sixth edition

MATHS MATE

GREEN

trial pack

Includes:

How to use Maths Mate

Record keeping sheet: Term 1

Worksheet masters: Term 1, Sheets 1 to 4

Test masters: 1A & 1B

Worksheet answers: Term 1, Sheets 1 to 4

Test answers: 1A & 1B

Problem Solving Hints & Solutions

Skill Builders:

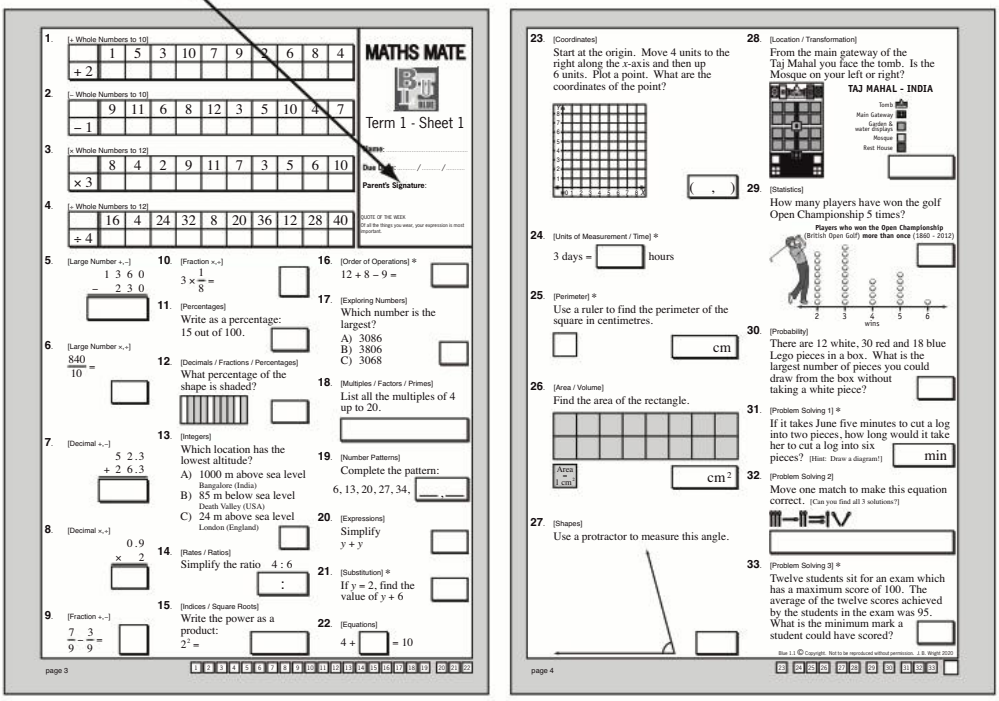
13.1 Comparing and ordering integers.
22.1 Finding the missing number in equations involving + and/or –

THE EDUCATIONAL ADVANTAGE

J. B. Wright & I. Tutos

HOW TO USE MATHS MATE

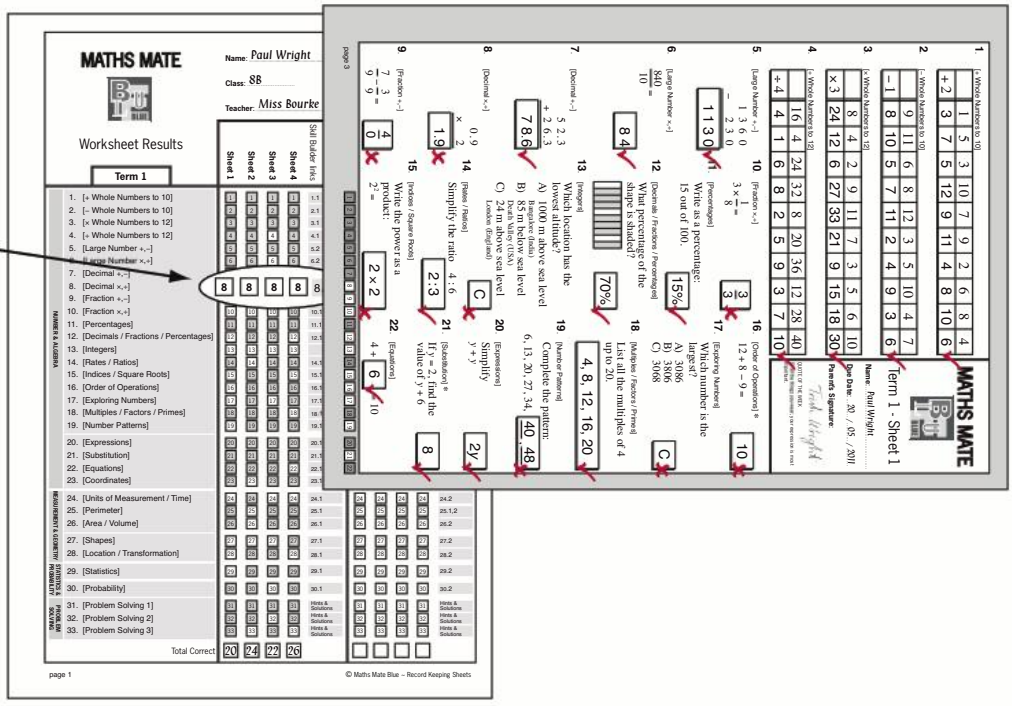
1. Students complete the **Maths Mate sheet.**
Parents sign the work.



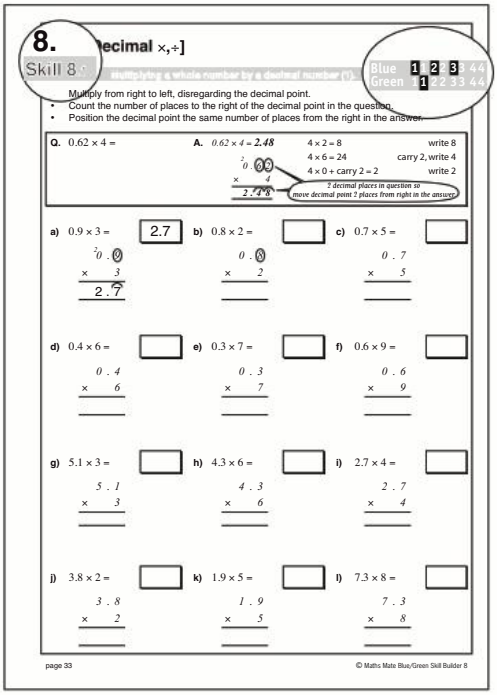
2. Students correct their work in class. Students colour the boxes to record their correct answers.

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

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



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



8. Skill 8: [×,÷ decimal]

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

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

Q. 0.62 × 4 = **A.** 0.62 × 4 = **2.48**

4 × 2 = 8 write 8
4 × 6 = 24 carry 2, write 4
4 × 0 + carry 2 = 2 write 2

2 decimal places in question so move decimal point 2 places from right in the answer.

a) 0.9 × 3 = 2.7 b) 0.8 × 2 = c) 0.7 × 5 =

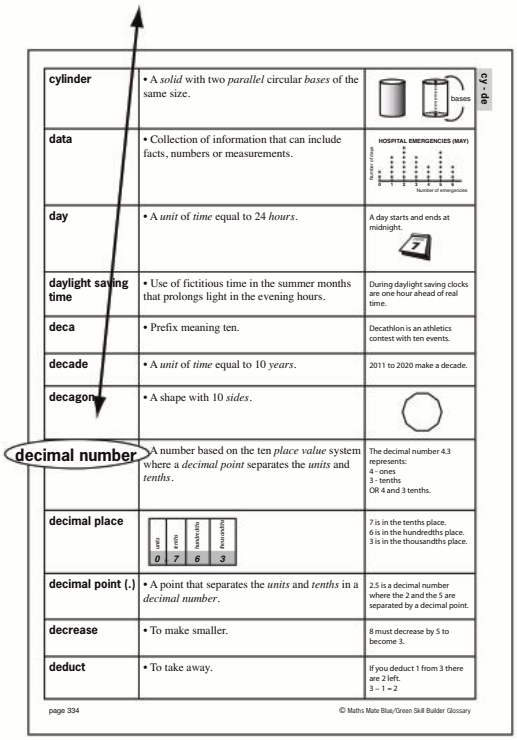
d) 0.4 × 6 = e) 0.3 × 7 = f) 0.6 × 9 =

g) 5.1 × 3 = h) 4.3 × 6 = i) 2.7 × 4 =

j) 3.8 × 2 = k) 1.9 × 5 = l) 7.3 × 8 =

page 33 © Maths Mate Blue/Green Skill Builder 8

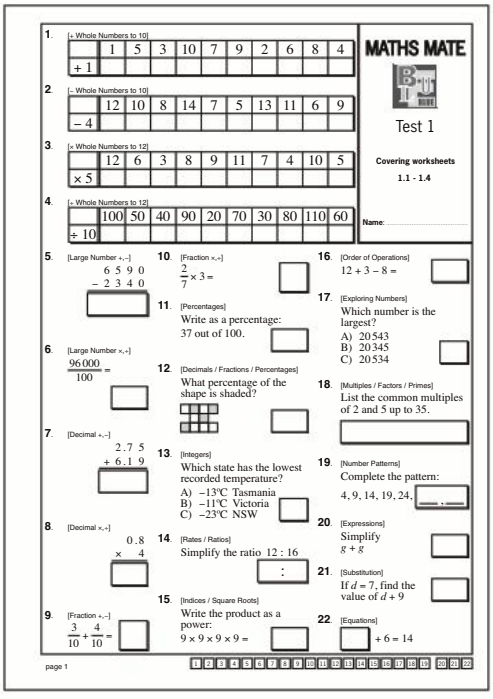
6. The Skill Builders also have a **Glossary** and **Maths Facts**.



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

page 334 © Maths Mate Blue/Green Skill Builder Glossary

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



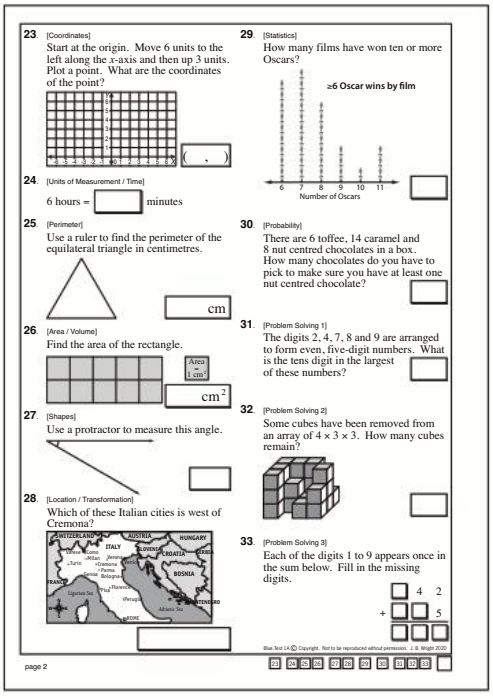
MATHS MATE

Test 1

Covering worksheets 1.1 - 1.4

Name:

page 1



page 2

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

1.3

31. **Hint:** *Consider the properties of even numbers. Make an organised list ordering the digits from largest to smallest.*

Solution: To be even, the numbers must end in 4 or 6. The largest possibilities for each ending are 76 534 and 75 436.

The largest number is 76 534 and the hundreds digit is **5**.

MATHS MATE

Name: .....

Class: .....

Teacher: .....

