

sixth edition

MATHS MATE



trial pack

Includes:

How to use Maths Mate

Record keeping sheet: Term 1

Worksheet masters: Term 1, Sheets 1 to 4

Test masters: 1A & 1B

Worksheet answers: Term 1, Sheets 1 to 4

Test answers: 1A & 1B

Problem Solving Hints & Solutions

Skill Builders:

10.1 Finding the unit rate and the unit price.

10.2 Simplifying ratios.

20.6 Solving equations involving algebraic fractions.



J. B. Wright & I. Tutos

HOW TO USE MATHS MATE

- Students complete the **Maths Mate sheet**.
Parents sign the work.

The image shows two pages of the 'Maths Mate' worksheet. Page 1 (left) is titled 'Term 1 - Sheet 1' and contains various math problems:

- 1. Addition: $153 + 10792684$
- 2. Subtraction: $9116812351047 - 1$
- 3. Multiplication: 842×911735610
- 4. Division: $164 \div 243282036122840$
- 5. Large Number: $840 \div 10$
- 6. Fractions: $3 \times \frac{1}{8} =$
- 7. Percentages: Write 15 out of 100 as a percentage.
- 8. Decimals: $5.23 + 2.63$
- 9. Fractions: $\frac{7}{9} \times \frac{3}{9} =$
- 10. Fractions: $3 \times \frac{1}{8} =$
- 11. Percentages: Write 15 out of 100 as a percentage.
- 12. Decimals: What percentage of the shape is shaded?
- 13. Integers: Which location has the lowest altitude?
- 14. Ratios: Simplify the ratio 4:6
- 15. Indices: Write the power as a product: $2^2 =$
- 16. Order of Operations: $12 + 8 - 9 =$
- 17. Exploring Numbers: Which number is the largest?
- 18. Multiples: List all the multiples of 4 up to 20.
- 19. Number Patterns: Complete the pattern: 6, 13, 20, 27, 34, ...
- 20. Expressions: Simplify $y + y$
- 21. Substitution: If $y = 2$, find the value of $y + 6$
- 22. Equations: $4 + \square = 10$

Page 2 (right) contains:

- 23. Coordinates: Plot a point on a grid.
- 24. Units of Measurement: 3 days = \square hours
- 25. Perimeter: Find the perimeter of a square.
- 26. Area/Volume: Find the area of a rectangle.
- 27. Shapes: Use a protractor to measure an angle.
- 28. Location/Transformation: Taj Mahal - India. Move 4 units right, then 6 units up.
- 29. Statistics: Golf Open Championship winners.
- 30. Probability: Lego pieces in a box.
- 31. Problem Solving 1: Cutting a log.
- 32. Problem Solving 2: Moving a match.
- 33. Problem Solving 3: Exam scores.

- Students correct their work in class. Students colour the boxes to record their correct answers.

- The student **record keeping sheets** are completed. Students can transfer their results directly from the worksheet to the results sheet.

- Students identify the appropriate Skill Builder as listed on the record keeping sheet.

The image shows a 'Maths Mate' record-keeping sheet for Paul Wright, Class 8B, Teacher Miss Bourke. It features a grid of boxes for recording scores for each problem from the worksheet. The student's scores are as follows:

Problem	Score
1	10
2	10
3	10
4	10
5	10
6	10
7	10
8	10
9	10
10	10
11	10
12	10
13	10
14	10
15	10
16	10
17	10
18	10
19	10
20	10
21	10
22	10
23	10
24	10
25	10
26	10
27	10
28	10
29	10
30	10
31	10
32	10
33	10
Total Correct	26

5. Students complete the **Skill Builder**. Students are supported with instructions and worked examples.

8. decimal \times, \div
Skill 8: Multiplying a whole number by a decimal number (\times, \div)

Blue 1 2 3 4 4
 Green 1 2 3 3 4 4

Multiply from right to left, disregarding the decimal point.
 • Count the number of places to the right of the decimal point in the question.
 • Position the decimal point the same number of places from the right in the answer.

Q. $0.62 \times 4 =$ A. $0.62 \times 4 = 2.48$ $4 \times 2 = 8$ write 8
 $4 \times 6 = 24$ carry 2, write 4
 $4 \times 0 + \text{carry } 2 = 2$ write 2

$\begin{array}{r} 0.62 \\ \times 4 \\ \hline 2.48 \end{array}$ $\begin{array}{r} 4 \\ \times 2 \\ \hline 8 \end{array}$ $\begin{array}{r} 24 \\ \times 2 \\ \hline 48 \end{array}$

7 decimal places in question so leave decimal point 7 places from right in the answer.

a) $0.9 \times 3 =$ 2.7 b) $0.8 \times 2 =$ c) $0.7 \times 5 =$

$\begin{array}{r} 0.9 \\ \times 3 \\ \hline 2.7 \end{array}$ $\begin{array}{r} 0.8 \\ \times 2 \\ \hline \end{array}$ $\begin{array}{r} 0.7 \\ \times 5 \\ \hline \end{array}$

d) $0.4 \times 6 =$ e) $0.3 \times 7 =$ f) $0.6 \times 9 =$

$\begin{array}{r} 0.4 \\ \times 6 \\ \hline \end{array}$ $\begin{array}{r} 0.3 \\ \times 7 \\ \hline \end{array}$ $\begin{array}{r} 0.6 \\ \times 9 \\ \hline \end{array}$

g) $5.1 \times 3 =$ h) $4.3 \times 6 =$ i) $2.7 \times 4 =$

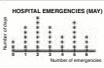
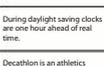
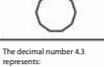
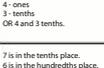
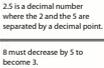
$\begin{array}{r} 5.1 \\ \times 3 \\ \hline \end{array}$ $\begin{array}{r} 4.3 \\ \times 6 \\ \hline \end{array}$ $\begin{array}{r} 2.7 \\ \times 4 \\ \hline \end{array}$

j) $3.8 \times 2 =$ k) $1.9 \times 5 =$ l) $7.3 \times 8 =$

$\begin{array}{r} 3.8 \\ \times 2 \\ \hline \end{array}$ $\begin{array}{r} 1.9 \\ \times 5 \\ \hline \end{array}$ $\begin{array}{r} 7.3 \\ \times 8 \\ \hline \end{array}$

page 33 © Maths Mate Blue/Green Skill Builder 8

6. The Skill Builders also have a **Glossary** and **Maths Facts**.

cylinder	• A solid with two parallel circular bases of the same size.		pp. 7-10
data	• Collection of information that can include facts, numbers or measurements.		
day	• A unit of time equal to 24 hours.		A day starts and ends at midnight.
daylight saving time	• Use of fictitious time in the summer months that prolongs light in the evening hours.		During daylight saving clocks are one hour ahead of real time.
deca	• Prefix meaning ten.		Decathlon is an athletics contest with ten events.
decade	• A unit of time equal to 10 years.		2011 to 2020 make a decade.
decagon	• A shape with 10 sides.		
decimal number	A number based on the ten place value system where a decimal point separates the units and tenths.		
decimal place		The decimal number 4.3 represents: 4 - ones 3 - tenths 0.4 and 3 tenths.	
decimal point (.)	• A point that separates the units and tenths in a decimal number.		
decrease	• To make smaller.		2.5 is a decimal number where the 2 and the 5 are separated by a decimal point. 7 is in the tenths place. 6 is in the hundredths place. 3 is in the thousandths place.
deduct	• To take away.		8 must decrease by 5 to become 3. If you deduct 1 from 3 there are 2 left. $3 - 1 = 2$

page 334 © Maths Mate Blue/Green Skill Builder Glossary

7. Testing is available after every 4 Maths Mate sheets.

MATHS MATE
Test 1
 Covering worksheets 1.1 - 1.4
 Name: _____

1. [Whole Numbers to 10]

1	5	3	10	7	9	2	6	8	4
---	---	---	----	---	---	---	---	---	---

2. [Whole Numbers to 10]

12	10	8	14	7	5	13	11	6	9
----	----	---	----	---	---	----	----	---	---

3. [Whole Numbers to 12]

12	6	3	8	9	11	7	4	10	5
----	---	---	---	---	----	---	---	----	---

4. [Whole Numbers to 12]

100	50	40	90	20	70	30	80	110	60
-----	----	----	----	----	----	----	----	-----	----

5. [Large Number \pm] $\begin{array}{r} 6590 \\ - 2340 \\ \hline \end{array}$

6. [Large Number \div] $\frac{96000}{100} =$

7. [Decimal \pm] $\begin{array}{r} 2.75 \\ + 6.19 \\ \hline \end{array}$

8. [Decimal \times] $\begin{array}{r} 0.8 \\ \times 4 \\ \hline \end{array}$

9. [Fraction \pm] $\frac{3}{10} + \frac{4}{10} =$

10. [Fraction \pm] $\frac{2}{7} \times 3 =$

11. [Percentages] Write as a percentage: 37 out of 100.

12. [Decimals / Fractions / Percentages] What percentage of the shape is shaded?

13. [Integers] Which state has the lowest recorded temperature?
 A) -13°C Tasmania
 B) -11°C Victoria
 C) -23°C NSW

14. [Rates / Ratios] Simplify the ratio 12 : 16

15. [Indices / Square Roots] Write the product as a power: $9 \times 9 \times 9 \times 9 =$

16. [Order of Operations] $12 + 3 - 8 =$

17. [Exploring Numbers] Which number is the largest?
 A) 20543
 B) 20345
 C) 20534

18. [Multiples / Factors / Primes] List the common multiples of 2 and 5 up to 35.

19. [Number Patterns] Complete the pattern: 4, 9, 14, 19, 24,

20. [Expressions] Simplify $x + 8$

21. [Substitution] If $d = 7$, find the value of $d + 9$

22. [Equations] $+ 6 = 14$

page 1 1 2 3 4 5 6 7 8 9 10 11 12

23. [Coordinate] Start at the origin. Move 6 units to the left along the x-axis and then up 3 units. Plot a point. What are the coordinates of the point?

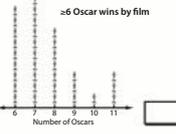
24. [Units of Measurement / Time] 6 hours = minutes

25. [Perimeter] Use a ruler to find the perimeter of the equilateral triangle in centimetres.

26. [Area / Volume] Find the area of the rectangle.

27. [Shapes] Use a protractor to measure this angle.

28. [Location / Transformations] Which of these Italian cities is west of Cremona?


29. [Statistical] How many films have won ten or more Oscars?


30. [Probability] There are 6 toffee, 14 caramel and 8 nut centred chocolates in a box. How many chocolates do you have to pick to make sure you have at least one nut centred chocolate?

31. [Problem Solving 1] The digits 2, 4, 7, 8 and 9 are arranged to form even, five-digit numbers. What is the tens digit in the largest of these numbers?

32. [Problem Solving 2] Some cubes have been removed from an array of $4 \times 3 \times 3$. How many cubes remain?

33. [Problem Solving 3] Each of the digits 1 to 9 appears once in the sum below. Fill in the missing digits.
 $\begin{array}{r} \square 42 \\ + \square \square 5 \\ \hline \end{array}$

page 2 1 2 3 4 5 6 7 8 9 10 11 12

8. If a student is having difficulty with their problem solving strategies, then the **Problem Solving Hints & Solutions** can be used by teachers to develop students' problem solving skills.

1.3

31. Hint: Consider the properties of even numbers. Make an organised list ordering the digits from largest to smallest.
Solution: To be even, the numbers must end in 4 or 6. The largest possibilities for each ending are 76534 and 75436. The largest number is 76534 and the hundreds digit is 5.

MATHS MATE



Name:

Class:

Teacher:

Worksheet Results

Term 1

	Sheet 1	Sheet 2	Sheet 3	Sheet 4	Skill Builder links	Sheet 5	Sheet 6	Sheet 7	Sheet 8	Skill Builder links										
NUMBER	1. [Long \times, \div]	1	1	1	1	1.1	1	1	1	1	1.5									
	2. [Decimal $+, -$]	2	2	2	2	2.1	2	2	2	2	2.1									
	3. [Decimal \times, \div]	3	3	3	3	3.1	3	3	3	3	3.2									
	4. [Fraction $+, -$]	4	4	4	4	4.1,2	4	4	4	4	4.1,2									
	5. [Fraction \times, \div]	5	5	5	5	5.1	5	5	5	5	5.5									
	6. [Percentages]	6	6	6	6	6.1,2	6	6	6	6	6.3									
	7. [Decimals / Fractions / Percentages]	7	7	7	7	7.1,2	7	7	7	7	7.3									
	8. [Integer $+, -$]	8	8	8	8	8.1	8	8	8	8	8.2									
	9. [Integer \times, \div]	9	9	9	9	9.1	9	9	9	9	9.2									
	10. [Rates / Ratios]	10	10	10	10	10.1	10	10	10	10	10.2,3									
	11. [Indices]	11	11	11	11	11.1	11	11	11	11	11.1									
	12. [Square Roots]	12	12	12	12	12.1	12	12	12	12	12.2									
	13. [Exploring Number]	13	13	13	13	13.1	13	13	13	13	13.2									
	14. [Financial Mathematics]	14	14	14	14	14.1	14	14	14	14	14.2									
	15. [Number Patterns]	15	15	15	15	15.1	15	15	15	15	15.2									
ALGEBRA	16. [Expressions]	16	16	16	16	16.1	16	16	16	16	16.1									
	17. [Substitution]	17	17	17	17	17.1	17	17	17	17	17.2									
	18. [Expansion]	18	18	18	18	18.1	18	18	18	18	18.1									
	19. [Factorisation]	19	19	19	19	19.1	19	19	19	19	19.1									
	20. [Equations]	20	20	20	20	20.1	20	20	20	20	20.2									
	21. [Coordinate Geometry]	21	21	21	21	21.1	21	21	21	21	21.2,3									
MEASUREMENT	22. [Units of Measurement / Time]	22	22	22	22	22.1	22	22	22	22	22.2									
	23. [Perimeter / Area]	23	23	23	23	23.1	23	23	23	23	23.5									
	24. [Surface Area]	24	24	24	24	24.1	24	24	24	24	24.2									
	25. [Volume]	25	25	25	25	25.1	25	25	25	25	25.2									
	26. [Pythagoras]	26	26	26	26	26.1	26	26	26	26	26.2									
	SPACE	27. [Angles]	27	27	27	27	27.1	27	27	27	27	27.2								
28. [Geometric Reasoning]		28	28	28	28	28.1,2,3	28	28	28	28	28.4									
STAT.	29. [Statistics]	29	29	29	29	29.1,3,4	29	29	29	29	29.2,3,4									
PROB.	30. [Probability]	30	30	30	30	30.1	30	30	30	30	30.2									
PROBLEM SOLVING	31. [Problem Solving 1]	31	31	31	31	Hints & Solutions	31	31	31	31	Hints & Solutions									
	32. [Problem Solving 2]	32	32	32	32	Hints & Solutions	32	32	32	32	Hints & Solutions									
Total Correct											<input type="text"/>									

MATHS MATE

Term 1 - Sheet 1



Name:

Due Date: / /

Parent's Signature:

1. [Long \times ,+] $63 \times 10 =$

2. [Decimal +,-] $2.5 + 3.4 =$

3. [Decimal \times ,+] $0.6 \times 3 =$

4. [Fraction +,-] $\frac{1}{5} + \frac{3}{5} =$

5. [Fraction \times ,+] $3 \times \frac{1}{5} =$

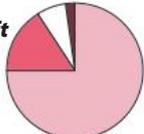
6. [Percentages] What percentage of web searches are conducted using Google?

