sixth edition

MATHS MATE

LIME

J. B. Wright & I. Tutos

MATHS MATE

Student Workbook - 6th Edition

ISBN 978 1 921535 86 4

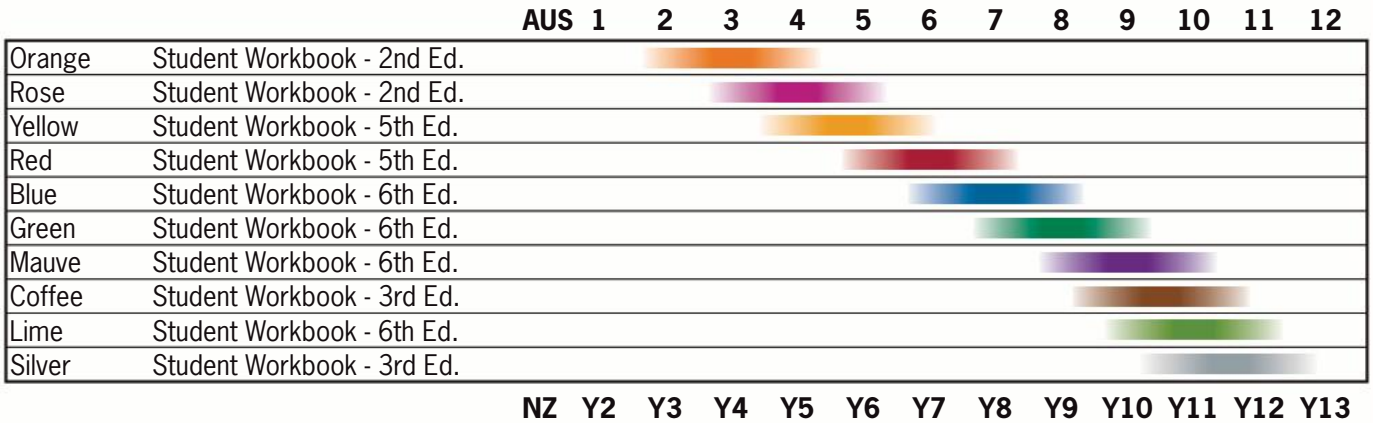
J. B. Wright & I. Tutos

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



Published and distributed by

The Educational Advantage Pty Ltd
Building 5 / 29 Clarice Road
Box Hill South VIC 3128 AUSTRALIA
Phone: 613 9899 9065
Email: info@mathsmate.net
Website: www.mathsmate.net

New Zealand books distributed by

Learning Works
408 Anglesea Street
Hamilton 3240 NEW ZEALAND
Phone: 647 929 4063
Email: info@mathsmate.co.nz
Website: www.mathsmate.co.nz

Editions: 1st Ed. - 1995, 2nd Ed. - 2001, 3rd Ed. - 2007, 4th Ed. - 2010, 5th Ed. - 2013, 6th Ed - 2023

Maths Mate Lime cover painting

Turtle Reef - 2003
Acrylic on canvas 50 × 60 cm
by Australian artist Susan Betts - Kokata, Mirning and Wirangu.

'Turtle Reef' 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

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NUMBER	1. [Long ×,÷]	1	1	1	1	1.1	1	1	1	1	1.4,6
	2. [Decimal +,–]	2	2	2	2	2.1	2	2	2	2	2.2
	3. [Decimal ×,÷]	3	3	3	3	3.2	3	3	3	3	3.3
	4. [Fraction +,–]	4	4	4	4	4.1,2	4	4	4	4	4.3,4
	5. [Fraction ×,÷]	5	5	5	5	5.2	5	5	5	5	5.5
	6. [Percentages]	6	6	6	6	6.3,4	6	6	6	6	6.5,9
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	8. [Integer +,–]	8	8	8	8	8.1	8	8	8	8	8.2
	9. [Integer ×,÷]	9	9	9	9	9.1	9	9	9	9	9.2
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	12. [Square Roots]	12	12	12	12	12.2	12	12	12	12	12.3
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	15. [Number Patterns]	15	15	15	15	15.2	15	15	15	15	15.3
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	24. [Surface Area]	24	24	24	24	24.2	24	24	24	24	24.3
	25. [Volume]	25	25	25	25	25.1,2	25	25	25	25	25.2
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	Total Correct										

MATHS MATE

Term 1 - Sheet 1

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷]

$902 \times 1000 =$

2. [Decimal +,–] *

$13.87 + 6.9 =$

3. [Decimal ×,÷]

$10 \times 0.064 =$

4. [Fraction +,–] *

$\frac{4}{15} + \frac{1}{15} =$

5. [Fraction ×,÷]

$\frac{2}{5} \times \frac{2}{7} =$

6. [Percentages] *

40% of 600 =

7. [Decimals / Fractions / Percentages] *

Complete the equivalent fractions:

$\frac{3}{5} = \frac{9}{\square} = \frac{\square}{60}$

8. [Integer +,–]

$(-14) + (+11) =$

9. [Integer ×,÷]

$(-7) \times (+11) =$

10. [Rates / Ratios] *

Simplify $\$4 : 50¢ : \$2.50$

11. [Indices] *

$4^4 =$

12. [Square Roots] *

$\sqrt{\frac{25}{64}} =$

13. [Exploring Number] *

$6 + 8 - (11 - 5) =$

14. [Financial Mathematics] *

Charlie paid a $200 deposit for a lay-by on a $2500 computer as the store demanded. What percentage of the sale price does the store expect on lay-by?

15. [Number Patterns]

Complete the pattern:

0 , 2 , 6 , 12 , 20 , ___ , ___

16. [Expressions]

Write as an expression:

3 times the product of m and n

17. [Substitution] *

If $x = 3$, find the value of $5x - 8$

18. [Expansion]

Expand $4(k - 5)$

19. [Factorisation]

Factorise $3r + 9s$

20. [Equations] *

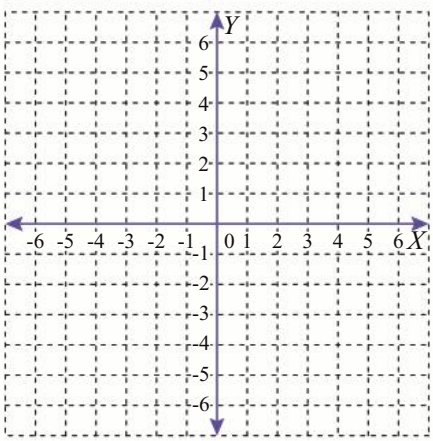
Solve for x: $4x - 3 = 0$

21. [Coordinate Geometry] *

Graph the line of equation $y = 2x$ by first completing this table of values.

[Label the line with the rule.]

x	–2	–1	0	1	2
y	–4				



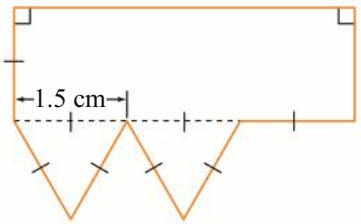
QUOTE OF THE WEEK: A wise man makes his own decisions, an ignorant man follows the public opinion. Chinese Proverb

22. [Units of Measurement / Time]

Which metric prefix is used to describe 1000 standard units?

23. [Perimeter / Area] *

Find the perimeter of the polygon.



cm

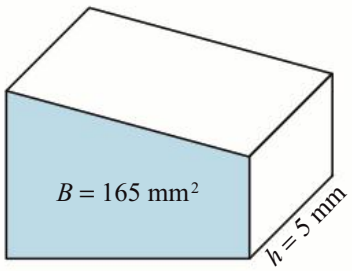
24. [Surface Area] *

Find the total surface area of a detergent box of width 80 mm, length 200 mm and height 150 mm.

mm^2

25. [Volume] *

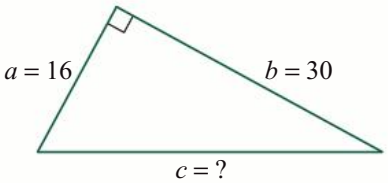
Using $V = Bh$ find the volume of the prism.



mm^3

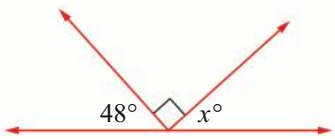
26. [Pythagoras / Trigonometry] *

For this triangle use Pythagoras' theorem $c^2 = a^2 + b^2$. Find the length of the hypotenuse.



27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

Sketch a hexagonal pyramid. How many edges does a hexagonal pyramid have?

edges =

29. [Statistics] *

Find the median and range of this set of data:
3.1, 3.1, 3.6, 3.6, 3.8, 4, 4.2, 4.5, 4.8, 4.9

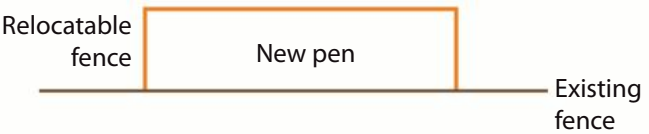
median = range =

30. [Probability] *

A 52-card deck of playing cards is shuffled, and one card is dealt from the top of the deck. What is the probability that it is a red court card? [Give your answer as a fraction in simplest form.]

31. [Problem Solving 1] *

A farmer wishes to make a rectangular pen using an existing section of straight fence and 36 m of relocatable fencing materials. What is the largest possible area of the pen?



m^2

32. [Problem Solving 2] *

The lines of a multiplication table are shown jumbled below. Which times table is it?

C × A = DI
C × F = ID
C × E = GE
C × H = C
C × C = FH
C × I = BA
C × G = AB
C × B = EG
C × D = HF

MATHS MATE

Term 1 - Sheet 2

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$268 \times 200 =$

2. [Decimal +,–]

$8.074 + 0.705 =$

3. [Decimal ×,÷]

$100 \times 0.35 =$

4. [Fraction +,–] *

$\frac{5}{16} - \frac{1}{16} =$

5. [Fraction ×,÷]

$\frac{3}{10} \times \frac{1}{2} =$

6. [Percentages] *

24% of 25 =

7. [Decimals / Fractions / Percentages] *

Complete the equivalent fractions:

$\frac{24}{36} = \frac{\square}{12} = \frac{2}{\square}$

8. [Integer +,–]

$(-10) + (-7) =$

9. [Integer ×,÷]

$(+3) \times (+13) =$

10. [Rates / Ratios] *

On average a horse needs 3 hours of sleep per day, while a python needs 18 hours of sleep per day. What is the ratio of the hours of sleep needed by a horse to the hours of sleep needed by a python?

11. [Indices]

$10^0 =$

12. [Square Roots] *

$\sqrt{1\frac{24}{25}} =$

13. [Exploring Number] *

$5 \times 8 + 6 \div 6 - 12 \times 2 =$

14. [Financial Mathematics] *

Which parking option is cheaper for a 5 hour stay?

Option	Car Parking Rates	Cost
A	Day Rate	$18.00
B	1st hour	$5.00
	Per hour thereafter	$3.00

15. [Number Patterns]

Complete the pattern:

54 , 53 , 51 , 48 , 44 , ___ , ___

16. [Expressions]

Write as an expression:

t subtracted from the product of c and d

17. [Substitution] *

If $w = 5$, find the value of $36 - 4w$

18. [Expansion]

Expand $6(6 + h)$

19. [Factorisation]

Factorise $4j - 10k$

20. [Equations] *

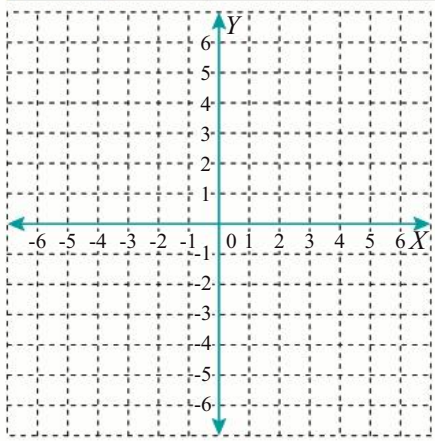
Solve for x: $2 + 3x = -1$

21. [Coordinate Geometry] *

Graph the line of equation $y = -3x - 1$ by first completing this table of values.

[Label the line with the rule.]

x	–2	–1	0	1	2
y	5				



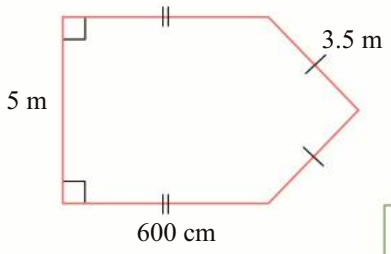
QUOTE OF THE WEEK: Love built on beauty, soon as beauty, dies. John Donne

22. [Units of Measurement / Time]

The symbol 'M' represents which metric prefix of 1 000 000 in value?

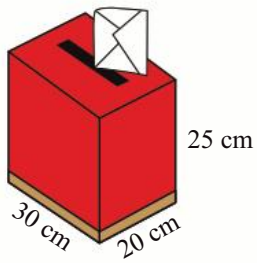
23. [Perimeter / Area] *

Find the perimeter of the shape in centimetres.



24. [Surface Area] *

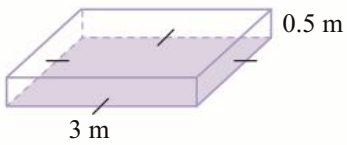
What is the total surface area of the mailbox if the letter opening has an area of 44 cm^2?
[Hint: External area of six faces less opening.]



cm^2

25. [Volume] *

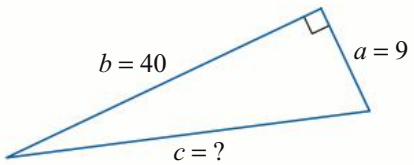
Find the volume of the square prism.



m^3

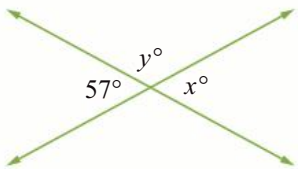
26. [Pythagoras / Trigonometry] *

For this triangle use Pythagoras' theorem $c^2 = a^2 + b^2$. Find the length of the hypotenuse.



27. [Angles] *

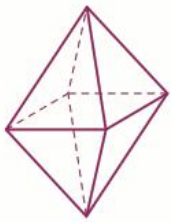
Find the values of $x°$ and $y°$.



$x° =$ $y° =$

28. [Geometric Reasoning]

Euler's formula, **E** = **V** + **F** − 2 defines the relationship between **E**dges, **V**ertices and **F**aces of any polyhedron. Verify Euler's formula for an octahedron:



□ = □ + □ − 2

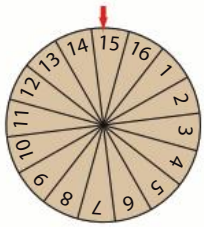
29. [Statistics] *

Calculate the mean and mode of this set of data:
12, 8, 12, 13, 12, 8, 13, 8, 10, 13, 9, 8

mean = mode =

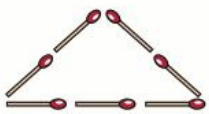
30. [Probability] *

This spinner is spun once. What is the probability of spinning a multiple of 5?
[Give your answer as a fraction.]



31. [Problem Solving 1] *

Seven matchsticks can be used to form a triangular enclosure in two different ways, {3,2,2} and {1,3,3} as shown below.
How many different triangles can be formed using 10 matchsticks?



3,2,2 1,3,3

32. [Problem Solving 2] *

Fill in the missing digits in the multiplication.

$$\begin{array}{r} \square\,\square\,5 \\ \times \quad 4\,\square \\ \hline \quad \square\,1\,5 \\ \square\,6\,\square\,0 \\ \hline 4\,7\,\square\,\square \end{array}$$

MATHS MATE

Term 1 - Sheet 3

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$150 \times 4000 =$

2. [Decimal +,–] *

$0.006 + 3.95 =$

3. [Decimal ×,÷]

$1000 \times 8.9 =$

4. [Fraction +,–] *

$\frac{19}{10} - \frac{7}{10} =$

5. [Fraction ×,÷] *

$\frac{4}{5} \times \frac{3}{4} =$

6. [Percentages] *

80% of 5 =

7. [Decimals / Fractions / Percentages] *

$\frac{6 \times 10}{7 \times 10} = \frac{6}{7}$ True or false?

8. [Integer +,–]

$(+17) + (-12) =$

9. [Integer ×,÷]

$(-23) \times (-2) =$

10. [Rates / Ratios] *

In his career, Pete Sampras won 14 Grand Slam titles in 18 finals. What is the ratio of wins to finals played?

11. [Indices]

$\left(\frac{3}{8}\right)^2 =$

12. [Square Roots] *

$\sqrt{30\frac{1}{4}} =$

13. [Exploring Number] *

$20 - 3 \times (3 + 5) \div 4 + 2 =$

14. [Financial Mathematics] *

There is a deal that if you buy books of equal value, the second is half price. This deal costs $17.85. How much does the deal save compared to the original price?

$

15. [Number Patterns]

Complete the pattern:

1 , 12 , 21 , 28 , 33 , ___ , ___

16. [Expressions]

Write as an expression:

5 subtracted from a quarter of s

17. [Substitution] *

If $a = 3$ and $b = 5$,
find the value of $2a + 3b$

18. [Expansion]

Expand $2(7r + 9)$

19. [Factorisation]

Factorise
$2a + 4b + 8$

20. [Equations] *

Solve for x: $\frac{4x}{3} + 5 = 4$

21. [Coordinate Geometry] *

Which line does the point $(-1,6)$ lie on?

A) $y = 5x + 8$
B) $y = -2x - 4$
C) $y = -x + 5$

QUOTE OF THE WEEK: A lot of people get what they want, but they don't always want what they get.

22. [Units of Measurement / Time]

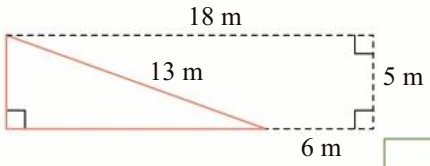
Which number represents the metric prefix 'centi'?

A) 0.1 B) $\frac{1}{100}$

C) $\frac{1}{1000}$ D) 100

23. [Perimeter / Area] *

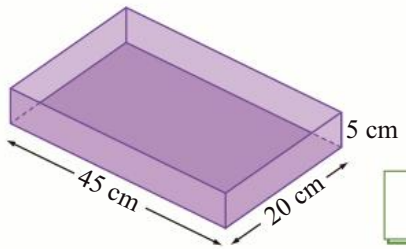
Find the perimeter of the right-angled triangle.



m

24. [Surface Area] *

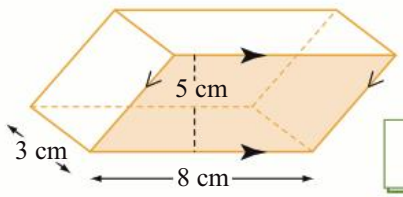
Gina wants to paint this open cardboard box on the inside and the outside. How many square centimetres of cardboard will Gina paint?



cm^2

25. [Volume] *

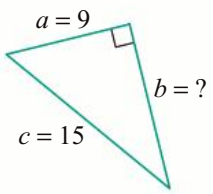
Find the volume of the prism.



cm^3

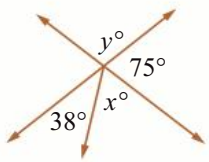
26. [Pythagoras / Trigonometry] *

Using Pythagoras' theorem find the length of the side labelled b.



27. [Angles] *

Find the values of $x°$ and $y°$.



$x° =$ $y° =$

28. [Geometric Reasoning]

Circle the net that **cannot** be folded to make a model of a three-dimensional shape.

29. [Statistics] *

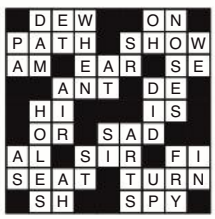
Which set of data has the same mean, median and mode?

A) 98, 99, 100, 100, 102, 103

B) 23, 25, 25, 25, 26, 26

30. [Probability] *

A fly lands on one square of the crossword. What is the probability that the fly lands on a black square? [Give your answer as a fraction in simplest form.]

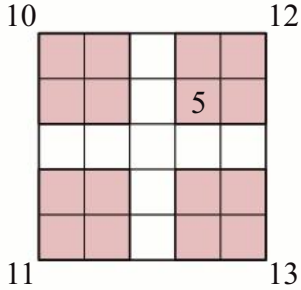


31. [Problem Solving 1] *

Simplify $\dfrac{5}{1+\dfrac{1}{1+3}}$

32. [Problem Solving 2]

Place all the digits 1 to 5 in each row and column, so that they are not repeated in any of the rows, columns, diagonals and shaded squares. The numbers outside the big square represent the sums of the four digits in each shaded square.



MATHS MATE

Term 1 - Sheet 4

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$2067 \times 300 =$

2. [Decimal +,–]

$1.21 + 12.012 =$

3. [Decimal ×,÷]

$0.004 \times 1000 =$

4. [Fraction +,–] *

$\frac{9}{5} + \frac{6}{5} =$

5. [Fraction ×,÷] *

$\frac{5}{7} \times \frac{7}{8} =$

6. [Percentages] *

15% of $90 =$

7. [Decimals / Fractions / Percentages] *

$\frac{12}{15} = \frac{12 \div 3}{15 \div 3}$ True or false?

8. [Integer +,–]

$(-13) + (+21) =$

9. [Integer ×,÷]

$(+12) \times (-9) =$

10. [Rates / Ratios] *

Plain chocolate is 60% carbohydrates, 35% fat and 5% other components. Find the ratio of carbohydrates to fat to other components.

11. [Indices] *

$\left(\frac{2}{5}\right)^3 =$

12. [Square Roots] *

$\sqrt{3\frac{1}{16}} =$

13. [Exploring Number] *

$(10 - 4)^2 \div (30 - 12) =$

14. [Financial Mathematics] *

The printing costs $1309 including GST. If the GST is 10%, how much is the cost excluding GST?

$

15. [Number Patterns]

Complete the pattern:

45 , 43 , 39 , 33 , 25 , ___ , ___

16. [Expressions]

To hire a car costs $70 per day plus a $40 fee. How much will it be to hire a car for x days?

17. [Substitution] *

If $a = 2$ and $b = 6$, find the value of $12 - ab$

18. [Expansion]

Expand $5(6 - 3e + 2f)$

19. [Factorisation]

Factorise $12j^2 + 18k - 9l$

20. [Equations] *

Solve for x: $\frac{9 + 6x}{7} = 2$

21. [Coordinate Geometry] *

Which of these points lie on the line defined by the rule $y = -2x - 3$?

A(3,–9)
B(0,3)
C(–2,1)

and

QUOTE OF THE WEEK: When people cease to believe in God, they will believe in anything. G. K. Chesterton

22. [Units of Measurement / Time]

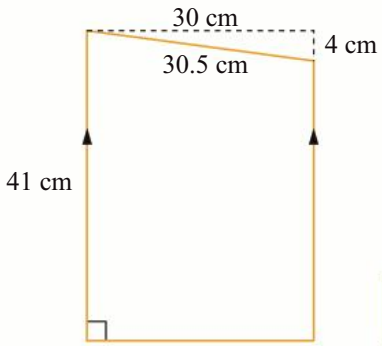
Which number represents the metric prefix 'milli'?

A) 0.001 B) $\frac{1}{100}$

C) $\frac{1}{10}$ D) 1000

23. [Perimeter / Area] *

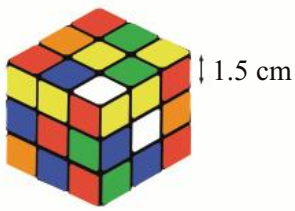
Find the perimeter of the trapezium.



cm

24. [Surface Area] *

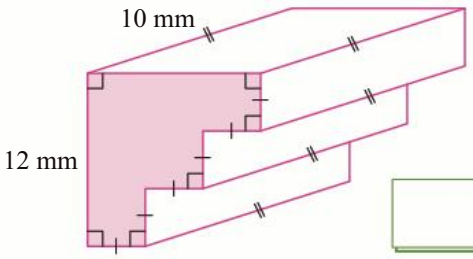
The faces of a Rubik's cube are covered by square stickers of one of six colours. What is the total surface area covered by the stickers?



cm^2

25. [Volume] *

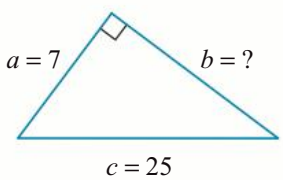
Find the volume of the prism.



mm^3

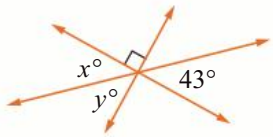
26. [Pythagoras / Trigonometry] *

Using Pythagoras' theorem find the length of the side labelled b.



27. [Angles] *

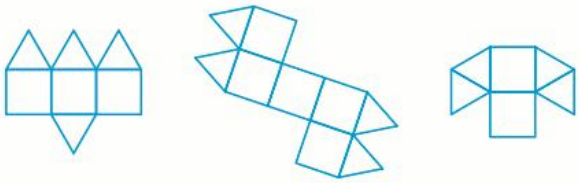
Find the values of $x°$ and $y°$.



$x° =$ $y° =$

28. [Geometric Reasoning]

Circle the net that **can** be folded to make a model of a three-dimensional shape.



29. [Statistics] *

Which set of data has the same mean, median and mode?

A) 12, 14, 15, 15, 15

B) 10, 10, 11, 11, 11, 12, 12

30. [Probability] *

A dart board has sections of identical size, numbered 1 to 20. A dart is thrown and hits the board. What is the probability that the dart lands inside a prime number section?

[Give your answer as a fraction in simplest form.]

31. [Problem Solving 1] *

Spanner's average rose from 7 goals per match to 8 after the fifth match. How many goals did Spanner kick in the fifth match?

32. [Problem Solving 2] *

Rod works for 15 days and Mary for 10 days to arrange a total of 1300 books on the library's shelves. They both work at different rates. Over the same period of time, Rod arranges 4 books for every 7 books that Mary arranges. How many books did Mary arrange altogether?