Worksheet Results

Term 1

		Sheet 1	Sheet 2	Sheet 3	Sheet 4	Skill Builder links	Sheet 5	Sheet 6	Sheet 7	Sheet 8	Skill Builder links
NUMBER	1. [+ Whole Numbers to 10]	1	1	1	1	1.1	1	1	1	1	1.1
	2. [– Whole Numbers to 10]	2	2	2	2	2.1	2	2	2	2	2.1
	3. [× Whole Numbers to 12]	3	3	3	3	3.1	3	3	3	3	3.1
	4. [÷ Whole Numbers to 12]	4	4	4	4	4.1	4	4	4	4	4.1
	5. [Large Number +,–]	5	5	5	5	5.4	5	5	5	5	5.3
	6. [Large Number ×,÷]	6	6	6	6	6.2	6	6	6	6	6.1,5
	7. [Decimal +,–]	7	7	7	7	7.1	7	7	7	7	7.2
	8. [Decimal ×,÷]	8	8	8	8	8.3	8	8	8	8	8.1
	9. [Fraction +,–]	9	9	9	9	9.1,2	9	9	9	9	9.3,4
	10. [Fraction ×,÷]	10	10	10	10	10.1	10	10	10	10	10.2
	11. [Percentages]	11	11	11	11	11.2	11	11	11	11	11.3
	12. [Decimals / Fractions / Percentages]	12	12	12	12	12.4	12	12	12	12	12.2
	13. [Integers]	13	13	13	13	13.1,2	13	13	13	13	13.3,4
	14. [Rates / Ratios]	14	14	14	14	14.1,2	14	14	14	14	14.3
	15. [Exponents / Square Roots]	15	15	15	15	15.2	15	15	15	15	15.3
	16. [Order of Operations]	16	16	16	16	16.2	16	16	16	16	16.4
	17. [Exploring Numbers]	17	17	17	17	17.2	17	17	17	17	17.2
	18. [Multiples / Factors / Primes]	18	18	18	18	18.2,3	18	18	18	18	18.4
	19. [Number Patterns]	19	19	19	19	19.1,2,3	19	19	19	19	19.5
ALGEBRA	20. [Expressions]	20	20	20	20	20.1	20	20	20	20	20.2
	21. [Substitution]	21	21	21	21	21.3	21	21	21	21	21.4
	22. [Equations]	22	22	22	22	22.1	22	22	22	22	22.2
	23. [Rules / Graphs]	23	23	23	23	23.2,3,5	23	23	23	23	23.4
MEASUREMENT	24. [Units of Measurement / Time]	24	24	24	24	24.2	24	24	24	24	24.3
	25. [Perimeter]	25	25	25	25	25.1,2	25	25	25	25	25.3
	26. [Area / Volume]	26	26	26	26	26.2,3	26	26	26	26	26.4
SPACE	27. [Shapes]	27	27	27	27	27.1,2	27	27	27	27	27.3,4
	28. [Location / Transformation]	28	28	28	28	28.2	28	28	28	28	28.3
STAT.	29. [Statistics]	29	29	29	29	29.3	29	29	29	29	29.4
PROB.	30. [Probability]	30	30	30	30	30.3	30	30	30	30	30.4
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
	33. [Problem Solving 3]	33	33	33	33	Hints & Solutions	33	33	33	33	Hints & Solutions
	Total Correct										

MATHS MATE

GREEN

Term 1 - Sheet 1

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Advice is seldom welcome; and those who want it the most always like it the least.
Earl of Chesterfield

1. [+ Whole Numbers to 10]

	4	6	11	8	7	13	10	2	9	15
+ 3										

2. [– Whole Numbers to 10]

	15	17	8	6	13	9	11	12	10	14
– 4										

3. [× Whole Numbers to 12]

	4	5	10	8	7	11	3	6	9	12
× 2										

4. [÷ Whole Numbers to 12]

	5	10	40	45	30	35	20	15	50	25
÷ 5										

5. [Large Number +,–] *

$2453 - 249 =$ ☐

6. [Large Number ×,÷] *

$3070 \div 10 =$ ☐

7. [Decimal +,–] *

$3.57 + 4.81 =$ ☐

8. [Decimal ×,÷] *

$0.35 \times 10 =$ ☐

9. [Fraction +,–]

$\frac{5}{7} + \frac{1}{7} =$ ☐

10. [Fraction ×,÷] *

$5 \times \frac{3}{7} =$ ☐

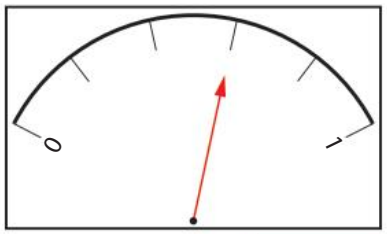
11. [Percentages] *

15% of the Australian population is aged 65+. What percentage of the population are under 65?

☐

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



☐

13. [Integers]

Arrange in ascending order:

5, –2, 3, –6, 7

☐

14. [Rates / Ratios]

Simplify the ratio

18 : 30 ☐ :

15. [Exponents / Square Roots]

$6^2 =$ ☐

16. [Order of Operations] *

$3 + 7 \times 3 =$ ☐

17. [Exploring Numbers]

What is the value of the underlined digit in the number 9<u>6</u>4?

☐

18. [Multiples / Factors / Primes] *

List the common multiples of 4 and 5 up to 60.

☐

19. [Number Patterns]

Complete the pattern:

2, 10, 18, 26, ___ , ___

20. [Expressions]

Simplify

$t + t + t$ ☐

21. [Substitution] *

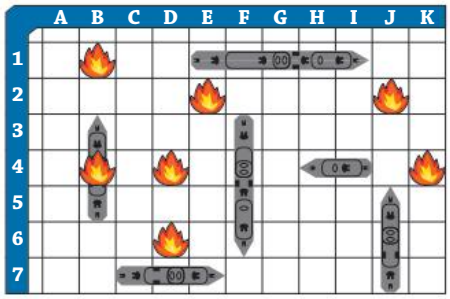
If $y = 8$,
find the value of
$3y + 7$ ☐

22. [Equations]

☐ $+ 7 = 13$

23. [Rules / Graphs]

What is the grid reference of the enemy hit on the battleship?

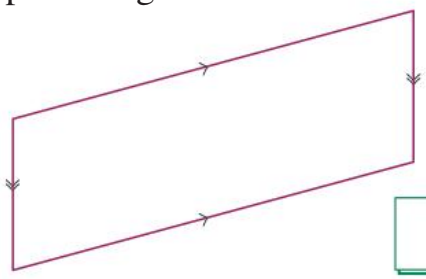


24. [Units of Measurement / Time] *

16 m = ☐ mm

25. [Perimeter] *

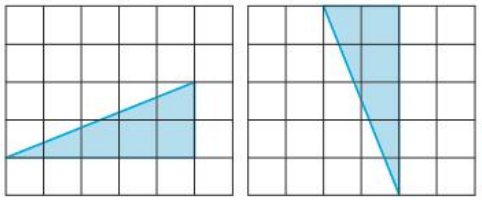
Use a ruler to find the perimeter of the parallelogram in millimetres.



☐ mm

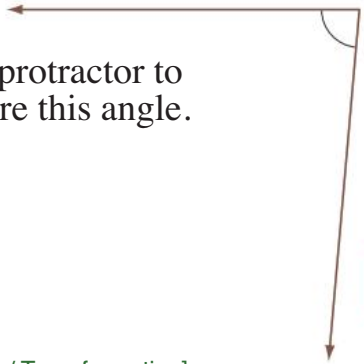
26. [Area / Volume]

Do these triangles have the same area?



27. [Shapes]

Use a protractor to measure this angle.



28. [Location / Transformation]

Draw all the axes of symmetry of this shape. How many axes of symmetry does this shape have?

29. [Statistics]

Which world region has the highest penetration of the internet?

World Internet Usage 2019		
World Regions	% popn. penetration	% of world popn.
Africa	37.3	17.1
Asia	51.8	55.0
Europe	86.8	10.7
Latin America/Carribean	67.5	8.5
Middle East	67.2	3.3
North America	89.4	4.7
Oceania/Australia	68.4	0.5
WORLD TOTAL	56.8	100

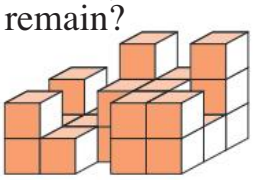
30. [Probability]

Ita can choose an economy, business or first class flight to London, Paris or Rome. How many different outcomes are possible? [Complete the table.]

Outcomes (sample space)	
flight type	destination
economy	London
economy	
economy	

31. [Problem Solving 1] *

Some cubes have been removed from an array of $5 \times 3 \times 3$. How many cubes remain?



32. [Problem Solving 2]

A man looking at a photograph says, "Brothers and sisters I have none, but that man's father is my father's son." Who is in the photograph?

33. [Problem Solving 3] *

Three girls, Angela, Lakisha and Jessica, each have one brother and one pet. Lakisha has a bulldog. The horse belongs to the girl whose brother is Paul. If Angela's brother is Ken and the other brother is Stephen, who is Jessica's brother?

MATHS MATE

Term 1 - Sheet 2

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Jones' Law - The man who can smile when things go wrong has thought of someone he can blame it on.
Rossiter

1. [+ Whole Numbers to 10]

	5	6	10	2	8	11	7	4	9	3
+ 1										

2. [– Whole Numbers to 10]

	19	7	6	10	12	8	4	11	13	5
– 2										

3. [× Whole Numbers to 12]

	4	7	5	2	1	6	9	3	10	8
× 3										

4. [÷ Whole Numbers to 12]

	24	4	16	32	12	28	36	20	40	8
÷ 4										

5. [Large Number +,–] *

$7563 - 3482 =$ ☐

6. [Large Number ×,÷] *

$22\,000 \div 100 =$ ☐

7. [Decimal +,–] *

$25.9 + 30.7 =$ ☐

8. [Decimal ×,÷] *

$0.622 \times 100 =$ ☐

9. [Fraction +,–]

$\frac{11}{13} - \frac{4}{13} =$ ☐

10. [Fraction ×,÷] *

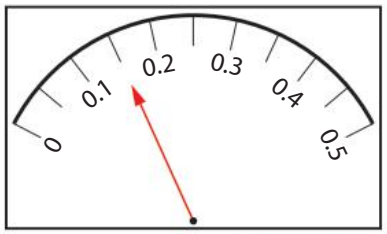
$\frac{3}{7} \times 14 =$ ☐

11. [Percentages] *

What percentage of the distance covered by an Olympic triathlon do athletes cycle if they swim for 3%, run for 20% and cycle the remainder? ☐

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



☐

13. [Integers]

Use < or > to make a true statement.

3 ☐ –4

14. [Rates / Ratios]

Simplify the ratio

40 : 28 ☐ :

15. [Exponents / Square Roots]

$9^2 =$ ☐

16. [Order of Operations] *

$5 \times 9 - 6 =$ ☐

17. [Exploring Numbers]

In the number 3.241 which digit is in the hundredths place? ☐

18. [Multiples / Factors / Primes] *

List the common multiples of 3 and 7 up to 70. ☐

19. [Number Patterns]

Complete the pattern:

43, 37, 31, 25, ☐, ☐

20. [Expressions]

Simplify

$m + m - m + m$ ☐

21. [Substitution] *

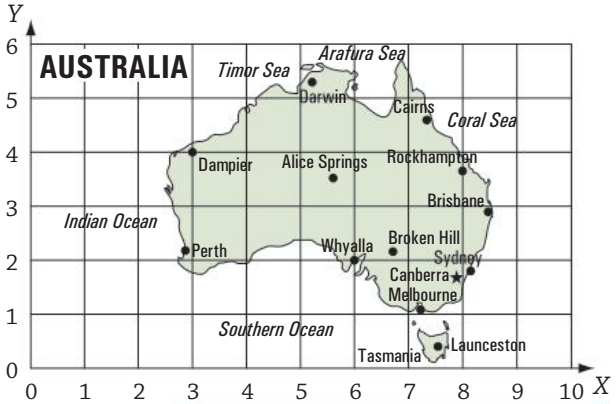
If $r = 3$, find the value of $5r - 8$ ☐

22. [Equations]

$16 -$ ☐ $= 9$

23. [Rules / Graphs]

Which town is located at the coordinates (6,2)?



24. [Units of Measurement / Time] *

200 mm = ☐ cm

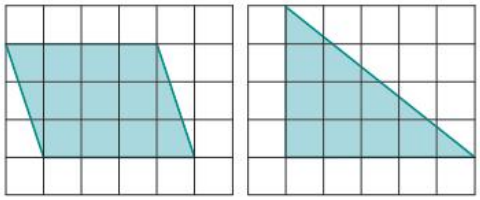
25. [Perimeter] *

Use a ruler to find the perimeter of the polygon in centimetres.

☐ cm

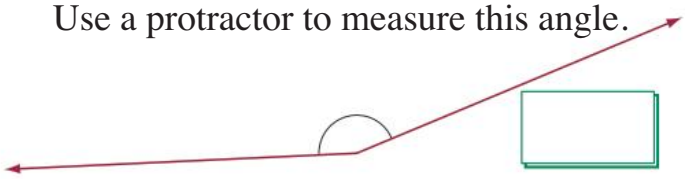
26. [Area / Volume]

Do the parallelogram and the triangle have the same area?



27. [Shapes]

Use a protractor to measure this angle.



28. [Location / Transformation]

Draw the axes of symmetry of these shapes. Circle the shapes that have vertical symmetry.

29. [Statistics]

Which food type has four times as much protein as brown bread?

Food (50 g)	proteins (g)	fats (g)	carbohydrates (g)
brown bread	4	0.9	24.6
fresh cream	1	11.5	1.5
chocolate	16	15.5	28
boiled egg	6.2	5.7	0.3
strawberry	0.45	0.35	8.6
tuna	12	0.4	0

☐

30. [Probability]

How many different outcomes are possible when choosing a vowel and choosing a card suit (spades, clubs, hearts or diamonds)? [Complete the table.]

Possible outcomes		vowel				
		a	**e**	**i**	**o**	**u**
card suit	**S**	a,S	e,S			
	C	a,C				
	H	a,H				
	D					

☐

31. [Problem Solving 1] *

Caro painted this design in her art class. What is the ratio of the black portion of the design to the white portion?

☐

32. [Problem Solving 2]

Complete the addition table.

+	3	8		
	5			6
		14		
12			17	
				13

33. [Problem Solving 3] *

To buy both the green (G) and blue (B) bikes would cost $1500. To buy the green and red (R) bikes would cost $750. To buy all three bikes would cost $2000. How much does each bike cost?