Google

Yahoo

Microsoft

Other



7. [Decimals / Fractions / Percentages] * Place in ascending order: 0.125, 0.025, 0.215, 0.052

8. [Integer +,-] $(+5) + (+3) =$

9. [Integer \times ,+] $(-5) \times (+5) =$

10. [Rates / Ratios] 3000 books sold in 10 days = books per day

11. [Indices] $10^2 =$

12. [Square Roots] $\sqrt{16} =$

13. [Exploring Number] * $8 \times 3 - 3 \times 5 =$

14. [Financial Mathematics] * Kyle saves \$20 per fortnight for a year. How much does Kyle save? \$

15. [Number Patterns] What is the value of the missing term in the pattern?

position	1	2	3	4	5
term	2	9	16	23	?

16. [Expressions] Write as an expression: The total of n and 16

17. [Substitution] * If $m = 0$, find the value of $m + 15$

18. [Expansion] Expand $5(n - 1)$

19. [Factorisation] Factorise $5x - 15$

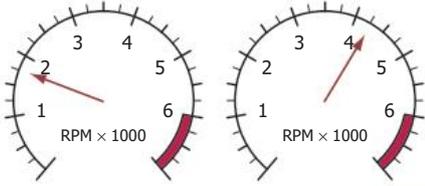
20. [Equations] * Solve for x : $x + 7 = 10$

21. [Coordinate Geometry] Complete the table of values for the linear rule $y = x - 5$

x	$y = x - 5$	y	(x, y)
-3	$y = -3 - 5$	-8	(-3, -8)
-1			
1			
3			
5			

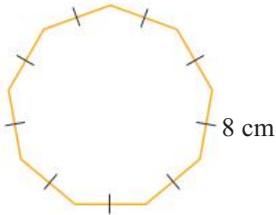
22. [Units of Measurement / Time] *

What is the difference in revolutions per minute (RPM) between the two vehicles?



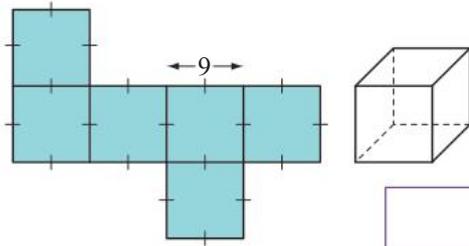
23. [Perimeter / Area] *

Find the perimeter of the nonagon.



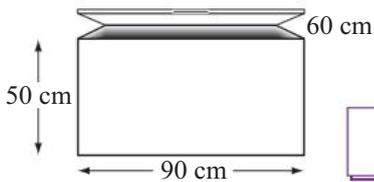
24. [Surface Area] *

Find the total surface area of the cube by finding the area of its net.



25. [Volume] *

This freezer is a rectangular prism. What is the volume of the freezer?



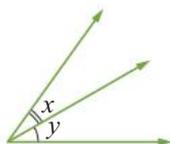
26. [Pythagoras]

Find the positive solution for c :
 $c^2 = 100$

27. [Angles]

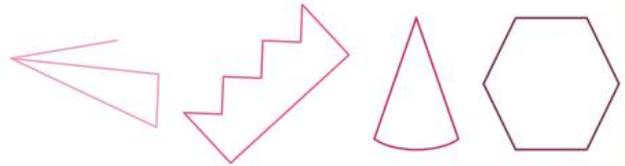
Which would describe the pair of angles marked x and y in this diagram?

- A) obtuse
- B) adjacent
- C) complementary



28. [Geometric Reasoning]

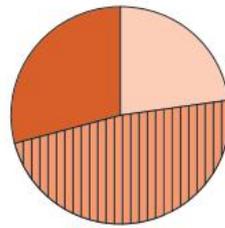
Circle the shapes that are **not** polygons.



29. [Statistics]

Of the total incoming solar radiation which fraction is closest to the amount of radiation absorbed into the atmosphere?

- A) $\frac{1}{6}$
- B) $\frac{1}{5}$
- C) $\frac{1}{4}$
- D) $\frac{1}{3}$



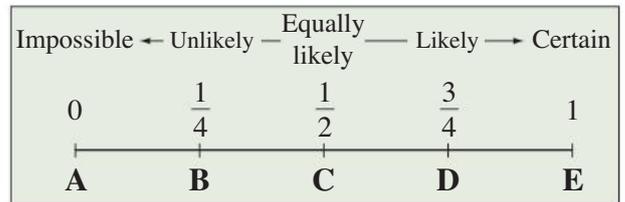
Incoming Solar Radiation

- absorbed into atmosphere
- absorbed at surface
- reflected

30. [Probability]

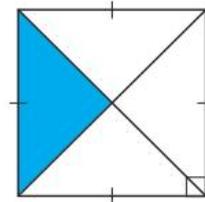
Which letter A to E describes the probability of this event?

'An even number turns up when a standard die is rolled.'



31. [Problem Solving 1] *

The shaded region has an area of 16 cm^2 . What is the perimeter of the square?



32. [Problem Solving 2] *

Each letter stands for a different digit. What number does ABC represent?

$$\begin{array}{r} A A \\ B B \\ + C C \\ \hline A B C \end{array}$$

MATHS MATE

Term 1 - Sheet 2



Name:

Due Date: / /

Parent's Signature:

1. [Long $\times, +$] *
 $97 \times 20 =$

2. [Decimal $+, -$]
 $0.03 + 0.04 =$

3. [Decimal $\times, +$] *
 $3.5 \times 7 =$

4. [Fraction $+, -$]
 $\frac{7}{9} - \frac{5}{9} =$

5. [Fraction $\times, +$] *
 $\frac{4}{9} \times 4 =$

6. [Percentages] *
 Of the slopes at Thredbo 16% are classified Beginner, 67% Intermediate and the rest Advanced. What percentage of slopes are Advanced?

7. [Decimals / Fractions / Percentages] *
 Place in descending order:
 0.209, 0.092, 0.029, 0.902

8. [Integer $+, -$]
 $(+7) + (-2) =$

9. [Integer $\times, +$]
 $(+2) \times (+8) =$

10. [Rates / Ratios]
 24 minutes for 6 songs =
 minutes per song

11. [Indices]
 $2^4 =$

12. [Square Roots]
 $\sqrt{36} =$

13. [Exploring Number] *
 $6 + 8 \div 4 \times 3 =$

14. [Financial Mathematics] *
 How much can I save in a year if I earn \$200 per week and my weekly expenses are as shown?

Expense	Cost
Junk food	\$25
Entertainment	\$40
Clothes	\$30
Other	\$25

\$

15. [Number Patterns]
 What is the value of the missing term in the pattern?

position	1	2	3	4	5	6
term	3	12	48	192	768	?

16. [Expressions]
 Write as an expression:
 A number that is equal to thirty times x

17. [Substitution] *
 If $k = 0$, find the value of $20 - k$

18. [Expansion]
 Expand $3(p + 6)$

19. [Factorisation]
 Factorise $6m - 2$

20. [Equations] *
 Solve for x : $x - 5 = 3$

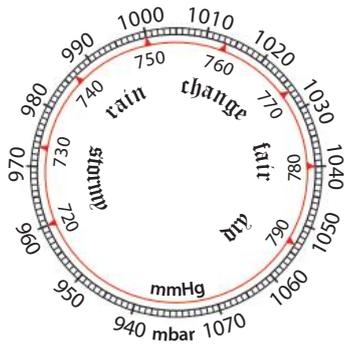
21. [Coordinate Geometry]
 Complete the table of values for the linear rule $y = 2x - 3$

x	$y = 2x - 3$	y	(x, y)
0	$y = 2 \times 0 - 3$	-3	(0, -3)
0.5			
1			
1.5			
2			

QUOTE OF THE WEEK: Adopt a teenager while they still know everything.

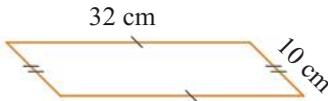
22. [Units of Measurement / Time] *

How many millimetres of mercury (mmHg) equal 1020 millibars (mbar) of pressure?



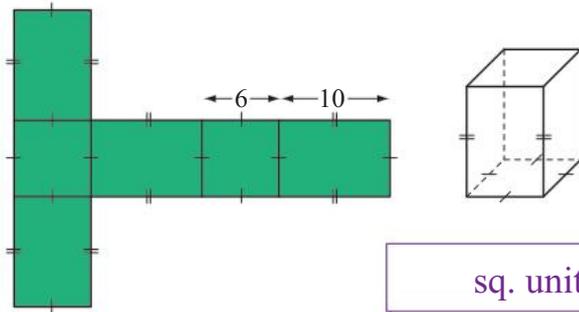
23. [Perimeter / Area] *

Find the perimeter of the parallelogram.



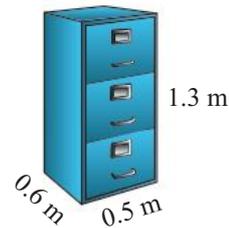
24. [Surface Area] *

Find the total surface area of the square prism by finding the area of its net.



25. [Volume] *

Find the volume of the rectangular prism.



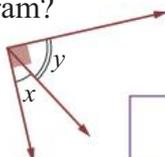
26. [Pythagoras]

Find the positive solution for b :
 $b^2 = 225$

27. [Angles]

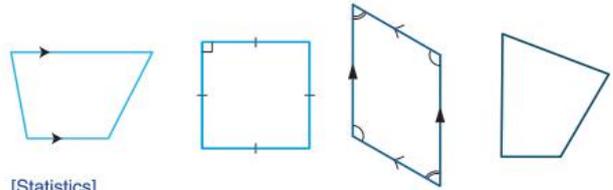
Which would describe the pair of angles marked x and y in this diagram?

- A) vertically opposite
- B) reflex
- C) complementary



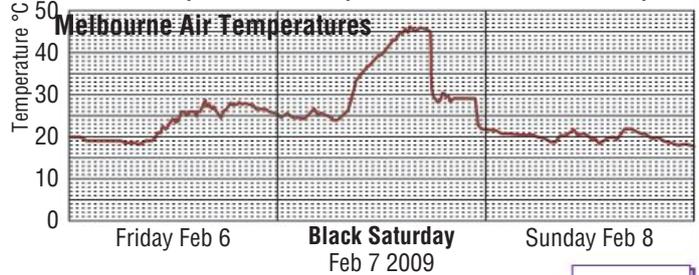
28. [Geometric Reasoning]

Circle the shapes that are **not** parallelograms.



29. [Statistics]

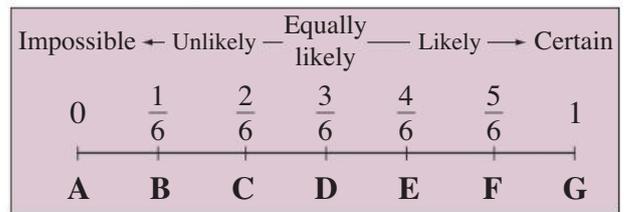
What was the maximum temperature on Friday February 6th, the day before Black Saturday?



30. [Probability]

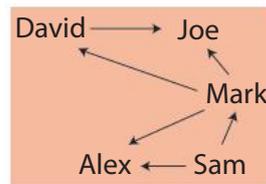
Which letter A to G describes the probability of this event?

'A month beginning with an M will follow if this month begins with a J.'



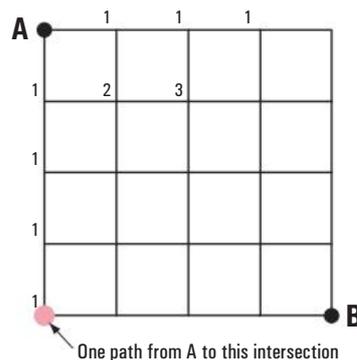
31. [Problem Solving 1] *

If David \longrightarrow Joe means 'David is taller than Joe', who is the tallest?



32. [Problem Solving 2] *

You are to move from A to B, always moving right or down along the lines. On how many different paths can you go? [The number of paths from A to various intersections has been included.]



