in a warm place for 15–20 minutes in step 2 of the recipe?
3. Why is it important to plunge the silverbeet into ice-cold water in step 3 of the recipe?
4. Explain why the recipe suggests you should place the dough on a baking tray before filling and folding the calzone.
5. Classify the ingredients for the calzone on a diagram of the *Australian Guide to Healthy Eating*. Comment on whether you would classify the calzone as being 'healthy' or 'not very healthy'. Justify your decision.

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# DAMPER WITH EUCALYPTUS OR GUMLEAF OIL BUTTER

13

### DAMPER

1½ cups milk

1 tablespoon wattleseed

1 tablespoon bush honey

2 cups self-raising flour, or 1 cup white self-raising flour plus 1 cup wholemeal self-raising flour

1 teaspoon turmeric

### EUCALYPTUS OR GUMLEAF OIL BUTTER

½ cup softened butter

3–4 drops eucalyptus or gum leaf oil (ensure that you use the variety suitable for cooking, not medicinal purposes)

few drops of green food colouring

SERVES FOUR

## METHOD

### DAMPER

1. Preheat the oven to 220°C.
2. Place the milk, wattleseed and honey in a saucepan and bring to the boil. Allow to cool.
3. Sift flour and turmeric into a basin.
4. Add cooled milk mixture and mix to soft dough with a spatula.
5. Lightly knead the mixture and form into six individual mini dampers or one large, round damper.
6. Place on a greased oven tray or place the large round in a greased cake tin.
7. Bake at 220°C for 20–30 minutes or until the damper sounds hollow when tapped. Mini dampers will only take 15–20 minutes to cook.
8. Serve the damper with eucalyptus or gumleaf oil butter.

### EUCALYPTUS OR GUMLEAF OIL BUTTER

Blend together all ingredients to form a spreadable butter.

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your damper.
2. Why is it important to warm the wattleseed with the honey and milk?
3. Explain the effect kneading has on the damper.
4. List three tests, other than tapping the base, that could be used to determine whether the damper is cooked.
5. Classify the ingredients for the Damper with Eucalyptus or Gumleaf Oil Butter on a diagram of the *Australian Guide to Healthy Eating*. Would you consider this to be a healthy lunch option if served with a garden salad? Justify your decision.

Mark Fergus Photography



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# KANGAROO MEATBALLS

**Meatballs can be served as an entrée or be eaten as finger food. They could be served with a suitable accompaniment using Indigenous Australian plants, such as bush chutney, as flavouring.**

1 small onion, grated

1–2 tablespoons oil

¼ cup fresh breadcrumbs

1 tablespoon commercial bush tomato sauce or tomato relish

1 small egg, beaten

4 shakes of pepper

250 grams kangaroo meat, finely minced

1 tablespoon cream

¼ cup cornflour

SERVES TWO

## METHOD

1. Gently fry the onion in 2 teaspoons of oil until soft. Cool.
2. Mix breadcrumbs with tomato sauce or relish.
3. Add beaten egg, pepper and cooked onion.
4. Combine the meat, breadcrumb mixture and cream and mix well.
5. Roll mixture into balls about 3 centimetres in diameter and roll in the cornflour.
6. Heat remaining oil in a frying pan and cook the meatballs in batches, shaking the pan until all sides are brown.
7. Drain on absorbent paper and pierce each meatball with a toothpick.

## EVALUATION

1. Why does this recipe use fresh breadcrumbs instead of dry breadcrumbs?
2. Suggest some other bush flavours that could be used in the Kangaroo Meatballs.
3. Identify two other low-fat meats that could be used in this recipe if kangaroo meat was unavailable.
4. What accompaniments could you serve with the Kangaroo Meatballs to ensure it was a healthy meal?
5. Classify the ingredients for your Kangaroo Meatballs and the accompaniments you have suggested on a diagram of the *Australian Guide to Healthy Eating* and explain whether it could be considered a healthy meal.

Mark Fergus Photography



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# WATTLESEED PAVLOVAS WITH MACADAMIA CREAM AND SUGAR BARK

13

### WATTLESEED PAVLOVAS

1 teaspoon wattleseed
2 egg whites
½ cup caster sugar
½ teaspoon vanilla essence
½ teaspoon vinegar

### SUGAR BARK

⅔ cup caster sugar
⅓ cup water

### MACADAMIA CREAM

150 millilitres cream
40 grams macadamia nuts
1 tablespoon Nutella

MAKES 6

Mark Fergus Photography

## METHOD

### WATTLESEED PAVLOVAS

1. Preheat oven to 160°C. Cover baking tray with baking paper and draw 6 circles approximately 6 centimetres in diameter.
2. Pour 1 tablespoon of boiling water over the wattleseed and soak for 10 minutes. Strain through a fine strainer. Retain the grounds.
3. In a medium bowl, beat the egg whites into a stiff foam. Gradually add the caster sugar, one tablespoon at a time. Beat until mixture is glossy and stiff.
4. Fold in the vanilla essence, vinegar and wattleseed grounds. Divide the mixture into 6 equal portions and shape into nests within each circle.
5. Place in oven at 160°C, then immediately reduce heat to 130°C and cook for 20–30 minutes or until the crust has dried. Cool.

### SUGAR BARK

1. Combine sugar and water in a saucepan and stir over low heat until the sugar has dissolved. Wash down any sugar crystals from the sides of the saucepan with cold water and a pastry brush.
2. Bring syrup to boil and reduce heat until the colour is pale gold.
3. Remove from heat and allow to rest until bubbles have subsided. Pour onto a foil-lined tray. Cool.
4. Break the toffee into strips that resemble bark.

### MACADAMIA CREAM

Beat the cream to soft peaks. Finely chop the macadamia nuts and fold through the cream with the Nutella.

### TO ASSEMBLE THE PAVLOVAS

Divide the cream filling between the pavlova nests. Break the sugar bark into shards and place vertically in the filling to decorate.

## EVALUATION

1. When making the pavlova, what steps should be taken during preparation to ensure the egg whites beat into a stiff foam?
2. Why are the vanilla, vinegar and wattleseed grounds folded through the pavlova mixture instead of being beaten into it?
3. Why is it important to dissolve the sugar before bringing the syrup to the boil?
4. Identify two safe work practices that should be followed when using electric handheld beaters and making the sugar bark toffee.
5. Identify the ingredients in the pavlovas that places them in the 'only sometimes and in small amounts' component of the *Australian Guide to Healthy Eating*. Predict the outcome for your long-term health if you were to eat mini pavlovas on a regular basis.


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# CHOCOLATE AND MACADAMIA BISCUITS

⅓ cup macadamia nuts, finely chopped
1¼ cups plain flour
½ teaspoon baking powder
125 grams butter
¼ cup soft brown sugar
⅓ cup caster sugar
1 teaspoon vanilla essence
1 egg, lightly beaten
½ cup white chocolate buttons, roughly chopped

MAKES ABOUT 24 BISCUITS

## METHOD

1. Preheat oven to 180°C.
2. Line two biscuit trays with baking paper.
3. Spread the chopped nuts onto one of the baking trays and cook for 6–8 minutes or until a light gold colour. Allow to cool.
4. Sift the flour and the baking powder.
5. Cream the butter and sugars until light and fluffy. Beat in the vanilla.
6. Gradually beat in the egg.
7. Stir in the sifted flour and baking powder.
8. Add the cooled toasted nuts and chocolate and mix well.
9. Place dessert-spoonfuls of mixture onto the two biscuit trays covered with baking paper, leaving enough room for spreading.
10. Bake at 180°C for 12–15 minutes or until golden and firm to touch.
11. Remove from the oven and allow to stand on the tray for 5 minutes.
12. Carefully remove with a spatula and transfer to a wire rack. Allow to cool.

## EVALUATION

1. What physical property of macadamia nuts causes them to brown quickly?
2. Explain how you knew when the butter and sugar were sufficiently creamed.
3. Why is it important to sift the flour and the baking powder together?
4. Why are the biscuits left to stand on the tray for 5 minutes before they are transferred to the wire rack?
5. Explain why, according to the Eat for Health program, you should limit the amount of discretionary foods, such as Chocolate and Macadamia Biscuits, you eat.

Mark Fergus Photography



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# 14 THE WORLD ON A PLATE

## KEY KNOWLEDGE

- Influences on eating in Australia
- Mediterranean cuisine
- Italian cuisine
  - Characteristics of Italian cuisine
  - Influences on Italian cuisine
  - Pasta
  - Gnocchi
- Greek cuisine
  - Characteristics of Greek cuisine
  - Influences on Greek cuisine
- Asian cuisine
  - Hawker-style foods
  - Flavours of Asia
  - Ingredients and flavourings of Asia
- Vietnamese cuisine
  - Characteristics of Vietnamese cuisine
  - Influences on Vietnamese cuisine
- Thai cuisine
  - Characteristics of Thai cuisine
  - Influences on Thai cuisine
- Indian cuisine
  - Characteristics of Indian cuisine
  - Influences on Indian cuisine
- Middle Eastern cuisine
  - Characteristics of Middle Eastern cuisine
  - Influences on Middle Eastern cuisine
- Mexican cuisine
  - Characteristics of Mexican cuisine
  - Influences on Mexican cuisine

## KEY TERMS

**food security** the state of having reliable access to a sufficient quantity of affordable, nutritious food

**hawker-style foods** small portions of food traditionally prepared, cooked and served in front of the customer on the street

**Pacific Rim cuisine** foods originating from countries around the edges of the Pacific Ocean

**Thai flavour wheel** a diagram that shows the five flavours – salty, sweet, sour, spicy and bitter – that are blended in Thai foods

## VICTORIAN CURRICULUM LINKS

### DESIGN AND TECHNOLOGIES

- Technologies contexts
  - Food specialisations
- Creating designed solutions
  - Investigating
  - Generating
  - Producing
  - Evaluating
  - Planning and managing

### HEALTH AND PHYSICAL EDUCATION

- Personal, social and community health

### CAPABILITIES

- Critical and creative thinking





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# INFLUENCES ON EATING IN AUSTRALIA

Before you can fully understand the evolution of Australian cuisine, you need to reflect on the past and trace the influences on food consumption and choices since the earliest days of the colony.

- *Pre-1800s*: Before the arrival of Captain Cook, foods native to Australia were eaten by Aboriginal and Torres Strait Islander peoples. (For more information on this subject, see Chapter 13.)
- *1800s*: An Anglo-Saxon diet came to Australia with the English colonial settlers. Early European settlers ate a diet that largely consisted of meat supplemented with rations of flour, sugar, salt and tea, but contained little fruit and vegetables. This diet was nutritionally poor, containing large quantities of saturated animal fats, sugar and little fibre, and was hardly appropriate for the warmer Southern Hemisphere climate.
- *1850s*: During the gold rush there was an influx of immigrants, including many from China, who brought with them new food and cooking skills. The Chinese quickly became market gardeners and greengrocers, and they adapted their recipes to suit the mainly Anglo-Saxon miners by adding more meat.
- *1850–1900*: The dairy and wine industries began to develop due to the influence of immigrants from Denmark, Sweden and Germany. There was expansion in the food processing industries with the production of jams, cordials, cheeses, tomato sauce and preserved meats. Households preserved their own fruit and vegetables and made their own jams, pickles and sauces, although much of Australia's food was also imported.
- *1900s*: In the early part of the 20th century, there were further developments in technology, which greatly influenced food trends. Gas and electric stoves became available and the domestic refrigerator slowly began to replace the ice chest. Methods of canning and freezing were introduced, and these had a significant impact on food types, storage and shopping patterns. The government approved the establishment of operations of foreign food companies such as Kraft, Nestlé, Cadbury and Kellogg's. Nutritional advice became more readily available, and advertising of food began. During the Great Depression, many people lived in poor economic circumstances, and many meals were based on cheaper foods, such as bread and dripping, and food from the land, especially rabbits.
- *1940s*: The Second World War led to significant food shortages. Rationing was introduced to ensure the fair distribution of food and proper nutrition of the population. American-style foods were introduced as American military personnel on leave in Australia demanded products such as hamburgers, canned sweet corn and Coca-Cola. Post-war immigration introduced new skills, products and knowledge to the restaurant trade. Takeaway food outlets also began to appear. After the war, the government adopted a policy of increasing Australia's population, and subsidised a scheme of migration. During this period, many people migrated to Australia from Britain, Italy and Greece.