G = $ B = $ R = $

MATHS MATE

GREEN

Term 1 - Sheet 3

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Practise yourself...in little things; and thence proceed to greater.
Epictetus

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

	6	13	10	7	12	8	5	9	11	14
– 3										

3. [× Whole Numbers to 12]

	5	8	11	6	9	12	10	7	3	4
× 5										

4. [÷ Whole Numbers to 12]

	16	14	24	8	12	22	6	10	20	18
÷ 2										

5. [Large Number +,–] *

$8921 - 3506 =$ ☐

6. [Large Number ×,÷] *

$630\,000 \div 100 =$ ☐

7. [Decimal +,–] *

$3.68 + 4.51 =$ ☐

8. [Decimal ×,÷] *

$60.5 \times 1000 =$ ☐

9. [Fraction +,–] *

$\frac{4}{5} + \frac{3}{5} =$ ☐

10. [Fraction ×,÷] *

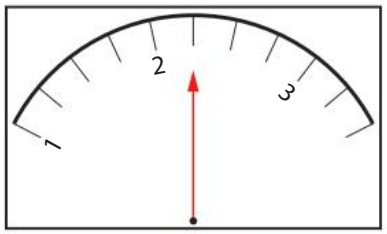
$\frac{2}{5} \times 5 =$ ☐

11. [Percentages] *

Eighteen-carat rose gold is 75% gold, 9% silver and the rest copper. What percentage is copper? ☐

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



☐

13. [Integers]

Use < or > to make a true statement.

-7 ☐ -5

14. [Rates / Ratios]

Simplify the ratio

2 kg : 8 kg ☐ :

15. [Exponents / Square Roots]

$0^2 =$ ☐

16. [Order of Operations] *

$56 \div 7 + 1 =$ ☐

17. [Exploring Numbers]

What is the value of the underlined digit in the number $0.5\underline{5}$? ☐

18. [Multiples / Factors / Primes] *

What is the lowest common multiple (LCM) of 5 and 6? ☐

19. [Number Patterns]

Complete the pattern:

2, 2.3, 2.6, 2.9, ___ , ___

20. [Expressions]

Simplify

$hi + hi + hi + hi + hi$ ☐

21. [Substitution] *

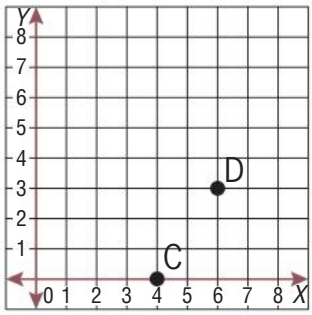
If $t = 4$,
find the value of $\frac{t+6}{5}$ ☐

22. [Equations]

$17 +$ ☐ $= 26$

23. [Rules / Graphs]

What are the coordinates of the points C and D on this Cartesian plane?



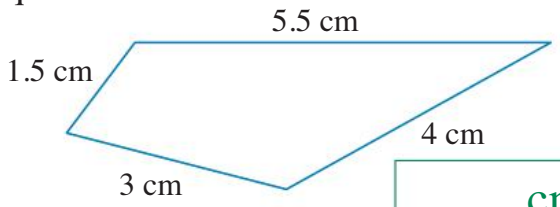
C(,) D(,)

24. [Units of Measurement / Time] *

46 cm = ____ mm

25. [Perimeter] *

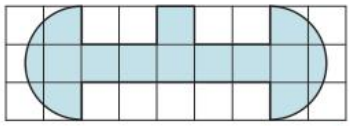
Calculate the perimeter of the quadrilateral.



cm

26. [Area / Volume] *

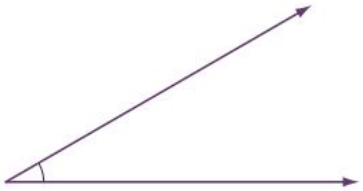
Find the area of the shaded shape.
[Round to the nearest whole number.]



sq. units

27. [Shapes]

Without measuring, would you estimate that the size of this angle is closer to 30° or to 45°?



28. [Location / Transformation]

Draw the axes of symmetry of these shapes. Circle the shapes that have horizontal symmetry.

29. [Statistics]

Of the animals that live for 15 years, which has the lowest heart rate?

Creature	Weight grams	Heart Rate beats/min	Longevity years
Human	90 000	60	70
Cat	2000	150	15
Dog	5000	90	15
Chicken	1500	275	15
Horse	1 200 000	44	40
Cow	800 000	65	22
Pig	150 000	70	25

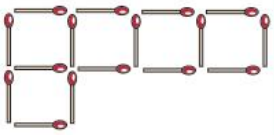
30. [Probability]

How many different outcomes are possible when rolling two dice?
[Complete the table.]

Possible outcomes	Die 1					
Die 2	1	2	3	4	5	6
1	1,1	1,2				
2	2,1					
3	3,1					
4						
5						
6						

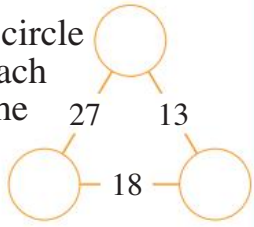
31. [Problem Solving 1]

By moving 3 matches to new positions, change the diagram so that there are 4 squares.



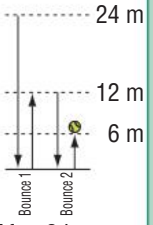
32. [Problem Solving 2] *

Enter a number in each circle so that the number on each line equals the sum of the numbers at each end.



33. [Problem Solving 3] *

A ball is dropped from a height of 24 m. With each bounce, the ball reaches a height that is half the height of the previous bounce. How far has the ball travelled by the time it comes to rest? [Hint: The answer is a whole number.]



After 2 bounces
24 + 12 + 12 + 6 = 54 m

m

MATHS MATE

Term 1 - Sheet 4

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

He that is without sin among you, let him cast the first stone.
JOHN 8 : 7

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

	20	18	14	13	17	11	15	16	12	19
– 10										

3. [× Whole Numbers to 12]

	12	8	7	11	4	6	3	9	5	10
× 4										

4. [÷ Whole Numbers to 12]

	4	11	8	12	7	10	6	9	3	5
÷ 1										

5. [Large Number +,–] *

$7605 - 1485 =$ ☐

6. [Large Number ×,÷] *

$504\,000 \div 1000 =$ ☐

7. [Decimal +,–] *

$52.7 + 38.1 =$ ☐

8. [Decimal ×,÷] *

$3.49 \times 1000 =$ ☐

9. [Fraction +,–] *

$\frac{16}{9} - \frac{2}{9} =$ ☐

10. [Fraction ×,÷] *

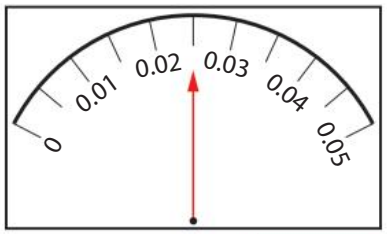
$2 \times \frac{7}{8} =$ ☐

11. [Percentages] *

Biofuel for a jet engine is made up of 50% jet A, 47.5% jatropha and the rest is algae. What percentage of the biofuel is algae? ☐

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



☐

13. [Integers]

Arrange in descending order:

3, –3, –7, –9, 5

☐

14. [Rates / Ratios] *

Simplify the ratio

40 cm : 2 m ☐ :

15. [Exponents / Square Roots]

$5^2 =$ ☐

16. [Order of Operations] *

$30 - 15 \div 3 =$ ☐

17. [Exploring Numbers]

What is the value of the underlined digit in the number 6.029? ☐

18. [Multiples / Factors / Primes] *

What is the lowest common multiple (LCM) of 9 and 12? ☐

19. [Number Patterns]

Complete the pattern:

8, 6.5, 5, 3.5, ☐ , ☐

20. [Expressions]

Simplify

$ij + ij - ij - ij + ij$ ☐

21. [Substitution] *

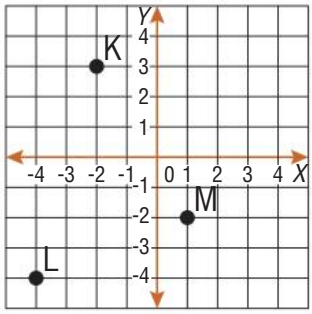
If $w = 2$,
find the value of $\frac{17 - w}{3}$ ☐

22. [Equations]

☐ $- 14 = 20$

23. [Rules / Graphs]

What are the coordinates of the points K, L and M on this Cartesian plane?



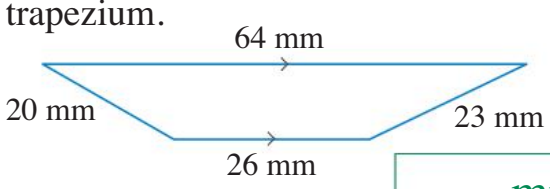
K(,) L(,) M(,)

24. [Units of Measurement / Time] *

8.5 km = ____ m

25. [Perimeter] *

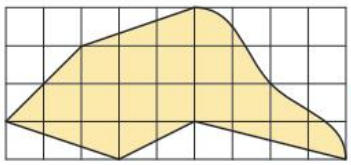
Calculate the perimeter of the trapezium.



____ mm

26. [Area / Volume] *

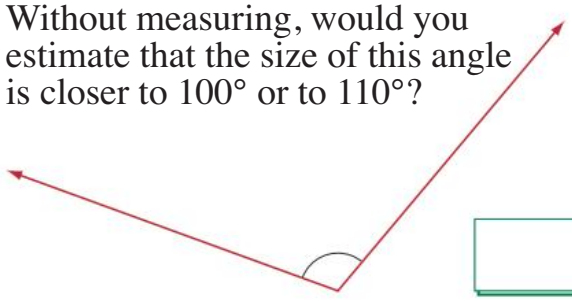
Find the area of the shaded shape.
[Round to the nearest whole number.]



____ sq. units

27. [Shapes]

Without measuring, would you estimate that the size of this angle is closer to 100° or to 110°?



28. [Location / Transformation]

Draw the axes of symmetry of these shapes. Circle the shapes that are both horizontally and vertically symmetrical.

29. [Statistics] *

Approximately what percentage of nuclear plants under construction are being built in the USA?

A) 0.1% B) 7% C) 30% D) 50%

Commercial Nuclear Power Plants to July 2019	Nuclear Electricity generated		Nuclear plants - Operable		Nuclear plants - Under Construction		Uranium required 2019
	Twh	%e	Number	GWe	Number	GWe	tonnes
World	2563	19.3	447	399	55	58	65014
USA	808	10.3	97	99	4	5	18996

GWh = Gigawatt hour
GWe = Gigawatts electric

____

30. [Probability]

A coin is flipped 3 times. Given that order matters, (i.e. HTH ≠ THH) find the size of the sample space.
[Complete the table.]

Outcomes (sample space)		
1st flip	2nd flip	3rd flip
H	H	H
H		
H		
H		

____

31. [Problem Solving 1] *

Rearrange the letters of each set of words to form three mathematical terms: {LOVE SUM}, {LARGE CENT}, {BURN ME}

____

32. [Problem Solving 2] *

A donkey (D) and a mule (M) were carrying sacks of apples. The donkey groaned so the mule said to him: "Why are you complaining? If you gave me one sack, I would have twice as many as you; if I gave you one of my sacks, then we would have equal loads." How many sacks was each carrying? [According to legend, Euclid was the author of this puzzle.]

D = ____ M = ____

33. [Problem Solving 3] *

A whole number is multiplied by six. What must the answer be?

A) a square number
B) a prime number
C) a number divisible by 12
D) a multiple of 3

____

MATHS MATE

GREEN

Test 1

Covering worksheets

1.1 - 1.4

Name: .....

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

	10	13	12	7	14	9	11	16	5	18
– 3										

3. [× Whole Numbers to 12]

	11	9	6	10	7	3	4	12	5	8
× 4										

4. [÷ Whole Numbers to 12]

	8	4	12	3	9	10	5	11	7	6
÷ 1										

5. [Large Number +,–]

$7163 - 3092 =$ ☐

6. [Large Number ×,÷]

$150\,000 \div 100 =$ ☐

7. [Decimal +,–]

$26.4 + 35.3 =$ ☐

8. [Decimal ×,÷]

$1.28 \times 1000 =$ ☐

9. [Fraction +,–]

$\frac{10}{3} - \frac{2}{3} =$ ☐

10. [Fraction ×,÷]

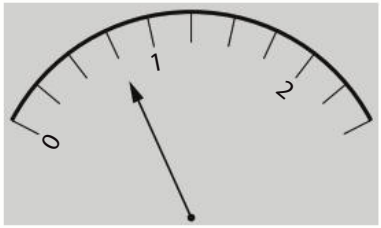
$3 \times \frac{4}{9} =$ ☐

11. [Percentages]

The *Star Princess* crew members represent 32% of the people on board, and the remainder are passengers. What percentage are passengers? ☐

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



☐

13. [Integers]

Use < or > to make a true statement.

–8 ☐ –4

14. [Rates / Ratios]

Simplify the ratio

60 : 24 ☐ :

15. [Indices / Square Roots]

$8^2 =$ ☐

16. [Order of Operations]

$6 + 27 \div 3 =$ ☐

17. [Exploring Numbers]

What is the value of the underlined digit in the number $7.3\underline{4}8$? ☐

18. [Multiples / Factors / Primes]

What is the lowest common multiple (LCM) of 10 and 15? ☐

19. [Number Patterns]

Complete the pattern:

2, 3.5, 5, 6.5, ___ , ___

20. [Expressions]

Simplify

$vw + vw - vw + vw$ ☐

21. [Substitution]

If $r = 14$, find the value of

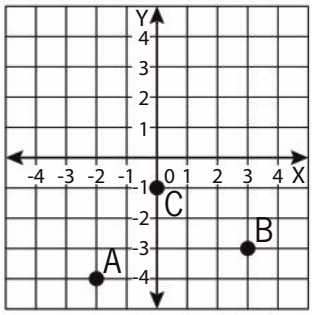
$\frac{r-5}{3}$ ☐

22. [Equations]

☐ $- 18 = 10$

23. [Coordinates]

What are the coordinates of the points A, B and C on this Cartesian plane?