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MATHS MATE

Term 1 - Sheet 3



Name:

Due Date: / /

Parent's Signature:

1. [Long \times ,+] *
 $78 \times 30 =$

2. [Decimal +,-]
 $4.78 + 6.92 =$

3. [Decimal \times ,+] *
 $14.78 \times 4 =$

4. [Fraction +,-]
 $\frac{4}{11} + \frac{4}{11} =$

5. [Fraction \times ,+] *
 $2 \times \frac{1}{6} =$

6. [Percentages] *
 The energy in cashew nuts comes from fats, carbohydrates and proteins. If 16% comes from carbohydrates and 9% from proteins, how much energy is supplied by fats?

7. [Decimals / Fractions / Percentages] *
 Place in ascending order:
 $\frac{3}{5}, \frac{7}{10}, \frac{57}{100}$

8. [Integer +,-]
 $(-8) + (-1) =$

9. [Integer \times ,+] *
 $(+4) \times (-7) =$

10. [Rates / Ratios] *
 A 5-pack of T-shirts cost \$25.95. What is the price per T-shirt? [Give the answer correct to 2 decimal places.]

11. [Indices]
 $3^3 =$

12. [Square Roots]
 $\sqrt{144} =$

13. [Exploring Number] *
 $4 \times (5 - 2) \times 5 =$

14. [Financial Mathematics] *
 Circus tickets cost \$8 per student if bought at the gate. The online price is \$5 each. What is the online saving for a class of 25 students?
 \$

15. [Number Patterns]
 What is the value of the missing term in the pattern?

position	1	2	3	4	5	6
term	18	13	8	3	-2	?

16. [Expressions]
 Write as an expression:
 m decreased by 200

17. [Substitution] *
 If $s = 0$, find the value of $5s$

18. [Expansion]
 Expand $9(x - 2)$

19. [Factorisation]
 Factorise $12p + 24m$

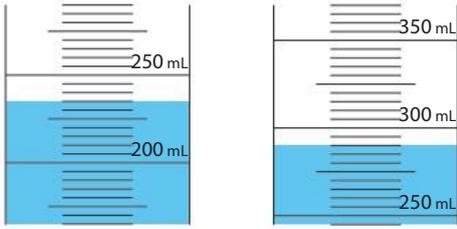
20. [Equations] *
 Solve for x : $12 + x = 3$

21. [Coordinate Geometry]
 Complete the table of values for the linear rule $y = -x + 4$

x	$y = -x + 4$	y	(x, y)
-4	$y = -(-4) + 4$	8	$(-4, 8)$
-2			
0			
2			
4			

22. [Units of Measurement / Time] *

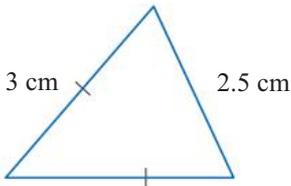
How much more water is in the second cylinder?



mL

23. [Perimeter / Area] *

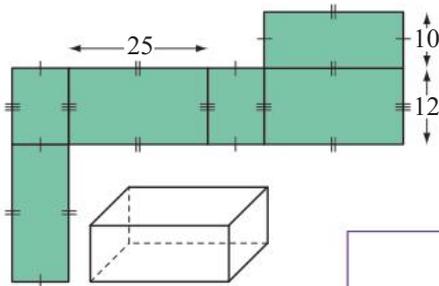
Find the perimeter of the isosceles triangle.



cm

24. [Surface Area] *

Find the total surface area of the rectangular prism by finding the area of its net.



sq. units

25. [Volume] *

Find the volume of the ream of paper.



cm³

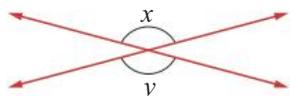
26. [Pythagoras] *

Find the positive solution for c :
 $c^2 = 5^2 + 12^2$

27. [Angles]

Which would describe the pair of angles marked x and y in this diagram?

- A) vertically opposite
- B) supplementary
- C) acute



28. [Geometric Reasoning]

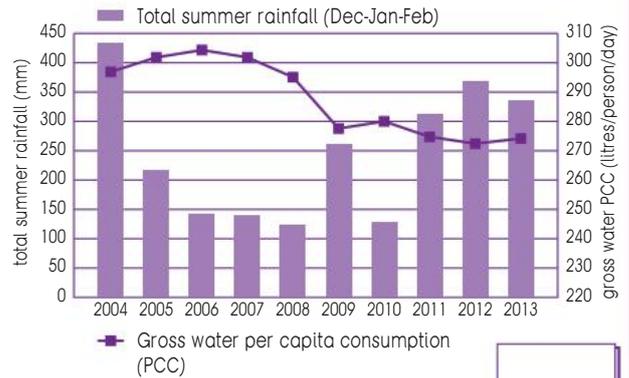
Draw and name the quadrilateral which has diagonals that are different in length and has two axes of symmetry.



29. [Statistics]

Which year registered the lowest summer rainfall in Wellington?

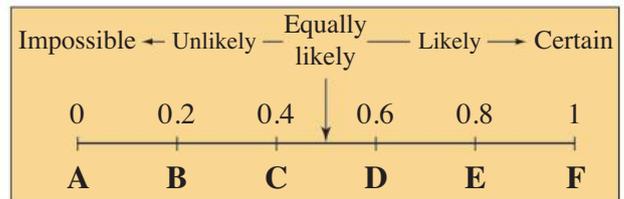
Influence of climate on water consumption - WELLINGTON



30. [Probability]

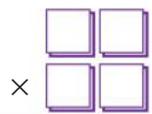
Which letter A to F best describes the probability of this event?

'Heads or tails will show uppermost when a coin is tossed.'



31. [Problem Solving 1] *

Use the digits 1, 2, 3 and 4 (once each) to complete this multiplication so that the answer is as large as possible.



32. [Problem Solving 2] *

The four digits 6, 7, 8 and 9 can be arranged to form 24 different four-digit numbers. If these numbers are arranged from smallest to largest, which number is in the seventeenth position?

MATHS MATE

Term 1 - Sheet 4



Name:

Due Date: / /

Parent's Signature:

1. [Long \times ,+] $320 \times 100 =$

2. [Decimal +,-] $3.96 + 0.07 =$

3. [Decimal \times ,+] * $1.039 \times 8 =$

4. [Fraction +,-] $\frac{11}{15} - \frac{7}{15} =$

5. [Fraction \times ,+] * $\frac{7}{10} \times 20 =$

6. [Percentages] *
Solder is made up of 28% zinc, 15% tin and the rest copper. What percentage is copper?

7. [Decimals / Fractions / Percentages] *
Place in descending order:
 $\frac{3}{10}, \frac{7}{20}, \frac{27}{100}$

8. [Integer +,-] $(-4) + (+7) =$

9. [Integer \times ,+] $(-9) \times (-4) =$

10. [Rates / Ratios] *
A 4 kg bag of capsicums is sold for \$11.00.
What is the cost per kilogram?

 \$ /kg

11. [Indices] $4^3 =$

12. [Square Roots] $\sqrt{1600} =$

13. [Exploring Number] *
 $(6 + 13) - (8 + 4) =$

14. [Financial Mathematics] *
Ian's car insurance direct debit is \$48.60 per month. How much does he save if he pays the up-front annual amount of \$490?

 \$

15. [Number Patterns]
What is the value of the missing term in the pattern?

position	1	2	3	4	5	6	
term	-1	2	-4	8	-16	?	<input type="text"/>

16. [Expressions]
Write as an expression:
The product of -6 and a

17. [Substitution] *
If $d = 0$, find the value of $\frac{d}{12}$

18. [Expansion]
Expand $4(a + 5)$

19. [Factorisation]
Factorise $3a - 18b$

20. [Equations] *
Solve for x : $9 - x = 4$

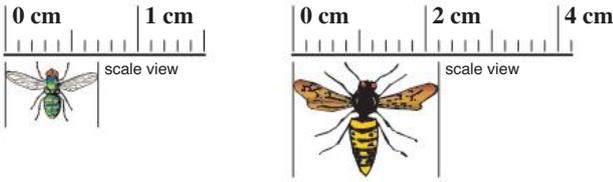
21. [Coordinate Geometry]
Complete the table of values for the linear rule $y = -3x - 6$

x	$y = -3x - 6$	y	(x, y)
-4	$y = -3 \times (-4) - 6$	6	$(-4, 6)$
-2			
0			
2			
4			

QUOTE OF THE WEEK: The man who confesses his ignorance shows it once; he who tries to conceal it shows it many times. Japanese Proverb.

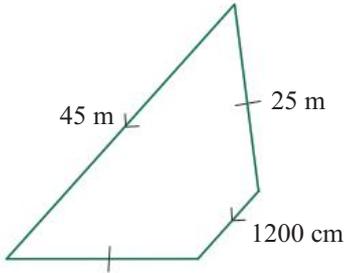
22. [Units of Measurement / Time] *

By how many millimetres is the wingspan of the wasp bigger than the fly?



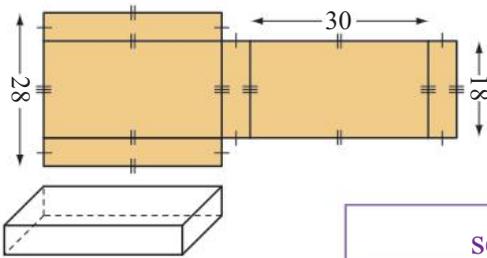
23. [Perimeter / Area] *

Find the perimeter of the trapezium in metres.



24. [Surface Area] *

Find the total surface area of the rectangular prism by finding the area of its net.



25. [Volume] *

Each ice cube has a side length of 2 cm. What is the volume of ice in this tray?



26. [Pythagoras] *

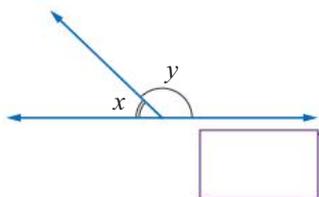
Find the positive solution for a :

$$a^2 = 20^2 - 16^2$$

27. [Angles]

Which would describe the pair of angles marked x and y in this diagram?

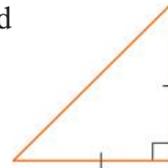
- A) straight
- B) supplementary
- C) right



28. [Geometric Reasoning]

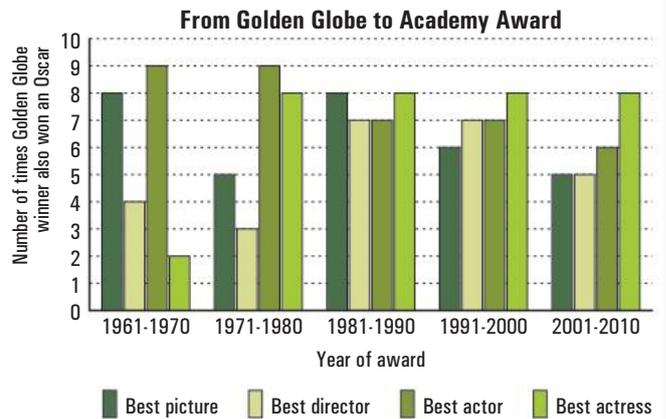
Which two options describe this triangle?

- A) right-angled
- B) isosceles
- C) equilateral



29. [Statistics]

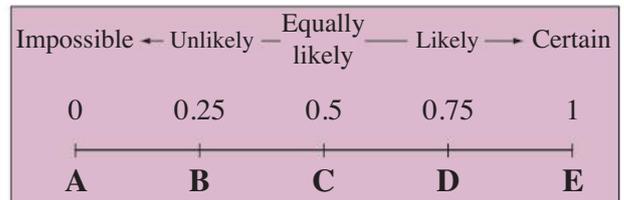
From 1961 to 2010 how many times did a Golden Globe best actress winner miss out on an Oscar for the same movie?



30. [Probability]

Which letter A to E describes the probability of this event?

'One of your 5 tickets in a 20-ticket lottery will win.'



31. [Problem Solving 1] *

A number of students are standing in a circle. They are evenly spaced and the sixth student is directly opposite the fifteenth student. How many students are there altogether?

32. [Problem Solving 2] *

Complete the addition table.

+	12		6	
3		8		
	28			
8				15
			13	

MATHS MATE



Test 1

Covering worksheets 1.1 - 1.4

Name:

1. [Long $\times, +$]
 $49 \times 20 =$

2. [Decimal $+, -$]
 $5.38 + 0.08 =$

3. [Decimal $\times, +$]
 $13.27 \times 5 =$

4. [Fraction $+, -$]
 $\frac{7}{10} - \frac{4}{10} =$

5. [Fraction $\times, +$]
 $\frac{5}{9} \times 3 =$

6. [Percentages]
 What percentage of the earth's ocean area is covered by the Atlantic Ocean?

7. [Decimals / Fractions / Percentages]
 Place in ascending order:
 $\frac{2}{5}, \frac{1}{3}, \frac{4}{15}$

8. [Integer $+, -$]
 $(+4) + (-9) =$

9. [Integer $\times, +$]
 $(+11) \times (-2) =$

10. [Rates / Ratios]
 180 litres flow in 4 minutes =
 litres per minute

11. [Indices]
 $4^2 =$

12. [Square Roots]
 $\sqrt{900} =$

13. [Exploring Number]
 $7 \times 6 - 12 \div 6 =$

14. [Financial Mathematics]
 Lou's home contents insurance direct debit is \$30.50 per month. How much does she save if she pays the up-front annual amount of \$318?
 \$

15. [Number Patterns]
 What is the value of the missing term in the pattern?

position	1	2	3	4	5	6	
term	6	12	24	48	96	?	<input type="text"/>

16. [Expressions]
 Write as an expression:
 p increased by 300

17. [Substitution]
 If $g = 0$, find the value of $9 + g$

18. [Expansion]
 Expand $2(m - 3)$

19. [Factorisation]
 Factorise $4h - 8$

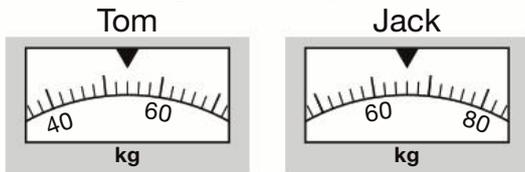
20. [Equations]
 Solve for x : $6 + x = 4$

21. [Coordinate Geometry]
 Complete the table of values for the linear rule $y = x - 6$

x	$y = x - 6$	y	(x, y)
-6	$y = -6 - 6$	-12	$(-6, -12)$
-3			
0			
3			
6			

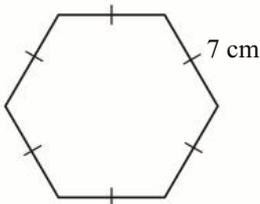
22. [Units of Measurement / Time]

How much lighter in weight is Tom than Jack?