Advertising Archives

**Early Italian food in Australia**

- *1950s*: Coloured packaging arrived in stores, and self-service began to replace counter service in stores.
- *1956*: The Olympic Games in Melbourne brought many overseas chefs to the Olympic village. Many of these chefs stayed on in Australia, introducing new skills and expertise. The introduction of television added a new dimension to food advertising.



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- *1960s*: More women entered the paid workforce. This meant more disposable income for families, less time for food preparation and more money for leisure activities. These factors greatly influenced the sales of convenience foods. People also began to buy a larger proportion of their food items from supermarkets.
- *1970s*: More people moved to the cities from country areas; their incomes increased, and consequently, their consumption of animal proteins, sugar, fats and takeaway foods also increased. The growth of foreign travel resulted in familiarity with new ethnic cuisines, particularly Italian, Greek and Chinese. Pre-prepared, or convenience foods, flooded supermarket shelves, accompanied by marketing of instant, no-fuss, frozen and ready-to-eat foods. New styles and skills in food preparation were used, and outdoor cooking became popular. Boys joined girls in school Home Economics and Food and Technology classes. During this period, migration from Asian countries such as Vietnam and Cambodia increased, and the food from these countries had a significant influence on Australian cuisine.
- *1980s*: Nutrition became a highly important issue and people generally turned to a healthier lifestyle and diet, with brown rice, yoghurt, low-salt and low-fat products increasing in popularity. Food was generally simpler, lighter and had a greater emphasis on vegetables and fish.
- *1990s*: Many people became increasingly concerned about their health and focused on diet and exercise. More pre-prepared foods began appearing in supermarkets as the demand for 'shortcut', quick meal solutions increased. There was also a growth in the number of fast-food outlets and a greater consumption of food outside the home during the 1990s. During this period, **Pacific Rim cuisine** – that is, foods from countries around the edges of the Pacific Ocean – gained in popularity and led to the availability of a wide range of ingredients used in Asian dishes.
- *2000s*: Busy lifestyles created time-poor consumers, many with few skills in food preparation. As a result, many consumers became reliant on convenience food for family meals instead of preparing food from scratch. Ready-to-go meals that required only heating and meal solutions such as pasta and simmer sauces, which required only three or four extra ingredients, occupied significant shelf space in supermarkets. The range of foods with additional health benefits – functional foods – and those that catered for specific allergies or hypersensitivities increased, as did the popularity of organic food. Many refugees and migrants arrived from countries in Africa and South America, and many new restaurants appeared. There was increased interest in Indigenous Australian foods as television shows about bush ingredients educated the population and small product ranges of native ingredients began to appear in supermarkets.


Mark Fergus Photography

**A wide variety of foods suitable for consumers with food allergies is now available**

- *2010s*: In cities and regional areas, farmers' markets became popular with shoppers keen to purchase foods directly from growers. Food manufacturers developed a greater range of functional foods with an emphasis on reduced-fat and low-fat products and foods with added vitamins and minerals. The range of foods designed to meet specific dietary needs, such as gluten-free and lactose-free foods, expanded. Organic foods and processed products became widely available in supermarkets and food shops. Consumers became more conscious of their health, and 'superfoods' such as goji berries, quinoa, acai berries and kale became prominent due to being natural foods rich in specific nutrients that are considered to have health benefits. Gut health became important, as did reducing the amount of sugar in our diets.


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Many restaurants began serving small-portion dishes, such as tapas, and meals designed to share with fellow diners at the table rather than individual courses. Pop-up food trucks were another new source of takeaway foods, and there was an extraordinary growth of cafes serving coffee and all-day breakfasts.

Television programs such as *MasterChef* and *My Kitchen Rules* captured viewers' attention and heightened interest in food preparation. Milk alternatives such as oat, almond and rice drinks became popular. Uber Eats and Deliveroo began delivering restaurant quality meals to homes. Delivery boxes such as HelloFresh, Marley Spoon and Dinnerly increased in popularity and online shopping, with the choice of delivery or click and collect, became the new way to grocery shop.


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**Meal delivery boxes have become popular with time-poor consumers**

- *2020s*: The United Nations estimates that by 2050 the world population will be close to 10 billion. A common question being asked by food producers is 'How are we going to feed 10 billion people?' Over the next 30 years, **food security** will become an even greater issue, as more food will need to be grown and produced, far more than has been produced in the last 200 years. In order to achieve this, there are many challenges that need to be considered, such as climate change, the impact of droughts, urban sprawl and constraints associated with natural resources.

Technological development and innovations in food production are being explored in order to address the issue of how we feed 10 billion people. The development of protein sources based on plants and insects is one example of technological developments in the food industry that will help to ensure a viable and sustainable protein supply for the world's population. The growing number of people concerned with sustainability and the environment has seen an increase in the popularity and consumption of 'faux-meat' products (plant-based meat substitutes), which imitate beef, chicken and fish. Plant-based 'meats' are found on supermarket shelves and on menus in restaurants such as Grill'd, Soul Burger and Lord of the Fries.

There is an increasing emphasis on reducing waste, including eliminating plastic bags, takeaway coffee cups and single-use plastic straws, as well as on food waste that is being upcycled into new consumer products, such as soy milk by-products being used to make soy flour. Edible insects might not be for everyone; however, they do have health and nutritional benefits for consumers and environmental benefits too. Insect farming requires much less water and land than traditional farming methods used to produce sources of animal protein. Because the entire bug is edible, there is little waste and less impact on the environment. Demand for edible bugs has increased significantly in recent years as they are an excellent source of protein, amino acids, mono- and poly-unsaturated fats and micronutrients such as copper, iron, magnesium and zinc. Gram for gram, crickets contain higher amounts of available iron than beef and the minerals found in crickets, grasshoppers and mealworms are more easily absorbed by the body than the same nutrients in beef. Cricket flour or powder can be used in protein bars, shakes, added to cakes and cookies, and burgers and casseroles.


Mark Fergus Photography

**Cricket powder or food products containing crickets are high in protein**

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## ACTIVITY 14.1

### AUSTRALIA TODAY

Australians' eating habits and trends in eating are undergoing significant changes. There is an enormous variety of foods available in Australia today, many of which are from various ethnic groups from around the globe.

1. List the different nationalities represented in your school.
2. List the country or countries of birth of people from three generations of your family.
3. Make a list of the foods your family eats that are typical of your cultural background.
4. Make a list of any foods your family eats that are from other cultures.

## ACTIVITY 14.2

### LOOKING BACK OVER THREE GENERATIONS

The following activity will help you to understand the foods and traditions of family meals in past generations.

1. From your experience of your own family and the families of your friends, write a definition of the term 'generation'.
2. Interview someone from your parents' generation and someone from your grandparents' generation to determine what they ate when they were your age. Interviewees could come from your own family or be friends or neighbours.
3. Interview someone from your own generation about the foods they eat.
4. Use the following points as the basis of a questionnaire that could be used to examine the eating patterns of the past three generations:
   - name
   - age
   - who does/did the shopping in the household
   - who does/did the cooking for the household
   - where meat, vegetables and groceries were/are purchased
   - how these food items are/were purchased
   - what food is/was produced or made at home, for example, vegetables, homemade cakes and sauces
   - what is/was eaten for the main meal of the day
   - the time of the day at which this main meal is/was served.

   You can record your interviews using a tablet or other electronic device.

#### Analysis

1. What similarities do you notice between the eating patterns and the ways in which food is/was purchased and prepared in households over the three generations?
2. What are the main differences between the eating patterns and the way in which food is/was purchased and prepared in households over the three generations?
3. At what time was the main meal served in the past two generations compared with today?

#### Conclusion

What are the main changes that have occurred over the past three generations? Why do you think these changes have occurred? What do you think the future of food shopping and cooking will look like in 10 years' time?

# MEDITERRANEAN CUISINE

Mediterranean cuisine can be defined as the cuisine of the countries surrounding the Mediterranean Sea. It includes staple dishes from European countries such as Italy, Greece and Spain. This region has a wide variety of ingredients that add flavour and depth to food. Food of the Mediterranean region is prepared with fresh, healthy ingredients that are highly nutritious and form the basis of a healthy diet, which is why Mediterranean foods are so popular throughout the world. For many years, people living in the countries surrounding the Mediterranean Sea have been found to have a lower risk of certain cancers, reduced risk of developing heart disease and increased longevity overall. Mediterranean foods are rich in lean proteins such as chicken, fish and legumes; fresh fruits and vegetables; wholegrains, cereals, nuts and seeds; and, healthy fats, such as olive oil.


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**Countries of the Mediterranean**

# ITALIAN CUISINE

After the Second World War, many migrants came from Italy to settle in Australia, introducing a range of food items from their native country such as olive oil, Roma tomatoes, eggplant, garlic, pasta, pizza and gnocchi.

## Characteristics of Italian cuisine

- Italian cuisine is known for its simplicity, with most dishes having only a few main ingredients.
- Italian cooks rely on the freshness and quality of the ingredients, instead of elaborate preparation and cooking techniques.
- Ingredients and meals will vary depending upon the region in which they are made.
- In the north of Italy, polenta and rice are important staple foods. Dairy foods – particularly cheese – and seafood are key ingredients in many dishes.
- The centre of Italy is a major gastronomic region, with food such as fresh pasta, ham, salami and cheese being widely produced. Balsamic vinegar, used to flavour salads and vegetables, is also produced in this region.
- In the south of Italy, sun-ripened vegetables (such as tomatoes), olives and fruit are popular, as are pasta and cheeses. Popular dishes are pizzas topped with fresh mozzarella or goat's cheese, spaghetti with tomatoes and meat sauce and granita made from lemons.
- Eating, shopping and preparing food are very important aspects of Italian life. Cafes and bars are a focal point in town squares all over Italy.

Shutterstock.com/Mazur Travel

**Cafes are an important aspect of Italian social life**

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## Influences on Italian cuisine

- The many regions of Italy have different culinary customs and varying cooking practices, passed down from generation to generation, contributing to the diversity of Italian cuisine.
- One of the most popular dishes is pasta. It is believed that the first pasta made in Italy was made in the same way as it is today, using durum wheat and flour.