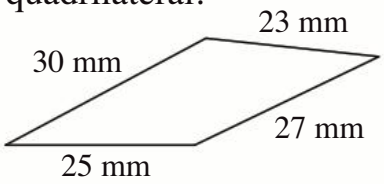
A(,) B(,) C(,)

24. [Units of Measurement / Time]

100 mm = ☐ cm

25. [Perimeter]

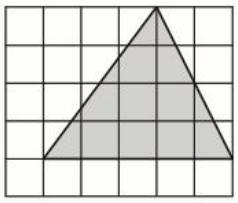
Calculate the perimeter of the quadrilateral.

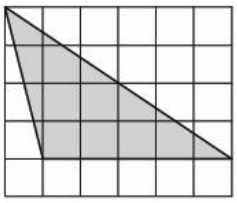


☐ mm

26. [Area / Volume]

Do these triangles have the same area?

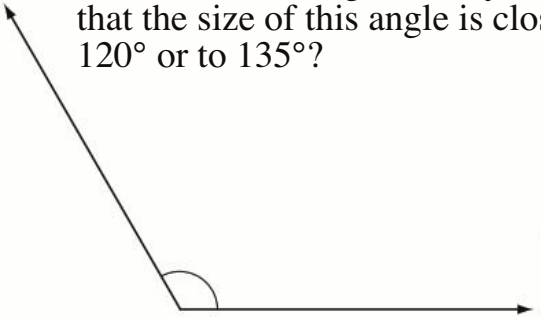




☐

27. [Shapes]

Without measuring, would you estimate that the size of this angle is closer to 120° or to 135°?



☐

28. [Location / Transformation]

Draw the axes of symmetry of these shapes. Circle the shapes that have horizontal symmetry.

29. [Statistics]

What percentage of the total salt content of ocean water is chloride?

COMPARISON: Ocean water & River water Chemical Constituent	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Bromide (Br)
Ocean water	-	-	1.19	3.72	30.53	1.11	0.42	7.67	55.16	-	0.20
River water	14.51	0.74	16.62	4.54	6.98	2.55	31.90	12.41	8.64	1.11	-

% of total salt content ☐

30. [Probability]

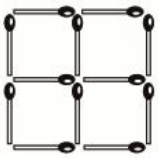
How many different outcomes are possible when choosing a season of the year and rolling a die? [Complete the table.]

Possible outcomes		Die 1	2	3	4	5	6
Season	S	S,1	S,2				
	A	A,1					
	W	W,1					
	Sp						

☐

31. [Problem Solving 1]

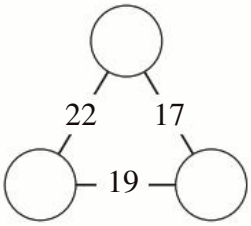
Which four matches should you remove to leave only one square?



☐

32. [Problem Solving 2]

Enter a number in each circle so that the number on each line equals the sum of the numbers at each end.



33. [Problem Solving 3]

Amy, Bill and Di each work as an artist, a banker or a dentist. Amy and the artist play tennis together. The dentist helped Di plant her garden. Bill is not the dentist and he has not met Amy. What is Di's occupation?

☐

MATHS MATE

GREEN

Test 1

Covering worksheets

1.1 - 1.4

Name: .....

1. [+ Whole Numbers to 10]

	6	8	11	14	7	10	9	12	15	3
+ 1										

2. [– Whole Numbers to 10]

	16	9	5	13	8	11	14	7	10	12
– 2										

3. [× Whole Numbers to 12]

	12	4	8	2	9	5	7	3	10	6
× 3										

4. [÷ Whole Numbers to 12]

	16	32	40	12	20	28	48	36	44	24
÷ 4										

5. [Large Number +,–]

$4532 - 2371 =$ ☐

6. [Large Number ×,÷]

$990\,000 \div 100 =$ ☐

7. [Decimal +,–]

$48.5 + 27.3 =$ ☐

8. [Decimal ×,÷]

$5.63 \times 1000 =$ ☐

9. [Fraction +,–]

$\frac{12}{5} - \frac{3}{5} =$ ☐

10. [Fraction ×,÷]

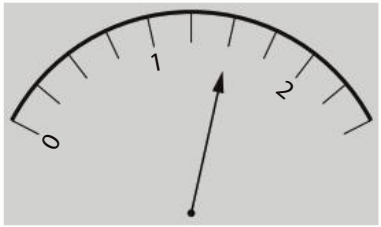
$4 \times \frac{5}{8} =$ ☐

11. [Percentages]

Dark chocolate contains 70% cocoa. What percentage do the other components make? ☐

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



☐

13. [Integers]

Use < or > to make a true statement.

–3 ☐ –7

14. [Rates / Ratios]

Simplify the ratio

72 : 48 ☐ :

15. [Indices / Square Roots]

$4^2 =$ ☐

16. [Order of Operations]

$48 - 8 \times 3 =$ ☐

17. [Exploring Numbers]

What is the value of the underlined digit in the number 3.0<u>8</u>5? ☐

18. [Multiples / Factors / Primes]

What is the lowest common multiple (LCM) of 12 and 18? ☐

19. [Number Patterns]

Complete the pattern:

0, 1.5, 3, 4.5, 6, ___ , ___

20. [Expressions]

Simplify

$yz - yz + yz + yz$ ☐

21. [Substitution]

If $q = 17$,
find the value of

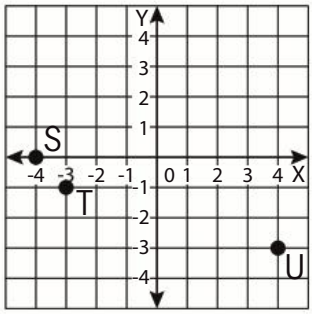
$\frac{q-3}{7}$ ☐

22. [Equations]

☐ $- 11 = 20$

23. [Coordinates]

What are the coordinates of the points S, T and U on this Cartesian plane?



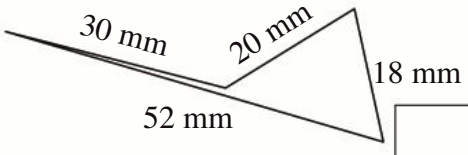
S(,) T(,) U(,)

24. [Units of Measurement / Time]

17 cm = ☐ mm

25. [Perimeter]

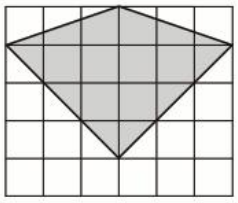
Calculate the perimeter of the quadrilateral.

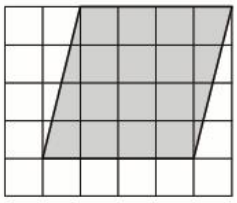


☐ mm

26. [Area / Volume]

Do the kite and the parallelogram have the same area?

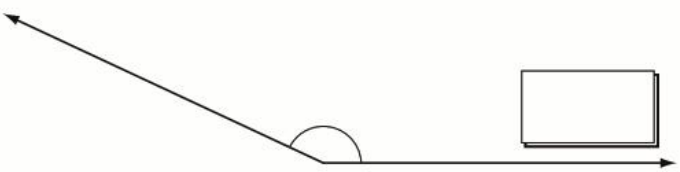




☐

27. [Shapes]

Without measuring, would you estimate that the size of this angle is closer to 140° or to 155°?



☐

28. [Location / Transformation]

Draw the axes of symmetry of these shapes. Circle the shapes that have vertical symmetry.

29. [Statistics]

How many earthquakes each year measure 6.2 to 6.9 on the Richter scale?

Earthquake magnitude

Richter Scale	<3.4	3.5 - 4.2	4.3 - 4.8	4.9 - 5.4	5.5 - 6.1	6.2 - 6.9	7.0 - 7.3	7.4 - 7.7	>8
Average number of earthquakes/yr	800000	30000	4800	1400	500	100	15	4	1 every 5 to 10 yr
Typical effects	Detected only by seismometers	Just about noticeable indoors	Windows rattle	Everyone notices them	Slight damage to buildings	Much damage to buildings	Serious damage	Most buildings collapse	Total damage, ground waves

☐

30. [Probability]

How many different outcomes are possible when spinning a spinner labelled 1, 2, 3, 4 and choosing a state of matter (solid, liquid or gas)?

[Complete the table.]

Possible outcomes		Spinner 1	2	3	4
state of matter	S	S,1			
	L				
	G				

☐

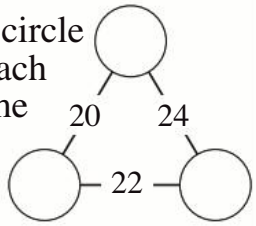
31. [Problem Solving 1]

By moving 3 matches to new positions, change the diagram so that there are 3 squares.

☐

32. [Problem Solving 2]

Enter a number in each circle so that the number on each line equals the sum of the numbers at each end.



33. [Problem Solving 3]

Holly, Annie and Nick went to a costume party as a witch, a queen and a pirate. Each brought a treat to the party. The pirate did not bring cakes. The witch brought fruit. Nick was the queen, and Annie made popcorn. Who dressed as a witch?

☐

MATHS MATE

Term 1 - Sheet 1

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Advice is seldom welcome; and those who want it the most always like it the least.
Earl of Chesterfield

1. [+ Whole Numbers to 10]

	4	6	11	8	7	13	10	2	9	15
+ 3	7	9	14	11	10	16	13	5	12	18

2. [– Whole Numbers to 10]

	15	17	8	6	13	9	11	12	10	14
– 4	11	13	4	2	9	5	7	8	6	10

3. [× Whole Numbers to 12]

	4	5	10	8	7	11	3	6	9	12
× 2	8	10	20	16	14	22	6	12	18	24

4. [÷ Whole Numbers to 12]

	5	10	40	45	30	35	20	15	50	25
÷ 5	1	2	8	9	6	7	4	3	10	5

5. [Large Number +,–] *

$2453 - 249 =$ 2204

6. [Large Number ×,÷] *

$3070 \div 10 =$ 307

7. [Decimal +,–] *

$3.57 + 4.81 =$ 8.38

8. [Decimal ×,÷] *

$0.35 \times 10 =$ 3.5

9. [Fraction +,–]

$\frac{5}{7} + \frac{1}{7} =$ $\frac{6}{7}$

10. [Fraction ×,÷] *

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

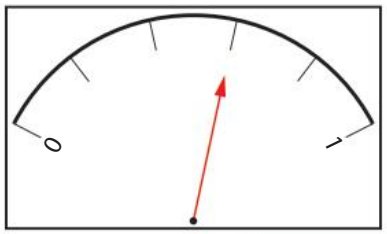
11. [Percentages] *

15% of the Australian population is aged 65+. What percentage of the population are under 65?

85%

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



0.6

13. [Integers]

Arrange in ascending order:

5, –2, 3, –6, 7

–6, –2, 3, 5, 7

14. [Rates / Ratios]

Simplify the ratio

18 : 30 → 3 : 5

15. [Exponents / Square Roots]

$6^2 =$ 36

16. [Order of Operations] *

$3 + 7 \times 3 =$ 24

17. [Exploring Numbers]

What is the value of the underlined digit in the number 9<u>6</u>4?

60

18. [Multiples / Factors / Primes] *

List the common multiples of 4 and 5 up to 60.

20, 40, 60

19. [Number Patterns]

Complete the pattern:

2, 10, 18, 26, 34, 42

20. [Expressions]

Simplify $t + t + t$

$3t$

21. [Substitution] *

If $y = 8$, find the value of $3y + 7$

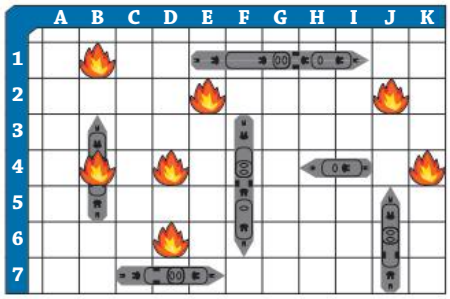
31

22. [Equations]

6 + 7 = 13

23. [Rules / Graphs]

What is the grid reference of the enemy hit on the battleship?



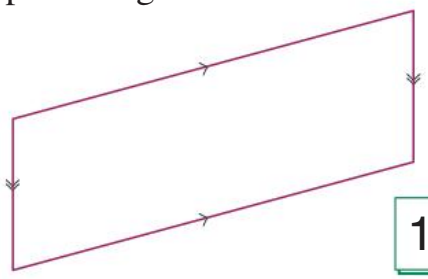
B4

24. [Units of Measurement / Time] *

16 m = 16 000 mm

25. [Perimeter] *

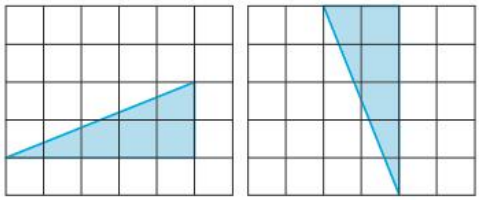
Use a ruler to find the perimeter of the parallelogram in millimetres.