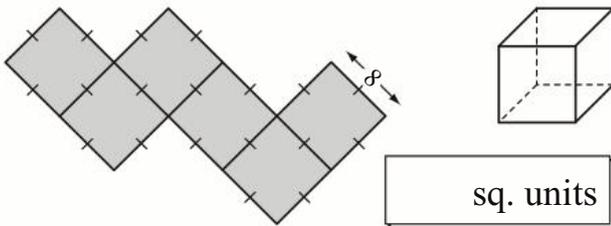
23. [Perimeter / Area]

Find the perimeter of the hexagon.



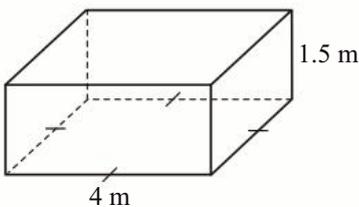
24. [Surface Area]

Find the total surface area of the cube by finding the area of its net.



25. [Volume]

Find the volume of the square prism.



26. [Pythagoras]

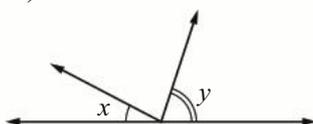
Find the positive solution for b :

$$b^2 = 144$$

27. [Angles]

Which would describe the angles marked x and y in this diagram?

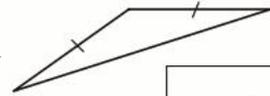
- A) adjacent
- B) supplementary
- C) acute



28. [Geometric Reasoning]

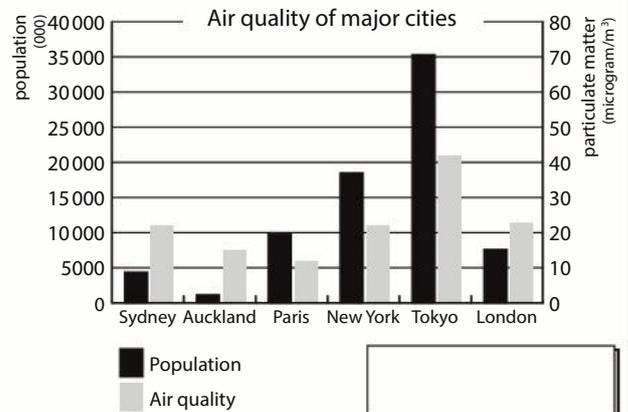
Which two options describe this triangle?

- A) right-angled
- B) obtuse-angled
- C) isosceles



29. [Statistics]

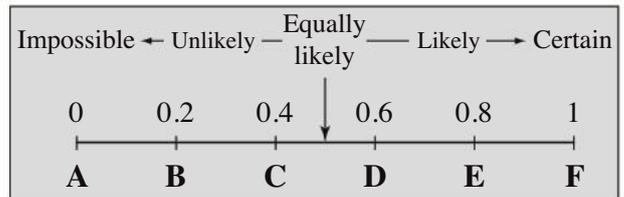
Relative to its population, which of these cities has the worst air quality?



30. [Probability]

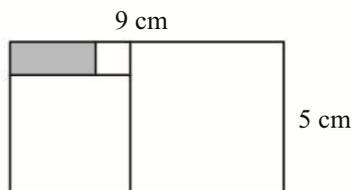
Which letter A to F describes the probability of this event?

'A spinner numbered 1 to 5 is spun and an odd number is obtained.'



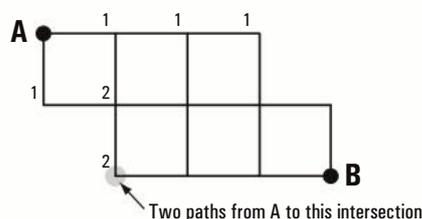
31. [Problem Solving 1]

A 9 cm by 5 cm rectangle is divided into 3 squares and a rectangle as shown below. Find the area of the shaded rectangle.



32. [Problem Solving 2]

You are to move from A to B, always moving right or down along the lines. On how many different paths can you go? [The number of paths from A to various intersections has been included.]



MATHS MATE



Test 1

Covering worksheets 1.1 - 1.4

Name:

1. [Long $\times, +$]
 $54 \times 20 =$

2. [Decimal $+, -$]
 $4.67 + 0.07 =$

3. [Decimal $\times, +$]
 $11.54 \times 6 =$

4. [Fraction $+, -$]
 $\frac{13}{17} - \frac{8}{17} =$

5. [Fraction $\times, +$]
 $\frac{3}{4} \times 2 =$

6. [Percentages]
 Of the slopes at Mount Buller, 30% are classified Advanced. What percentage of slopes are Intermediate?

7. [Decimals / Fractions / Percentages]
 Place in descending order:
 $\frac{2}{3}, \frac{5}{6}, \frac{5}{12}$

8. [Integer $+, -$]
 $(+4) + (-8) =$

9. [Integer $\times, +$]
 $(+6) \times (-3) =$

10. [Rates / Ratios]
 10°C drop in 4 hours =
 $^\circ\text{C}$ per hour

11. [Indices]
 $3^2 =$

12. [Square Roots]
 $\sqrt{400} =$

13. [Exploring Number]
 $18 - 5 - (18 - 6) =$

14. [Financial Mathematics]
 Joe's car insurance direct debit is \$34.80 per month. How much does he save if he pays the up-front annual amount of \$337?
 \$

15. [Number Patterns]
 What is the value of the missing term in the pattern?

term position	1	2	3	4	5	6	<input type="text"/>
term value	4	12	36	108	324	?	<input type="text"/>

16. [Expressions]
 Write as an expression:
 g decreased by 25

17. [Substitution]
 If $p = 0$, find the value of $16 - p$

18. [Expansion]
 Expand $3(k - 2)$

19. [Factorisation]
 Factorise $5s - 20$

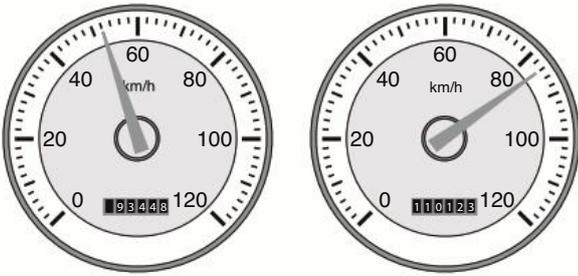
20. [Equations]
 Solve for x : $8 + x = 4$

21. [Coordinate Geometry]
 Complete the table of values for the linear rule $y = 3x$

x	$y = 3x$	y	(x, y)
-2	$y = 3 \times (-2)$	-6	$(-2, -6)$
-1			
0			
1			
2			

22. [Units of Measurement / Time]

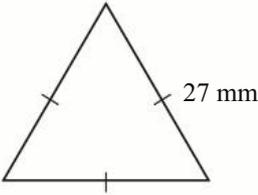
What is the difference in speed?



km/h

23. [Perimeter / Area]

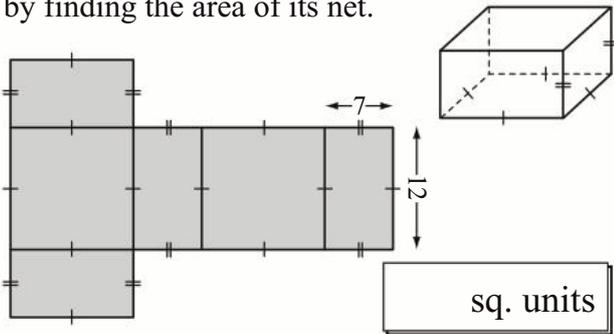
Find the perimeter of the equilateral triangle.



mm

24. [Surface Area]

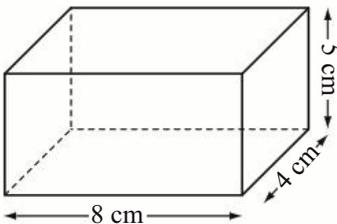
Find the total surface area of the square prism by finding the area of its net.



sq. units

25. [Volume]

Find the volume of the rectangular prism.



cm³

26. [Pythagoras]

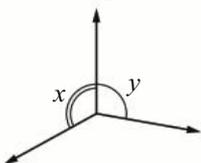
Find the positive solution for c :

$$c^2 = 400$$

27. [Angles]

Which would describe the angles marked x and y in this diagram?

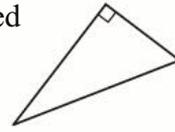
- A) reflex
- B) obtuse
- C) complementary



28. [Geometric Reasoning]

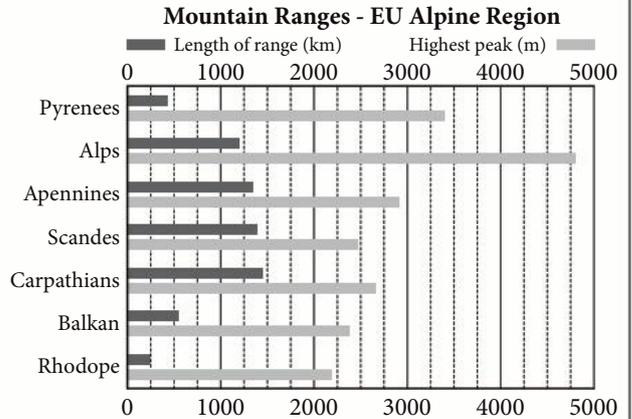
Which two options describe this triangle?

- A) right-angled
- B) scalene
- C) isosceles



29. [Statistics]

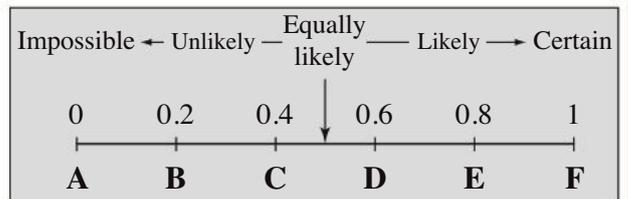
How many European mountain ranges have peaks between 2500 m and 3500 m?



30. [Probability]

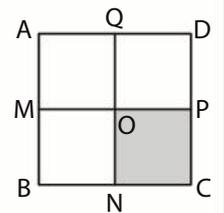
Which letter A to F describes the probability of this event?

'A red marble will be drawn from a bag containing 8 white marbles and 2 red marbles.'



31. [Problem Solving 1]

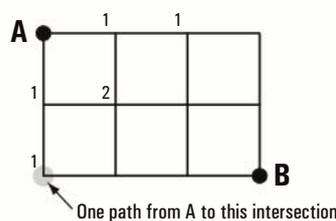
M, N, P and Q are the midpoints of the sides of the square ABCD. The shaded square has an area of 36 cm². What is the perimeter of the square ABCD?



cm

32. [Problem Solving 2]

You are to move from A to B, always moving right or down along the lines. On how many different paths can you go? [The number of paths from A to various intersections has been included.]



MATHS MATE

Term 1 - Sheet 1



Name:

Due Date: / /

Parent's Signature:

1. [Long \times ,+] $63 \times 10 =$ 630

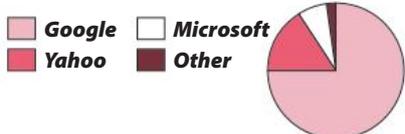
2. [Decimal +,-] $2.5 + 3.4 =$ 5.9

3. [Decimal \times ,+] $0.6 \times 3 =$ 1.8

4. [Fraction +,-] $\frac{1}{5} + \frac{3}{5} =$ $\frac{4}{5}$

5. [Fraction \times ,+] $3 \times \frac{1}{5} =$ $\frac{3}{5}$

6. [Percentages] What percentage of web searches are conducted using Google?



75%

7. [Decimals / Fractions / Percentages] * Place in ascending order: 0.125, 0.025, 0.215, 0.052

0.025, 0.052, 0.125, 0.215

8. [Integer +,-] $(+5) + (+3) =$ 8

9. [Integer \times ,+] $(-5) \times (+5) =$ -25

10. [Rates / Ratios] 3000 books sold in 10 days = 300 books per day

11. [Indices] $10^2 =$ 100

12. [Square Roots] $\sqrt{16} =$ 4

13. [Exploring Number] * $8 \times 3 - 3 \times 5 =$ 9

14. [Financial Mathematics] * Kyle saves \$20 per fortnight for a year. How much does Kyle save? \$ 520

15. [Number Patterns] What is the value of the missing term in the pattern?

position	1	2	3	4	5
term	2	9	16	23	?