MATHS MATE

Term 1 - Sheet 5

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$390\,800 \div 200 =$

2. [Decimal +,–] *

$4.123 - 0.234 =$

3. [Decimal ×,÷]

$126.5 \times 0.1 =$

4. [Fraction +,–] *

$5\frac{5}{6} - 2\frac{1}{6} =$

5. [Fraction ×,÷] *

$\frac{7}{10} \div \frac{2}{5} =$

6. [Percentages] *

In 2002 the average Australian family shopped once a week and used 15 plastic bags per trip. By 2005 plastic bag usage had fallen by 45%. How many plastic bags did an average family use over the full year in 2005?

7. [Decimals / Fractions / Percentages] *

Write 10% as a decimal.

8. [Integer +,–]

$(-14) - (+17) =$

9. [Integer ×,÷]

$(-30) \div (+15) =$

10. [Rates / Ratios] *

The maximum cruise speed of a Boeing 747 is around 950 km/h or 0.855 Mach. At this speed, what distance can a Boeing 747 travel in 8 hours?

km

11. [Indices] *

Evaluate $2^2 \times 2^6$

12. [Square Roots]

$\sqrt{1.44} =$

13. [Exploring Number]

Round 2.145 to 2 decimal places.

14. [Financial Mathematics] *

Mae sells a car for $33 000 and earns 6% commission. What is Mae's commission?

$

15. [Number Patterns]

Complete the pattern:

$15\ ,\ 11\ ,\ 7\ ,\ 3\ ,\ -1\ ,$ ___ , ___

16. [Expressions]

Simplify $2 \times w \times w$

17. [Substitution] *

If $y = 2x - 8$, find y when $x = 4$

18. [Expansion]

Expand $k(k + 9)$

19. [Factorisation] *

Factorise and evaluate

$101 \times 19 - 101 \times 18$

20. [Equations] *

Solve the inequality:

$2(9 - 3x) \leq 6$

21. [Coordinate Geometry] *

Find the x-intercept of the line defined by the equation $y = -2x + 6$

QUOTE OF THE WEEK: Beauregard's Law - When you're up to your nose, keep your mouth shut. Rossiter

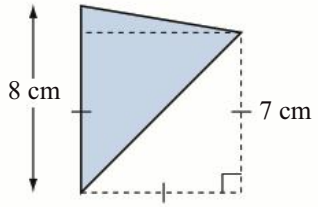
22. [Units of Measurement / Time]

Regulations require shafts to have a diameter of 10 ± 0.018 mm. What is the minimum acceptable diameter?

mm

23. [Perimeter / Area] *

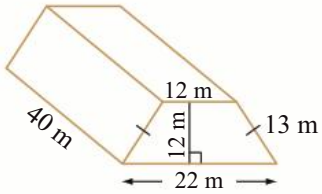
Find the area of the shaded triangle.



cm^2

24. [Surface Area] *

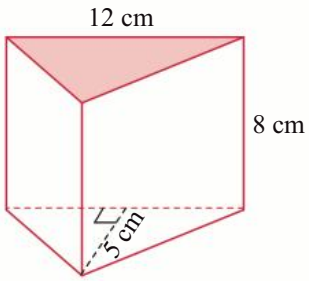
Find the total surface area of the prism.



m^2

25. [Volume] *

Find the volume of the triangular prism.



cm^3

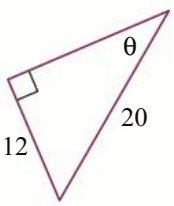
26. [Pythagoras / Trigonometry]

Which trigonometric ratio would be used to find angle θ?

A) $\sin\theta = \frac{12}{20}$

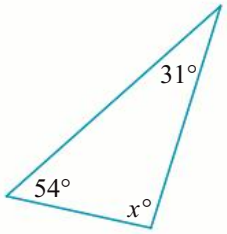
B) $\cos\theta = \frac{12}{20}$

C) $\tan\theta = \frac{12}{20}$



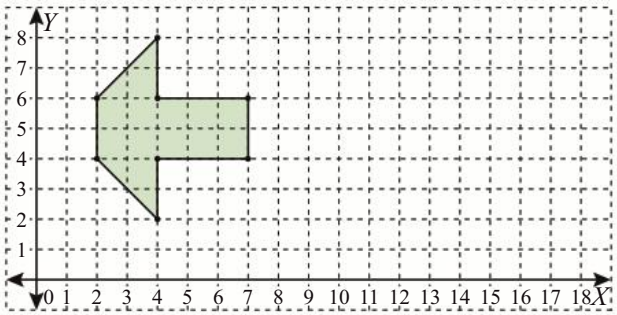
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

Redraw the shape after translating it 10 units horizontally and –2 units vertically.



29. [Statistics]

Against which country did Don Bradman have the highest test batting average?

[Hint: Batting average = runs per innings]

Don Bradman's Test Cricket Batting

30. [Probability] *

What is the probability of getting a consonant when a letter is chosen randomly from the word TRIGONOMETRY? [Give your answer as a fraction in simplest form.]

31. [Problem Solving 1]

Complete the multiplication table.

×	5	8		
	25			35
		16		
9			54	
				49

32. [Problem Solving 2] *

A farmer in Queensland has a banana plantation of 80 trees. Each tree produces on average 450 bananas. He wants to increase his production and knows that, because of lost space and sunlight, every additional tree that he plants will cause a reduction of 5 bananas from each tree. What is the maximum number of bananas that he will be able to produce on his plantation, and how many trees will he need to reach this maximum?

trees = bananas =

MATHS MATE

Term 1 - Sheet 6

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$12\,420 \div 30 =$

2. [Decimal +,–] *

$2.9 - 1.093 =$

3. [Decimal ×,÷]

$0.01 \times 0.03 =$

4. [Fraction +,–] *

$1\frac{1}{4} + 3\frac{3}{4} =$

5. [Fraction ×,÷] *

$\frac{5}{6} \div \frac{2}{3} =$

6. [Percentages] *

By 2050 the population of New Zealand is predicted to be 20% more than the present, approximate figure of 4.5 million. What will the population be in 2050?

7. [Decimals / Fractions / Percentages] *

The top cruise speed of a Boeing Dreamliner 787 is 77% of the speed of sound. Write 77% as a decimal.

8. [Integer +,–]

$(-15) - (-13) =$

9. [Integer ×,÷]

$(+32) \div (+4) =$

10. [Rates / Ratios] *

The Osaka monorail is the second longest monorail in the world, with a length of 22 km. It takes approximately 55 minutes to travel one loop. What is its average speed?

km/h

11. [Indices] *

Evaluate 6×6^2

12. [Square Roots]

$\sqrt{6.25} =$

13. [Exploring Number]

Round 7.53535353... to 3 decimal places.

14. [Financial Mathematics] *

Dianne bought a second-hand car for $10 500. She then sold it for 15% less. What is the selling price of the car?

$

15. [Number Patterns]

Complete the pattern:

36 , 24 , 12 , 0 , ___ , ___

16. [Expressions]

Simplify $a \times b \times a$

17. [Substitution] *

If $y = x^2 - 3$, find y when $x = 3$

18. [Expansion]

Expand $p(7 - 7p)$

19. [Factorisation] *

Factorise and evaluate

$999 \times 999 - 998 \times 999$

20. [Equations] *

Solve the inequality:

$5(-2x + 4) < 40$

21. [Coordinate Geometry] *

Find the y-intercept of the line defined by the equation $y - 3x = -4$

QUOTE OF THE WEEK: When it is dark enough, you can see the stars. Ralph Waldo Emerson

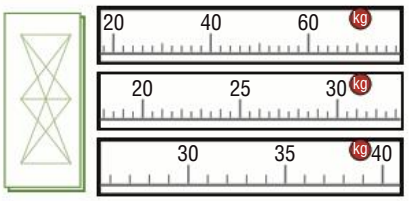
22. [Units of Measurement / Time]

Match the weights to the instruments based on the precision of their scales.

A) 1 kg

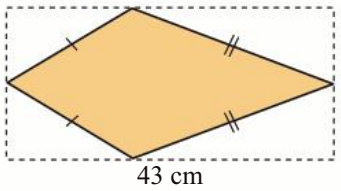
B) 2 kg

C) 0.5 kg



23. [Perimeter / Area] *

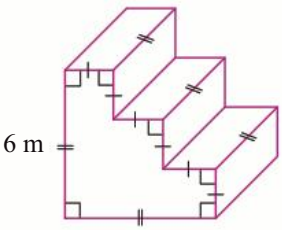
Find the area of the kite.



cm^2

24. [Surface Area] *

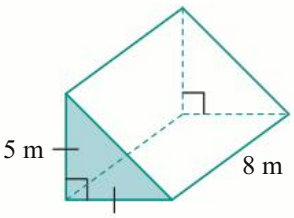
Find the total surface area of the prism.



m^2

25. [Volume] *

Find the volume of the triangular prism.



m^3

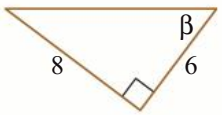
26. [Pythagoras / Trigonometry]

Which trigonometric ratio would be used to find angle β?

A) $\sin\beta = \frac{6}{8}$

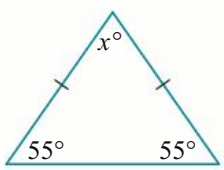
B) $\cos\beta = \frac{8}{6}$

C) $\tan\beta = \frac{8}{6}$



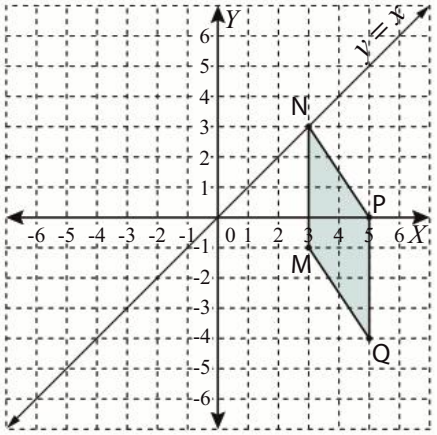
27. [Angles] *

Find the value of $x°$.



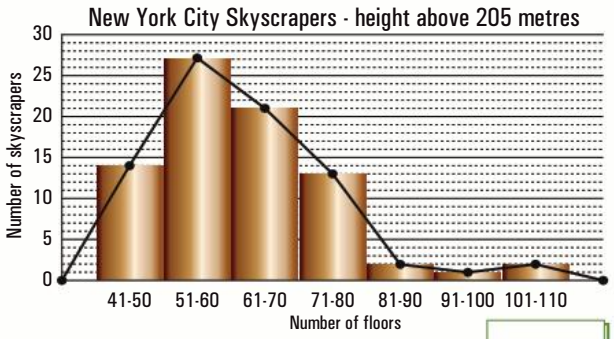
28. [Geometric Reasoning]

Draw the reflection of the parallelogram MNPQ in the line of equation $y = x$.



29. [Statistics]

How many New York City skyscrapers with a height above 205 m have more than 70 floors?

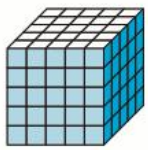


30. [Probability]

A number from 1 to 13 is chosen at random. What is the probability that the number chosen is a multiple of 4?

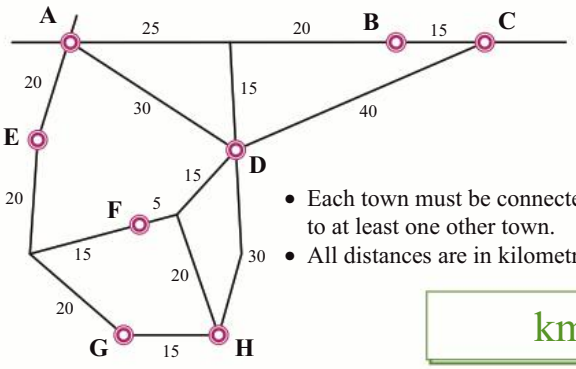
31. [Problem Solving 1]

How many of the smaller cubes have faces which touch the faces of exactly four other cubes?



32. [Problem Solving 2] *

A pay television station wishes to lay cables along existing roads to connect each town, A to H, to a fibre optic network. Calculate the minimum length of cable required.



- Each town must be connected to at least one other town.
- All distances are in kilometres.

km

MATHS MATE

Term 1 - Sheet 7

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$11\,160 \div 60 =$

2. [Decimal +,–] *

$7.4 - 3.78 =$

3. [Decimal ×,÷]

$7.77 \times 0.1 =$

4. [Fraction +,–] *

$2\frac{5}{8} + 1\frac{1}{8} =$

5. [Fraction ×,÷] *

$\frac{3}{11} \div \frac{9}{22} =$

6. [Percentages] *

A jellyfish is 95% water. If the water in this jellyfish weighs 190 kg, what is its total weight in kilograms?

7. [Decimals / Fractions / Percentages] *

Write 1.5 as a percentage.

8. [Integer +,–]

$(+11) - (+17) =$

9. [Integer ×,÷]

$(-45) \div (-9) =$

10. [Rates / Ratios] *

A garden snail can travel at 0.012 m/s. At this speed, how long does it take a snail to cover 12 m?

S

11. [Indices]

Simplify $y^3 \times y^4$

12. [Square Roots]

$\sqrt{0.49} =$

13. [Exploring Number]

$\phi \approx 1.61803398$ (the golden number). Write the rational approximation of ϕ correct to two decimal places.

14. [Financial Mathematics] *

Ivan bought a house for $225 000 and renovated it. He then sold it, making a profit of 20%. What was the selling price of the house?

$

15. [Number Patterns]

Complete the pattern:

$-18\ ,\ -10\ ,\ -2\ ,\ 6\ ,\ 14\ ,$ ___ , ___

16. [Expressions]

Simplify $y \times x^2 \times -4$

17. [Substitution] *

If $y = 2x^2 - 1$, find y when $x = 0$

18. [Expansion]

Expand $2d(6 + 4e)$

19. [Factorisation] *

Factorise and evaluate

$50 \times 14 + 50 \times 8$

20. [Equations] *

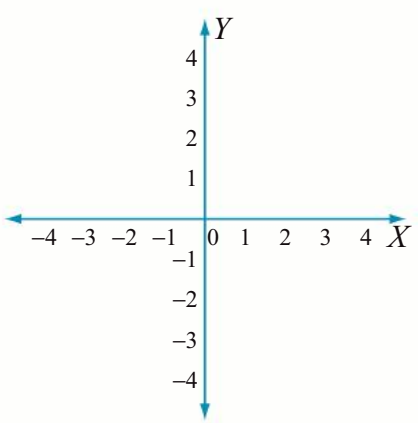
Solve the inequality:

$3(3x - 2) - 19 > 20$

21. [Coordinate Geometry] *

Sketch the line of equation $y = 2x - 3$ by marking the x-intercept and the y-intercept.

[Label the graph with the rule.]



QUOTE OF THE WEEK: Cleverness is not wisdom. Euripides

22. [Units of Measurement / Time]

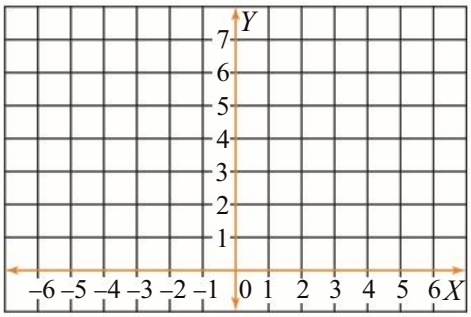
'An emu egg weighs between 10 and 12 hen eggs.'

Choose the description for the weight tolerance suggested by this statement.

A) 10 ± 2 hen eggs
B) 11 ± 1 hen eggs
C) 12 ± 1 hen eggs

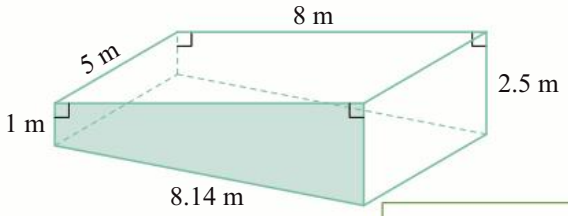
23. [Perimeter / Area] *

Plot the points A(−5,0), B(6,5) and C(3,0) and use them to find the area of ΔABC.



24. [Surface Area] *

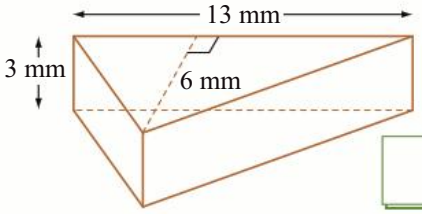
A swimming pool has the shape of a trapezoidal prism. What is the total surface area of the inside walls and floor of the pool?



m^2

25. [Volume] *

Find the volume of the triangular prism.

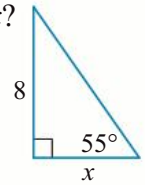


mm^3

26. [Pythagoras / Trigonometry]

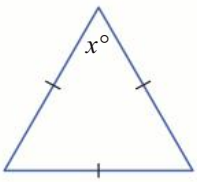
Which trigonometric ratio would be used to find the unknown side x?

A) $\sin 55°$
B) $\cos 55°$
C) $\tan 55°$



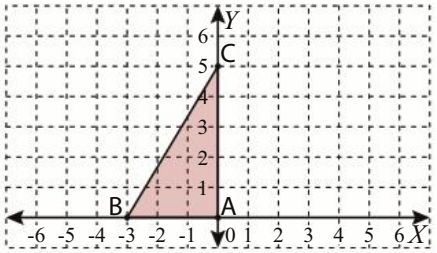
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

Redraw the triangle ABC after rotating it 90° clockwise about the origin, and then translating it 1 unit horizontally to the right and 3 units vertically up. Label the transformation A'B'C'. Are triangles ABC and A'B'C' congruent or similar?

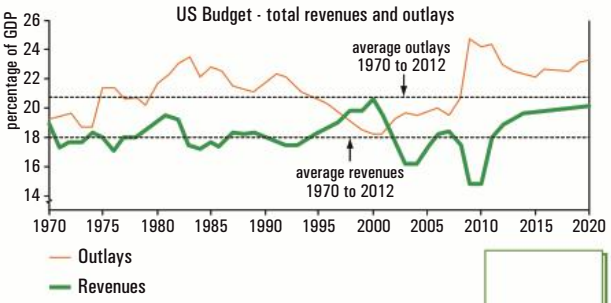


29. [Statistics] *

Choose the correct statement given this budget data and projection.

A) Budget surplus lasts for close to 4 years
B) Budget deficit lasts for close to 4 years
C) Budget surplus lasts for close to 46 years
D) There is never a budget surplus

[Hint: Surplus - When revenue is greater than outlay.]

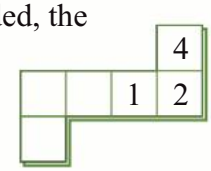


30. [Probability]

If a standard die is rolled, what is the probability of obtaining an 8?

31. [Problem Solving 1]

On a standard die, opposite sides add to 7. Fill in the spaces so that, when folded, the net will form a standard die.



32. [Problem Solving 2] *

In a magic square each row, each column and each diagonal add to the same 'magic' number X. In this magic square the letters a to i represent different numbers and $X = 3e$. Which is a correct expression for h?

A) $2e - a$
B) $2e - b$
C) $2e - g$
D) $2e - i$

a	b	c
d	e	f
g	h	i

MATHS MATE

Term 1 - Sheet 8

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$1\,036\,000 \div 400 =$

2. [Decimal +,–] *

$1.009 - 0.19 =$

3. [Decimal ×,÷]

$0.001 \times 10.2 =$

4. [Fraction +,–] *

$5\frac{8}{9} - 2\frac{2}{9} =$

5. [Fraction ×,÷] *

$\frac{5}{8} \div \frac{5}{12} =$

6. [Percentages] *

Within 100 km of the USA border live 28 million Canadians. This is 80% of Canada's population. How many people live in Canada?

7. [Decimals / Fractions / Percentages] *

Write 0.387 as a percentage.

8. [Integer +,–]

$(+12) - (-23) =$

9. [Integer ×,÷]

$(+42) \div (-7) =$

10. [Rates / Ratios] *

The cheetah can run at a steady speed of 100 km/h over a short distance. At this rate how long will the cheetah take to run 5 km?

min

11. [Indices]

Simplify $m^6 \times m^5$

12. [Square Roots]

$\sqrt{0.04} =$

13. [Exploring Number]

$\cos 15° \approx 0.96593$

Write the rational approximation of $\cos 15°$ correct to three decimal places.

14. [Financial Mathematics] *

A pair of shoes is marked up 25%. If the sale price is \$80, what profit is made?

$

15. [Number Patterns]

Complete the pattern:

$-26\ ,\ -20\ ,\ -14\ ,\ -8\ ,\ -2\ ,$ ___ , ___

16. [Expressions]

Simplify $m \times 6 \times n \div -p$

17. [Substitution] *

If $y = \frac{2x}{15}$, find y when $x = 5$

18. [Expansion]

Expand $t(7t - 4u + 2)$

19. [Factorisation] *

Factorise and evaluate

$-7 \times 54 - 7 \times 46$

20. [Equations] *

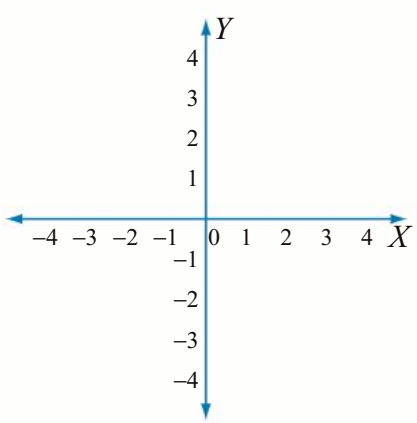
Solve the inequality:

$15 \geq 5(7 - 2x) - 60$

21. [Coordinate Geometry] *

Sketch the line of equation $y = -4x + 3$ by marking the x-intercept and the y-intercept.

[Label the graph with the rule.]



QUOTE OF THE WEEK: April Fools have a day all their own; the rest of us have to muddle along without any recognition at all. Rossiter

22. [Units of Measurement / Time]

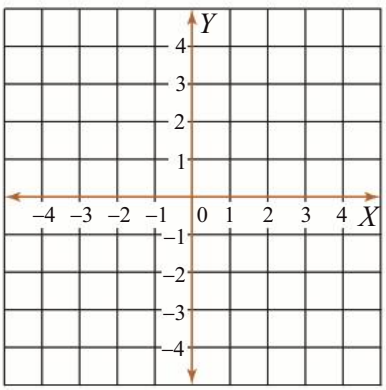
'A tennis ball must weigh between 57.7 g and 58.5 g.'

Choose the description for the weight tolerance of a tennis ball given this statement.

A) 58.1 ± 0.4 g
B) 57.7 ± 0.8 g
C) 58.1 ± 0.8 g

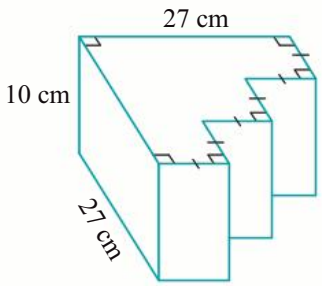
23. [Perimeter / Area] *

Plot the points A(–4,3), B(4,3), C(0,–2) and D(–3,–2) and use them to find the area of the trapezium ABCD.



24. [Surface Area] *

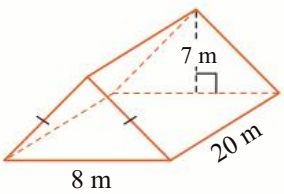
Find the total surface area of the prism.



cm^2

25. [Volume] *

Find the volume of the triangular prism.

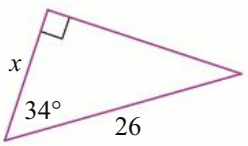


m^3

26. [Pythagoras / Trigonometry]

Which trigonometric ratio would be used to find the unknown side x?

A) $\sin 34°$
B) $\cos 34°$
C) $\tan 34°$

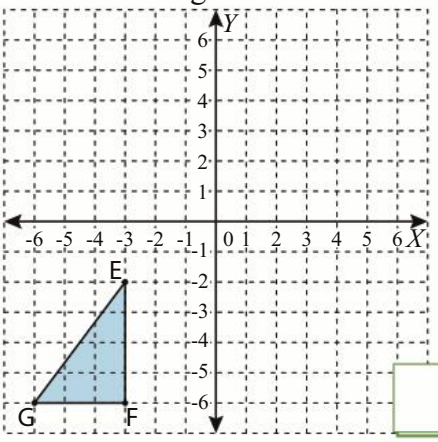


27. [Angles] *

Find the value of $x°$.

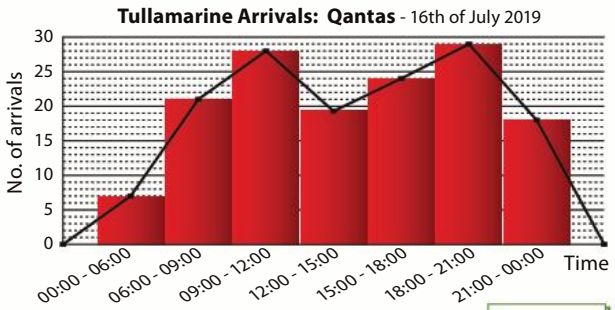
28. [Geometric Reasoning]

Redraw the triangle EFG after rotating it 180° about the point of coordinates (–3,–2) and then reflecting it in the y-axis. Label the transformation E'F'G'. Are triangles EFG and E'F'G' congruent or similar?



29. [Statistics]

How many Qantas flights arrived at the Melbourne Tullamarine airport between 12:00 pm and 6:00 pm, on July 16th 2019?



30. [Probability] *

There are 8 choc chip, 12 coconut macadamia, 7 smiley and 5 chocolate dipped cookies in the cookie jar. If a cookie is chosen at random, what is the probability it will be a coconut macadamia? [Give your answer as a fraction in simplest form.]

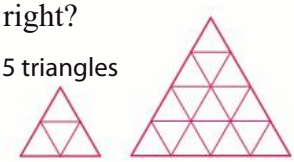
31. [Problem Solving 1] *

There are 141 rooms in a block of 39 apartments. Each apartment has either 3 or 4 rooms. How many apartments have 4 rooms?

32. [Problem Solving 2] *

The diagram on the left below includes 5 triangles (four small and a larger one). How many triangles are there in the diagram on the right?

5 triangles



MATHS MATE

Name: .....

Class: .....

Teacher: .....

