

third edition



# MATHS MATE

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J. B. Wright & I. Tutos

# MATHS MATE

## Student Workbook - 3rd Edition



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J. B. Wright & I. Tutos

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### Preface

The Maths Mate Review Program is designed to be used in schools by students from years 3 to 10 (Australia) and years 4 to 11 (New Zealand). Emphasis is placed on the review and gradual development of basic skills.

It is not expected that all students will be able to complete every question from week one. Some questions have been designed to offer a real challenge. However, a major strength of the program is that students are consistently confronted with problems relating to their understanding of the same basic skill, encouraging them to see the need to master that skill in order to progress.

### RECOMMENDED GRADE / YEAR LEVEL INDICATOR

	AUS 1	2	3	4	5	6	7	8	9	10	11	12
Orange Student Workbook - 2nd Ed.												
Rose Student Workbook - 2nd Ed.												
Yellow Student Workbook - 5th Ed.												
Red Student Workbook - 5th Ed.												
Blue Student Workbook - 6th Ed.												
Green Student Workbook - 6th Ed.												
Mauve Student Workbook - 6th Ed.												
Coffee Student Workbook - 3rd Ed.												
Lime Student Workbook - 6th Ed.												
Silver Student Workbook - 3rd Ed.												

NZ Y2 Y3 Y4 Y5 Y6 Y7 Y8 Y9 Y10 Y11 Y12 Y13

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### Maths Mate Coffee cover painting

Echidna - 2003  
 Acrylic on canvas 45 × 60 cm  
 by Australian artist Susan Betts - Kokata, Mirning and Wirangu.

'Echidna' was purchased by The Educational Advantage who have been kindly given permission to reproduce the painting. This contemporary Aboriginal artwork combines traditional and modern techniques. Susan's rich and vibrant art reflects the Australian landscape and wildlife, both flora and fauna.

# MATHS MATE



Name: .....

Class: .....

Teacher: .....

## Worksheet Results

**Term 1**

		Sheet 1	Sheet 2	Sheet 3	Sheet 4	Sheet 5	Sheet 6	Sheet 7	Sheet 8
<b>NUMBER</b>	1. [Long $\times, \div$ ]	1	1	1	1	1	1	1	1
	2. [Decimal $+, -$ ]	2	2	2	2	2	2	2	2
	3. [Decimal $\times, \div$ ]	3	3	3	3	3	3	3	3
	4. [Fraction $+, -$ ]	4	4	4	4	4	4	4	4
	5. [Fraction $\times, \div$ ]	5	5	5	5	5	5	5	5
	6. [Percentages]	6	6	6	6	6	6	6	6
	7. [Integer $+, -$ ]	7	7	7	7	7	7	7	7
	8. [Integer $\times, \div$ ]	8	8	8	8	8	8	8	8
	9. [Rates / Ratios]	9	9	9	9	9	9	9	9
	10. [Indices]	10	10	10	10	10	10	10	10
	11. [Square Roots / Surds]	11	11	11	11	11	11	11	11
	12. [Order of Operations]	12	12	12	12	12	12	12	12
	13. [Exploring Number]	13	13	13	13	13	13	13	13
	14. [Scientific Notation]	14	14	14	14	14	14	14	14
	15. [Number Patterns]	15	15	15	15	15	15	15	15
<b>ALGEBRA</b>	16. [Expressions]	16	16	16	16	16	16	16	16
	17. [Substitution]	17	17	17	17	17	17	17	17
	18. [Expansion]	18	18	18	18	18	18	18	18
	19. [Factorisation]	19	19	19	19	19	19	19	19
	20. [Equations]	20	20	20	20	20	20	20	20
	21. [Graphs & Functions]	21	21	21	21	21	21	21	21
<b>MEASUREMENT</b>	22. [Units of Measurement / Time]	22	22	22	22	22	22	22	22
	23. [Perimeter]	23	23	23	23	23	23	23	23
	24. [Area]	24	24	24	24	24	24	24	24
	25. [Volume]	25	25	25	25	25	25	25	25
	26. [Surface Area]	26	26	26	26	26	26	26	26
	27. [Pythagoras / Trigonometry]	27	27	27	27	27	27	27	27
<b>SPACE</b>	28. [Shape / Location]	28	28	28	28	28	28	28	28
	29. [Angles]	29	29	29	29	29	29	29	29
<b>STAT.</b>	30. [Statistics]	30	30	30	30	30	30	30	
<b>PROB.</b>	31. [Probability]	31	31	31	31	31	31	31	
<b>PROBLEM SOLVING</b>	32. [Problem Solving 1]	32	32	32	32	32	32	32	32
	33. [Problem Solving 2]	33	33	33	33	33	33	33	33
Total Correct		<input type="checkbox"/>							





Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, \div$ ] \*  
 $15 \times 35 =$

2. [Decimal  $+, -$ ]  
 $6.25 + 9.45 =$

3. [Decimal  $\times, \div$ ]  
 $5.7 \times 100 =$

4. [Fraction  $+, -$ ]  
 $\frac{1}{9} + \frac{4}{9} =$

5. [Fraction  $\times, \div$ ]  
 $\frac{3}{5} \times \frac{10}{7} =$

6. [Percentages] \*  
20% of 320 =

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

8. [Integer  $\times, \div$ ]  
 $(-2) \times (+6) =$

9. [Rates / Ratios] \*  
The fastest aircraft in the world is the X-15 rocket plane, with a climbing rate of 18000 m per minute. At this rate how far can it climb in 10 seconds?  m

10. [Indices]  
Evaluate  $0.2^3$

11. [Square Roots / Surds] \*  
Evaluate  $\sqrt{\frac{4}{25}}$

12. [Order of Operations]  
 $4 \times 9 \div 3 =$

13. [Exploring Number]  
Write 1.05 as a percentage.

14. [Scientific Notation]  
Write  $5.1 \times 10^4$  as a basic numeral.

15. [Number Patterns]  
Complete the pattern:  
8, 10, 12, 14, ,

16. [Expressions]  
Select the like terms:  
 $z, z^2, 5z^2$

17. [Substitution] \*  
If  $y = 2x - 1$ , find the value of  $y$  when  $x = 3$

18. [Expansion]  
Expand  $7(2s - 1)$

19. [Factorisation]  
Factorise  $14cd - 7c$

20. [Equations] \*  
Solve for  $x$ :  $2x - 1 = 7$

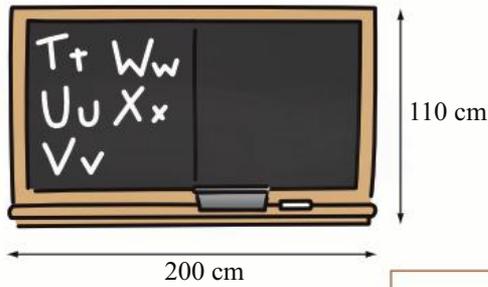
21. [Graphs & Functions]  
Complete the table for the rule  $y = 2x + 4$

$x$	$y = 2x + 4$	$(x, y)$
0	$y = 2 \times 0 + 4$	(0, 4)
1		
2		
3		
4		

22. [Units of Measurement / Time] \*  
How many hours from 8:00 am one day until 4:00 pm the next?

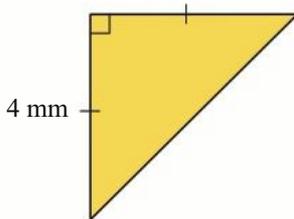
23. [Perimeter] \*

Find the perimeter of the blackboard.



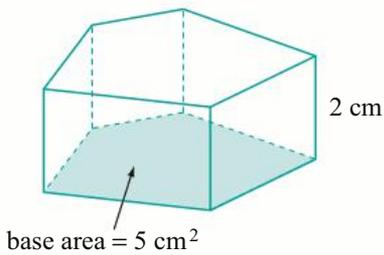
24. [Area] \*

Find the area of the triangle.



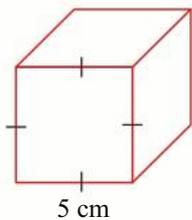
25. [Volume] \*

Find the volume of the prism.



26. [Surface Area] \*

Find the total surface area of the cube.



27. [Pythagoras / Trigonometry]

Find the positive solution for  $x$ :

$$x^2 = 81$$

28. [Shape / Location]

Draw a triangle with exactly one axis of symmetry. What type of triangle have you drawn?

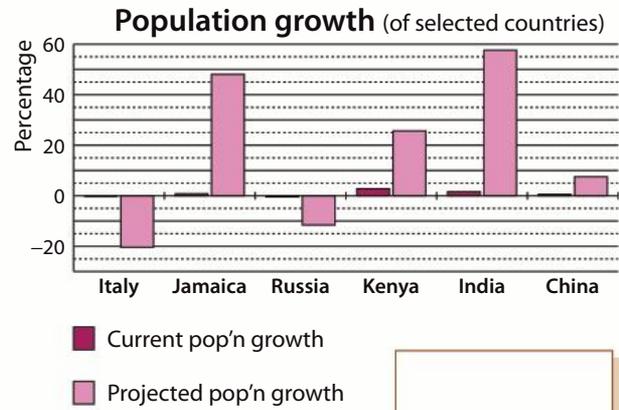


29. [Angles]

What is the supplement of  $123^\circ$ ?

30. [Statistics]

Which country has the highest current population growth?



31. [Probability]

If the probability of receiving a message on the internet today is  $\frac{8}{9}$ , what is the probability of not receiving a message?

32. [Problem Solving 1] \*

Find all the possible values for the integer  $n$  so that  $\frac{7}{n-2}$  is also an integer.

33. [Problem Solving 2] \*

Which number is greater:  $(-3)^{22}$  or  $(-2)^{33}$ ?



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times$ ,  $\div$ ]  
 $234 \div 9 =$

2. [Decimal  $+$ ,  $-$ ]  
 $4.38 + 0.9 =$

3. [Decimal  $\times$ ,  $\div$ ]  
 $32 \div 1000 =$

4. [Fraction  $+$ ,  $-$ ] \*  
 $\frac{6}{6} - \frac{2}{6} =$

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

6. [Percentages] \*  
 25% of 180 =

7. [Integer  $+$ ,  $-$ ]  
 $(+9) - (+1) =$

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

9. [Rates / Ratios] \*  
 The fastest helicopter in the world is the 'Westland Lynx', which can fly at a speed of 400 km/h. What distance can it fly in 12 minutes?  km

10. [Indices] \*  
 Evaluate  $3^2 \times 3^3$

11. [Square Roots / Surds]  
 Evaluate  $\sqrt{81} \times \sqrt{81}$

12. [Order of Operations]  
 $6 \times (9 + 5) =$

13. [Exploring Number] \*  
 Express 0.25% as a fraction in simplest form.

14. [Scientific Notation]  
 Express  $8.6 \times 10^{-3}$  as a basic numeral.

15. [Number Patterns]  
 Complete the pattern:  
 7, 11, 15, 19, ,

16. [Expressions]  
 Select the like terms:  
 $4q$ ,  $8q^2$ ,  $8q$

17. [Substitution] \*  
 If  $y = x^2 - x$ , find the value of  $y$  when  $x = 6$

18. [Expansion]  
 Expand  $y(y + 2)$

19. [Factorisation]  
 Factorise  $16ef^2 - 8fg + 24f$

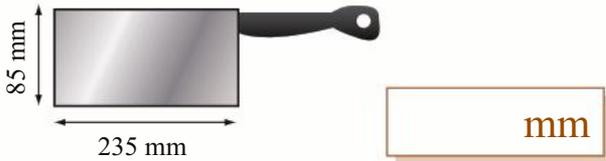
20. [Equations] \*  
 Solve for  $x$ :  $3x + 3 = 21$

21. [Graphs & Functions]  
 Complete the table for the rule  $y = -x + 1$

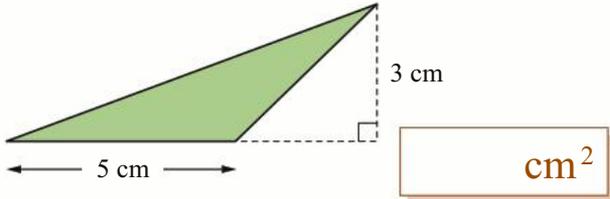
$x$	$y = -x + 1$	$(x, y)$
0	$y = 0 + 1$	$(0, 1)$
1		
2		
3		
4		

22. [Units of Measurement / Time] \*  
 How many months are there from September 1st 2009 until June 1st 2014?

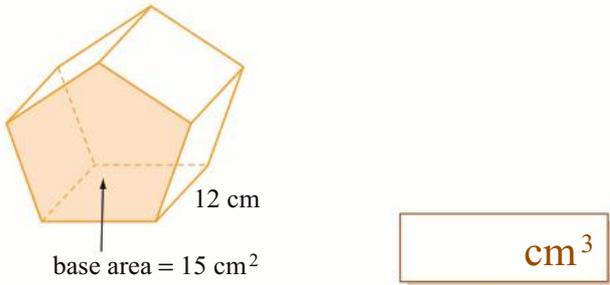
23. [Perimeter] \*  
Find the perimeter of the meat cleaver blade.



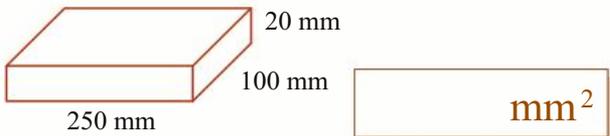
24. [Area] \*  
Find the area of the shaded triangle.



25. [Volume] \*  
Find the volume of the pentagonal prism.



26. [Surface Area] \*  
Find the total surface area of the rectangular prism.



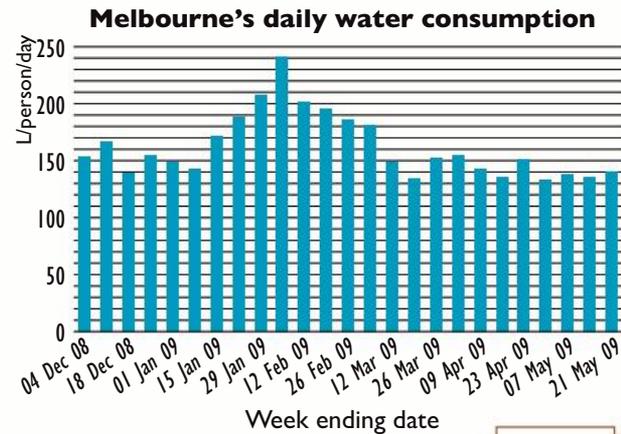
27. [Pythagoras / Trigonometry] \*  
Find the positive solution for  $c$ :  
 $c^2 = 0.6^2 + 0.8^2$

28. [Shape / Location]  
Sketch and label as many different isosceles triangles as you can in which at least one side is 3 cm long and at least one angle is  $30^\circ$ .  
[Drawings need not be to scale.]

29. [Angles] \*  
Find the value of  $x^\circ$ .



30. [Statistics]  
For how many of the 25 weeks shown was Melbourne's average daily water consumption on or below its target of 155 litres per person?




31. [Probability]  
In a Lego toy, some bricks are red, some white and the rest are blue. One brick is chosen at random. If the probability of choosing a red brick is 0.38 and the probability of choosing a white brick is 0.17, what is the probability of choosing a blue brick?

32. [Problem Solving 1] \*  
 $1 \times 3 \times \dots \times 101 > 2 \times 4 \times \dots \times 100$   
True or false?

33. [Problem Solving 2] \*  
What is the smallest number which is reversed when 2 is added to its double?



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, \div$ ]  
 $438 \div 6 =$

2. [Decimal  $+, -$ ]  
 $6.7 - 2.8 =$

3. [Decimal  $\times, \div$ ]  
 $0.8 \div 100 =$

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

5. [Fraction  $\times, \div$ ]  
 $\frac{1}{6} \times \frac{6}{7} =$

6. [Percentages] \*  
 15% of 480 =

7. [Integer  $+, -$ ]  
 $(-9) + (-3) =$

8. [Integer  $\times, \div$ ]  
 $(-12) \div (-3) =$

9. [Rates / Ratios] \*  
 The fastest train in the world is the 'Train a Grande Vitesse' in France. Find its average speed, in kilometres per hour, if it can travel 45 km in 5 minutes.

10. [Indices]  
 Evaluate  $\frac{5^5}{5^2}$

11. [Square Roots / Surds]  
 Evaluate  $\sqrt{1} \times \sqrt{1}$

12. [Order of Operations] \*  
 $(4 + 11) - (9 - 6) =$

13. [Exploring Number]  
 Write 0.06 as a fraction in simplest form.

14. [Scientific Notation]  
 Express  $4.005 \times 10^2$  as a basic numeral.

15. [Number Patterns]  
 Complete the pattern:  
 $\frac{1}{5}, 1, 5, 25,$

16. [Expressions]  
 Select the like terms:  
 $2x^2, 2m, x^2$

17. [Substitution] \*  
 If  $y = 4(x - 2)$ , find the value of  $y$  when  $x = 2$

18. [Expansion]  
 Expand  $3(4 - 2t)$

19. [Factorisation]  
 Factorise  $4ab + 6bc + 8bd$

20. [Equations] \*  
 Solve for  $x$ :  
 $\frac{2x + 1}{3} = 5$

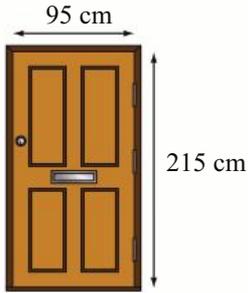
21. [Graphs & Functions]  
 Complete the table of values for the rule  $y = 2x - 3$

$x$	$y = 2x - 3$	$(x, y)$
0	$y = 2 \times 0 - 3$	$(0, -3)$
1		
2		
3		
4		

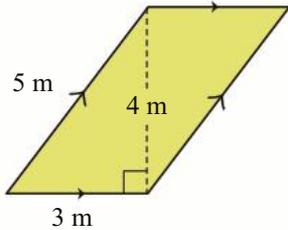
22. [Units of Measurement / Time] \*  
 Find the time in hours and minutes from 1230 hours one day until 0620 hours the next.

h  min

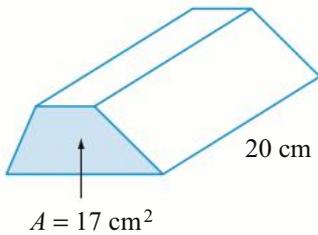
23. [Perimeter] \*  
Calculate the perimeter of the door.



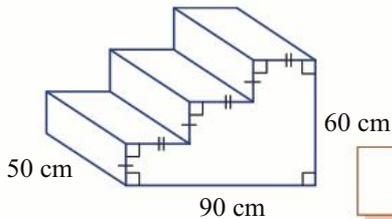
24. [Area] \*  
Find the area of the parallelogram.



25. [Volume] \*  
Find the volume of the prism.



26. [Surface Area] \*  
Find the total surface area of the prism.



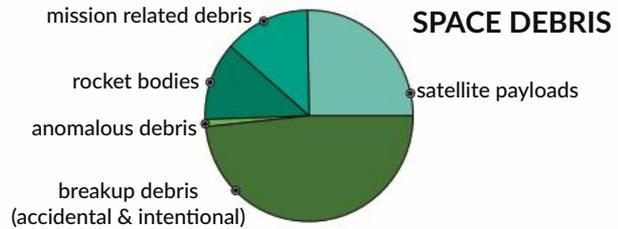
27. [Pythagoras / Trigonometry] \*  
Find the positive solution for  $b$ :  
 $64 + b^2 = 100$

28. [Shape / Location]  
Draw a triangle that has three axes of symmetry. What type of triangle have you drawn?



29. [Angles]  
State whether the following angles are supplementary (S) or complementary (C):  
 $65^\circ, 25^\circ$ .

30. [Statistics]  
According to the pie chart, which source contributes closest to 25% of our space debris?



31. [Probability]  
Join the following probabilities to their best description: [One has been done for you.]

Pr =  $\frac{1}{1000}$     **A** — **1** once in a blue moon  
Pr =  $\frac{1}{2}$         **B**    **2** in the box seat  
Pr = 0         **C**    **3** even chance  
Pr =  $\frac{3}{4}$         **D**    **4** pigs might fly

32. [Problem Solving 1] \*  
How much time is saved by driving 10 km at 100 km/h instead of 60 km/h?

33. [Problem Solving 2]  
Deduce the answer to the following game of cows and bulls.

[Reminder: A cow means a number is correct in value but in the wrong position, and a bull indicates that a number is both correct in value and in the correct position. i.e. 2 cows and 1 bull would indicate that all three numbers were correct but two were in the wrong positions.]

Guess	Cows	Bulls
9 7 6	2	—
6 1 9	2	—
1 6 7	2	—



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, \div$ ]  
 $170 \div 5 =$

2. [Decimal  $+, -$ ]  
 $4.2 - 3.9 =$

3. [Decimal  $\times, \div$ ]  
 $1000 \times 0.02 =$

4. [Fraction  $+, -$ ] \*  
 $\frac{19}{13} - \frac{6}{13} =$

5. [Fraction  $\times, \div$ ] \*  
 $\frac{5}{4} \div \frac{3}{8} =$

6. [Percentages] \*  
 5% of \$15.00 =

7. [Integer  $+, -$ ]  
 $(-1) - (+9) =$

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

9. [Rates / Ratios] \*  
 The fastest electrically powered car in the world can travel 18 km in 10 minutes. Find its average speed in kilometres per hour.

10. [Indices]  
 Evaluate  $\frac{2^{14}}{2^{10}}$

11. [Square Roots / Surds]  
 Evaluate  $\sqrt{\frac{64}{25}}$

12. [Order of Operations] \*  
 $3 \times 5 - (18 \div 3) =$

13. [Exploring Number]  
 Write  $\frac{12.5}{10}$  as a percentage.

14. [Scientific Notation]  
 Express 0.1175 in scientific notation.

15. [Number Patterns]  
 Complete the pattern:  
 25, 21, 17, 13,  ,

16. [Expressions]  
 Select the like terms:  
 $10k, 10, 3k^2, 4$

17. [Substitution] \*  
 If  $y = \frac{2x+1}{3}$ , find the value of  $y$  when  $x = 7$

18. [Expansion]  
 Expand  $x(x-1)$

19. [Factorisation]  
 Factorise  $4x^2 - 36x$

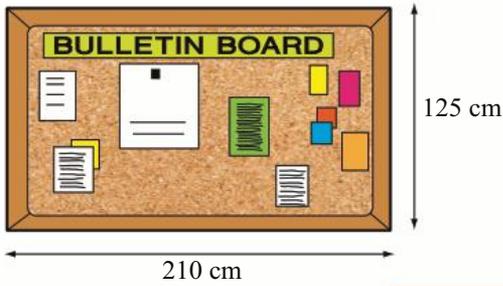
20. [Equations] \*  
 Solve for  $x$ :  $4x + 1 = 17$

21. [Graphs & Functions]  
 Complete the table of values for the rule  $y = -2x + 1$

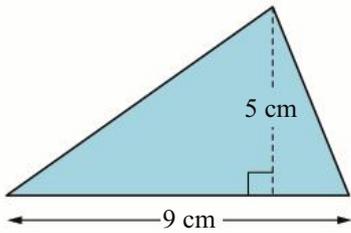
$x$	$y = -2x + 1$	$(x, y)$
0	$y = -2 \times 0 + 1$	(0, 1)
1		
2		
3		
4		

22. [Units of Measurement / Time] \*  
 Find the time in hours and minutes from 2330 hours one day until 1320 hours the next.  
 h  min

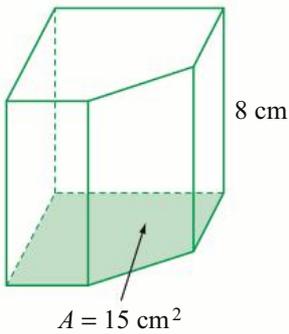
23. [Perimeter] \*  
Find the perimeter of the bulletin board.



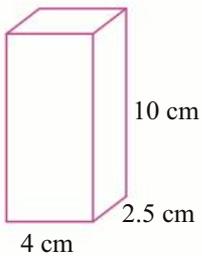
24. [Area] \*  
Find the area of the triangle.



25. [Volume] \*  
Find the volume of the prism.

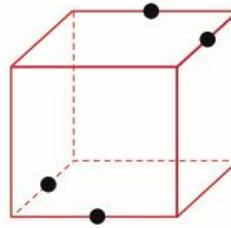


26. [Surface Area] \*  
Find the total surface area of the rectangular prism.



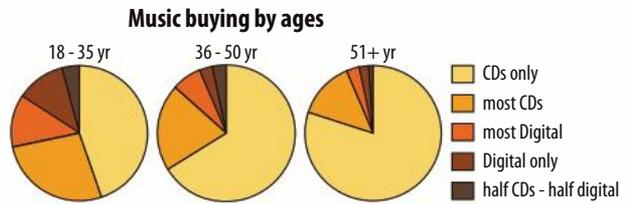
27. [Pythagoras / Trigonometry] \*  
Find the positive solution for  $a$ :  
 $a^2 + 225 = 625$

28. [Shape / Location]  
What shape is the cross section produced by slicing through the points indicated on the cube?



29. [Angles]  
What is the complement of  $34^\circ$ ?