30

16. [Expressions] Write as an expression: The total of n and 16 n + 16

17. [Substitution] * If $m = 0$, find the value of $m + 15$ 15

18. [Expansion] Expand $5(n - 1)$ 5n - 5

19. [Factorisation] Factorise $5x - 15$ 5(x - 3)

20. [Equations] * Solve for x : $x + 7 = 10$ 3

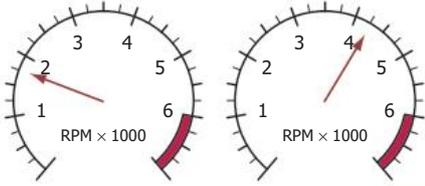
21. [Coordinate Geometry] Complete the table of values for the linear rule $y = x - 5$

x	$y = x - 5$	y	(x, y)
-3	$y = -3 - 5$	-8	(-3, -8)
-1	$y = -1 - 5$	-6	(-1, -6)
1	$y = 1 - 5$	-4	(1, -4)
3	$y = 3 - 5$	-2	(3, -2)
5	$y = 5 - 5$	0	(5, 0)

QUOTE OF THE WEEK: The more you say the less people remember. Francis Fenelon

22. [Units of Measurement / Time] *

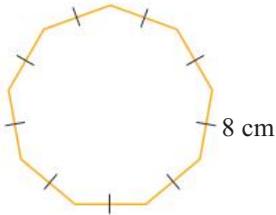
What is the difference in revolutions per minute (RPM) between the two vehicles?



2500 RPM

23. [Perimeter / Area] *

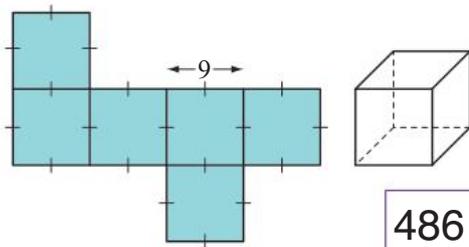
Find the perimeter of the nonagon.



72 cm

24. [Surface Area] *

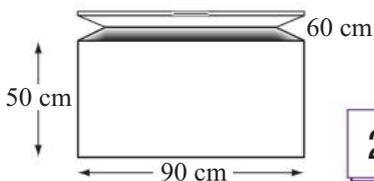
Find the total surface area of the cube by finding the area of its net.



486 sq. units

25. [Volume] *

This freezer is a rectangular prism. What is the volume of the freezer?



270 000 cm³

26. [Pythagoras]

Find the positive solution for c :

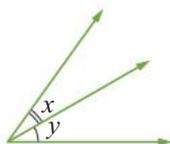
$$c^2 = 100$$

10

27. [Angles]

Which would describe the pair of angles marked x and y in this diagram?

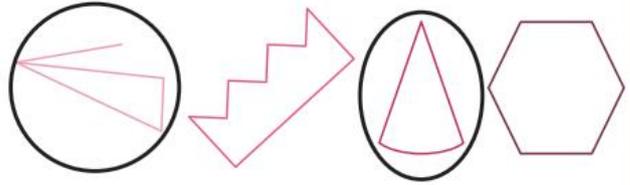
- A) obtuse
- B) adjacent
- C) complementary



B

28. [Geometric Reasoning]

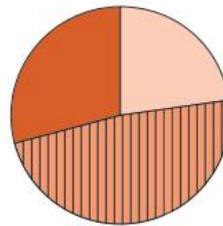
Circle the shapes that are **not** polygons.



29. [Statistics]

Of the total incoming solar radiation which fraction is closest to the amount of radiation absorbed into the atmosphere?

- A) $\frac{1}{6}$
- B) $\frac{1}{5}$
- C) $\frac{1}{4}$
- D) $\frac{1}{3}$



Incoming Solar Radiation

absorbed into atmosphere

absorbed at surface

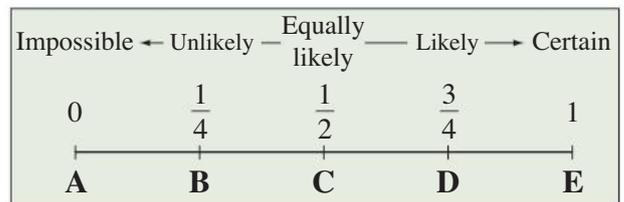
reflected

C

30. [Probability]

Which letter A to E describes the probability of this event?

'An even number turns up when a standard die is rolled.'

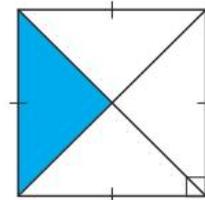


C

31. [Problem Solving 1] *

The shaded region has an area of 16 cm².

What is the perimeter of the square?



32 cm

32. [Problem Solving 2] *

Each letter stands for a different digit. What number does ABC represent?

$$\begin{array}{r} A A \\ B B \\ + C C \\ \hline A B C \end{array}$$

198

MATHS MATE

Term 1 - Sheet 2



Name:

Due Date: / /

Parent's Signature:

1. [Long $\times, +$] *
 $97 \times 20 =$ 1940

2. [Decimal $+, -$]
 $0.03 + 0.04 =$ 0.07

3. [Decimal $\times, +$] *
 $3.5 \times 7 =$ 24.5

4. [Fraction $+, -$]
 $\frac{7}{9} - \frac{5}{9} =$ $\frac{2}{9}$

5. [Fraction $\times, +$] *
 $\frac{4}{9} \times 4 =$ $1\frac{7}{9}$

6. [Percentages] *
 Of the slopes at Thredbo 16% are classified Beginner, 67% Intermediate and the rest Advanced. What percentage of slopes are Advanced? 17%

7. [Decimals / Fractions / Percentages] *
 Place in descending order:
 0.209, 0.092, 0.029, 0.902
0.902, 0.209, 0.092, 0.029

8. [Integer $+, -$]
 $(+7) + (-2) =$ 5

9. [Integer $\times, +$]
 $(+2) \times (+8) =$ 16

10. [Rates / Ratios]
 24 minutes for 6 songs =
4 minutes per song

11. [Indices]
 $2^4 =$ 16

12. [Square Roots]
 $\sqrt{36} =$ 6

13. [Exploring Number] *
 $6 + 8 \div 4 \times 3 =$ 12

14. [Financial Mathematics] *
 How much can I save in a year if I earn \$200 per week and my weekly expenses are as shown?

Expense	Cost
Junk food	\$25
Entertainment	\$40
Clothes	\$30
Other	\$25

\$ 4160

15. [Number Patterns]
 What is the value of the missing term in the pattern?

position	1	2	3	4	5	6
term	3	12	48	192	768	?

3072

16. [Expressions]
 Write as an expression:
 A number that is equal to thirty times x
 or $30 \times x$ 30x

17. [Substitution] *
 If $k = 0$, find the value of $20 - k$ 20

18. [Expansion]
 Expand $3(p + 6)$ 3p + 18

19. [Factorisation]
 Factorise $6m - 2$ 2(3m - 1)

20. [Equations] *
 Solve for x : $x - 5 = 3$ 8

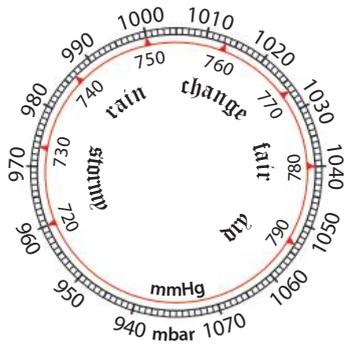
21. [Coordinate Geometry]
 Complete the table of values for the linear rule $y = 2x - 3$

x	$y = 2x - 3$	y	(x, y)
0	$y = 2 \times 0 - 3$	-3	(0, -3)
0.5	$y = 2 \times 0.5 - 3$	-2	(0.5, -2)
1	$y = 2 \times 1 - 3$	-1	(1, -1)
1.5	$y = 2 \times 1.5 - 3$	0	(1.5, 0)
2	$y = 2 \times 2 - 3$	1	(2, 1)

QUOTE OF THE WEEK: Adopt a teenager while they still know everything.

22. [Units of Measurement / Time] *

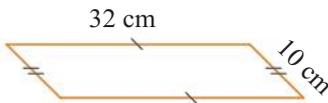
How many millimetres of mercury (mmHg) equal 1020 millibars (mbar) of pressure?



765 mmHg

23. [Perimeter / Area] *

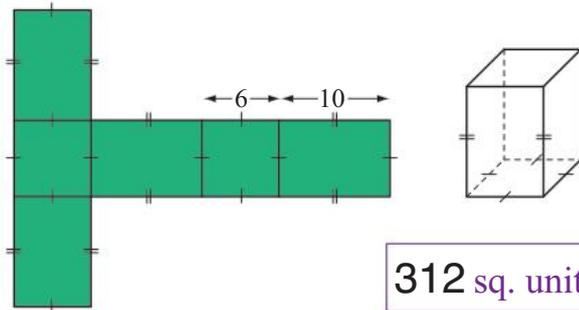
Find the perimeter of the parallelogram.



84 cm

24. [Surface Area] *

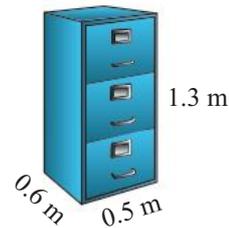
Find the total surface area of the square prism by finding the area of its net.



312 sq. units

25. [Volume] *

Find the volume of the rectangular prism.



0.39 m³

26. [Pythagoras]

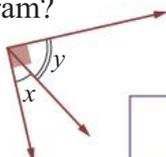
Find the positive solution for b :
 $b^2 = 225$

15

27. [Angles]

Which would describe the pair of angles marked x and y in this diagram?

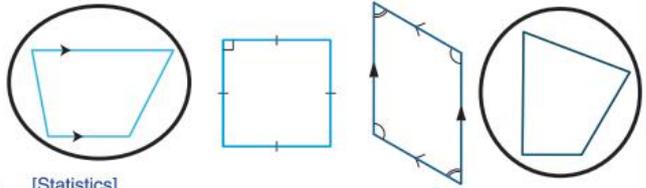
- A) vertically opposite
- B) reflex
- C) complementary



C

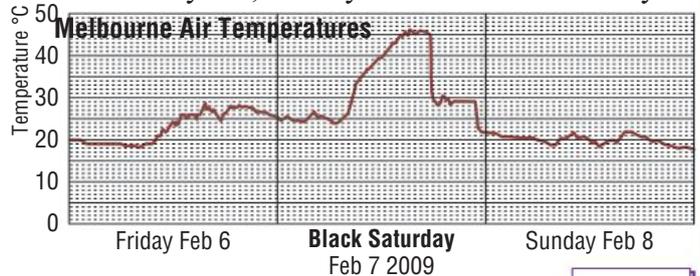
28. [Geometric Reasoning]

Circle the shapes that are **not** parallelograms.



29. [Statistics]

What was the maximum temperature on Friday February 6th, the day before Black Saturday?

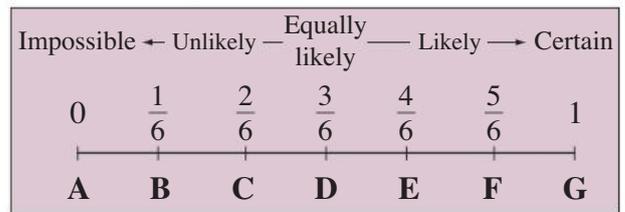


29°C

30. [Probability]

Which letter A to G describes the probability of this event?

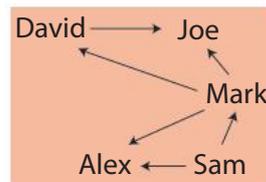
'A month beginning with an M will follow if this month begins with a J.'



A

31. [Problem Solving 1] *

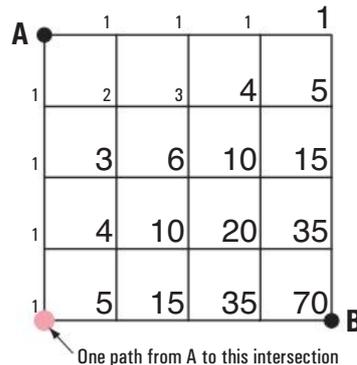
If David \longrightarrow Joe means 'David is taller than Joe', who is the tallest?



Sam

32. [Problem Solving 2] *

You are to move from A to B, always moving right or down along the lines. On how many different paths can you go? [The number of paths from A to various intersections has been included.]



70

MATHS MATE

Term 1 - Sheet 3



Name:

Due Date: / /

Parent's Signature:

1. [Long \times ,+] *
 $78 \times 30 =$

2340

2. [Decimal +,-]
 $4.78 + 6.92 =$

11.7

3. [Decimal \times ,+] *
 $14.78 \times 4 =$

59.12

4. [Fraction +,-]
 $\frac{4}{11} + \frac{4}{11} =$

$\frac{8}{11}$

5. [Fraction \times ,+] *
 $2 \times \frac{1}{6} =$

$\frac{1}{3}$

6. [Percentages] *
The energy in cashew nuts comes from fats, carbohydrates and proteins. If 16% comes from carbohydrates and 9% from proteins, how much energy is supplied by fats?

75%

7. [Decimals / Fractions / Percentages] *
Place in ascending order:

$\frac{3}{5}, \frac{7}{10}, \frac{57}{100}$

$\frac{57}{100}, \frac{3}{5}, \frac{7}{10}$

8. [Integer +,-]
 $(-8) + (-1) =$

-9

9. [Integer \times ,+]
 $(+4) \times (-7) =$

-28

10. [Rates / Ratios] *
A 5-pack of T-shirts cost \$25.95. What is the price per T-shirt? [Give the answer correct to 2 decimal places.]

\$ 5.19

11. [Indices]
 $3^3 =$

27

12. [Square Roots]
 $\sqrt{144} =$

12

13. [Exploring Number] *
 $4 \times (5 - 2) \times 5 =$

60

14. [Financial Mathematics] *
Circus tickets cost \$8 per student if bought at the gate. The online price is \$5 each. What is the online saving for a class of 25 students?

\$ 75

15. [Number Patterns]
What is the value of the missing term in the pattern?

position	1	2	3	4	5	6
term	18	13	8	3	-2	?