150 mm

26. [Area / Volume]

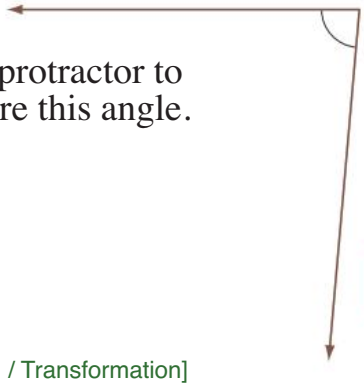
Do these triangles have the same area?



yes

27. [Shapes]

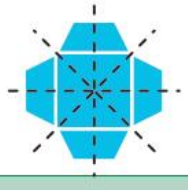
Use a protractor to measure this angle.



85°

28. [Location / Transformation]

Draw all the axes of symmetry of this shape. How many axes of symmetry does this shape have?



4

29. [Statistics]

Which world region has the highest penetration of the internet?

World Internet Usage 2019		
World Regions	% popn. penetration	% of world popn.
Africa	37.3	17.1
Asia	51.8	55.0
Europe	86.8	10.7
Latin America/Carribean	67.5	8.5
Middle East	67.2	3.3
North America	89.4	4.7
Oceania/Australia	68.4	0.5
WORLD TOTAL	56.8	100

North America

30. [Probability]

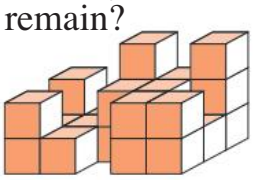
Ita can choose an economy, business or first class flight to London, Paris or Rome. How many different outcomes are possible? [Complete the table.]

Outcomes (sample space)	
flight type	destination
economy	London
economy	Paris
economy	Rome
business	London
business	Paris
business	Rome
first	London
first	Paris
first	Rome

9

31. [Problem Solving 1] *

Some cubes have been removed from an array of $5 \times 3 \times 3$. How many cubes remain?



25

32. [Problem Solving 2]

A man looking at a photograph says, "Brothers and sisters I have none, but that man's father is my father's son." Who is in the photograph?

his own son

33. [Problem Solving 3] *

Three girls, Angela, Lakisha and Jessica, each have one brother and one pet. Lakisha has a bulldog. The horse belongs to the girl whose brother is Paul. If Angela's brother is Ken and the other brother is Stephen, who is Jessica's brother?

Paul

MATHS MATE

Term 1 - Sheet 2

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Jones' Law - The man who can smile when things go wrong has thought of someone he can blame it on.
Rossiter

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

	19	7	6	10	12	8	4	11	13	5
– 2	17	5	4	8	10	6	2	9	11	3

3. [× Whole Numbers to 12]

	4	7	5	2	1	6	9	3	10	8
× 3	12	21	15	6	3	18	27	9	30	24

4. [÷ Whole Numbers to 12]

	24	4	16	32	12	28	36	20	40	8
÷ 4	6	1	4	8	3	7	9	5	10	2

5. [Large Number +,–] *

$7563 - 3482 =$ 4081

6. [Large Number ×,÷] *

$22\,000 \div 100 =$ 220

7. [Decimal +,–] *

$25.9 + 30.7 =$ 56.6

8. [Decimal ×,÷] *

$0.622 \times 100 =$ 62.2

9. [Fraction +,–]

$\frac{11}{13} - \frac{4}{13} =$ $\frac{7}{13}$

10. [Fraction ×,÷] *

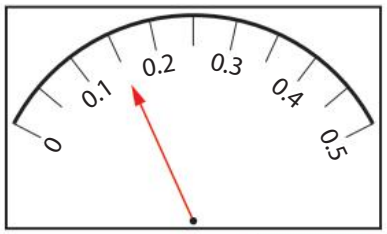
$\frac{3}{7} \times 14 =$ 6

11. [Percentages] *

What percentage of the distance covered by an Olympic triathlon do athletes cycle if they swim for 3%, run for 20% and cycle the remainder? 77%

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



0.15

13. [Integers]

Use < or > to make a true statement.

3 > –4

14. [Rates / Ratios]

Simplify the ratio

40 : 28 10 : 7

15. [Exponents / Square Roots]

$9^2 =$ 81

16. [Order of Operations] *

$5 \times 9 - 6 =$ 39

17. [Exploring Numbers]

In the number 3.241 which digit is in the hundredths place? 4

18. [Multiples / Factors / Primes] *

List the common multiples of 3 and 7 up to 70.

21, 42, 63

19. [Number Patterns]

Complete the pattern:

43, 37, 31, 25, 19, 13

20. [Expressions]

Simplify $m + m - m + m$ $2m$

21. [Substitution] *

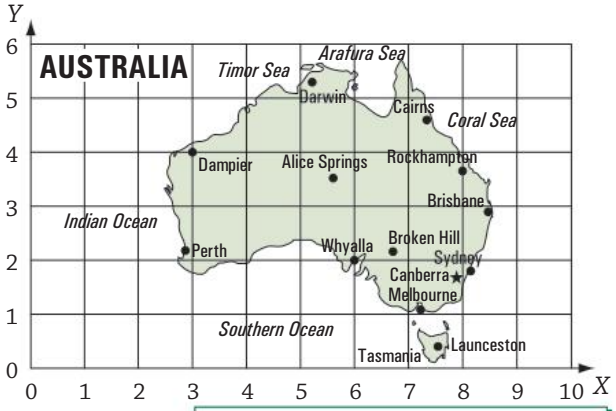
If $r = 3$, find the value of $5r - 8$ 7

22. [Equations]

$16 -$ 7 $= 9$

23. [Rules / Graphs]

Which town is located at the coordinates (6,2)?



Whyalla

24. [Units of Measurement / Time] *

200 mm = 20 cm

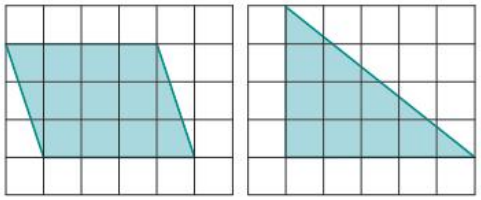
25. [Perimeter] *

Use a ruler to find the perimeter of the polygon in centimetres.

21 cm

26. [Area / Volume]

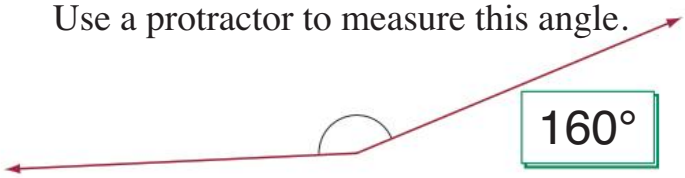
Do the parallelogram and the triangle have the same area?



no

27. [Shapes]

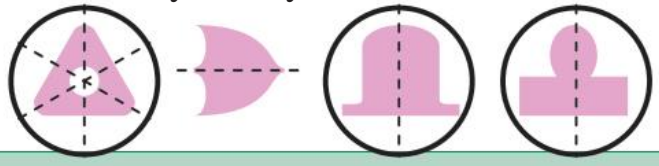
Use a protractor to measure this angle.



160°

28. [Location / Transformation]

Draw the axes of symmetry of these shapes. Circle the shapes that have vertical symmetry.



29. [Statistics]

Which food type has four times as much protein as brown bread?

Food (50 g)	proteins (g)	fats (g)	carbohydrates (g)
brown bread	4	0.9	24.6
fresh cream	1	11.5	1.5
chocolate	16	15.5	28
boiled egg	6.2	5.7	0.3
strawberry	0.45	0.35	8.6
tuna	12	0.4	0

chocolate

30. [Probability]

How many different outcomes are possible when choosing a vowel and choosing a card suit (spades, clubs, hearts or diamonds)? [Complete the table.]

Possible outcomes		vowel				
		a	e	i	o	u
card suit	S	a,S	e,S	i,S	o,S	u,S
	C	a,C	e,C	i,C	o,C	u,C
	H	a,H	e,H	i,H	o,H	u,H
	D	a,D	e,D	i,D	o,D	u,D

20

31. [Problem Solving 1] *

Caro painted this design in her art class. What is the ratio of the black portion of the design to the white portion?

1 : 3

32. [Problem Solving 2]

Complete the addition table.

+	3	8	5	4
2	5	10	7	6
6	9	14	11	10
12	15	20	17	16
9	12	17	14	13

33. [Problem Solving 3] *

To buy both the green (G) and blue (B) bikes would cost $1500. To buy the green and red (R) bikes would cost $750. To buy all three bikes would cost $2000. How much does each bike cost?

G = $250 B = $1250 R = $500

MATHS MATE

Term 1 - Sheet 3

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Practise yourself...in little things; and thence proceed to greater.
Epictetus

1. [+ Whole Numbers to 10]

	4	7	2	5	1	10	8	6	9	3
+ 10	14	17	12	15	11	20	18	16	19	13

2. [– Whole Numbers to 10]

	6	13	10	7	12	8	5	9	11	14
– 3	3	10	7	4	9	5	2	6	8	11

3. [× Whole Numbers to 12]

	5	8	11	6	9	12	10	7	3	4
× 5	25	40	55	30	45	60	50	35	15	20

4. [÷ Whole Numbers to 12]

	16	14	24	8	12	22	6	10	20	18
÷ 2	8	7	12	4	6	11	3	5	10	9

5. [Large Number +,–] *

$8921 - 3506 =$ 5415

6. [Large Number ×,÷] *

$630\,000 \div 100 =$ 6300

7. [Decimal +,–] *

$3.68 + 4.51 =$ 8.19

8. [Decimal ×,÷] *

$60.5 \times 1000 =$ 60 500

9. [Fraction +,–] *

$\frac{4}{5} + \frac{3}{5} =$ $1\frac{2}{5}$

10. [Fraction ×,÷] *

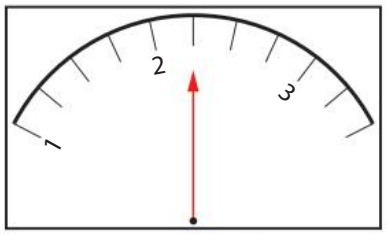
$\frac{2}{5} \times 5 =$ 2

11. [Percentages] *

Eighteen-carat rose gold is 75% gold, 9% silver and the rest copper. What percentage is copper? 16%

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



2.25

13. [Integers]

Use < or > to make a true statement.

-7 < -5

14. [Rates / Ratios]

Simplify the ratio

2 kg : 8 kg 1 : 4

15. [Exponents / Square Roots]

$0^2 =$ 0

16. [Order of Operations] *

$56 \div 7 + 1 =$ 9

17. [Exploring Numbers]

What is the value of the underlined digit in the number $0.\underline{5}5$?

or $\frac{5}{100}$ 0.05

18. [Multiples / Factors / Primes] *

What is the lowest common multiple (LCM) of 5 and 6? 30

19. [Number Patterns]

Complete the pattern:

2, 2.3, 2.6, 2.9, 3.2, 3.5

20. [Expressions]

Simplify

$hi + hi + hi + hi + hi$ $5hi$

21. [Substitution] *

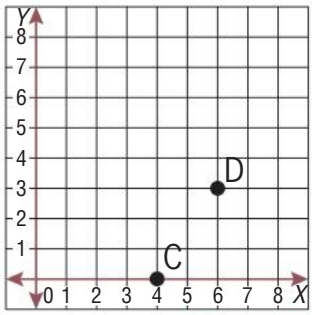
If $t = 4$,
find the value of $\frac{t+6}{5}$ 2

22. [Equations]

$17 +$ 9 $= 26$

23. [Rules / Graphs]

What are the coordinates of the points C and D on this Cartesian plane?



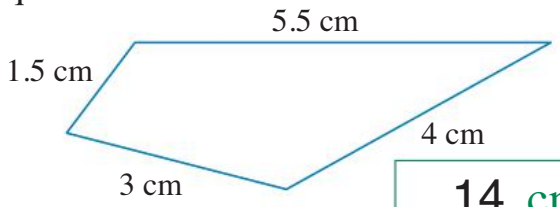
C(4 , 0) D(6 , 3)

24. [Units of Measurement / Time] *

46 cm = 460 mm

25. [Perimeter] *

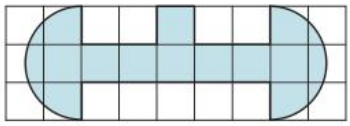
Calculate the perimeter of the quadrilateral.



14 cm

26. [Area / Volume] *

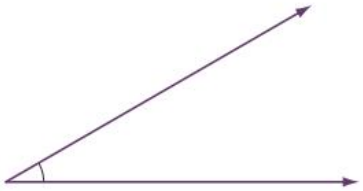
Find the area of the shaded shape.
[Round to the nearest whole number.]



13 sq. units

27. [Shapes]

Without measuring, would you estimate that the size of this angle is closer to 30° or to 45°?