Worksheet Results

Term 2

		Sheet 1	Sheet 2	Sheet 3	Sheet 4	Skill Builder links	Sheet 5	Sheet 6	Sheet 7	Sheet 8	Skill Builder links
NUMBER	1. [Long ×,÷]	1	1	1	1	1.2	1	1	1	1	1.4,7
	2. [Decimal +,–]	2	2	2	2	2.2	2	2	2	2	2.4
	3. [Decimal ×,÷]	3	3	3	3	3.4	3	3	3	3	3.2
	4. [Fraction +,–]	4	4	4	4	4.5	4	4	4	4	4.6,9
	5. [Fraction ×,÷]	5	5	5	5	5.2	5	5	5	5	5.6
	6. [Percentages]	6	6	6	6	6.4	6	6	6	6	6.6
	7. [Decimals / Fractions / Percentages]	7	7	7	7	7.6,7	7	7	7	7	7.8,9
	8. [Integer +,–]	8	8	8	8	8.3	8	8	8	8	8.3
	9. [Integer ×,÷]	9	9	9	9	9.1	9	9	9	9	9.4
	10. [Rates / Ratios]	10	10	10	10	10.12	10	10	10	10	10.8,9
	11. [Indices]	11	11	11	11	11.4	11	11	11	11	11.3,4,5,6
	12. [Square Roots]	12	12	12	12	12.4	12	12	12	12	12.5
	13. [Exploring Number]	13	13	13	13	13.5,6	13	13	13	13	13.7
	14. [Financial Mathematics]	14	14	14	14	14.5	14	14	14	14	14.6
	15. [Number Patterns]	15	15	15	15	15.4	15	15	15	15	15.5
ALGEBRA	16. [Expressions]	16	16	16	16	16.3	16	16	16	16	16.4
	17. [Substitution]	17	17	17	17	17.5,6	17	17	17	17	17.6
	18. [Expansion]	18	18	18	18	18.4	18	18	18	18	18.5
	19. [Factorisation]	19	19	19	19	19.2,4	19	19	19	19	19.5
	20. [Equations]	20	20	20	20	20.5	20	20	20	20	20.6
	21. [Coordinate Geometry]	21	21	21	21	21.8,9	21	21	21	21	21.10,11
MEASUREMENT	22. [Units of Measurement / Time]	22	22	22	22	22.5	22	22	22	22	22.6
	23. [Perimeter / Area]	23	23	23	23	23.1,5	23	23	23	23	23.10
	24. [Surface Area]	24	24	24	24	24.4	24	24	24	24	24.5
	25. [Volume]	25	25	25	25	25.3	25	25	25	25	25.4
	26. [Pythagoras / Trigonometry]	26	26	26	26	26.6	26	26	26	26	26.7
SPACE	27. [Angles]	27	27	27	27	27.5	27	27	27	27	27.6
	28. [Geometric Reasoning]	28	28	28	28	28.9	28	28	28	28	28.10
STAT.	29. [Statistics]	29	29	29	29	29.10	29	29	29	29	29.11,15
PROB.	30. [Probability]	30	30	30	30	30.3	30	30	30	30	30.5
PROBLEM SOLVING	31. [Problem Solving 1]	31	31	31	31	Hints & Solutions	31	31	31	31	Hints & Solutions
	32. [Problem Solving 2]	32	32	32	32	Hints & Solutions	32	32	32	32	Hints & Solutions
	Total Correct										

MATHS MATE

Term 2 - Sheet 1

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$269 \times 15 =$

2. [Decimal +,–] *

$21.08 - 2.064 =$

3. [Decimal ×,÷]

$0.08 \times 0.6 =$

4. [Fraction +,–]

$3 - \frac{2}{7} =$

5. [Fraction ×,÷] *

$\frac{2}{3} \times \frac{9}{10} =$

6. [Percentages] *

1% of 430 =

7. [Decimals / Fractions / Percentages] *

Write 0.15 as a fraction in simplest form.

8. [Integer +,–] *

$(+13) - (+18) + (-21) =$

9. [Integer ×,÷] *

$(-3) \times (+5) \times (+2) =$

10. [Rates / Ratios] *

In New Zealand, the minimum rate of pay for adults is $17.70 per hour. At this rate what is the pay for an adult working 8 hours?

$

11. [Indices]

Simplify $a^7 \div a^3$

12. [Square Roots] *

$5\sqrt{400} =$

13. [Exploring Number]

4.18×10^7 is the scientific notation for:

A) 4.1800000 B) 4 180 000 C) 41 800 000

14. [Financial Mathematics] *

Roald, a sales manager, earns $24 per hour after tax for a 40 hour week. If his pay this fortnight is $1944, by how much was Roald overpaid?

$

15. [Number Patterns]

Complete the pattern:

$-2 , 10 , -50 , 250 ,$ ___ , ___

16. [Expressions]

Choose the like terms:

$4p , -3p^2 , 0.5p , 0.5$

17. [Substitution] *

Use $P = 2l + 2w$ to find the perimeter P of a rectangle when $l = 8$ and $w = 3$

18. [Expansion]

Expand $-4h(5 - 4h)$

19. [Factorisation]

Factorise

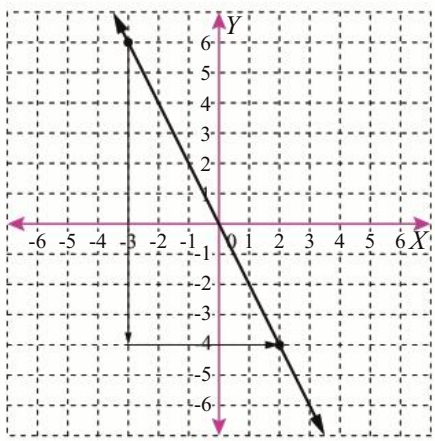
$3pq - 4p + 2pqr$

20. [Equations] *

Solve for x: $5x + 3(x - 11) = 7$

21. [Coordinate Geometry] *

Find the gradient of the line passing through the points (–3,6) and (2,–4).



QUOTE OF THE WEEK: One of the problems in life exists in trying to find out something you should know without letting on you don't already know. P. K. Shaw

22. [Units of Measurement / Time] *

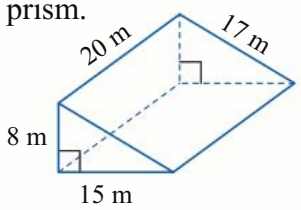
The day and time is Monday, 1815 hours in Cairo, and Tuesday, 0315 hours in Melbourne. By how many hours is Cairo time behind Melbourne time?

23. [Perimeter / Area] *

An Australian $100 note measures 15.8 cm by 6.5 cm. What is its perimeter in millimetres?

24. [Surface Area] *

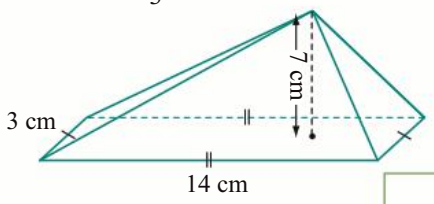
Find the total surface area of the triangular prism.



m^2

25. [Volume] *

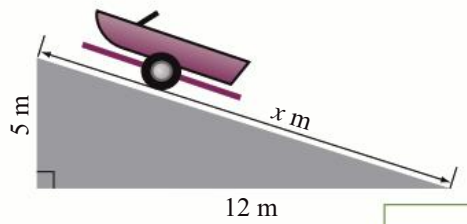
Find the volume of the rectangular pyramid using $V = \frac{Bh}{3}$



cm^3

26. [Pythagoras / Trigonometry] *

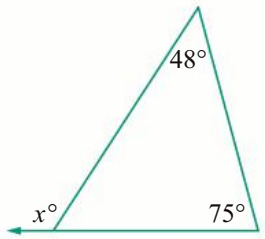
How long is the ramp on which the boat descends?



m

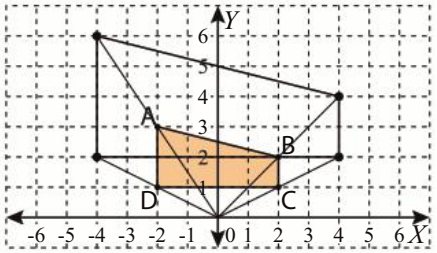
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

Find the scale factor of enlargement for trapezium ABCD.



29. [Statistics] *

The stem-and-leaf plot shows the average monthly minimum temperatures for Pensacola, Florida. Find the median and range of the data.

stem	leaf
4	6 8
5	0 0 2 7
6	1 6
7	2 3 5 5

Key
7 | 0 = 70°F

median = range =

30. [Probability] *

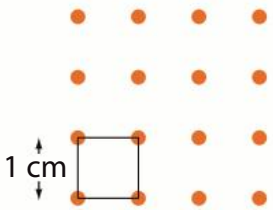
A student is chosen at random from a class of 16 girls and 12 boys. What is the probability that the student chosen is not a girl? [Give your answer as a fraction in simplest form.]

31. [Problem Solving 1] *

In the Williams family George is twice as old as his son Jack, and Jack is twice as old as his son Alex. If the total of their ages is 147, how old is George?

32. [Problem Solving 2] *

A square is to be constructed using any 4 of the sixteen points below as corner points. The smallest square that can be constructed in this way has an area of 1 cm^2. What other areas are possible?



1, ___, ___, ___ & ___ cm^2

MATHS MATE

Term 2 - Sheet 2

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$374 \times 18 =$

2. [Decimal +,–] *

$3.6 - 0.046 =$

3. [Decimal ×,÷] *

$0.07 \times 0.14 =$

4. [Fraction +,–]

$4 - \frac{2}{5} =$

5. [Fraction ×,÷] *

$\frac{3}{4} \times \frac{8}{9} =$

6. [Percentages] *

$66\frac{2}{3}\%$ of $45 =$

7. [Decimals / Fractions / Percentages] *

Write 0.08 as a fraction in simplest form.

8. [Integer +,–] *

$(+14) + (-11) - (+15) =$

9. [Integer ×,÷] *

$(-4) \times (+3) \times (-6) =$

10. [Rates / Ratios] *

Italy has an area of just over 300 000 km^2, and reached a population of 60 000 000 people in 2010. What was the average population density of Italy in 2010?

people/km^2

11. [Indices] *

Evaluate $\frac{8^8}{8^6}$

12. [Square Roots] *

$10\sqrt{144} =$

13. [Exploring Number]

5.6×10^{-6} is the scientific notation for:

A) 5.600000 B) 0.0000056 C) 0.000056

14. [Financial Mathematics] *

A salesman earns a monthly salary of $800 plus 4% commission on sales. What value are his sales if he earns $4000 for a month?

$

15. [Number Patterns]

Complete the pattern:

$3 , -15 , 75 , -375 ,$ ___ , ___

16. [Expressions]

Choose the like terms:

$b^2 , -2b , -c^2 , 2b^2$

17. [Substitution] *

Use $A = \frac{1}{2}(a+b)h$ to find the area A of a trapezium when $a = 9$, $b = 4$ and $h = 5$

18. [Expansion]

Expand $-3x(2 - 3y)$

19. [Factorisation]

Factorise

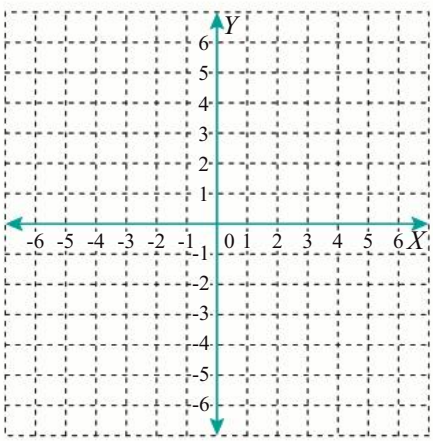
$5g^2 - 10gh - 15gi$

20. [Equations] *

Solve for x: $2x + 3(1 - 2x) = 3$

21. [Coordinate Geometry] *

Graph the line passing through the points (–4,0) and (4,2). What is the gradient of the line?



QUOTE OF THE WEEK: My mind is already made up. Don't confuse me with facts! Rossiter

22. [Units of Measurement / Time] *

Wade departs Perth on Tuesday at 14:30 and arrives in New York on Wednesday at 00:30. If New York time is 12 hours behind Perth, how long was the flight?

h

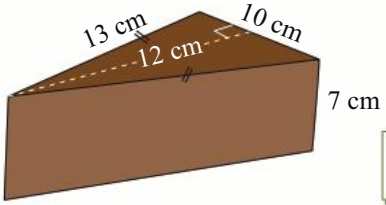
23. [Perimeter / Area] *

A badminton court measures 6.1 m by 13.4 m. What is the perimeter of the court?

m

24. [Surface Area] *

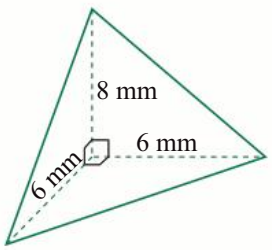
Find the total surface area of the piece of cake.



cm^2

25. [Volume] *

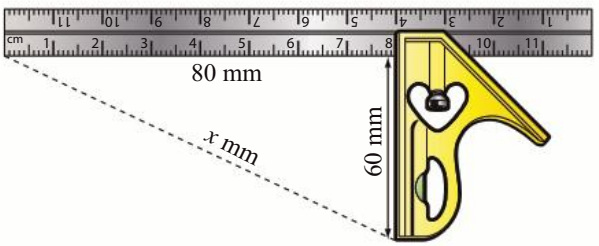
Find the volume of the triangular pyramid.



mm^3

26. [Pythagoras / Trigonometry] *

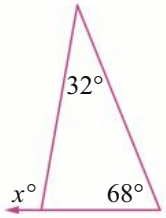
Find the missing length in this diagram showing a T-square.



mm

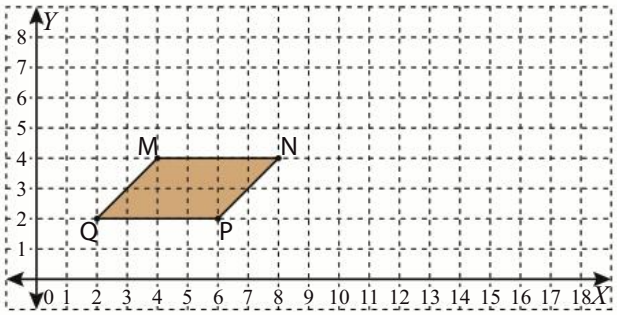
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

Redraw the parallelogram MNPQ enlarged by a scale factor of 2 about point Q.



29. [Statistics] *

The stem plot shows the average rainfall (mm) for Queenstown over one year. Find the median and upper quartile (UQ) of the data.

stem	leaves
4	2 3
4	6 6 8
5	0 0
5	
6	0 1 3
6	
7	0 2
7	

Key
5 | 0 = 50 mm

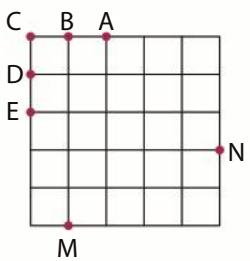
median = UQ =

30. [Probability] *

A 52-card deck of playing cards is shuffled, and one card is dealt from the top of the deck. What is the probability that it is not a club? [Give your answer as a decimal.]

31. [Problem Solving 1] *

Points A, B, C, D and E are placed on a square grid as shown. Which of these five points forms an isosceles triangle with the other two vertices M and N?



32. [Problem Solving 2] *

Gino and Pedro are bricklayers. Gino lays 150 bricks in 60 minutes and Pedro lays 20 bricks in 10 minutes. If they work together, how long will it take them to lay 180 bricks?

min

MATHS MATE

Term 2 - Sheet 3

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$286 \times 24 =$

2. [Decimal +,–] *

$14.74 - 5.038 =$

3. [Decimal ×,÷] *

$5.39 \times 0.3 =$

4. [Fraction +,–]

$3 - 2\frac{3}{4} =$

5. [Fraction ×,÷] *

$\frac{5}{8} \times \frac{4}{15} =$

6. [Percentages] *

12.5% of 1000 =

7. [Decimals / Fractions / Percentages] *

Write $\frac{21}{25}$ as a decimal.

8. [Integer +,–] *

$(-24) - (+6) + (-15) =$

9. [Integer ×,÷] *

$(-2) \times (-4) \times (-30) =$

10. [Rates / Ratios] *

In 2010 New Zealand had a population density of 16 people/km^2. If New Zealand has an area of around 270 000 km^2, what was its population in 2010?

11. [Indices] *

Evaluate $5^6 \div 5$

12. [Square Roots] *

$4\sqrt{121} =$

13. [Exploring Number]

615 000 000 written in scientific notation is:

A) 615×10^8 B) 6.15×10^6 C) 6.15×10^8

14. [Financial Mathematics] *

On a base income of $34 000 how much superannuation will Kapil be paid when the guarantee reaches 12%?

$

15. [Number Patterns]

Complete the pattern:

$\frac{1}{9}, \frac{1}{3}, 1, 3, 9,$ ___ , ___

16. [Expressions]

Choose the like terms:

$x, x^2, -3x^2, -x^3$

17. [Substitution] *

Use $C = 2\pi r$ to find the circumference C of a circle when $r = 10$ and $\pi \approx 3.14$

18. [Expansion]

Expand $-qr(4q + 2)$

19. [Factorisation]

Factorise

$a^3b^2 + ab^2$

20. [Equations] *

Solve for x: $9(x - 10) = -x$

21. [Coordinate Geometry] *

Use $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$ to find the coordinates of the midpoint M of the interval joining the points (–2,5) and (6,7).

QUOTE OF THE WEEK: Energy multiplies when you set a desired goal and resolve to work toward that goal. David Joseph Schwartz

22. [Units of Measurement / Time]

How much time elapses between high tide on Tuesday evening and the next high tide?

Cape Melville (QLD) Tide data:			
Tuesday 16th July 2019		Wednesday 17th July 2019	
03:51 am	1.0 m Low	04:28 am	1.1 m Low
08:14 am	1.8 m High	08:45 am	1.8 m High
03:00 pm	0.5 m Low	03:30 pm	0.6 m Low
09:22 pm	2.5 m High	09:59 pm	2.5 m High

h min

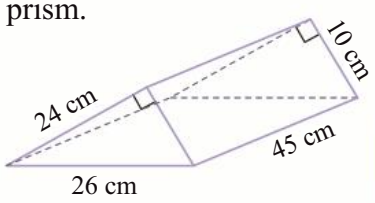
23. [Perimeter / Area] *

What is the perimeter of a square with an area of 81 mm^2?

mm

24. [Surface Area] *

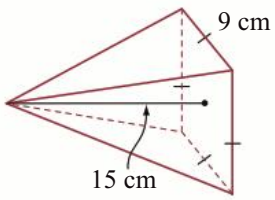
Find the total surface area of the triangular prism.



cm^2

25. [Volume] *

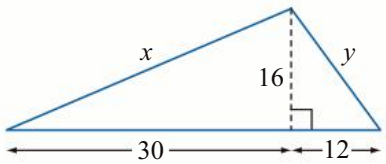
Find the volume of the square pyramid.



cm^3

26. [Pythagoras / Trigonometry] *

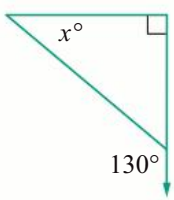
Find the missing lengths in this triangle.



$x =$ $y =$

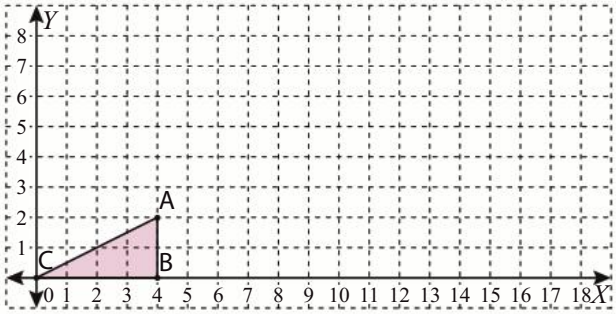
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

Redraw the triangle ABC enlarged by a scale factor of 4 about the origin of the axes. Label the enlargement A'B'C. Are triangles ABC and A'B'C congruent or similar?



29. [Statistics] *

The back-to-back stem plot shows the average monthly relative humidity percentages for the Gold Coast and Melbourne in the past 30 years. Find the difference between the medians of the two sets of data.

Gold Coast		Melbourne
	6	4
9 9 9 7 6 5	6	6 7 8 9
2 1 1	7	0 2 3
	7	7
	8	0 2 3

Key
5 | 0 = 50

30. [Probability] *

A jar contains 10 white, 4 yellow and 8 orange jelly beans. Find the probability that a jelly bean drawn at random from the jar will not be yellow. [Give your answer as a fraction in simplest form.]

31. [Problem Solving 1] *

A 72-page magazine is made up of 18 sheets which have been folded over and stapled down the middle. Pages 1, 2, 71, 72 are on the same sheet. Pages 35, 36, 37, 38 are on the same sheet. What numbers are on the same sheet with 19?

32. [Problem Solving 2] *

I have $100 with which I wish to buy exactly 100 animals to feed to my snake. Tender succulent mice cost $5, large juicy fresh cockroaches are $1, and imported blowflies are only 5¢ each. If I spend every cent buying these animals, and I buy at least one of each, how many cockroaches will I buy?

MATHS MATE

Term 2 - Sheet 4

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$459 \times 37 =$

2. [Decimal +,–] *

$0.907 - 0.055 =$

3. [Decimal ×,÷] *

$0.09 \times 2.6 =$

4. [Fraction +,–]

$5 - 2\frac{5}{6} =$

5. [Fraction ×,÷] *

$\frac{8}{15} \times \frac{25}{24} =$

6. [Percentages] *

0.5% of 120 =

7. [Decimals / Fractions / Percentages] *

Three quarters of the world's fish stock have been over-exploited. Write this as a decimal.

8. [Integer +,–] *

$(+20) - (-8) - (+16) =$

9. [Integer ×,÷] *

$(+11) \times (-5) \times (-2) =$

10. [Rates / Ratios] *

On average in Australia, one person is born every 1 minute and 40 seconds. Approximately how many people is that in 24 hours?

11. [Indices]

Simplify $\frac{c^4}{c^3}$

12. [Square Roots] *

$3\sqrt{196} =$

13. [Exploring Number]

0.000000201 written in scientific notation is:

A) 2.01×10^{-7} B) 2.1×10^{-6} C) 2.01×10^{-5}

14. [Financial Mathematics] *

When the superannuation guarantee was 9%, how much did Kay's employer pay annually into her superannuation if her annual wage, before tax, was $6500?

$

15. [Number Patterns]

Complete the pattern:

$\frac{4}{9}$, $\frac{4}{3}$, 4 , 12 , 36 , ___ , ___

16. [Expressions]

Choose the like terms:

$-jk$, j^2k , $-jk^2$, $2kj^2$

17. [Substitution] *

Use $F = \frac{9}{5}C + 32$ to find the temperature F in degrees Fahrenheit when $C = 40$

18. [Expansion]

Expand $-2s(5st + 3t)$

19. [Factorisation]

Factorise

$2de - 8def$

20. [Equations] *

Solve for x: $2(3x + 4) = 2(x - 10)$

21. [Coordinate Geometry] *

Use $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$ to find the coordinates of the midpoint M of the interval joining the points (–6,4) and (–4,–8).

QUOTE OF THE WEEK: Individuals are occasionally guided by reason, crowds never. Dean W. R. Inge

22. [Units of Measurement / Time]

What is the earliest week day time you can arrive at the Arts Centre when travelling by tram from Bell Street?

Monday to Friday	East Coburg to South Melbourne Beach							
Route 1	via Brunswick > Carlton > City > Sth Melbourne							
Stop		AM	AM	AM	AM	AM	AM	AM	AM
135	East Coburg - Bell St						5:40	5:50	6:00
112	Elgin St & Lygon St	4:59	5:11	5:35	5:46	5:56	6:06	6:16	6:26
1	Melbourne University	5:01	5:13	5:25	5:37	5:48	5:58	6:08	6:18
13	Federation Square	5:12	5:24	5:36	5:48	5:59	6:09	6:16	6:29
14	Arts Centre	5:14	5:26	5:38	5:50	6:01	6:11	6:21	6:31
16	Southbank Blvd & St Kilda Rd	5:15	5:27	5:39	5:51	6:02	6:12	6:22	6:32
32	South Melbourne Beach	5:27	5:39	5:51	6:03	6:14	6:24	6:34	6:54

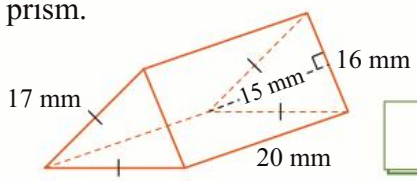
23. [Perimeter / Area] *

The sport of fencing uses a rectangular space with an area of 28 m^2. What is the perimeter of this space if the length measures 14 m?

m

24. [Surface Area] *

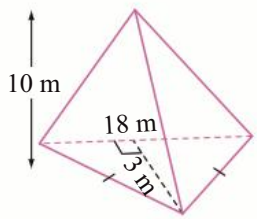
Find the total surface area of the triangular prism.



mm^2

25. [Volume] *

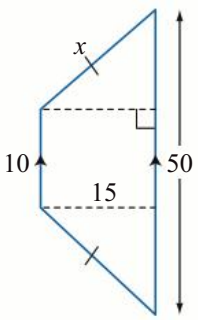
Find the volume of the triangular pyramid.



m^3

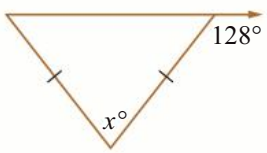
26. [Pythagoras / Trigonometry] *

Find the missing side length in this trapezium.



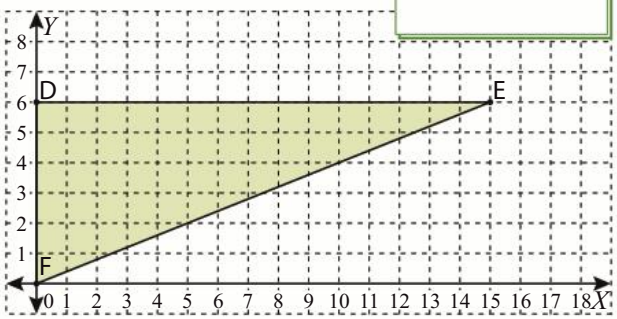
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

Redraw the triangle DEF reduced by a scale factor of 3 about the origin of the axes. Label the reduction D'E'F. Are triangles DEF and D'E'F congruent or similar?