## Pasta

Although pasta is a staple food of Italy, today, it is widely eaten in many countries throughout the world. In Australia, pasta has become a popular food because it is quick and easy to prepare and can be served in a variety of ways, with a wide range of sauces to suit different tastes.

Pasta can be purchased, either fresh or dried, in supermarkets and other stores, or can be easily made at home. Today, pasta dough is often flavoured with other ingredients, including spinach or tomato paste. It can also be made with wholemeal flour to increase the proportion of dietary fibre it contains.

### Types and shapes of pasta

In Italian, the word 'pasta' means pastry or dough. Pasta dough, once prepared, can be cut or moulded into an endless variety of sizes, shapes and designs. There are hundreds of different shapes of pasta available, some of which may have several different names, depending on the region in which they originated.

Pasta is, however, usually divided into four main groups according to the way in which it is used:

- small shapes used in soups: anellini, creste di gallo, ditalini, farfallini, ruoti
- longer lengths of pasta used for boiling and coating in a sauce: spaghetti, lasagnette, capellini, vermicelli, bucatini, fettuccine, tagliatelle, penne, linguine, farfalle
- sheets or shaped pasta used for baking: lasagne, cannelloni, conchiglie, rigate
- shaped pasta that can be filled: agnolotti, cappelletti, tortellini, ravioli.

## ACTIVITY 14.3

## IDENTIFYING PASTA SHAPES

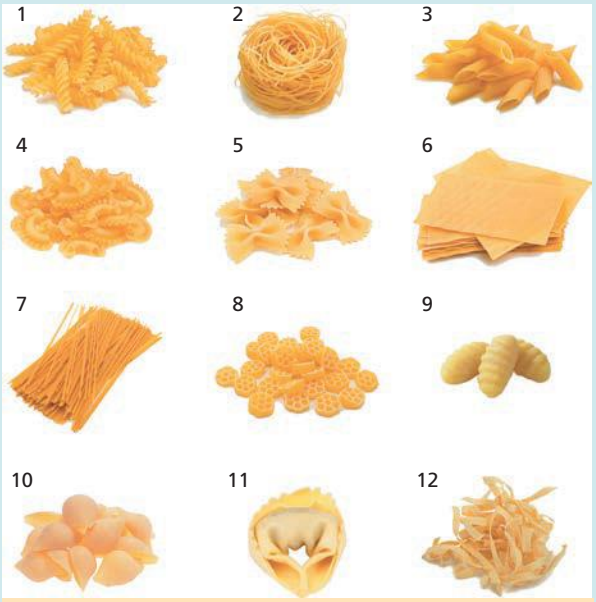
### Types of pasta

| Pasta | Number | Use |
|---|---|---|
| Spirale | | |
| Tagliatelle | | |
| Farfalle | | |
| Lasagne | | |
| Spaghetti | | |
| Creste de gallo | | |
| Gnocchi | | |
| Tortellini | | |
| Penne | | |
| Ruoti | | |
| Fettucine | | |
| Conchiglie | | |

1 Use a range of recipe books, food magazines or the internet to help you match each pasta shape below with its correct name from the table.

2 Copy the table into your workbook. Match the number of the pasta to its name in your table.

3 Find out the main use of each pasta type, for example, in soups, in salads, filled, coated with sauce or baked.




**Different pasta shapes**





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## Top tips for cooking pasta

1 Use plenty of water – specifically, 1 litre of water for every 100 grams of dried pasta – so that the pasta can swirl and roll around to cook evenly.
2 Add the pasta to the water only after it has reached a rolling boil.
3 Quickly stir the pasta when it first hits the water to prevent it from sticking together.
4 Add a teaspoon of oil to the water – this will help to prevent the water from boiling over and will also stop the pasta from sticking together.
5 Add salt to the cooking water to prevent the pasta from tasting bland.
6 Do not cram too much pasta into one saucepan, otherwise the water will take too long to reboil and the pasta will stick together.

## ACTIVITY 14.4

### INVESTIGATING PASTA

Visit the website of a major pasta manufacturer (such as Latina, Barilla, Vetta or San Remo) and a supermarket's website to answer the following questions.

1 Make a list of the main brands of fresh and dry pasta that are available in your local supermarket.
2 What nutritional information is provided on the packaging by the pasta manufacturers? What difference is there in the amount of carbohydrate present in commercial wholemeal pasta compared with white pasta?
3 What additional information about the nutritional value of pasta is provided by one of the commercial pasta manufacturers?
4 Instead of wheat, are there alternative types of grains, pulses or legumes that can be used to produce specialty pasta? What are they?
5 List the main methods used to package the pasta sauces available in your local supermarket. What would be the advantage to consumers of purchasing a pasta sauce in clear plastic packs compared with either glass or cans?
6 What are the four most common flavours of pasta sauce available in each type of packaging?
7 Are any low-fat sauces available in the supermarket? What marketing strategies have been used by the manufacturers of these products?
8 Search one of the pasta websites for ideas for a flavoured pasta meal that is low in fat and would be suitable for someone wishing to reduce their kilojoule intake.

## Gnocchi

In Italy, gnocchi is a traditional favourite Sunday dish. Each region of Italy has a different way of preparing it. In the north, gnocchi is made with flour and water; in Rome, with semolina; and in the south, with flour, potatoes and eggs.

Gnocchi are small dumplings that can be served with either a tomato or pesto sauce, or a heavier meat sauce or ragu. Selecting potatoes of a starchy variety that mash well is essential to ensuring that the dumplings are light.

**1** Boil potatoes until soft and tender. Drain, then push through the ricer.

**2** Mix with other ingredients and form into a soft dough.

**3** Divide the dough into portions and roll out into sausages, each about 2 centimetres thick.

**4** Cut the gnocchi into 2-centimetre-long pieces and roll over lightly with thumb to create a small indentation for the sauce.

**5** Place eight to 10 pieces of gnocchi into boiling water. When they float on the surface, the gnocchi is cooked. Remove from saucepan and cook the next batch.

Mark Fergus Photography

**Steps in making gnocchi**

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# GREEK CUISINE

Greek food has a reputation for being heart healthy with its use of olive oil, fish, lean meats, vegetables, herbs and grains – although some dishes can be quite rich.

## Characteristics of Greek cuisine

- Mezze is a Greek word that means 'small dishes'. Mezze dishes are popular and a variety of small dishes often make up a main meal, served with salads, dips and pita bread.
- Olive oil, olives, eggplant, tomatoes, potato, lemon, cheese, herbs, grains, legumes and honey are popular ingredients.
- Many dishes are wrapped in filo pastry – including Greek classics, such as spanakopita (spinach and feta triangles) and the honey-drenched, nut filled dessert, baklava.

## Influences on Greek cuisine

- The climate and countryside of Greece are best suited to raising goats and sheep, instead of cattle. As a result, beef dishes are uncommon.
- The climate of Greece is also perfectly suited to growing olive and lemon trees, which produce two of the most fundamental ingredients used in Greek cooking.
- Goat and sheep milk are used to make cheeses, such as feta cheese.
- Due to its geographic location and many islands, fish and seafood are popular dishes.

Dreamstime.com/Kobeza

**Olives, feta, herbs and tomatoes are popular ingredients in Greek cuisine**

## TESTING KNOWLEDGE

1. Read the section 'Influences on eating in Australia' on pages 313–15 then create a similar timeline that identifies major events and influences in your family that have shaped your eating patterns.
2. Outline four examples of how migration has influenced the cuisine of Australia.
3. Explain how concern for good health has influenced the foods available to consumers.
4. Discuss how the lifestyle of consumers has had an impact on the types of foods that are available in supermarkets today.
5. List 10 foods that Italian migrants brought to Australia after the Second World War that form an important part of our diet today.
6. Identify two recipes that would be suited to using longer lengths of pasta.
7. What are the benefits of using wholemeal flour when making pasta dough?
8. Explain why starchy potatoes are used for making gnocchi.
9. Describe how you can tell when gnocchi are cooked.
10. What does the Greek word 'mezze' mean?

# ASIAN CUISINE

In Australia, there is an exciting East-meets-West cuisine derived from our neighbours in South-East Asia and East Asia including Thailand, Malaysia, Indonesia, Vietnam, China and Japan.

Chinese people first came to Australia in large numbers during the gold rush in the 1850s and 1860s. As the gold ran out, many of the Chinese miners started businesses and stayed permanently in Australia. Many opened Chinese restaurants and grocery stores in cities and in numerous country towns.

Other Asian foods and flavours began to appear on Australian menus in the late 1970s, in the wake of the Vietnam War. With continuing waves of multicultural immigration, mainly drawn from the Asian region, there is now a vast array of restaurants producing different cuisines, such as Thai, Vietnamese,


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Malaysian and Japanese. Traditional European restaurants also began to add Asian ingredients to their dishes and menus and create dishes that fused eastern and western flavours.


**Asian countries with cuisines explored in this chapter**

During the 1970s and 1980s, cheap travel meant that many Australians were able to travel to Asian countries, and, therefore, to taste Asian flavours, which they often continued to eat when they returned home. An influx of Asian students studying in Australia has also increased the demand for traditional Asian foods and restaurants.

Australians are becoming more conscious of their health and demanding lighter, smaller, low-fat dishes that include a greater quantity and range of vegetables and complex carbohydrates, such as rice and noodle-based dishes. Asian dishes are quick to prepare and require minimal equipment – for example, a complete main course for a family can be prepared in one wok. Food manufacturers have responded to this trend by producing marinated meats, prepared sauces and fresh and frozen vegetables ready for stir-frying.

## Hawker-style foods

**Hawker-style foods** are small portions of food that are traditionally prepared, cooked and served in front of the customer on the street. A 'hawker' is someone who tends a mobile food stall in the street. Hawker-style foods are traditionally eaten on the run.

In Malaysia, hawkers sell buns filled with sweet barbecued pork for breakfast, soup, laksas or won ton noodles for lunch, satays for snacks and a variety of noodle and rice dishes for the evening meal. In Thailand, charcoal-grilled chicken and sticky rice, soups and noodle dishes are readily available on street corners. In the past, hawkers often delivered their foods to people's homes.

Alamy Stock Photo/robertharding

**Hawker-style food**

## Flavours of Asia

Asian cuisine is bursting with the warm tingling of spices, the sensuous perfume of lemongrass, ginger and herbs, the heat of chillies, the tang of lime and the soothing touch of coconut.

The essence of Asian cuisine is harmony; ingredients with strongly contrasting features are balanced in dishes in which no one flavour overpowers the other. Flavours and textures are balanced: sweet and sour, hot and mild, wet and dry, crisp and soft.

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**Thai flavour wheel**

# Ingredients and flavourings of Asia

## Herbs

- Anise – often called star anise because of its star formation; has a liquorice flavour; is one of the main ingredients in five-spice powder
- Coriander – also known as Chinese parsley; used fresh in Thai curries or as a garnish; seeds are dry-fried and added to Indian curries
- Kaffir lime and leaves – a variety of lime with a dark skin and strong citrus aroma; used in curry dishes; glossy green leaves are available dried or fresh, and are added to curries
- Lemongrass – a long, tough-stemmed herb with a citrus, lemony flavour; the stem is bruised then chopped finely for use in Thai curries
- Mint – several varieties are available; used to flavour soups and as a component in rice-paper rolls.