30. [Statistics]  
Which age group includes the largest group of people who only buy music in digital form?



31. [Probability]  
Join the following probabilities to their best description:

Pr = 62.5%  A  1 a tossed coin lands tails up

Pr = 100%  B  2 choosing a heart from a deck of 52 cards

Pr = 25%  C  3 choosing a chocolate cookie from a box with 5 chocolate and 3 butter cookies

Pr = 50%  D  4 the sun will rise in the east tomorrow

32. [Problem Solving 1] \*  
Find the value of the product:  
 $(-1)^1 \times (-1)^2 \times (-1)^3 \times \dots \times (-1)^{30}$

33. [Problem Solving 2] \*  
Find the value of the product:  
 $(1 + \frac{1}{2})(1 + \frac{1}{3})(1 + \frac{1}{4})(1 + \frac{1}{5})(1 + \frac{1}{6})$



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, +$ ] \*  
 $84 \times 13 =$

2. [Decimal  $+, -$ ]  
 $2.0 - 0.5 =$

3. [Decimal  $\times, +$ ]  
 $146 \times 0.01 =$

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

5. [Fraction  $\times, +$ ] \*  
 $\frac{3}{2} \times \frac{8}{4} =$

6. [Percentages] \*  
75% of 1 litre =  millilitres

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

8. [Integer  $\times, +$ ]  
 $(+10) \times (+4) =$

9. [Rates / Ratios] \*  
A car with a 2 L engine has a consumption of 4.6 litres of diesel per 100 kilometres. How many litres of diesel are needed for a 350 km trip?

10. [Indices]  
Simplify  $\frac{4s^3}{2s^3}$

11. [Square Roots / Surds] \*  
Evaluate  $\sqrt{1.96}$

12. [Order of Operations] \*  
 $(2 + 2)^2 \times 2 =$

13. [Exploring Number] \*  
Place in ascending order:  
 $\frac{1}{3}, 0.3, 3\%$

14. [Scientific Notation]  
Round 100.6 correct to the nearest whole number.

15. [Number Patterns]  
Complete the pattern:  
3, 4, 7, 12, 19, ,

16. [Expressions]  
Simplify  
 $2z - 5 + z + 8$

17. [Substitution] \*  
If  $y = (x + 2)(x + 3)$ ,  
find the value of  $y$  when  $x = 0$

18. [Expansion]  
Expand  $2k(k + 2)$

19. [Factorisation]  
Factorise  $6x^2 + 9x + 15xy$

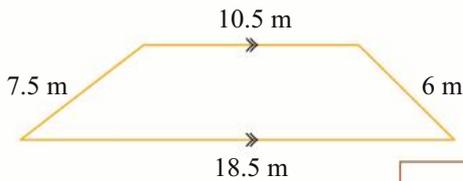
20. [Equations] \*  
Solve for  $x$ :  
 $\frac{x}{5} - 1 = 4$

21. [Graphs & Functions]  
Complete the table of values for the rule  $y = 2x + 5$

$x$	-3	-2	-1	0	1	2	3
$y$	-1						

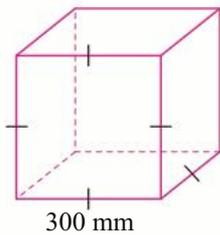
22. [Units of Measurement / Time]  
Complete the statement:  
 $2\frac{1}{2}$  years =  months

23. [Perimeter] \*  
Find the perimeter of the trapezium.

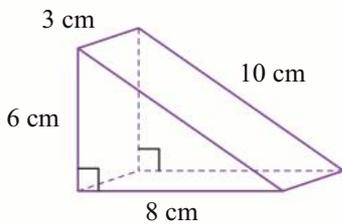


24. [Area] \*  
What is the area of a square whose perimeter is 20 cm?

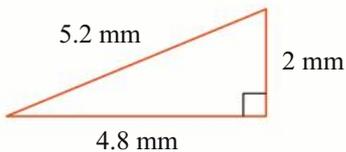
25. [Volume] \*  
Find, in  $\text{cm}^3$ , the volume of the cube.



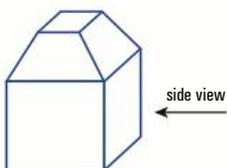
26. [Surface Area] \*  
Find the total surface area of the triangular prism.



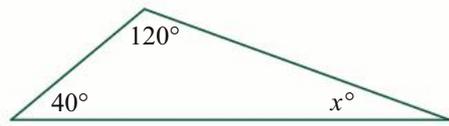
27. [Pythagoras / Trigonometry]  
What is the length of the hypotenuse of the triangle?



28. [Shape / Location]  
Draw the side view of the solid.

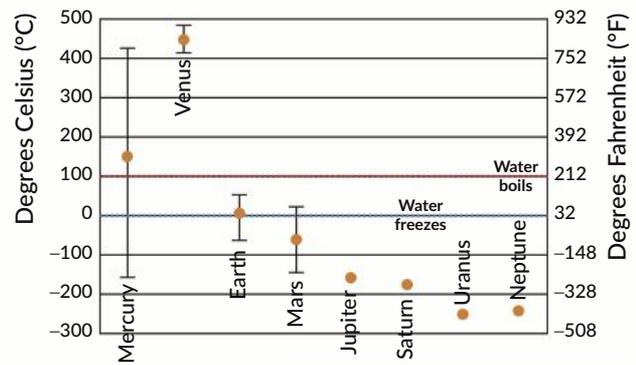


29. [Angles] \*  
Find the value of  $x^\circ$ .



30. [Statistics]  
On which planet would it be possible to experience temperatures of  $850^\circ\text{F}$ ?

Atmospheric temperatures of the planets - range/average



31. [Probability] \*  
A 52 card deck of playing cards is shuffled, and one card is dealt from the top of the deck. Determine the probability that it is an ace.



32. [Problem Solving 1] \*  
If  $n$  is a whole number, which of the following must be an odd number?

- A)  $n + 1$
- B)  $2n$
- C)  $2n + 1$
- D)  $2(n + 1)$
- E)  $3(n + 1)$

33. [Problem Solving 2] \*  
A car's odometer displays 15 951 km. This is a palindromic number - it reads the same backwards and forwards. Two hours later the meter shows the next palindromic number. What was the car's average speed for those two hours?



Name: .....

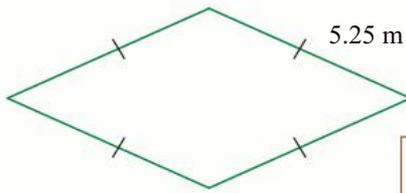
Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times$ ,  $\div$ ]  
 $621 \div 9 =$
2. [Decimal  $+$ ,  $-$ ]  
 $7.82 - 3.65 =$
3. [Decimal  $\times$ ,  $\div$ ]  
 $48 \times 0.1 =$
4. [Fraction  $+$ ,  $-$ ] \*  
 $1\frac{1}{8} + 2\frac{3}{8} =$
5. [Fraction  $\times$ ,  $\div$ ] \*  
 $\frac{6}{5} \div \frac{2}{9} =$
6. [Percentages] \*  
 $66\frac{2}{3}\%$  of 1 hour =  minutes
7. [Integer  $+$ ,  $-$ ]  
 $(-1) - (-5) =$
8. [Integer  $\times$ ,  $\div$ ]  
 $(-20) \div (-4) =$
9. [Rates / Ratios] \*  
One of the busiest airports in the world is in Atlanta (Georgia, USA). It has averaged 1.75 million passengers per week. At this rate what is the average number of people using the airport each day?
10. [Indices]  
Simplify  $7b \times b^5$
11. [Square Roots / Surds] \*  
Evaluate  $\sqrt{2\frac{7}{9}}$
12. [Order of Operations]  
 $(3 \times 3)^3 =$
13. [Exploring Number] \*  
Place in descending order:  
 $0.4, \frac{1}{2}, 45\%$
14. [Scientific Notation]  
Express 0.012 correct to 2 decimal places.
15. [Number Patterns]  
Complete the pattern:  
24, 22, 19, 15, ,
16. [Expressions]  
Simplify  
 $8 - 5q + 12 + 4q$
17. [Substitution] \*  
If  $y = x(x + 3)$ , find the value of  $y$  when  $x = 1$
18. [Expansion]  
Expand  $3n(4 - 2n)$
19. [Factorisation]  
Factorise  $4x^2y^2 - 20xy$
20. [Equations] \*  
Solve for  $x$ :  
 $\frac{x}{3} - 2 = 3$
21. [Graphs & Functions]  
Complete the table of values for the rule  $y = -2x - 1$ 

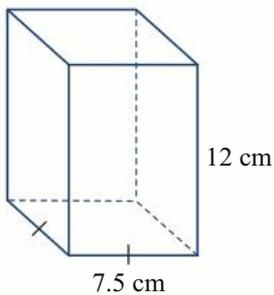
$x$	-3	-2	-1	0	1	2	3
$y$	5						
22. [Units of Measurement / Time]  
Convert 18:30 from 24 hour time to 12 hour (am/pm) time.

23. [Perimeter] \*  
Find the perimeter of the rhombus.

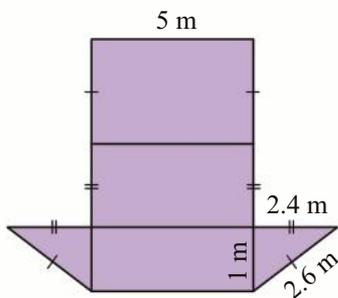


24. [Area] \*  
A rectangle has a perimeter of 36 cm. If its length is twice its width, find its area.

25. [Volume] \*  
Find the volume of the square prism.

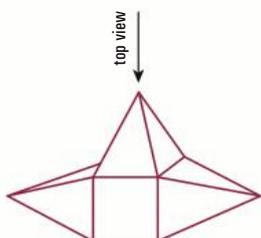


26. [Surface Area] \*  
Find the area of the net.

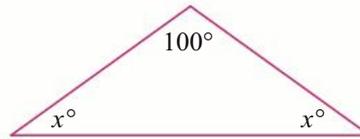


27. [Pythagoras / Trigonometry]  
The three sides of a right-angled triangle have lengths of 24 cm, 26 cm and 10 cm. Which one is the length of the hypotenuse?

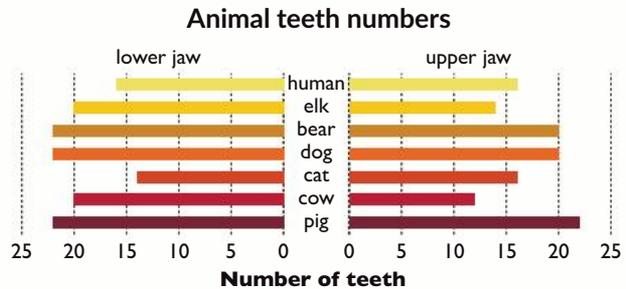
28. [Shape / Location]  
Draw the top view of this solid.



29. [Angles] \*  
Find the value of  $x^\circ$ .



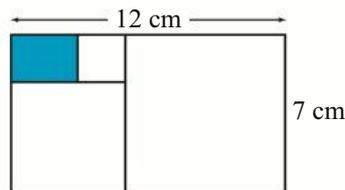
30. [Statistics]  
Which animal has a total of 30 teeth?



31. [Probability] \*  
A card is drawn at random from a deck of 52 playing cards. What is the probability that it is a 2 or a 3?



32. [Problem Solving 1] \*  
A 12 cm by 7 cm rectangle is divided into 3 squares and a rectangle as shown below. Find the area of the shaded rectangle.



33. [Problem Solving 2]  
The lines of a multiplication table are shown jumbled below. Which times table is it?

$E \times B = E$   
 $E \times C = HD$   
 $E \times D = BH$   
 $E \times E = HI$   
 $E \times F = DB$   
 $E \times G = JC$   
 $E \times H = DG$   
 $E \times I = CF$   
 $E \times J = FJ$



Name: .....

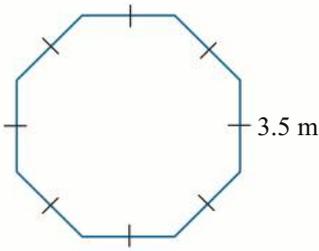
Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, +$ ]  
 $28 \times 20 =$
2. [Decimal  $+, -$ ]  
 $0.5 + 9.8 =$
3. [Decimal  $\times, +$ ]  
 $2.03 \div 0.01 =$
4. [Fraction  $+, -$ ] \*  
 $\frac{4}{6} + 2\frac{2}{6} =$
5. [Fraction  $\times, +$ ] \*  
 $\frac{5}{8} \times \frac{4}{9} =$
6. [Percentages] \*  
20% of 1 metre =  millimetres
7. [Integer  $+, -$ ]  
 $(+7) - (-1) =$
8. [Integer  $\times, +$ ]  
 $(+12) \times (-2) =$
9. [Rates / Ratios] \*  
On average, iron makes up 5% of the Earth's crust. How much iron would you expect to find in 1 tonne of the Earth's crust?  kg
10. [Indices]  
Simplify  $\frac{4m^6}{2m}$
11. [Square Roots / Surds] \*  
Evaluate  $\sqrt{0.01}$
12. [Order of Operations] \*  
 $(4 + 1 \times 4)^2 =$
13. [Exploring Number]  
Place in ascending order:  
 $-6^\circ\text{C}, -13^\circ\text{C}, +2^\circ\text{C}, 0^\circ\text{C}$
14. [Scientific Notation]  
Express 17.651 correct to 2 decimal places.
15. [Number Patterns]  
Complete the pattern:  
1, 10, 18, 25, ,
16. [Expressions]  
Simplify  $6t - 5 + t + 9$
17. [Substitution] \*  
If  $y = \frac{x}{4} - 3$ , find the value of  $y$  when  $x = 12$
18. [Expansion]  
Expand  $5x(1 - x)$
19. [Factorisation]  
Factorise  $x^2y^2 + 2x^3y$
20. [Equations] \*  
Solve for  $x$ :  
 $\frac{x}{2} + 1 = 12$
21. [Graphs & Functions]  
Complete the table of values for the rule  $y = -2x - 5$   

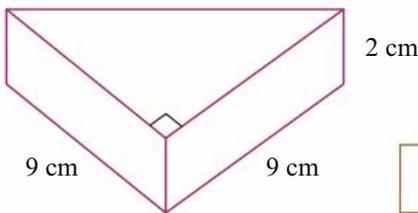
x	-3	-2	-1	0	1	2	3
y	1						
22. [Units of Measurement / Time] \*  
Complete the statement:  
 $\frac{3}{5}$  of a kilogram =  grams

23. [Perimeter] \*  
Find the perimeter of the octagon.

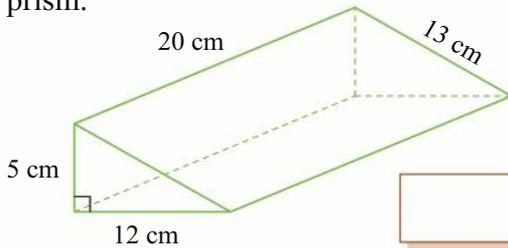


24. [Area] \*  
A square paddock has a perimeter of 2 km.  
Find its area in hectares (ha).

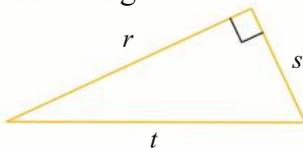
25. [Volume] \*  
Find the volume of the triangular prism.



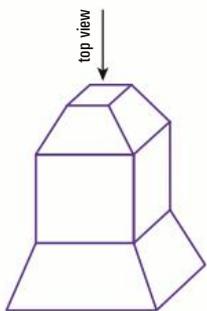
26. [Surface Area] \*  
Find the total surface area of the triangular prism.



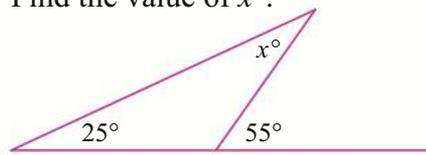
27. [Pythagoras / Trigonometry]  
Which letter corresponds to the hypotenuse of this triangle?



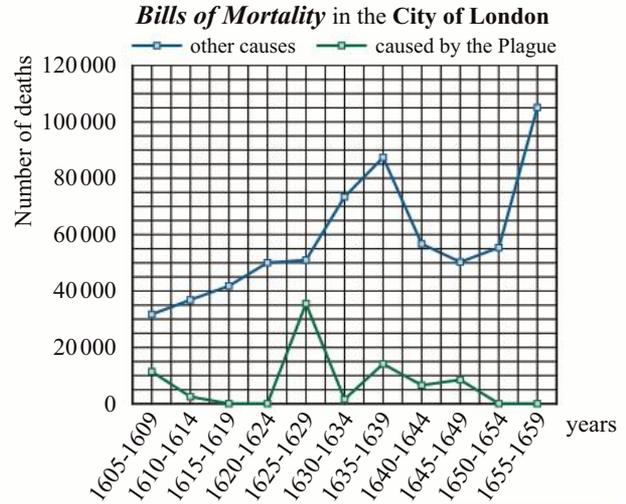
28. [Shape / Location]  
Draw the top view of the solid.



29. [Angles] \*  
Find the value of  $x^\circ$ .



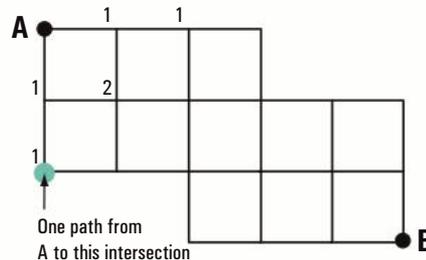
30. [Statistics]  
Use the graph below to estimate the number of people who died from the plague in the years 1625 to 1629.



31. [Probability] \*  
A 52 card deck of playing cards is shuffled, and two cards are dealt from the top of the deck. Determine the probability of dealing two red cards.



32. [Problem Solving 1]  
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.]



33. [Problem Solving 2] \*  
You need to drive 80 kilometres in one hour for an appointment with a judge. If you have taken 40 minutes to drive the first 40 km, what speed must you average for the remainder of your journey so as not to be late?



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, \div$ ] \*  
 $23 \times 23 =$

2. [Decimal  $+, -$ ]  
 $0.9 + 3.3 =$

3. [Decimal  $\times, \div$ ]  
 $5.4 \div 0.1 =$

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

5. [Fraction  $\times, \div$ ] \*  
 $\frac{8}{5} \div \frac{3}{4} =$

6. [Percentages] \*  
 22% of 1 tonne =  grams

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

8. [Integer  $\times, \div$ ]  
 $(+16) \div (-4) =$

9. [Rates / Ratios] \*  
 The lowest level of unemployment in Australia was reached in 2022, at 3.4%. At this rate what was the average number of unemployed people found in a sample of 100 000 people?

10. [Indices]  
 Simplify  $3x \times x^2 \times 5x^3$

11. [Square Roots / Surds] \*  
 Evaluate  $\sqrt{1\frac{21}{100}}$

12. [Order of Operations] \*  
 $3 \times (100 \div 5)^2 =$

13. [Exploring Number] \*  
 Place in ascending order:  
 $\sqrt{3} - \sqrt{2}, \sqrt{4} - \sqrt{3}, \sqrt{5} - \sqrt{4}$

14. [Scientific Notation]  
 Round 4.09 to the nearest whole number.

15. [Number Patterns]  
 Complete the pattern:  
 1, 3, 7, 15, ,

16. [Expressions]  
 Simplify  
 $9h - 5h + 12 + h$

17. [Substitution] \*  
 If  $y = x^3$ , find the value of  $y$  when  $x = -2$

18. [Expansion]  
 Expand  $m(2 - 4m)$

19. [Factorisation]  
 Factorise  
 $4x^2y - 6xy + 12xy^2$

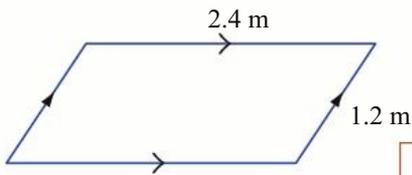
20. [Equations] \*  
 Solve for  $x$ :  
 $3 - \frac{x}{2} = 6$

21. [Graphs & Functions]  
 Complete the table of values for the rule  
 $y = -3x + 3$

$x$	-3	-2	-1	0	1	2	3
$y$	12						

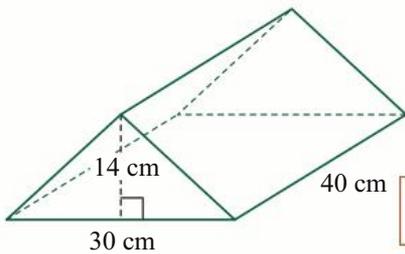
22. [Units of Measurement / Time]  
 Convert 10:21 pm to 24 hour time.

23. [Perimeter] \*  
Find the perimeter of the parallelogram.

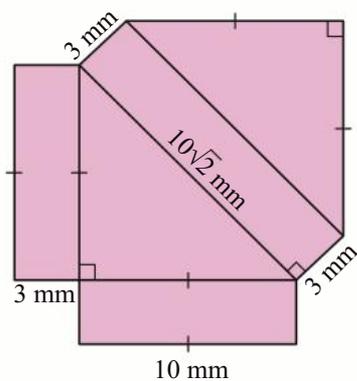


24. [Area] \*  
What is the area of a rhombus whose perimeter is 16 metres if its opposite sides are 3 metres apart?

25. [Volume] \*  
Find the volume of the triangular prism.

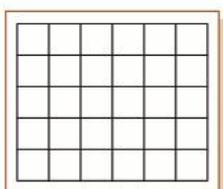
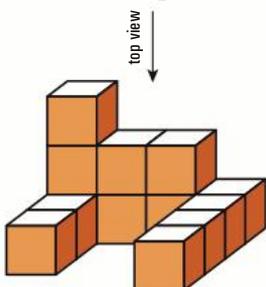


26. [Surface Area] \*  
Find the area of the net. (Use  $\sqrt{2} \approx 1.4$ )

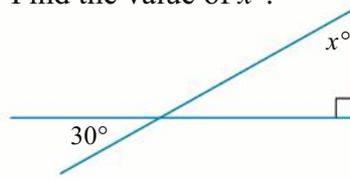


27. [Pythagoras / Trigonometry]  
The three sides of a right-angled triangle have lengths of 2.5 mm, 2.4 mm and 0.7 mm. Which one is the length of the hypotenuse?

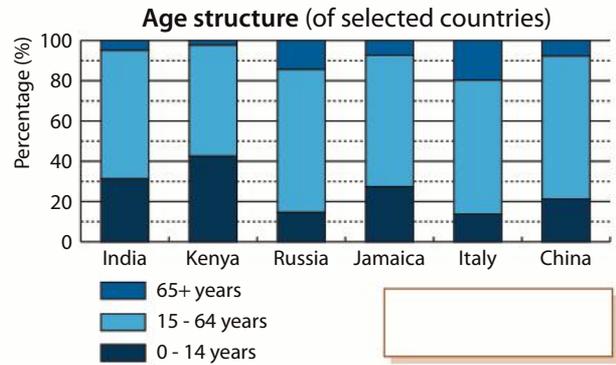
28. [Shape / Location]  
Draw the top view of this solid.



29. [Angles] \*  
Find the value of  $x^\circ$ .



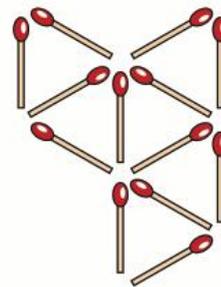
30. [Statistics]  
Which country has closest to twice as many people in the 0 to 14 age group as Russia?



31. [Probability] \*  
A 52 card deck of playing cards is shuffled, and two cards are dealt from the top of the deck. Determine the probability of dealing one black and one red card.



32. [Problem Solving 1]  
Remove three matches from this arrangement to leave three triangles.



33. [Problem Solving 2] \*  
David left Echuca on the Great Victorian Bike Ride riding at 20 km/h. Forty-five minutes later Peter rode out of town at 25 km/h. If these speeds are maintained, how far down the road will David be when Peter catches up to him?

# MATHS MATE



Name: .....

Class: .....

Teacher: .....