29. [Statistics] *

The back-to-back stem plot shows Carlton's home and away scores in the 2017 and 2018 AFL seasons. Find the difference between the medians of the two sets of data.

2017		2018
	3	0
7	4	5 6 6 9
8 8 7 7 1	5	0 2 2 5 9 9
6 4 2	6	1 1 7 9 9
9 7 7 6 1	7	0 2 6 9
9 3 3 2 2 2	8	
7 6	9	1 5

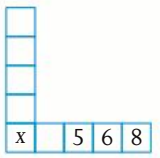
Key
5 | 0 = 50

30. [Probability] *

A bag contains 50 balls, each marked with a number from 1 to 50. A ball is drawn from the bag at random. What is the probability that the number drawn is not a multiple of 5? [Give your answer as a decimal.]

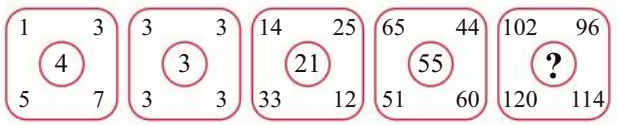
31. [Problem Solving 1] *

The digits from 1 to 9 inclusive are placed one per square in this diagram. The total of the five numbers in the vertical column is the same as the total of the five numbers in the horizontal row. How many different possible values of x are there?



32. [Problem Solving 2] *

The central number is determined by the same rule in each of these shapes. What is the missing number?



MATHS MATE

Term 2 - Sheet 5

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$345 \div 15 =$

2. [Decimal +,–] *

$3.5 + 14.02 - 8 =$

3. [Decimal ×,÷] *

$7.34 \times 20 =$

4. [Fraction +,–] *

$\frac{3}{5} + \frac{3}{10} =$

5. [Fraction ×,÷] *

$4 \div \frac{2}{3} =$

6. [Percentages] *

120% of 500 =

7. [Decimals / Fractions / Percentages] *

Approximately 35% of the calories in a leg of lamb come from fat. Write this percentage as a fraction in simplest form.

8. [Integer +,–] *

$(-16) + (+13) + (-15) =$

9. [Integer ×,÷] *

$(+10) \times (20) \div (-2) =$

10. [Rates / Ratios] *

Find the missing term in the proportion:

$\frac{33}{b} = \frac{9}{6}$

$b =$

11. [Indices]

Simplify $8b^2 \times 2b^2$

12. [Square Roots] *

$\sqrt{36} \times \sqrt{36} =$

13. [Exploring Number]

$22 + 2 \times (5 - 15) =$

14. [Financial Mathematics] *

Jarad's taxable income is $41 000. What is the amount of tax payable on his income?

Taxable Income	Tax on this income*
0-$18 200	Nil
$18 201 - $37 000	19¢ for each $1 over $18 200
$37 001 - $90 000	$3 572 plus 32.5¢ for each dollar over $37 000
$90 001 - $180 000	$20 797 plus 37¢ for each dollar over $90 000
$180 001 and over	$54 097 plus 45¢ for each dollar over $180 000

*Resident tax rates 2019-2020 (Australia)

15. [Number Patterns]

Complete the pattern:

$-2048, 512, -128, 32,$ ___ , ___

16. [Expressions]

Simplify $t^2 + 4t^2 - 2t$

17. [Substitution] *

If $y = x(x - 8)$, find y when $x = 8$

18. [Expansion] *

Expand and simplify

$n(3n - 4) + 2n$

19. [Factorisation]

Factorise

$-2t^2 - 8t$

20. [Equations] *

Solve for x: $10 - x = \frac{3x}{2}$

21. [Coordinate Geometry] *

Write the equation $6x - 2y = 3$ in the gradient-intercept form $y = mx + c$, where m represents the gradient and c the y-intercept.

$y =$

QUOTE OF THE WEEK: Human relations are something we always wish we had. P. K. Shaw

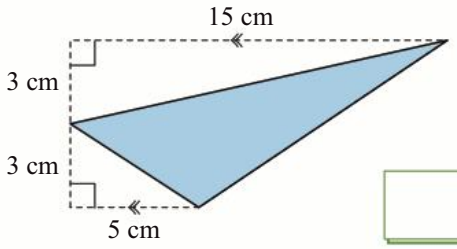
22. [Units of Measurement / Time] *

Express in centimetres:

2 m and 380 mm = _____

23. [Perimeter / Area] *

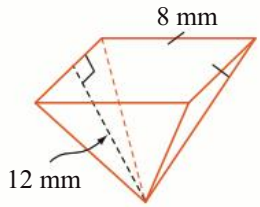
Find the area of the obtuse triangle.



_____ cm^2

24. [Surface Area] *

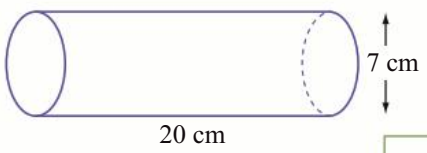
Find the total surface area of the regular square pyramid.



_____ mm^2

25. [Volume] *

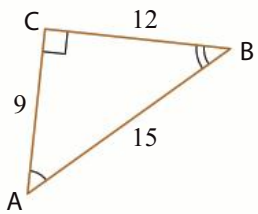
Using $V = \pi r^2 h$ and $\pi \approx \frac{22}{7}$, find the volume of the cylinder.



_____ cm^3

26. [Pythagoras / Trigonometry] *

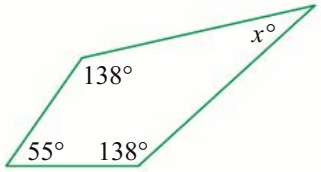
Calculate the value of sin A in this triangle.



_____

27. [Angles] *

Find the value of $x°$.

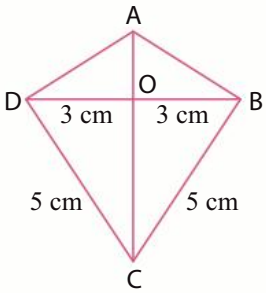


_____

28. [Geometric Reasoning]

Which congruence test can be applied to show that ΔCOD and ΔBOC are congruent?

A) side-side-side (SSS)
B) side-angle-side (SAS)
C) angle-angle-side (AAS)
D) right-hypotenuse-side (RHS)

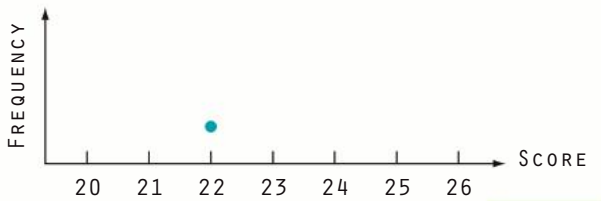


_____

29. [Statistics] *

Complete the dot plot and find the median of the following data:

~~22~~, 24, 20, 21, 25, 23, 23, 20, 25, 22, 20, 26



_____

30. [Probability] *

A standard die is tossed, and a spinner labelled 1, 2, 3 and 4 is spun. Complete the table. What is the probability of obtaining at least one odd number when the die is tossed and the spinner is spun once? [Give your answer as a fraction in simplest form.]

Possible outcomes		Die					
		1	**2**	**3**	**4**	**5**	**6**
Spinner	**1**	(1,1)	(1,2)				
	2	(2,1)					
	3	(3,1)					
	4						

_____

31. [Problem Solving 1] *

The ratio of $10 notes to $20 notes in Luke's wallet is 4 : 5. If he has twenty-seven notes altogether, what is the total value of the twenty-seven notes?

$ _____

32. [Problem Solving 2] *

A mother is 7 times as old as her son. In 5 years time she will be 4 times her son's age. How old is the mother now?

_____

MATHS MATE

Term 2 - Sheet 6

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$432 \div 16 =$

2. [Decimal +,–] *

$0.06 + 11.66 - 2.4 =$

3. [Decimal ×,÷] *

$2.5 \times 150 =$

4. [Fraction +,–] *

$\frac{2}{3} - \frac{7}{12} =$

5. [Fraction ×,÷] *

$14 \div \frac{7}{8} =$

6. [Percentages] *

How much is 200% of 9?

7. [Decimals / Fractions / Percentages] *

Write 4% as a fraction in simplest form.

8. [Integer +,–] *

$(+23) - (-17) + (-14) =$

9. [Integer ×,÷] *

$(+12) \div (-4) \times (+8) =$

10. [Rates / Ratios] *

50 : 33 is in proportion with 5 : 11
True or false?

11. [Indices]

Simplify $x^3y \times xy^2$

12. [Square Roots] *

$\sqrt{\frac{1}{4}} \times \sqrt{\frac{1}{100}} =$

13. [Exploring Number] *

$-5 \times (18 + 4) =$

14. [Financial Mathematics]

Philippe is a foreign resident on a holiday working visa in Australia. His taxable income is $20 000. What is the amount of tax payable on his income?

Taxable Income	Tax on this income*
0-$90 000	32%
$90 001-$180 000	$29 250 + 37% of amounts over $90 000
$180 000 and over	$62 550 + 45% of amounts over $180 000

*Foreign resident tax rates 2019-2020 (Australia)

15. [Number Patterns]

Complete the pattern:
1458 , –486 , 162 , –54 , 18 , ___ , ___

16. [Expressions] *

Simplify $4y + 6z - y - 5z$

17. [Substitution] *

If $y = (x + 2)(x - 3)$, find y when $x = 3$

18. [Expansion]

Expand and simplify
$2r(s + 7) - 5r$

19. [Factorisation]

Factorise
$-15w + 20$

20. [Equations] *

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

21. [Coordinate Geometry] *

Write the equation $8x + 2y - 10 = 0$ in the gradient-intercept form $y = mx + c$, where m represents the gradient and c the y-intercept.

$y =$

QUOTE OF THE WEEK: Little minds are tamed and subdued by misfortunes; but great minds rise above them. Washington Irving

22. [Units of Measurement / Time] *

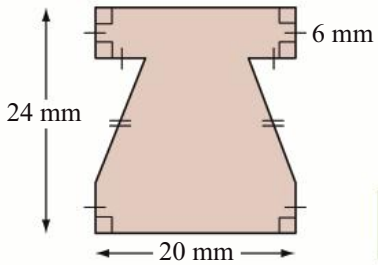
Which distance is greater?

A) running 3 heats and the final in the 400 m

B) swimming 1.5 km

23. [Perimeter / Area] *

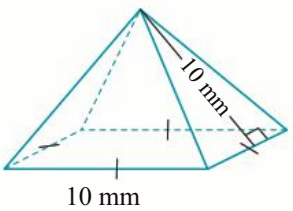
Find the area of the polygon.



mm^2

24. [Surface Area] *

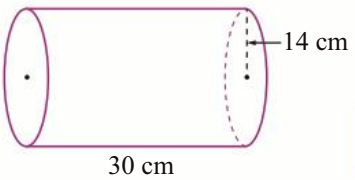
Find the total surface area of the regular square pyramid.



mm^2

25. [Volume] *

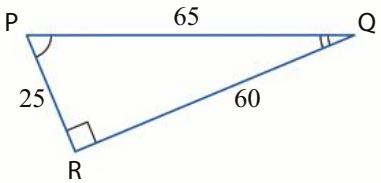
Find the volume of the cylinder using $\pi \approx \frac{22}{7}$



cm^3

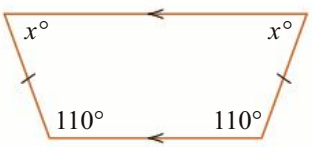
26. [Pythagoras / Trigonometry] *

Calculate the value of cos Q in this triangle.



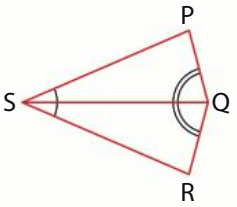
27. [Angles] *

Find the value of $x°$.



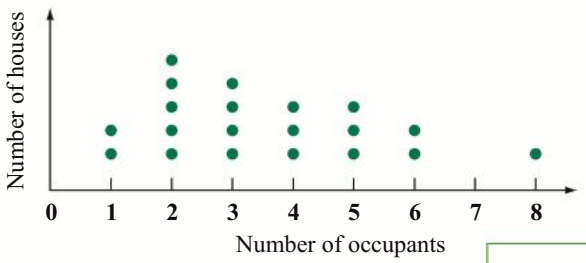
28. [Geometric Reasoning]

Which congruence test (SSS, SAS, AAS, RHS) can be applied to show that ΔPQS is congruent to ΔQRS?



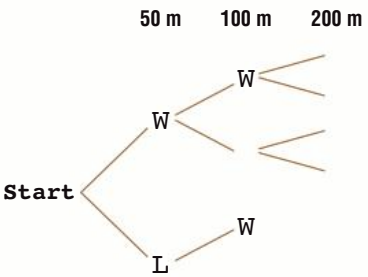
29. [Statistics] *

This dot plot shows the number of people living in the houses on our street. What is the median of this distribution?



30. [Probability] *

On school sports day Roger swims in the 50 m, 100 m and 200 m freestyle races. Roger estimates that he has equal chances of winning or losing each race. Complete the tree diagram. What is the probability that he wins at least two races? [Give your answer as a fraction in simplest form.]



31. [Problem Solving 1] *

A survey of 50 drivers found that 30 people always drive to the speed limit and 25 never talk on their mobile phones while driving. If 17 drivers observe both safety measures, how many drivers observe neither safety measure?

32. [Problem Solving 2] *

$3x + 4y = 120$

How many pairs of positive integers make this equation true?

[Hint: Positive integers are 1, 2, 3, 4, ...]

MATHS MATE

Term 2 - Sheet 7

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$399 \div 19 =$

2. [Decimal +,–] *

$13 - 0.08 + 2.9 =$

3. [Decimal ×,÷] *

$0.025 \times 50 =$

4. [Fraction +,–] *

$\frac{1}{6} + \frac{7}{12} =$

5. [Fraction ×,÷] *

$12 \div \frac{8}{5} =$

6. [Percentages] *

105% of $240 =$

7. [Decimals / Fractions / Percentages] *

What percentage of the price of a \$200 printer is an \$80 deposit?

8. [Integer +,–] *

$(-19) + (+9) + (-16) =$

9. [Integer ×,÷] *

$(-4) \times (+200) \div (-25) =$

10. [Rates / Ratios] *

30 : 12 is in proportion with 45 : 18

True or false?

11. [Indices]

Simplify $\frac{9x^3}{3x}$

12. [Square Roots] *

$\frac{\sqrt{8100}}{\sqrt{100}} =$

13. [Exploring Number] *

$7 \times 8 \div (1 - 5) =$

14. [Financial Mathematics] *

Harry has a taxable income of \$50 000. His employer has withheld \$10 000 in tax. How much tax refund will he receive at the end of the financial year, if there are no other deductions?

Taxable Income	Tax on this income*
\$0 - \$14 000	10.5%
\$14 001 - \$48 000	\$1470 plus 17.5% for each dollar over \$14 000
\$48 001 - \$70 000	\$7420 plus 30% for each dollar over \$48 000
Over \$70 000	\$14 020 plus 33% for each dollar over \$70 000

*Resident tax rates 2019-2020 (New Zealand)

15. [Number Patterns]

Complete the pattern:

96 , 48 , 24 , 12 , 6 , ___ , ___

16. [Expressions] *

Simplify $4hi - 3 + 10 - 3hi$

17. [Substitution] *

If $t = 4$ and $u = 10$,
find the value of $t(u - 15)$

18. [Expansion] *

Expand and simplify
$x(yz + 5) + 3(2x + 7)$

19. [Factorisation]

Factorise
$-m^3 - 2m^2n$

20. [Equations] *

Solve for x: $2x + \frac{x}{4} = 9$

21. [Coordinate Geometry] *

Complete the table:

equation	gradient (m)	x-intercept	y-intercept (c)
$y = -2x + 3$			

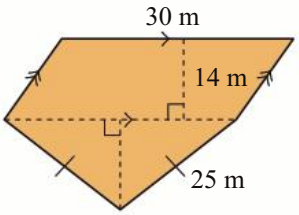
QUOTE OF THE WEEK: Absence is to love what wind is to fire; it extinguishes the small, it inflames the great. Bussy - Rabutin

22. [Units of Measurement / Time] *

The Limpopo River (Africa) is 1 800 000 m in length. The Yangtze River (China) is three and a half times longer. What is the length in kilometres of the Yangtze River?

23. [Perimeter / Area] *

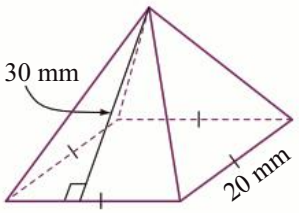
Find the area of the polygon.
[Hint: Pythagoras' theorem will help.]



m^2

24. [Surface Area] *

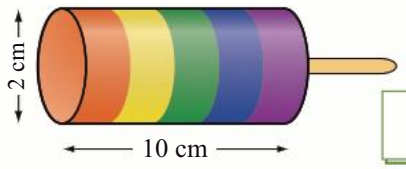
Find the total surface area of the regular square pyramid.



mm^2

25. [Volume] *

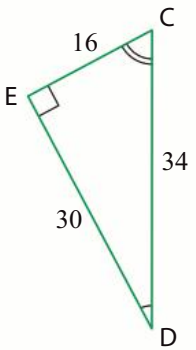
Using $\pi \approx 3.14$ find the volume of ice in the icy pole.



cm^3

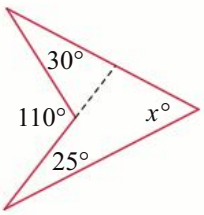
26. [Pythagoras / Trigonometry] *

Calculate the value of tan D in this triangle.



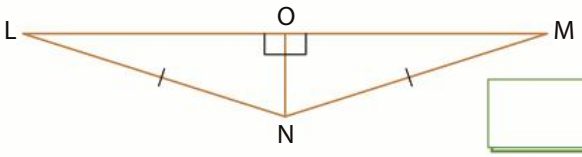
27. [Angles] *

Find the value of $x°$.



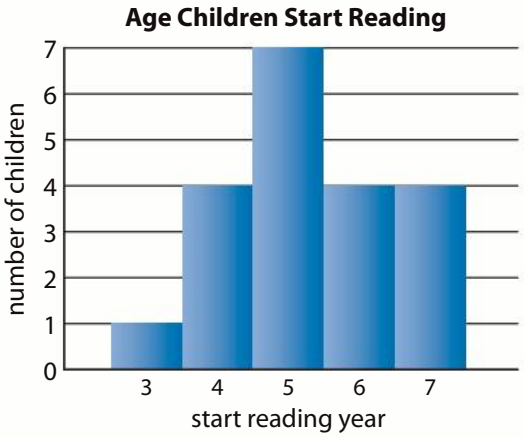
28. [Geometric Reasoning]

Which congruence test (SSS, SAS, AAS, RHS) can be applied to show that ΔLON is congruent to ΔMON?



29. [Statistics] *

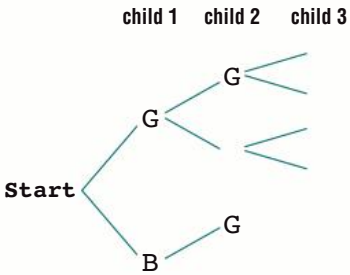
Find the median and mean of the distribution.



median = mean =

30. [Probability] *

Joanna and Claude wish to start a family. They plan to have 3 children. Complete the tree diagram. If the chance of having a girl or a boy is equal, find the probability that they have 2 boys and a girl, in any order. [Give your answer as a fraction in simplest form.]



31. [Problem Solving 1] *

A painted cube is sliced into 27 smaller cubes. How many of these smaller cubes are painted on three sides?

32. [Problem Solving 2] *

Two identical jugs are filled with mixtures of fruit juice and water in the ratio 2 : 1 and 5 : 1 respectively. If the drinks are then mixed in a larger container, what will the ratio of fruit juice to water become?

MATHS MATE

Term 2 - Sheet 8

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$2278 \div 17 =$

2. [Decimal +,–] *

$0.707 + 0.057 - 0.07 =$

3. [Decimal ×,÷] *

$200 \times 0.0054 =$

4. [Fraction +,–] *

$\frac{1}{2} - \frac{5}{18} =$

5. [Fraction ×,÷] *

$15 \div \frac{6}{7} =$

6. [Percentages] *

How much is 110% of 120?

7. [Decimals / Fractions / Percentages] *

What percentage is 12 out of 240?

8. [Integer +,–] *

$(-18) - (+21) - (-27) =$

9. [Integer ×,÷] *

$(+10) \div (-5) \times (+20) =$

10. [Rates / Ratios] *

Find the missing term in the proportion:

$\frac{16}{20} = \frac{4}{x}$ $x =$

11. [Indices]

Simplify $\frac{c^2 d^3}{cd}$

12. [Square Roots] *

$\sqrt{256} \div \sqrt{64} =$

13. [Exploring Number] *

$-36 \div (-1 - 5) + 19 =$

14. [Financial Mathematics] *

Suri has a taxable income of $87 000. He receives a pay rise of $5000 and moves into the next tax bracket. How much more tax will Suri pay per year?

Taxable Income	Tax on this income*
0-$18 200	Nil
$18 201 - $37 000	19¢ for each $1 over $18 200
$37 001 - $90 000	$3572 plus 32.5¢ for each dollar over $37 000
$90 001 - $180 000	$20 797 plus 37¢ for each dollar over $90 000
$180 001 and over	$54 097 plus 45¢ for each dollar over $180 000

*Resident tax rates 2019-2020 (Australia)

15. [Number Patterns]

Complete the pattern:

$64, 16, 4, 1,$ ___ , ___

16. [Expressions] *

Simplify $10x + 2x^2 - 4x^2 - 6x$

17. [Substitution] *

If $m = 1$ and $n = 5$,
find the value of $2m(3m - n)$

18. [Expansion] *

Expand and simplify
$2e(e + 1) - 4(e + 5)$

19. [Factorisation]

Factorise
$-6s^3 - 21s^2t + 18s$

20. [Equations] *

Solve for x: $\frac{x+2}{5} - \frac{x-1}{2} = 2$

21. [Coordinate Geometry] *

Complete the table:

equation	gradient (m)	x-intercept	y-intercept (c)
$y = \frac{1}{4}x - 1$			

QUOTE OF THE WEEK: Man blames most accidents on fate - but feels a more personal responsibility when he makes a hole-in-one.

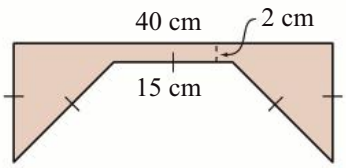
22. [Units of Measurement / Time] *

Place in ascending order:

0.45 km, 54 m and 54 000 cm

23. [Perimeter / Area] *

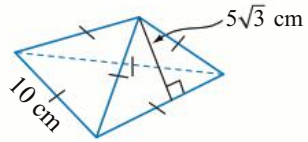
Find the area of the polygon.



cm^2

24. [Surface Area] *

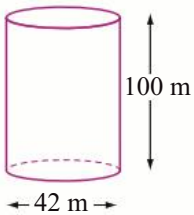
Find the total surface area of the regular tetrahedron. [Leave the answer as a surd in simplest form.]



cm^2

25. [Volume] *

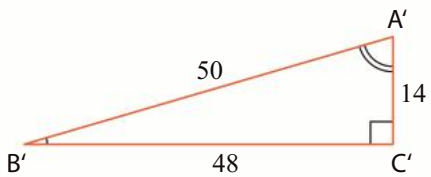
Find the volume of the cylinder using $\pi \approx \frac{22}{7}$



m^3

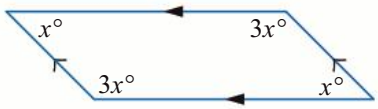
26. [Pythagoras / Trigonometry] *

Calculate the value of sin A′ in this triangle.



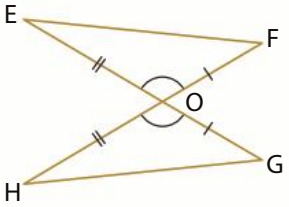
27. [Angles] *

Find the value of $x°$.



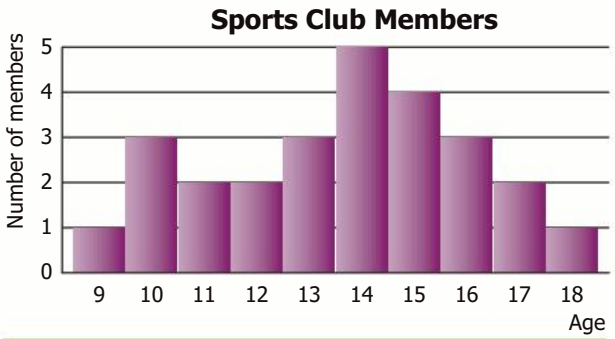
28. [Geometric Reasoning]

Which congruence test (SSS, SAS, AAS, RHS) can be applied to show that ΔEOF is congruent to ΔGOH?



29. [Statistics] *

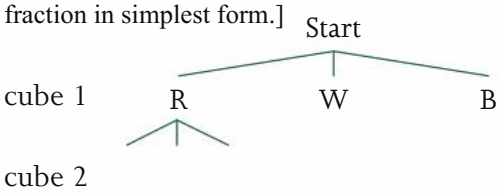
Find the range and median of the distribution.



range = median =

30. [Probability] *

Two cubes each have two faces painted red, two white and two blue. They are rolled on the floor. Complete the tree diagram. What is the probability that the colours appearing uppermost are the same? [Give your answer as a fraction in simplest form.]



31. [Problem Solving 1] *

Larry records the weights of four parcels. He notes that the median is 4.5 kg, the mode is 5 kg, and the mean is 4 kg. What is the weight of each parcel?

kg, kg, kg, kg

32. [Problem Solving 2] *

My watch is 5 minutes slow, but I think it is 3 minutes fast. I arrive 'on time' according to my calculations to catch the 1:15 pm train. What is the real time when I arrive at the station?

