sixth edition

MATHS MATE

trial pack

Includes:

How to use Maths Mate

Record keeping sheet: Term 1

Worksheet masters: Term 1, Sheets 1 to 4

Test masters: 1A & 1B

Worksheet answers: Term 1, Sheets 1 to 4

Test answers: 1A & 1B

Problem Solving Hints & Solutions

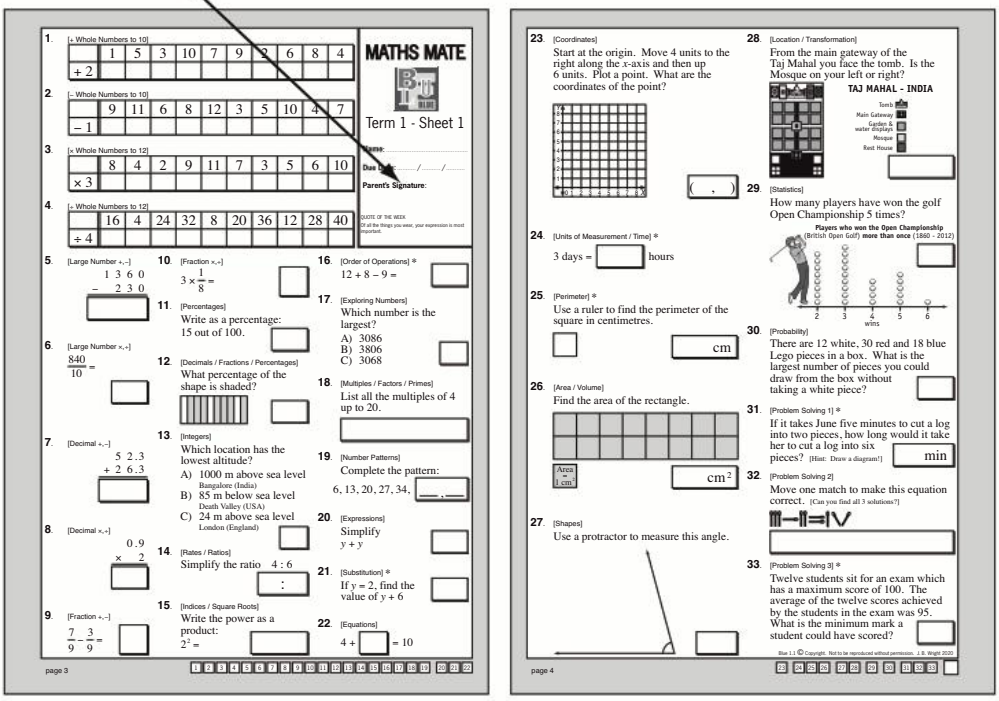
Skill Builders:

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

J. B. Wright & I. Tutos

HOW TO USE MATHS MATE

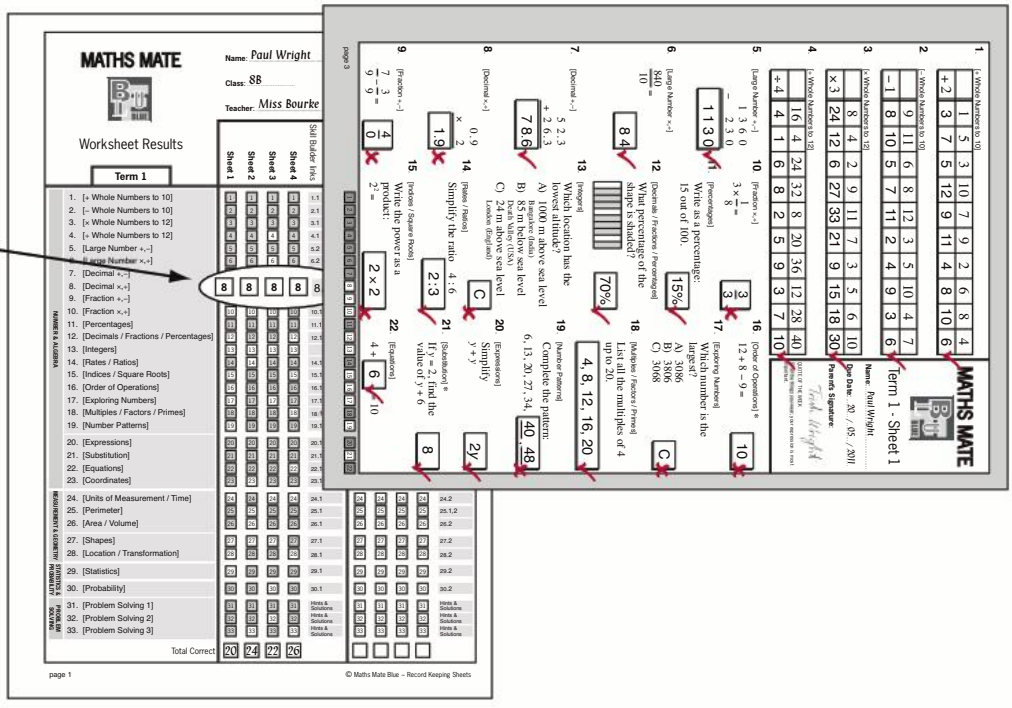
1. Students complete the **Maths Mate sheet.**
Parents sign the work.



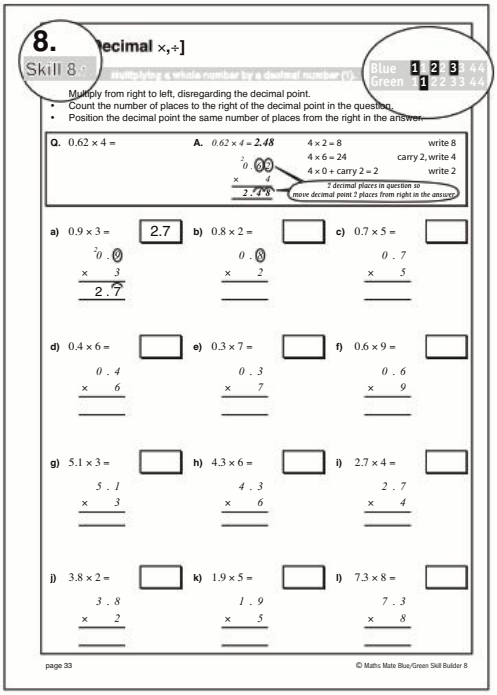
2. Students correct their work in class. Students colour the boxes to record their correct answers.