## Worksheet Results

**Term 2**

		Sheet 1	Sheet 2	Sheet 3	Sheet 4	Sheet 5	Sheet 6	Sheet 7	Sheet 8
NUMBER	1. [Long $\times, \div$ ]	1	1	1	1	1	1	1	1
	2. [Decimal $+, -$ ]	2	2	2	2	2	2	2	2
	3. [Decimal $\times, \div$ ]	3	3	3	3	3	3	3	3
	4. [Fraction $+, -$ ]	4	4	4	4	4	4	4	4
	5. [Fraction $\times, \div$ ]	5	5	5	5	5	5	5	5
	6. [Percentages]	6	6	6	6	6	6	6	6
	7. [Integer $+, -$ ]	7	7	7	7	7	7	7	7
	8. [Integer $\times, \div$ ]	8	8	8	8	8	8	8	8
	9. [Rates / Ratios]	9	9	9	9	9	9	9	9
	10. [Indices]	10	10	10	10	10	10	10	10
	11. [Square Roots / Surds]	11	11	11	11	11	11	11	11
	12. [Order of Operations]	12	12	12	12	12	12	12	12
	13. [Exploring Number]	13	13	13	13	13	13	13	13
	14. [Scientific Notation]	14	14	14	14	14	14	14	14
	15. [Number Patterns]	15	15	15	15	15	15	15	15
ALGEBRA	16. [Expressions]	16	16	16	16	16	16	16	16
	17. [Substitution]	17	17	17	17	17	17	17	17
	18. [Expansion]	18	18	18	18	18	18	18	18
	19. [Factorisation]	19	19	19	19	19	19	19	19
	20. [Equations]	20	20	20	20	20	20	20	20
	21. [Graphs & Functions]	21	21	21	21	21	21	21	21
MEASUREMENT	22. [Units of Measurement / Time]	22	22	22	22	22	22	22	22
	23. [Perimeter]	23	23	23	23	23	23	23	23
	24. [Area]	24	24	24	24	24	24	24	24
	25. [Volume]	25	25	25	25	25	25	25	25
	26. [Surface Area]	26	26	26	26	26	26	26	26
	27. [Pythagoras / Trigonometry]	27	27	27	27	27	27	27	27
SPACE	28. [Shape / Location]	28	28	28	28	28	28	28	28
	29. [Angles]	29	29	29	29	29	29	29	29
STAT.	30. [Statistics]	30	30	30	30	30	30	30	
PROB.	31. [Probability]	31	31	31	31	31	31	31	
PROBLEM SOLVING	32. [Problem Solving 1]	32	32	32	32	32	32	32	32
	33. [Problem Solving 2]	33	33	33	33	33	33	33	33
Total Correct		<input type="checkbox"/>							





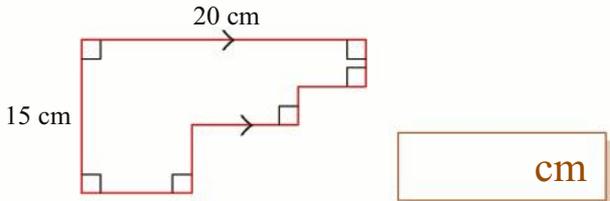
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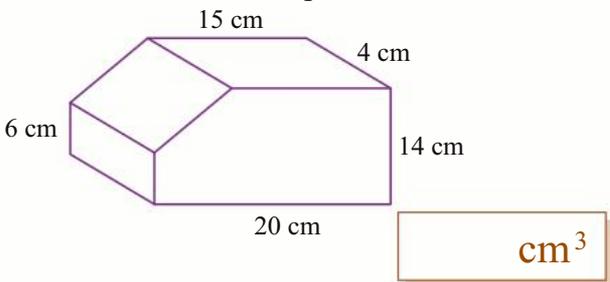
1. [Long  $\times, \div$ ] \*  
 $17 \times 35 =$
2. [Decimal  $+, -$ ]  
 $8 - 3.5 =$
3. [Decimal  $\times, \div$ ] \*  
 $1.2 \div 0.3 =$
4. [Fraction  $+, -$ ]  
 $4 - \frac{1}{5} =$
5. [Fraction  $\times, \div$ ] \*  
 $1\frac{3}{10} \times \frac{15}{13} =$
6. [Percentages] \*  
Express 48 out of 60 as a percentage.
7. [Integer  $+, -$ ]  
 $(-6) - (+9) =$
8. [Integer  $\times, \div$ ]  
 $(-5) \times (+11) =$
9. [Rates / Ratios] \*  
Mortar is made from lime, sand and cement.  
If 36 kg of mortar contains 27 kg of sand and 6 kg of cement, find the ratio lime : cement : sand.
10. [Indices]  
Evaluate  $(-1)^{10}$
11. [Square Roots / Surds]  
 $\sqrt{25} - \sqrt{16} = \sqrt{9}$   
True or false?
12. [Order of Operations] \*  
 $3 + 4 \times 9 \div 3 =$
13. [Exploring Number]  
 $-3.04 > -3.4$  True or false?
14. [Scientific Notation]  
Express  $6.29 \times 10^5$  as a basic numeral.
15. [Number Patterns]  
Complete the pattern:  
1, 9, 17, 25, ,
16. [Expressions]  
Simplify  $4 \times q \times q^2 \div 2$  without using  $\times$  and  $\div$  signs.
17. [Substitution] \*  
If  $a = 6$  and  $b = 9$ , find the value of  $a + \frac{b}{a}$
18. [Expansion] \*  
Expand and simplify  $3(2p + 1) + 3p$
19. [Factorisation] \*  
Factorise, then evaluate  $21 \times 2.3 - 21 \times 1.3$
20. [Equations] \*  
Solve the inequality:  $2x > 7x + 5$
21. [Graphs & Functions] \*  
Complete the missing coordinates given that A, B and C lie on the line defined by the rule  $y = -x$   
A(-4, ) , B(, -5), C(, -6)
22. [Units of Measurement / Time]  
How many metres in 0.54 kilometres?

23. [Perimeter] \*  
Find the perimeter of the polygon.

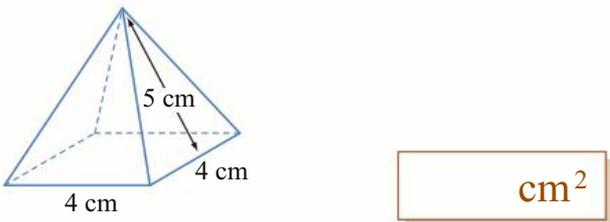


24. [Area] \*  
A square has an area of  $25 \text{ m}^2$ . What will the area of the square become if you double the length of its sides?

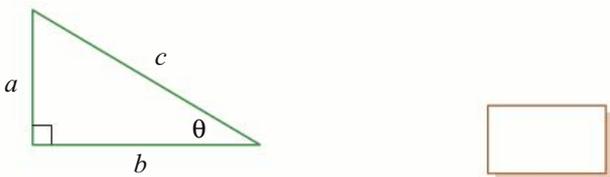
25. [Volume] \*  
Find the volume of the prism.



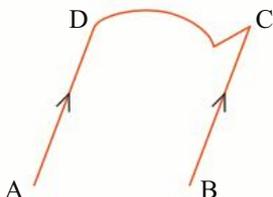
26. [Surface Area] \*  
Find the total surface area of the square pyramid.



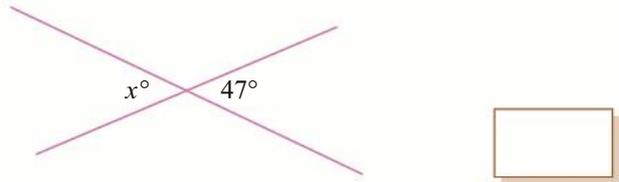
27. [Pythagoras / Trigonometry]  
Which side is opposite the angle  $\theta$  in the triangle?



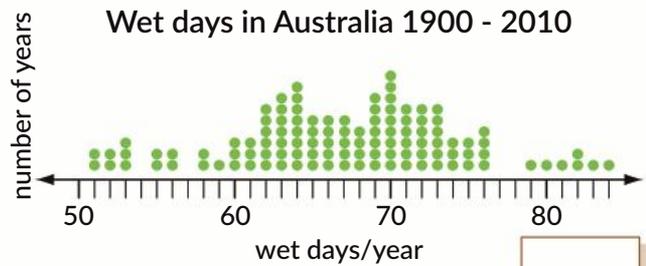
28. [Shape / Location]  
If ABCD is a parallelogram, join A to B in such a way that the completed shape will tessellate.



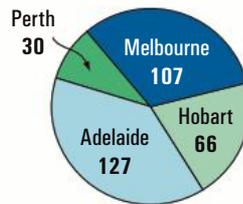
29. [Angles]  
Find the value of  $x^\circ$ .



30. [Statistics]  
Between 1900 and 2010 in Australia, how many years registered 74 or more wet days per year?

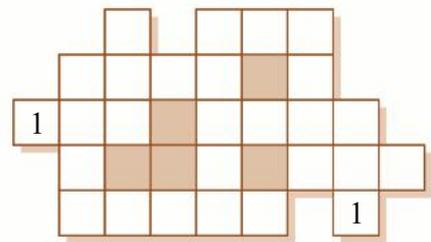


31. [Probability] \*  
If a tourist is chosen from the group at random, what is the probability that they will have voted for Hobart as their favourite city to visit?



Tourist Survey:  
Favourite city to visit

32. [Problem Solving 1]  
Fill in the cross number puzzle using the following numbers:  
3 digits: 191, 312, 411, 491, 611  
4 digits: 1969, 1973, 1974, 1980  
5 digits: 91 413, 60 151



33. [Problem Solving 2] \*  
Make each statement true by placing a single digit in each of the circles below. Each of the digits 1 to 9 must be used.

$\bigcirc \times \bigcirc - \bigcirc = 30$   
 $\bigcirc \times \bigcirc + \bigcirc = 30$   
 $\bigcirc \times \bigcirc \div \bigcirc = 30$



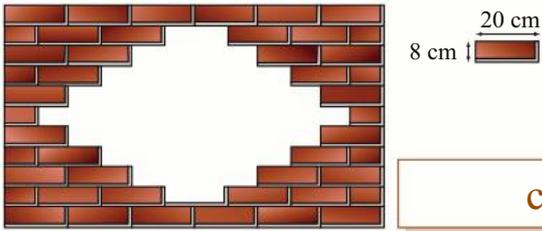
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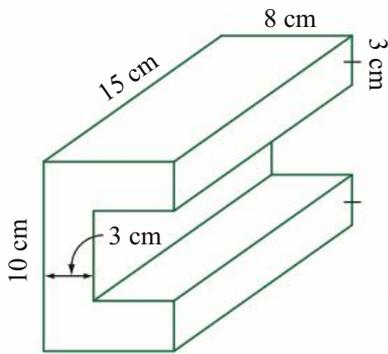
1. [Long  $\times, \div$ ] \*  
 $568 \div 5 =$
2. [Decimal  $+, -$ ]  
 $7.8 - 4.75 =$
3. [Decimal  $\times, \div$ ] \*  
 $13 \times 0.07 =$
4. [Fraction  $+, -$ ]  
 $1 - \frac{5}{9} =$
5. [Fraction  $\times, \div$ ] \*  
 $1\frac{2}{3} \div \frac{2}{3} =$
6. [Percentages] \*  
Express 27 out of 90 as a percentage.
7. [Integer  $+, -$ ]  
 $(+3) - (+8) =$
8. [Integer  $\times, \div$ ]  
 $(+8) \times (+10) =$
9. [Rates / Ratios] \*  
If 20% of the atoms in methane are carbon, and the rest are hydrogen, what is the methane ratio of carbon atoms to hydrogen atoms?
10. [Indices]  
Evaluate  $(-10)^3$
11. [Square Roots / Surds]  
 $\sqrt{100} - \sqrt{36} = \sqrt{64}$   
True or false?
12. [Order of Operations] \*  
 $(1 + 6) \times (4 + 9) =$
13. [Exploring Number] \*  
 $\frac{5}{6}$  of 18  $<$   $\frac{2}{3}$  of 24 True or false?
14. [Scientific Notation]  
Express  $4.72 \times 10^4$  as a basic numeral.
15. [Number Patterns]  
Complete the pattern:  
57, 48, 39, 30, ,
16. [Expressions]  
Simplify  $2 \times p \times q^2 \div q$  without using  $\times$  and  $\div$  signs.
17. [Substitution] \*  
If  $p = 7$  and  $q = 11$ , find the value of  $q(p + 1)$
18. [Expansion] \*  
Expand and simplify  $b(b + 3) - 2b$
19. [Factorisation] \*  
Factorise, then evaluate  $\frac{3}{8} \times 33 + \frac{3}{8} \times 47$
20. [Equations] \*  
Solve the inequality:  $5x \leq x + 16$
21. [Graphs & Functions] \*  
Complete the missing coordinates given that A, B and C lie on the line defined by the rule  $y = 2x$   
A(3, ) , B(-2, ) , C(, -6)
22. [Units of Measurement / Time]  
Change 35 centimetres into metres.

23. [Perimeter] \*  
Find the perimeter of the hole in the brick wall.

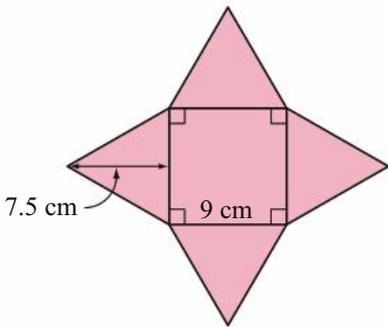


24. [Area] \*  
Find the length of the base of a triangle whose height is 16 cm and area is  $80 \text{ cm}^2$ .

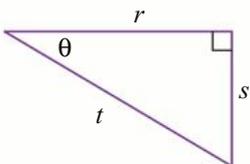
25. [Volume] \*  
Find the volume of the prism.



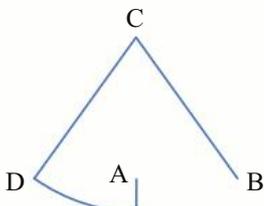
26. [Surface Area] \*  
Find the area of the net.



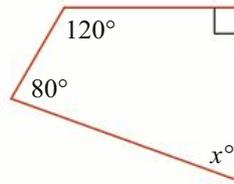
27. [Pythagoras / Trigonometry]  
Which perpendicular side is adjacent to the angle  $\theta$  in the triangle?



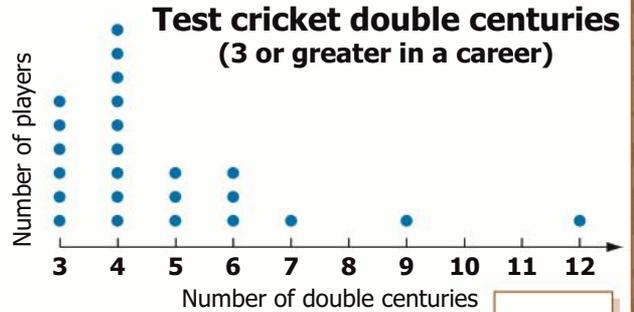
28. [Shape / Location]  
If  $CD = CB$ , join A to B in such a way that the completed shape will tessellate.



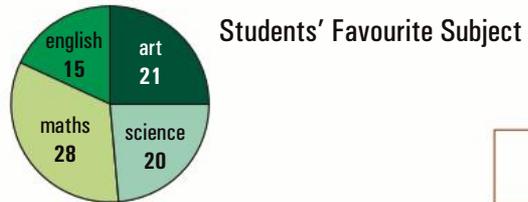
29. [Angles] \*  
Find the value of  $x^\circ$ .



30. [Statistics]  
How many more double centuries did the best batsman make over his closest rival?



31. [Probability] \*  
If a student is chosen at random, what is the probability that their favourite subject is Maths?



32. [Problem Solving 1] \*  
Two rockets fly from two different places, 1317 km apart, towards each other. One flies at a speed of 9000 km/h and the other at 21 000 km/h. What is the distance between the rockets 1 minute before the collision?

33. [Problem Solving 2] \*  
Last Autumn, while tidying up her sweet peas, Breanna was surprised to find that there were just as many pods on each plant as there were plants. What is more, there were the same number of seeds in each pod as there were pods on each plant. Nonetheless, she divided the seeds into 7 equal piles to give to her friends and the few remaining seeds, she planted in her own garden. How many seeds did she plant?



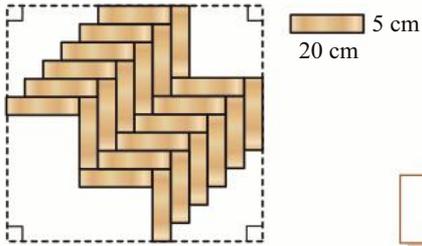
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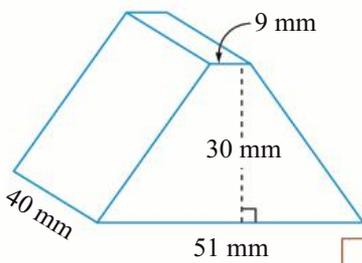
1. [Long  $\times, \div$ ] \*  
 $438 \div 8 =$
2. [Decimal  $+, -$ ]  
 $5 - 0.8 =$
3. [Decimal  $\times, \div$ ] \*  
 $4 \div 0.08 =$
4. [Fraction  $+, -$ ]  
 $4 - \frac{2}{7} =$
5. [Fraction  $\times, \div$ ] \*  
 $2\frac{1}{2} \times \frac{6}{9} =$
6. [Percentages] \*  
 Express 24 out of 80 as a percentage.
7. [Integer  $+, -$ ]  
 $(-7) + (-4) =$
8. [Integer  $\times, \div$ ]  
 $(-34) \div (+17) =$
9. [Rates / Ratios] \*  
 Two-stroke fuel for my chainsaw contains 4% oil, and the rest is petrol. What is the ratio of oil to petrol in the fuel?
10. [Indices]  
 Evaluate  $\left(\frac{2}{5}\right)^3$
11. [Square Roots / Surds]  
 Evaluate  $\sqrt{16} + \sqrt{9}$
12. [Order of Operations] \*  
 $3 \times (8 - 9 \times 2) =$
13. [Exploring Number]  
 $-12.5 < -15.2$  True or false?
14. [Scientific Notation]  
 Express  $7 \times 10^{-3}$  as a basic numeral.
15. [Number Patterns]  
 Complete the pattern:  
 2, 13, 24, 35, ,
16. [Expressions]  
 Simplify  $3 \times t - 4 \div t$  without using  $\times$  and  $\div$  signs.
17. [Substitution] \*  
 If  $c = -1$  and  $d = 8$ , find the value of  $\frac{c+d}{c}$
18. [Expansion] \*  
 Expand and simplify  $-x(2x + 3) + 5x$
19. [Factorisation] \*  
 Factorise, then evaluate  $\frac{6}{7} \times 16 + \frac{6}{7} \times 19$
20. [Equations] \*  
 Solve the inequality:  $4x \geq x + 21$
21. [Graphs & Functions] \*  
 Complete the missing coordinates given that A, B and C lie on the line defined by the rule  $y = 4x + 3$   
 A(1, ) , B(-3, ) , C(, -13)
22. [Units of Measurement / Time]  
 How many kilograms in 11.2 tonnes?

23. [Perimeter] \*  
Calculate the distance around the shaded section of the parquetry floor.

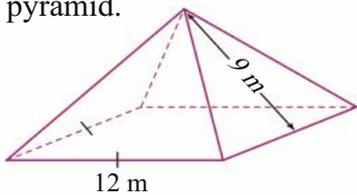


24. [Area] \*  
A square has an area of 2 hectares. What will the area of the square become if you double the length of its sides?

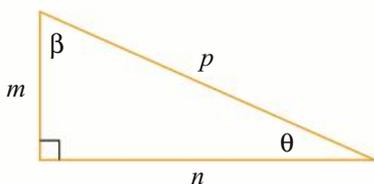
25. [Volume] \*  
Find the volume of the prism.



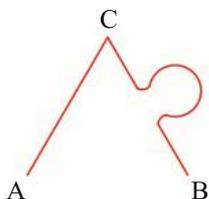
26. [Surface Area] \*  
Find the total surface area of the square pyramid.



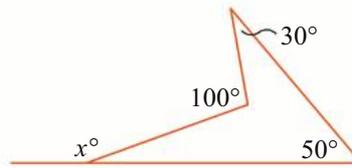
27. [Pythagoras / Trigonometry]  
Which side is opposite the angle  $\theta$  in the triangle?



28. [Shape / Location]  
If A, B and C are the vertices of an equilateral triangle, join A to B in such a way that the completed shape will tessellate.

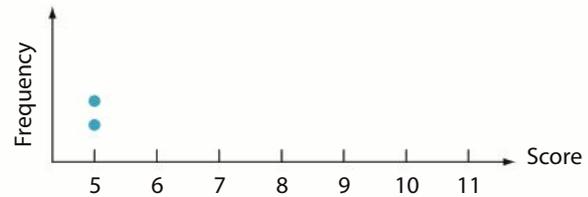


29. [Angles] \*  
Find the value of  $x^\circ$ .



30. [Statistics]  
Complete the dot plot and find the median of the following data:

5, 5, 10, 8, 10, 11, 8, 10, 6, 9, 11



31. [Probability] \*  
If a student is chosen at random, what is the probability that they will be playing basketball at the school carnival?



Sports at school carnival

32. [Problem Solving 1] \*  
The first digit of a six-digit number is 9. If this 9 is moved to the end of the number, the new six-digit number is only a quarter of the original number. Find the original number.

$$\begin{array}{r} A B C D E 9 \\ \times \quad \quad \quad \quad 4 \\ \hline 9 A B C D E \end{array}$$

33. [Problem Solving 2] \*  
Patrick has fewer than 35 marbles. When he puts them in piles of 3, he has no marbles left over. When he puts them in piles of 2, he has one left. When he puts them in piles of 5, he has one left. How many marbles does he have?



Name: .....

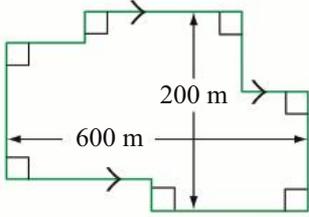
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Parent's Signature: .....

1. [Long  $\times, \div$ ] \*  
 $368 \div 3 =$
2. [Decimal  $+, -$ ]  
 $7 - 5.5 =$
3. [Decimal  $\times, \div$ ] \*  
 $0.5 \div 0.25 =$
4. [Fraction  $+, -$ ]  
 $3 - \frac{1}{3} =$
5. [Fraction  $\times, \div$ ] \*  
 $2\frac{2}{3} \div \frac{1}{3} =$
6. [Percentages] \*  
What percentage of 75 is 15?
7. [Integer  $+, -$ ]  
 $(-6) - (+4) =$
8. [Integer  $\times, \div$ ]  
 $(-36) \div (+4) =$
9. [Rates / Ratios] \*  
If 100 g of chocolate contains 28 g of fat,  
find the ratio of fat to non-fat  
ingredients.
10. [Indices]  
Evaluate  $(-\frac{1}{2})^2$
11. [Square Roots / Surds]  
Evaluate  $\sqrt{25} + \sqrt{144}$
12. [Order of Operations] \*  
 $(3 \times 5 - 18) \div 3 =$
13. [Exploring Number]  
 $\frac{4}{7} < \frac{1}{2}$  True or false?
14. [Scientific Notation]  
Express  $9.1 \times 10^{-2}$  as  
a basic numeral.
15. [Number Patterns]  
Complete the pattern:  
4, 4.75, 5.50, 6.25, ,
16. [Expressions]  
Simplify  $3 \times g^0 \times g^1 \times g^2 \div 3$   
without using  $\times$  and  $\div$  signs.
17. [Substitution] \*  
If  $u = 5$  and  $w = -3$ ,  
find the value of  $(u + w)(u - w)$
18. [Expansion] \*  
Expand and simplify  
 $-3y(2 - y) + 10y$
19. [Factorisation] \*  
Factorise, then evaluate  
 $\frac{5}{6} \times 38 + \frac{5}{6} \times 22$
20. [Equations] \*  
Solve the inequality:  
 $4x < 10x + 48$
21. [Graphs & Functions] \*  
Complete the missing coordinates given that  
A, B and C lie on the line defined by the rule  
 $y = \frac{1}{2}x - 2$   
A( , 2), B(2,  ), C( , -4)
22. [Units of Measurement / Time]  
Change 600 grams into kilograms.

QUOTE OF THE WEEK: The real art of conversation is not only to say the right thing at the right place, but to leave unsaid the wrong thing at the tempting moment. Dorothy Nevill

23. [Perimeter] \*  
Find the perimeter of the polygon.

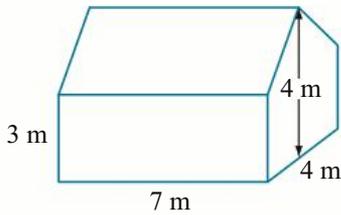


m

24. [Area] \*  
A rectangle has an area of  $15 \text{ cm}^2$ . If you double the width of the rectangle, what is the area of the wider rectangle?

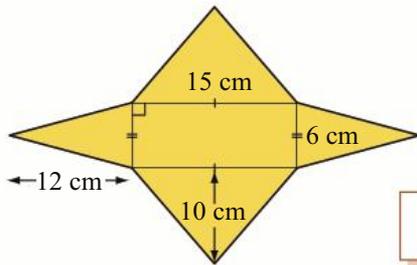
$\text{cm}^2$

25. [Volume] \*  
What is the volume of air inside the shed?



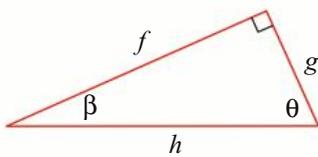
$\text{m}^3$

26. [Surface Area] \*  
Find the area of the net.



$\text{cm}^2$

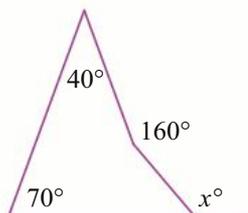
27. [Pythagoras / Trigonometry]  
For which angle is  $f$  the adjacent side?