MATHS MATE

Name: .....

Class: .....

Teacher: .....

Worksheet Results

Term 3

		Sheet 1	Sheet 2	Sheet 3	Sheet 4	Skill Builder links	Sheet 5	Sheet 6	Sheet 7	Sheet 8	Skill Builder links
NUMBER	1. [Long ×,÷]	1	1	1	1	1.3	1	1	1	1	1.4,8
	2. [Decimal +,–]	2	2	2	2	2.3	2	2	2	2	2.3
	3. [Decimal ×,÷]	3	3	3	3	3.6,7	3	3	3	3	3.8
	4. [Fraction +,–]	4	4	4	4	4.7,8,10,11	4	4	4	4	4.3,4
	5. [Fraction ×,÷]	5	5	5	5	5.3	5	5	5	5	5.7
	6. [Percentages]	6	6	6	6	6.7	6	6	6	6	6.8
	7. [Decimals / Fractions / Percentages]	7	7	7	7	7.10,11	7	7	7	7	7.12
	8. [Integer +,–]	8	8	8	8	8.4	8	8	8	8	8.4
	9. [Integer ×,÷]	9	9	9	9	9.5	9	9	9	9	9.5
	10. [Rates / Ratios]	10	10	10	10	10.10,11	10	10	10	10	10.13,15
	11. [Indices]	11	11	11	11	11.7	11	11	11	11	11.8
	12. [Square Roots]	12	12	12	12	12.7	12	12	12	12	12.5,6,7
	13. [Exploring Number]	13	13	13	13	13.5,6	13	13	13	13	13.9
	14. [Financial Mathematics]	14	14	14	14	14.7	14	14	14	14	14.8
	15. [Number Patterns]	15	15	15	15	15.6	15	15	15	15	15.7
ALGEBRA	16. [Expressions]	16	16	16	16	16.5	16	16	16	16	16.6
	17. [Substitution]	17	17	17	17	17.7	17	17	17	17	17.8
	18. [Expansion]	18	18	18	18	18.6	18	18	18	18	18.7
	19. [Factorisation]	19	19	19	19	19.6,7	19	19	19	19	19.8
	20. [Equations]	20	20	20	20	20.7	20	20	20	20	20.8
	21. [Coordinate Geometry]	21	21	21	21	21.12,13	21	21	21	21	21.14,15
MEASUREMENT	22. [Units of Measurement / Time]	22	22	22	22	22.7	22	22	22	22	22.8
	23. [Perimeter / Area]	23	23	23	23	23.3,4	23	23	23	23	23.12
	24. [Surface Area]	24	24	24	24	24.7	24	24	24	24	24.7,8
	25. [Volume]	25	25	25	25	25.4	25	25	25	25	25.5
	26. [Pythagoras / Trigonometry]	26	26	26	26	26.8	26	26	26	26	26.9
SPACE	27. [Angles]	27	27	27	27	27.7	27	27	27	27	27.8
	28. [Geometric Reasoning]	28	28	28	28	28.11	28	28	28	28	28.12,13
STAT.	29. [Statistics]	29	29	29	29	29.12	29	29	29	29	29.13,16
PROB.	30. [Probability]	30	30	30	30	30.6,7	30	30	30	30	30.8
PROBLEM SOLVING	31. [Problem Solving 1]	31	31	31	31	Hints & Solutions	31	31	31	31	Hints & Solutions
	32. [Problem Solving 2]	32	32	32	32	Hints & Solutions	32	32	32	32	Hints & Solutions
	Total Correct	◯	◯	◯	◯		◯	◯	◯	◯	

MATHS MATE

Term 3 - Sheet 1

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$1014 \times 130 =$

2. [Decimal +,–] *

$1 - 0.052 =$

3. [Decimal ×,÷]

$5.9 \div 100 =$

4. [Fraction +,–] *

$\frac{1}{5} + \frac{2}{3} =$

5. [Fraction ×,÷] *

$1\frac{2}{3} \times 1\frac{1}{4} =$

6. [Percentages] *

Increase 2400 by 1%.

7. [Decimals / Fractions / Percentages] *

Complete the table:

Decimal	Fraction	Percentage
0.025		

8. [Integer +,–] *

$9 + (4 - 8) =$

9. [Integer ×,÷] *

$(2 + 4) \times (-5 + 7) =$

10. [Rates / Ratios] *

The cruise ship 'Sapphire Princess' has a crew to passenger ratio of 1 : 2.3
If the ship has a crew of 1000, what is the total number of people on board?
[Hint: Crew + passengers.]

11. [Indices]

Simplify $(ab)^5$

12. [Square Roots] *

$\sqrt{100} - \sqrt{25} =$

13. [Exploring Number]

Write 1.4×10^9 km, the diameter of the Sun, as a basic numeral.

14. [Financial Mathematics] *

Simple Interest = Principal × Rate × Time.
How much interest would Jacinta earn if she invests $200 for 4 years at a simple interest rate of 9% per year?

15. [Number Patterns] *

Find the 25th term in the pattern:
4 , 8 , 12 , 16 , 20 , ...

16. [Expressions]

Simplify $4x \times 5y$

17. [Substitution] *

If $y = 5x - 4$, find y when $x = -2$

18. [Expansion] *

Expand and simplify
$2(2c - 3) - c(c^2 + 4)$

19. [Factorisation]

Factorise
$x(y + 2) + 5(y + 2)$

20. [Equations] *

Solve the inequality:
$\frac{2(4+x)}{5} < 4$

21. [Coordinate Geometry] *

Use $m = \frac{y_2 - y_1}{x_2 - x_1}$ to find the gradient of the line passing through the points (–2,3) and (0,–1).

22. [Units of Measurement / Time] *

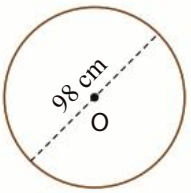
Write in kilograms:

2.05 tonnes and 500 g =

QUOTE OF THE WEEK: For what shall it profit a man, if he shall gain the whole world, and lose his own soul? St. Mark 8:36

23. [Perimeter / Area] *

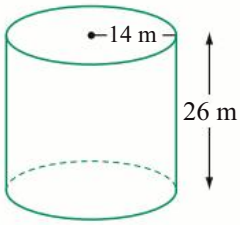
Using $C = 2\pi r$ where $\pi \approx \frac{22}{7}$, find the circumference of the circle.



cm

24. [Surface Area] *

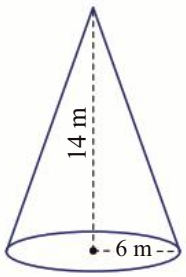
Using $TSA = 2\pi r(r + h)$ and $\pi \approx \frac{22}{7}$, find the total surface area of the cylinder.



m^2

25. [Volume] *

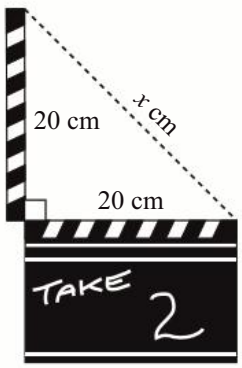
Using $V = \frac{\pi r^2 h}{3}$ and $\pi \approx \frac{22}{7}$, find the volume of the cone.



m^3

26. [Pythagoras / Trigonometry] *

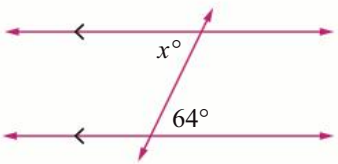
Find the missing length in this diagram of a clapboard. [Leave your answer in surd form.]



cm

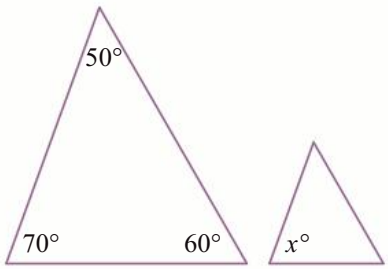
27. [Angles]

Find the value of $x°$.



28. [Geometric Reasoning]

If these two triangles are similar, what is the value of $x°$?



29. [Statistics] *

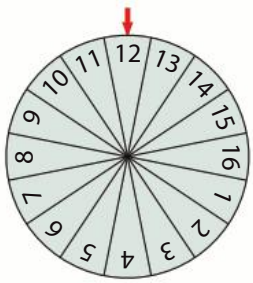
Find the median and range of the following distribution.

Score	4	8	12	16	20
Frequency	3	5	7	3	12

median = range =

30. [Probability] *

This spinner is spun once. What is the probability of spinning a 7 or an even number? [Give your answer as a fraction.]



31. [Problem Solving 1] *

Mick's football team has won 60% of the first 10 games, which is half the season. They aim for 75% wins over the whole season. How many of the last 10 games must they win to reach this aim?

32. [Problem Solving 2] *

Find a four-digit number that when multiplied by nine gives the original number back to front.

Hint:

$$\begin{array}{rcccc} & A & B & C & D \\ \times & & & & 9 \\ \hline & D & C & B & A \end{array}$$

MATHS MATE

Term 3 - Sheet 2

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$2230 \times 140 =$

2. [Decimal +,–] *

$10 - 0.108 =$

3. [Decimal ×,÷]

$20.8 \div 1000 =$

4. [Fraction +,–] *

$\frac{1}{3} - \frac{1}{10} =$

5. [Fraction ×,÷] *

$\frac{1}{7} \times 5\frac{3}{5} =$

6. [Percentages] *

Increase 550 by 60%.

7. [Decimals / Fractions / Percentages] *

Complete the table:

Decimal	Fraction	Percentage
		8%

8. [Integer +,–] *

$5 - (3 - 9) =$

9. [Integer ×,÷] *

$(4 - 3) \times (3 - 4) =$

10. [Rates / Ratios] *

The ratio of strings to brass to percussion instruments in a 76 piece orchestra is 15 : 3 : 1
How many brass instruments are in the orchestra?

11. [Indices]

Simplify $(2x)^4$

12. [Square Roots] *

$\sqrt{49} + \sqrt{49} =$

13. [Exploring Number]

Write 22.5 million degrees Fahrenheit, the temperature of the Sun's core, in scientific notation.

14. [Financial Mathematics] *

Using $SI = PRT$ how much interest must Paddy pay on a loan of $2500 for 3 years at an interest rate of 13% per year?

15. [Number Patterns] *

Find the 15th term in the pattern:

2 , 7 , 12 , 17 , 22 , ...

16. [Expressions]

Simplify $-5p \times -6q$

17. [Substitution] *

If $a = -2$ and $b = 3$,
find the value of $-b - 4a$

18. [Expansion] *

Expand and simplify
$2b(b^2 - a) + 8a(b - 1)$

19. [Factorisation] *

Factorise
$x(z - 4) + y(z - 4)$

20. [Equations] *

Solve the inequality:

$\frac{2(x-3)}{3} \geq 4$

21. [Coordinate Geometry] *

Use $m = \frac{y_2 - y_1}{x_2 - x_1}$ to find the gradient of the line passing through the points (2,–4) and (–4,–1).

22. [Units of Measurement / Time] *

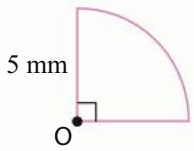
Which has a lesser mass?

A) paper clip weighing 0.5 g
B) ten cent piece weighing 5650 mg

QUOTE OF THE WEEK: It is the greatest of mistakes to do nothing because you can only do a little. Do what you can. Sydney Smith.

23. [Perimeter / Area] *

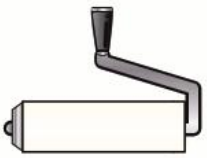
Using $C = 2\pi r$ where $\pi \approx 3.14$, find the perimeter of the shape.



mm

24. [Surface Area] *

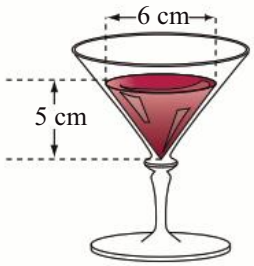
Using $LA = 2\pi rh$ and $\pi \approx 3.14$, find the lateral area of a paint roller of diameter 5 cm and length 15 cm.



cm^2

25. [Volume] *

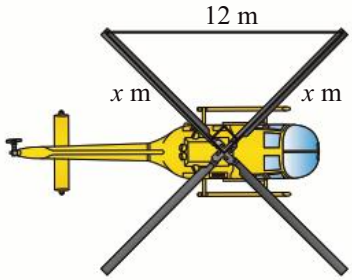
Using $\pi \approx 3.14$ find how much liquid is in the conical glass. [Hint: 1 mL = 1 cm^3]



mL

26. [Pythagoras / Trigonometry] *

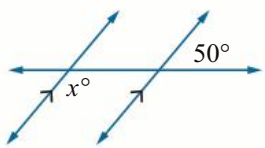
How long is each of the helicopter's blades, if they are all the same length and the distance between the tips of two consecutive blades is 12 m? [Leave your answer in surd form.]



m

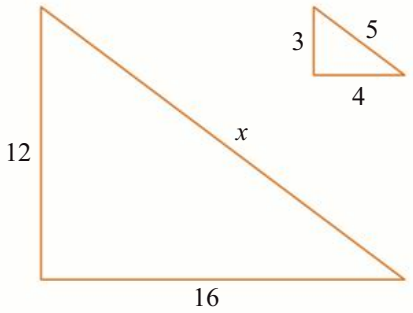
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning] *

If these two triangles are similar, what is the value of x? [All measurements are in cm.]



29. [Statistics] *

Find the median and mode of the following distribution.

Score	2	4	6	8	10	12
Frequency	1	2	3	6	2	1

median = mode =

30. [Probability] *

A bag contains 40 balls, each marked with a number from 1 to 40. A ball is drawn from the bag at random. What is the probability that the number drawn is less than 5 or a multiple of 6? [Give your answer as a fraction in simplest form.]

31. [Problem Solving 1] *

Seven consecutive numbers are listed. The sum of the smallest three numbers is 48. What is the sum of the largest three?

32. [Problem Solving 2] *

Jay (J) and Kay (K) can pack the shelves in one aisle of the supermarket in 30 minutes. Kay and Elle (L) take 35 minutes to do the same job, but, when Jay and Elle work together, the job takes 42 minutes. How long would each person take working individually?

J = min, K = min, L = min

MATHS MATE

Term 3 - Sheet 3

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$205 \times 1700 =$

2. [Decimal +,–] *

$100 - 0.444 =$

3. [Decimal ×,÷] *

$0.007 \div 0.01 =$

4. [Fraction +,–] *

$\frac{3}{4} - \frac{3}{10} =$

5. [Fraction ×,÷] *

$1\frac{5}{7} \times \frac{7}{8} =$

6. [Percentages] *

Increase 80 by 12.5%.

7. [Decimals / Fractions / Percentages] *

Of the 28 European Union countries, one fourteenth have not agreed to adopt the Euro as their currency. How many EU countries will not adopt the Euro?

8. [Integer +,–] *

$6 - (6 + 7) =$

9. [Integer ×,÷] *

$(2 + 5) \times (2 - 5) =$

10. [Rates / Ratios] *

The ratio of Italy's gold to silver to bronze medals at the 2016 Rio Olympics was 2 : 3 : 2. If Italy won 28 medals in total, how many medals were gold?

11. [Indices] *

Simplify $2(3x)^3$

12. [Square Roots] *

$3\sqrt{25} - \sqrt{25} =$

13. [Exploring Number]

Write 6.25×10^{-5} m, the size of a sand particle, as a decimal number.

14. [Financial Mathematics] *

Cheryl invested $7000 for 5 years at a simple interest rate of 11%. How much does Cheryl get back?
[Hint: Principal + interest.]

15. [Number Patterns] *

Find the 20th term in the pattern:
1 , 4 , 9 , 16 , 25 , ...

16. [Expressions]

Simplify $s \times -2s$

17. [Substitution] *

If $r = 2$ and $s = -5$,
find the value of $r(2r + s)$

18. [Expansion] *

Expand and simplify
$-3(d^2 - e) + 4d(d - 1)$

19. [Factorisation] *

Factorise
$2a - 4 + ab - 2b$

20. [Equations] *

Solve the inequality:
$\frac{4x}{3} - x > 1$

21. [Coordinate Geometry] *

Use $y - y_1 = m(x - x_1)$ where $m = \frac{y_2 - y_1}{x_2 - x_1}$ to write the equation of the line passing through the points (–2,0) and (–1,4).

$y =$

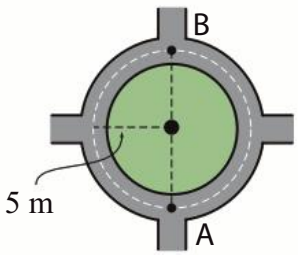
22. [Units of Measurement / Time] *

The average adult human heart has a mass of 0.3 kg. If a human brain is four and a half times bigger, what is its mass in grams?

QUOTE OF THE WEEK: Our greatest glory is not in never falling, but in rising every time we fall. Confucius: Analects

23. [Perimeter / Area] *

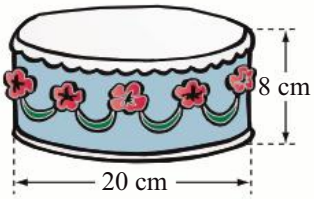
How much further must a driver travel from A to B by going around the roundabout rather than straight across the intersection? (Use $\pi \approx 3.14$)



m

24. [Surface Area] *

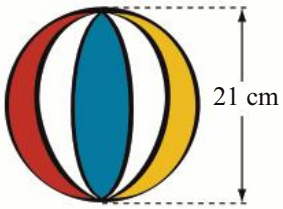
This cake is covered in icing, except for the base. Using $\pi \approx 3.14$ find the total surface area of the icing.



cm^2

25. [Volume] *

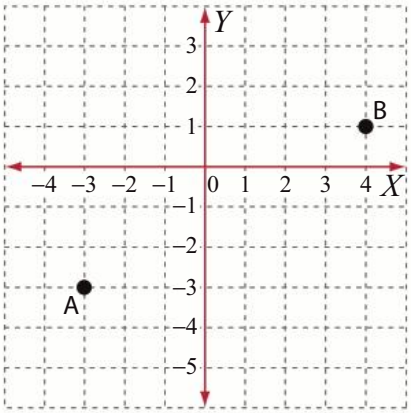
Using $V = \frac{4\pi r^3}{3}$ and $\pi \approx \frac{22}{7}$, find the volume of air in the beach ball.



cm^3

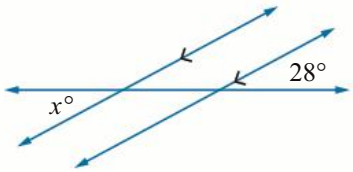
26. [Pythagoras / Trigonometry] *

Find the distance AB in this Cartesian plane.
[Leave your answer in surd form.]



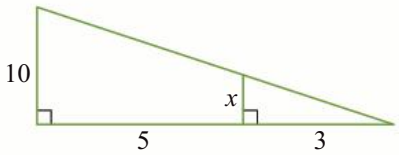
27. [Angles]

Find the value of $x°$.



28. [Geometric Reasoning] *

Find the value of x. [All measurements are in cm.]



29. [Statistics] *

Find the mean of the following distribution.

Score	0	10	20	30	50
Frequency	10	15	5	20	10

30. [Probability] *

A 52-card deck of playing cards is shuffled, and one card is dealt from the top of the deck. What is the probability that it is an even number or a diamond? [Give your answer as a fraction in simplest form.]

31. [Problem Solving 1] *

Lisa had a box of apples. She gave $\frac{1}{3}$ of them to Henry and $\frac{1}{4}$ of the remainder to Alex. If there were still 30 apples left, how many did she have at the start?

32. [Problem Solving 2] *

A 4 litre, 20% alcohol-water mixture will be upgraded by adding to it a certain amount of a 70% alcohol-water mixture. How many litres of the 70% mixture must be added to make the new solution a 50% alcohol-water mixture?

MATHS MATE

Term 3 - Sheet 4

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$461 \times 1800 =$

2. [Decimal +,–] *

$100 - 0.073 =$

3. [Decimal ×,÷] *

$1.61 \div 0.001 =$

4. [Fraction +,–] *

$\frac{1}{6} + \frac{3}{8} =$

5. [Fraction ×,÷] *

$1\frac{1}{11} \times 4\frac{1}{8} =$

6. [Percentages] *

Increase 320 by 45%.

7. [Decimals / Fractions / Percentages] *

The longest bone in the human body is the femur (thigh), which is about one quarter of a person's height. How long is the femur of a person 1.92 m high?

cm

8. [Integer +,–] *

$2 + (-4 - 7) =$

9. [Integer ×,÷] *

$(9 - 4) \times (-2 - 2) =$

10. [Rates / Ratios] *

Disinfectant should be diluted with water in a ratio of 1 : 20. How much water is needed to dilute 800 mL of disinfectant?

L

11. [Indices] *

Simplify $3(gh)^2$

12. [Square Roots] *

$5\sqrt{81} + 6\sqrt{4} =$

13. [Exploring Number]

Write 0.000000000753 kg, the mass of a dust particle, in scientific notation.

14. [Financial Mathematics] *

Chi lent to Phi $12 000 for 5 years at a simple interest rate of 7% per year. How much will Chi be repaid? [Hint: Principal + interest.]

15. [Number Patterns] *

Find the 20th term in the pattern:

$\frac{1}{2}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8}, \frac{1}{10}, \ldots$

16. [Expressions]

Simplify $-3b \times 2ab$

17. [Substitution] *

If $j = 1$ and $k = -4$,
find the value of $10 - 2j + 3k$

18. [Expansion] *

Expand and simplify
$-2gh(g - 2h) - 4h(gh - 1)$

19. [Factorisation] *

Factorise
$6gh - 4g + 3h - 2$

20. [Equations] *

Solve the inequality:

$\frac{2x}{5} + x < 14$

21. [Coordinate Geometry] *

Use $y - y_1 = m(x - x_1)$ where $m = \frac{y_2 - y_1}{x_2 - x_1}$ to write the equation of the line passing through the points (2,–1) and (–7,4).

$y =$

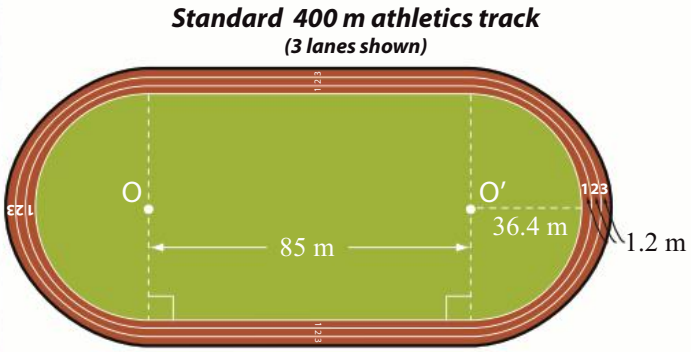
22. [Units of Measurement / Time] *

Place in descending order:
76 700 g, 7.67 kg and 0.767 t

QUOTE OF THE WEEK: Blessed is the man who having nothing to say, abstains from giving us wordy evidence of the fact. George Eliot

23. [Perimeter / Area] *

Using $\pi \approx 3.14$ find the perimeter around the outside of lane 3 of an athletics track.



m

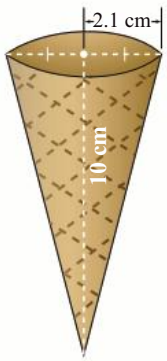
24. [Surface Area] *

Using $\pi \approx \frac{22}{7}$ find the lateral area of the glue stick label.

mm^2

25. [Volume] *

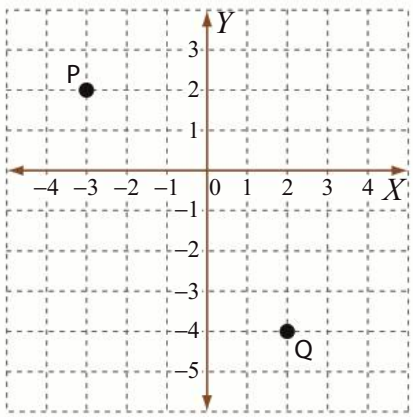
Find the volume of ice cream in the cone using $\pi \approx \frac{22}{7}$



cm^3

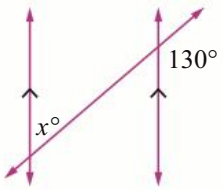
26. [Pythagoras / Trigonometry] *

Find the distance PQ in this Cartesian plane.
[Leave your answer in surd form.]



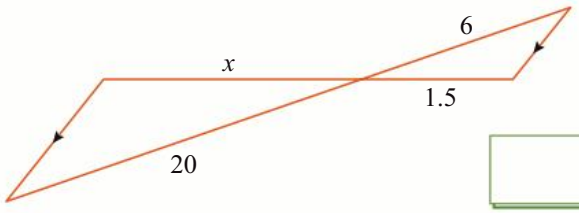
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning] *

Find the value of x. [All measurements are in cm.]



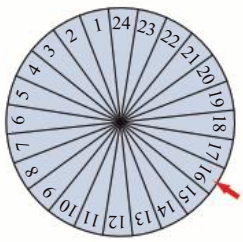
29. [Statistics] *

Find the mean of the following distribution.

Score	5	10	15	20	25	30
Frequency	3	6	4	3	3	1

30. [Probability] *

This spinner is spun once. What is the probability of spinning a multiple of 3 or a multiple of 4? [Give your answer as a fraction in simplest form.]



31. [Problem Solving 1] *

A computer drawing was enlarged using a scale factor of 250%. What scale factor is required if the drawing is now to be reduced to its original size?

32. [Problem Solving 2] *

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

$$\begin{array}{r} \text{FORTY} \\ \text{TEN} \\ +\ \text{TEN} \\ \hline \text{SIXTY} \end{array}$$

MATHS MATE

Term 3 - Sheet 5

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$1134 \div 12 =$

2. [Decimal +,–] *

$24 - 6.87 =$

3. [Decimal ×,÷] *

$4.8 \div 0.6 =$

4. [Fraction +,–] *

$3\frac{2}{7} - 1\frac{5}{7} =$

5. [Fraction ×,÷] *

$\frac{4}{7} \div 8 =$

6. [Percentages] *

Decrease 5500 by 9%.