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

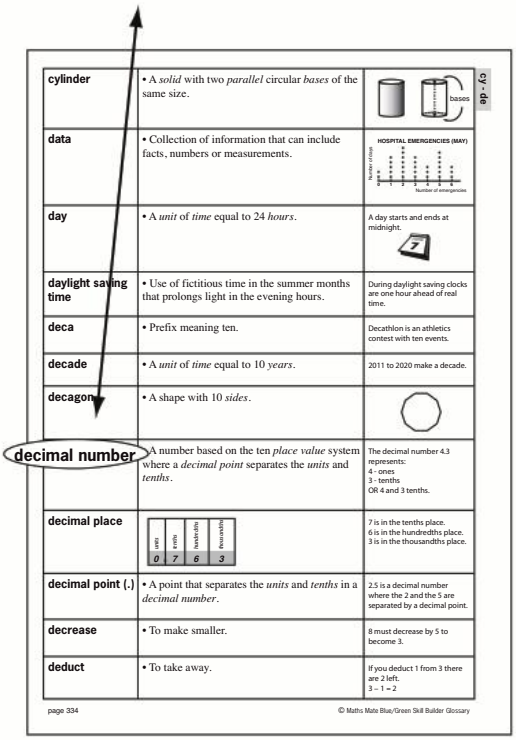
4. Students identify the appropriate Skill Builder as listed on the record keeping sheet.



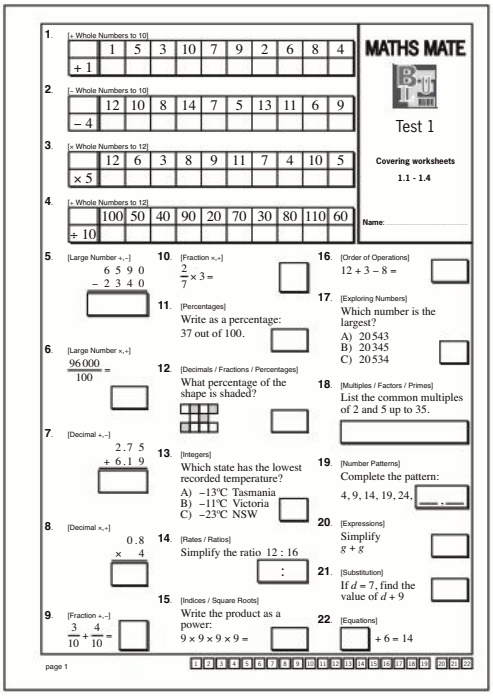
5. Students complete the **Skill Builder.** Students are supported with instructions and worked examples.

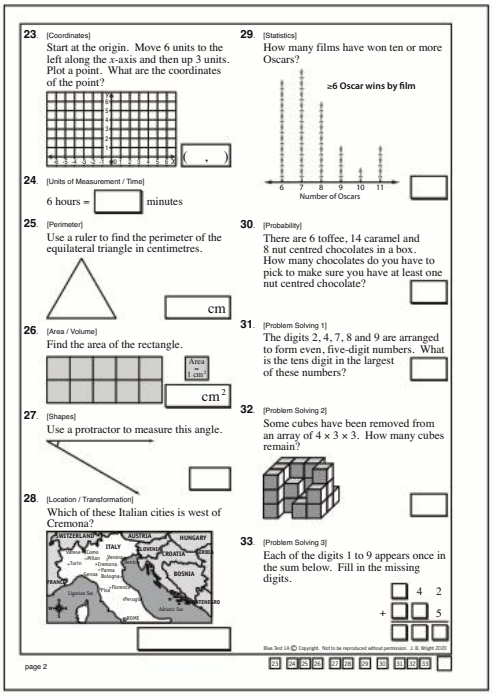


6. The Skill Builders also have a **Glossary** and **Maths Facts**.



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





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**.

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MATHS MATE

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Worksheet Results

Term 1

Name: .....

Class: .....

Teacher: .....