30°

28. [Location / Transformation]

Draw the axes of symmetry of these shapes. Circle the shapes that have horizontal symmetry.

29. [Statistics]

Of the animals that live for 15 years, which has the lowest heart rate?

Creature	Weight grams	Heart Rate beats/min	Longevity years
Human	90 000	60	70
Cat	2000	150	15
Dog	5000	90	15
Chicken	1500	275	15
Horse	1 200 000	44	40
Cow	800 000	65	22
Pig	150 000	70	25

dog

30. [Probability]

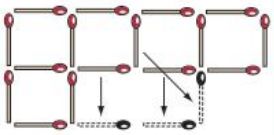
How many different outcomes are possible when rolling two dice?
[Complete the table.]

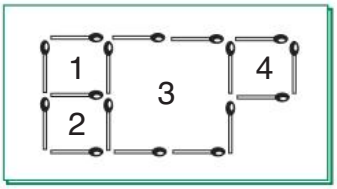
Possible outcomes	Die 1					
Die 2	1	2	3	4	5	6
1	1,1	1,2	1,3	1,4	1,5	1,6
2	2,1	2,2	2,3	2,4	2,5	2,6
3	3,1	3,2	3,3	3,4	3,5	3,6
4	4,1	4,2	4,3	4,4	4,5	4,6
5	5,1	5,2	5,3	5,4	5,5	5,6
6	6,1	6,2	6,3	6,4	6,5	6,6

36

31. [Problem Solving 1]

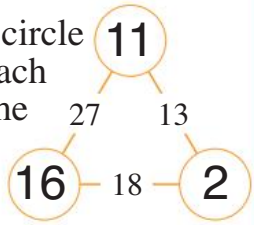
By moving 3 matches to new positions, change the diagram so that there are 4 squares.





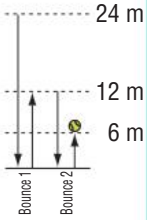
32. [Problem Solving 2] *

Enter a number in each circle so that the number on each line equals the sum of the numbers at each end.



33. [Problem Solving 3] *

A ball is dropped from a height of 24 m. With each bounce, the ball reaches a height that is half the height of the previous bounce. How far has the ball travelled by the time it comes to rest? [Hint: The answer is a whole number.]



After 2 bounces
24 + 12 + 12 + 6 = 54 m

72 m

MATHS MATE

Term 1 - Sheet 4

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

He that is without sin among you, let him cast the first stone.
JOHN 8 : 7

1. [+ Whole Numbers to 10]

	11	5	12	8	6	4	9	7	10	3
+ 5	16	10	17	13	11	9	14	12	15	8

2. [– Whole Numbers to 10]

	20	18	14	13	17	11	15	16	12	19
– 10	10	8	4	3	7	1	5	6	2	9

3. [× Whole Numbers to 12]

	12	8	7	11	4	6	3	9	5	10
× 4	48	32	28	44	16	24	12	36	20	40

4. [÷ Whole Numbers to 12]

	4	11	8	12	7	10	6	9	3	5
÷ 1	4	11	8	12	7	10	6	9	3	5

5. [Large Number +,–] *

$7605 - 1485 =$ 6120

6. [Large Number ×,÷] *

$504\,000 \div 1000 =$ 504

7. [Decimal +,–] *

$52.7 + 38.1 =$ 90.8

8. [Decimal ×,÷] *

$3.49 \times 1000 =$ 3490

9. [Fraction +,–] *

$\frac{16}{9} - \frac{2}{9} =$ $1\frac{5}{9}$

10. [Fraction ×,÷] *

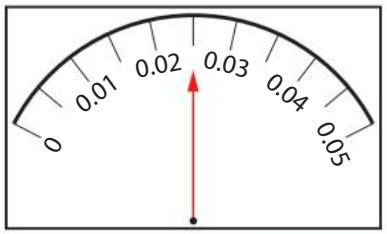
$2 \times \frac{7}{8} =$ $1\frac{3}{4}$

11. [Percentages] *

Biofuel for a jet engine is made up of 50% jet A, 47.5% jatropha and the rest is algae. What percentage of the biofuel is algae? 2.5%

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



0.025

13. [Integers]

Arrange in descending order:

3, –3, –7, –9, 5

5, 3, –3, –7, –9

14. [Rates / Ratios] *

Simplify the ratio

40 cm : 2 m 1 : 5

15. [Exponents / Square Roots]

$5^2 =$ 25

16. [Order of Operations] *

$30 - 15 \div 3 =$ 25

17. [Exploring Numbers]

What is the value of the underlined digit in the number 6.029?

or $\frac{9}{1000}$ 0.009

18. [Multiples / Factors / Primes] *

What is the lowest common multiple (LCM) of 9 and 12? 36

19. [Number Patterns]

Complete the pattern:

8, 6.5, 5, 3.5, 2 , 0.5

20. [Expressions]

Simplify

$ij + ij - ij - ij + ij$ ij

21. [Substitution] *

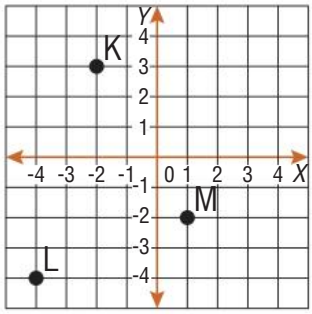
If $w = 2$, find the value of $\frac{17 - w}{3}$ 5

22. [Equations]

34 $- 14 = 20$

23. [Rules / Graphs]

What are the coordinates of the points K, L and M on this Cartesian plane?



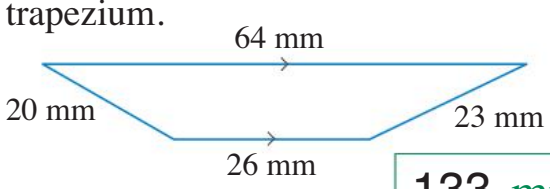
K(–2, 3) L(–4,–4) M(1 ,–2)

24. [Units of Measurement / Time] *

8.5 km = 8500 m

25. [Perimeter] *

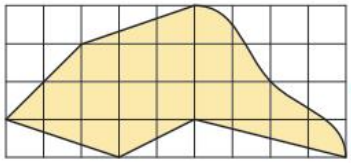
Calculate the perimeter of the trapezium.



133 mm

26. [Area / Volume] *

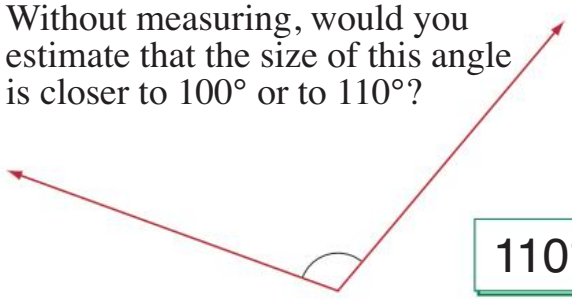
Find the area of the shaded shape.
[Round to the nearest whole number.]



19 sq. units

27. [Shapes]

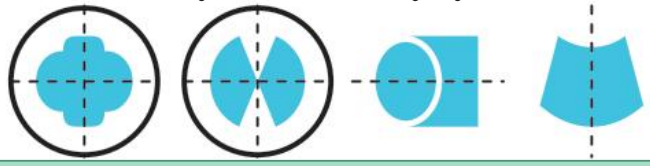
Without measuring, would you estimate that the size of this angle is closer to 100° or to 110°?



110°

28. [Location / Transformation]

Draw the axes of symmetry of these shapes. Circle the shapes that are both horizontally and vertically symmetrical.



29. [Statistics] *

Approximately what percentage of nuclear plants under construction are being built in the USA?

A) 0.1% B) 7% C) 30% D) 50%

Commercial Nuclear Power Plants to July 2019	Nuclear Electricity generated		Nuclear plants - Operable		Nuclear plants - Under Construction		Uranium required 2019
	Twh	%e	Number	GWe	Number	GWe	tonnes
World	2563	19.3	447	399	55	58	65014
USA	808	10.3	97	99	4	5	18996

GWh = Gigawatt hour
GWe = Gigawatts electric

B

30. [Probability]

A coin is flipped 3 times. Given that order matters, (i.e. HTH ≠ THH) find the size of the sample space.
[Complete the table.]

Outcomes (sample space)		
1st flip	2nd flip	3rd flip
H	H	H
H	H	T
H	T	H
H	T	T
T	H	H
T	H	T
T	T	H
T	T	T

8

31. [Problem Solving 1] *

Rearrange the letters of each set of words to form three mathematical terms: {LOVE SUM}, {LARGE CENT}, {BURN ME}

VOLUMES, RECTANGLE, NUMBER

32. [Problem Solving 2] *

A donkey (D) and a mule (M) were carrying sacks of apples. The donkey groaned so the mule said to him: "Why are you complaining? If you gave me one sack, I would have twice as many as you; if I gave you one of my sacks, then we would have equal loads." How many sacks was each carrying? [According to legend, Euclid was the author of this puzzle.]

D = 5 M = 7

33. [Problem Solving 3] *

A whole number is multiplied by six. What must the answer be?

A) a square number
B) a prime number
C) a number divisible by 12
D) a multiple of 3

D

MATHS MATE

GREEN

Test 1

Covering worksheets

1.1 - 1.4

Name: .....

1. [+ Whole Numbers to 10]

	6	1	4	8	2	7	10	3	9	5
+ 10	16	11	14	18	12	17	20	13	19	15

2. [– Whole Numbers to 10]

	10	13	12	7	14	9	11	16	5	18
– 3	7	10	9	4	11	6	8	13	2	15

3. [× Whole Numbers to 12]

	11	9	6	10	7	3	4	12	5	8
× 4	44	36	24	40	28	12	16	48	20	32

4. [÷ Whole Numbers to 12]

	8	4	12	3	9	10	5	11	7	6
÷ 1	8	4	12	3	9	10	5	11	7	6

5. [Large Number +,–]

$7163 - 3092 =$ 4071

6. [Large Number ×,÷]

$150\,000 \div 100 =$ 1500

7. [Decimal +,–]

$26.4 + 35.3 =$ 61.7

8. [Decimal ×,÷]

$1.28 \times 1000 =$ 1280

9. [Fraction +,–]

$\frac{10}{3} - \frac{2}{3} =$ $2\frac{2}{3}$

10. [Fraction ×,÷]

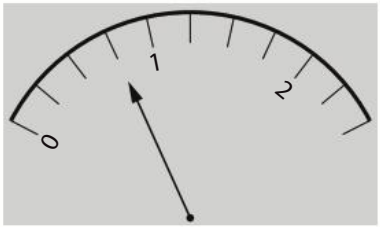
$3 \times \frac{4}{9} =$ $1\frac{1}{3}$

11. [Percentages]

The *Star Princess* crew members represent 32% of the people on board, and the remainder are passengers. What percentage are passengers? 68%

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



0.75

13. [Integers]

Use < or > to make a true statement.

–8 < –4

14. [Rates / Ratios]

Simplify the ratio

60 : 24 5 : 2

15. [Indices / Square Roots]

$8^2 =$ 64

16. [Order of Operations]

$6 + 27 \div 3 =$ 15

17. [Exploring Numbers]

What is the value of the underlined digit in the number $7.3\underline{4}8$?

or $\frac{4}{100}$ 0.04

18. [Multiples / Factors / Primes]

What is the lowest common multiple (LCM) of 10 and 15? 30

19. [Number Patterns]

Complete the pattern:

2, 3.5, 5, 6.5, 8 , 9.5

20. [Expressions]

Simplify

$vw + vw - vw + vw$

$2vw$

21. [Substitution]

If $r = 14$, find the value of

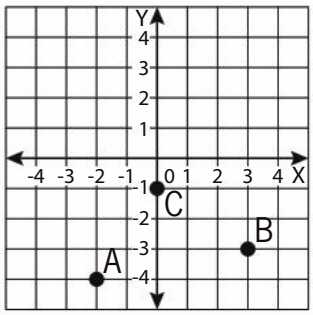
$\frac{r-5}{3}$ 3

22. [Equations]

28 – 18 = 10

23. [Coordinates]

What are the coordinates of the points A, B and C on this Cartesian plane?



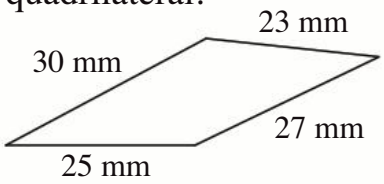
A(–2,–4) B(3 ,–3) C(0 ,–1)

24. [Units of Measurement / Time]

100 mm = 10 cm

25. [Perimeter]

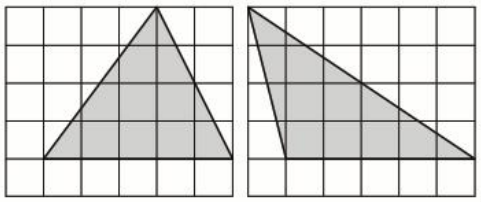
Calculate the perimeter of the quadrilateral.