7. [Decimals / Fractions / Percentages] *

Place in ascending order:

$\frac{2}{5}$, 0.45, 43%

8. [Integer +,–] *

$(3 - 7) - (7 - 3) =$

9. [Integer ×,÷] *

$\frac{5-8}{5-8} =$

10. [Rates / Ratios] *

Michael Milton is the fastest Australian skier with a record of nearly 60 m/s. What is this speed in kilometres per hour?

11. [Indices]

Simplify $(a^y)^z$

12. [Square Roots] *

$27\sqrt{36} \div 3\sqrt{4} =$

13. [Exploring Number]

Which is **not** a rational number?

A) 1.75 B) 3.14

C) 0.87878787... D) π

14. [Financial Mathematics] *

A 15% increase followed by a 10% discount on the same item is >, < or = a 5% increase of the original value?

15. [Number Patterns] *

If the general rule of a sequence is $-3(n + 2)$ find the 18th term ($n = 18$).

16. [Expressions]

Simplify $8f \div 6f$

17. [Substitution] *

If $c = 5$ and $d = -4$, find the value of

$\frac{c}{3}(11 - d)$

18. [Expansion]

Expand

$(6 - a)(3 - b)$

19. [Factorisation]

Factorise $m^2 - n^2$

20. [Equations] *

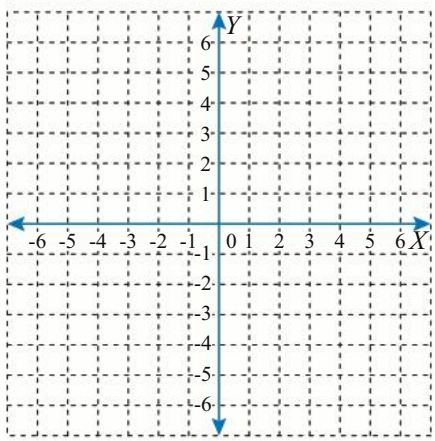
Solve for x:

$(x + 8)(x + 3) = 0$

21. [Coordinate Geometry] *

Sketch the non-linear rule $y = x^2 - 5$ (parabola) by first completing this table of values.

x	–3	–2	–1	0	1	2	3
y	4						



QUOTE OF THE WEEK: It is impossible to make anything foolproof because fools are ingenious. Rossiter

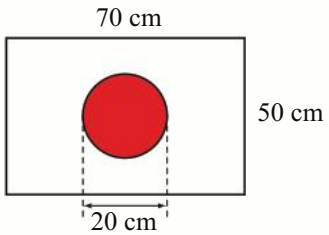
22. [Units of Measurement / Time] *

Express in litres:

2 L and 50 mL =

23. [Perimeter / Area] *

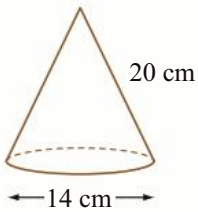
Use $A = \pi r^2$ where $\pi \approx 3.14$, to find the area of the white background on this Japanese flag.



cm^2

24. [Surface Area] *

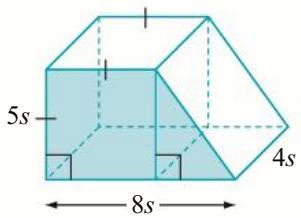
Use $TSA = \pi r(r + s)$ and $\pi \approx \frac{22}{7}$ to find the total surface area of the cone.



cm^2

25. [Volume] *

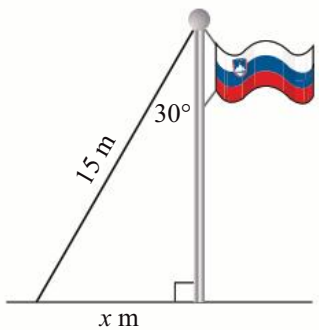
Write an algebraic expression for the volume V of the prism. [Express the answer in terms of s.]



$V =$

26. [Pythagoras / Trigonometry] *

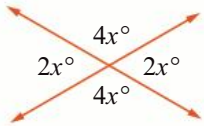
A 15 m long support wire is attached to a flagpole and makes an angle of 30° with the pole. If sin 30° = 0.5, find the distance from the end of the wire to the base of the flagpole.



m

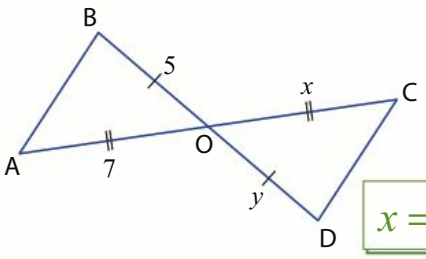
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

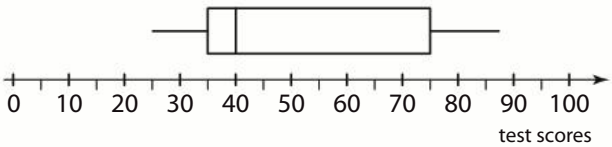
Find the value of x and y in this pair of congruent triangles.



$x =$ $y =$

29. [Statistics]

The box-and-whisker plot shows a set of English test scores. Find the median and lower quartile (LQ).



median = LQ =

30. [Probability] *

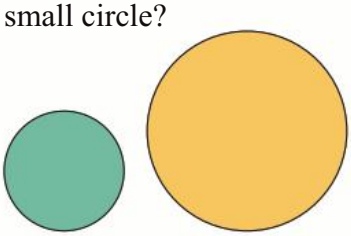
The unemployment rate in Australia at the end of March 2019 was approximately 5.1%. Based on this figure, how many people were expected to be unemployed in a population sample of 10 000 people?

31. [Problem Solving 1] *

In a quiz show, Clara won 20 points for each correct answer and lost 30 points for each incorrect answer. After 30 questions her score was zero. How many correct answers did she have?

32. [Problem Solving 2] *

The diameter of the small circle is 60% of the diameter of the large circle. What percentage of the area of the large circle is the area of the small circle?



MATHS MATE

Term 3 - Sheet 6

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$9135 \div 14 =$

2. [Decimal +,–] *

$15 - 0.041 =$

3. [Decimal ×,÷] *

$3.05 \div 0.05 =$

4. [Fraction +,–] *

$2\frac{9}{11} + 4\frac{5}{11} =$

5. [Fraction ×,÷] *

$\frac{4}{5} \div 2 =$

6. [Percentages] *

Reduce 120 by 70%.

7. [Decimals / Fractions / Percentages] *

Place in descending order:

$0.09,\ 91\%,\ \frac{9}{10}$

8. [Integer +,–] *

$(1 + 4) + (3 - 8) =$

9. [Integer ×,÷] *

$\frac{4+5}{2-5} =$

10. [Rates / Ratios] *

During normal breathing the air travels at about 90 km/h. What is this speed in metres per second?

11. [Indices]

Simplify $(b^3)^2$

12. [Square Roots] *

$4\sqrt{100} \times 3\sqrt{9} =$

13. [Exploring Number]

Which numbers are rational?

A) $\sqrt{36}$ B) $\sqrt{45}$

C) $3.141592653...$ D) $-2.\dot{3}$

14. [Financial Mathematics] *

After receiving a 25% discount, Ellie paid $240 for a bookcase. What was the original marked price of the bookcase?

15. [Number Patterns] *

If the general rule of a sequence is $\frac{n}{3} - 6$ find the 60th term ($n = 60$).

16. [Expressions]

Simplify $5bc \div bc$

17. [Substitution] *

If $x = 3$, $y = 4$ and $z = -5$, find the value of $\frac{6}{x}(xy + z)$

18. [Expansion]

Expand $(p - 3)(5 + 2q)$

19. [Factorisation]

Factorise $9y^2 - 64$

20. [Equations] *

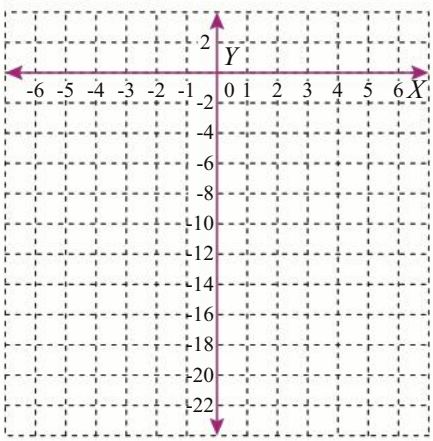
Solve for x:

$(x + 5)(x - 2) = 0$

21. [Coordinate Geometry] *

Sketch the non-linear rule $y = -2x^2$ (parabola) by first completing this table of values.

x	–3	–2	–1	0	1	2	3
y							



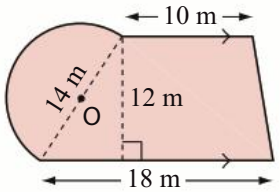
QUOTE OF THE WEEK: Cherish your visions and your dreams as they are the children of your soul; the blueprints of your ultimate achievements. Napoleon Hill

22. [Units of Measurement / Time] *

The pool built in Melbourne's Rod Laver Arena for the 2007 world swimming championships held 3750 million cm^3 of water. Is this $<$, $=$ or $>$ 3750 m^3?

23. [Perimeter / Area] *

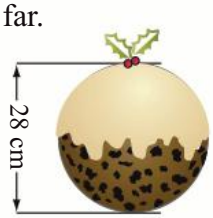
Use $\pi \approx \frac{22}{7}$ to find the area of the shape.



m^2

24. [Surface Area] *

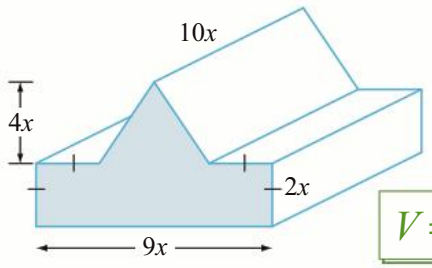
Using $TSA = 4\pi r^2$ and $\pi \approx \frac{22}{7}$, find how much area still needs to be iced to cover the whole pudding, given that 1400 cm^2 has been iced so far.



cm^2

25. [Volume] *

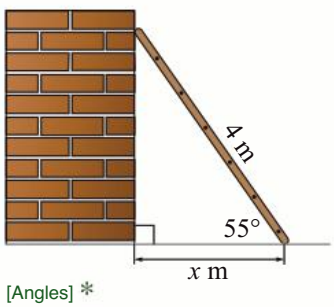
Write an algebraic expression for the volume V of the prism. [Express the answer in terms of x.]



$V =$

26. [Pythagoras / Trigonometry] *

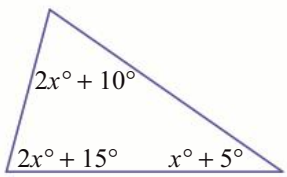
A 4 m long ladder is leaning against a wall and makes an angle of 55° with the ground. If $\cos 55° \approx 0.57$, how far out from the base of the wall is the end of the ladder?



m

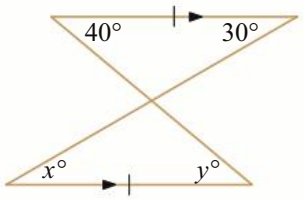
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

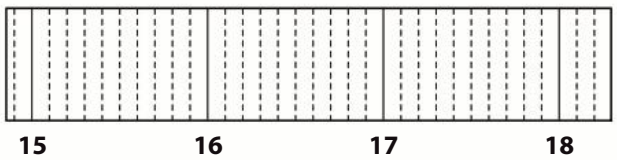
Find the value of $x°$ and $y°$ in this pair of congruent triangles.



$x° =$ $y° =$

29. [Statistics]

Draw a box-and-whisker plot for the set of data whose lowest value is 15.4, greatest value is 18.1, median is 16.5, lower quartile is 16.2 and upper quartile is 17.8.



30. [Probability] *

A school survey found that 3 out of 5 students travel to school by bus. There are 600 students in the school. How many students would you expect to travel to school by bus?

31. [Problem Solving 1] *

If car plates were to have four digits separated in the centre by any letter of the alphabet, how many different plates would be available? [Digits can be repeated.]

05 - X - 68

32. [Problem Solving 2] *

A pattern is made using circles as shown. Two circles were required to make the first figure, and six circles were required to make the second. How many circles are required to make the twentieth figure in the pattern?

Figure 1 Figure 2 Figure 3

MATHS MATE

Term 3 - Sheet 7

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$996 \div 16 =$

2. [Decimal +,–] *

$12 - 3.456 =$

3. [Decimal ×,÷] *

$12.3 \div 1.23 =$

4. [Fraction +,–] *

$3\frac{8}{9} + 1\frac{4}{9} =$

5. [Fraction ×,÷] *

$\frac{7}{10} \div 14 =$

6. [Percentages] *

Decrease 300 by 51%.

7. [Decimals / Fractions / Percentages] *

Place in ascending order:

$35\%,\ 0.38,\ \frac{3}{8}$

8. [Integer +,–] *

$(6 - 12) - (-4 + 6) =$

9. [Integer ×,÷] *

$\frac{-6-2}{2-6} =$

10. [Rates / Ratios] *

40 000 m/h = ____ km/h

11. [Indices]

Simplify $(x^4)^2$

12. [Square Roots] *

$6\sqrt{25} \times 2\sqrt{81} =$

13. [Exploring Number]

Which is an irrational number?

A) $\sqrt{36}$ B) $\sqrt{100}$

C) $-\sqrt{6}$ D) $\frac{12}{17}$

14. [Financial Mathematics]

A dress is reduced by 30%. If the sale price is $140, what is the discount on the dress?

15. [Number Patterns] *

If the general rule of a sequence is $10 - 3n$ find the 25th term.

16. [Expressions]

Simplify $-32xy \div -4y$

17. [Substitution] *

If $a = -2$, find the value of $\frac{a^2 - 2a}{5}$

18. [Expansion] *

Expand and simplify $(j - 7)(j + 7)$

19. [Factorisation] *

Factorise $7z^2 - 63$

20. [Equations] *

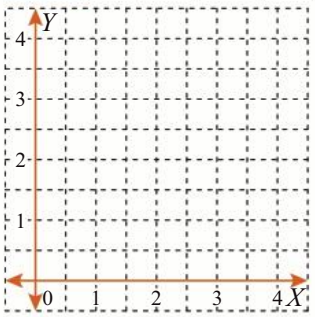
Solve for x:

$x(x - 2) = 0$

21. [Coordinate Geometry] *

Sketch the non-linear rule $y = \frac{2}{x}$ (hyperbola) by first completing this table of values.

x	0	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4
y									



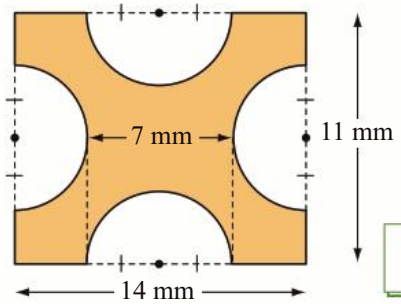
QUOTE OF THE WEEK: Self pity is our worst enemy and if we yield to it we can never do anything wise in the world. Helen Keller

22. [Units of Measurement / Time] *

An average washing machine uses approximately 120 L of water per load and an average dishwasher 25 000 mL. Express the difference in millilitres.

23. [Perimeter / Area] *

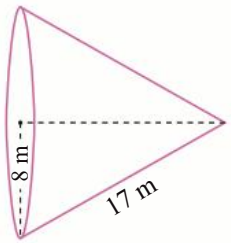
Use $A = \pi r^2$ where $\pi \approx \frac{22}{7}$, to find the area of the shaded shape.



mm^2

24. [Surface Area] *

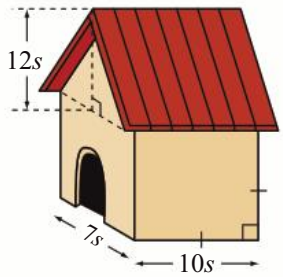
Use $\pi \approx 3.14$ to find the total surface area of the cone.



m^2

25. [Volume] *

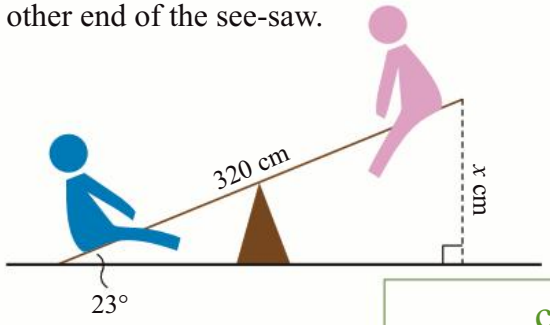
Write an algebraic expression for the volume of air inside the dog house.



$V =$

26. [Pythagoras / Trigonometry] *

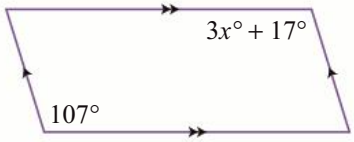
A see-saw is 320 cm long. When one end touches the ground, it makes an angle of 23° with the ground. If sin 23° ≈ 0.4, find the approximate height from the ground of the other end of the see-saw.



cm

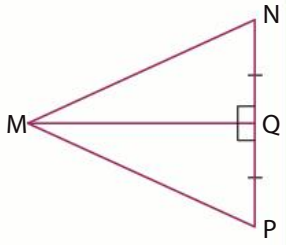
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

Write the pairs of equal sides and angles to prove that ΔMNQ and ΔMPQ are congruent. Which congruence test did you use?



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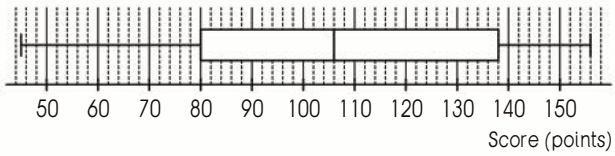
congruence test:

29. [Statistics] *

What is the median and interquartile range (IQR) of these scores?



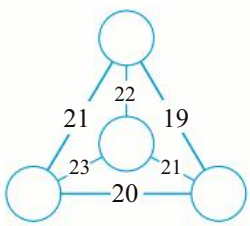
median = IQR =

30. [Probability] *

A standard die is rolled 300 times. How many numbers greater than 4 would you expect as a result?

31. [Problem Solving 1] *

Enter numbers in the circles so that the numbers on each line equal the sum of the numbers at each end.



32. [Problem Solving 2] *

A long strip of paper was folded in half then in half again. It then had three crease lines in the strip. If the paper was folded in half six more times (eight altogether), how many creases would there be when it was unfolded?

[Note: When unfolded all the crease lines should be parallel to each other.]

MATHS MATE

Term 3 - Sheet 8

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$1608 \div 30 =$

2. [Decimal +,–] *

$68 - 0.907 =$

3. [Decimal ×,÷] *

$1.28 \div 0.8 =$

4. [Fraction +,–] *

$3\frac{1}{12} - 1\frac{7}{12} =$

5. [Fraction ×,÷] *

$\frac{4}{9} \div 12 =$

6. [Percentages] *

Reduce 480 by 35%.

7. [Decimals / Fractions / Percentages] *

Place in descending order:

$0.6,\ 66\%,\ \frac{2}{3}$

8. [Integer +,–] *

$(-9 - 15) + (3 - 8) =$

9. [Integer ×,÷] *

$\frac{30}{-2 \times 3} =$

10. [Rates / Ratios] *

300 beats/min = ____ beats/s

11. [Indices]

Simplify $3(y^5)^2$

12. [Square Roots] *

$\frac{8\sqrt{144}}{2\sqrt{16}} =$

13. [Exploring Number]

Which numbers are rational?

A) $-0.727272...$ B) $\sqrt{3}$

C) π D) $-\frac{1}{5}$

14. [Financial Mathematics] *

There is a discount of $50 on a fish tank for purchasing by cash. If the original marked price of the tank is $125, what is the percentage discount given on the marked price?

15. [Number Patterns] *

If the general rule of a sequence is $-\frac{3n}{5}$ find the 45th term.

16. [Expressions]

Simplify $-18g^2h \div 6h$

17. [Substitution] *

If $x = -3$ and $y = -5$,

find the value of $x^2 + \frac{3y}{2}$

18. [Expansion] *

Expand and simplify $(q - 4)(q - 6)$

19. [Factorisation] *

Factorise $a^2b^2 - 9c^2$

20. [Equations] *

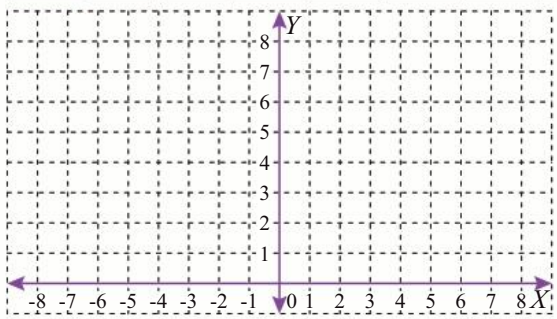
Solve for x:

$x(9 + x) = 0$

21. [Coordinate Geometry] *

Sketch the non-linear rule $y = 2^x$ (exponential function) by first completing this table of values.

x	–3	–2	–1	0	1	2	3
y	$\frac{1}{8}$						



QUOTE OF THE WEEK: Question: "Which is worse - ignorance or apathy?" Response: "I don't know and I don't care."

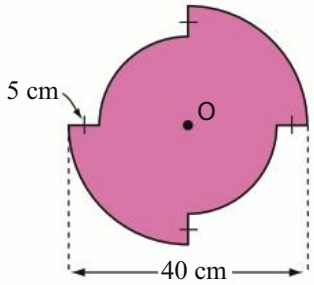
22. [Units of Measurement / Time] *

Place in order from largest to smallest:

0.0025 ML, 25 L and 250 000 mL

23. [Perimeter / Area] *

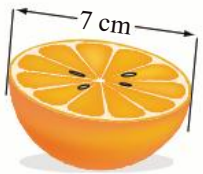
Use $A = \pi r^2$ where $\pi \approx 3.14$, to find the area of the shape.



cm^2

24. [Surface Area] *

Use $\pi \approx \frac{22}{7}$ to find the total surface area of the orange half including the peel and cut surface.

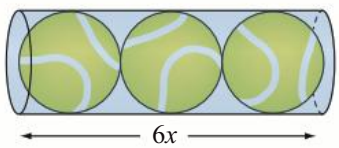


cm^2

25. [Volume] *

A can contains three tennis balls, with no room for the balls to move. Write an algebraic expression in terms of x for the volume of the can which is not occupied by the balls.

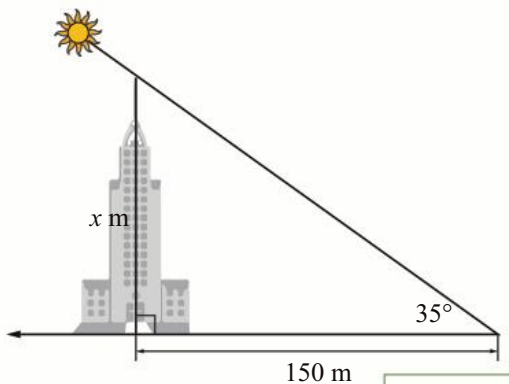
[Hint: $V_{sphere} = \frac{4\pi r^3}{3}$, $V_{cylinder} = \pi r^2 h$]



$V =$

26. [Pythagoras / Trigonometry] *

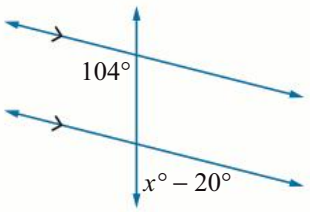
A skyscraper casts a shadow which is 150 m long when the sun is at an angle of 35° in the sky. If tan 35° = 0.7, find the height of the skyscraper.



m

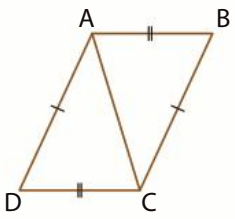
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

Write the pairs of equal sides and angles to prove that ΔABC and ΔADC are congruent. Which congruence test did you use?



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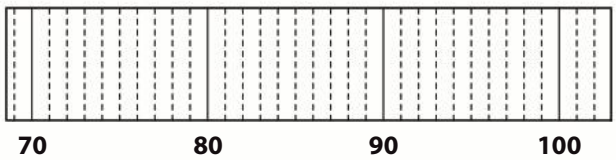
congruence test:

29. [Statistics]

Draw a box-and-whisker plot for this set of data:

77, 78, 80, 86, 87, 87, 94, 98, 100



30. [Probability] *

Based on 50 practice kicks for goal, the probability of a certain result is shown. How many points were scored?

Result	GOALS	POINTS	Out of Bounds	Falls short
Probability	0.5	0.3	0.1	0.1

31. [Problem Solving 1] *

A bag contains 100 balls and 95% are blue. Some blue balls are taken out. After this 75% of the balls in the bag are blue. How many balls were removed?

32. [Problem Solving 2] *

It is 5 km from Millie's house to Irene's house. Millie and Irene started to walk to each other's house at noon, meeting at 12:30 pm. If Millie walked 2 km/h faster than Irene, how fast did Irene walk?

km/h

MATHS MATE

Name: .....

Class: .....

Teacher: .....