		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	5.2	5	5	5	5	5.1
	6. [Large Number ×,÷]	6	6	6	6	6.2	6	6	6	6	6.1
	7. [Decimal +,–]	7	7	7	7	7.1	7	7	7	7	7.2
	8. [Decimal ×,÷]	8	8	8	8	8.1	8	8	8	8	8.3
	9. [Fraction +,–]	9	9	9	9	9.1,2	9	9	9	9	9.1,2
	10. [Fraction ×,÷]	10	10	10	10	10.1	10	10	10	10	10.1
	11. [Percentages]	11	11	11	11	11.1	11	11	11	11	11.2
	12. [Decimals / Fractions / Percentages]	12	12	12	12	12.1	12	12	12	12	12.2
	13. [Integers]	13	13	13	13	13.1	13	13	13	13	13.1
	14. [Rates / Ratios]	14	14	14	14	14.1	14	14	14	14	14.2
	15. [Exponents / Square Roots]	15	15	15	15	15.1	15	15	15	15	15.2
	16. [Order of Operations]	16	16	16	16	16.1	16	16	16	16	16.2
	17. [Exploring Numbers]	17	17	17	17	17.1	17	17	17	17	17.2
	18. [Multiples / Factors / Primes]	18	18	18	18	18.1,2	18	18	18	18	18.3
	19. [Number Patterns]	19	19	19	19	19.1,3,4	19	19	19	19	19.2,3,4
ALGEBRA	20. [Expressions]	20	20	20	20	20.1	20	20	20	20	20.1
	21. [Substitution]	21	21	21	21	21.1	21	21	21	21	21.2
	22. [Equations]	22	22	22	22	22.1	22	22	22	22	22.1
	23. [Rules / Graphs]	23	23	23	23	23.1	23	23	23	23	23.2,3
MEASUREMENT	24. [Units of Measurement / Time]	24	24	24	24	24.1	24	24	24	24	24.2
	25. [Perimeter]	25	25	25	25	25.1	25	25	25	25	25.1,2
	26. [Area / Volume]	26	26	26	26	26.1	26	26	26	26	26.2
SPACE	27. [Shapes]	27	27	27	27	27.1	27	27	27	27	27.2
	28. [Location / Transformation]	28	28	28	28	28.1	28	28	28	28	28.2
STAT.	29. [Statistics]	29	29	29	29	29.1	29	29	29	29	29.2
PROB.	30. [Probability]	30	30	30	30	30.1	30	30	30	30	30.2
PROBLEM SOLVING	31. [Problem Solving 1]	31	31	31	31	Hints & Solutions	31	31	31	31	Hints & Solutions
	32. [Problem Solving 2]	32	32	32	32	Hints & Solutions	32	32	32	32	Hints & Solutions
	33. [Problem Solving 3]	33	33	33	33	Hints & Solutions	33	33	33	33	Hints & Solutions
	Total Correct										

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MATHS MATE

BLUE

Term 1 - Sheet 1

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Of all the things you wear, your expression is most important.

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

	9	11	6	8	12	3	5	10	4	7
– 1										

3. [× Whole Numbers to 12]

	8	4	2	9	11	7	3	5	6	10
× 3										

4. [÷ Whole Numbers to 12]

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

5. [Large Number +,–]

$$\begin{array}{r} 1\,3\,6\,0 \\ -\quad 2\,3\,0 \\ \hline \end{array}$$

6. [Large Number ×,÷]

$$\frac{840}{10} =$$

7. [Decimal +,–]

$$\begin{array}{r} 5\,2.3 \\ +\,2\,6.3 \\ \hline \end{array}$$

8. [Decimal ×,÷]

$$\begin{array}{r} 0.9 \\ \times\quad 2 \\ \hline \end{array}$$

9. [Fraction +,–]

$$\frac{7}{9} - \frac{3}{9} =$$

10. [Fraction ×,÷]

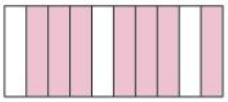
$$3 \times \frac{1}{8} =$$

11. [Percentages]

Write as a percentage:
15 out of 100.

12. [Decimals / Fractions / Percentages]

What percentage of the shape is shaded?



13. [Integers]

Which location has the lowest altitude?

A) 1000 m above sea level
Bangalore (India)

B) 85 m below sea level
Death Valley (USA)

C) 24 m above sea level
London (England)

14. [Rates / Ratios]

Simplify the ratio 4 : 6

:

15. [Exponents / Square Roots]

Write the power as a product:
$2^2 =$

16. [Order of Operations] *

$12 + 8 - 9 =$

17. [Exploring Numbers]

Which number is the largest?

A) 3086
B) 3806
C) 3068

18. [Multiples / Factors / Primes]

List all the multiples of 4 up to 20.

19. [Number Patterns]

Complete the pattern:

6, 13, 20, 27, 34, ___ , ___

20. [Expressions]

Simplify
$y + y$

21. [Substitution] *

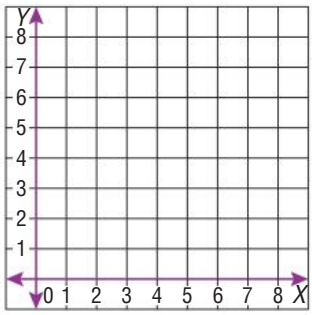
If $y = 2$, find the value of $y + 6$

22. [Equations]

$4 + \square = 10$

23. [Rules / Graphs]

Start at the origin. Move 4 units to the right along the x-axis and then up 6 units. Plot a point. What are the coordinates of the point?



(,)

24. [Units of Measurement / Time] *

3 days = ☐ hours

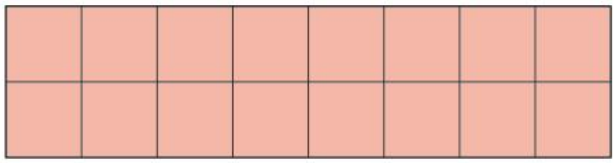
25. [Perimeter] *

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

☐ cm

26. [Area / Volume]

Find the area of the rectangle.

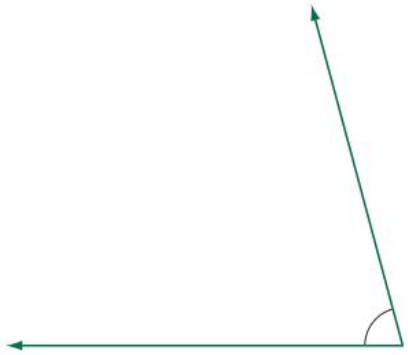


Area = 1 cm²

☐ cm²

27. [Shapes]

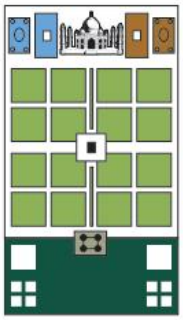
Use a protractor to measure this angle.



☐

28. [Location / Transformation]

From the main gateway of the Taj Mahal you face the tomb. Is the Mosque on your left or right?