## Spices

- Cardamom – a spice from seed pods of plants in the ginger family; purchased in the pod, ground or as seeds
- Cinnamon – the fragrant bark of a tree; available ground or as sticks
- Cloves – dried flower buds; available ground or whole
- Cumin – dried seeds of the cumin plant; roasted and ground and used in Indian curries.

## Vegetables

- Bamboo shoots – tender shoots of the bamboo plant that add texture to a dish; available in cans
- Bean sprouts – from soy beans or mung beans; available fresh or canned
- Chillies – available fresh, dried whole, powdered or as chilli sauce. Fresh chillies are available in many types and sizes – the smaller the chilli, the hotter the flavour. It is important to use rubber gloves when chopping to avoid burning the skin. Chilli sauce comes as a hot Chinese variety or a sweet, milder sauce
- Chinese broccoli – also known as Chinese kale
- Chinese cabbage – also known as wombok
- Chinese chard – also known as bok choy or pak choy
- Galangal – variety of ginger with a distinct taste; available fresh or dried; used in Asian curry pastes, stir-fries and soups
- Ginger – fresh rhizome or root; the skin is removed by scraping, then the root is grated or chopped; used in a variety of Asian dishes
- Snake beans – also known as dau kok (Chinese) or dâu que (Vietnamese)
- Water chestnut – also known as matai (Chinese) or ma thay (Vietnamese).

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**Asian flavouring ingredients**

## Flavourings

- Black bean sauce – made from fermented soy beans; used to flavour stir-fries
- Curry – available as paste or powder; prepared from a combination of ground seeds, particularly coriander, cumin, fennel and anise; other herbs and spices, such as galangal, turmeric, chillies and cinnamon, are also included


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- Fish sauce – thin, brown sauce made from fermented fish; gives a salty, fishy flavour to Thai and Vietnamese dishes
- Palm sugar – coarse-grained brown sugar used in South-East Asian and Indian dishes
- Peanut – underground rhizome or nut that is crushed and used in satay sauce, or chopped, fried and sprinkled on salads and grilled foods
- Saffron threads – reddish to orange threads from the stigma of the crocus flower; when infused in liquid, they give off a vivid colour and impart a subtle flavour to rice and curries.

# VIETNAMESE CUISINE

Vietnam shares its borders with three other countries: its northern border is shared with China, and its western border with Laos and Cambodia. While the influence of these three countries can be seen in the cuisine of Vietnam, its food still has a character and flavour of its own. Many forces – of climate, trade, religion, history and multiculturalism – have influenced Vietnamese cuisine.

## Characteristics of Vietnamese cuisine

- Fresh, well-flavoured ingredients are purchased daily from markets.
- Accompaniments such as chillies, fish sauce, lime wedges, fresh herbs and dipping sauces are used.
- Rice is the most important crop and is the country's staple food, forming the base for most dishes. Rice cultivation accounts for 75 per cent of the country's arable land. A sticky, glutinous variety is used for sweets and cakes; spring roll wrappers and noodles are made from ground rice.
- Fish is the main protein source and a feature of the country's cuisine. Fishing is a major industry along the long coastline and in the rice paddies. Fish is available fresh daily in markets or is dried for later use or fermented to produce nuoc mam or fish sauce. Fish sauce is a crucial flavouring for most Vietnamese food, and no meal is considered complete without it.

## Influences on Vietnamese cuisine

- Religion: the introduction of the Buddhist religion from China brought with it a rich and varied vegetarian diet with an emphasis on soy products for protein. Christianity – in particular, Catholicism – is another influence from the long French occupation.
- Celebrations: celebrations such as the Lunar New Year, or Tet festival, include sweet cakes made from sticky rice or sticky rice flour (Tet cakes, or moon cakes) and sweet delicacies made from bananas.

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**Vietnamese market**

- Climate: in the northern areas, the climate is colder, and, consequently, a smaller variety of foods is grown. In southern areas, the climate is hotter and more humid with a higher rainfall. The Mekong Delta is a very rich, fertile area where a greater variety of fruits and vegetables are grown. Sugarcane is also grown in the south; because of this, many of the foods there are sweeter.
- Chinese rule: the ingredients and cooking methods of the food of Vietnam have been significantly influenced by early Chinese rule. The early Chinese culture brought noodles and chopsticks.
- French occupation: the Vietnamese learnt the art of bread-making from the French during their long occupation of the country. The French brought the baguette, pastries and filtered coffee.
- American occupation: ice-cream is now a popular food in South Vietnam. It was a favourite food imported for the American troops who were stationed in this area during the Vietnam War.



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**Baguettes for sale in a Vietnamese street**

## TESTING KNOWLEDGE

**11** Explain how Chinese food was introduced into Australia.

**12** Describe how travel to Asian countries has influenced Australians' eating habits.

**13** Why do Asian-style meals appeal to people in the community who are health-conscious?

**14** What are hawker-style foods, and why are they so popular in Asia? Provide two examples.

**15** What is the significance of the Thai flavour wheel, and how can the information it provides be used when designing dishes and meals?

**16** List six herbs and flavourings that provide the flavours characteristic of the Pacific Rim countries. Name one Asian recipe that you have made or eaten that includes at least one of these flavourings.

**17** List five vegetables available in Australia that are of Asian origin. Place a tick against those that you have tried.

**18** What is fish sauce? Research how it is made and explain why it is commonly used in Asian cuisine.

**19** Identify the three countries that Vietnam shares its borders with.

**20** What other countries have had a significant impact on Vietnamese cuisine? Provide an example.

# THAI CUISINE

Thailand is a small country in South-East Asia that shares a peninsula with Myanmar, Laos, Cambodia and Vietnam. Thailand forms a crescent around the Gulf of Thailand and has a maze of rivers and canals running through it. Thai cuisine is renowned all around the globe for its distinctive characteristics, including its mix of spicy and sour flavours.

## Characteristics of Thai cuisine

- The main meats eaten are pork, beef, chicken and water buffalo. The quantities of meat eaten are small, as it is considered an expensive food item.
- Fish, an important source of protein, is often used in Thai dishes.
- Dairy products are eaten in small amounts because the land space for raising cattle is limited.
- Food is purchased daily from markets.
- Fresh fruits are grown all year round in the hot, wet climate. Fruits such as jackfruit, pineapple, custard apple and mango are usually served at the end of a Thai meal.
- Desserts are generally based on coconut milk, for example, coconut custard or steamed coconut pudding.
- Fresh herbs, spices and seasonings such as basil, lemongrass and coriander are regularly used. Foods such as the kaffir lime give Thai food a distinctive perfume and aroma. Other unique flavours are provided by galangal (a type of ginger), fish sauce, shrimp paste, coconut milk, tamarind, chillies and palm sugar. Curry pastes (red and green) are popular ingredients.
- Garnishes are important in the presentation of Thai food. Garnishes such as roasted peanuts, shallots, toasted coconut and carved vegetables provide flavour and texture to dishes.
- The meal is built around rice. Southern Thai people eat long-grain rice, while northerners favour short-grain, or sticky rice. Noodles were introduced from China and also play a major role in Thai cuisine.
- Food is light and low in fat, with the major components being cooked vegetables with a small amount of meat.


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- The preparation of ingredients by pounding, chopping and blending is time-consuming compared with the final cooking process.
- The five flavours of salty, sweet, sour, spicy and bitter are blended and balanced in each meal.

## Influences on Thai cuisine

- Climate and location: geographically placed halfway between India and China, the hot, humid climate encourages the growth of a wide variety of plant foods.
- Religion: the philosophy of Buddhism influences the food customs of Thailand. Early in the morning, families offer monks food from tables outside their homes. This generous offering is an important means of gaining merit for their future incarnation. Buddhist religious days are celebrated by bringing specially cooked foods to the temples.
- Fuel: cooking fuel is expensive, so cooking usually employs quick methods, such as frying, grilling and stir-frying.

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**Cooking in a floating market in Thailand**

## ACTIVITY 14.5

### INVESTIGATING READY-TO-EAT ASIAN FOOD PRODUCTS

1 Your teacher will purchase three Asian inspired ready-to-eat dishes.

2 Consider the information listed in the nutrition information panel.

   a Identify which product was highest in:

      i fat

      ii salt

      iii sugar.

   b Would this be product be a suitable meal to consume on a daily basis? Justify your answer.


Mark Fergus Photography

**Ready-to-eat Asian inspired meals**

3 Read the label on each package carefully and list the ingredients in the table below to indicate their position on the Thai flavour wheel (page 322).

| Product | Spicy | Sweet | Bitter | Sour | Salty |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

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4 Taste test the ready-to-eat meals and complete a sensory analysis of each of the products using descriptive language.

| Product | Appearance | Aroma | Flavour | Texture | Sound |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |

### Conclusion

Which product did you prefer? Justify your answer in reference to both the nutritional and sensory properties of each product.



# INDIAN CUISINE

Indian cuisine is remarkably diverse and uses a wide variety of spices, vegetables, fruits, grains and meats. Each region of India has its own style of cooking and distinctive flavours typical of that area. India's religious beliefs and culture have heavily influenced the types of cuisines, with vegetarianism being the way of life for many.

Australians began to travel through India during the 1960s and 1970s and were fascinated by the vibrant and intensely colourful world of Indian cuisine. Due to increased immigration, Indian food is found across Australia.

## Characteristic of Indian cuisine

- The north of India is best known for its tandoori and korma dishes and is renowned for its use of dairy products such as milk, paneer (fresh cheese), ghee (clarified butter) and yoghurt. Sauces in dishes are typically dairy based. Other common ingredients include chillies, saffron and nuts. North Indian cooking features the use of the 'tawa' (griddle) for baking flat breads like roti and paratha, and 'tandoor' (a large and cylindrical coal-fired oven) for baking breads such as naan. Main courses such as tandoori chicken are also cooked in the tandoor. Goat and lamb are popular meats, along with lentils and vegetables. Samosa is a popular north Indian snack.

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- Southern India is well-known for hot and spicy foods and its emphasis on rice as the staple grain. Rice is eaten in many forms including thin crepes known as dosai, or steamed to form idli. A popular dish is sambar, a lentil and mixed vegetable soup that is consumed at breakfast or as a side dish during mealtimes; each of the southern Indian states has its own unique way of preparing the dish. Southern Indian cuisine can be classified into six tastes: sweet, sour, salty, bitter, pungent and astringent. Traditional cuisine will include all six tastes to provide a nutritious meal that provides balance and satisfies cravings.

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- East India specialises in curries that are not too spicy but very fragrant and are eaten with plain boiled rice or spiced rice. A meal generally consists of many side dishes made from vegetables. Fish and seafood are also popular in this area. East India is also famous for its sweets and desserts. Dishes such as rasgulla (dumplings in syrup) and kheer (creamy rice puddings) are just some of the dishes favoured by the locals.

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- Western Indian cuisine utilises coastal ingredients, such as coconut and seafood, as well as rice in its traditional dishes. Religious influences shape eating habits with the majority of India's population practising Hinduism. As a result, vegetarianism is prevalent across the continent, but Hindu food habits may vary according to regional traditions.

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## Influences on Indian cuisine

- The climate and geographic features vary across the country and the different regions are distinguished by food habits based on food items available locally.
- Religious beliefs have a great influence on food choices. Hindus and Sikhs do not eat beef, Muslims do not eat pork and Jewish people do not eat pork or shellfish.
- Spices are widely used in Indian cuisine. Common spices include chilli, mustard seed, cumin, fennel, cardamom, cinnamon, ginger, garlic, coriander and turmeric. A spice mix called garam masala is also popular and varies from region to region.