Worksheet Results

Term 4

		Sheet 1	Sheet 2	Sheet 3	Sheet 4	Skill Builder links	Sheet 5	Sheet 6	Sheet 7	Sheet 8	Skill Builder links
NUMBER	1. [Long ×,÷]	1	1	1	1	1.2	1	1	1	1	1.4,9
	2. [Decimal +,–]	2	2	2	2	2.4	2	2	2	2	2.4
	3. [Decimal ×,÷]	3	3	3	3	3.9	3	3	3	3	3.8
	4. [Fraction +,–]	4	4	4	4	4.12	4	4	4	4	4.13
	5. [Fraction ×,÷]	5	5	5	5	5.4	5	5	5	5	5.8
	6. [Percentages]	6	6	6	6	6.10	6	6	6	6	6.11
	7. [Decimals / Fractions / Percentages]	7	7	7	7	7.13,14	7	7	7	7	7.15
	8. [Integer +,–]	8	8	8	8	8.1,2,3	8	8	8	8	8.5
	9. [Integer ×,÷]	9	9	9	9	9.1,2,4	9	9	9	9	9.6
	10. [Rates / Ratios]	10	10	10	10	10.16	10	10	10	10	10.17
	11. [Indices]	11	11	11	11	11.9	11	11	11	11	11.10
	12. [Square Roots]	12	12	12	12	12.7	12	12	12	12	12.8
	13. [Exploring Number]	13	13	13	13	13.10	13	13	13	13	13.11
	14. [Financial Mathematics]	14	14	14	14	14.9	14	14	14	14	14.10
	15. [Number Patterns]	15	15	15	15	15.8	15	15	15	15	15.9
ALGEBRA	16. [Expressions]	16	16	16	16	16.4	16	16	16	16	16.5,6
	17. [Substitution]	17	17	17	17	17.9	17	17	17	17	17.5,6
	18. [Expansion]	18	18	18	18	18.7	18	18	18	18	18.8,9
	19. [Factorisation]	19	19	19	19	19.7	19	19	19	19	19.9
	20. [Equations]	20	20	20	20	20.9	20	20	20	20	20.10
	21. [Coordinate Geometry]	21	21	21	21	21.16	21	21	21	21	21.17
MEASUREMENT	22. [Units of Measurement / Time]	22	22	22	22	22.9	22	22	22	22	22.10
	23. [Perimeter / Area]	23	23	23	23	23.4	23	23	23	23	23.10,12
	24. [Surface Area]	24	24	24	24	24.6,8	24	24	24	24	24.9
	25. [Volume]	25	25	25	25	25.6,7	25	25	25	25	25.8
	26. [Pythagoras / Trigonometry]	26	26	26	26	26.10	26	26	26	26	26.11
SPACE	27. [Angles]	27	27	27	27	27.9	27	27	27	27	27.9
	28. [Geometric Reasoning]	28	28	28	28	28.14	28	28	28	28	28.15
STAT.	29. [Statistics]	29	29	29	29	29.14	29	29	29	29	29.17
PROB.	30. [Probability]	30	30	30	30	30.9,10	30	30	30	30	30.11,12
PROBLEM SOLVING	31. [Problem Solving 1]	31	31	31	31	Hints & Solutions	31	31	31	31	Hints & Solutions
	32. [Problem Solving 2]	32	32	32	32	Hints & Solutions	32	32	32	32	Hints & Solutions
	Total Correct										

MATHS MATE

Term 4 - Sheet 1

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$1432 \times 49 =$

2. [Decimal +,–] *

$2.8 + 15.03 - 0.004 =$

3. [Decimal ×,÷] *

$8 \div 0.02 =$

4. [Fraction +,–] *

$\frac{1}{3} + \frac{3}{5} - \frac{2}{15} =$

5. [Fraction ×,÷] *

$\frac{3}{8} \times \frac{1}{2} \times \frac{8}{9} =$

6. [Percentages] *

Due to Cyclone Larry, the price of bananas in Queensland increased from \$3.00 per kilogram in 2005 to \$10.50 per kilogram in 2006. What percentage increase was this?

7. [Decimals / Fractions / Percentages] *

$0.2\dot{6}\dot{9}$ is the notation for:

A) 0.2669966.....
B) 0.2696969.....
C) 0.2666999.....

8. [Integer +,–]

$-1 + -5 =$

9. [Integer ×,÷]

$-54 \div -9 =$

10. [Rates / Ratios] *

The goal to goal distance at the Melbourne Cricket Ground (MCG) is 160 m. What scale factor was used to build a 20 cm long model of the MCG?

1 :

11. [Indices]

Evaluate $(-3)^2$

12. [Square Roots] *

$\sqrt{169} - \sqrt{144} =$

13. [Exploring Number]

Which classification describes 1.723?

A) integer and rational
B) rational and real
C) irrational and rational
D) real and integer

14. [Financial Mathematics] *

Mal loans a friend \$4000 at a compound interest rate of 6% per year. What is the total amount of interest owed to Mal after 2 years?

15. [Number Patterns] *

Write an expression for the term in position n given the table of values for the sequence.

position	1	2	3	4	5	....	n
term	7	8	9	10	11	....	

16. [Expressions] *

Simplify $3x^2 + 2y^2 - x^2 - 3y^2$

17. [Substitution] *

If $y = x^2 - 4x$, find y when $x = 1$

18. [Expansion] *

Expand and simplify $(2u - 4)(u - 3)$

19. [Factorisation] *

Factorise $x^2 + 3x + 4x + 12$

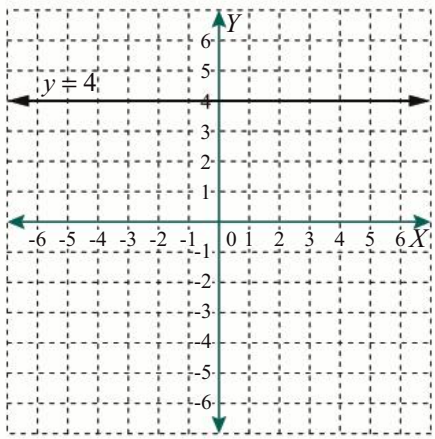
20. [Equations] *

Solve the simultaneous equations:

$y = 2x + 3$
$y = 3$

21. [Coordinate Geometry] *

Solve the simultaneous equations $y = 4$ and $y = 3x - 5$ by graphing their lines on the Cartesian plane. [The line $y = 4$ has been drawn.]



QUOTE OF THE WEEK: It is never wise to try to appear to be more clever than you are. It is sometimes wise to appear slightly less so. William Whitelaw

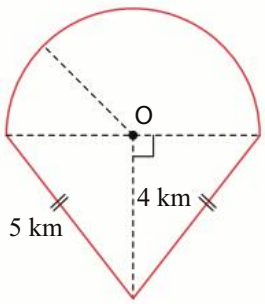
22. [Units of Measurement / Time] *

Express in square centimetres:

$1\ m^2$ and $5000\ cm^2$ =

23. [Perimeter / Area] *

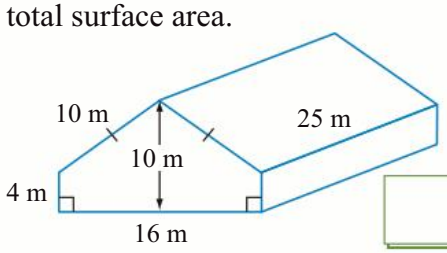
Find the perimeter of the shape.
(Use $\pi \approx 3.14$)



km

24. [Surface Area] *

A block of wood has the shape of a triangular prism on top of a rectangular prism. Find its total surface area.



m^2

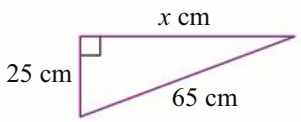
25. [Volume] *

A rectangular prism with volume $1080\ m^3$ has a length of 15 m and a width of 6 m. Calculate the height of the prism.

m

26. [Pythagoras / Trigonometry] *

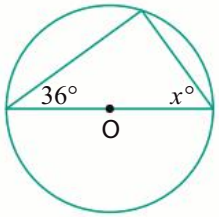
Find the area of the right-angled triangle by first calculating the missing side length.



cm^2

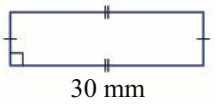
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

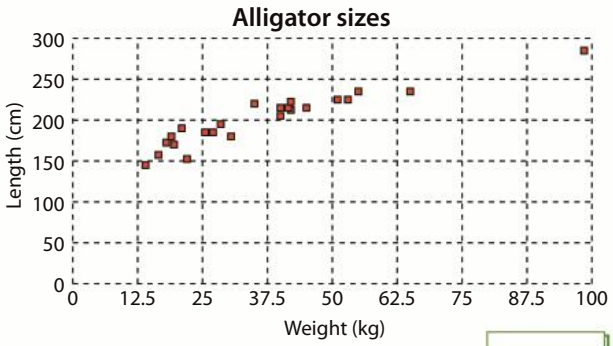
Redraw the rectangle to scale and estimate the length of its diagonal.



diagonal = mm

29. [Statistics]

Of the alligators sampled, how many have a weight of more than 50 kilograms and a length of less than 250 centimetres?



30. [Probability] *

A boy and girl class captain are to be chosen at random from a group of 8 boys and 14 girls. Eva and Alan are in the group. What is the probability that they are both chosen?
[Give your answer as a fraction.]

31. [Problem Solving 1] *

If n is an even number, which one or more of the following must be odd?

A) n^3 B) $2n$
C) $2n + n$ D) $2n + 5$

32. [Problem Solving 2] *

Two cyclists ride towards each other at 20 km/h from opposite ends of a straight stretch of road 40 km long. At the same time, a blowfly flies away from one cyclist towards the other at 30 km/h. When it meets the other cyclist, it is so scared that it turns around and heads back. It continues moving from cyclist to cyclist until the cyclists meet. At this point the fly drops dead with fright. What was the total distance flown by the blowfly?

km

MATHS MATE

Term 4 - Sheet 2

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$3917 \times 26 =$

2. [Decimal +,–] *

$26 - 13.904 + 3.05 =$

3. [Decimal ×,÷] *

$14 \div 0.7 =$

4. [Fraction +,–] *

$\frac{2}{3} - \frac{5}{18} + \frac{1}{6} =$

5. [Fraction ×,÷] *

$\frac{1}{3} \times \frac{6}{10} \times \frac{5}{2} =$

6. [Percentages] *

In 1960 Australians each used 200 L per day of water. By 2013 Australians each used 175 L per day. What percentage decrease was this?

7. [Decimals / Fractions / Percentages] *

$0.\dot{4}3\dot{1}$ is the notation for:

A) 0.431431431.....
B) 0.4443111.....
C) 0.4333331.....

8. [Integer +,–]

$-4 - -7 =$

9. [Integer ×,÷]

$14 \times -3 =$

10. [Rates / Ratios] *

The superjumbo jet Airbus A 380 has a wingspan of 80 m. What scale factor was used to build a model that has a wingspan of 20 cm?

1 :

11. [Indices]

Evaluate $(-5)^3$

12. [Square Roots] *

$\sqrt{144} + \sqrt{81} =$

13. [Exploring Number]

Which classification describes $0.\dot{6}\dot{3}$?

A) integer and rational
B) rational and real
C) irrational and rational
D) real and integer

14. [Financial Mathematics] *

Ollie borrowed $5000 for 3 years at a compound interest rate of 10%. How much did Ollie pay back?
[Hint: Principal + interest.]

15. [Number Patterns] *

Write an expression for the term in position n given the table of values for the sequence.

position	1	2	3	4	5	....	n
term	4	7	10	13	16	....	

16. [Expressions] *

Simplify $a^2b - 2a - 4a^2b + a$

17. [Substitution] *

If $y = 2x^2 - 3x - 4$, find y when $x = 0$

18. [Expansion] *

Expand and simplify
$(4y - 6)(y + 7)$

19. [Factorisation] *

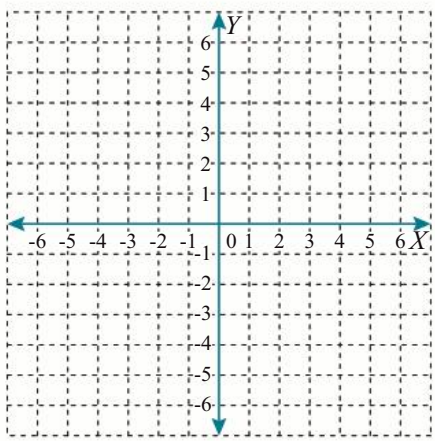
Factorise
$u^2 + 2u + 5u + 10$

20. [Equations] *

Solve the simultaneous equations:
$x + y = 4$
$y = 2x + 1$

21. [Coordinate Geometry] *

Solve the simultaneous equations $y = x + 2$ and $y = 2x - 1$ by graphing their lines on the Cartesian plane.



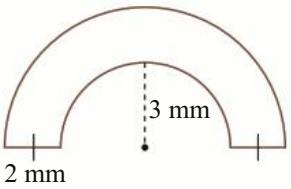
QUOTE OF THE WEEK: Learning is a treasure which accompanies its owner everywhere. Chinese Proverb

22. [Units of Measurement / Time] *

A 2019, 50th anniversary stamp commemorating the Apollo 11 moon landing has an area of 986 mm^2. Is the stamp <, = or > 10 cm^2?

23. [Perimeter / Area] *

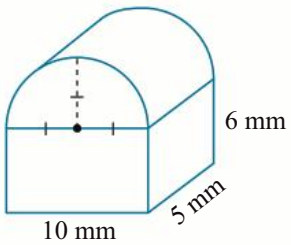
Using $C = 2\pi r$ where $\pi \approx 3.14$, find the perimeter of the shape.



mm

24. [Surface Area] *

Use $\pi \approx 3.14$ to find the total surface area of the shape.



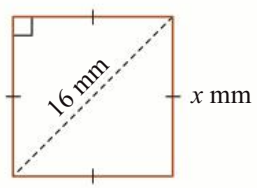
mm^2

25. [Volume] *

A rectangular swimming pool contains 800 000 L of water. The pool is 24 m long and 16 m wide. If its average depth is supposed to be 2.5 m, how many more litres of water need to be added to the pool? [Hint: 1000 L = 1 m^3]

26. [Pythagoras / Trigonometry] *

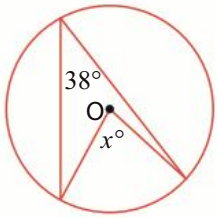
Find the area of the square by first calculating the missing side length.



mm^2

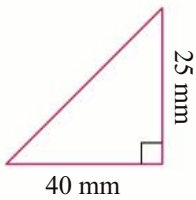
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

Redraw the triangle to scale and estimate the length of its hypotenuse.

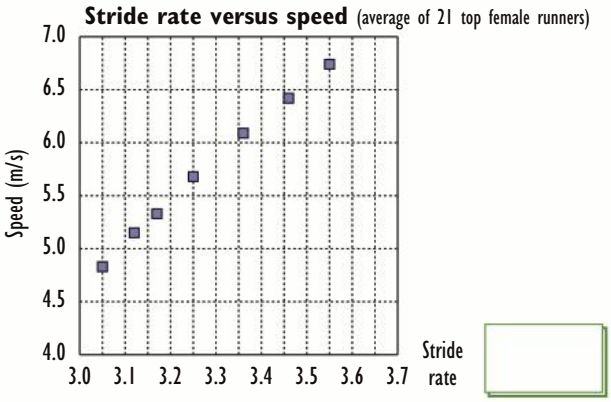


hypotenuse = mm

29. [Statistics]

If the speed is 6.5 metres per second, what is the stride rate most likely to be?

A) 3.5 B) 3.9 C) 3.4 D) 3.6

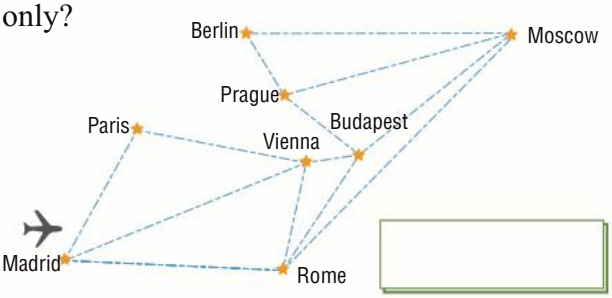


30. [Probability] *

In Australia it is estimated that 60% of drivers are distracted by their mobile phones. If two drivers are chosen at random, what is the probability that they are both distracted by their mobiles?

31. [Problem Solving 1] *

Beginning at Madrid, where will you end up if you travel every flight path once and once only?



32. [Problem Solving 2] *

In a small town there are five straight streets, none of which is parallel to the other. What is the maximum number of intersections there could be in this town?

Three streets, three intersections

MATHS MATE

Term 4 - Sheet 3

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$4026 \times 38 =$

2. [Decimal +,–] *

$15.094 + 2.7 - 4.703 =$

3. [Decimal ×,÷] *

$40 \div 0.25 =$

4. [Fraction +,–] *

$\frac{1}{2} + \frac{2}{5} - \frac{7}{9} =$

5. [Fraction ×,÷] *

$\frac{2}{3} \times \frac{7}{10} \times \frac{6}{7} =$

6. [Percentages] *

In 2013 the value of a Google Inc. share was approximately $800. By 2019 a Google Inc (now Alphabet Inc) share was selling for around $1600 per share. Find the percentage increase.

7. [Decimals / Fractions / Percentages] *

Write $\frac{2}{3}$ as a recurring decimal.

8. [Integer +,–] *

$-7 - 9 + -4 =$

9. [Integer ×,÷] *

$48 \div -12 \times 2 =$

10. [Rates / Ratios]

On a map the scale ratio is 1 : 10 000 000. What is the real life distance between Napier and Invercargill (New Zealand), if they are 13 cm apart on the map?

km

11. [Indices]

Evaluate $(-1)^9$

12. [Square Roots] *

$\sqrt{25} - \sqrt{16} = \sqrt{9}$

True or false?

13. [Exploring Number]

Use true and false to complete this table:

	Integer	Rational	Irrational	Real
$3\frac{2}{7}$				

14. [Financial Mathematics] *

April invests $1000 at a compound interest rate of 12% per year. How much does she get back after 2 years?

[Hint: Principal + interest.]

15. [Number Patterns] *

Write an expression for the term in position n given the table of values for the sequence.

position	1	2	3	4	5	....	n
term	7	9	11	13	15	....	

16. [Expressions] *

Simplify $-5q - q^2 + 2q + 3q^2$

17. [Substitution] *

If $y = 3x^2 + x - 6$, find y when $x = 2$

18. [Expansion] *

Expand and simplify $(x + 4)(3x - 5)$

19. [Factorisation] *

Factorise $3q + q^2 + 18 + 6q$

20. [Equations] *

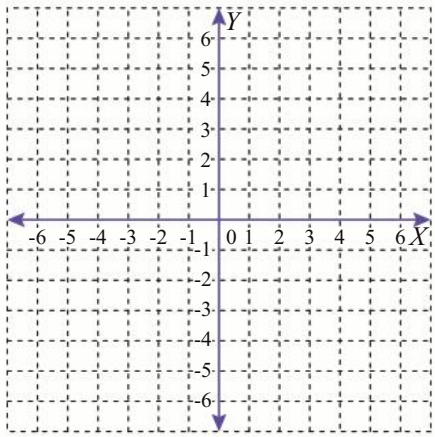
Solve the simultaneous equations:

$7 = 3x - y$

$7 = x + 2y$

21. [Coordinate Geometry] *

Solve the simultaneous equations $x - 2 = 0$ and $3x - y = 2$ by graphing their lines on the Cartesian plane.



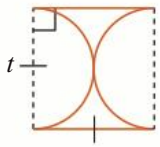
QUOTE OF THE WEEK: Genius is one percent inspiration and ninety-nine percent perspiration. Thomas A. Edison

22. [Units of Measurement / Time] *

The area of a Maths Mate sheet is 62 370 mm^2. Express this in square centimetres.

23. [Perimeter / Area] *

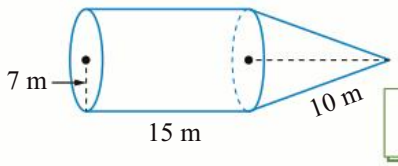
Write an algebraic expression for the perimeter P of the shape. [Express the answer in terms of t and π.]



$P =$

24. [Surface Area] *

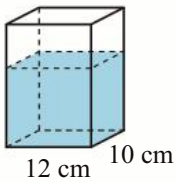
Use $\pi \approx \frac{22}{7}$ to find the total surface area of the shape.



m^2

25. [Volume] *

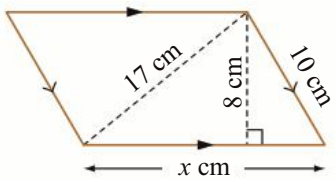
The vase has 1.8 litres of water in it. Find the depth of the water. [Hint: 1000 cm^3 = 1 L]



cm

26. [Pythagoras / Trigonometry] *

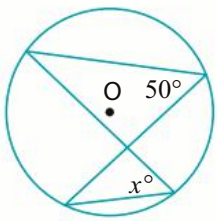
Find the area of the parallelogram by first calculating the missing side length.



cm^2

27. [Angles]

Find the value of $x°$.



28. [Geometric Reasoning] *

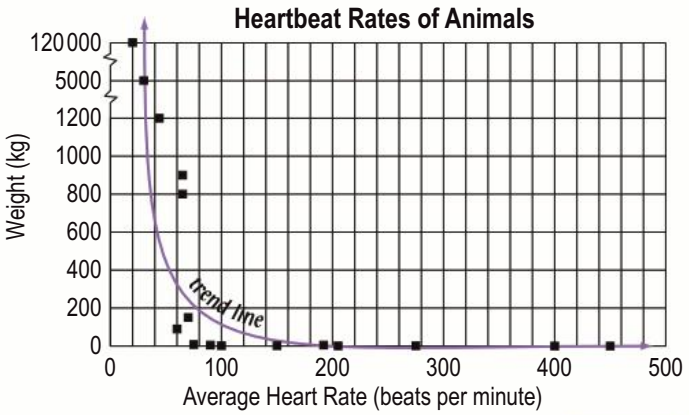
Determine the scale factor used when the rectangle represents the plan of a house block of length 80 m.

1 :

29. [Statistics]

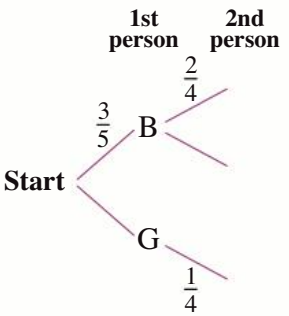
Which best describes the sample?

A) Heavier animals have a faster heart rate
B) Heavier animals have a slower heart rate
C) Heart rates are not related to weight



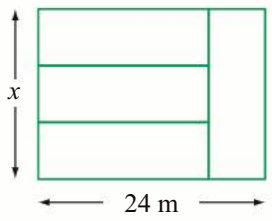
30. [Probability] *

A pair of students must be selected from 2 girls and 3 boys. Complete the probability tree diagram. What is the probability of selecting a mixed pair? [Give your answer as a fraction in simplest form.]



31. [Problem Solving 1] *

A rectangle is divided into 4 identical rectangles as shown. If the original rectangle is 24 m long, how wide is it?



m

32. [Problem Solving 2] *

Three boys, Peter, David and Sam, each have one sister and one pet. Peter has a parrot. The horse belongs to the boy whose sister is Rebecca. If Sam's sister is Tess and the other girl is Veronica, who is David's sister?

MATHS MATE

Term 4 - Sheet 4

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$5309 \times 74 =$

2. [Decimal +,–] *

$0.306 - 0.098 + 0.88 =$

3. [Decimal ×,÷] *

$9 \div 0.5 =$

4. [Fraction +,–] *

$\frac{1}{2} - \frac{1}{3} + \frac{2}{7} =$

5. [Fraction ×,÷] *

$\frac{9}{11} \times \frac{2}{3} \times \frac{22}{6} =$

6. [Percentages] *

Koala numbers were surveyed in the Gunnedah area. Their numbers fell from an estimated 15 000 in 1993 to 1500 in 2013. What percentage decrease was this?

7. [Decimals / Fractions / Percentages] *

Write $\frac{5}{6}$ as a recurring decimal.

8. [Integer +,–] *

$3 - -19 + -12 =$

9. [Integer ×,÷] *

$-5 \times -4 \div 2 =$

10. [Rates / Ratios] *

On a map the distance between Wanganui and Rotorua (New Zealand) is 15 cm. What is the scale factor of the map, if the real life distance is 300 km?

1 :

11. [Indices] *

Evaluate $(-4)^4$

12. [Square Roots] *

$\sqrt{36} + \sqrt{36} + \sqrt{36} + \sqrt{36} = \sqrt{144}$

True or false?

13. [Exploring Number]

Use true and false to complete this table:

	Integer	Rational	Irrational	Real
$\sqrt{15}$				

14. [Financial Mathematics] *

What is the total amount repaid on a loan of $500 at a compound interest rate of 10% after 3 years? [Hint: Principal + interest.]

15. [Number Patterns] *

Write an expression for the term in position n given the table of values for the sequence.

position	1	2	3	4	5	....	n
term	4	3	2	1	0	....	

16. [Expressions] *

Simplify

$4g^2h - 5gh^2 + gh^2 - 3g^2h$

17. [Substitution] *

If $y = x^2 + 2x + 1$, find y when $x = -1$

18. [Expansion] *

Expand and simplify

$(2k - 2)(2k - 3)$

19. [Factorisation] *

Factorise

$3r + 3 - r^2 - r$

20. [Equations] *

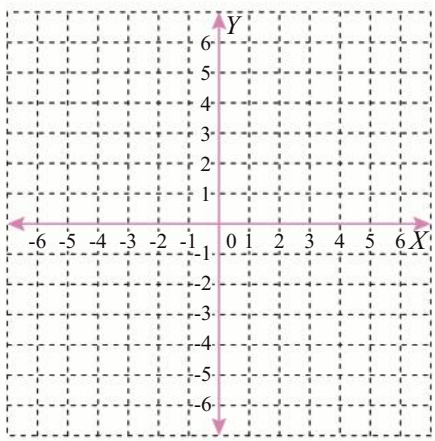
Solve the simultaneous equations:

$x + y = 1$

$x + 3 = y$

21. [Coordinate Geometry] *

Solve the simultaneous equations $2x - y = 0$ and $3x + 2y = 7$ by graphing their lines on the Cartesian plane.



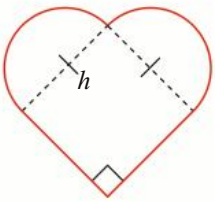
QUOTE OF THE WEEK: One of the greatest achievements in a materialistic society is to be content with what we have. P. K. Shaw

22. [Units of Measurement / Time] *

Place in order from smallest to largest:
100 m^2, 100 000 cm^2 and 0.001 km^2

23. [Perimeter / Area] *

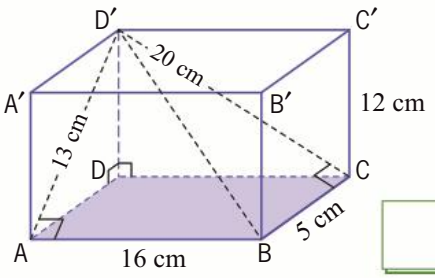
Write an algebraic expression for the perimeter P of the shape. [Express the answer in terms of h and π.]