TAJ MAHAL - INDIA

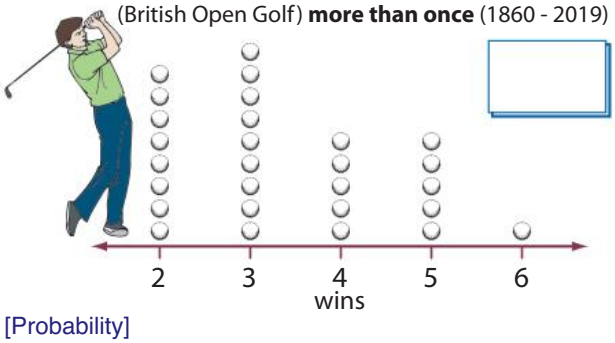
Tomb
Main Gateway
Garden & water displays
Mosque
Rest House

☐

29. [Statistics]

How many players have won the golf Open Championship 5 times?

Players who won the Open Championship
(British Open Golf) **more than once** (1860 - 2019)



☐

30. [Probability]

There are 12 white, 30 red and 18 blue Lego pieces in a box. What is the largest number of pieces you could draw from the box without taking a white piece?

☐

31. [Problem Solving 1] *

If it takes June five minutes to cut a log into two pieces, how long would it take her to cut a log into six pieces? [Hint: Draw a diagram!]

☐ min

32. [Problem Solving 2]

Move one match to make this equation correct. [Can you find all 3 solutions?]

☐

33. [Problem Solving 3] *

Twelve students sit for an exam which has a maximum score of 100. The average of the twelve scores achieved by the students in the exam was 95. What is the minimum mark a student could have scored?

☐

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MATHS MATE

BLUE

Term 1 - Sheet 2

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Late night TV is educational. It teaches you that you should have gone to bed earlier.

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

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

3. [× Whole Numbers to 12]

	4	9	11	5	7	12	10	6	8	3
× 5										

4. [÷ Whole Numbers to 12]

	6	12	2	18	14	8	20	4	10	16
÷ 2										

5. [Large Number +,–]

$$\begin{array}{r} 2\,9\,4\,9 \\ -\quad 4\,2\,2 \\ \hline \end{array}$$

6. [Large Number ×,÷]

$$\frac{1200}{100} =$$

7. [Decimal +,–]

$$\begin{array}{r} 5.3\,1 \\ +\ 2.7\,4 \\ \hline \end{array}$$

8. [Decimal ×,÷]

$$\begin{array}{r} 0.7 \\ \times\quad 3 \\ \hline \end{array}$$

9. [Fraction +,–]

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

10. [Fraction ×,÷]

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

11. [Percentages]

Write as a percentage:
40 out of 100.

12. [Decimals / Fractions / Percentages]

What fraction of the shape is shaded?

13. [Integers]

Who won the 2019 Masters? [Hint: In golf the lowest score wins.]

A) –8 J. Harding
B) +2 C. Smith
C) –13 T. Woods

14. [Rates / Ratios]

Simplify the ratio 12 : 2

:

15. [Exponents / Square Roots]

Write the product as a power:
$4 \times 4 \times 4 \times 4 =$

16. [Order of Operations] *

$14 - 8 + 7 =$

17. [Exploring Numbers]

Which number is the largest?

A) 17 904
B) 17 490
C) 17 940

18. [Multiples / Factors / Primes]

List all the multiples of 7 up to 35.

19. [Number Patterns]

Complete the pattern:

3, 12, 21, 30, 39, ___ , ___

20. [Expressions]

Simplify
$x + x + x + x$

21. [Substitution] *

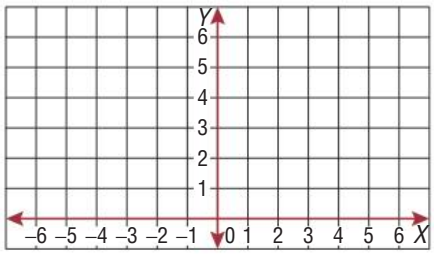
If $n = 5$, find the value of $n + n + n$

22. [Equations]

$9 +$ ☐ $= 17$

23. [Rules / Graphs]

Start at the origin. Move 5 units to the left along the x-axis and then up 4 units. Plot a point. What are the coordinates of the point?



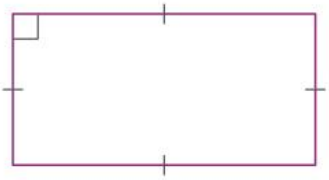
(,)

24. [Units of Measurement / Time] *

15 minutes = ____ seconds

25. [Perimeter] *

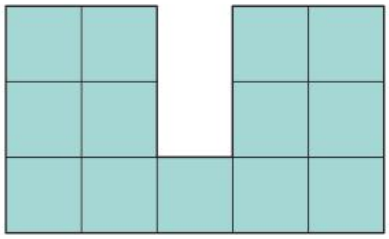
Use a ruler to find the perimeter of the rectangle in millimetres.



mm

26. [Area / Volume]

Find the area of the polygon.

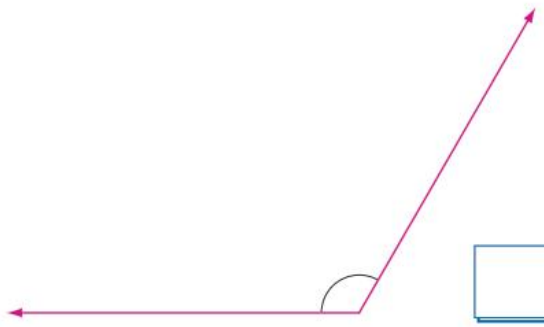


Area = 1 cm²

cm²

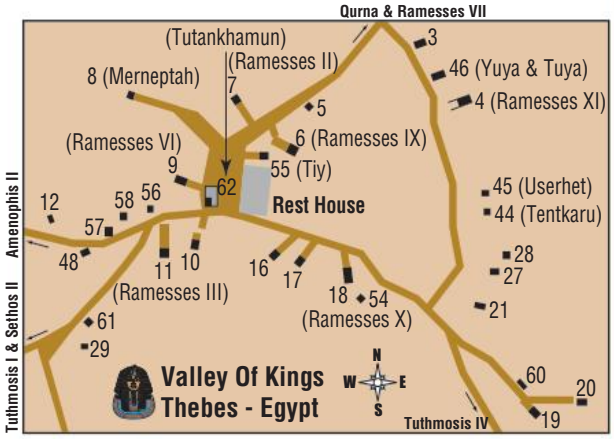
27. [Shapes]

Use a protractor to measure this angle.