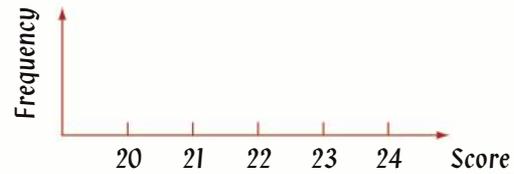
28. [Shape / Location]  
Euler's formula  $E = V + F - 2$  defines the relationship between Edges, Vertices and Faces of any polyhedron. Verify Euler's formula for a pentagonal prism.

=  +  - 2

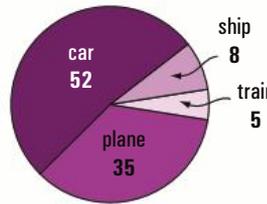
29. [Angles] \*  
Find the value of  $x^\circ$ .



30. [Statistics]  
Complete the dot plot and find the median of the following data:  
22, 24, 20, 21, 23, 23, 20, 22, 20

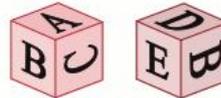


31. [Probability] \*  
What is the probability that a scientist, selected at random, travelled to the conference by train?



Global Warming Conference:  
Transport mode by Scientists

32. [Problem Solving 1]  
Here are two views of one die. Which letter is on the face opposite the D?

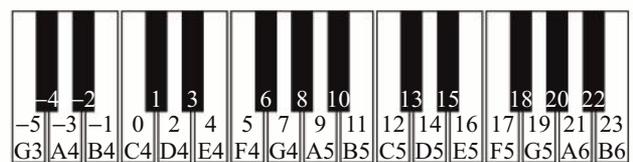


33. [Problem Solving 2] \*  
On a piano the frequency of the note 'middle C' (shown as C4 below) is 440 Hz. If we imagine this key as position 0 on a number line and other keys as 1, 2, 3, to the right and  $-1, -2, -3$  to the left as shown, then the frequency of each key can be found using:

$$F_n = 440 \times 2^{\left(\frac{n}{12}\right)}$$

Use this to find the value of the ratio:

$$\frac{\text{frequency of C4}}{\text{frequency of C5}}$$



Middle C (440 Hz)



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

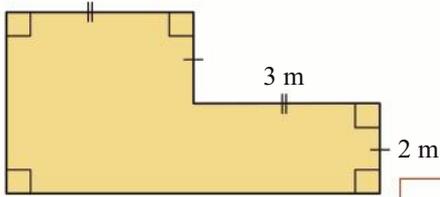
1. [Long  $\times, \div$ ] \*  
 $69 \times 12 =$
2. [Decimal  $+, -$ ]  
 $5.5 + 0.55 =$
3. [Decimal  $\times, \div$ ] \*  
 $1.2 \times 0.8 =$
4. [Fraction  $+, -$ ]  
 $2\frac{2}{7} - \frac{5}{7} =$
5. [Fraction  $\times, \div$ ] \*  
 $1\frac{1}{2} \times 1\frac{4}{5} =$
6. [Percentages] \*  
Increase \$40 by 15%.  
\$
7. [Integer  $+, -$ ]  
 $(+1) - (+5) =$
8. [Integer  $\times, \div$ ]  
 $(+2) \times (+25) \times (+4) =$
9. [Rates / Ratios] \*  
The golden eagle can fly at a speed of 300 km/h. At this speed, what distance can it fly in 5 minutes?  
 km
10. [Indices]  
Simplify  $(3x)^4$
11. [Square Roots / Surds] \*  
Between which two consecutive whole numbers does  $2\sqrt{5}$  lie?
12. [Order of Operations] \*  
 $(4 - 1)^3 + 1^3 =$
13. [Exploring Number] \*  
Which quantity is cheaper per millilitre?  
A) \$12 for 800 mL  
B) \$14 for 1 L
14. [Scientific Notation]  
Which is larger:  
 $2.11 \times 10^4$  or  $2.1 \times 10^4$ ?
15. [Number Patterns]  
Complete the pattern:  
3, 4.2, 5.4, 6.6, ,
16. [Expressions]  
The expression  $4(x + 3)$  can also be written as:  
 $4 + (x + 3)$ ,  $4 \times (x + 3)$  or  $4 - (x + 3)$
17. [Substitution] \*  
Given  $V = IR$ , find  $V$  when  
 $I = 0.24$  and  $R = 1000$
18. [Expansion]  
Expand  $-x(x + 2)$
19. [Factorisation]  
Factorise  
 $3(x + 1) + x(x + 1)$
20. [Equations] \*  
Solve for  $x$ :  
 $3(x + 2) = 9$
21. [Graphs & Functions] \*  
Find the  $y$ -intercept of the graph defined by the linear rule  $2x + 3y = 18$   
[Let  $x = 0$  in the relation.]
22. [Units of Measurement / Time] \*  
Wednesday 1200 hours in Sydney occurs at 1800 hours Tuesday in San Francisco. What day and time is it in San Francisco if it is 1130 hours on a Friday in Sydney?

23. [Perimeter] \*

The Great Pyramid of Giza is a square pyramid with a base length of 230 metres and a height of 147 metres. What is the perimeter of the pyramid's base?

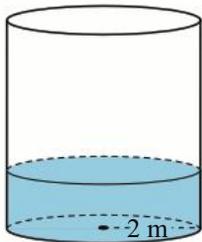
24. [Area] \*

Find the area of the shape.




25. [Volume] \*

In this cylindrical water tank there are 31 400 L of water. Using  $\pi \approx 3.14$  find the depth of the water in the tank.  
[Hint: 1000 L = 1 m<sup>3</sup>]

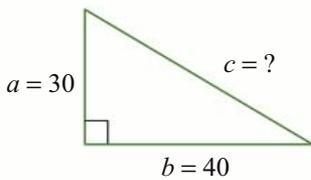



26. [Surface Area] \*

Find the total surface area of an ice cube of side 10 mm.

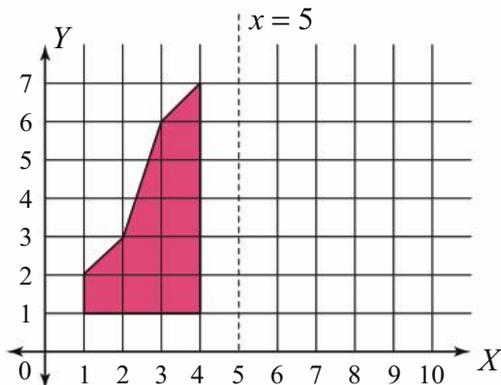
27. [Pythagoras / Trigonometry] \*

Using Pythagoras' theorem  $a^2 + b^2 = c^2$ , find the length of the hypotenuse.



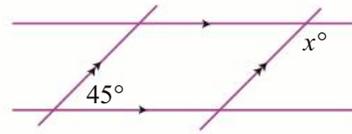

28. [Shape / Location]

Draw the reflection of the shape in the line of equation  $x = 5$ .



29. [Angles] \*

Find the value of  $x^\circ$ .




30. [Statistics]

This stem-and-leaf plot shows the points scored by Ravi in a basketball tournament. Calculate his median score for the tournament.

stem	leaves
0	5
1	8 8 9
2	1 5 6 6
3	5
4	0

31. [Probability]

What is the probability that a person chosen at random flew with Qantas?

[Complete the two-way table.]

	America	Europe	Total
Qantas	16	21	
Other airlines	8	5	
Total			

32. [Problem Solving 1] \*

A picture was reduced on a photocopier using a scale factor of  $66\frac{2}{3}\%$ . What scale factor is required to copy the reduced picture so that it returns to its original size?

33. [Problem Solving 2] \*

Find the dimensions of all rectangles that have a perimeter equal to their area.

[Note: The dimensions must be integers.]



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times$ ,  $\div$ ]  
 $693 \div 9 =$
2. [Decimal  $+$ ,  $-$ ]  
 $9.6 + 0.535 =$
3. [Decimal  $\times$ ,  $\div$ ] \*  
 $30 \times 0.16 =$
4. [Fraction  $+$ ,  $-$ ]  
 $2\frac{2}{9} - \frac{6}{9} =$
5. [Fraction  $\times$ ,  $\div$ ] \*  
 $\frac{5}{6} \div 4\frac{1}{2} =$
6. [Percentages] \*  
Increase \$1000 by 18%.
7. [Integer  $+$ ,  $-$ ]  
 $(-3) - (-5) =$
8. [Integer  $\times$ ,  $\div$ ]  
 $(-3) \times (-2) \times (-8) =$
9. [Rates / Ratios] \*  
The blue shark can reach a speed of 70 km/h.  
At this speed, how much time does it take to cover 700 m?
10. [Indices]  
Simplify  $2(a^3)^4$
11. [Square Roots / Surds]  
Between which two consecutive whole numbers does  $\sqrt{77}$  lie?
12. [Order of Operations] \*  
 $(2 + 3 \times 5)^2 - 7 =$
13. [Exploring Number] \*  
Which item is cheaper per gram?  
A) \$18 for 1500 g  
B) \$12.50 for 1 kg
14. [Scientific Notation]  
Which is larger:  
 $2.64 \times 10^6$  or  $6.24 \times 10^4$ ?
15. [Number Patterns]  
Complete the pattern:  
9.45, 8.70, 7.95, 7.20,  ,
16. [Expressions]  
The expression  $2 \times y \times y \times z \times z$  can also be written as:  
 $2yz$ ,  $2yz^2$  or  $2y^2z^2$
17. [Substitution] \*  
Given  $v = \frac{x}{t}$ , find  $v$  when  
 $x = 200$  and  $t = 25$
18. [Expansion]  
Expand  $-3(4 - a)$
19. [Factorisation]  
Factorise  
 $6(a + 4) + 2b(a + 4)$
20. [Equations] \*  
Solve for  $x$ :  $3(2 - x) = 9$
21. [Graphs & Functions] \*  
Find the  $x$ -intercept for the straight line defined by the equation  $-3x + y = -9$   
[Let  $y = 0$  in the relation.]
22. [Units of Measurement / Time] \*  
At 1200 hours in Melbourne it is 1000 hours in Beijing. What day and time is it in Beijing if it is 2150 hours on Saturday in Melbourne?





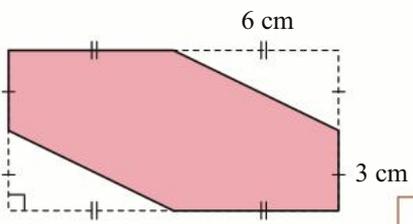
Name: .....

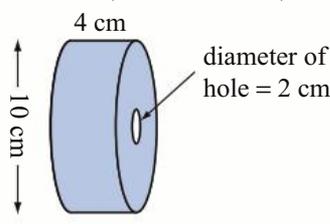
Due Date: ..... / ..... / .....

Parent's Signature: .....

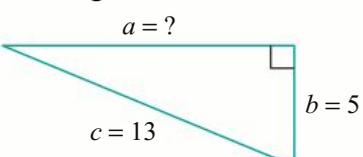
1. [Long  $\times, +$ ]  
 $44 \times 20 =$
2. [Decimal  $+, -$ ]  
 $30 - 0.4 =$
3. [Decimal  $\times, \div$ ]\*  
 $0.3 \div 0.03 =$
4. [Fraction  $+, -$ ]\*  
 $3\frac{1}{12} - \frac{7}{12} =$
5. [Fraction  $\times, \div$ ]\*  
 $1\frac{1}{4} \times \frac{3}{5} =$
6. [Percentages]\*  
Increase \$90 by 30%.
7. [Integer  $+, -$ ]  
 $(+3) - (-1) =$
8. [Integer  $\times, \div$ ]  
 $(+4) \times (+4) \times (-10) =$
9. [Rates / Ratios]\*  
The earth's average velocity orbiting the sun is 107 200 km per hour. At this speed, what distance does the earth cover in a day?
10. [Indices]  
Simplify  $(5z^2)^3$
11. [Square Roots / Surds]  
Between which two consecutive whole numbers does  $\sqrt{37}$  lie?
12. [Order of Operations]\*  
 $2 \times 9 + 25 \div 5 =$
13. [Exploring Number]\*  
Which item is cheaper per gram?  
A) \$5 for 75 g  
B) \$15 for 250 g
14. [Scientific Notation]  
Which is larger:  
 $6.1 \times 10^{-3}$  or  $2.7 \times 10^{-1}$ ?
15. [Number Patterns]  
Complete the pattern:  
0.65, 1.3, 2.6, 5.2,
16. [Expressions]  
The expression  $7 \times t \times t \times k \times k \times k \times j$  can also be written as:  
 $7jk^2t, 7jk^3t^2$  or  $7jk^2t^2$
17. [Substitution]\*  
Given  $a = \frac{v-u}{t}$ , find  $a$  when  $v = 61, u = 19$  and  $t = 6$
18. [Expansion]  
Expand  $-3n(n+4)$
19. [Factorisation]\*  
Factorise  
 $ab + 3b + 2a + 6$
20. [Equations]\*  
Solve for  $x$ :  
 $2(x-4) = 20$
21. [Graphs & Functions]\*  
Find the  $y$ -intercept of the graph defined by the linear rule  $-4x - 3y = 12$
22. [Units of Measurement / Time]\*  
At 1200 hours in Brisbane it is 1400 hours in Auckland. What day and time is it in Auckland if it is 0630 hours on Sunday in Brisbane?

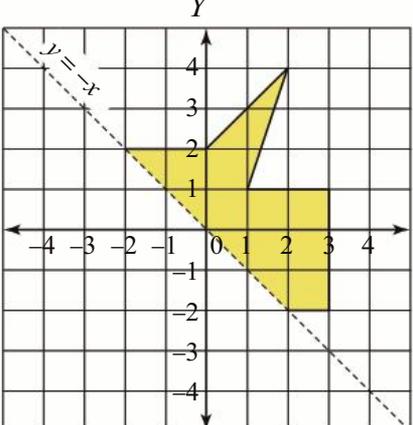
23. [Perimeter] \*  
Flower markets are still held in 'The Market Place' in Brussels. Surrounded by 18th century buildings, the rectangular courtyard is 110 m long and 68 m wide. Find its perimeter.

24. [Area] \*  
Find the area of the shaded region.  


25. [Volume] \*  
Find the volume of rubber used to make the wheel. (Use  $\pi \approx 3.14$ )  


26. [Surface Area] \*  
Find the total surface area of a plank of wood in the shape of a rectangular prism 5 cm by 15 cm by 200 cm.

27. [Pythagoras / Trigonometry] \*  
Using Pythagoras' theorem  $a^2 + b^2 = c^2$ , find the length of the side labelled  $a$ .  


28. [Shape / Location]  
Draw the other half of this shape, given it has a line of symmetry of equation  $y = -x$ .  


29. [Angles] \*  
Find the value of  $x^\circ$ .  


30. [Statistics]  
Complete the stem-and-leaf plot using class intervals of 10, then use it to find the median value for the following data:  
30, 55, 22, 36, 57, 21, 60, 53, 38, 45, 63, 22, 57, 34  

stem	leaves
2	1 _ _ _
_	_ _ _ _
_	_ _ _ _
_	_ _ _ _
_	_ _ _ _

31. [Probability]  
What is the probability that a student chosen at random preferred to go to the library?  
[Complete the two-way table.]  

	Boys	Girls	Total
Library		24	
Playing	30		84
Total	80		

32. [Problem Solving 1] \*  
Our large pump can fill our dam from the river in 3 hours. It takes 12 hours using the small pump. How long would it take if I use both pumps at the same time?

33. [Problem Solving 2] \*  
If  $a$ ,  $b$  and  $c$  represent the side lengths of a triangle and  $a^2b^2 + c^4 = b^4 + a^2c^2$ , then what type of triangle is it?



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

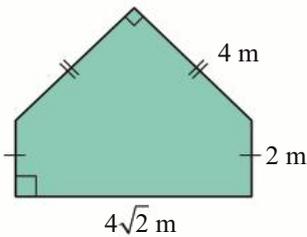
1. [Long  $\times, \div$ ] \*  
 $41 \times 23 =$
2. [Decimal  $+, -$ ] \*  
 $7 - 3.65 =$
3. [Decimal  $\times, \div$ ] \*  
 $200 \times 0.15 =$
4. [Fraction  $+, -$ ] \*  
 $1\frac{4}{10} - \frac{9}{10} =$
5. [Fraction  $\times, \div$ ] \*  
 $1\frac{2}{5} \div 1\frac{3}{4} =$
6. [Percentages] \*  
Increase \$60 by 20%.
7. [Integer  $+, -$ ] \*  
 $(+8) - (-8) =$
8. [Integer  $\times, \div$ ] \*  
 $(+4) \times (-4) \times (-4) =$
9. [Rates / Ratios] \*  
The average speed of a space shuttle in orbit is 29 000 km/h. At this speed, how many kilometres will a shuttle travel in 2.5 hours?
10. [Indices] \*  
Simplify  $(2b^2)^5$
11. [Square Roots / Surds] \*  
Between which two consecutive whole numbers does  $\sqrt{62}$  lie?
12. [Order of Operations] \*  
 $(3 + 4)^2 - 9 =$
13. [Exploring Number] \*  
Which quantity is cheaper per millilitre?  
A) \$15 for 500 mL  
B) \$40 for 1.25 L
14. [Scientific Notation] \*  
Which is larger:  
 $0.5 \times 10^4$  or  $4.8 \times 10^3$ ?
15. [Number Patterns] \*  
Complete the pattern:  
0.01042, 0.1042, 1.042, 10.42,  
 ,
16. [Expressions] \*  
The expression  $5 \times g \times g^2 \times h \times k$  can also be written as:  
 $g^3hk$ ,  $5g^2hk$  or  $5g^3hk$
17. [Substitution] \*  
Given the perimeter of a rectangle is  $P = 2(l + w)$ , find  $P$  when  $l = 8$  and  $w = 4$
18. [Expansion] \*  
Expand  $-4(1 - 2t)$
19. [Factorisation] \*  
Factorise  $x^2 + 2x + xy + 2y$
20. [Equations] \*  
Solve for  $x$ :  
 $4(x - 1) = 24$
21. [Graphs & Functions] \*  
Find the  $x$ -intercept for the straight line defined by the equation  $y = 2x - 6$
22. [Units of Measurement / Time] \*  
At 1200 hours in Canberra it is 0400 hours in Athens. What day and time is it in Athens if it is 0620 hours on Monday in Canberra?

23. [Perimeter] \*

French artist Jean-François Millet painted 'The Gleaners' in 1850. Three poor peasant women on the Plain of Chailly have been excluded from the harvest and are only allowed to glean what the harvesters have left behind. The painting is 111 cm wide and 83 cm high. Find the painting's perimeter.

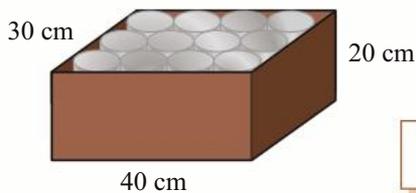
24. [Area] \*

Find the area of the shape. (Use  $\sqrt{2} \approx 1.41$ )




25. [Volume] \*

There are 12 cylindrical cans with diameter 10 cm and height 20 cm in this box. Find the volume of air left in the box. (Use  $\pi \approx 3.14$ )

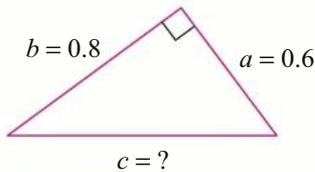



26. [Surface Area] \*

Given  $TSA = \pi r(r + s)$  where  $\pi \approx \frac{22}{7}$ , find the total surface area of a cone of radius 14 cm and slant height 36 cm.

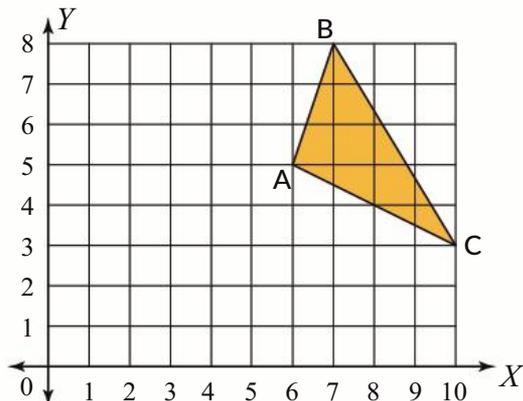
27. [Pythagoras / Trigonometry] \*

Using Pythagoras' theorem  $a^2 + b^2 = c^2$ , find the length of the hypotenuse.



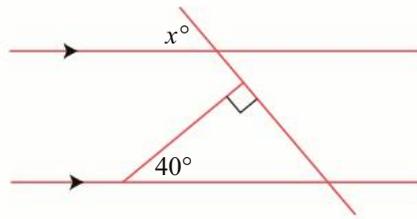

28. [Shape / Location]

Redraw the triangle ABC after translating it  $-5$  units horizontally and  $-3$  units vertically.



29. [Angles] \*

Find the value of  $x^\circ$ .




30. [Statistics]

The heights in centimetres of twenty year 9 students are shown in the stem-and-leaf plot. Find the median height in the class.

STEM | LEAVES

14	0 2 5
15	1 3 3 4 7
16	3 4 4 5 6 6
17	0 1 8 9
18	0 2

31. [Probability]

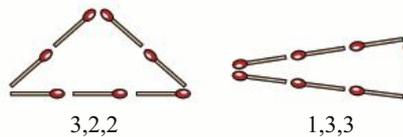
What is the probability that a person chosen at random flew using economy class?

[Complete the two-way table.]

	Economy class	Business class	First class	Total
Leisure	56%	4%	8%	
Business	8%			32%
Total		25%		

32. [Problem Solving 1] \*

Seven matchsticks can be used to form a triangular enclosure in two different ways,  $\{3,2,2\}$  and  $\{1,3,3\}$ . How many different triangles can be formed using 14 matchsticks?




33. [Problem Solving 2] \*

Calculate:

$$\sqrt{2} \times \sqrt{2 + \sqrt{2}} \times \sqrt{2 + \sqrt{2} + \sqrt{2}} \times \sqrt{2 - \sqrt{2} + \sqrt{2}}$$

# MATHS MATE



Name: .....

Class: .....

Teacher: .....

## Worksheet Results

**Term 3**

		Sheet 1	Sheet 2	Sheet 3	Sheet 4	Sheet 5	Sheet 6	Sheet 7	Sheet 8
<b>NUMBER</b>	1. [Long $\times, \div$ ]	1	1	1	1	1	1	1	1
	2. [Decimal $+, -$ ]	2	2	2	2	2	2	2	2
	3. [Decimal $\times, \div$ ]	3	3	3	3	3	3	3	3
	4. [Fraction $+, -$ ]	4	4	4	4	4	4	4	4
	5. [Fraction $\times, \div$ ]	5	5	5	5	5	5	5	5
	6. [Percentages]	6	6	6	6	6	6	6	6
	7. [Integer $+, -$ ]	7	7	7	7	7	7	7	7
	8. [Integer $\times, \div$ ]	8	8	8	8	8	8	8	8
	9. [Rates / Ratios]	9	9	9	9	9	9	9	9
	10. [Indices]	10	10	10	10	10	10	10	10
	11. [Square Roots / Surds]	11	11	11	11	11	11	11	11
	12. [Order of Operations]	12	12	12	12	12	12	12	12
	13. [Exploring Number]	13	13	13	13	13	13	13	13
	14. [Scientific Notation]	14	14	14	14	14	14	14	14
	15. [Number Patterns]	15	15	15	15	15	15	15	15
<b>ALGEBRA</b>	16. [Expressions]	16	16	16	16	16	16	16	16
	17. [Substitution]	17	17	17	17	17	17	17	17
	18. [Expansion]	18	18	18	18	18	18	18	18
	19. [Factorisation]	19	19	19	19	19	19	19	19
	20. [Equations]	20	20	20	20	20	20	20	20
	21. [Graphs & Functions]	21	21	21	21	21	21	21	21
<b>MEASUREMENT</b>	22. [Units of Measurement / Time]	22	22	22	22	22	22	22	22
	23. [Perimeter]	23	23	23	23	23	23	23	23
	24. [Area]	24	24	24	24	24	24	24	24
	25. [Volume]	25	25	25	25	25	25	25	25
	26. [Surface Area]	26	26	26	26	26	26	26	26
	27. [Pythagoras / Trigonometry]	27	27	27	27	27	27	27	27
<b>SPACE</b>	28. [Shape / Location]	28	28	28	28	28	28	28	28
	29. [Angles]	29	29	29	29	29	29	29	29
<b>STAT.</b>	30. [Statistics]	30	30	30	30	30	30	30	
<b>PROB.</b>	31. [Probability]	31	31	31	31	31	31	31	
<b>PROBLEM SOLVING</b>	32. [Problem Solving 1]	32	32	32	32	32	32	32	32
	33. [Problem Solving 2]	33	33	33	33	33	33	33	33
Total Correct		<input type="checkbox"/>							

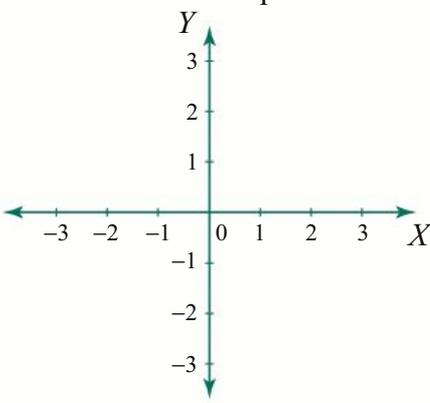




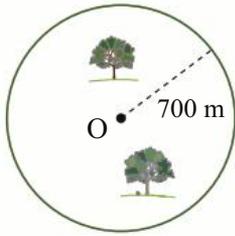
Name: .....