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**A wide variety of spices are used in Indian cuisine**

- Popular vegetables include cauliflower, cabbage, carrot, cucumber, beans, peas, potatoes, sweet potatoes, onion, tomato, corn and eggplant.
- Vindaloo, masala, korma, madras, biriyani and rogan josh are dishes widely cooked throughout the country. Chicken and lamb are used in most dishes.
- Side dishes are served as accompaniments to main meals. Pappadams (a thin crisp made from black gram flour), raita (a sauce made from yoghurt with grated vegetables and spices), chutneys and pickles all provide balance, add colour and help cleanse the palate.
- Bread was introduced by the Portuguese during colonial times and is very popular, particularly for breakfast.
- Meal times are important occasions for families to get together. In many Indian homes, food is made from scratch and parents begin to teach their children the art of cooking traditional family dishes from a very young age.

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# MIDDLE EASTERN CUISINE

The cuisine of this area is greatly diverse and includes Arabic, Iranian, Israeli, Kurdish, Cypriot and Turkish cuisine. The Middle East includes the region formally known as the Fertile Crescent and is the land between the Tigris and Euphrates rivers. Wheat was first cultivated in this area, closely followed by barley, nuts and fruits that feature heavily in many recipes. Middle Eastern cuisine includes a wide variety of foods; however, there is a common theme in most recipes – they all use vibrant spices and herbs to create dishes with deep and complex flavours.

Since ancient times, grains have formed the staple food of Middle Eastern cuisine and still play an integral part in the diet. Wheat, rice and barley are the most common grains used in cooking.




**The countries of the Middle East**

## Characteristics of Middle Eastern cuisine

Hospitality is central to Middle Eastern culture and many people spend hours, sometimes days, preparing an impressive spread of dishes for family feasts.

- Most of the dishes are vegetarian, made with olive oil, chickpeas, beans, lentils and vegetables.
- Cheeses, legumes and yoghurt are the key sources of protein for most people.
- Due to religious restrictions, meat is sometimes excluded from the meals and pork and is not consumed. The meat dishes are commonly made of lamb, chicken and beef.
- Wheat is consumed in the form of flatbreads or pita.
- Eggplant is the most favoured vegetable of Middle Eastern cuisine.
- Nutmeg, caraway, cumin, turmeric, parsley and mint add flavours to the dishes.
- Usually the dishes are prepared by skewering and grilling.
- Consuming tea is a part of the social culture for all ages. Strong Turkish coffee is also popular.


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**Hommus and falafel are popular foods eaten in the Middle East**

## Influences on Middle Eastern cuisine

- Many restaurants and grocery stores follow the dietary laws of Kashrut for Judaism or Halal for Islam. This means that all meat must be Kosher or Halal and food is prepared according to set rules.
- Traditionally, dinner is served with all food on the table or a blanket on the floor. Utensils are not generally used. Instead, food is placed on a slice of pita bread to be eaten.
- The Islamic holiday of Ramadan involves fasting. This is viewed as a method of promoting patience, modesty and spirituality. For each day of the ninth month of the Islamic calendar, participants refrain from eating and drinking from dusk till dawn. The end of Ramadan is marked by a festival, Eid 'al-Fitr, a feast that breaks the fast, during which a large quantity and variety of sweets and pastries are consumed.

# MEXICAN CUISINE

Mexican food, with its famous tacos, nachos and enchiladas, is one of the world's most popular cuisines. The food has experienced a wide variety of influences due to past colonisation and, later, from trade among people from various countries and colonies.

The staple foods of Mexico are native ingredients such as corn, beans, chilli peppers, tomatoes and avocados.

## Characteristics of Mexican cuisine

- The cuisine has sharp flavours with a wide variety of textures, combining fresh ingredients with quick, simple preparation methods.
- Corn is the most common starchy cereal and, while it is eaten fresh, it is also dried, treated with lime and ground to form masa, which is the dough used to make tortillas.
- The most common way to eat corn in Mexico is in the form of a tortilla, which accompanies a variety of dishes. Tortillas can be eaten plain or wrapped around a filling. They form the base for burritos, tacos, quesadillas and enchiladas.
- Chilli is a major flavouring ingredient in Mexican food. Chillies are used either fresh or dried, and vary greatly in heat and spiciness.
- Frijoles (pronounced fri-hole-lez) means 'beans'. Mexican foods use black, red, white or pinto beans.
- The main meal of the day usually consists of a meat served in a cooked sauce with salsa on the side, accompanied by beans and tortillas.
- Northern Mexico is famous for its beef production, while south-eastern Mexico is known for its spicy vegetable and chicken-based foods.
- Seafood is popular in the states that border the Pacific Ocean and the Gulf of Mexico.

## Influences on Mexican cuisine

The early culinary influences on Mexican cuisine were from the Mayan Indians, who used native ingredients such as corn, beans, chilli peppers and herbs. Mexican cuisine has also been heavily influenced as a result of the Spanish conquest of the Aztec Empire in the 16th century. The Spanish conquistadors bought with them meats such as beef, pork, chicken, goat and sheep; dairy products, particularly cheese; and various herbs and spices. Today, locally grown foods such as corn and beans form a large part of the meals.

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# ACTIVITY 14.6

## SALSA TASTE TEST

Salsa (which means 'sauce') is frequently used as a dip, spooned onto savoury dishes as a garnish, or served as an accompaniment to a main meal. Salsa can be either hot and spicy or cool and refreshing – it all depends on the combination of ingredients. The basic ingredients are dried or fresh peppers, onions, tomatoes, garlic and coriander. Oregano, vinegar and olive oil are sometimes added.

### Aim

To carry out a taste test to compare the sensory properties of commercial salsas.

### Method

1 Purchase three varieties of the same brand of commercially prepared salsa with varying degrees of heat (mild, medium and hot).
2 Use corn chips (unsalted) or teaspoons to taste the salsa.
3 Record your results in the table below.

### Results

| Sensory properties | Mild salsa | Medium salsa | Hot salsa |
|---|---|---|---|
| Appearance | | | |
| Aroma | | | |
| Flavour | | | |
| Texture | | | |
| Sound | | | |

### Analysis

1 Which salsa had the most appealing colour? Why?
2 Did the texture of the salsas vary?
3 Was there a significant difference in the degree of heat in each salsa?
4 Read the labels of the commercially prepared salsas and identify the ingredients that would make the salsas taste hot.
5 Some brands of salsa use a sketch of a chilli on the label. Do you think the use of the chilli image on the packaging is more useful for consumers than an ingredient list? Justify your answer.

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**Tacos are a popular food to pair with salsa**

6 Record the ingredients on the labels that are described as additives.
7 Why are additives included in salsas?
8 Why are unsalted corn chips more suitable for the taste test than salted ones?

### Conclusion

Which salsa did you prefer? Why?


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## TESTING KNOWLEDGE

**21** List four herbs and spices that give Thai cuisine its unique flavour.

**22** Draw a concept map to demonstrate the key characteristics of Thai cuisine.

**23** Discuss how religion influences the food customs of Thailand.

**24** Construct a table with the headings North, South, East and West. In each of the columns, place the food items that are specific to each of the regions of India.

**25** What is the purpose of serving side dishes as accompaniments to Indian foods served as main meals?

**26** Identify three grains and four spices that are commonly used in Middle Eastern dishes.

**27** Discuss how the Spanish influenced the ingredients used in Mexican cuisine.

**28** Explain how corn is treated before it is made into tortillas.

**29** Why are tortillas an important ingredient in the Mexican diet?

**30** Describe two main differences between Thai and Mexican cuisine.

## THINKING SKILLS

### Influences on foods trends in Australia

**1** Develop a timeline that shows the significant influences on eating in Australia.

**2** Make predictions about what will be the next significant trend that will influence eating in Australia.

# Design activity 14.1

### ASIAN NOODLE BOX

Noodle Box is Australia's largest and most popular noodle-based franchise and takeaway food chain. The company's owners have asked you to design and create a new menu item for the Chinese New Year festival. The dish should be healthy, tasty and colourful and include Asian herbs, spices and vegetables. The flavourings used will form the sauce base of your noodle dish.

### Design brief

**1** Write a design brief based on the five Ws:

- who – to whom will this new noodle-box item be marketed?
- what – what style of Asian cuisine will be the influence of the new noodle-box item?
- when – at what time of the year will the item be sold?
- where – where will the new food product be sold?
- why – comment on why the dish might have significant cultural meaning for this event.

**2** Develop five criteria by which to judge the success of your end product.

### Investigating

**1** Use recipe books, food magazines or the internet to research the different types of Asian noodles suitable to include in a noodle box. Record these in the table below.

**2** Research the different types of proteins that could be added to the dish. Remember to include a protein ingredient suitable for a vegan customer. Record these in the table on the next page.

**3** Using the information on pages 322–3, complete the table by recording the type/s of Asian vegetables, herbs, spices and flavourings suitable to include in your noodle box.



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14

| | Noodle type | Protein ingredient | Asian vegetables | Herbs and spices | Flavouring ingredients |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |

## Generating

1 Using the information you have gathered from your research into suitable ingredients, make a list of the ingredients that you will use in your noodle-box dish.

2 Using the recipe for Beef Noodle Stir-fry on page 166 as a guide to the quantities of ingredients you require, write up a new recipe for your noodle box.

## Planning and managing

1 Prepare a food order.

2 Before producing your noodle box, write up a production plan, noting any safe work practices to be followed, and identify the major processes to be used.

## Producing

Prepare the product.

## Evaluating

1 Describe the sensory properties – appearance, aroma, flavour, texture and sound – of your noodle box.

2 Evaluate your product according to your previously established criteria to evaluate the success of your noodle-box dish.

3 Share your noodle box with two other people and record their comments.

4 Suggest any modifications you would make to the recipe if you were to produce it again. Explain how you think these modifications will improve the dish.

5 Classify the ingredients of your noodle box on a diagram of the *Australian Guide to Healthy Eating*. Comment on whether your noodle box is a healthy meal option.

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**A noodle box makes a delicious, healthy meal**


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# GNOCCHI WITH SUN-DRIED TOMATO PESTO

2 medium to large starchy potatoes
½ cup flour
½ teaspoon salt
1 teaspoon olive oil
½ egg, lightly beaten

SERVES TWO

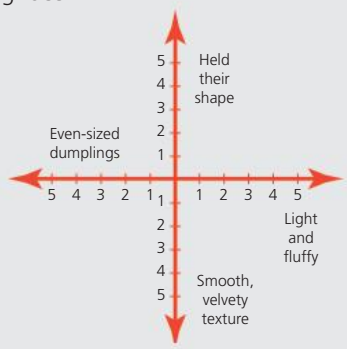
### SUN-DRIED TOMATO AND PEPITA PESTO

½ cup sun-dried tomatoes, preserved in oil
¼ cup toasted pepitas (pumpkin seeds)
½ tablespoon fresh rosemary
1 clove garlic
2 tablespoons grated parmesan cheese
pinch salt and pepper
⅓ cup olive oil

SERVES TWO

## EVALUATION

**1** Use the star diagram below to record the sensory properties of the gnocchi.




**2** If you do not have a ricer, suggest another method you could use to process the potatoes.

**3** Suggest an alternative method for shaping and rolling the gnocchi other than that used in the recipe.

**4** Why is it important to drop the gnocchi into the boiling water one at a time and to remove each one when it rises to the top?