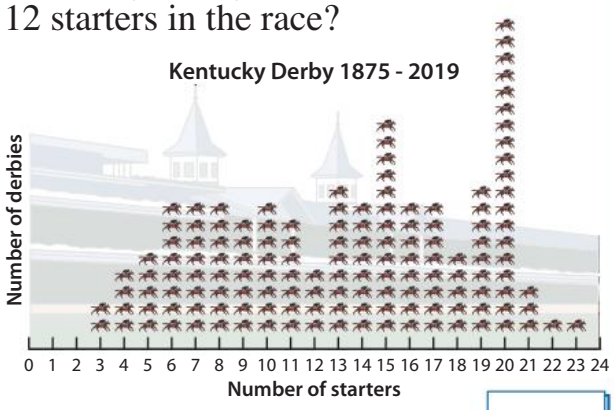
28. [Location / Transformation]

Which tomb number is west of tomb number 7, Ramesses II?



29. [Statistics]

How many times in the history of the Kentucky Derby has there been 12 starters in the race?



30. [Probability]

How many people do you need to gather to be sure that at least two of them have birthdays in the same month?

31. [Problem Solving 1] *

What two consecutive numbers add to 257?

32. [Problem Solving 2] *

What is the lowest positive integer greater than 1, which when divided by 5 or 8 leaves a remainder of 1?

33. [Problem Solving 3] *

In a set of seven numbers, the average of the first four is 15 and the average of the last three is 8. What is the average of all seven numbers?

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MATHS MATE

BTU BLUE

Term 1 - Sheet 3

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

There are no dumb questions, only dumb answers.

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

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

3. [× Whole Numbers to 12]

	4	6	1	9	5	8	2	7	10	3
× 1										

4. [÷ Whole Numbers to 12]

	60	110	120	90	50	30	80	70	40	100
÷ 10										

5. [Large Number +,–]

$$\begin{array}{r} 5\,7\,2\,6 \\ -\,3\,1\,0\,2 \\ \hline \end{array}$$

6. [Large Number ×,÷]

$$\frac{310\,000}{1000} =$$

7. [Decimal +,–]

$$\begin{array}{r} 5.7\,9 \\ +\,1.4\,0 \\ \hline \end{array}$$

8. [Decimal ×,÷]

$$3\overline{)0.9}$$

9. [Fraction +,–]

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

10. [Fraction ×,÷] *

$$4 \times \frac{3}{7} =$$

11. [Percentages]

Write as a percentage:
7 out of 100.

12. [Decimals / Fractions / Percentages]

What fraction of the shape is shaded?

13. [Integers]

Which location has the highest temperature?

A) –179°C Titan (moon of Saturn)
B) –60°C Mt Everest
C) –90°C Antarctica

14. [Rates / Ratios]

Simplify the ratio 10 : 25

15. [Exponents / Square Roots]

Write the power as a product:

$5^3 =$

16. [Order of Operations] *

$48 \div 8 \div 2 =$

17. [Exploring Numbers]

$36\,809 < 36\,980$
True or false?

18. [Multiples / Factors / Primes] *

List the common multiples of 2 and 3 up to 28.

19. [Number Patterns]

Complete the pattern:

0.2, 1, 1.8, 2.6, 3.4, ___ , ___

20. [Expressions]

Simplify
$h + h - h$

21. [Substitution] *

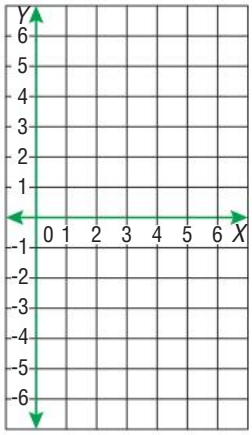
If $w = 3$, find the value of $9 - w$

22. [Equations]

$\square + 15 = 22$

23. [Rules / Graphs]

Start at the origin. Move 5 units to the right along the x-axis and then down 2 units. Plot a point. What are the coordinates of the point?



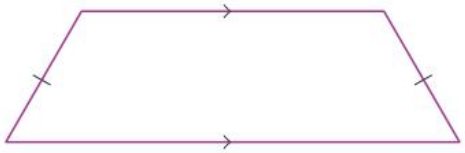
(,)

24. [Units of Measurement / Time] *

180 min = ☐ h

25. [Perimeter] *

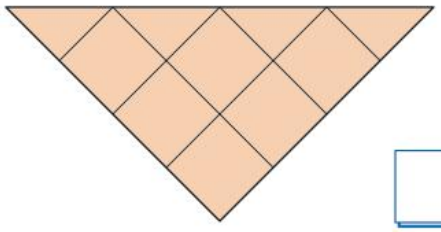
Use a ruler to find the perimeter of the trapezium in millimetres.



mm

26. [Area / Volume]

Find the area of the triangle.



Area = 1 cm²

cm²

27. [Shapes]

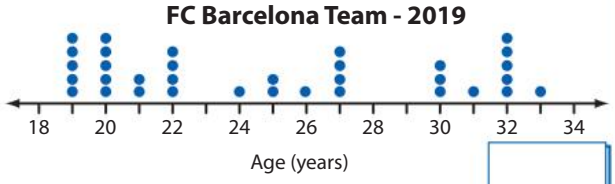
Use a protractor to measure this angle.

28. [Location / Transformation]

From the start, Leon walks east along Stott Tce. He takes the second street on the left and then the second street on the right. Where is Leon headed?

29. [Statistics]

How many FC Barcelona players are under the age of 23?