Due Date: ..... / ..... / .....

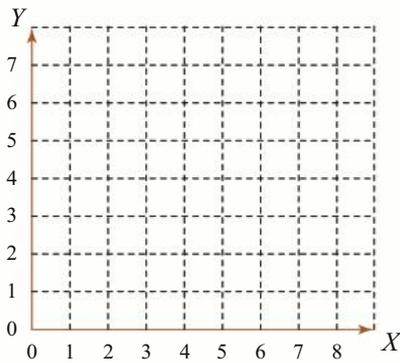
Parent's Signature: .....

1. [Long  $\times, \div$ ]  
 $1463 \div 7 =$
2. [Decimal  $+, -$ ]  
 $5.12 - 0.04 =$
3. [Decimal  $\times, \div$ ] \*  
 $2.4 \times 0.4 =$
4. [Fraction  $+, -$ ] \*  
 $\frac{1}{3} + \frac{1}{6} =$
5. [Fraction  $\times, \div$ ] \*  
 $7 \times \frac{4}{3} =$
6. [Percentages] \*  
 Of the 40 students in our class, 75% went camping. How many students went camping?
7. [Integer  $+, -$ ]  
 $(-2) - (-9) - (+10) =$
8. [Integer  $\times, \div$ ]  
 $(-5) \times (-4) \times (+10) =$
9. [Rates / Ratios] \*  
 Joanna's computer uses an internet connection with a download speed of 50 MB per second. At this rate, how many seconds will it take to download a 30 GB file?  
 [Hint: 1 GB = 1000 MB.]  S
10. [Indices]  
 Evaluate  $3^{-1}$
11. [Square Roots / Surds] \*  
 Evaluate  $2\sqrt{100} + 3\sqrt{100}$
12. [Order of Operations] \*  
 $[(2 + 1)^2 + 1]^2 =$
13. [Exploring Number]  
 Fill in with the appropriate symbol ( $<$ ,  $>$ ,  $=$ )  
 $2340 \div 0.9$    $2340$
14. [Scientific Notation]  
 Round 0.027 correct to 2 decimal places.
15. [Number Patterns]  
 Complete the pattern:  
 $\frac{3}{1000}, \frac{3}{100}, \frac{3}{10},$
16. [Expressions]  
 Write the following as an algebraic expression:  
 5 more than  $p$
17. [Substitution] \*  
 If  $e = -5$  and  $f = -4$ , find the value of  $5ef$
18. [Expansion] \*  
 Expand and simplify  
 $(3a - 1) + 2(a + 2)$
19. [Factorisation]  
 Factorise  $x^2 - 1$
20. [Equations] \*  
 Solve the inequality:  
 $\frac{2x + 1}{3} \geq 5$
21. [Graphs & Functions]  
 Sketch the line of equation  $x = -2$   

22. [Units of Measurement / Time]  
 How many litres in 0.8 megalitres (ML)?

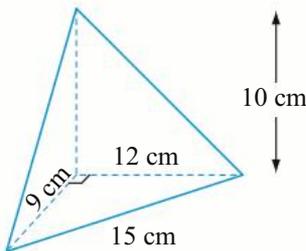
23. [Perimeter] \*  
Using  $C = 2\pi r$  and  $\pi \approx \frac{22}{7}$ , find the circumference of the circular park.



24. [Area] \*  
Plot the points F(1,6), G(7,6) and H(7,2) and use them to find the area of the triangle FGH.

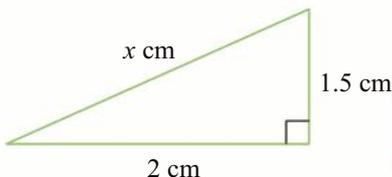


25. [Volume] \*  
Using  $V = \frac{1}{3} \times \text{base area} \times \text{height}$ , find the volume of the triangular pyramid.

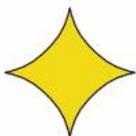


26. [Surface Area] \*  
Using  $TSA = 2\pi r(r + h)$  and  $\pi \approx \frac{22}{7}$ , find the total surface area of a cylinder of radius 4 cm and height 3 cm.

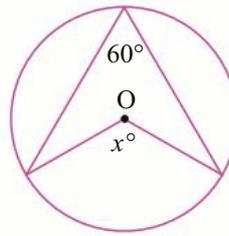
27. [Pythagoras / Trigonometry] \*  
Find the value of  $x$ .



28. [Shape / Location]  
Draw all axes of symmetry and show the centre of symmetry for the shape.



29. [Angles] \*  
Find the value of  $x^\circ$ .



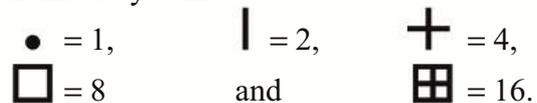
30. [Statistics]  
How is the variable 'language spoken' best defined?

- A) Ordinal (ranked opinion e.g. favourite song)  
B) Nominal (described e.g. car colour)  
C) Continuous (measured e.g. weight)  
D) Discrete (counted e.g. crowd size)

31. [Probability]  
Two dice are thrown one after the other. What is the probability of getting a 2 on the first throw?



32. [Problem Solving 1] \*  
An ancient civilization used the following number system:



Using as few symbols as possible, complete the numbers 1 to 10.

•, |, |, +, +, •

---



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33. [Problem Solving 2] \*  
Four students on an excursion came across an old weighing machine and decided to weigh themselves.

"Sorry," said the owner, "that machine is only accurate for weights over 100 kg."

"That's OK," replied one student, "we will hop on two at a time."

The results of the pairings in kilograms were: 103, 105, 106, 106, 107 and 109. What was the weight of the lightest student?



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, \div$ ] \*  
 $534 \div 12 =$

2. [Decimal  $+, -$ ]  
 $1 - 0.09 =$

3. [Decimal  $\times, \div$ ] \*  
 $0.6 \div 0.25 =$

4. [Fraction  $+, -$ ] \*  
 $\frac{1}{4} - \frac{1}{12} =$

5. [Fraction  $\times, \div$ ] \*  
 $6 \div \frac{3}{7} =$

6. [Percentages]  
 Of the 10 games, Leon won 6. What percentage of the games did he win?

7. [Integer  $+, -$ ]  
 $(+5) - (+10) - (+9) =$

8. [Integer  $\times, \div$ ]  
 $(-6) \times (+5) \div (+10) =$

9. [Rates / Ratios] \*  
 The average speed of a river current is 5 km/h. How long would it take a person floating on an air bed to drift with the current for 12 km?

hours  min

10. [Indices] \*  
 Evaluate  $(-0.5)^{-2}$

11. [Square Roots / Surds] \*  
 Evaluate  $2\sqrt{7} + 3\sqrt{7}$

12. [Order of Operations] \*  
 $[3 \times (6 - 2) + 4] \div 2 =$

13. [Exploring Number]  
 Fill in with the appropriate symbol ( $<$ ,  $>$ ,  $=$ )

$4.03$    $4 + \frac{3}{10}$

14. [Scientific Notation]  
 Express 5.0218 correct to 3 decimal places.

15. [Number Patterns]  
 Complete the pattern:

$\frac{7}{27}, \frac{7}{9}, \frac{7}{3}, 7, \text{  ,  }$

16. [Expressions]  
 Write the following as an algebraic expression:  
 A number that is equal to fifteen less than  $y$

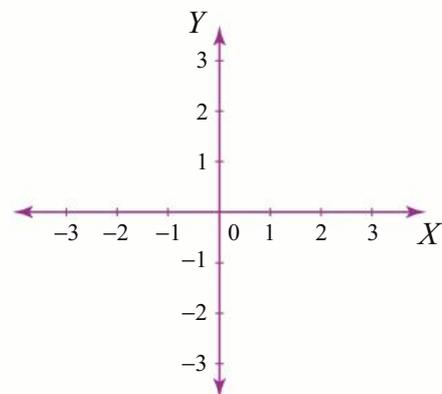
17. [Substitution] \*  
 If  $x = -3$ , find the value of  $2x^2 + x$

18. [Expansion] \*  
 Expand and simplify  $(m + 1)(m + 4)$

19. [Factorisation]  
 Factorise  $16 - x^2$

20. [Equations] \*  
 Solve the inequality:  
 $\frac{3 - 2x}{3} > 7$

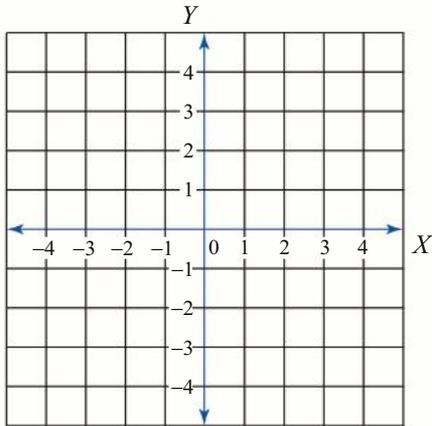
21. [Graphs & Functions]  
 Sketch the line of equation  $y = -x$  using the set of coordinate axes below.



22. [Units of Measurement / Time]  
 Change 2500 mL into litres.

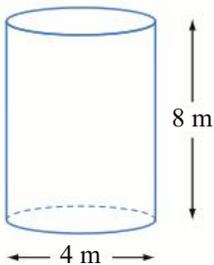
23. [Perimeter] \*  
Using  $\pi \approx 3.14$  find the circumference of a bicycle wheel with a radius of 25 cm.

24. [Area] \*  
Plot the points D(-4,1), E(-1,4), F(4,1) and G(-1,-3) and use them to find the area of the quadrilateral DEFG.

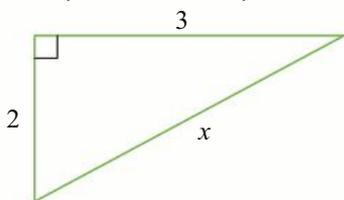



25. [Volume] \*  
A square pyramid has a base 4 cm by 4 cm and a height of 3 cm. What is its volume?

26. [Surface Area] \*  
Using  $\pi \approx 3.14$  find the total surface area of the cylinder.



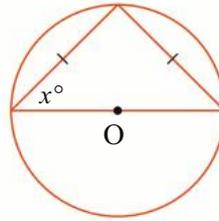

27. [Pythagoras / Trigonometry] \*  
Find, in surd form, the value of  $x$ .




28. [Shape / Location]  
Draw all axes of symmetry and mark the centre of symmetry for the shape.



29. [Angles] \*  
Find the value of  $x^\circ$ .



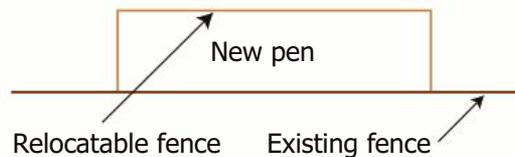

30. [Statistics]  
How is the variable 'games won this season' best defined?

- A) Ordinal (ranked opinion e.g. favourite song)
- B) Nominal (described e.g. car colour)
- C) Continuous (measured e.g. weight)
- D) Discrete (counted e.g. crowd size)

31. [Probability]  
Two dice are thrown one after the other. What is the probability of getting a 4 on the second throw?




32. [Problem Solving 1] \*  
A farmer wishes to make a rectangular pen using an existing section of straight fence and 100 m of relocatable fencing materials. What is the largest possible area of the pen?



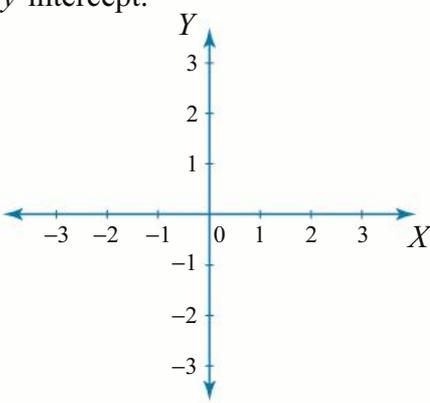

33. [Problem Solving 2] \*  
For a scheduled test match, the ground staff at Lords were asked to move the rope, used to mark the circular boundary, out a further 5 metres all the way around the ground. How much more rope should the curator purchase to fill the gap created by enlarging the circle? (Use  $\pi \approx 3.14$ )



Name: .....

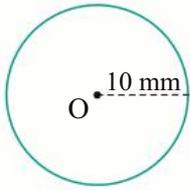
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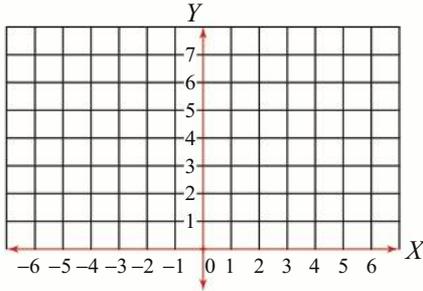
1. [Long  $\times, \div$ ] \*  
 $56 \times 38 =$
2. [Decimal  $+, -$ ]  
 $4.27 + 1.93 =$
3. [Decimal  $\times, \div$ ] \*  
 $3.2 \div 0.08 =$
4. [Fraction  $+, -$ ] \*  
 $\frac{2}{3} + \frac{1}{9} =$
5. [Fraction  $\times, \div$ ] \*  
 $2 \times \frac{7}{8} =$
6. [Percentages] \*  
Of the 400 sausages bought for a school fete, only 35% were sold. How many sausages were sold?
7. [Integer  $+, -$ ] \*  
 $(-1) - (-10) + (-7) =$
8. [Integer  $\times, \div$ ]  
 $(-40) \times (-10) \div (+20) =$
9. [Rates / Ratios] \*  
A police officer drives from Canberra to Wagga Wagga, a distance of 240 km, at an average speed of 80 km/h, and returns in an emergency averaging 120 km/h. What is the officer's average speed for the two way trip?  km/h
10. [Indices] \*  
Evaluate  $\frac{1}{10^{-2}}$
11. [Square Roots / Surds] \*  
Evaluate  $4\sqrt{25} - 3\sqrt{25}$
12. [Order of Operations] \*  
 $[3 + (7 - 6)] \times 3 =$
13. [Exploring Number]  
Fill in with the appropriate symbol ( $<, >, =$ )  
 $5.20$    $5 + \frac{2}{10}$
14. [Scientific Notation]  
Express 60.499 correct to the nearest whole number.
15. [Number Patterns]  
Complete the pattern:  
 $\frac{1}{32}, \frac{1}{4}, 2, 16,$   ,
16. [Expressions]  
Write the following as an algebraic expression:  
A quarter of  $x$
17. [Substitution] \*  
If  $a = -1, b = 3$  and  $c = 4,$  find the value of  $b^2 - \frac{c}{a}$
18. [Expansion] \*  
Expand and simplify  $x(x + 2) - 2(x + 1)$
19. [Factorisation]  
Factorise  $y^2 - 36$
20. [Equations] \*  
Solve the inequality:  
 $\frac{3x + 1}{5} < 5$
21. [Graphs & Functions] \*  
Sketch the graph of the linear rule  $y = -2x + 1$  by first finding the  $x$ -intercept and the  $y$ -intercept.  

22. [Units of Measurement / Time]  
How many millimetres in 125 centimetres?

QUOTE OF THE WEEK: We give thanks for the invention of the handle, without it there would be many things we couldn't get a hold on. Leunig

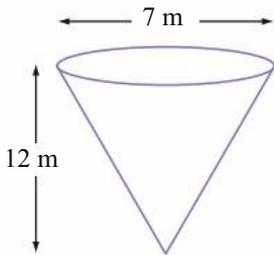
23. [Perimeter] \*  
Using  $\pi \approx 3.14$  find the circumference of the circle.



24. [Area] \*  
Plot the points M(-5,7), N(3,4) and P(3,1) and use them to find the area of the triangle MNP.

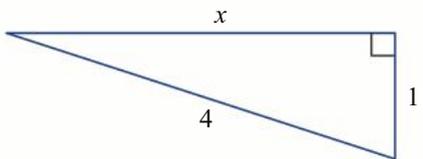


25. [Volume] \*  
Using  $V = \frac{\pi r^2 h}{3}$  and  $\pi \approx \frac{22}{7}$ , find the volume of the cone.



26. [Surface Area] \*  
Using  $\pi \approx \frac{22}{7}$  find the total surface area of a cylindrical can of radius 3.5 cm and height 1.5 cm.

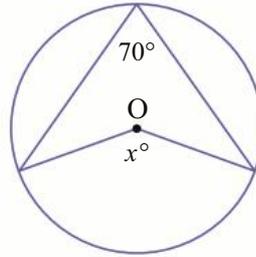
27. [Pythagoras / Trigonometry] \*  
Find, in surd form, the value of  $x$ .



28. [Shape / Location]  
Draw all axes of symmetry and mark the centre of symmetry for the shape.



29. [Angles] \*  
Find the value of  $x^\circ$ .



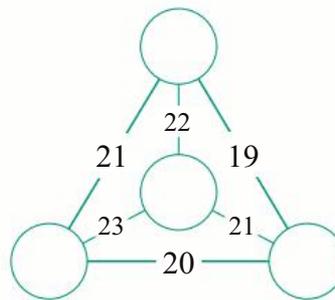
30. [Statistics]  
How is the variable 'restaurant quality' best defined?

- A) Ordinal (ranked opinion e.g. favourite song)
- B) Nominal (described e.g. car colour)
- C) Continuous (measured e.g. weight)
- D) Discrete (counted e.g. crowd size)

31. [Probability]  
Two dice are thrown one after the other. What is the probability of getting the same score on the second die as the first?



32. [Problem Solving 1] \*  
Enter numbers in the circles so that the numbers on each line equal the sum of the numbers at each end.



33. [Problem Solving 2] \*  
Farmer Brown claims his rectangular farm is the same as Old MacDonald's, admittedly 20% shorter, but to make up for this it is 20% wider. In reality he owns 10 hectares less than Old MacDonald. How many hectares does Old MacDonald own?



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, \div$ ] \*  
 $649 \div 11 =$

2. [Decimal  $+, -$ ] \*  
 $8.09 + 0.91 =$

3. [Decimal  $\times, \div$ ] \*  
 $0.5 \times 0.3 =$

4. [Fraction  $+, -$ ] \*  
 $\frac{5}{18} - \frac{1}{9} =$

5. [Fraction  $\times, \div$ ] \*  
 $\frac{5}{9} \div 6 =$

6. [Percentages] \*  
 In the mathematics test, Mabel scored 32 out of a possible 40 marks. What percentage is this?

7. [Integer  $+, -$ ] \*  
 $(+10) + (-7) + (-4) =$

8. [Integer  $\times, \div$ ] \*  
 $(+5) \times (-40) \div (+2) =$

9. [Rates / Ratios] \*  
 Joshua averaged 164 heart beats per minute for the first 10 minutes of his half an hour fitness session, and 122 beats per minute for the rest of the session. What was his average heart rate for the whole session?  **beats/min**

10. [Indices] \*  
 Evaluate  $\left(\frac{1}{2}\right)^{-4}$

11. [Square Roots / Surds] \*  
 Evaluate  $4\sqrt{3} \times 2\sqrt{3}$

12. [Order of Operations] \*  
 $[12 + (24 - 16)] \div 4 =$

13. [Exploring Number]  
 Fill in with the appropriate symbol ( $<$ ,  $>$ ,  $=$ )  
 $4245 \times 0.9$    $4245$

14. [Scientific Notation]  
 Express 0.08529 correct to 3 decimal places.

15. [Number Patterns]  
 Complete the pattern:  
 $\frac{1}{18}, \frac{1}{3}, 2, 12,$

16. [Expressions]  
 Write the following as an algebraic expression:  
 Four lots of  $b$

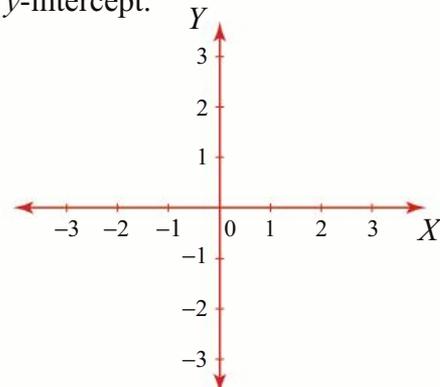
17. [Substitution] \*  
 If  $p = 2, r = -1$  and  $s = 4,$   
 find the value of  $\frac{r}{p} + \frac{r}{s}$

18. [Expansion] \*  
 Expand and simplify  
 $(y + 1)(y - 1)$

19. [Factorisation]  
 Factorise  $9x^2 - 4$

20. [Equations] \*  
 Solve the inequality:  
 $\frac{5x + 2}{11} \leq 2$

21. [Graphs & Functions] \*  
 Sketch the graph of the linear rule  $y = \frac{1}{3}x - 1$   
 by first finding the  $x$ -intercept and the  $y$ -intercept.



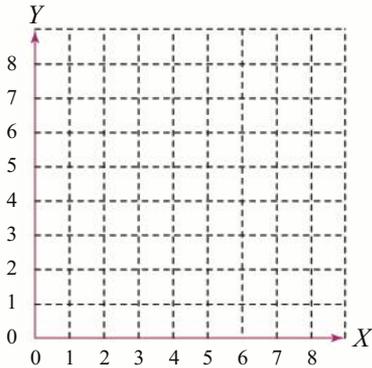
22. [Units of Measurement / Time]  
 Change 1650 mm into metres.

23. [Perimeter] \*  
Using  $\pi \approx \frac{22}{7}$  find the circumference of a bicycle wheel with radius 21 cm.

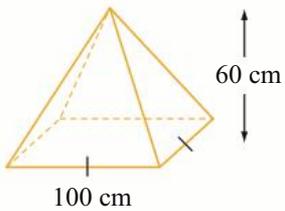


wheel diameter = 42 cm

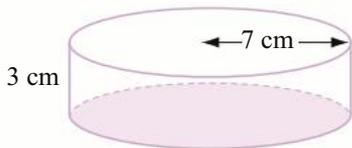
24. [Area] \*  
Plot the points S(3,2), T(3,5), U(7,8) and V(7,1) and use them to find the area of the quadrilateral STUV.



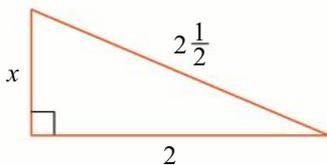

25. [Volume] \*  
Find the volume, in  $m^3$ , of the square pyramid.



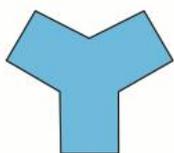

26. [Surface Area] \*  
Using  $\pi \approx \frac{22}{7}$  find the total surface area of the cylinder.



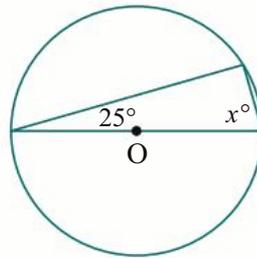

27. [Pythagoras / Trigonometry] \*  
Find the value of  $x$ .




28. [Shape / Location]  
Draw all axes of symmetry and mark the centre of symmetry for the shape.



29. [Angles] \*  
Find the value of  $x^\circ$ .



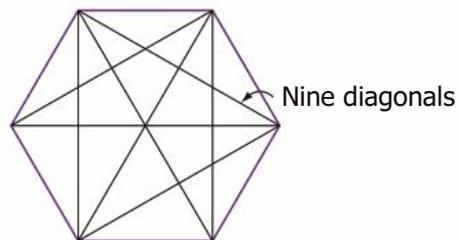

30. [Statistics]  
How is the variable 'patient's temperature' best defined?

- A) Ordinal (ranked opinion e.g. favourite song)
- B) Nominal (described e.g. car colour)
- C) Continuous (measured e.g. weight)
- D) Discrete (counted e.g. crowd size)

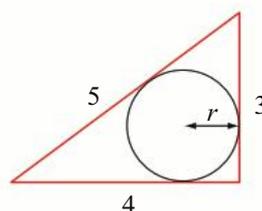
31. [Probability] \*  
A coin and a die are tossed. What is the probability of throwing a tail and an even number?




32. [Problem Solving 1] \*  
If each corner of a square is joined to each other corner of the square, two diagonals will have been drawn. To do the same for a hexagon, nine diagonals would have to be drawn. How many diagonals would have to be drawn on a regular polygon with 15 sides?




33. [Problem Solving 2] \*  
Find the radius of the inscribed circle in a 3, 4, 5 triangle.





Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, \div$ ] \*  
 $12.5 \times 12 =$

2. [Decimal  $+, -$ ]  
 $20 - 0.08 =$

3. [Decimal  $\times, \div$ ] \*  
 $2 \div 0.08 =$

4. [Fraction  $+, -$ ] \*  
 $1\frac{3}{8} - \frac{1}{4} =$

5. [Fraction  $\times, \div$ ]  
 $\frac{3}{5} \times 10 =$

6. [Percentages] \*  
 Reduce \$130 by 20%.