-7

16. [Expressions]
Write as an expression:
 m decreased by 200

$m - 200$

17. [Substitution] *
If $s = 0$, find the value of $5s$

0

18. [Expansion]
Expand $9(x - 2)$

$9x - 18$

19. [Factorisation]
Factorise $12p + 24m$

$12(p + 2m)$

20. [Equations] *
Solve for x : $12 + x = 3$

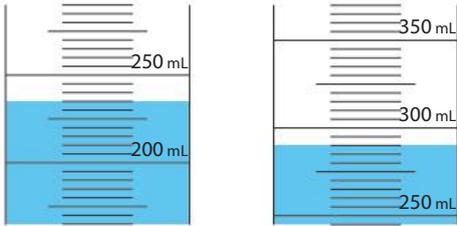
-9

21. [Coordinate Geometry]
Complete the table of values for the linear rule $y = -x + 4$

x	$y = -x + 4$	y	(x, y)
-4	$y = -(-4) + 4$	8	$(-4, 8)$
-2	$y = -(-2) + 4$	6	$(-2, 6)$
0	$y = 0 + 4$	4	$(0, 4)$
2	$y = -2 + 4$	2	$(2, 2)$
4	$y = -4 + 4$	0	$(4, 0)$

22. [Units of Measurement / Time] *

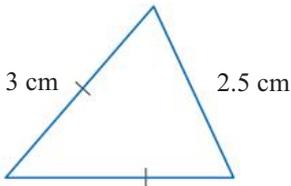
How much more water is in the second cylinder?



55 mL

23. [Perimeter / Area] *

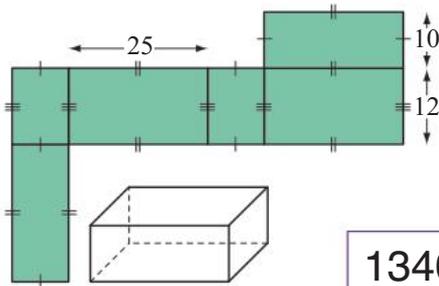
Find the perimeter of the isosceles triangle.



8.5 cm

24. [Surface Area] *

Find the total surface area of the rectangular prism by finding the area of its net.



1340 sq. units

25. [Volume] *

Find the volume of the ream of paper.



3225 cm³

26. [Pythagoras] *

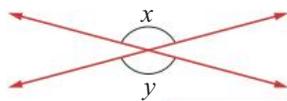
Find the positive solution for c :
 $c^2 = 5^2 + 12^2$

13

27. [Angles]

Which would describe the pair of angles marked x and y in this diagram?

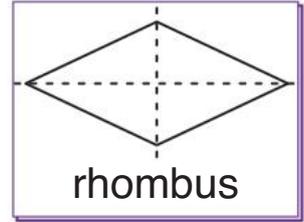
- A) vertically opposite
- B) supplementary
- C) acute



A

28. [Geometric Reasoning]

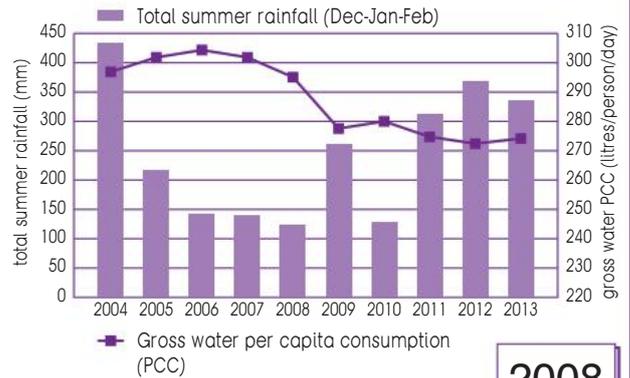
Draw and name the quadrilateral which has diagonals that are different in length and has two axes of symmetry.



29. [Statistics]

Which year registered the lowest summer rainfall in Wellington?

Influence of climate on water consumption - WELLINGTON

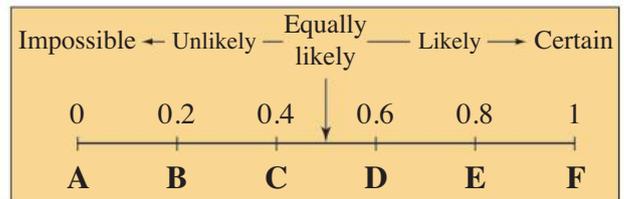


2008

30. [Probability]

Which letter A to F best describes the probability of this event?

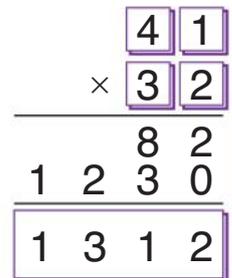
'Heads or tails will show uppermost when a coin is tossed.'



F

31. [Problem Solving 1] *

Use the digits 1, 2, 3 and 4 (once each) to complete this multiplication so that the answer is as large as possible.



32. [Problem Solving 2] *

The four digits 6, 7, 8 and 9 can be arranged to form 24 different four-digit numbers. If these numbers are arranged from smallest to largest, which number is in the seventeenth position?

8967

MATHS MATE

Term 1 - Sheet 4



Name:

Due Date: / /

Parent's Signature:

1. [Long \times ,+] $320 \times 100 =$

32 000

2. [Decimal +,-] $3.96 + 0.07 =$

4.03

3. [Decimal \times ,+] * $1.039 \times 8 =$

8.312

4. [Fraction +,-] $\frac{11}{15} - \frac{7}{15} =$

$\frac{4}{15}$

5. [Fraction \times ,+] * $\frac{7}{10} \times 20 =$

14

6. [Percentages] *
Solder is made up of 28% zinc, 15% tin and the rest copper. What percentage is copper?

57%

7. [Decimals / Fractions / Percentages] *
Place in descending order:

$\frac{3}{10}, \frac{7}{20}, \frac{27}{100}$

$\frac{7}{20}, \frac{3}{10}, \frac{27}{100}$

8. [Integer +,-] $(-4) + (+7) =$

3

9. [Integer \times ,+] $(-9) \times (-4) =$

36

10. [Rates / Ratios] *
A 4 kg bag of capsicums is sold for \$11.00.
What is the cost per kilogram?

\$ 2.75 /kg

11. [Indices] $4^3 =$

64

12. [Square Roots] $\sqrt{1600} =$

40

13. [Exploring Number] *
 $(6 + 13) - (8 + 4) =$

7

14. [Financial Mathematics] *
Ian's car insurance direct debit is \$48.60 per month. How much does he save if he pays the up-front annual amount of \$490?

\$ 93.20

15. [Number Patterns]
What is the value of the missing term in the pattern?

position	1	2	3	4	5	6
term	-1	2	-4	8	-16	?

32

16. [Expressions]
Write as an expression:
The product of -6 and a

$-6a$

or $-6 \times a$

17. [Substitution] *
If $d = 0$, find the value of $\frac{d}{12}$

0

18. [Expansion]
Expand $4(a + 5)$

$4a + 20$

19. [Factorisation]
Factorise $3a - 18b$

$3(a - 6b)$

20. [Equations] *
Solve for x : $9 - x = 4$

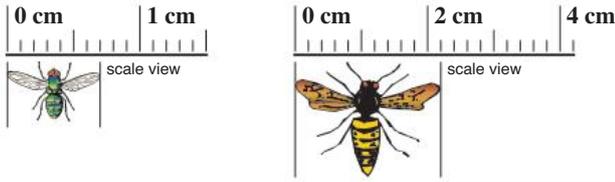
5

21. [Coordinate Geometry]
Complete the table of values for the linear rule $y = -3x - 6$

x	$y = -3x - 6$	y	(x, y)
-4	$y = -3 \times (-4) - 6$	6	$(-4, 6)$
-2	$y = -3 \times (-2) - 6$	0	$(-2, 0)$
0	$y = -3 \times 0 - 6$	-6	$(0, -6)$
2	$y = -3 \times 2 - 6$	-12	$(2, -12)$
4	$y = -3 \times 4 - 6$	-18	$(4, -18)$

22. [Units of Measurement / Time] *

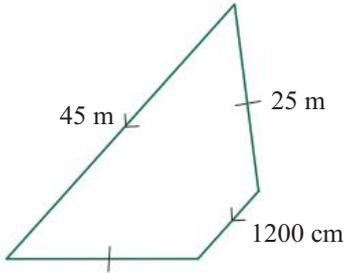
By how many millimetres is the wingspan of the wasp bigger than the fly?



15 mm

23. [Perimeter / Area] *

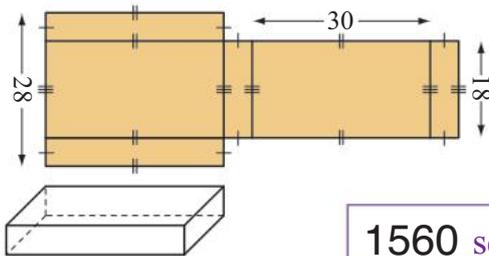
Find the perimeter of the trapezium in metres.



107 m

24. [Surface Area] *

Find the total surface area of the rectangular prism by finding the area of its net.



1560 sq. units

25. [Volume] *

Each ice cube has a side length of 2 cm. What is the volume of ice in this tray?



96 cm³

26. [Pythagoras] *

Find the positive solution for a :

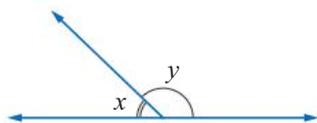
$$a^2 = 20^2 - 16^2$$

12

27. [Angles]

Which would describe the pair of angles marked x and y in this diagram?

- A) straight
- B) supplementary
- C) right

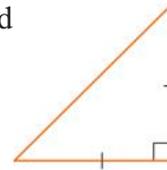


B

28. [Geometric Reasoning]

Which two options describe this triangle?

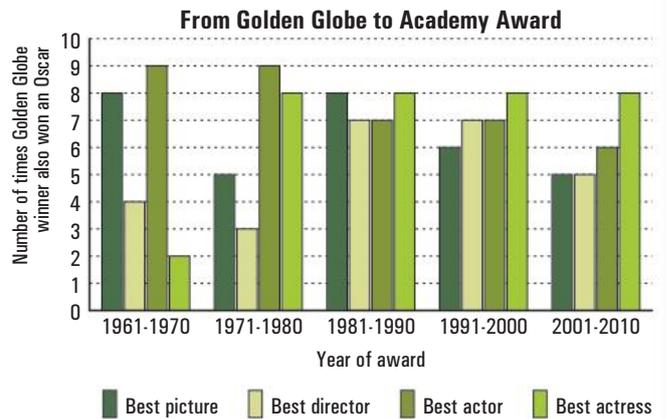
- A) right-angled
- B) isosceles
- C) equilateral



A and B

29. [Statistics]

From 1961 to 2010 how many times did a Golden Globe best actress winner miss out on an Oscar for the same movie?

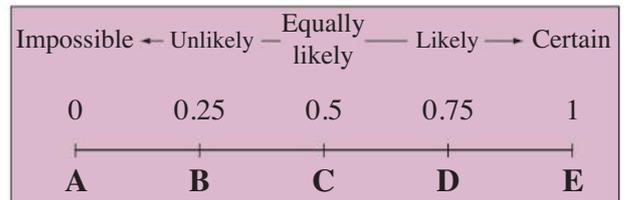


16

30. [Probability]

Which letter A to E describes the probability of this event?

'One of your 5 tickets in a 20-ticket lottery will win.'



B

31. [Problem Solving 1] *

A number of students are standing in a circle. They are evenly spaced and the sixth student is directly opposite the fifteenth student.

How many students are there altogether?

18

32. [Problem Solving 2] *

Complete the addition table.

+	12	5	6	7
3	15	8	9	10
16	28	21	22	23
8	20	13	14	15
7	19	12	13	14

MATHS MATE



Test 1

Covering worksheets 1.1 - 1.4

Name:

1. [Long \times ,+] $49 \times 20 =$ 980

2. [Decimal +,-] $5.38 + 0.08 =$ 5.46

3. [Decimal \times ,+] $13.27 \times 5 =$ 66.35

4. [Fraction +,-] $\frac{7}{10} - \frac{4}{10} =$ $\frac{3}{10}$

5. [Fraction \times ,+] $\frac{5}{9} \times 3 =$ $1\frac{2}{3}$

6. [Percentages]
What percentage of the earth's ocean area is covered by the Atlantic Ocean?

20%

7. [Decimals / Fractions / Percentages]
Place in ascending order:
 $\frac{2}{5}, \frac{1}{3}, \frac{4}{15}$ $\frac{4}{15}, \frac{1}{3}, \frac{2}{5}$

8. [Integer +,-] $(+4) + (-9) =$ -5

9. [Integer \times ,+] $(+11) \times (-2) =$ -22

10. [Rates / Ratios]
180 litres flow in 4 minutes = 45 litres per minute

11. [Indices] $4^2 =$ 16

12. [Square Roots] $\sqrt{900} =$ 30

13. [Exploring Number] $7 \times 6 - 12 \div 6 =$ 40

14. [Financial Mathematics]
Lou's home contents insurance direct debit is \$30.50 per month. How much does she save if she pays the up-front annual amount of \$318?
\$ 48

15. [Number Patterns]
What is the value of the missing term in the pattern?

position	1	2	3	4	5	6
term	6	12	24	48	96	?

192

16. [Expressions]
Write as an expression:
 p increased by 300
 $p + 300$

17. [Substitution]
If $g = 0$, find the value of $9 + g$ 9

18. [Expansion]
Expand $2(m - 3)$ $2m - 6$

19. [Factorisation]
Factorise $4h - 8$ $4(h - 2)$

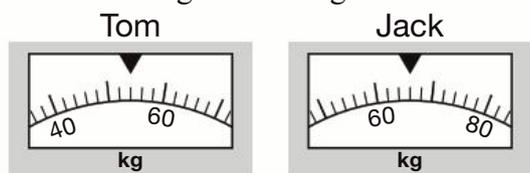
20. [Equations]
Solve for x : $6 + x = 4$ -2

21. [Coordinate Geometry]
Complete the table of values for the linear rule $y = x - 6$

x	$y = x - 6$	y	(x, y)
-6	$y = -6 - 6$	-12	$(-6, -12)$
-3	$y = -3 - 6$	-9	$(-3, -9)$
0	$y = 0 - 6$	-6	$(0, -6)$
3	$y = 3 - 6$	-3	$(3, -3)$
6	$y = 6 - 6$	0	$(6, 0)$

22. [Units of Measurement / Time]

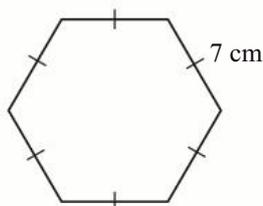
How much lighter in weight is Tom than Jack?