30. [Probability]

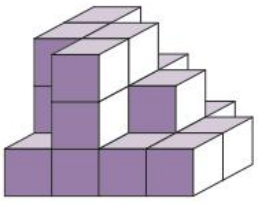
Of the 400 songs in a playlist, 150 are pop songs. How many songs do you need to play on a shuffle setting to be sure you will hear a pop song?

31. [Problem Solving 1] *

The digits 3, 4, 5, 6 and 7 are arranged to form even, five-digit numbers. What is the hundreds digit in the largest of these numbers?

32. [Problem Solving 2]

Some cubes have been removed from an array of $4 \times 3 \times 3$. How many cubes remain?



33. [Problem Solving 3] *

In how many ways can 24 be written as the sum of two different prime numbers?

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MATHS MATE

BTU BLUE

Term 1 - Sheet 4

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Be yourself. Who else is better qualified?
Frank Giblin

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

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

3. [× Whole Numbers to 12]

	2	8	1	4	5	7	6	9	3	10
× 2										

4. [÷ Whole Numbers to 12]

	15	27	12	30	24	18	9	21	36	33
÷ 3										

5. [Large Number +,–]

$$\begin{array}{r} 8\,1\,9\,7 \\ -\,1\,0\,3\,2 \\ \hline \end{array}$$

6. [Large Number ×,÷]

$$\frac{57\,000}{100} =$$

7. [Decimal +,–]

$$\begin{array}{r} 4.2\,6 \\ +\,1.3\,8 \\ \hline \end{array}$$

8. [Decimal ×,÷]

$$6\overline{)\,3.6}$$

9. [Fraction +,–]

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

10. [Fraction ×,÷] *

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

11. [Percentages]

Write as a percentage:
23 out of 100.

12. [Decimals / Fractions / Percentages]

What percentage of the shape is shaded?

13. [Integers]

Which insect can endure the lowest temperature?

A) –24°C cucujus beetle
B) –51°C gall wasp larvae
C) –10°C stink bug
D) –184°C red flat bark beetle

14. [Rates / Ratios]

Simplify the ratio 5 : 90

:

15. [Exponents / Square Roots]

Write the product as a power:

$3 \times 3 \times 3 \times 3 \times 3 =$

16. [Order of Operations] *

$24 \div 3 \times 4 =$

17. [Exploring Numbers]

$4075 > 4507$
True or false?

18. [Multiples / Factors / Primes] *

List the common multiples of 2 and 4 up to 20.

19. [Number Patterns]

Complete the pattern:

$\frac{3}{9}, \frac{4}{9}, \frac{5}{9}, \frac{6}{9},$ ___ , ___

20. [Expressions]

Simplify
$t - t + t + t$

21. [Substitution] *

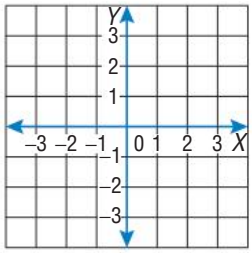
If $p = 9$, find the value of $p + p - 5$

22. [Equations]

$\square + 13 = 23$

23. [Rules / Graphs]

Start at the origin. Move 3 units to the left along the x–axis and then down 3 units. Plot a point. What are the coordinates of the point?



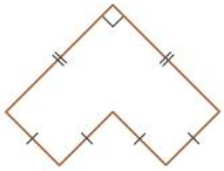
(,)

24. [Units of Measurement / Time] *

$4\frac{1}{2}$ hours = ____ minutes

25. [Perimeter] *

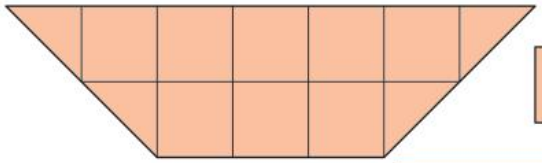
Use a ruler to find the perimeter of the polygon in centimetres.



cm

26. [Area / Volume]

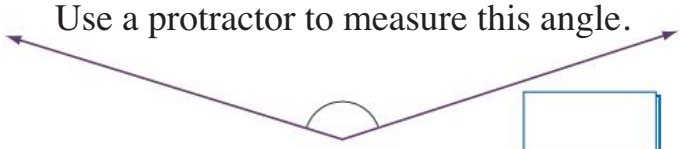
Find the area of the trapezium.



cm²

27. [Shapes]

Use a protractor to measure this angle.

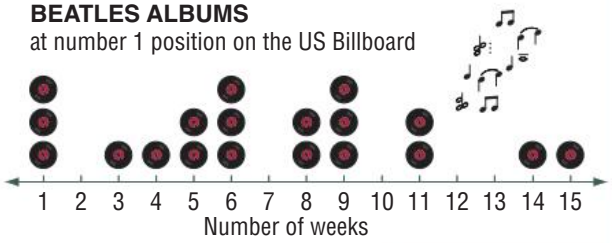


28. [Location / Transformation]

Penny travels southeast from Dandenong. Her bus turns right at the next town and right at the town after that. Where is Penny headed?

29. [Statistics]

'Sgt. Pepper's Lonely Hearts Club Band' was The Beatles album that held the number one position on the US Billboard for the longest period of time. For how long was this album at number one?



weeks

30. [Probability]

Tom has 6 blue discs and 12 red discs in his pocket. How many discs does he need to take out of his pocket to make sure he has at least 4 blue discs?

31. [Problem Solving 1] *

Each shape represents a different whole number.

▲ + ▲ + ■ = 23

▲ × ■ = 60

What are the values of ▲ and ■?

▲ = ■ =

32. [Problem Solving 2] *

Four students ran in the 800 m race:

- Martina finished 2 m ahead of Ling
- Yina finished ahead of Tanya
- Tanya was 2 m ahead of Martina

Who won the race?

33. [Problem Solving 3]

Fill in the missing digits.

$$\begin{array}{r} 1\,\square\,2 \\ \square\,4\,\square \\ +\;9\;7\;1 \\ \hline 2\,\square\,3\;8 \end{array}$$

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MATHS MATE

BLUE

Test 1

Covering worksheets

1.1 - 1.4

Name: .....