105 mm

26. [Area / Volume]

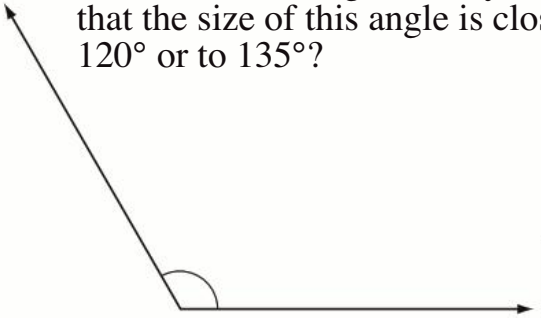
Do these triangles have the same area?



yes

27. [Shapes]

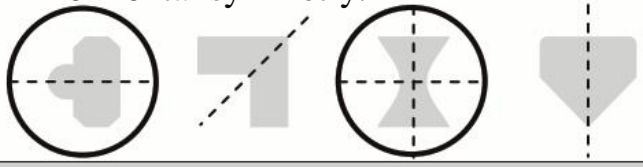
Without measuring, would you estimate that the size of this angle is closer to 120° or to 135°?



120°

28. [Location / Transformation]

Draw the axes of symmetry of these shapes. Circle the shapes that have horizontal symmetry.



29. [Statistics]

What percentage of the total salt content of ocean water is chloride?

COMPARISON: Ocean water & River water Chemical Constituent	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_2)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Bromide (Br)
Ocean water	-	-	1.19	3.72	30.53	1.11	0.42	7.67	55.16	-	0.20
River water	14.51	0.74	16.62	4.54	6.98	2.55	31.90	12.41	8.64	1.11	-

% of total salt content

55.16%

30. [Probability]

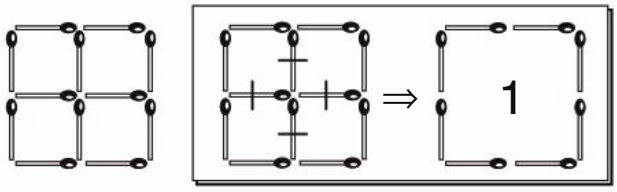
How many different outcomes are possible when choosing a season of the year and rolling a die? [Complete the table.]

Possible outcomes		Die 1	2	3	4	5	6
Season	S	S,1	S,2	S,3	S,4	S,5	S,6
	A	A,1	A,2	A,3	A,4	A,5	A,6
	W	W,1	W,2	W,3	W,4	W,5	W,6
	Sp	Sp,1	Sp,2	Sp,3	Sp,4	Sp,5	Sp,6

24

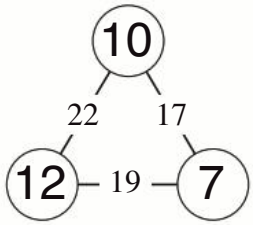
31. [Problem Solving 1]

Which four matches should you remove to leave only one square?



32. [Problem Solving 2]

Enter a number in each circle so that the number on each line equals the sum of the numbers at each end.



33. [Problem Solving 3]

Amy, Bill and Di each work as an artist, a banker or a dentist. Amy and the artist play tennis together. The dentist helped Di plant her garden. Bill is not the dentist and he has not met Amy. What is Di's occupation?

artist

MATHS MATE

GREEN

Test 1

Covering worksheets

1.1 - 1.4

Name: .....

1. [+ Whole Numbers to 10]

	6	8	11	14	7	10	9	12	15	3
+ 1	7	9	12	15	8	11	10	13	16	4

2. [– Whole Numbers to 10]

	16	9	5	13	8	11	14	7	10	12
– 2	14	7	3	11	6	9	12	5	8	10

3. [× Whole Numbers to 12]

	12	4	8	2	9	5	7	3	10	6
× 3	36	12	24	6	27	15	21	9	30	18

4. [÷ Whole Numbers to 12]

	16	32	40	12	20	28	48	36	44	24
÷ 4	4	8	10	3	5	7	12	9	11	6

5. [Large Number +,–]

$4532 - 2371 =$ 2161

6. [Large Number ×,÷]

$990\,000 \div 100 =$ 9900

7. [Decimal +,–]

$48.5 + 27.3 =$ 75.8

8. [Decimal ×,÷]

$5.63 \times 1000 =$ 5630

9. [Fraction +,–]

$\frac{12}{5} - \frac{3}{5} =$ $1\frac{4}{5}$

10. [Fraction ×,÷]

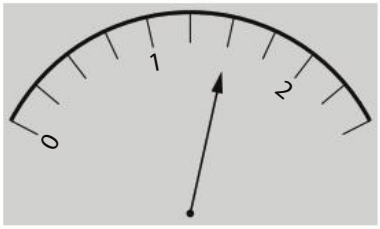
$4 \times \frac{5}{8} =$ $2\frac{1}{2}$

11. [Percentages]

Dark chocolate contains 70% cocoa. What percentage do the other components make? 30%

12. [Decimals / Fractions / Percents]

What decimal number is shown on this meter?



1.5

13. [Integers]

Use < or > to make a true statement.

–3 > –7

14. [Rates / Ratios]

Simplify the ratio

72 : 48 3 : 2

15. [Indices / Squares Roots]

$4^2 =$ 16

16. [Order of Operations]

$48 - 8 \times 3 =$ 24

17. [Exploring Numbers]

What is the value of the underlined digit in the number $3.0\underline{8}5$?

or $\frac{8}{100}$ 0.08

18. [Multiples / Factors / Primes]

What is the lowest common multiple (LCM) of 12 and 18? 36

19. [Number Patterns]

Complete the pattern:

0, 1.5, 3, 4.5, 6, 7.5, 9

20. [Expressions]

Simplify $yz - yz + yz + yz$ $2yz$

21. [Substitution]

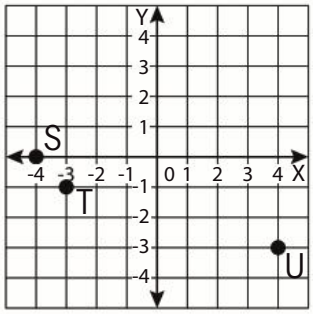
If $q = 17$, find the value of $\frac{q-3}{7}$ 2

22. [Equations]

31 $- 11 = 20$

23. [Coordinates]

What are the coordinates of the points S, T and U on this Cartesian plane?



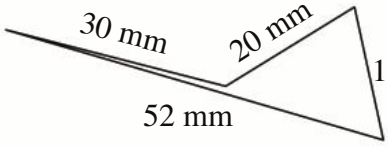
S(–4, 0) T(–3,–1) U(4 ,–3)

24. [Units of Measurement / Time]

17 cm = 170 mm

25. [Perimeter]

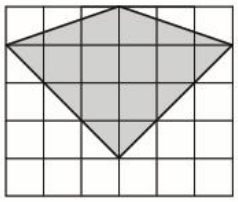
Calculate the perimeter of the quadrilateral.

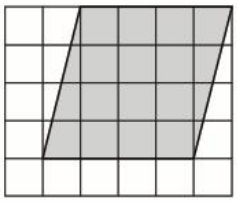


120 mm

26. [Area / Volume]

Do the kite and the parallelogram have the same area?

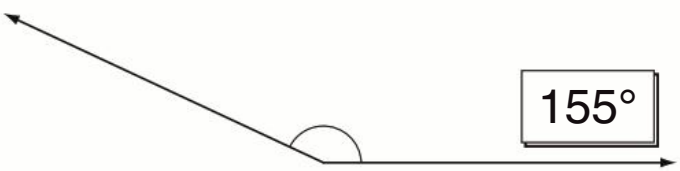




no

27. [Shapes]

Without measuring, would you estimate that the size of this angle is closer to 140° or to 155°?



155°

28. [Location / Transformation]

Draw the axes of symmetry of these shapes. Circle the shapes that have vertical symmetry.

29. [Statistics]

How many earthquakes each year measure 6.2 to 6.9 on the Richter scale?

Earthquake magnitude

Richter Scale	<3.4	3.5 - 4.2	4.3 - 4.8	4.9 - 5.4	5.5 - 6.1	6.2 - 6.9	7.0 - 7.3	7.4 - 7.7	>8
Average number of earthquakes/yr	800000	30000	4800	1400	500	100	15	4	1 every 5 to 10 yr
Typical effects	Detected only by seismometers	Just about noticeable indoors	Windows rattle	Everyone notices them	Slight damage to buildings	Much damage to buildings	Serious damage	Most buildings collapse	Total damage, ground waves

100

30. [Probability]

How many different outcomes are possible when spinning a spinner labelled 1, 2, 3, 4 and choosing a state of matter (solid, liquid or gas)?

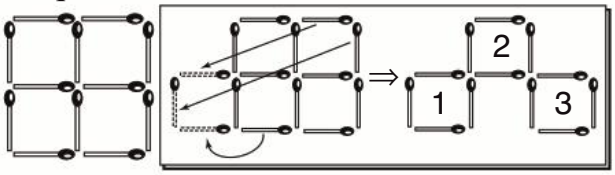
[Complete the table.]

Possible outcomes		Spinner 1	2	3	4
state of matter	S	S,1	S,2	S,3	S,4
	L	L,1	L,2	L,3	L,4
	G	G,1	G,2	G,3	G,4

12

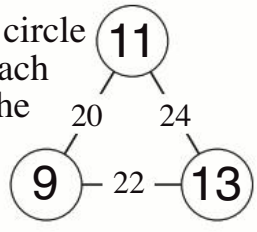
31. [Problem Solving 1]

By moving 3 matches to new positions, change the diagram so that there are 3 squares.



32. [Problem Solving 2]

Enter a number in each circle so that the number on each line equals the sum of the numbers at each end.



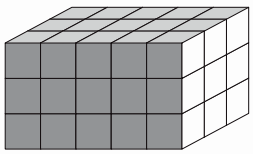
33. [Problem Solving 3]

Holly, Annie and Nick went to a costume party as a witch, a queen and a pirate. Each brought a treat to the party. The pirate did not bring cakes. The witch brought fruit. Nick was the queen, and Annie made popcorn. Who dressed as a witch?

Holly

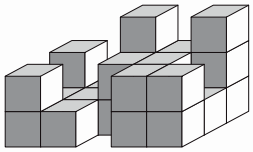
1.1

31. **Hint:** *First consider the number of cubes in a completed layer. Then count the cubes in each layer by subtracting the missing cubes from the total.*
Solution: In an array of $5 \times 3 \times 3$ cubes each complete layer would have:
$5 \times 3 = 15$ cubes



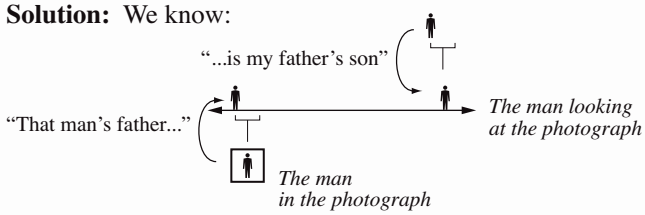
Taking the layers one by one, this incomplete array has:

base layer	15 – 1	= 14 cubes
2nd layer	15 – 6	= 9 cubes
3rd layer	15 – 13	= 2 cubes
total		= 25 cubes



So **25** cubes remain.

32. **Hint:** *Draw a family tree type diagram keeping the generations in line.*
Solution: We know:



We also know that the man has no brothers or sisters. So "That man's father" must be himself and the photograph is of **his own son**.

33. **Hint:** *Draw a table to help your reasoning.*
Solution: From the given information we can immediately put into the table:

Lakisha has a bulldog, so she does not have a horse. Angela's brother is Ken, so she cannot be the sister of Paul.

Name	Brother	Pet
Angela	Ken	
Lakisha		bulldog
Jessica		

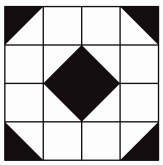
The horse and a brother named Paul are mentioned together, so they must be connected to Jessica.

Name	Brother	Pet
Angela	Ken	
Lakisha		bulldog
Jessica	Paul	horse

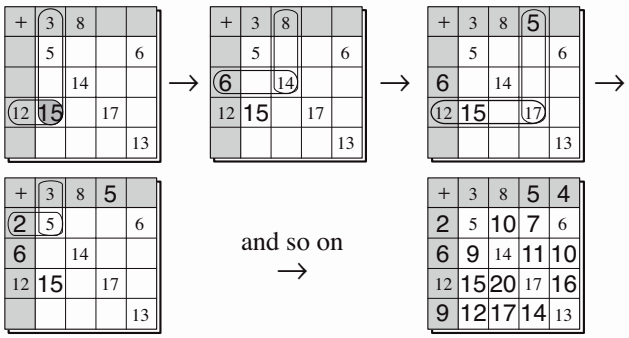
Paul is Jessica's brother.

1.2

31. **Hint:** *Determine the area covered by the black portion and the white portion of the design.*
Solution: The total area of the design is 16 square units. The area covered by the black portion is represented by 8 triangles each covering half of a square unit.
So the total black area is $\frac{1}{2} \times 8 = 4$ square units.
The area covered by the white portion is the remainder.
So the total white area is $16 - 4 = 12$ square units.
The ratio of the black portion of the design to the white portion of the design is 4 : 12 or **1 : 3**.