12 kg

23. [Perimeter / Area]

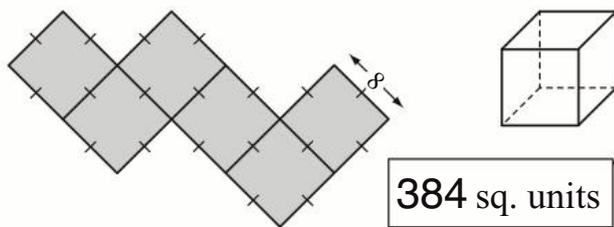
Find the perimeter of the hexagon.



42 cm

24. [Surface Area]

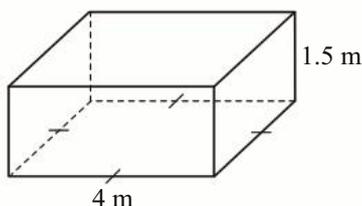
Find the total surface area of the cube by finding the area of its net.



384 sq. units

25. [Volume]

Find the volume of the square prism.



24 m³

26. [Pythagoras]

Find the positive solution for b :

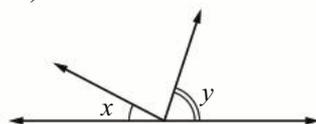
$b^2 = 144$

12

27. [Angles]

Which would describe the angles marked x and y in this diagram?

- A) adjacent
- B) supplementary
- C) acute



C

28. [Geometric Reasoning]

Which two options describe this triangle?

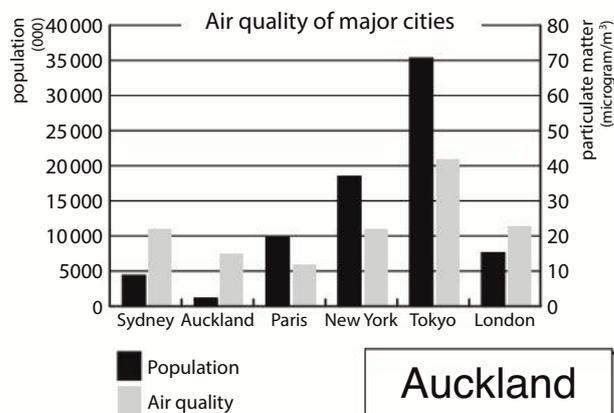
- A) right-angled
- B) obtuse-angled
- C) isosceles



B and C

29. [Statistics]

Relative to its population, which of these cities has the worst air quality?

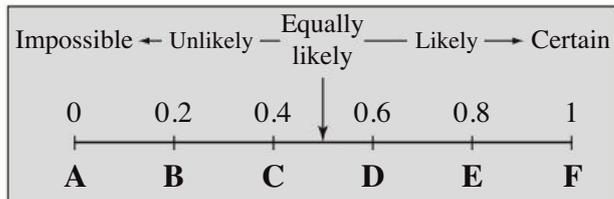


Auckland

30. [Probability]

Which letter A to F describes the probability of this event?

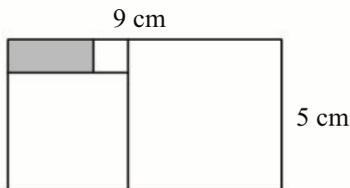
'A spinner numbered 1 to 5 is spun and an odd number is obtained.'



D

31. [Problem Solving 1]

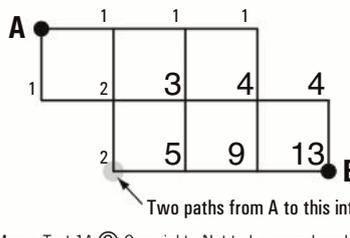
A 9 cm by 5 cm rectangle is divided into 3 squares and a rectangle as shown below. Find the area of the shaded rectangle.



3 cm²

32. [Problem Solving 2]

You are to move from A to B, always moving right or down along the lines. On how many different paths can you go? [The number of paths from A to various intersections has been included.]



13

MATHS MATE



Test 1

Covering worksheets 1.1 - 1.4

Name:

1. [Long \times ,+] $54 \times 20 =$ 1080

2. [Decimal +,-] $4.67 + 0.07 =$ 4.74

3. [Decimal \times ,+] $11.54 \times 6 =$ 69.24

4. [Fraction +,-] $\frac{13}{17} - \frac{8}{17} =$ $\frac{5}{17}$

5. [Fraction \times ,+] $\frac{3}{4} \times 2 =$ $1\frac{1}{2}$

6. [Percentages]
Of the slopes at Mount Buller, 30% are classified Advanced. What percentage of slopes are Intermediate?

45%

7. [Decimals / Fractions / Percentages]
Place in descending order:
 $\frac{2}{3}, \frac{5}{6}, \frac{5}{12}$ $\frac{5}{6}, \frac{2}{3}, \frac{5}{12}$

8. [Integer +,-] $(+4) + (-8) =$ -4

9. [Integer \times ,+] $(+6) \times (-3) =$ -18

10. [Rates / Ratios]
 10°C drop in 4 hours = 2.5 $^\circ\text{C}$ per hour

11. [Indices] $3^2 =$ 9

12. [Square Roots] $\sqrt{400} =$ 20

13. [Exploring Number] $18 - 5 - (18 - 6) =$ 1

14. [Financial Mathematics]
Joe's car insurance direct debit is \$34.80 per month. How much does he save if he pays the up-front annual amount of \$337?
\$ 80.60

15. [Number Patterns]
What is the value of the missing term in the pattern?

term position	1	2	3	4	5	6
term value	4	12	36	108	324	?

972

16. [Expressions]
Write as an expression:
 g decreased by 25
 $g - 25$

17. [Substitution]
If $p = 0$, find the value of $16 - p$ 16

18. [Expansion]
Expand $3(k - 2)$ $3k - 6$

19. [Factorisation]
Factorise $5s - 20$ $5(s - 4)$

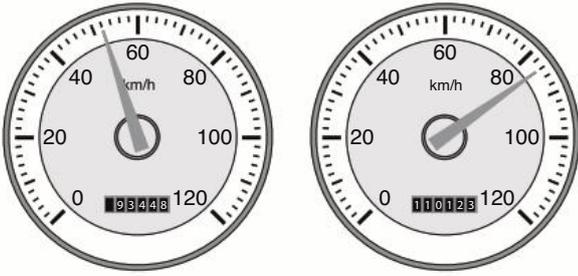
20. [Equations]
Solve for x : $8 + x = 4$ -4

21. [Coordinate Geometry]
Complete the table of values for the linear rule $y = 3x$

x	$y = 3x$	y	(x, y)
-2	$y = 3 \times (-2)$	-6	$(-2, -6)$
-1	$y = 3 \times (-1)$	-3	$(-1, -3)$
0	$y = 3 \times 0$	0	$(0, 0)$
1	$y = 3 \times 1$	3	$(1, 3)$
2	$y = 3 \times 2$	6	$(2, 6)$

22. [Units of Measurement / Time]

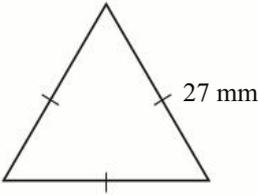
What is the difference in speed?



32 km/h

23. [Perimeter / Area]

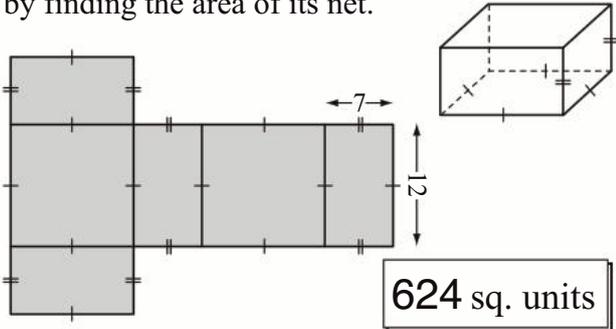
Find the perimeter of the equilateral triangle.



81 mm

24. [Surface Area]

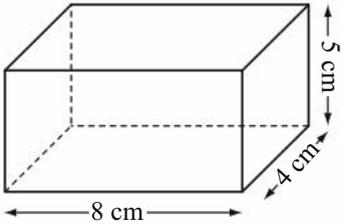
Find the total surface area of the square prism by finding the area of its net.



624 sq. units

25. [Volume]

Find the volume of the rectangular prism.



160 cm³

26. [Pythagoras]

Find the positive solution for c :

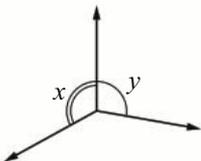
$c^2 = 400$

20

27. [Angles]

Which would describe the angles marked x and y in this diagram?

- A) reflex
- B) obtuse
- C) complementary

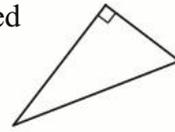


B

28. [Geometric Reasoning]

Which two options describe this triangle?

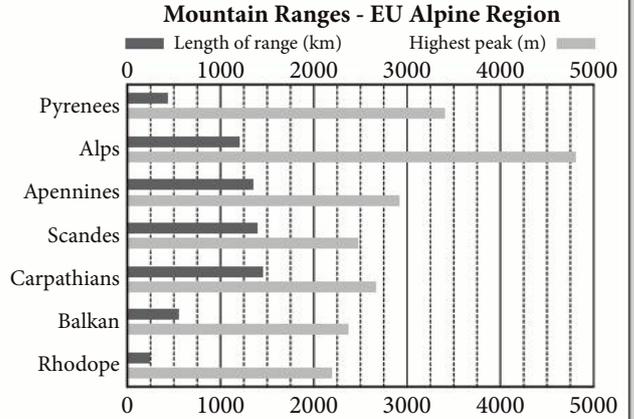
- A) right-angled
- B) scalene
- C) isosceles



A and B

29. [Statistics]

How many European mountain ranges have peaks between 2500 m and 3500 m?

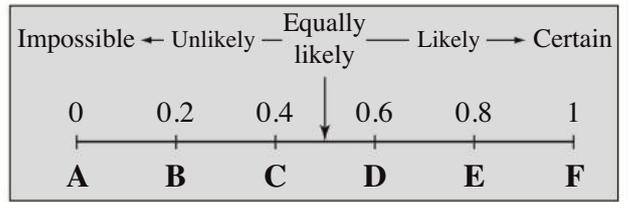


3

30. [Probability]

Which letter A to F describes the probability of this event?

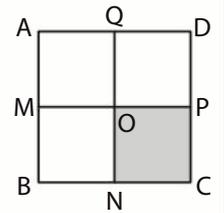
'A red marble will be drawn from a bag containing 8 white marbles and 2 red marbles.'



B

31. [Problem Solving 1]

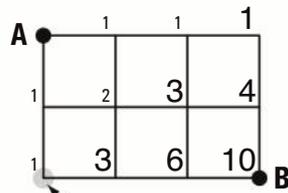
M, N, P and Q are the midpoints of the sides of the square ABCD. The shaded square has an area of 36 cm². What is the perimeter of the square ABCD?



48 cm

32. [Problem Solving 2]

You are to move from A to B, always moving right or down along the lines. On how many different paths can you go? [The number of paths from A to various intersections has been included.]



One path from A to this intersection

10



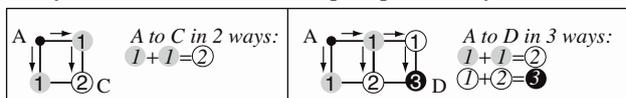
1.1

- 31. Hint:** Find the area of the square, then find the length of its side.
Solution: If the shaded area of the square has an area of 16 cm^2 , then the total area must be 4 times this, or 64 cm^2 .
 Use the formula for the area of a square:
 $A = s^2$
 $s^2 = 64$
 $s = 8$
 Use the formula for the perimeter of a square:
 $P = 4s = 4 \times 8 = 32$
 The perimeter of the square is **32 cm**.

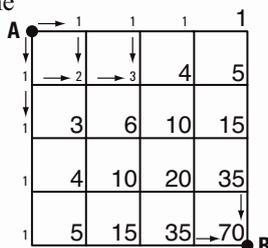
- 32. Hint:** Start by trying to find the hundreds digit. Use trial and error.
Solution: A has to be 1 or 2, because three 2-digit numbers can not add to 300 or more. ($99 + 88 + 77 = 264$)
 If $A = 2$, the only possible numbers for B and C that will give an answer greater than 200 are 8 and 9 but
 $22 + 88 + 99 = 209$ doesn't work.
 Therefore **A = 1**
 Now we know that $1 + B + C$ ends in C.
 So $1 + B$ must end in 0. Therefore **B = 9**
 By substitution we find **C = 8**, so **ABC = 198**

1.2

- 31. Hint:** Consider who gives the most information at a glance. Write logic statements.
Solution: Arrows from Mark indicate he is taller than Alex, David and Joe.
 The only other person left to consider is Sam.
 Sam is taller than Mark.
 By inference Sam is also taller than Alex, David and Joe.
Sam is the tallest.
- 32. Hint:** Look for a pattern working one intersection at a time from A. Consider the simpler problems first:



Solution: Working from A consider all the points on the grid that give only one possible path to that intersection. Mark them with 1. Use this pattern to establish the rule for finding the number of paths from A to any intersection: 'Add the number of paths from the intersections immediately up and left.'
 Apply this rule to every intersection on the grid until you reach B.