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

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

3. [× Whole Numbers to 12]

	12	6	3	8	9	11	7	4	10	5
× 5										

4. [÷ Whole Numbers to 12]

	100	50	40	90	20	70	30	80	110	60
÷ 10										

5. [Large Number +,–]

$$\begin{array}{r} 6\,5\,9\,0 \\ -\,2\,3\,4\,0 \\ \hline \end{array}$$

6. [Large Number ×,÷]

$$\frac{96\,000}{100} =$$

7. [Decimal +,–]

$$\begin{array}{r} 2.7\,5 \\ +\,6.1\,9 \\ \hline \end{array}$$

8. [Decimal ×,÷]

$$\begin{array}{r} 0.8 \\ \times\quad 4 \\ \hline \end{array}$$

9. [Fraction +,–]

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

10. [Fraction ×,÷]

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

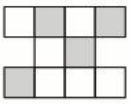
11. [Percentages]

Write as a percentage:

37 out of 100.

12. [Decimals / Fractions / Percentages]

What percentage of the shape is shaded?



13. [Integers]

Which state has the lowest recorded temperature?

A) –13ºC Tasmania
B) –11ºC Victoria
C) –23ºC NSW

14. [Rates / Ratios]

Simplify the ratio 12 : 16

:

15. [Indices / Square Roots]

Write the product as a power:

$9 \times 9 \times 9 \times 9 =$

16. [Order of Operations]

$12 + 3 - 8 =$

17. [Exploring Numbers]

Which number is the largest?

A) 20 543
B) 20 345
C) 20 534

18. [Multiples / Factors / Primes]

List the common multiples of 2 and 5 up to 35.

19. [Number Patterns]

Complete the pattern:

4, 9, 14, 19, 24, ___ , ___

20. [Expressions]

Simplify

$g + g$

21. [Substitution]

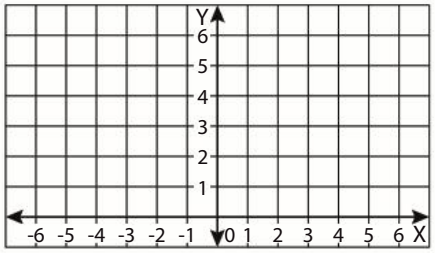
If $d = 7$, find the value of $d + 9$

22. [Equations]

$\square + 6 = 14$

23. [Coordinates]

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



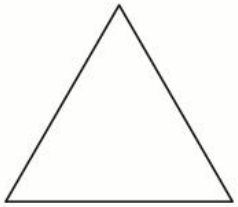
(,)

24. [Units of Measurement / Time]

6 hours = ☐ minutes

25. [Perimeter]

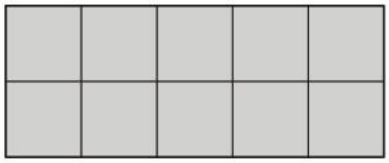
Use a ruler to find the perimeter of the equilateral triangle in centimetres.



☐ cm

26. [Area / Volume]

Find the area of the rectangle.

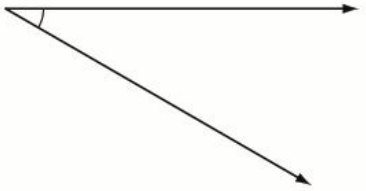


Area = 1 cm^2

☐ cm^2

27. [Shapes]

Use a protractor to measure this angle.



☐

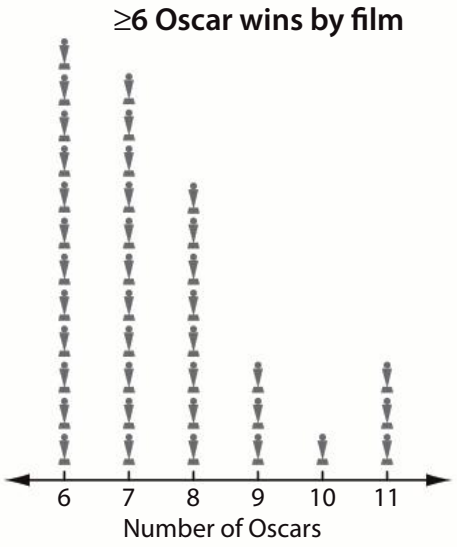
28. [Location / Transformation]

Which of these Italian cities is west of Cremona?

☐

29. [Statistics]

How many films have won nine or more Oscars?



☐

30. [Probability]

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

☐

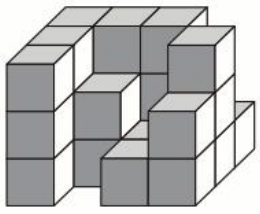
31. [Problem Solving 1]

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

☐

32. [Problem Solving 2]

Some cubes have been removed from an array of $4 \times 3 \times 3$. How many cubes remain?



☐

33. [Problem Solving 3]

Each of the digits 1 to 9 appears once in the sum below. Fill in the missing digits.

$$\begin{array}{r} \square\,4\,2 \\ +\ \square\,\square\,5 \\ \hline \square\,\square\,\square \end{array}$$

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MATHS MATE

BLUE

Test 1

Covering worksheets

1.1 - 1.4

Name: .....

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

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

3. [× Whole Numbers to 12]

	1	5	9	6	2	4	10	7	3	8
× 3										

4. [÷ Whole Numbers to 12]

	10	2	6	16	4	12	20	14	8	18
÷ 2										

5. [Large Number +,–]

$$\begin{array}{r} 5\,8\,0\,7 \\ -\,2\,2\,0\,3 \\ \hline \end{array}$$

6. [Large Number ×,÷]

$$\frac{25\,000}{100} =$$

7. [Decimal +,–]

$$\begin{array}{r} 4.2\,6 \\ +\,5.3\,7 \\ \hline \end{array}$$

8. [Decimal ×,÷]

$$\begin{array}{r} 0.3 \\ \times\quad 9 \\ \hline \end{array}$$

9. [Fraction +,–]

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

10. [Fraction ×,÷]

$$\frac{2}{9} \times 4 =$$

11. [Percentages]

Write as a percentage:
82 out of 100.