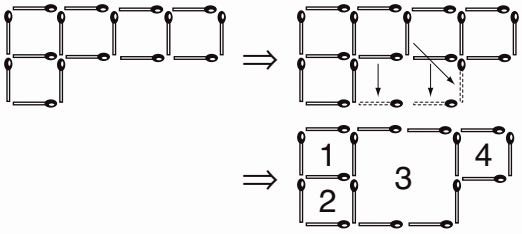
32. **Hint:** *The addition table has the numbers to be added in the first row and the first column. Their sums go in the corresponding intersecting spaces. Look for sums where 2 of these 3 facts are known.*
Solution:



33. **Hint:** *Look at the total cost and the cost of two bikes.*
Solution: If all three bikes cost \$2000 and the green and blue bikes cost \$1500, then the red bike must cost the difference between these prices which is \$**500**.
If the green and red bikes cost \$750, then the green bike costs \$**250**. If the red and green bikes cost \$750, then the blue bike costs \$**1250**.

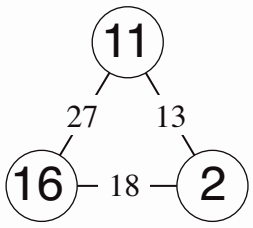
1.3

31. **Hint:** *Make a model. Use trial and error.*
Solution:

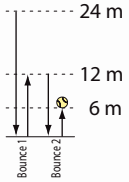


1.3 (cont.)

32. **Hint:** *Try any reasonable guess in the top circle and observe your results.*
Solution: Whatever you place in the top circle to get 27 and 13 on the sides, your two base circles must have the same difference, which is 14. You therefore require two numbers that have a difference of 14 but add to 18.
By trial and error we find 2 and 16. The 16 must go on the left where the greater number is required for the 27. The 2 goes on the right and this leads to an 11 at the top.



33. **Hint:** *Add the first 13 distances and then have an educated guess. OR Consider a ball dropped from twice the height and look at the difference in the number patterns produced.*
Solution:



Distance travelled by the ball by the time it comes to rest:

$24 + \underline{12 + 12} + \underline{6 + 6} + \underline{3 + 3} + \underline{\frac{3}{2} + \frac{3}{2}} + \underline{\frac{3}{4} + \frac{3}{4}} + \underline{\frac{3}{8} + \frac{3}{8}} + \ldots$

$= 24 + \underline{24} + \underline{12} + \underline{6} + \underline{3} + \underline{\frac{3}{2}} + \underline{\frac{3}{4}} + \ldots$

$= 71\frac{1}{4} + \ldots$

Notice that after the first term, every new term seems to move the total half way to 72. (i.e. 24 is half the difference between 72 and 24, 12 is half the difference between 72 and 48, etc.)
The ball has travelled **72** metres by the time it comes to rest.

OR
Let the distance travelled be D.

$D = 24 + 24 + 12 + 6 + 3 + \frac{3}{2} + \frac{3}{4} + \ldots$

Consider a ball dropped from twice the height. It will clearly travel twice the distance.

$2D = 48 + 48 + 24 + 12 + 6 + 3 + \frac{3}{2} + \frac{3}{4} + \ldots$

The difference between the two distances is $2D - D = D$

or $48 + 48 + \not{2}4 + \not{1}2 + \not{6} + \not{3} + \not{\frac{3}{2}} + \not{\frac{3}{4}} + \ldots$

$- \quad 24 - \not{2}4 - \not{1}2 - \not{6} - \not{3} - \not{\frac{3}{2}} - \not{\frac{3}{4}} - \ldots$

$= \quad 72$

The ball has travelled **72** metres by the time it comes to rest.

1.4

31. **Hint:** *Write the letters in a circle. Use trial and error. Group letters that make common word endings or word beginnings.*
Solution:

Consider that the word may end in 'S' and that the letter 'V' will have a vowel next to it ⇒ **VOLUMES**

Consider possible letter groupings: ance, green, antle, angle, etc, and then look at the remaining letters to unjumble any possible whole words ⇒ **RECTANGLE**

Consider that the word may start with 'RE' or end in 'ER' and then look at the remaining letters to unjumble any possible whole words ⇒ **NUMBER**

32. **Hint:** *Draw a table of possible loads when the mule has twice the load. Work backwards.*
Solution: If the donkey (D) gave the mule (M) a sack, then the mule would have twice as many sacks as the donkey.

So, possible loads if mule gets extra sack:

D	1	2	3	4	5
M	2	4	6	8	10

mule has twice as many sacks

∴ Original loads:

D	2	3	4	5	6
M	1	3	5	7	9

∴ Loads if donkey gets extra sack:

D	3	4	5	6	7
M	0	2	4	6	8

equal loads

The donkey (D) was carrying **5** sacks and the mule (M) was carrying **7** sacks.

33. **Hint:** *Consider the factors of 6.*
Solution: Factors of 6: 1, 2, 3, 6
If a number is multiplied by 6, the resulting number becomes a multiple of 6, and therefore a multiple of 1, 2 and 3. So the resulting number must be a multiple of 3, therefore D) is correct.
Checking other options:
A) Multiplying a number by 6 does not guarantee that the answer is a square number. e.g. $13 \times 6 = 78$ (not a square number)
B) Multiplying a number by 6 cannot give a prime number as the answer, because a prime number cannot have 6 as a factor.
C) Multiplying a number by 6 does not guarantee that the answer is a multiple of 12. e.g. $13 \times 6 = 78$ (not a multiple of 12)
So when a whole number is multiplied by 6 the answer must be a multiple of 3, therefore the answer is **D**.

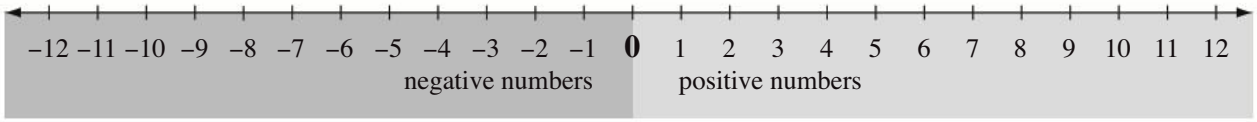
13. [Integers]

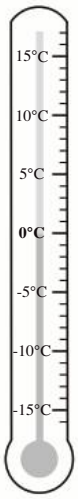
Skill 13.1 Comparing and ordering integers (1).

- Use a number line.
  Hint: Numbers decrease as you move to the left or down and increase as you move to the right or up.

NUMBER LINE

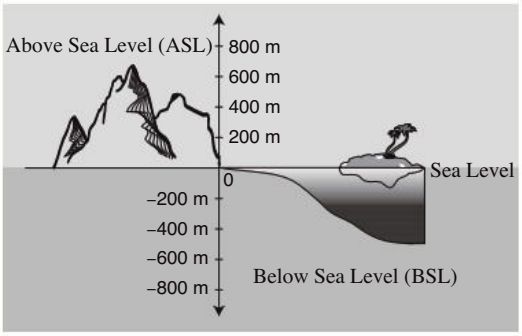
A negative number is always smaller than a positive number.





ALTITUDE

An altitude is lower when further down, below sea level (BSL) and higher when further up, above sea level (ASL).

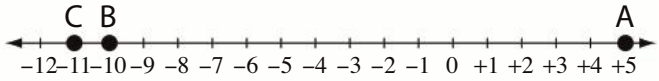


TEMPERATURE

Temperatures below zero are lower than temperatures above zero.

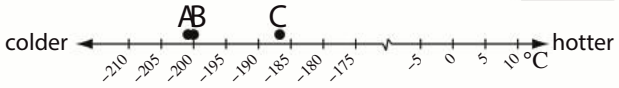
Q. Who won the 2010 Women's British Open Golf Tournament?
[Hint: In golf the lowest score wins.]
A) +5 K. Webb
B) –10 K. Hull
C) –11 Y. Tseng

A. *C* Find the lowest score to determine the winner.



a) Which of Saturn's moons has the highest temperature?
A) –201°C Enceladus
B) –200°C Mimas
C) –187°C Tethys

C



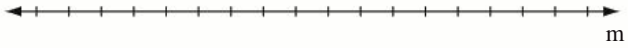
b) Which temperature for oxygen is higher?
A) –183°C boiling point
B) –218°C melting point

c) Who won the 2010 British Open Golf Tournament?
[Hint: In golf the lowest score wins.]
A) –16 L. Oosthuizen
B) +3 P. Senior
C) –2 R. Allenby

d) Which body of water is at the lowest altitude?
A) –28 m Caspian Sea
B) –408 m Dead Sea
C) –15 m Lake Eyre

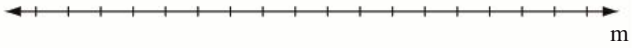
e) Which location has the lowest altitude?

A) 3 m above sea level
Amsterdam (Netherlands)
B) 133 m below sea level
Qattara Depression (Egypt)
C) 2430 m above sea level
Machu Picchu (Peru)



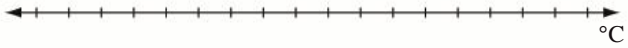
f) Which location has the highest altitude?

A) 10 m below sea level
Laguna Salada (Mexico)
B) 7 m below sea level
Lammefjord (Denmark)
C) 19 m above sea level
Vatican City (Italy)



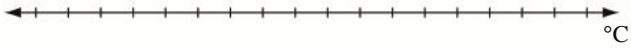
g) Which location recorded the lowest temperature?

A) −25.6°C Kabul
B) +14.1°C Christmas Island
C) −15.2°C La Paz

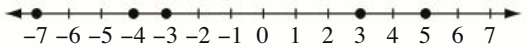


h) Which continent has the lowest recorded temperature?

A) −63°C North America
B) −23°C Australia
C) −55°C Europe

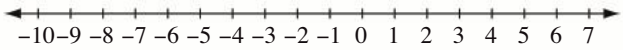


i) Arrange in ascending order:
−4, −7, 5, −3, 3

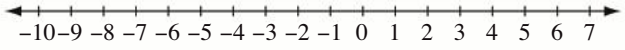


−7, −4, −3, 3, 5

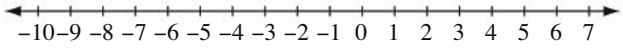
j) Arrange in order from largest to smallest:
0, 8, −9, 6, −4



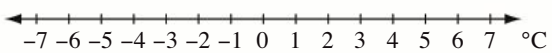
k) Arrange in descending order:
−10, 8, 1, −8, 4



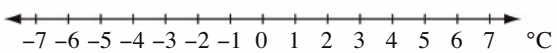
l) Arrange in order from smallest to largest:
−2, −6, 0, −3, 5



m) Arrange in order from coldest to warmest:
2°C, −3°C, 4°C, −5°C



n) Arrange in order from warmest to coldest:
−1°C, −5°C, 5°C, −3°C



22. [Equations]

Skill 22.1 Finding the missing number in equations involving + and – (1).

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

EITHER
Use **trial and error:**

- Guess the value of the missing number that will make the equation true (both sides of the equation are equal).
- Substitute this value in the equation.
- Check if the equation is true.
- Write the guessed value as the solution of the equation.

Example:

$4 + \boxed{?} = 12$

$4 + \mathbf{8} = 12$

$12 = 12$ (true)

The equation is true, so **8** is the solution.

OR
Use **inverse operations:**

- Consider the operation used to construct the sum or the difference.
- Get the missing number alone on one side of the equation, by performing the inverse operation to both sides of the equation.
- Evaluate the other side of the equation.

Hints: Addition and subtraction are inverse operations. Adding 4 and then subtracting 4 leaves a number unchanged.

Example: $4 + \boxed{?} = 12$

$4 + ? - 4 = 12 - 4$

$? = 8$

Q. $15 - \square = 9$

A. *15 – ? = 9*

What number subtracted from 15 gives 9?

15 – 6 = 9

Guess ? = 6

9 = 9 (true)

The solution is ***6****.*

OR

15 – ? = 9

15 – 15 – ? = 9 – 15

–? = –6

? = ***6***

If 15 was added to the missing number, then do the inverse operation and subtract 15 from both sides of the equation.
Finally, reverse the signs on both sides.

Use trial and error

a) $16 - \boxed{7} = 9$

16 – ? = 9

? = 7

b) $7 + \square = 15$

7 + ? = 15

? =

c) $\square + 24 = 30$

? + 24 = 30

? =

d) $14 - \square = 6$

? =

e) $13 - \square = 3$

? =

f) $8 + \square = 21$

? =

g) $\square + 8 = 20$

? =

h) $14 + \square = 21$

? =

i) $\square - 8 = 13$

? =

Skill 22.1 Finding the missing number in equations involving + and – (2).

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

Operation: + 18 — Use inverse operations

j) $18 + \boxed{9} = 27$

Inverse of + 18 is – 18

~~18~~ + ? – ~~18~~ = 27 – 18

? = 9

k) $\square - 14 = 13$

? – ~~14~~ + ~~14~~ = 13 + 14

? =

l) $\square + 20 = 25$

? =

m) $\square + 6 = 23$

n) $4 + \square = 20$

o) $16 + \square = 27$

p) $15 + \square = 29$

q) $\square + 16 = 34$

r) $\square + 18 = 38$

s) $\square - 7 = 18$

t) $\square - 18 = 15$

u) $\square - 13 = 14$

v) $\square - 31 = 4$

w) $12 - \square = 3$

x) $16 - \square = 9$

y) $24 - \square = 9$

z) $\square - 8 = 16$

A) $\square - 8 = 12$