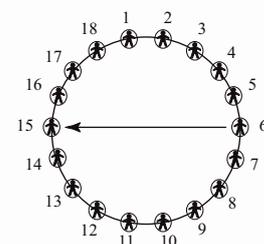
The final addition at intersection B is: $35 + 35 = 70$
 Movement from A to B can be done in **70** ways.

1.3

- 31. Hint:** Think about the digits 1, 2, 3 and 4 in terms of the two largest, 2-digit numbers you can make out of them. Use trial and error.
Solution: The 3 and 4 should be used in the tens positions.
 The possible choices and their results are:
 $42 \times 31 = 1302$ and
 $41 \times 32 = 1312$
 The larger product results from 2 lots of 40s rather than 2 lots of 30s.
- 32. Hint:** List the numbers from highest to lowest, working backwards, until you get to the number in the 17th position. Look for a pattern.
Solution: There are 24 possible 4-digit numbers made out of the digits 6, 7, 8 and 9.
 $4 \text{ digits} \Rightarrow 4 \times 3 \times 2 \times 1 = 24$ combinations
 Working from the largest to the smallest number gets us to the 17th position most simply:
 24th 9876
 23th 9867
 22th 9786
 21th 9768
 20th 9687
 19th 9678
 18th 8976
 17th 8967
 The number in the 17th position is **8967**.

1.4

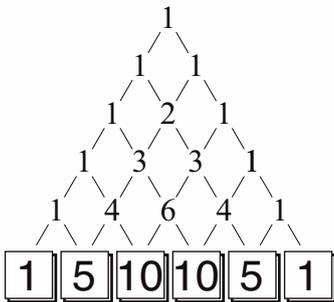
- 31. Hint:** Establish what you know. Draw a diagram.
Solution: There are 8 students between the 6th and the 15th students no matter which way you go.
 So $8 + 8 = 16$.
 Then include the 6th and the 15th students.
 You have **18** students evenly spaced in the circle.
- 32. Hint:** The addition table has the numbers to be added in the first row and the first column. Their sums go in the corresponding intersecting spaces. Look for sums where 2 of these 3 facts are known.



+	12	5	6	7
3	15	8	9	10
16	28	21	22	23
8	20	13	14	15
7	19	12	13	14

1.5

31. **Hint:** Look for patterns.
Solution: Pascal's triangle has 1 at the apex and has a 1 at both ends of each line. Any other number equals the sum of the two numbers directly above it.
 The sixth line is **1, 5, 10, 10, 5, 1**



32. **Hint:** Start with what you know. Work systematically. Use trial and error.

Solution:

Guess	Cows	Bulls
2 4 5	2	-
3 5 4	2	-
4 2 3	2	-

Two cows in every row indicate that no numbers are in the right positions in any row.
 4 is in all three positions, so it can not be part of the solution.
 5 can not be in positions 2 or 3, so it is in position 1.
 2 can not be in positions 1 and 2, so it is in position 3.
 3 can not be in positions 1 and 3, so it is in position 2.
 So the answer is **532**.

1.6

31. **Hint:** Which symbols appear to have the greatest/least values? Presume a simple relationship between symbols. e.g. $\nabla\Delta = 6$ if $\nabla = 3$, $\Delta = 2$ and $| = 1$.
Solution: $\Delta|| = 5$. The only possible values for $|$ are 0, 1 and 2.
 If $| = 0$, then $\Delta = 5$ but from $\nabla\Delta\Delta = 15$, $\nabla = 5$. This must be false because two different symbols have the same value.
 If $| = 2$, then $\Delta = 1$ but from $\nabla\Delta\Delta = 15$, $\nabla = 13$. This would make the the statement $\nabla\nabla| = 19$ false.
 If $| = 1$, then $\Delta = 3$ and from $\nabla\Delta\Delta = 15$, $\nabla = 9$. This would make all statements true.
 SO: $\nabla\nabla\Delta| = 9 + 9 + 3 + 1 = 22$

32. **Hint:** Make a list. Work systematically. Look for a pattern.
Solution: The list of possible combinations of dots on the domino tiles is as follows (remember order is of no importance on each tile):
- | | | | | | | |
|----|----|----|----|----|----|----|
| 00 | 11 | 22 | 33 | 44 | 55 | 66 |
| 01 | 12 | 23 | 34 | 45 | 56 | |
| 02 | 13 | 24 | 35 | 46 | | |
| 03 | 14 | 25 | 36 | | | |
| 04 | 15 | 26 | | | | |
| 05 | 16 | | | | | |
| 06 | | | | | | |
- The possibilities are 7 then 6, 5, etc.
 $7 + 6 + 5 + 4 + 3 + 2 + 1 = 28$
 There are **28** domino pieces in the set.

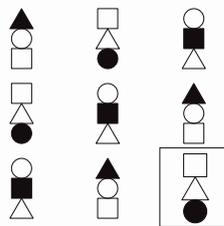
1.7

31. **Hint:** Make an organised list. A table format may help.
Solution:

Minute	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Metres moved	+2	-1	+2	-1	+2	-1	+2	-1	+2	-1	+2	-1	+2	-1	+2	-1	+2
Height up wall	2	1	3	2	4	3	5	4	6	5	7	6	8	7	9	8	10

The frog took **17** minutes to reach the top of the well.

32. **Hint:** Look for patterns. What are the variables?
Solution: The variables are shape, colour and position. Every figure has one of each shape, one black and two white shapes and an order not used by any other figure in its same row or column.



1.8

31. **Hint:** Make organised lists.
Solution: Let B and G represent the number of boys and girls in the family.

Fact 1 Each of my sons has as many brothers as sisters. Some possibilities are:	Fact 2 Each of my daughters has half as many sisters as brothers. Some possibilities are:
--	--

Gender	Total	Gender	Total
B + (G + B)	(1G, 2B)	G + (G + 2B)	(2G, 2B)
B + (2G + 2B)	(2G, 3B)	G + (2G + 4B)	(3G, 4B)
B + (3G + 3B)	(3G, 4B)	G + (3G + 6B)	(4G, 6B)
B + (4G + 4B)	(4G, 5B)	G + (4G + 8B)	(5G, 8B)

There is one option that fits both criteria.
 So there are 3 girls and 4 boys in the family, a total of **7** children.

10. [Rates / Ratios]

Skill 10.1 Finding the unit rate and the unit price.

Mauve 1 2 2 3 3 4 4
Lime 1 1 2 2 3 3 4 4

To find the unit rate

- Divide the two quantities to show how many of the first quantity correspond to one of the second quantity.

To find the unit price

- Divide the total amount by the number of items.

Q. 200 litres flow in 5 minutes =

litres per minute

A. *200 litres in 5 minutes* Simplify the fraction by 5.

$$= \frac{200 \text{ L}}{5 \text{ min}}$$

$$= \frac{200 \text{ L}}{5 \text{ min}}$$

$$= 40 \text{ litres per minute (L/min)}$$

a) 300 cars sold in 30 days =

cars per day

300 cars in 30 days

$$= \frac{300 \text{ cars}}{30 \text{ days}}$$

Simplify: ÷ 30

$$= 10 \text{ cars per day}$$

b) 420 m walked in 5 minutes =

m per minute

420 m in 5 minutes

=

=

c) 12°C drop in 6 hours =

°C per hour

=

=

d) 600 beats in 10 minutes =

beats per minute

=

=

e) If 8 kg of apples are sold for \$10, what is the cost per kilogram?

=

\$ /kg

f) The plumber charged \$231 for a 3-hour job. What was the charge per hour?

=

/h

g) Nina earns \$100 for an 8-hour shift. How much does she earn per hour?

=

/h

h) A 6-pack of exercise books cost \$9.60. What is the price per exercise book?

=

\$

Skill 10.2 Simplifying ratios.

Mauve 1 1 22 33 44
Lime 1 1 22 33 44

- Write the quantities of the ratio with the same unit of measurement.

EITHER

- Find the largest number that divides evenly into each quantity of the ratio (Highest Common Factor).
- Divide each quantity by the HCF.

Hints: The order of the quantities in a ratio matters.
' \cdot ' means 'to'.

Examples: The ratio of legs to ears in a dog is $4 : 2 = 2 : 1$
The ratio of ears to legs in a dog is $2 : 4 = 1 : 2$

OR

- Divide each quantity of the ratio by any factor until the ratio is reduced to its simplest form.

$$a : b = \frac{a}{b} \quad \text{Ratio}$$

Q. Simplify $80 \text{ min} : 3 \text{ h}$ **A.** $3 \text{ h} = 3 \times 60 \text{ min} = 180 \text{ min}$ **OR** **A.** $3 \text{ h} = 3 \times 60 \text{ min} = 180 \text{ min}$

$$\begin{aligned} & 80 \text{ min} : 3 \text{ h} \\ & = \overset{4}{80} \text{ min} : \overset{9}{180} \text{ min} \\ & = 4 : 9 \end{aligned}$$

1 h = 60 min
HCF of 80 and 180 is 20 so $\div 20$
Ignore the units

$$\begin{aligned} & 80 \text{ min} : 3 \text{ h} \\ & = 80 \text{ min} : 180 \text{ min} \\ & = \overset{4}{8} : \overset{9}{18} \\ & = 4 : 9 \end{aligned}$$

Simplify: $\div 10$
Simplify: $\div 2$

a) Simplify $600 \text{ mL} : 0.2 \text{ L}$

$$0.2 \text{ L} = 0.\overset{3}{\text{200}} \times 1000 \text{ mL} = 200 \text{ mL}$$

1 L = 1000 mL
3 zeros, 3 places right

$$\begin{aligned} & 600 \text{ mL} : 200 \text{ mL} \\ & = 6^3 : 2^1 \\ & = 3 : 1 \end{aligned}$$

Simplify: $\div 100$
Simplify: $\div 2$

b) Simplify $2 \text{ m} : 50 \text{ cm}$

$$= \quad = \quad =$$

c) Simplify $750 \text{ g} : 1 \text{ kg}$

$$= \quad = \quad =$$

d) Simplify $6 \text{ months} : 4 \text{ years}$

$$= \quad = \quad =$$

e) Simplify $2 \text{ km} : 3200 \text{ m}$

$$= \quad = \quad =$$

f) Simplify $\$24 : 300\text{c}$

$$= \quad = \quad =$$

g) Simplify $0.5 \text{ kg} : 2000 \text{ g} : 4 \text{ kg}$

$$= \quad = \quad =$$

h) Simplify $50\text{c} : \$4.00 : \2.50

$$= \quad = \quad =$$

Skill 20.6 Solving equations involving algebraic fractions (1).

- Use inverse operations rules to isolate any algebraic fractions.
- Rewrite all expressions as fractions if necessary.
- Cross multiply. (see skill 10.11, page 109)
- Combine all variables on one side of the equation by using inverse operations. (see skill 20.5, page 211)
- To isolate the variable (x) perform the inverse operations, in order, to both sides of the equation.

Q. Solve for x : $\frac{x}{3} = x + 4$

A.

$$\frac{x}{3} = x + 4$$

$$\frac{x}{3} \times \frac{x+4}{1} \quad \text{Cross multiply}$$

$$x = 3(x + 4)$$

$$x = 3x + 12$$

$$x - 3x = 3x - 3x + 12 \quad \text{Combine } x\text{'s: } -3x$$

$$-2x = 12$$

$$\frac{-2x}{-2} = \frac{12}{-2} \quad \text{Inverse of } \times -2 \text{ is } \div -2$$

$$x = -6$$

a) Solve for x : $\frac{x}{4} - 10 = -x$

Isolate the fraction

$$\frac{x}{4} - 10 + 10 = -x + 10$$

$$\frac{x}{4} \times \frac{-x+10}{1} \quad \text{Rewrite expression as fraction}$$

$$x = 4(-x + 10)$$

$$x + 4x = -4x + 4x + 40$$

$$5x = 40$$

$$x = \boxed{}$$

b) Solve for x : $\frac{18}{x} = 2$

$$=$$

$$=$$

$$=$$

$$x = \boxed{}$$

c) Solve for x : $\frac{6}{x} = \frac{3}{10}$

$$=$$

$$=$$

$$=$$

$$=$$

$$x = \boxed{}$$

d) Solve for x : $\frac{10}{x} = 5$

$$=$$

$$=$$

$$=$$

$$=$$

$$x = \boxed{}$$

e) Solve for x : $\frac{12}{x} = 3$

$$=$$

$$=$$

$$=$$

$$=$$

$$x = \boxed{}$$

f) Solve for x : $\frac{4}{x} = \frac{2}{7}$

$$=$$

$$=$$

$$=$$

$$=$$

$$x = \boxed{}$$

Skill 20.6 Solving equations involving algebraic fractions (2).

Mauve 11 22 3 44
Lime 11 22 33 44

g) Solve for x : $\frac{20-2x}{3} = 2$

=

=

=

=

$x =$

h) Solve for x : $\frac{3x-2}{5} = 8$

=

=

=

=

$x =$

i) Solve for x : $\frac{5x-1}{3} = 3$

=

=

=

=

$x =$

j) Solve for x : $\frac{2x}{5} = x - 3$

=

=

=

=

$x =$

k) Solve for x : $8 - x = \frac{2x}{5}$

=

=

=

=

$x =$

l) Solve for x : $\frac{2x}{3} + 10 = 4x$

=

=

=

=

$x =$

m) Solve for x : $\frac{x-2}{4} = \frac{x+6}{5}$

=

=

=

=

$x =$

n) Solve for x : $\frac{x+4}{3} = \frac{10-x}{4}$

=

=

=

=

$x =$

o) Solve for x : $\frac{x+3}{3} - \frac{x-2}{5} = 3$

=

=

=

=

$x =$