7. [Integer  $+, -$ ]  
 $(+5) - (+2) + (-9) =$

8. [Integer  $\times, \div$ ]  
 $\frac{(-6)}{(-2)} =$

9. [Rates / Ratios] \*  
 Divide \$21 in the ratio 2 : 5

10. [Indices]  
 Simplify  $\frac{x^4 y^6}{x^3}$

11. [Square Roots / Surds]  
 $\sqrt{27} = 3\sqrt{3}$   
 True or false?

12. [Order of Operations]  
 $\sqrt{9 + 16} =$

13. [Exploring Number]  
 Write  $\frac{2}{3}$  as a recurring decimal.

14. [Scientific Notation]  
 Express 0.0175 in scientific notation.

15. [Number Patterns]  
 Complete the pattern:  
 2, 2, 4, 6, 10, ,

16. [Expressions]  
 Write the following as an algebraic expression:  
 A number that is five more than  
 a half of  $z$

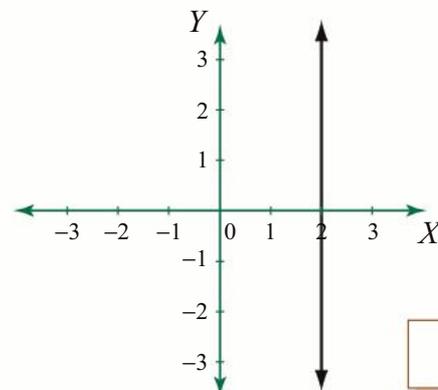
17. [Substitution] \*  
 If  $y = 3x + 7$ , what value of  $x$   
 will make  $y = 7$ ?

18. [Expansion] \*  
 Expand and simplify  
 $2(p + 2) - (p - 3)$

19. [Factorisation] \*  
 Factorise and simplify  $\frac{6x - 3}{10x - 5}$

20. [Equations] \*  
 Solve for  $x$ :  
 $\frac{3(x + 2)}{5} = 6$

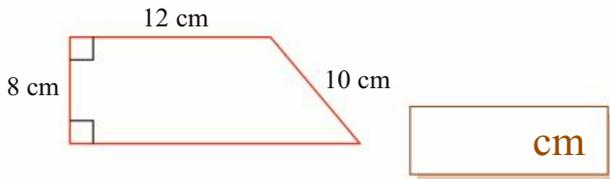
21. [Graphs & Functions]  
 Find the equation of the straight line.



22. [Units of Measurement / Time]  
 Convert  $10 \text{ km}^2$  to  $\text{m}^2$ .   $\text{m}^2$

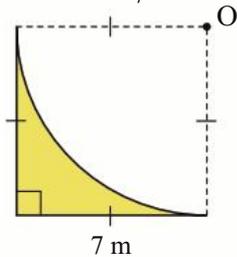
QUOTE OF THE WEEK: Rabbits can multiply - but only a snake can be an adder.

23. [Perimeter] \*  
Find the perimeter of the trapezium.  
[Hint: Pythagoras' theorem will help.]



cm

24. [Area] \*  
Find the area of the shaded region.  
(Use  $\pi \approx \frac{22}{7}$ )

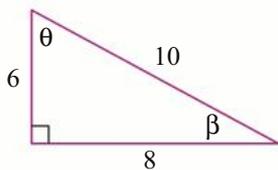


m<sup>2</sup>

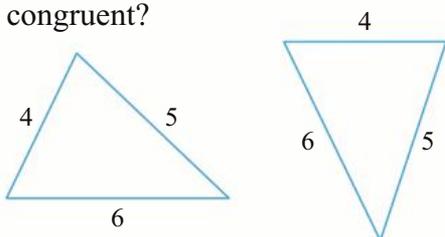
25. [Volume] \*  
Find the volume of milk (in litres) in a carton  
8 cm by 8 cm by  $15\frac{5}{8}$  cm.

26. [Surface Area] \*  
A cargo container 3 m by 4 m by 2.5 m is to be given a coat of paint on all surfaces, inside and out. If 1 litre of paint covers 10 m<sup>2</sup>, how many 4 litre tins of paint are required?

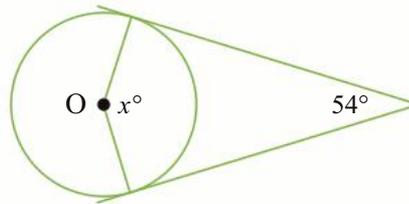
27. [Pythagoras / Trigonometry] \*  
For which angle is the sine ratio 0.6?



28. [Shape / Location]  
Which test (SSS, SAS, ASA, RHS) could be used to show the following triangles are congruent?



29. [Angles] \*  
Find the value of  $x^\circ$ .

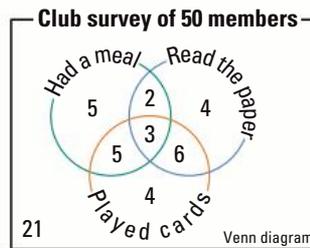


30. [Statistics]  
Find the median and mode for the following distribution:

Score	11	12	13	14	15	16
Frequency	3	5	1	2	4	1

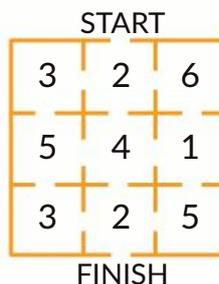
median =  mode =

31. [Probability] \*  
Find the probability that a club member selected at random had a meal and played cards, but didn't read the paper.



32. [Problem Solving 1] \*  
Martha, Tamara and Virginia each prepared a list of history's most influential people. The lists were compared and any names that appeared on at least two lists were shortlisted. Of the names on the shortlist, 45 had been included on Martha's list, 34 on Tamara's list, and 28 on Virginia's list. What is the maximum number of names that might have reached the shortlist?

33. [Problem Solving 2] \*  
Find a path from START to FINISH so that the product of the numbers of the rooms through which you pass is 1200.





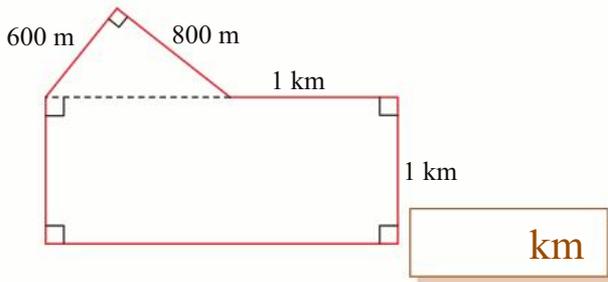
Name: .....

Due Date: ..... / ..... / .....

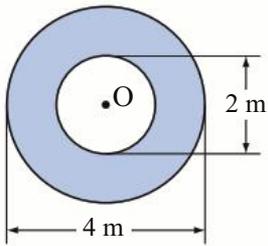
Parent's Signature: .....

1. [Long  $\times$ ,  $\div$ ]  
 $531 \div 9 =$
2. [Decimal  $+$ ,  $-$ ]  
 $1.19 + 0.91 =$
3. [Decimal  $\times$ ,  $\div$ ] \*  
 $1.5 \times 0.6 =$
4. [Fraction  $+$ ,  $-$ ] \*  
 $3\frac{1}{6} + \frac{1}{2} =$
5. [Fraction  $\times$ ,  $\div$ ] \*  
 $8 \div \frac{4}{3} =$
6. [Percentages] \*  
 Reduce \$96 by 25%.
7. [Integer  $+$ ,  $-$ ]  
 $(-3) - (+2) + (-6) =$
8. [Integer  $\times$ ,  $\div$ ]  
 $\frac{18}{(-3)} =$
9. [Rates / Ratios] \*  
 Share 45 oranges in the ratio 6 : 3
10. [Indices]  
 Simplify  $\frac{5a^{10}b^4}{a^6}$
11. [Square Roots / Surds] \*  
 Simplify  $\sqrt{48}$
12. [Order of Operations] \*  
 $\sqrt{5^2 - 3^2} =$
13. [Exploring Number] \*  
 Express the recurring decimal  $0.\dot{1}\dot{5}$  as a fraction in its simplest form.
14. [Scientific Notation]  
 Express  $2\,500\,000\text{ km}^2$ , the area of the Mediterranean Sea, in scientific notation.
15. [Number Patterns]  
 Complete the pattern:  
 $\frac{1}{1}, \frac{1}{4}, \frac{1}{9}, \frac{1}{16},$   ,
16. [Expressions]  
 Write the following as an algebraic expression:  
 A number that is ten less than a third of  $n$
17. [Substitution] \*  
 If we substitute  $x = 0$  and  $y = 4$  into  $\frac{x}{y} + 4$  the result is 4. True or false?
18. [Expansion] \*  
 Expand and simplify  $4(z - 1) - 2(z - 2)$
19. [Factorisation] \*  
 Factorise and simplify  $\frac{4x^2 - 8x}{3x - 6}$
20. [Equations] \*  
 Solve for  $x$ :  
 $\frac{2(x - 3)}{3} = 9$
21. [Graphs & Functions] \*  
 Find the equation of the straight line.
22. [Units of Measurement / Time]  
 How many  $\text{cm}^2$  are there in an area of  $400\text{ mm}^2$ ?

23. [Perimeter] \*  
Find the perimeter of the polygon.  
[Hint: Pythagoras' theorem will help.]



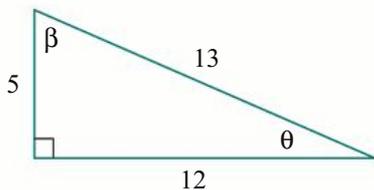
24. [Area] \*  
Find the area of the shaded annulus.  
(Use  $\pi \approx 3.14$ )



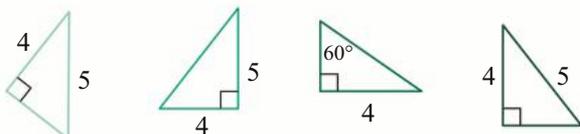
25. [Volume] \*  
A rectangular fish tank 120 cm long and 50 cm wide is filled with 240 litres of water. What is the average depth of the water in the fish tank?

26. [Surface Area] \*  
The side length of a cube is tripled. By what factor will the surface area increase?

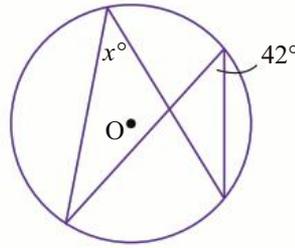
27. [Pythagoras / Trigonometry] \*  
For which angle is the tangent ratio 2.4?



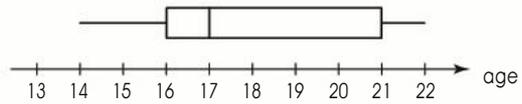
28. [Shape / Location]  
Circle the two congruent triangles and give your reason: SSS, SAS, ASA or RHS



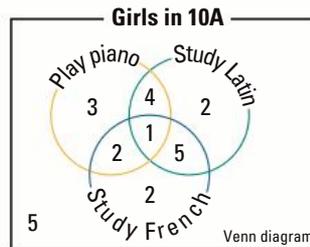
29. [Angles] \*  
Find the value of  $x^\circ$ .



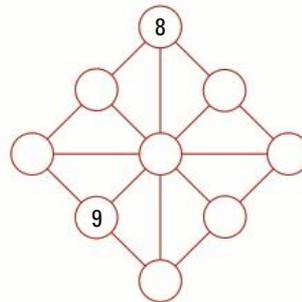
30. [Statistics]  
Find the median and range for the ages sampled in this box-and-whisker plot.



31. [Probability] \*  
If a girl from the class is chosen at random, what is the probability that she plays piano?



32. [Problem Solving 1] \*  
Fill in the numbers 1 to 7 so that the sum of the numbers along each straight line is 15.



33. [Problem Solving 2] \*  
Two women and two children wish to cross a river in a canoe that will hold only one woman or both children. They can all row on their own, but no one can swim. If a one way trip in the canoe takes 10 minutes, what is the minimum time in which all four people can cross the river?



Name: .....

Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, \div$ ] \*  
 $23.8 \times 14 =$

2. [Decimal  $+, -$ ]  
 $4 - 0.04 =$

3. [Decimal  $\times, \div$ ] \*  
 $0.12 \div 0.006 =$

4. [Fraction  $+, -$ ] \*  
 $\frac{3}{4} - \frac{3}{20} =$

5. [Fraction  $\times, \div$ ]  
 $4 \times \frac{9}{2} =$

6. [Percentages] \*  
 Reduce \$12 by 5%.  \$

7. [Integer  $+, -$ ]  
 $(+15) + (-12) + (-1) =$

8. [Integer  $\times, \div$ ]  
 $\frac{(-24)}{6} =$

9. [Rates / Ratios] \*  
 Divide 60 kg in the ratio 4 : 2  
 kg :  kg

10. [Indices]  
 Simplify  $\frac{9a^3 b}{3a}$

11. [Square Roots / Surds] \*  
 Simplify  $\sqrt{72}$

12. [Order of Operations] \*  
 $\sqrt[3]{(5+3)^2} =$

13. [Exploring Number]  
 Express the recurring decimal  $0.\dot{8}$  as a fraction.

14. [Scientific Notation]  
 Express 100 000 000 000, the number of stars in the Milky Way, in scientific notation.

15. [Number Patterns]  
 Complete the pattern:  
 0, 2, 6, 14, 30, ,

16. [Expressions]  
 Write the following as an algebraic expression:  
 A number that is three times more than a half of  $m$

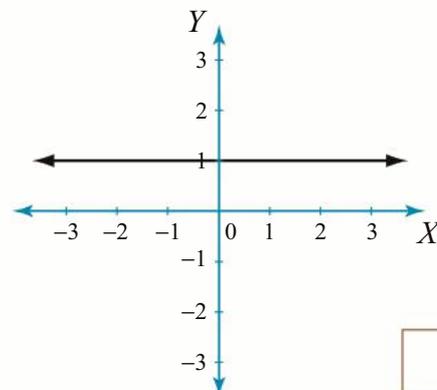
17. [Substitution] \*  
 If  $y = \frac{x}{4} - 3$ , find the value of  $y$  when  $x = 12$

18. [Expansion] \*  
 Expand and simplify  $(x - 2)(x + 3)$

19. [Factorisation] \*  
 Factorise and simplify  $\frac{5x^2 + 10x}{2x + 4}$

20. [Equations] \*  
 Solve for  $x$ :  
 $\frac{4(x - 1)}{3} = 8$

21. [Graphs & Functions]  
 Find the equation of the straight line.

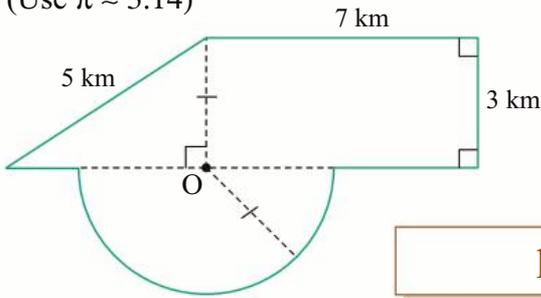


22. [Units of Measurement / Time]  
 How many  $\text{cm}^3$  are there in 1 cubic metre?

QUOTE OF THE WEEK: To refuse praise reveals a desire to be praised twice over. Duc de la Rochefoucauld.

23. [Perimeter] \*

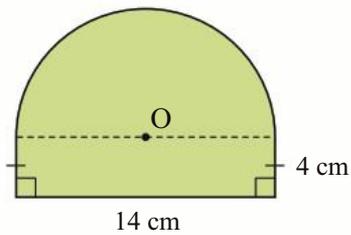
Find the perimeter of the shape.  
(Use  $\pi \approx 3.14$ )



km

24. [Area] \*

Find the area of the shaded region.  
(Use  $\pi \approx \frac{22}{7}$ )



cm<sup>2</sup>

25. [Volume] \*

A water-wise person places a brick 12 cm by 10 cm by 25 cm inside the toilet cistern. How many litres of water will the family save each week if the toilet is used 13 times per day?

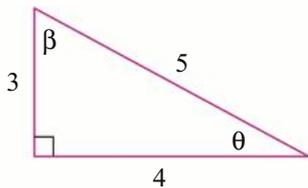
26. [Surface Area] \*

In which sphere is the ratio  $\frac{\text{surface area}}{\text{volume}}$  greater?

- A) a smaller sphere
- B) a larger sphere

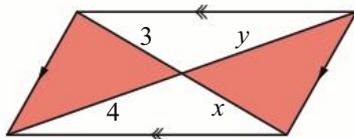
27. [Pythagoras / Trigonometry] \*

Calculate the value of  $\cos \theta$ .



28. [Shape / Location]

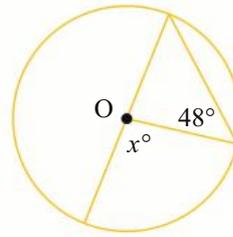
Use the rules of congruence to find the values of  $x$  and  $y$ .



$x =$    $y =$

29. [Angles] \*

Find the value of  $x^\circ$ .



30. [Statistics]

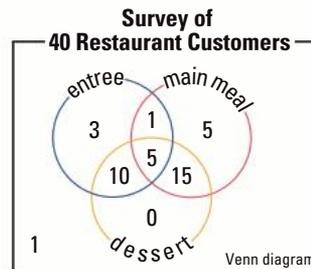
Find the median and mode for the following distribution:

Score	1	2	3	4	5	6
Frequency	2	1	3	1	2	6

median =  mode =

31. [Probability] \*

Find the probability that a customer selected at random had a main meal and dessert but no entree.



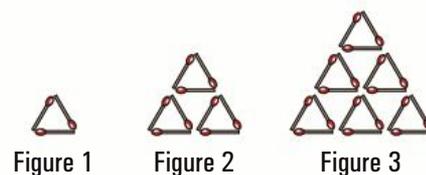
32. [Problem Solving 1] \*

If  $0 < x < 1$ , which of the following is the largest?

- A)  $\frac{1}{x^2}$
- B)  $\frac{1}{x}$
- C)  $x$
- D)  $x^2$
- E)  $x^3$

33. [Problem Solving 2] \*

A pattern of triangles is made from matches, as shown below. To make the first triangle required three matches, the second figure required 9 matches. How many matches are required for the tenth figure in this pattern?





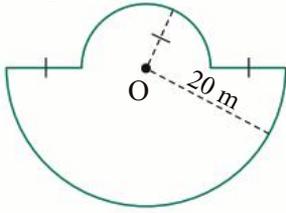
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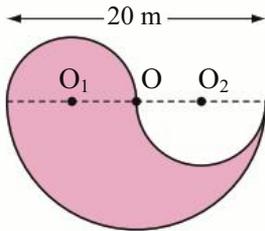
Parent's Signature: .....

1. [Long  $\times$ ,+] \*  
 $37.5 \times 8 =$
2. [Decimal +,-] \*  
 $2.88 + 0.88 =$
3. [Decimal  $\times$ ,+] \*  
 $1.3 \times 0.11 =$
4. [Fraction +,-] \*  
 $1\frac{1}{14} - \frac{3}{7} =$
5. [Fraction  $\times$ ,+] \*  
 $3 \div \frac{3}{7} =$
6. [Percentages] \*  
Reduce \$6.50 by 40%.
7. [Integer +,-] \*  
 $(+6) - (-7) + (+13) =$
8. [Integer  $\times$ ,+] \*  
 $(4 - 6) \times (3 - 5) =$
9. [Rates / Ratios] \*  
Share 24 apples in the ratio 5 : 3
10. [Indices] \*  
Simplify  $\frac{6m^4n^2}{2m^2n^2}$
11. [Square Roots / Surds] \*  
Simplify  $\sqrt{80}$
12. [Order of Operations] \*  
 $(\sqrt{9} + \sqrt{4})^2 =$
13. [Exploring Number] \*  
Write  $\frac{2}{11}$  as a recurring decimal.
14. [Scientific Notation] \*  
Express 149 000 000 km, the distance from the Earth to the Sun, in scientific notation.
15. [Number Patterns] \*  
Complete the pattern:  
32, 31, 29, 26,
16. [Expressions] \*  
Write the following as an algebraic expression:  
A number that is the average of  $m$  and  $n$
17. [Substitution] \*  
If  $y = 4x - 5$ , what value of  $x$  will make  $y = -1$ ?
18. [Expansion] \*  
Expand and simplify  $(a + 5)(a - 5)$
19. [Factorisation] \*  
Factorise and simplify  $\frac{12xy - 4y}{6x - 2}$
20. [Equations] \*  
Solve for  $x$ :  
 $\frac{3(x + 4)}{4} = 6$
21. [Graphs & Functions] \*  
Find the equation of the straight line.
22. [Units of Measurement / Time] \*  
Change 0.25 hectares into square metres.

23. [Perimeter] \*  
Using  $\pi \approx 3.14$  calculate the perimeter of the shape.



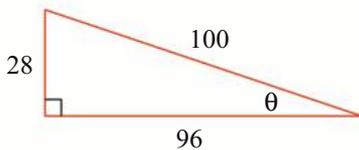
24. [Area] \*  
Find the area of the shape. (Use  $\pi \approx 3.14$ )



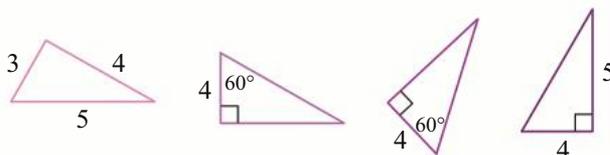
25. [Volume] \*  
How many cubic metres of sand are needed to fill a rectangular long jump pit 5 m long, 1.8 m wide and 40 cm deep?

26. [Surface Area] \*  
The surface area of a cube is  $54 \text{ cm}^2$ . What is its side length?

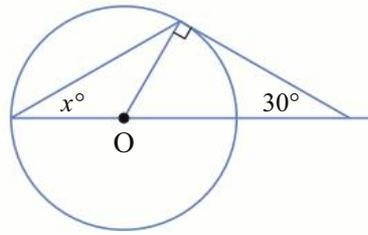
27. [Pythagoras / Trigonometry] \*  
Calculate the value of  $\sin \theta$ .



28. [Shape / Location]  
Circle the two congruent triangles and give your reason: SSS, SAS, ASA or RHS



29. [Angles] \*  
Find the value of  $x^\circ$ .

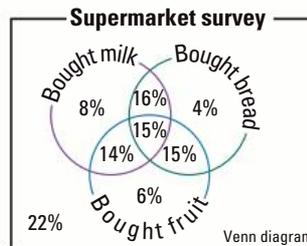


30. [Statistics]  
Find the median and mode for the following distribution:

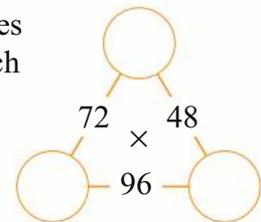
Score	1	2	3	4	5	6
Frequency	3	2	4	7	8	6

median =  mode =

31. [Probability] \*  
Find the probability that a customer chosen at random did not buy fruit.



32. [Problem Solving 1] \*  
Enter numbers in the circles so that the numbers on each line equal the product of the numbers at each end.



33. [Problem Solving 2]  
This table shows the team standings after 2 rounds of the 2006 F.I.F.A. World Cup. Who did Japan play in its third round robin game?  
[Each team plays every other team in the group once, and 3 points are awarded for a win, 1 for a draw and none for a lost game.]

**Group F**

Team	MP	W	D	L	GF	GA	Pts
	matches played	wins	draws	losses	goals for	goals against	points
Brazil	2	2	0	0	3	0	6
Australia	2	1	0	1	3	3	3
Croatia	2	0	1	1	0	1	1
Japan	2	0	1	1	1	3	1

Japan:

# MATHS MATE



Name: .....

Class: .....

Teacher: .....

## Worksheet Results

**Term 4**

		Sheet 1	Sheet 2	Sheet 3	Sheet 4	Sheet 5	Sheet 6	Sheet 7	Sheet 8
<b>NUMBER</b>	1. [Long $\times, \div$ ]	1	1	1	1	1	1	1	1
	2. [Decimal $+, -$ ]	2	2	2	2	2	2	2	2
	3. [Decimal $\times, \div$ ]	3	3	3	3	3	3	3	3
	4. [Fraction $+, -$ ]	4	4	4	4	4	4	4	4
	5. [Fraction $\times, \div$ ]	5	5	5	5	5	5	5	5
	6. [Percentages]	6	6	6	6	6	6	6	6
	7. [Integer $+, -$ ]	7	7	7	7	7	7	7	7
	8. [Integer $\times, \div$ ]	8	8	8	8	8	8	8	8
	9. [Rates / Ratios]	9	9	9	9	9	9	9	9
	10. [Indices]	10	10	10	10	10	10	10	10
	11. [Square Roots / Surds]	11	11	11	11	11	11	11	11
	12. [Order of Operations]	12	12	12	12	12	12	12	12
	13. [Exploring Number]	13	13	13	13	13	13	13	13
	14. [Scientific Notation]	14	14	14	14	14	14	14	14
	15. [Number Patterns]	15	15	15	15	15	15	15	15
<b>ALGEBRA</b>	16. [Expressions]	16	16	16	16	16	16	16	16
	17. [Substitution]	17	17	17	17	17	17	17	17
	18. [Expansion]	18	18	18	18	18	18	18	18
	19. [Factorisation]	19	19	19	19	19	19	19	19
	20. [Equations]	20	20	20	20	20	20	20	20
	21. [Graphs & Functions]	21	21	21	21	21	21	21	21
<b>MEASUREMENT</b>	22. [Units of Measurement / Time]	22	22	22	22	22	22	22	22
	23. [Perimeter]	23	23	23	23	23	23	23	23
	24. [Area]	24	24	24	24	24	24	24	24
	25. [Volume]	25	25	25	25	25	25	25	25
	26. [Surface Area]	26	26	26	26	26	26	26	26
	27. [Pythagoras / Trigonometry]	27	27	27	27	27	27	27	27
<b>SPACE</b>	28. [Shape / Location]	28	28	28	28	28	28	28	28
	29. [Angles]	29	29	29	29	29	29	29	29
<b>STAT.</b>	30. [Statistics]	30	30	30	30	30	30	30	
<b>PROB.</b>	31. [Probability]	31	31	31	31	31	31	31	
<b>PROBLEM SOLVING</b>	32. [Problem Solving 1]	32	32	32	32	32	32	32	32
	33. [Problem Solving 2]	33	33	33	33	33	33	33	33
Total Correct		<input type="checkbox"/>							





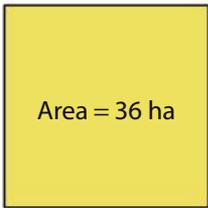
Name: .....