$P =$

24. [Surface Area] *

In this rectangular prism, what is the total surface area of the pyramid of base ABCD and vertex D′?



cm^2

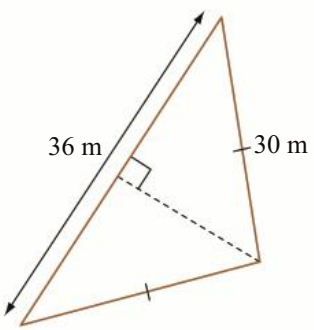
25. [Volume] *

If the total surface area of a cube is 600 cm^2, what is the volume of the cube?

cm^3

26. [Pythagoras / Trigonometry] *

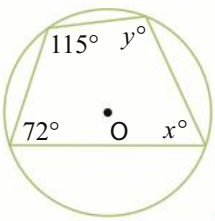
Find the area of this triangle.



m^2

27. [Angles] *

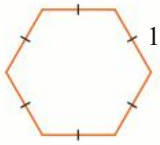
Find the values of $x°$ and $y°$.



$x° =$ $y° =$

28. [Geometric Reasoning] *

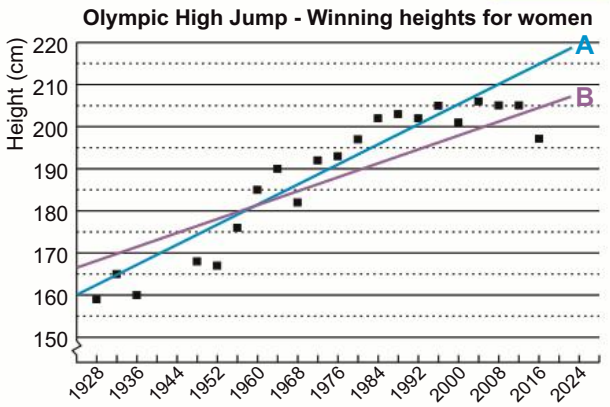
Determine the scale factor used when the regular hexagon represents the plan of a bike track of perimeter 9 km.



1 :

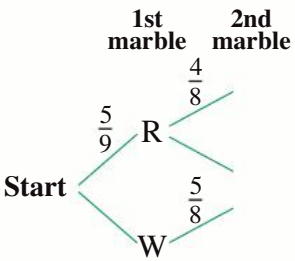
29. [Statistics]

Select the most appropriate trend line for this scatter plot. [Hint: The sums of the distances from the points above and below the line, to the line, are approximately equal.]



30. [Probability] *

Two marbles are taken out in succession, without replacing, from a bag containing 5 red and 4 white marbles. Complete the probability tree diagram. What is the probability of choosing two white marbles? [Give the answer as a fraction in simplest form.]



31. [Problem Solving 1] *

If $1 \clubsuit 3 = 8$
$2 \clubsuit 4 = 6$
$2 \clubsuit 9 = 1$
and $3 \clubsuit 6 = 3$
what does $4 \clubsuit 4 = ?$

(This rather difficult problem was found on a grade three test! Can you solve it?)

32. [Problem Solving 2] *

The excavator at the mine uses a litre of fuel every 3 minutes. The truck uses a litre of fuel every 6 minutes. How long will 100 litres of fuel last if both machines are being used?

min

MATHS MATE

Term 4 - Sheet 5

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$800 \div 3 =$

2. [Decimal +,−] *

$34.09 + 13.3 - 0.087 =$

3. [Decimal ×,÷] *

$0.2 \div 0.4 =$

4. [Fraction +,−] *

$1\frac{1}{8} + 1\frac{1}{6} =$

5. [Fraction ×,÷] *

$2\frac{1}{4} \div \frac{3}{8} =$

6. [Percentages] *

40% of ☐ $= 80$

7. [Decimals / Fractions / Percentages] *

Which fraction is approximately equal to 0.333?

A) $\frac{1}{6}$ B) $\frac{1}{3}$ C) $\frac{1}{10}$

8. [Integer +,−] *

$-7 +$ ☐ $= 8$

9. [Integer ×,÷] *

$-6 \times$ ☐ $= 48$

10. [Rates / Ratios] *

Which wing-beat has a higher rate?

A) 50 beats/s

B) 2000 beats/min

11. [Indices] *

Evaluate 3^{-2}

12. [Square Roots] *

Between which two consecutive whole numbers does $\sqrt{7}$ lie?

and

13. [Exploring Number]

Which number is greater?

3.14 or π

14. [Financial Mathematics] *

A computer depreciates in value at an annual rate of 25%. If it cost $3200 when new, calculate its value after 2 years.

15. [Number Patterns]

Complete the pattern:

2.5 , 3.5 , 5 , 7 , 9.5 , ___ , ___

16. [Expressions] *

Simplify $-3a \times 4b \times 2a$

17. [Substitution] *

Use $TSA = 2\pi r(r + h)$ to find the total surface area TSA of a cylinder when $\pi \approx 3.14$, $r = 5$ and $h = 15$

18. [Expansion] *

Expand and simplify $(r + 2)^2$

19. [Factorisation] *

Find the missing factor in the factorisation of $h^2 + 8h + 7$

$(h + 7)($ $)$

20. [Equations] *

Solve for x:

$x^2 - 5x = 0$

21. [Coordinate Geometry] *

Use $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ to find the distance between the points (2,1) and (5,5).

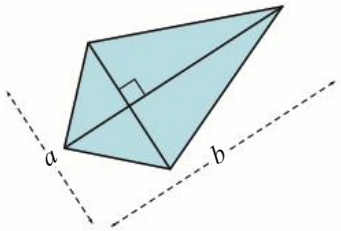
QUOTE OF THE WEEK: The Fifth Law of Procrastination - Procrastination avoids boredom; one never has the feeling that there is nothing important to do. Rossiter

22. [Units of Measurement / Time] *

Convert 10 000 cubic centimetres to litres.

23. [Perimeter / Area] *

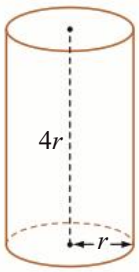
Write an algebraic expression for the area A of the kite. [Express the answer in terms of a and b.]



$A =$

24. [Surface Area] *

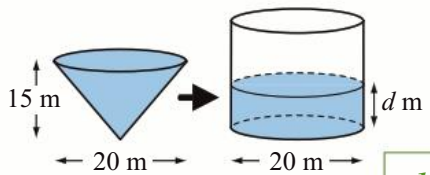
Write an algebraic expression for the total surface area TSA of the cylinder. [Express the answer in terms of r and π.]



$TSA =$

25. [Volume] *

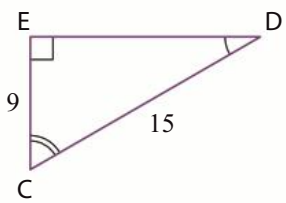
A cone full of water has been poured into a cylinder as shown. What is the depth (d) of water in the cylinder?



$d =$ m

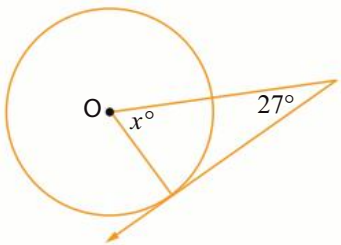
26. [Pythagoras / Trigonometry] *

Calculate the value of tan D in this triangle.
[Hint: Pythagoras' theorem will help.]



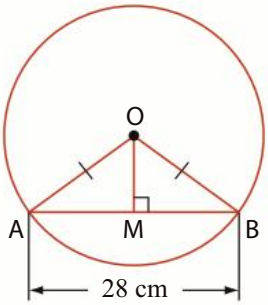
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning]

Find the length of the segment AM in this diagram.



cm

29. [Statistics] *

Calculate the median and upper quartile (UQ) for the data displayed in this frequency table.

Rio, 2016 - gold medal winning countries

Number of medals	1	2	3	4	5	6	7	8	9	10
Frequency	21	11	6	3	2	2	2	4	1	1

median = UQ =

30. [Probability] *

Complete the two-way table. If one person is selected at random, find the probability that it is a man who voted 'No' at the referendum.
[Give your answer as a fraction in simplest form.]

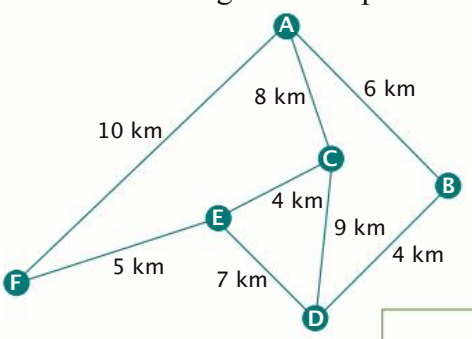
	Women	Men	Total
Yes	620	530	
No			790
Total	1000		

31. [Problem Solving 1] *

Deena has three children and one of them is a teenager. When Deena multiplies her children's ages together the result is 1155. How old is the teenager?

32. [Problem Solving 2] *

List a letter sequence for the path that allows you to travel to each letter and covers the greatest distance starting at A and ending at F, without travelling the same path twice.



MATHS MATE

Term 4 - Sheet 6

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$308 \div 6 =$

2. [Decimal +,−] *

$32 - 4.029 - 6.13 =$

3. [Decimal ×,÷] *

$0.28 \div 0.08 =$

4. [Fraction +,−] *

$3\frac{1}{4} - 1\frac{5}{6} =$

5. [Fraction ×,÷] *

$4\frac{1}{5} \div 1\frac{4}{10} =$

6. [Percentages] *

95% of ☐ $= 760$

7. [Decimals / Fractions / Percentages] *

Which fraction does $0.\dot{1}$ equal?

A) $\frac{1}{10}$ B) $\frac{1}{6}$ C) $\frac{1}{9}$

8. [Integer +,−] *

☐ $- -2 = 7$

9. [Integer ×,÷] *

☐ $\div -4 = -7$

10. [Rates / Ratios] *

Which density is higher?

A) 1000 kg/m^3 (water)

B) 0.8 g/cm^3 (oil)

11. [Indices] *

Evaluate 2^{-3}

12. [Square Roots] *

Between which two consecutive whole numbers does $\sqrt{15}$ lie?

and

13. [Exploring Number]

Which number is greater?

$\sqrt{15}$ or 4

14. [Financial Mathematics] *

A car depreciates in value at an annual rate of 10%. If it cost $30 000 when new, calculate its value after 4 years.

15. [Number Patterns]

Complete the pattern:

$2\frac{1}{4}, 4\frac{1}{2}, 9, 18,$ ___ , ___

16. [Expressions] *

Simplify $-30x^2y \div 3y$

17. [Substitution] *

Use $A = \pi r^2$ to find the area A of a circle when $\pi \approx 3\frac{1}{7}$ and $r = 7$

18. [Expansion] *

Expand and simplify $(g-7)^2$

19. [Factorisation] *

Find the missing factor in the factorisation of $a^2 + 3a - 10$

$(a+5)($ $)$

20. [Equations] *

Solve for x:

$x^2 - 9 = 0$

21. [Coordinate Geometry] *

Use $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ to find the distance between the points (6,2) and (1,1).

[Leave the answer in surd form.]

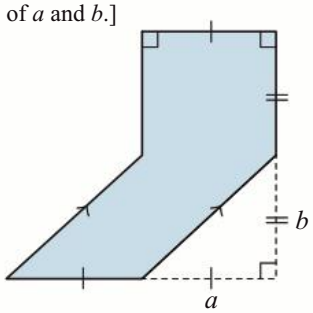
QUOTE OF THE WEEK: The men who try to do something and fail are infinitely better than those who try to do nothing and succeed. Lloyd Jones

22. [Units of Measurement / Time] *

The volume of a chainsaw's petrol tank is 550 cm^3. Is this <, = or > 5500 mL?

23. [Perimeter / Area] *

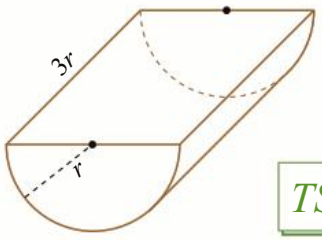
Write an algebraic expression for the area A of the shaded shape. [Express the answer in terms of a and b.]



$A =$

24. [Surface Area] *

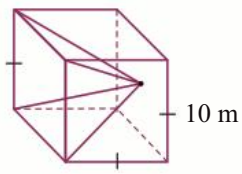
Write an algebraic expression for the total surface area TSA of the half cylinder. [Express the answer in terms of r and π.]



$TSA =$

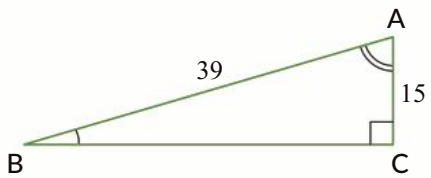
25. [Volume] *

How many times greater is the volume of a 10 m × 10 m × 10 m cube than the volume of a 10 m × 10 m × 10 m pyramid?



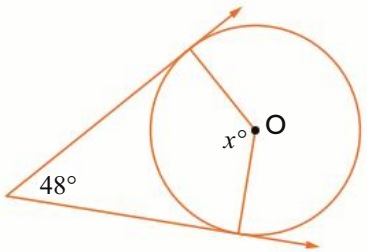
26. [Pythagoras / Trigonometry] *

Calculate the value of sin A in this triangle.
[Hint: Pythagoras' theorem will help.]



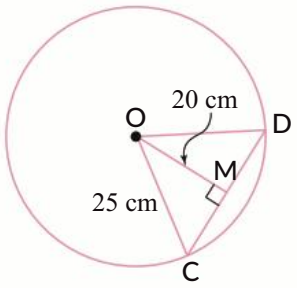
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning] *

Find the length of the chord CD in this diagram. [Hint: Pythagoras' theorem will help.]



cm

29. [Statistics] *

Calculate the median and lower quartile (LQ) for the data displayed in this frequency table.

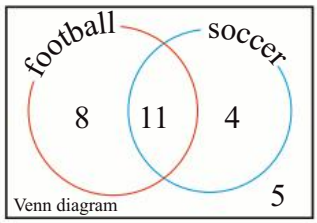
Jason Day - PGA, 2018 **rounds 72 or less**

Score	63	65	66	67	68	69	70	71	72
Frequency	1	2	2	5	4	12	9	7	4

median = LQ =

30. [Probability] *

If one student is selected at random, find the probability that he or she plays only soccer. [Give your answer as a fraction in simplest form.]



31. [Problem Solving 1] *

Use the digits 1, 2, 3, 4, 5 and 6 (once each) to complete this multiplication, so that the answer is as large as possible.

□□□ × □□□

32. [Problem Solving 2] *

Chan's kitchen clock stopped at 2:00 pm. Not knowing the correct time, he replaced the battery but did not adjust the time. He then rode to visit Avon, arriving at 3:15 pm and leaving at 4:45 pm. If the ride each way took the same time, and when he arrived home the kitchen clock showed 5:30 pm, how long had the clock been stopped for?

min

MATHS MATE

Term 4 - Sheet 7

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$1840 \div 9 =$

2. [Decimal +,–] *

$44 - 7.008 - 13.07 =$

3. [Decimal ×,÷] *

$1.5 \div 1.2 =$

4. [Fraction +,–] *

$1\frac{5}{12} - 1\frac{1}{8} =$

5. [Fraction ×,÷] *

$3\frac{1}{3} \div \frac{5}{6} =$

6. [Percentages] *

15% of ☐ $= 75$

7. [Decimals / Fractions / Percentages] *

Which fraction does $0.1\dot{6}$ equal?

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

8. [Integer +,–] *

☐ $+ -4 = -12$

9. [Integer ×,÷] *

$-26 \div$ ☐ $= 2$

10. [Rates / Ratios] *

Which density is lower?

A) 0.9 g/cm^3 (ice)

B) 1.2 kg/m^3 (air)

11. [Indices] *

Evaluate 3^{-4}

12. [Square Roots] *

Between which two consecutive whole numbers does $\sqrt{40}$ lie?

and

13. [Exploring Number]

Which number is smaller?

$\sqrt{3}$ or 3

14. [Financial Mathematics]

The population of a town compounded annually at a rate of 10% per year. The population was initially 12 000. What was the population after 3 years?

15. [Number Patterns]

Complete the pattern:

$24, 12, 6, 3, \frac{3}{2},$ ___ , ___

16. [Expressions] *

Simplify $-2xy \times 3x \times -y$

17. [Substitution] *

Use $c^2 = a^2 + b^2$ to find the value of $c > 0$ when $a = 5$ and $b = 12$

18. [Expansion] *

Expand and simplify

$(b + 5)^2 + 6$

19. [Factorisation] *

Factorise

$b^2 + b - 12$

20. [Equations] *

Solve for x:

$x^2 + 8x = 0$

21. [Coordinate Geometry] *

Use $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ to find the distance between the points (–2,0) and (8,–5).

[Leave the answer in surd form.]

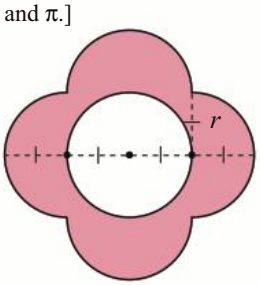
QUOTE OF THE WEEK: We are not primarily put on this earth to see through one another, but to see one another through. Peter De Vries

22. [Units of Measurement / Time] *

How many cubic metres of uncompressed air could be contained in a SCUBA tank with a 12.2 L capacity?

23. [Perimeter / Area] *

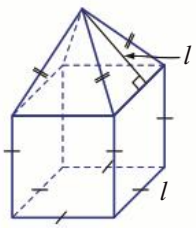
Write an algebraic expression for the area A of the shaded shape. [Express the answer in terms of r and π.]



$A =$

24. [Surface Area] *

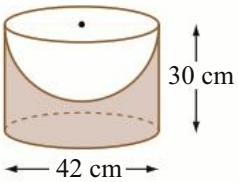
Write an algebraic expression for the total surface area TSA of the obelisk. [Express the answer in terms of l.]



$TSA =$

25. [Volume] *

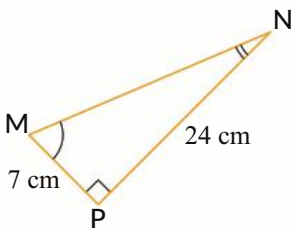
A hemisphere of diameter 42 cm is removed from this cylinder. Using $\pi \approx \frac{22}{7}$ find the volume of the remaining shape.



cm^3

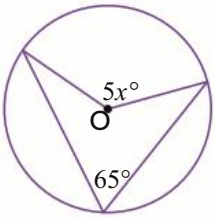
26. [Pythagoras / Trigonometry] *

Calculate the value of cos M in this triangle.



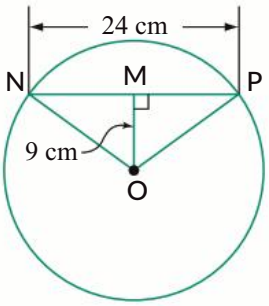
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning] *

Find the length of the radius of the circle in this diagram. [Hint: Pythagoras' theorem will help.]



cm

29. [Statistics] *

Calculate the median and interquartile range (IQR) for the data displayed in this frequency table.

Scrabble tiles

Value	0	1	2	3	4	5	6	7	8	9	10
Frequency	1	10	2	4	5	1	0	0	2	0	2

median = IQR =

30. [Probability] *

If one ticket is selected at random, find the probability that it is an adult ticket for the second night performance. [Complete the two-way table and give your answer as a fraction in simplest form.]

	Adult	*Child*	*Total*
1st night	65	80	
2nd night		30	55
3rd night	80	70	
Total			

31. [Problem Solving 1] *

What is the smallest positive integer, other than 1, which when divided by 2, 3, 4 or 5 always leaves a remainder of 1?

32. [Problem Solving 2] *

There are some vases and flowers in a reception hall. If you place 5 flowers in each vase, you end up with some full vases, 1 empty vase and 1 vase with 3 flowers. If you place 7 flowers in each vase, you end up with some full vases, 4 empty vases and 1 vase with 4 flowers. How many vases and flowers are there?

vases = flowers =

MATHS MATE

Term 4 - Sheet 8

Name: .....

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

Parent's Signature: .....

1. [Long ×,÷] *

$6054 \div 11 =$

2. [Decimal +,–] *

$0.037 + 0.606 - 0.094 =$

3. [Decimal ×,÷] *

$0.1 \div 0.25 =$

4. [Fraction +,–] *

$2\frac{3}{4} - 1\frac{7}{9} =$

5. [Fraction ×,÷] *

$4\frac{2}{7} \div 1\frac{19}{21} =$

6. [Percentages] *

5% of ☐ $= 30$

7. [Decimals / Fractions / Percentages] *

Which fraction does $0.\dot{1}\dot{8}$ equal?

A) $\frac{18}{10}$ B) $\frac{18}{99}$ C) $\frac{18}{100}$

8. [Integer +,–] *

$-3 -$ ☐ $= -10$

9. [Integer ×,÷] *

☐ $\times -7 = -84$

10. [Rates / Ratios] *

Which density is higher?

A) 2700 kg/m³ (aluminium)

B) 19.3 g/cm³ (gold)

11. [Indices] *

Evaluate 5^{-3}

12. [Square Roots] *

Between which two consecutive whole numbers does $\sqrt{83}$ lie?

and

13. [Exploring Number]

Place in ascending order:

$\sqrt{3}, \frac{5}{3}, 1.5, \sqrt{5}, 1.3$

14. [Financial Mathematics] *

A printer depreciates in value at an annual rate of 20%. If it cost $200 when new, calculate its value after 3 years.

15. [Number Patterns]

Complete the pattern:

$\frac{5}{12}, \frac{2}{3}, \frac{11}{12}, 1\frac{1}{6}, 1\frac{5}{12},$ ___ , ___

16. [Expressions] *

Simplify $25ab \div 5a \times ac$

17. [Substitution] *

Use $a^2 = c^2 - b^2$ to find the value of $a > 0$ when $c = 15$ and $b = 9$

18. [Expansion] *

Expand and simplify $(d+3)^2 - 7d$

19. [Factorisation] *

Factorise $w^2 - 2w - 24$

20. [Equations] *

Solve for x:

$x^2 - 100 = 0$

21. [Coordinate Geometry] *

Use $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ to find the distance between the points (–3,2) and (–7,3).

[Leave the answer in surd form.]

QUOTE OF THE WEEK: A period of living it up is usually followed by a period of living it down. P. K. Shaw

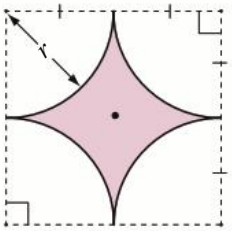
22. [Units of Measurement / Time] *

Place in ascending order:

425 cm^3 schooner, 1.125 L jug and 200 mL glass

23. [Perimeter / Area] *

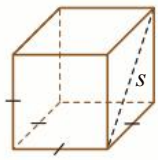
Write an algebraic expression for the area A of the shaded shape. [Express the answer in terms of r and π.]



$A =$

24. [Surface Area] *

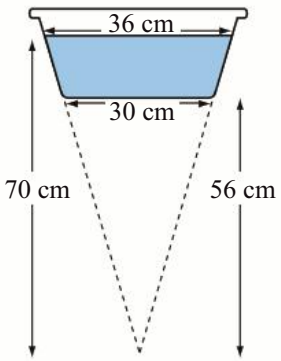
Write an algebraic expression for the total surface area TSA of the cube with side diagonals of length s. [Express the answer in terms of s.]



$TSA =$

25. [Volume] *

Using $\pi \approx \frac{22}{7}$ find the volume of water in the dish which has the shape of a truncated cone.

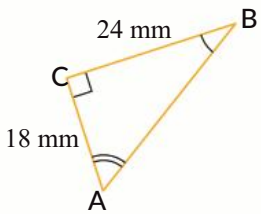


[Hint: $V_{cone} = \frac{\pi r^2 h}{3}$]

cm^3

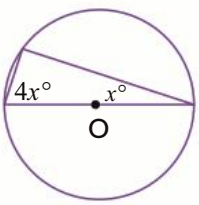
26. [Pythagoras / Trigonometry] *

Calculate the value of sin B in this triangle.



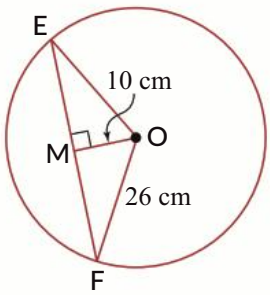
27. [Angles] *

Find the value of $x°$.



28. [Geometric Reasoning] *

A chord EF is 10 cm from the centre of a circle of radius 26 cm. Find the length of chord EF.



cm

29. [Statistics] *

This stem-and-leaf plot shows the ages of the 20th century American Presidents when they were first elected. Find the interquartile range (IQR) for the set of data.

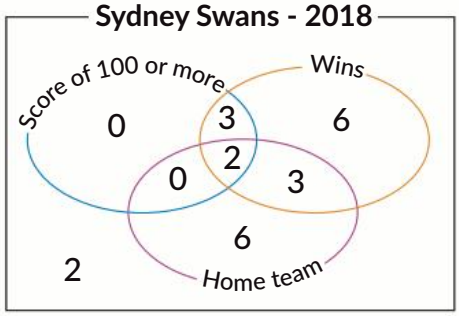
STEM	LEAF
4	3 4 7
5	1 1 2 3 5 5 6 6 7
6	1 1 3 5
7	0

IQR =

30. [Probability] *

If one match is selected at random, what is the probability that the Swans scored 100 points or more as an away team, and won?

[Give your answer as a fraction in simplest form.]



31. [Problem Solving 1] *

Find the sum:

$(-1)^{2n} + (-1)^{4n} + (-1)^{6n} + (-1)^{8n}$

given that n is a natural number.

32. [Problem Solving 2] *

Charles Sturt wishes to cross the desert, a seven day trip. Charles and each of his helpers are able to carry supplies for a maximum of five days. How many helpers must start out with Charles if he is to cross the desert, and his helpers are to either cross with him or return safely to the starting point?