**5** Write a paragraph to describe the health benefits of Gnocchi with Tomato and Pepita Pesto.

## METHOD

**1** Boil the potatoes with their skins on until tender. Peel and put through a ricer (similar to a big Italian-style garlic press). Cool.

**2** Mix the potato, flour, salt, oil and egg into a soft dough.

**3** Shape into a fat loaf and set on a floured board. Cut off pieces and roll very lightly into a cord 1 centimetre thick. Cut the cord into 2-centimetre lengths.

**4** Lightly roll each segment in the centre under your forefinger to give the piece a bow shape.

**5** Set the gnocchi aside. The pieces should not touch.

**6** Bring a large saucepan of water to the boil and drop in the gnocchi one at a time. They are cooked when they rise to the top. Remove immediately to a heat-proof dish using a slotted spoon. Cook 8 to 10 at one time.

**7** Place on serving plate and stir in sun-dried tomato and pepita pesto.

### SUN-DRIED TOMATO AND PEPITA PESTO

**1** Preheat the oven to 180°C.

**2** Place the pepitas on a lined baking tray in a single layer and toast in the oven for 15 minutes.

**3** Place the sun-dried tomatoes and toasted pepitas in a food processor and process to combine.

**4** Add the rosemary, garlic, parmesan and salt and use the pulse function to mix into a chunky paste. Pour in the oil gradually as you pulse.

**5** Serve immediately with cooked gnocchi or pasta. Alternatively, store in a clean, airtight jar covered with a thin layer of olive oil and place in the refrigerator.

Mark Fergus Photography



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# BASIC PASTA DOUGH

120 grams baker's flour or strong flour

¼–½ teaspoon salt

1–2 eggs

2 teaspoons olive oil

SERVES TWO

## METHOD

1. Sift the flour and salt. Lightly beat the eggs.
2. Make a well in the centre of the flour and add the oil and some of the eggs.
3. Gradually mix the flour into the liquid, adding more liquid if necessary, to form a firm dough.
4. Knead the dough for approximately 10 minutes or until very smooth and elastic, using extra flour as required. The dough should be able to stretch without cracking.
5. Cover the dough with plastic wrap. Allow to rest for 20 minutes.
6. Roll out by hand or use a pasta machine to cut into shapes.
7. When cut, hang over an oven rack or thin rod to dry.
8. Place in boiling water and boil for 2–3 minutes or until al dente, or tender to the bite. (You can test this by tasting a piece of the cooked pasta to check whether there is any uncooked starch remaining in the centre.)
9. Drain and serve as desired.

## EVALUATION

1. Why is it important to gradually mix the dry ingredients into the liquid ingredients?
2. What is the purpose of kneading the dough for 10 minutes?
3. Why is it desirable to rest the dough for 20 minutes before using it?
4. Explain why it is essential to cook pasta in plenty of boiling water.
5. Based on the principles of the *Australian Guide to Healthy Eating*, explain why pasta with a vegetable or simple meat sauce is considered a healthy meal.

Getty Images/Nico De Pasquale Photography



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# SPAGHETTI BOLOGNESE



### BOLOGNESE SAUCE

½ onion, finely diced
1 small clove garlic, crushed
1 tablespoon oil
125 grams minced beef
1 cup canned, diced tomatoes
2 tablespoons tomato paste
½ cup stock
¼ teaspoon dried basil
¼ teaspoon dried oregano
few shakes of pepper
1 tablespoon parmesan cheese, for garnish

### PASTA

oil
200 grams dried or fresh pasta
salt

SERVES TWO

## METHOD

### BOLOGNESE SAUCE

1. Heat the oil in a medium-sized saucepan. Add the onion and garlic and gently fry for 2–3 minutes until just beginning to brown.
2. Add the minced beef and stir continuously until well browned.
3. Add the tomatoes, tomato paste, stock, herbs and pepper.
4. Bring the sauce to the boil. Reduce heat to simmer, cover with a lid and cook gently for approximately 30 minutes or until the sauce has thickened. Stir occasionally during cooking to prevent sauce from sticking to the bottom of the saucepan.

### PASTA

1. Fill two-thirds of a large saucepan with water. Place the lid on the saucepan and bring to the boil.
2. Add a teaspoon of oil and a pinch of salt to the water – this will help to prevent the water from boiling over and stop the pasta from sticking together.
3. Gradually add the pasta to the boiling water. Stir once or twice only to separate the pasta.
4. Rapidly boil, uncovered, until the pasta is al dente. (You can check this by tasting a piece of the cooked pasta to check whether there is any uncooked starch remaining in the centre.) Cooking time will vary according to the type of pasta used. After the water has come to the boil, fresh pasta will take 2–4 minutes to cook; dried pasta will take 12–15 minutes.
5. Drain the pasta in a colander.
6. Serve immediately with the bolognese sauce. Garnish with parmesan cheese.

### EVALUATION

1. Why is oil added to the cooking water when boiling pasta?
2. Explain why the sauce is simmered for 30 minutes.
3. How much dried pasta would you prepare for one serving?
4. Explain the meaning of the term 'al dente' in reference to pasta.
5. Classify the ingredients for Spaghetti Bolognese on a diagram of the *Australian Guide to Healthy Eating* and explain whether it could be described as a healthy family meal.

Mark Fergus Photography

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# VIETNAMESE SPRING ROLLS WITH DIPPING SAUCE

14

## SPRING ROLLS

1 teaspoon peanut oil
1 teaspoon fresh ginger, grated
1 clove garlic, crushed
2 spring onions, chopped
125 grams minced pork
100 grams canned small prawns
1 tablespoon fresh mint, chopped
2 teaspoons fish sauce
1 tablespoon sweet chilli sauce
2 teaspoons lime juice
pinch of sugar
15 spring roll wrappers
2 teaspoons cornflour
2 teaspoons water
oil, for frying

## DIPPING SAUCE

2 tablespoons sugar
2 tablespoons hot water
1 tablespoon fish sauce
1 tablespoon lime or lemon juice
1 tablespoon sweet chilli sauce (or 1 small red chilli, sliced)
2 teaspoons white vinegar
2 teaspoons chopped fresh coriander leaves

MAKES 15 SPRING ROLLS

## METHOD

### SPRING ROLLS

1. Heat the oil in a wok and add ginger, garlic and spring onions. Cook until spring onions are soft.
2. Add the pork and cook until the meat is tender and has changed colour. Add the prawns and toss through the meat mixture.
3. Stir in the mint, sauces, lime juice and sugar. Stir and cook for a few minutes until the liquid has been reduced. Spread on a plate and allow to cool.
4. Place 2 teaspoons of mixture in the middle of each spring roll wrapper. Fold each side inwards and roll up. Secure the end of the wrapper with a paste made from the cornflour and water.
5. Deep-fry the rolls in hot oil until golden brown. Drain well on absorbent paper. Alternatively, place the spring rolls on a greased baking tray, lightly spray with oil and bake at 200°C for approximately 10 minutes or until golden.
6. Serve with dipping sauce.

### DIPPING SAUCE

1. Dissolve the sugar in the hot water and boil, uncovered and without stirring, for 5 minutes or until the mixture slightly thickens.
2. Stir in the remaining ingredients and allow to cool.
3. Serve in a small bowl as a dipping sauce for the spring rolls.

## EVALUATION

1. Why is it important to fry the garlic, ginger and spring onions in step 1 of the spring rolls recipe?
2. Explain why it is recommended that you allow the filling to cool before assembling the spring rolls.
3. Explain how the cornflour seals the spring rolls.
4. What are the advantages of baking the rolls in the oven, rather than deep-frying them?
5. Classify the ingredients for the recipe on a diagram of the *Australian Guide to Healthy Eating*. Comment on how well the spring rolls meet the requirements of this food selection model and why it is recommended they should only be eaten sometimes and in small amounts.

Mark Fergus Photography



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# CHICKEN CURRY WITH COCONUT PANCAKES



### CHICKEN CURRY

2 teaspoons oil
1 clove garlic, crushed
1 small piece fresh ginger, grated
1 chilli, seeds removed and finely chopped
½ teaspoon lemongrass, finely chopped
2 skinless chicken fillets, sliced
1 small onion, quartered and separated
1 teaspoon coriander, roughly chopped
1 tablespoon light soy sauce
1 cup coconut cream
½ cup chicken stock
1–2 teaspoons green curry paste (according to taste)
1 extra chilli, to prepare as chilli flower garnish

### COCONUT PANCAKES

1 egg, lightly beaten
½ cup coconut milk
½ cup flour
2 tablespoons shredded coconut
small quantity of butter, for frying

SERVES TWO

## METHOD

### CHICKEN CURRY

1. Heat the oil in a wok over a medium flame and sauté the garlic, ginger, chilli and lemongrass for 1–2 minutes.
2. Add chicken and allow to brown on both sides. Cook for 5–8 minutes. Do not turn the chicken pieces until each side has seared and the juices are sealed in.
3. Add the onion and quickly fry.
4. Stir in the remaining ingredients and simmer for 15 minutes or until the chicken is tender.
5. Serve with coconut pancakes and garnish with chilli flowers and chopped coriander.

### COCONUT PANCAKES

1. Whisk together egg and coconut milk.
2. Sift flour and add to the egg mixture with shredded coconut. Whisk until smooth.
3. Allow to stand for 30 minutes.
4. Melt a small amount of butter in a crepe pan or frying pan (6 centimetres in diameter) over medium heat.
5. Spoon in small quantities of batter.
6. Allow to cook until the surface appears dry and the underneath is golden brown.
7. Loosen edges and turn or flip.
8. Cook the underside until it too is golden brown.
9. Remove and keep warm by wrapping in foil wrap.
10. Serve as an accompaniment to the chicken curry.

Mark Fergus Photography

### EVALUATION

1. Explain why it is important to take great care when chopping chillies.
2. Why are the garlic, ginger, chilli and lemongrass fried before being combined with the chicken?
3. List four other vegetables that could be added to the chicken curry recipe.
4. What effect does standing have on the pancake batter?
5. Classify the ingredients for the Chicken Curry with Coconut Pancakes on a diagram of the *Australian Guide to Healthy Eating* and explain how well it meets the guidelines of this food selection model.

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# THAI FISHCAKES

14

185 grams canned tuna (in brine)
1 teaspoon Thai green curry paste
¼ cup coconut cream
2 tablespoons cornflour
1 egg
2 tablespoons coriander, chopped
1 cup fresh breadcrumbs
2 tablespoons peanut oil
sweet chilli dipping sauce

SERVES TWO

## METHOD

1. Drain the tuna well.
2. Place the tuna in a food processor with the Thai curry paste, coconut cream, cornflour, egg and coriander.
3. Process until just combined – do not over-process or allow the mixture to become paste-like.
4. Add the breadcrumbs and combine in the food processor; if too wet, add more breadcrumbs.
5. Shape tablespoons of mixture into small patties.
6. Rest the patties in the refrigerator for 10 minutes to firm.
7. Heat oil in frying pan and cook fishcakes for 2–3 minutes or until lightly browned all over. Turn once only.
8. Drain on absorbent paper before serving.
9. Serve in lettuce cups with a sweet chilli dipping sauce.