Due Date: ..... / ..... / .....

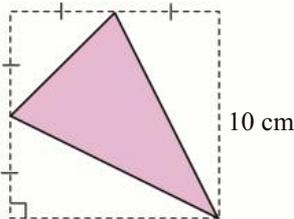
Parent's Signature: .....

1. [Long  $\times, \div$ ] \*  
 $5.2 \div 8 =$
2. [Decimal  $+, -$ ]  
 $19.6 + 0.1 - 0.4 =$
3. [Decimal  $\times, \div$ ] \*  
 $0.8 \times 0.6 =$
4. [Fraction  $+, -$ ] \*  
 $\frac{1}{2} + \frac{1}{5} =$
5. [Fraction  $\times, \div$ ] \*  
 $\frac{3}{5} \times 2\frac{1}{4} =$
6. [Percentages] \*  
Find 100%, given that 10% is \$30.
7. [Integer  $+, -$ ]  
 $-6 - (2 - 5) =$
8. [Integer  $\times, \div$ ]  
 $(-4m) \times (-2) =$
9. [Rates / Ratios] \*  
Concrete contains cement, sand and gravel in the ratio 2 : 3 : 5. How much gravel is there in 200 kg of concrete?
10. [Indices] \*  
Simplify  $\frac{4s^2}{8s^{-3}}$
11. [Square Roots / Surds] \*  
Evaluate  $\frac{6\sqrt{45}}{3\sqrt{5}}$
12. [Order of Operations] \*  
 $(9 - 8)^{2011} \times (2 - 2)^{2012} =$
13. [Exploring Number] \*  
Find  $\frac{4}{5}$  of \$6
14. [Scientific Notation]  
How many significant figures are there in 14 500?
15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = 2n$  where  $n \geq 1$
16. [Expressions]  
Simplify:  
 $(x^2 + 2x + 3) + (x^2 + 3x - 2)$
17. [Substitution] \*  
If  $a = 5$  and  $b = 2$ , write true or false for the statement:  
 $ab = 0$
18. [Expansion] \*  
Expand  $(a + 2)^2$
19. [Factorisation] \*  
Factorise  $x^2 + 5x + 6$
20. [Equations] \*  
Solve for  $x$ :  
 $(x + 1)(x - 3) = 0$
21. [Graphs & Functions] \*  
Use the rule  $m = \frac{y_2 - y_1}{x_2 - x_1}$  to find the gradient of the line joining the points M(1,1) and N(3,7)
22. [Units of Measurement / Time] \*  
A penguin can swim at a speed of 10 m/s. What is this speed in km per hour?

23. [Perimeter] \*  
Find the perimeter of the square.

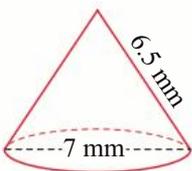



24. [Area] \*  
Find the area of the shaded region.

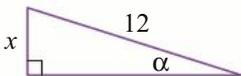



25. [Volume] \*  
A square pyramid of base 3 cm by 3 cm is made from 18 cm<sup>3</sup> of clay. What is the height of the pyramid?

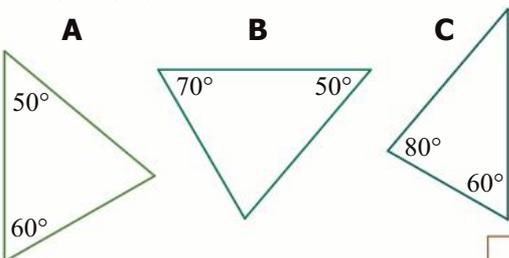
26. [Surface Area] \*  
Use  $TSA = \pi r(r + s)$  and  $\pi \approx \frac{22}{7}$  to find the total surface area of the cone.



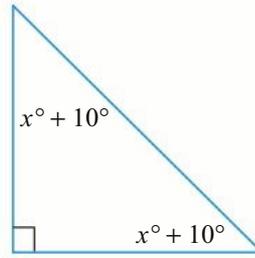

27. [Pythagoras / Trigonometry] \*  
Find the value of  $x$ , given  $\sin \alpha = 0.3$




28. [Shape / Location]  
Two of these triangles are similar. Which is the odd one out?

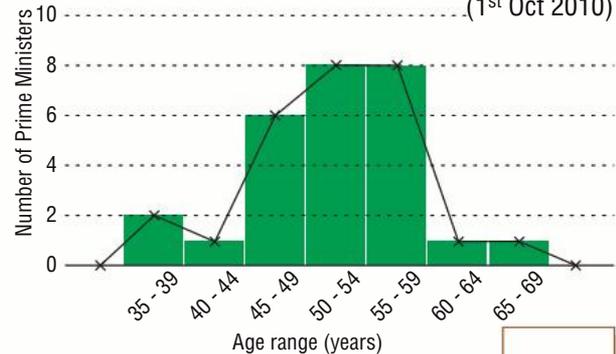



29. [Angles] \*  
Find the value of  $x^\circ$ .

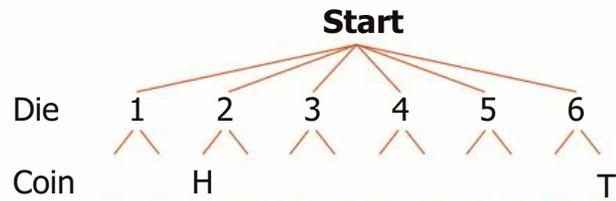



30. [Statistics]  
How many prime ministers began their term in office before the age of 50?

Age of Australian Prime Ministers beginning their term (1<sup>st</sup> Oct 2010)




31. [Probability]  
A die is rolled, and then a coin tossed. What is the probability of throwing a tail and a five?  
[Complete the tree diagram to help solve the problem.]




32. [Problem Solving 1] \*  
Fill in the magic square.  
[Every row, column and diagonal has the same sum.]

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

33. [Problem Solving 2] \*  
I have square paving tiles in two different colours. I want you to design for me a paved area that is made up of a rectangle in one colour surrounded by a border in the other colour. I want however to use exactly the same number of pavers of each colour and I want the total paved area to be as large as possible. How many pavers do I need?



Name: .....

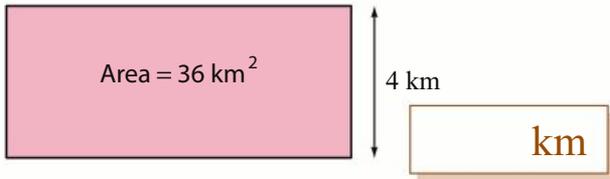
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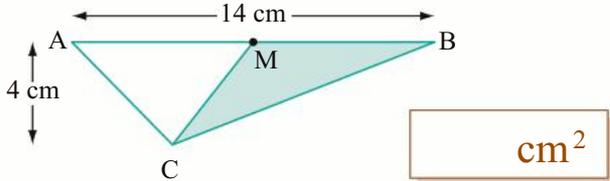
- |  |   |
|--|---|
| <p><b>1.</b> [Long <math>\times, \div</math>] *<br/><math>18.7 \times 8 =</math> <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>2.</b> [Decimal <math>+, -</math>]<br/><math>0.7 + 3.5 - 0.5 =</math> <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>3.</b> [Decimal <math>\times, \div</math>] *<br/><math>0.4 \div 5 =</math> <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>4.</b> [Fraction <math>+, -</math>] *<br/><math>\frac{1}{2} - \frac{1}{3} =</math> <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>5.</b> [Fraction <math>\times, \div</math>] *<br/><math>1\frac{1}{9} \times 1\frac{7}{2} =</math> <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>6.</b> [Percentages] *<br/>Find 100%, given that 50% is \$28. <input style="width: 60px; height: 25px;" type="text"/> \$</p> <p><b>7.</b> [Integer <math>+, -</math>]<br/><math>7 + (3 - 9) =</math> <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>8.</b> [Integer <math>\times, \div</math>]<br/><math>(+5) \times (-3q) =</math> <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>9.</b> [Rates / Ratios] *<br/>Renee built a Lego house using white, blue and red bricks in the ratio 2 : 8 : 5. Of the 150 bricks used, how many were blue? <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>10.</b> [Indices] *<br/>Simplify <math>\frac{3(t^2)^{-2}}{t^{-5}}</math> <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>11.</b> [Square Roots / Surds] *<br/>Evaluate <math>\frac{5\sqrt{80}}{\sqrt{5}}</math> <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>12.</b> [Order of Operations] *<br/><math>15 \times 36 \times (2 - 2) + 9 =</math> <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>13.</b> [Exploring Number] *<br/>Find <math>\frac{2}{9}</math> of \$3.60 <input style="width: 60px; height: 25px;" type="text"/> \$</p> | <p><b>14.</b> [Scientific Notation]<br/>How many significant figures are there in 200 000? <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>15.</b> [Number Patterns] *<br/>Write the first four terms of the sequence <math>t_n = 2n + 3</math> where <math>n \geq 1</math> <input style="width: 150px; height: 25px;" type="text"/></p> <p><b>16.</b> [Expressions]<br/>Simplify:<br/><math>(2x^2 + 3x + 5) + (x^2 - 2x - 3)</math> <input style="width: 150px; height: 25px;" type="text"/></p> <p><b>17.</b> [Substitution] *<br/>If <math>a = 5</math>, <math>b = 3</math> and <math>c = 1</math>, write true or false for the statement:<br/><math>b + c &lt; a</math> <input style="width: 100px; height: 25px;" type="text"/></p> <p><b>18.</b> [Expansion] *<br/>Expand <math>(x - 2)^2</math> <input style="width: 150px; height: 25px;" type="text"/></p> <p><b>19.</b> [Factorisation] *<br/>Factorise <math>x^2 + 8x + 12</math> <input style="width: 150px; height: 25px;" type="text"/></p> <p><b>20.</b> [Equations] *<br/>Solve for <math>x</math>:<br/><math>(x - 8)(x + 3) = 0</math> <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>21.</b> [Graphs &amp; Functions] *<br/>Use the rule <math>m = \frac{y_2 - y_1}{x_2 - x_1}</math> to find the gradient of the line joining the points P(3,2) and Q(1,5) <input style="width: 60px; height: 25px;" type="text"/></p> <p><b>22.</b> [Units of Measurement / Time] *<br/>The normal landing speed of a jet aircraft is approximately 270 km/h. How many m/s is this equivalent to? <input style="width: 100px; height: 25px;" type="text"/></p> |
|--|---|

QUOTE OF THE WEEK: Constant dripping hollows out a stone. Lucretius

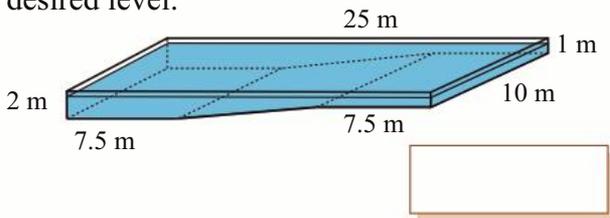
23. [Perimeter] \*  
Find the perimeter of the rectangle.



24. [Area] \*  
Find the area of the shaded triangle, given that M is the midpoint of AB.



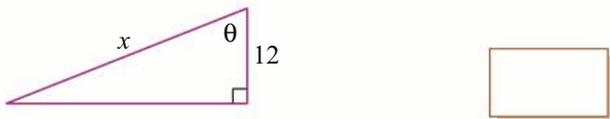
25. [Volume] \*  
The water level in a public swimming pool has fallen 4 cm due to evaporation. Use the pool dimensions to find how many litres of water must be added to the pool to reach the desired level.



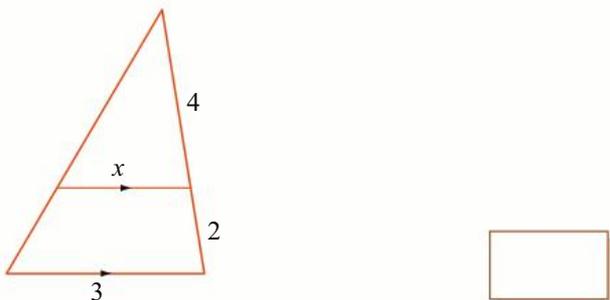
26. [Surface Area] \*  
Using  $TSA = 4\pi r^2$  and  $\pi \approx \frac{22}{7}$ , find the surface area of the sphere.



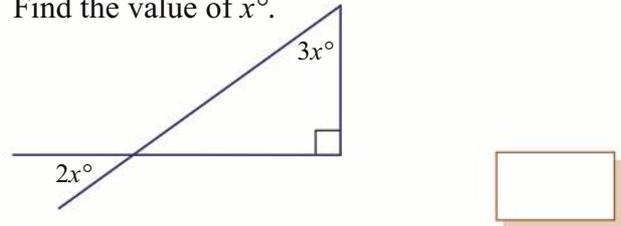
27. [Pythagoras / Trigonometry] \*  
Find the value of  $x$ , given  $\cos \theta = 0.4$



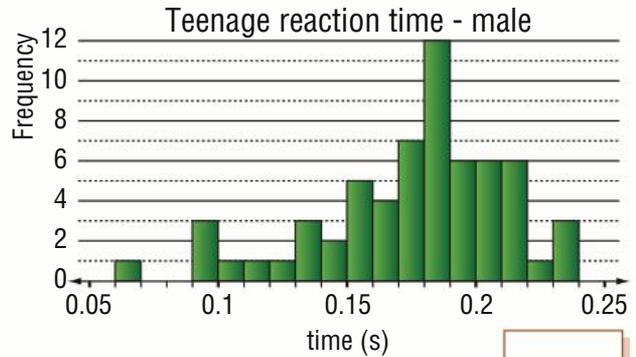
28. [Shape / Location]  
Find the value of  $x$ . [All measurements are in cm.]



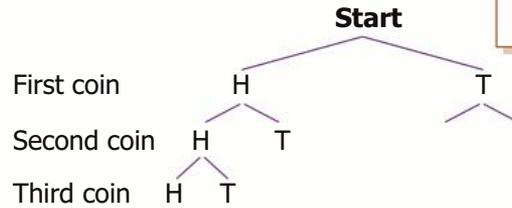
29. [Angles] \*  
Find the value of  $x^\circ$ .



30. [Statistics]  
How many teenage males had a reaction time of 0.15 to 0.18 seconds?



31. [Probability]  
Three coins are tossed. What is the probability of having two heads and one tail? [Complete the tree diagram to help solve the problem.]



32. [Problem Solving 1] \*  
Chuquet posed the following problem in the year 1484:  
“A builder made a deal with a man to build a house in 30 days. For every day of work the builder was to be paid 5 coins but for every day of rest he would pay back 6 coins. When the house was finished the builder had gained 18 coins. Find the number of days the builder worked.”

33. [Problem Solving 2] \*  
A bricklayer knows from experience that no more than 6% of any load of bricks is broken on delivery. Since it is often not possible to purchase exactly matching bricks at a later date, it is important that the original order include sufficient bricks for the job. If bricks can only be ordered in lots of 100, and 8000 bricks are required to finish the job, how many bricks should the bricklayer order?



Name: .....

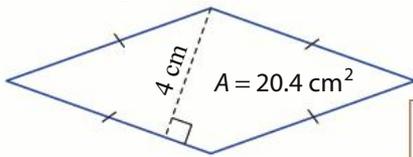
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1. [Long  $\times, \div$ ] \*  
 $6.03 \div 9 =$
2. [Decimal  $+, -$ ] \*  
 $4 + 0.2 - 2.3 =$
3. [Decimal  $\times, \div$ ] \*  
 $0.75 \times 0.04 =$
4. [Fraction  $+, -$ ] \*  
 $\frac{2}{5} - \frac{1}{3} =$
5. [Fraction  $\times, \div$ ] \*  
 $2 \times 2\frac{4}{5} =$
6. [Percentages] \*  
 Find 100%, given that 2% is \$4.
7. [Integer  $+, -$ ] \*  
 $(6 - 11) - 2 =$
8. [Integer  $\times, \div$ ] \*  
 $(-7) \times (-2t) =$
9. [Rates / Ratios] \*  
 The ratio of the pages Heath has read to those he hasn't read from a book of 360 pages is 5 : 4. How many pages has Heath read?
10. [Indices] \*  
 Simplify  $\frac{4s}{s^{-4}}$
11. [Square Roots / Surds] \*  
 Evaluate  $6\sqrt{24} \div 2\sqrt{6}$
12. [Order of Operations] \*  
 $(3 - 3)^9 + (1999 \times 3)^0 =$
13. [Exploring Number] \*  
 Find  $\frac{7}{8}$  of 1 tonne in kilograms.
14. [Scientific Notation]  
 How many significant figures are there in 0.0407?
15. [Number Patterns] \*  
 Write the first four terms of the sequence  $t_n = 5n$  where  $n \geq 1$
16. [Expressions]  
 Simplify:  
 $(3x + 5y + 1) + (2x - 3y + 4)$
17. [Substitution] \*  
 If  $a = 3$  and  $b = 4$ , write true or false for the statement:  
 $(a + b)^2 = a^2 + 2ab + b^2$
18. [Expansion] \*  
 Expand and simplify  
 $(x - 1)(2x + 3)$
19. [Factorisation] \*  
 Factorise  
 $x^2 - 11x + 30$
20. [Equations] \*  
 Solve for  $x$ :  
 $(x + 2)(x - 5) = 0$
21. [Graphs & Functions] \*  
 Use the rule  $m = \frac{y_2 - y_1}{x_2 - x_1}$  to find the gradient of the line joining the points A(-1,1) and B(0,2)
22. [Units of Measurement / Time] \*  
 A lion can run at 80 km/h. How many m/s is this equivalent to? [Round to the nearest whole number.]

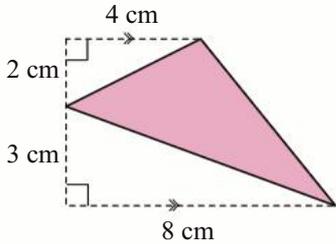
QUOTE OF THE WEEK: I get by with a little help from my friends. John Lennon

23. [Perimeter] \*  
Find the perimeter of the rhombus.



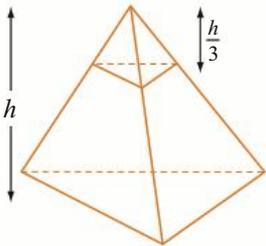
cm

24. [Area] \*  
Find the area of the shaded triangle.

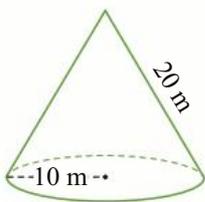


cm<sup>2</sup>

25. [Volume] \*  
For the pyramids shown, find the ratio:  
Volume of pyramid with height  $h$   
Volume of pyramid with height  $\frac{h}{3}$

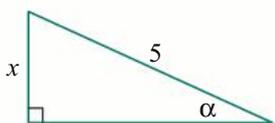


26. [Surface Area] \*  
Find the total surface area of the cone.  
(Use  $\pi \approx 3.14$ )

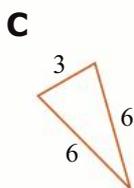
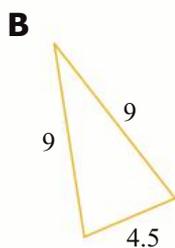
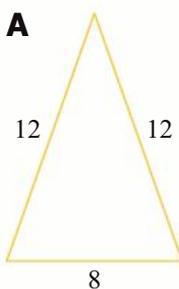


m<sup>2</sup>

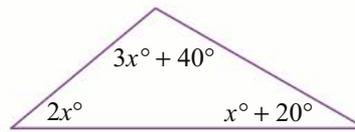
27. [Pythagoras / Trigonometry] \*  
Find the value of  $x$ , given  $\sin \alpha = 0.42$



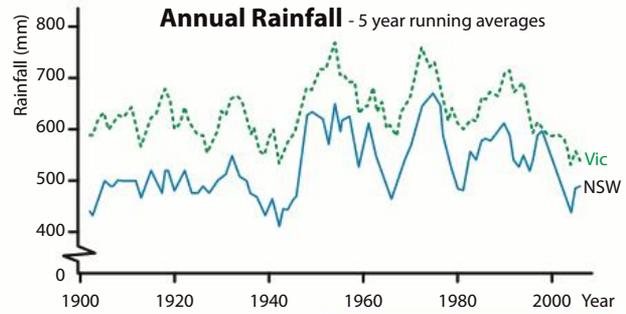
28. [Shape / Location]  
Two of these triangles are similar. Which is the odd one out?



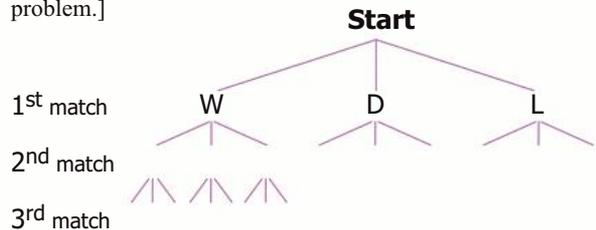
29. [Angles] \*  
Find the value of the biggest angle in the triangle. [Triangle not drawn to scale.]



30. [Statistics]  
During which 20-year period did both NSW and Victoria have the largest increase in rainfall?



31. [Probability]  
A soccer team plays three matches which it can either win (W), lose (L) or draw (D). What is the probability of having 2 wins and 1 draw? [Complete the tree diagram to help solve the problem.]



32. [Problem Solving 1] \*  
 $\frac{0.6 \times 0.125}{0.25 \times 0.1} =$

33. [Problem Solving 2] \*  
A gambler begins with \$1024. He bets half of all he has on the toss of a coin. So pleased is he with the win that he bets, in exactly the same fashion, another 9 times. "Happily," he says, "I won as often as I lost. So I presume I've come out even." Just how much money will he have after the 10 bets? [Example: If he bets \$100 he will either lose the \$100 or win \$100.]

\$



Name: .....

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1. [Long  $\times, \div$ ] \*  
 $4.56 \div 5 =$
2. [Decimal  $+, -$ ]  
 $0.25 + 0.22 - 0.27 =$
3. [Decimal  $\times, \div$ ] \*  
 $45 \div 1.5 =$
4. [Fraction  $+, -$ ] \*  
 $\frac{1}{3} + \frac{1}{4} =$
5. [Fraction  $\times, \div$ ] \*  
 $\frac{5}{9} \div 2\frac{6}{5} =$
6. [Percentages] \*  
Find 100%, given that 5% is \$6.
7. [Integer  $+, -$ ]  
 $(6 - 3) - 9 =$
8. [Integer  $\times, \div$ ]  
 $(+20k) \div (-4) =$
9. [Rates / Ratios] \*  
The ratio of the soda water to lemon juice in lemonade is 9 : 1. How much lemon juice is there in 2 L of lemonade?
10. [Indices] \*  
Simplify  $\frac{6p^2}{3p^{-2}}$
11. [Square Roots / Surds] \*  
Evaluate  $9\sqrt{2} \div 6\sqrt{18}$
12. [Order of Operations] \*  
 $(4 - 4)^8 \div 1998 =$
13. [Exploring Number] \*  
Find  $1\frac{1}{2}$  of \$84
14. [Scientific Notation]  
How many significant figures are there in 5050?
15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = n^2$  where  $n \geq 1$
16. [Expressions]  
Simplify:  
 $(2x + y + 5) + (x + 2y - 3)$
17. [Substitution] \*  
If  $a = 5$ ,  $b = 3$  and  $c = 1$ , write true or false for the statement:  
 $12 - b = a + c + 4$
18. [Expansion] \*  
Expand and simplify  
 $(x + 4)^2 - 10$
19. [Factorisation]  
Factorise  
 $x^2 + 3x - 10$
20. [Equations] \*  
Solve for  $x$ :  
 $(x - 4)(x + 9) = 0$
21. [Graphs & Functions] \*  
Use the rule  $m = \frac{y_2 - y_1}{x_2 - x_1}$  to find the gradient of the line joining the points A(2,-2) and B(-3,1)
22. [Units of Measurement / Time] \*  
A dolphin can swim at up to 18 m/s. What is this speed in km per hour? [Round to the nearest whole number.]