## EVALUATION

1. Why is it important to drain the tuna well before adding it to the other ingredients?
2. What is the purpose of adding fresh breadcrumbs to the mixture?
3. List the important safety issues to consider when frying the fishcakes.
4. Explain why it is important to drain the fishcakes on absorbent paper before serving.
5. Identify the benefits of including fish in a well-balanced diet.

Mark Fergus Photography



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# SPICED INDIAN POTATOES WITH CAULIFLOWER AND LAMB

3 tablespoons sunflower oil

8 curry leaves

1 onion, finely diced

1 large potato, peeled and diced into 2-centimetre cubes

200 grams cauliflower, cut into small florets

½ red capsicum, thinly sliced

1 teaspoon ginger, grated

1 clove garlic, crushed

¼ teaspoon turmeric powder

¼ teaspoon chilli powder

½ teaspoon salt

¼ cup water

250 grams minced lamb

2 tablespoons fresh coriander, chopped

SERVES TWO

## METHOD

1. Heat 2 tablespoons of the oil in a large frying pan, add the curry leaves and half the onions and sauté for about 30 seconds. Add the potatoes and cauliflower and cook for 2 minutes.
2. Add the red capsicum, salt and water. Turn heat down to low, cover the frying pan with a lid and allow the vegetables to steam for 15–18 minutes. When the potatoes are cooked, remove from the heat and transfer the vegetables to a plate.
3. Add the remaining tablespoon of oil to the frying pan and sauté the remainder of the onion for 2 minutes.
4. Add the ginger, garlic, turmeric, chilli and lamb mince.
5. Stir the meat and spices, using a wooden spoon to break up the meat to stop lumps from forming. Cook for 10 minutes.
6. Add the reserved vegetables to the lamb mixture. Stir to gently combine.
7. Divide the spiced Indian potatoes with cauliflower and lamb between two bowls, top with fresh coriander and serve with naan bread (page 113), mango chutney and raita.

Mark Fergus Photography

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the recipe and comment on the overall success of this dish. What changes would you make if you were to prepare the dish again?
2. Identify the process that causes the lamb to become firm when it is cooked. Explain what would occur if the lamb was not broken up with a spoon during the cooking process.
3. What other protein foods could be used in this dish instead of minced lamb?
4. Outline two safety rules to follow when cooking on the stove top.
5. Classify the ingredients for the recipe on a diagram of the *Australian Guide to Healthy Eating* and explain how well it meets the guidelines of this food selection model.



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# BEETROOT FALAFEL WITH PARSLEY SALAD

14

## BEETROOT FALAFEL

1 small red onion, finely diced

2 cloves garlic, crushed

2 teaspoons olive oil

400 grams canned chickpeas, drained and rinsed

1 beetroot (approximately 250 grams), peeled and grated

½ cup coriander leaves, roughly chopped

2 tablespoons tahini

2 teaspoons ground cumin

1 teaspoon smoked paprika

salt and pepper

olive oil spray or 1 tablespoon olive oil, extra

## PARSLEY SALAD

1 cup flatleaf parsley, leaves only

1 tomato, seeded and diced

1 spring onion, thinly sliced

1 teaspoon olive oil

salt and pepper

## METHOD

1. Line a baking tray with baking paper.
2. Place the onion, garlic and oil in a small frying pan and sauté until soft but not brown.
3. Place the chickpeas, grated beetroot, coriander leaves, tahini, cumin, smoked paprika, sautéd onion and garlic in a small food processor. Season well with salt and pepper.
4. Process for 2 minutes to form a smooth firm paste.
5. Using damp hands, roll heaped tablespoons of mixture into small balls and place on the lined baking tray. Allow to rest at room temperature for 10 minutes.
6. Preheat the oven to 200°C.
7. Spray the beetroot falafel with olive oil spray or brush them lightly with 1 tablespoon olive oil.
8. Bake in the preheated oven for 20 minutes until crisp.
9. To prepare the parsley salad, wash and dry the parsley leaves and place them in a bowl along with the diced tomato, sliced spring onion and oil. Season well with salt and pepper and toss to combine.

## TO SERVE

Serve the falafel with Homemade Pita Bread (page 113), Parsley Salad and Tzatziki Dip (page 58) or Herbed Yoghurt (page 210).

## EVALUATION

1. Describe the sensory properties – appearance, aroma, flavour, texture and sound – of the Beetroot Falafel with Parsley Salad (served with pita bread and tzatziki dip).
2. Outline two safety rules to observe when using a food processor.
3. Why is it important to allow the falafel to rest for 10 minutes before baking them in the oven?
4. Explain why health professionals would recommend baking the falafel in the oven rather than pan frying them.
5. Classify the ingredients for the Beetroot Falafel with Parsley Salad (served with pita bread and tzatziki dip) on a diagram of the *Australian Guide to Healthy Eating*. Explain how well it meets the recommendations of this food selection model.

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# CHICKEN BURRITOS

This recipe uses a light white sauce to bind the filling ingredients. This has health benefits because the sauce is much lower in fat than sour cream.

### TO POACH CHICKEN

1 cup chicken stock

¼ onion

8 centimetres celery, chopped

½ bay leaf

1 chicken breast, skinned

### FILLING

1 chicken breast, poached, or 1 cup cooked chicken

2 teaspoons oil

½ onion, diced

2 teaspoons chilli sauce

3 teaspoons cornflour

150 millilitres light evaporated milk

### TO ASSEMBLE BURRITOS

4 tortillas

lettuce, shredded (as needed)

tomato, diced (as needed)

avocado, chopped (as needed)

salsa

SERVES TWO

## METHOD

### TO POACH CHICKEN

1. Add the chicken stock, onion, celery and bay leaf to a pan with a tight-fitting lid. Bring to boil.
2. Add the chicken breast and reduce heat to simmer. Cover with lid and cook for 8 minutes.
3. Turn off heat and allow chicken to cool in the liquid.

### TO ASSEMBLE BURRITOS

1. Preheat oven to 180°C.
2. Dice the cooked chicken into 1-centimetre cubes.
3. Heat oil in pan, add onion and cook for 1 minute. Remove from heat.
4. Add chilli sauce, cornflour and light evaporated milk. Stir to combine.
5. Return to heat and bring to the boil, stirring constantly. Simmer for 1 minute – the sauce should have thickened. Remove saucepan from heat.
6. Fold chicken through the sauce.
7. Wrap the tortillas together in foil and warm for 10 minutes in preheated oven.
8. Fill each burrito with chicken mixture, lettuce, tomato, avocado, salsa and extra chilli sauce (if desired), then roll up and serve.

## EVALUATION

1. What are the advantages and disadvantages of poaching your own chicken for this recipe?
2. When making the sauce for the filling, why is it important to bring the mixture to the boil in step 5 of the recipe?
3. Why are the tortillas wrapped and warmed in the oven before being filled?
4. Which part of this production did you find the most challenging? Why?
5. Plot the ingredients of the Chicken Burritos on a diagram of the *Australian Guide to Healthy Eating*. Comment on the nutritional rating you would give this dish.

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# TACOS

14

## SPICY MEAT FILLING

2 teaspoons oil
¼ onion, finely diced
½ clove garlic, crushed
100 grams minced meat
1 tablespoon tomato paste
⅛–¼ teaspoon chilli powder
pinch salt, pepper and sugar
¼ teaspoon ground cumin
¼ teaspoon ground coriander
½ teaspoon Worcestershire sauce
¼ cup water
1 tablespoon canned kidney beans, rinsed and roughly chopped

## ASSEMBLING THE TACOS

2 king-sized taco shells
½ tomato, diced
lettuce leaf, shredded
30 grams cheese, grated
chilli sauce

SERVES ONE

## METHOD

### SPICY MEAT FILLING

1. In a small saucepan, heat the oil and lightly brown the onion and garlic.
2. Add minced meat and stir until brown. Mash with a fork or potato masher to break the meat into small pieces.
3. Add the tomato paste, spices, flavourings, water and kidney beans.
4. Simmer for 5–10 minutes until the water has evaporated and the mixture has thickened and is almost dry.

### TO ASSEMBLE TACOS

1. Preheat oven to 180°C.
2. Place the taco shells on a baking tray with the openings facing down so they remain open during cooking. Heat shells in oven for 4 minutes.
3. Fill with the spicy meat filling, tomato, lettuce and cheese. Top with chilli sauce.

## EVALUATION

1. Why are the onion and garlic lightly browned before the meat is added to the spicy meat filling?
2. Why are the taco shells heated upside down?
3. Describe two safe work practices you should consider when removing food from the oven.
4. What changes would you make to the recipe if you were to make it again?
5. Plot the ingredients of the Tacos on a diagram of the *Australian Guide to Healthy Eating*. Comment on their nutritional rating.

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# NACHOS

2 teaspoons oil
¼ onion, finely diced
½ clove garlic, crushed
⅛ teaspoon chilli powder
¼ teaspoon paprika
¼ teaspoon cumin
1 tomato, skinned and diced
2 tablespoons canned kidney beans, rinsed and roughly chopped
1 tablespoon tomato paste
¼ teaspoon brown sugar
¼ cup water
30 grams tasty cheese, grated
extra pinch of paprika, for garnish
corn chips

SERVES ONE

## METHOD

1. Preheat oven to 180°C. Omit this step if the final cooking is done in the microwave.
2. Heat the oil in a small saucepan and sauté the onion, garlic and spices.
3. Cook for 2–3 minutes but do not brown.
4. Add the tomato, beans, tomato paste, sugar and water. Cover and gently simmer for about 5 minutes or until the mixture is thick. Stir occasionally.
5. Arrange the corn chips on an ovenproof plate and spoon mixture into the centre.
6. Sprinkle with cheese and a pinch of paprika.
7. Cook in oven until cheese has melted or microwave on medium-high for 2–3 minutes.

### HOW TO SKIN THE TOMATO

1. Remove the stem end from the tomato using the point of a vegetable knife.
2. Place the tomato in a large bowl. Boil enough water to cover the tomato.
3. Pour the water over the prepared tomato and let it stand for 30 seconds or until the skin begins to split. Drain off the hot water.
4. Cover in cold water. Stand for 30 seconds. Drain off cold water.
5. Allow the tomato to cool, then peel.

Mark Fergus Photography

## EVALUATION

1. Identify the ingredients in the recipe that are classified as spices.
2. Why are the kidney beans an important part of the sauce?
3. What processed product could you use instead of peeling and dicing a fresh tomato?
4. Why is the sauce simmered with the lid on the saucepan in step 4?
5. Explain why health professionals would have some health concerns about serving corn chips with dips at a party.