QUOTE OF THE WEEK: One of the advantages of being young is that you don't let common sense get in the way of doing things everybody else knows are impossible.

**23.** [Perimeter] \*  
Find the perimeter of the parallelogram.

**24.** [Area] \*  
Find the area of the shaded triangle, given that M, N and P are midpoints of the sides of the triangle ABC.

**25.** [Volume] \*  
A brick 12 cm by 8 cm by 25 cm is dropped into a deep rectangular tank which is half full of water. If the base of the tank is 15 cm wide and 40 cm long, by how much will the water level in the tank rise?

**26.** [Surface Area] \*  
Using  $\pi \approx 3.14$  find the surface area of the sphere.

**27.** [Pythagoras / Trigonometry] \*  
Find the value of  $x$ , given  $\cos \theta = 0.69$

**28.** [Shape / Location]  
Find the value of  $x$ . [All measurements are in cm.]

**29.** [Angles] \*  
Find the value of the smallest angle in the triangle. [Triangle not drawn to scale.]

**30.** [Statistics]  
At what age can female graduates with a 'bachelor or higher degree' boast that they have earned US\$1 000 000 in total?

**31.** [Probability]  
A drawer contains three ties, identical except in colour. One is green (G), one black (B) and one navy (N). Two ties are selected at random from the drawer. Find the probability that one of the chosen ties is black. [Complete the tree diagram to help solve the problem.]

**32.** [Problem Solving 1] \*  
Find positive integers  $a, b, c$  and  $d$  if:  
 $a + a = b,$   
 $b + b = c,$   
 $c + c = d,$  and  
 $a + b + c + d = 360$

$a = \quad b = \quad c = \quad d =$

**33.** [Problem Solving 2] \*  
The sum of  $x$  consecutive numbers is  $12x + 4$ . Find the maximum possible value of  $x$ .



Name: .....

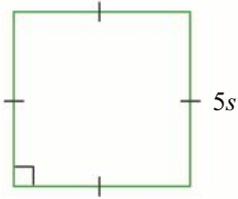
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1. [Long  $\times, \div$ ] \*  
 $18.9 \times 47 =$
2. [Decimal  $+, -$ ]  
 $10 + 4.2 - 0.01 =$
3. [Decimal  $\times, \div$ ] \*  
 $1 \div 0.008 =$
4. [Fraction  $+, -$ ] \*  
 $\frac{1}{3} + \frac{1}{4} + \frac{1}{5} =$
5. [Fraction  $\times, \div$ ] \*  
 $\frac{3}{4} \times 1\frac{4}{5} =$
6. [Percentages] \*  
If the 10% GST on a pair of shoes is \$10, what is the total price of the shoes?  \$
7. [Integer  $+, -$ ] \*  
 $(4 - 5) - (3 - 6) =$
8. [Integer  $\times, \div$ ] \*  
 $(10 - 3) \times (3 - 10) =$
9. [Rates / Ratios] \*  
Find the missing term in the proportion:  
 $\frac{3}{5} = \frac{k}{35}$    $k =$
10. [Indices] \*  
If  $2^x = 0.125$ , then  $x =$
11. [Square Roots / Surds] \*  
Simplify  $2\sqrt{8} + 2\sqrt{2}$
12. [Order of Operations] \*  
 $(25 - 5^2) \div 2004 + 1998 =$
13. [Exploring Number] \*  
A pair of socks cost \$3.80. How many pairs can you buy with \$25?
14. [Scientific Notation] \*  
Evaluate  $(2.5 \times 10^4) \times (4 \times 10^{-6})$
15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = 11 - n$  where  $n \geq 1$
16. [Expressions]  
Using algebraic notation, write three consecutive whole numbers starting with  $n$ .
17. [Substitution] \*  
If  $v = u + at$  find the speed  $v$ , in m/s, if  $u = 2$  m/s,  $a = 3$  m/s<sup>2</sup> and  $t = 5$  s.
18. [Expansion] \*  
Expand  $(b - 3)^2$
19. [Factorisation] \*  
Factorise and simplify  
 $\frac{x^2 - x - 12}{x + 3}$
20. [Equations] \*  
Solve for  $x$ :  
 $\frac{x}{2} + \frac{x}{3} = 5$
21. [Graphs & Functions] \*  
Complete the table:  

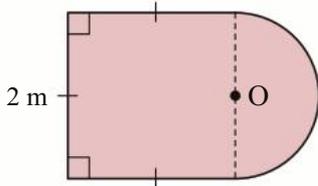
rule	gradient ( $m$ )	$x$ -intercept	$y$ -intercept ( $c$ )
$y = x + 6$			
$y = 2x + 6$			
22. [Units of Measurement / Time]  
How many litres are there in  $v$  millilitres?

23. [Perimeter] \*  
Write a formula for the perimeter  $P$  of the square.



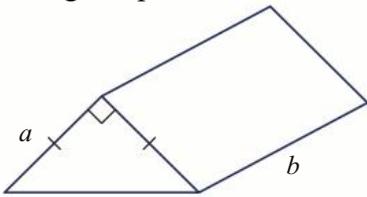
$P =$

24. [Area] \*  
Find the area of the shape. (Use  $\pi \approx 3.14$ )



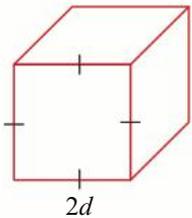
$\text{m}^2$

25. [Volume] \*  
Write a formula for the volume  $V$  of the triangular prism.



$V =$

26. [Surface Area] \*  
Write a formula for the total surface area (TSA) of the cube.



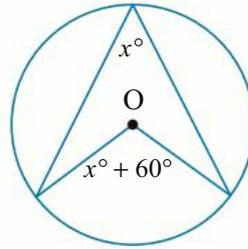
$TSA =$

27. [Pythagoras / Trigonometry] \*  
A triangle has sides of lengths 5 m, 23 m and 24 m. Is it a right-angled triangle?

28. [Shape / Location] \*  
Circle the net that **can not** be folded to form a model of a polyhedron.



29. [Angles] \*  
Find the value of  $x^\circ$ .

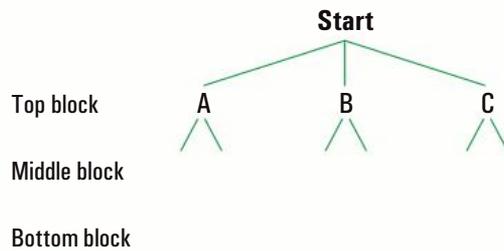


30. [Statistics] \*  
Calculate the mean and range for the data displayed in the frequency table.

Score	2	3	4	5	6
Frequency	5	4	7	6	4

mean =  range =

31. [Probability] \*  
In how many different ways can three blocks, A, B and C, be stacked in a pile?  
[Complete the tree diagram to help solve the problem.]



32. [Problem Solving 1] \*  
Pierre de Fermat, a 17<sup>th</sup> century French lawyer, stated that any whole number can be written as the sum of four, or fewer, square numbers. For example:  $15 = 3^2 + 2^2 + 1^2 + 1^2$ . Write 56 as the sum of four, or fewer, square numbers.

33. [Problem Solving 2] \*  
At the end of a set of tennis, Gabby had won exactly 50% of the points played but lost the set! What is the least number of games that Gabby must have won in the set?



Name: .....

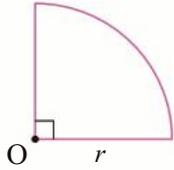
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1. [Long  $\times, \div$ ] \*  
 $15.6 \times 35 =$
2. [Decimal  $+, -$ ]  
 $3.142 - 0.14 - 0.002 =$
3. [Decimal  $\times, \div$ ] \*  
 $25 \times 0.04 =$
4. [Fraction  $+, -$ ] \*  
 $\frac{2}{3} - \frac{2}{5} + \frac{1}{15} =$
5. [Fraction  $\times, \div$ ] \*  
 $3\frac{1}{2} \div \frac{7}{3} =$
6. [Percentages] \*  
If the 10% GST on the price of a telescope is \$30, what is the total price of the telescope?
7. [Integer  $+, -$ ] \*  
 $(6 + 3) + (2 - 4) =$
8. [Integer  $\times, \div$ ] \*  
 $(4 - 6) \times (3 - 8) =$
9. [Rates / Ratios] \*  
Find the missing term in the proportion:  
 $\frac{y}{8} = \frac{15}{40}$
10. [Indices] \*  
If  $3^x = \frac{1}{81}$ , find the value of  $x$ .
11. [Square Roots / Surds] \*  
Simplify  $4\sqrt{7} - 3\sqrt{63}$
12. [Order of Operations] \*  
 $(6 \times 4 - 23)^9 - 2^3 =$
13. [Exploring Number] \*  
Can you drive 475 km at an average speed of 80 km/h in under 6 hours?
14. [Scientific Notation] \*  
Evaluate  $(2 \times 10^{-1}) \times (5 \times 10^2)$
15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = 5(n - 1)$  where  $n \geq 1$
16. [Expressions]  
Using algebraic notation, write two consecutive whole numbers starting with  $2n$ .
17. [Substitution] \*  
If  $x = vt$  find the distance  $x$ , in km, when  $v = 25$  km/h and  $t = 120$  min.
18. [Expansion] \*  
Expand and simplify  $(t + 3)^2 - 4t$
19. [Factorisation] \*  
Factorise and simplify  $\frac{x^2 + 4x + 3}{x + 1}$
20. [Equations] \*  
Solve for  $x$ :  
 $\frac{x}{2} + \frac{x}{4} = 3$
21. [Graphs & Functions] \*  
Complete the table:  

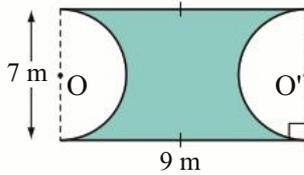
rule	gradient ( $m$ )	$x$ -intercept	$y$ -intercept ( $c$ )
$y = -x + 1$			
$y = x - 1$			
22. [Units of Measurement / Time]  
How many grams are there in  $w$  kilograms?

23. [Perimeter] \*  
Write a formula for the perimeter  $P$  of the shape. [Leave your answer as a multiple of  $\pi$ .]



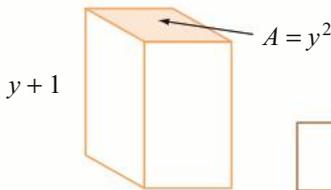
$P =$

24. [Area] \*  
Find the area of the shaded region. (Use  $\pi \approx \frac{22}{7}$ )



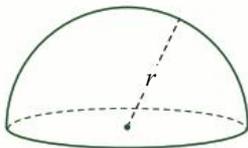
$m^2$

25. [Volume] \*  
Write a formula for the volume  $V$  of the rectangular prism.



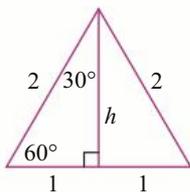
$V =$

26. [Surface Area] \*  
The surface area of a sphere is  $4\pi r^2$ . Write a formula for the total surface area (TSA) of the solid hemisphere. [Leave your answer as a multiple of  $\pi$ .]

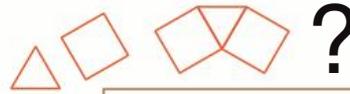


$TSA =$

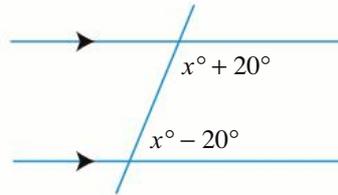
27. [Pythagoras / Trigonometry] \*  
Find the height of the equilateral triangle. [Express your answer in surd form.]



28. [Shape / Location]  
I have three squares and two triangles, all of which have side lengths of 4 cm. I attempt to form a net for a polyhedron by taping the shapes together along their edges. If this can be done, into what shape will the net fold?



29. [Angles] \*  
Find the value of  $x^\circ$ .

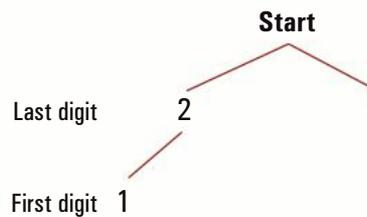


30. [Statistics] \*  
Calculate the mean and range for the data displayed in the frequency table.

Score	20	21	22	23	24	25
Frequency	2	3	5	6	3	1

mean =  range =

31. [Probability]  
How many different two-digit even numbers can be made using the digits 1, 2, 3 and 4 if the digits can not be repeated? [Complete the tree diagram to help solve the problem.]



32. [Problem Solving 1] \*  
If each letter represents a different digit, none of which is zero, find the value of the number 'DANGER'. [Clue: SOS = 323]

$$\begin{array}{r} \text{CROSS} \\ + \text{ROADS} \\ \hline \text{DANGER} \end{array}$$

33. [Problem Solving 2] \*  
What are the last two digits in the expansion of  $6^{2012}$ ?



Name: .....

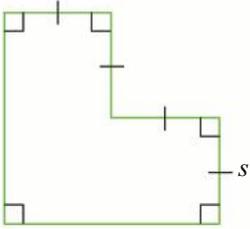
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1. [Long  $\times, \div$ ] \*  
 $612 \div 18 =$
2. [Decimal  $+, -$ ] \*  
 $1.1 + 0.49 + 0.01 =$
3. [Decimal  $\times, \div$ ] \*  
 $2.25 \div 0.9 =$
4. [Fraction  $+, -$ ] \*  
 $\frac{2}{3} + \frac{3}{4} - \frac{5}{12} =$
5. [Fraction  $\times, \div$ ] \*  
 $1\frac{1}{9} \times 1\frac{3}{6} =$
6. [Percentages] \*  
If the 10% GST on admission to the game is \$2, what is the total price of admission?
7. [Integer  $+, -$ ] \*  
 $(7 - 11) - (1 - 8) =$
8. [Integer  $\times, \div$ ] \*  
 $\frac{6 - 9}{9 - 6} =$
9. [Rates / Ratios] \*  
Find the missing term in the proportion:  
 $\frac{36}{40} = \frac{9}{x}$
10. [Indices] \*  
If  $3 \times 2^y = 12$ , then  $y =$
11. [Square Roots / Surds] \*  
Simplify  $3\sqrt{8} + 2\sqrt{18}$
12. [Order of Operations] \*  
 $(1001 - 10^3) \times 2012 =$
13. [Exploring Number] \*  
Can you drive 642 km at an average speed of 90 km/h in under 7 hours?
14. [Scientific Notation] \*  
Evaluate  $(1.6 \times 10^2) \times (3 \times 10^5)$
15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = 2(n + 1)$  where  $n \geq 1$
16. [Expressions] \*  
Using algebraic notation, write three consecutive whole numbers starting with  $n - 2$ .
17. [Substitution] \*  
Given  $a = \frac{v}{t}$  find the acceleration  $a$ , in  $\text{m/s}^2$ , when  $v = 300 \text{ m/s}$  and  $t = 60 \text{ s}$ .
18. [Expansion] \*  
Expand and simplify  $(2m + 3)(m - 1)$
19. [Factorisation] \*  
Factorise and simplify  $\frac{x^2 + 11x + 10}{x + 1}$
20. [Equations] \*  
Solve for  $x$ :  
 $\frac{x}{3} + \frac{x}{4} = 7$
21. [Graphs & Functions] \*  
Complete the table:
 

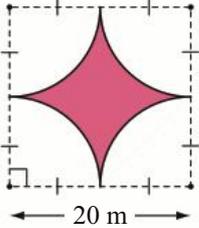
rule	gradient ( $m$ )	$x$ -intercept	$y$ -intercept ( $c$ )
$y = x$			
$y = x - 1$			
22. [Units of Measurement / Time] \*  
How many years are there in  $t$  decades?

23. [Perimeter] \*  
Write a formula for the perimeter  $P$  of the polygon.



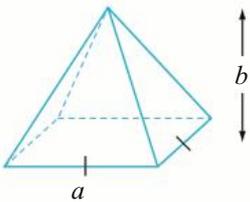
$P =$

24. [Area] \*  
Find the area of the shaded region.  
(Use  $\pi \approx 3.14$ )



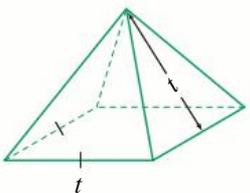
$\text{m}^2$

25. [Volume] \*  
Write a formula for the volume  $V$  of the square pyramid.



$V =$

26. [Surface Area] \*  
Write a formula for the total surface area ( $TSA$ ) of the square pyramid.

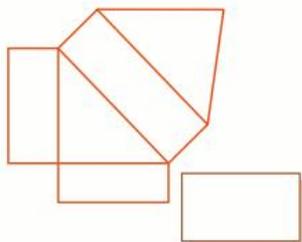


$TSA =$

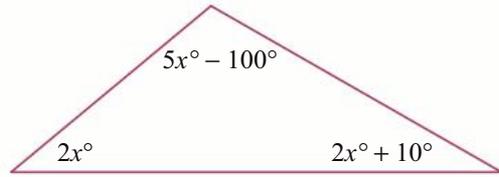
27. [Pythagoras / Trigonometry] \*  
Find the distance between the points  $A(1,5)$  and  $B(4,1)$ .

28. [Shape / Location]  
Which shape can this net be used to make?

- A) cube
- B) square pyramid
- C) triangular prism
- D) rectangular prism
- E) tetrahedron



29. [Angles] \*  
Find the value of the biggest angle in the triangle below. [Triangle not drawn to scale.]

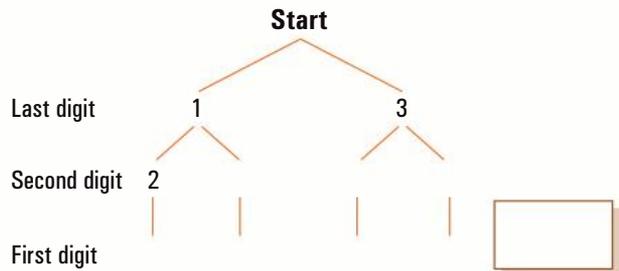


30. [Statistics] \*  
Calculate the mean and range for the data displayed in the frequency table.

Score	5	6	7	8	9
Frequency	5	2	9	6	3

mean =  range =

31. [Probability]  
How many odd, three-digit numbers can be made using the digits 1, 2 and 3 once each?  
[Complete the tree diagram to help solve the problem.]



32. [Problem Solving 1] \*  
Fill in the missing digits in the multiplication.

$$\begin{array}{r}
 22\ \square \\
 \times \quad 2\ \square \\
 \hline
 \square\square\square \\
 \square 5\square 0 \\
 \hline
 5\square\square 2
 \end{array}$$

33. [Problem Solving 2] \*  
How many squares are there on a chess board? [Hint: Remember that apart from the 64 smallest squares there are other squares of a larger size  $2 \times 2$ ,  $3 \times 3$ , etc.]



Name: .....

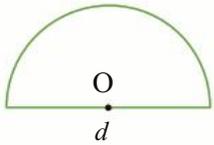
Due Date: ..... / ..... / .....

Parent's Signature: .....

1. [Long  $\times, \div$ ] \*  
 $31.6 \times 25 =$
2. [Decimal  $+, -$ ]  
 $32 - 0.5 + 1.64 =$
3. [Decimal  $\times, \div$ ] \*  
 $0.04 \div 8 =$
4. [Fraction  $+, -$ ] \*  
 $\frac{1}{2} + \frac{2}{3} - \frac{4}{5} =$
5. [Fraction  $\times, \div$ ] \*  
 $3\frac{1}{7} \div \frac{11}{7} =$
6. [Percentages] \*  
If the 10% GST on the price of a ticket is \$1.50, what is the total price of the ticket? \$
7. [Integer  $+, -$ ] \*  
 $(8 - 4) - (4 - 8) =$
8. [Integer  $\times, \div$ ] \*  
 $(4 - 9) \times (6 - 3) =$
9. [Rates / Ratios] \*  
Find the missing term in the proportion:  
 $\frac{10}{z} = \frac{25}{45}$    $z =$
10. [Indices] \*  
Given  $\frac{1}{5^m} = 0.04$ , find the value of  $m$ .
11. [Square Roots / Surds] \*  
Simplify  $2 + 3\sqrt{2} + 5 - \sqrt{72}$
12. [Order of Operations] \*  
 $(267 \div 6)^0 + 10 =$
13. [Exploring Number] \*  
If kitchen chairs cost \$48 each, how many can you buy with \$200?
14. [Scientific Notation] \*  
Evaluate  $(8 \times 10^{-3}) \div (2 \times 10^{-2})$
15. [Number Patterns] \*  
Write the first four terms of the sequence  $t_n = n(n + 1)$  where  $n \geq 1$
16. [Expressions]  
Using algebraic notation, write two consecutive whole numbers starting with  $2n - 1$ .
17. [Substitution] \*  
Given  $I = \frac{V}{R}$  find the current  $I$ , in Amps, when  $V = 240$  Volts and  $R = 1200$  Ohms.
18. [Expansion] \*  
Expand  $(2r - 1)^2$
19. [Factorisation] \*  
Factorise and simplify  
 $\frac{x^2 - 7x + 12}{x - 3}$
20. [Equations] \*  
Solve for  $x$ :  
 $\frac{x}{4} - \frac{x}{2} = 6$
21. [Graphs & Functions]  
Complete the table:  

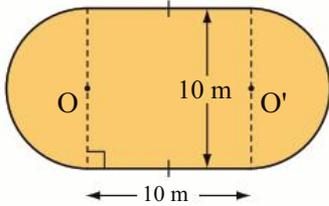
rule	gradient ( $m$ )	$x$ -intercept	$y$ -intercept ( $c$ )
$y = 3x$			
$y = 3x - 3$			
22. [Units of Measurement / Time]  
How many centimetres are there in  $d$  metres?

23. [Perimeter] \*  
Write a formula for the perimeter  $P$  of the shape. [Leave your answer as a multiple of  $\pi$ .]



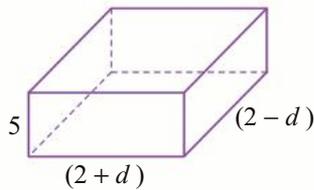
$P =$

24. [Area] \*  
Find the area of the shaded region. (Use  $\pi \approx 3.14$ )



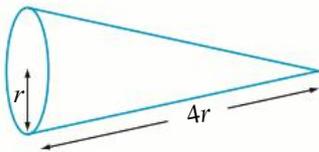
$m^2$

25. [Volume] \*  
Write a formula for the volume  $V$  of the rectangular prism.



$V =$

26. [Surface Area] \*  
Write a simple formula for the total surface area of the cone in terms of the symbols given. [Leave your answer as a multiple of  $\pi$ .]

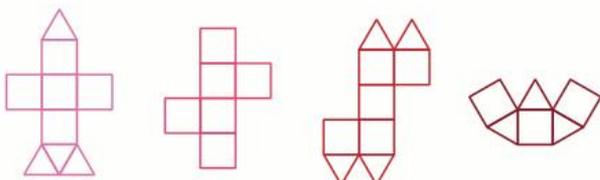


$TSA =$

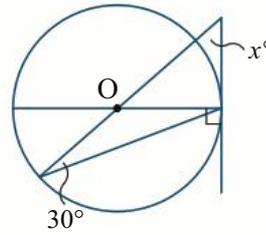
27. [Pythagoras / Trigonometry]  
A radio mast is 16 metres high. If support wires are to be attached three quarters of the way up the mast and anchored 9 metres from its base, how long must the support wires be?

$m$

28. [Shape / Location]  
Circle the net that **can not** be folded to form a model of a polyhedron.



29. [Angles] \*  
Find the value of  $x^\circ$ .

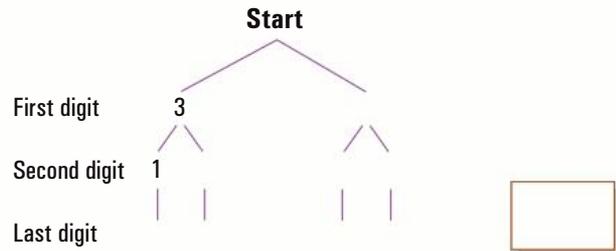


30. [Statistics] \*  
Calculate the mean and range for the data displayed in the frequency table.

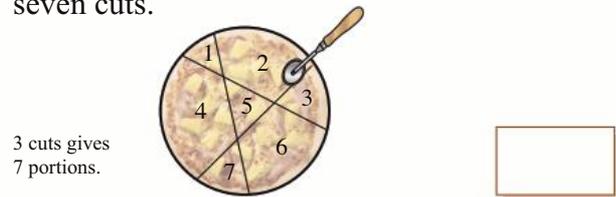
Score	20	21	22	23	24
Frequency	1	3	4	1	2

mean =  range =

31. [Probability]  
How many different three-digit numbers greater than 200 can be made using the digits 1, 3 and 5 once each? [Complete the tree diagram to help solve the problem.]



32. [Problem Solving 1] \*  
A circular pizza can be cut into seven portions using just three straight cuts. Find the maximum number of portions obtainable using seven cuts.



33. [Problem Solving 2] \*  
If you calculated the following sum  
 $9 + 99 + 999 + 9999 + 99999 + \dots$   
where the last number to be added consists of 99 digits of 9, how many times would the digit 1 appear in your answer?