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# GLOSSARY

**aeration or leavening** to trap air in a mixture that then expands as the product cooks, and causes the product to rise and be light in texture

**aquaculture** the breeding, rearing and harvesting of fish and shellfish in coastal marine waters, open oceans and freshwater systems

***Australian Guide to Healthy Eating*** a food model that is a pictorial representation of *Dietary Guideline 2* – enjoy a wide variety of foods from the five food groups each day

**baking** cooking food in an oven without the addition of fat or oil

**blanching** a method of partly cooking food by plunging it briefly into boiling water

**boiling** cooking food in water at 100°C

**breakfast** the first meal you eat soon after waking up from your night's sleep

**bycatch** fish or other marine animals that are caught unintentionally by commercial fishing operations

**casein** the protein present in the curds of milk

**cardiovascular disease** a general term used to describe a range of diseases, including heart disease, stroke and blood vessel disease

**caramelisation** the process that sugars undergo when heated to high temperatures to develop a golden brown colour

**cheese** a by-product from the curds of milk that are separated from the water and lactose or whey

**coagulation** the permanent change of the physical and chemical structure of protein

**coeliac disease** a disease of the small intestine associated with permanent intolerance or hypersensitivity to gluten

**conduction** when heat is transferred from one molecule to another by collision or movement

**connective tissue** the tissue in meat that links and holds together muscles

**considerations** factors in the design brief, such as the season of the year or the skills of the chef, which are more flexible than constraints but may also influence the design and development of the product

**constraints** factors in the design brief with which the product must comply

**convection** when the molecules in liquids or gases move from a warmer area to a cooler one

**cooking** the transfer of energy from a heat source to food

**cross-contamination** the transfer of harmful bacteria from uncooked food to food that has been cooked or prepared

**cruciferous** a diverse family of vegetables that includes broccoli, cauliflower, cabbage, Brussels sprouts, bok choy, kale and spinach

**danger zone** the temperature – between 5°C and 60°C – at which bacteria can multiply quickly

**design brief** specific information about the type of product to be developed and the audience at which the new product is aimed

**design process** the process of investigating, generating, planning and managing, producing and evaluating

**dextrinisation** the process that occurs when the starch in flour is exposed to dry heat and is broken down into dextrin, resulting in a change in colour to golden brown

**diabetes** a disease where the pancreas is unable to produce sufficient insulin to enable the glucose produced during digestion to be absorbed into the bloodstream

**digestion** the breakdown of large pieces of food into smaller components that can be absorbed into the bloodstream

**electric oven** an oven that uses radiant and convection heat produced by electricity to cook food

**enzymatic browning** a process that occurs when the enzymes in cut or peeled fruits cause browning when exposed to oxygen in the air

**fast** a period of time during which nothing is eaten

**fermentation** the process of yeast growing and reproducing by budding, then converting carbohydrates into carbon dioxide, alcohol and water

**fire blanket** an insulated blanket used to extinguish small fires in the kitchen

**firestick farming** the practice undertaken by Indigenous Australians of using fire to burn vegetation to make animal hunting easier and to reorganise the composition of the plants and animals in the area

**food allergy** an abnormal immunological reaction to food

**food** any substance that we eat or drink that provides the body with chemical substances called nutrients

**food intolerance** a reaction to food that is of a similar type to food allergies, but generally less severe

**food models** food selection guides that present a summary of the key information in the *Australian Dietary Guidelines* in a pictorial format

**food poisoning** an illness caused by eating food that has been contaminated with harmful bacteria

**food security** the state of having reliable access to a sufficient quantity of affordable, nutritious food


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**food spoilage** the deterioration in the physical, sensory and chemical properties of food over time

**fructose** a natural sugar found in fruit and honey

**frying** a method of cooking food by total or part immersion in fat or oil that is heated to between 150°C and 220°C

**gas oven** an oven that uses radiant and convection heat produced by gas to cook food

**gelatinisation** the process that occurs when starch granules in the endosperm of cereals absorb liquid in the presence of head and thicken the liquid

**glucose** a simple sugar that is found in some vegetables and sweet fruits

**gluten** the main protein in wheat flour

**glycaemic index (GI)** a ranking of carbohydrate foods based on the immediate effect they have on blood sugar levels

**glycogen** energy stored in the muscle, tissue and liver

**grain (cereal) foods** edible seeds of grasses, including wheat, oats, rice, rye, barley, millet, quinoa and corn

**grilling** a fast, dry method of cooking that uses intense heat radiated by an electrical element, a gas flame, glowing charcoal, or an open wood fire

**Health Star Rating** a front-of-pack labelling system that rates the overall nutritional profile of packaged food

**hawker-style foods** small portions of food traditionally prepared, cooked and served in front of the customer on the street

**homogenisation** process by which the globules of fat within the milk are broken into minute particles so that the cream does not rise to the surface

**in season** the time of year when a fruit or vegetable has its best sensory properties

**kneading** a process in which air bubbles are evenly distributed and the gluten strengthened in a yeast dough

**legumes** the seeds from the Leguminosae family. These vegetables are eaten in the immature form as green peas and beans, and in the mature form as dried peas, beans, lentils and chickpeas

**lactose** the sugar (carbohydrate) present in milk

**lactose intolerance** the reduced ability to digest milk sugars, due to insufficient amounts of the enzyme lactase

**Maillard reaction** a browning reaction that occurs when sugar or starch and a protein are present during baking

**marbling** the even distribution of fat cell deposits in red muscle tissue

**marinate** to soak meat or other food in a liquid with an acid food ingredient to tenderise and/or enhance the flavour

**metric measuring tools** spoons, cups, jugs and scales that have been calibrated to accurately measure ingredients by weight and volume using the metric system

**modified atmosphere packaging (MAP)** a system that changes or modifies the atmosphere or gas inside a package, in order to extend the shelf life of the food

**monounsaturated fats** fats found in olives, olive oil, avocados and nuts that have been shown to reduce blood cholesterol levels

**muscle fibres** the cells that are bound into thin sheets of connective tissue; these bundles then form groups to create muscles

**no-till farming** a farming practice where the stubble from last year's crop is left in the soil to enrich and stabilise it

**nutrients** chemical substances in food that are broken down during digestion, including protein, carbohydrates, fat, vitamins and minerals

**osteoporosis** a medical condition that occurs when calcium is lost from the bones, making them fragile and easily broken

**Pacific Rim cuisine** foods originating from countries around the edges of the Pacific Ocean

**pasteurisation** process that destroys pathogenic, or disease-causing bacteria and extends the shelf life of milk

**poaching** a method of cooking delicate foods in liquid at a temperature just below simmering point (85°C)

**pome fruit** fruit that has crisp, juicy flesh surrounding a core that contains seeds, for example, apples and pears

**preferred option** the design option that best meets the requirements set out in in the design brief

**processed breakfast cereals** grains such as corn, wheat and rice that have been softened by precooking and then dried; most are fortified or have had vitamins and minerals added during processing

**proving** a process in which a yeast dough is rested to allow time for fermentation to take place

**qualitative or sensory analysis** the evaluation of the sensory properties of food, such as appearance, aroma, flavour, texture and sound

**quantitative measures** ways to measure the physical, chemical or nutritional properties of food

**radiation** the transmission of heat energy in the form of rays, as occurs during grilling

**recipe** a list of ingredients and instructions for preparing food

**roasting** a method of cooking food in an oven using a minimum amount of fat or oil

**saturated fats** fats found mainly in foods of animal origin such as meat, cheese and butter that are linked to raised cholesterol levels; coconut oil and palm oil are also high in saturated fats

**sensory properties** the appearance, aroma, flavour, texture and sound of food

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**small appliance** equipment such as toasters, food processors, handheld beaters or blenders

**solanine** a toxin that develops when potatoes are exposed to light, resulting in a green colour on all exposed surfaces

**specifications** the considerations and constraints within the design brief

**steaming** cooking food in the steam made from boiling water

**stewing** a long, slow method of simmering food in a small amount of liquid

**sustainable farming** farming practices that maintain the land's productivity so that it will be available for future generations

**sustainable fishing** the practice of leaving enough fish in the ocean so that the fish population can remain productive and healthy

**Thai flavour wheel** a diagram that shows the five flavours – salty, sweet, sour, spicy and bitter – that are blended in Thai foods

**trans fats** bad fats that can lead to serious health concerns and should be avoided; they are found mainly in hydrogenated vegetable oil used by food manufacturers in processed and fast foods

**wild bush foods** the huge variety of edible native Australian herbs, spices, mushrooms, fruits, flowers, vegetables, animals, birds, reptiles and insects

**yeast** a single-celled, microscopic fungus


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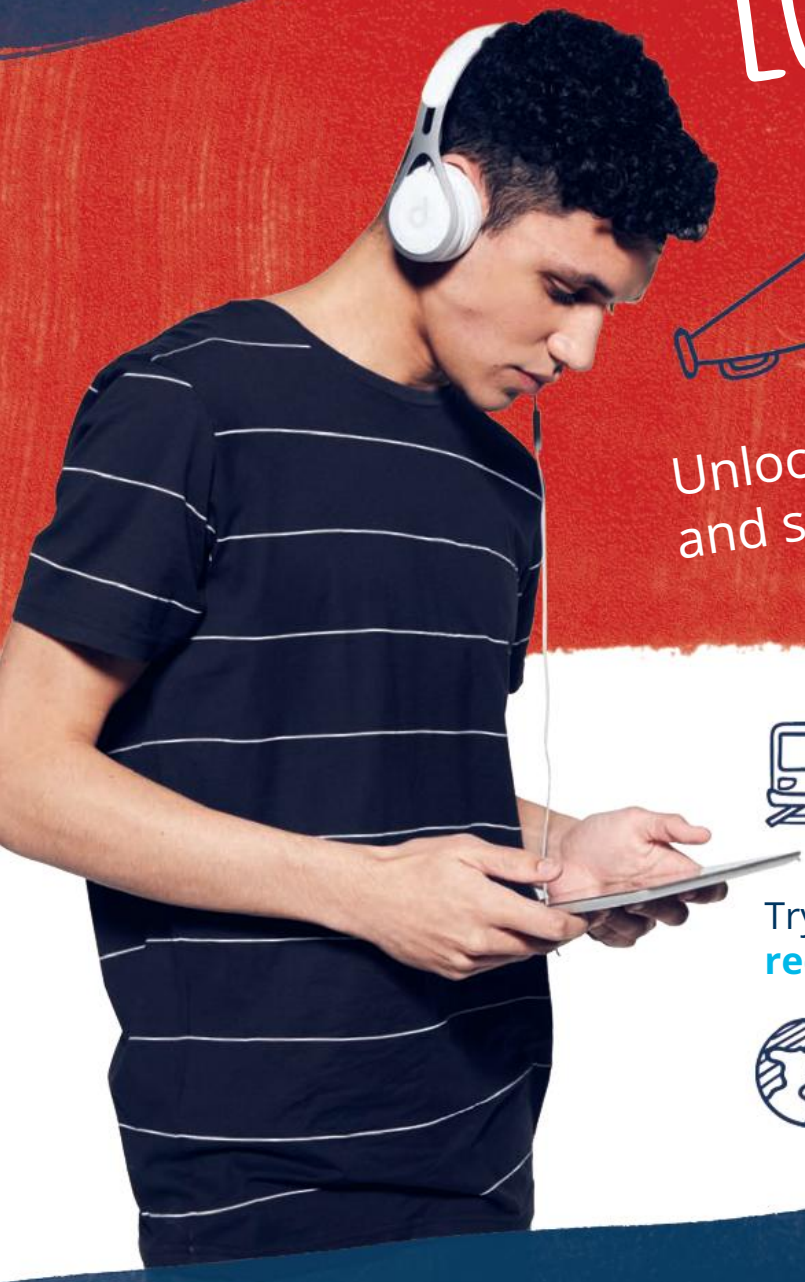

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