12. [Decimals / Fractions / Percentages]

What percentage of the shape is shaded?

13. [Integers]

Which continent has the lowest recorded temperature?

A) –33ºC South America
B) –68ºC Asia
C) –24ºC Africa

14. [Rates / Ratios]

Simplify the ratio 16 : 24

:

15. [Indices / Square Roots]

Write the product as a power:
$8 \times 8 \times 8 \times 8 \times 8 =$

16. [Order of Operations]

$13 - 9 + 4 =$

17. [Exploring Numbers]

Which number is the largest?

A) 18 067
B) 18 706
C) 18 670

18. [Multiples / Factors / Primes]

List the common multiples of 3 and 4 up to 40.

19. [Number Patterns]

Complete the pattern:

5, 11, 17, 23, 29, ___ , ___

20. [Expressions]

Simplify
$e + e$

21. [Substitution]

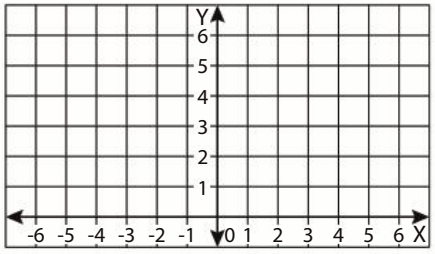
If $g = 6$, find the value of $8 + g$

22. [Equations]

$8 +$ ☐ $= 13$

23. [Coordinates]

Start at the origin. Move 5 units to the right along the *x*-axis and then up 2 units. Plot a point. What are the coordinates of the point?



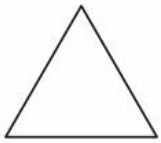
(,)

24. [Units of Measurement / Time]

8 minutes = ☐ seconds

25. [Perimeter]

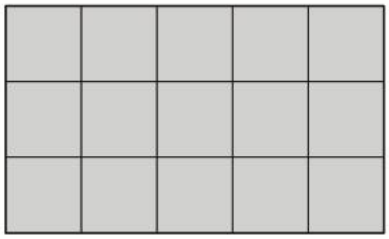
Use a ruler to find the perimeter of the equilateral triangle in centimetres.



☐ cm

26. [Area / Volume]

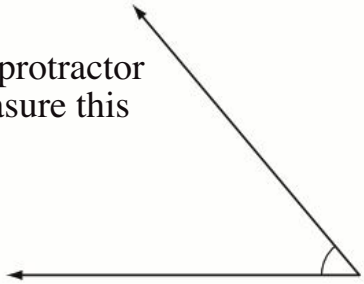
Find the area of the rectangle.



☐ cm^2

27. [Shapes]

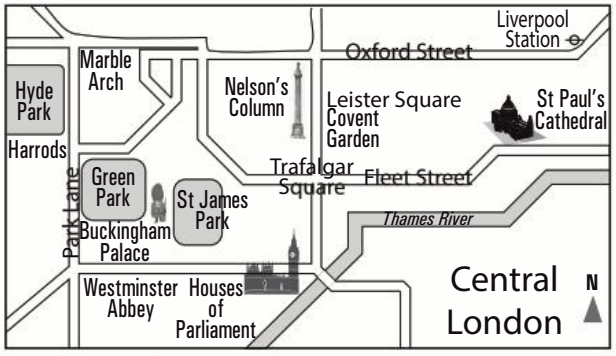
Use a protractor to measure this angle.



☐

28. [Location / Transformation]

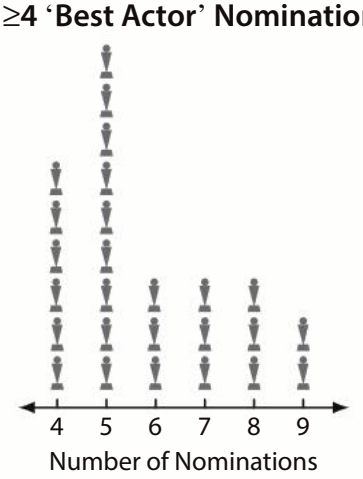
Which park is west of Nelson's Column?



☐

29. [Statistics]

How many actors have received nine nominations for 'best actor'?



☐

30. [Probability]

There are 25 blue, 10 red and 15 yellow marbles in a bag. How many marbles do you have to select to make sure you have at least one yellow marble?

☐

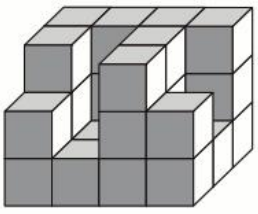
31. [Problem Solving 1]

The digits 1, 3, 6, 7 and 9 are arranged to form odd, five-digit numbers. What is the tens digit in the smallest of these numbers?

☐

32. [Problem Solving 2]

Some cubes have been removed from an array of $4 \times 3 \times 3$. How many cubes remain?



☐

33. [Problem Solving 3]

Each of the digits 1 to 9 appears once in the sum below. Fill in the missing digits.

$$\begin{array}{r} \square\,6\,7 \\ +\ \square\,\square\,8 \\ \hline \square\,\square\,\square \end{array}$$

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MATHS MATE

BLUE

Term 1 - Sheet 1

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Of all the things you wear, your expression is most important.

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

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

3. [× Whole Numbers to 12]

	8	4	2	9	11	7	3	5	6	10
× 3	24	12	6	27	33	21	9	15	18	30

4. [÷ Whole Numbers to 12]

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

5. [Large Number +,–]

$$\begin{array}{r} 1\,3\,6\,0 \\ -\quad 2\,3\,0 \\ \hline \end{array}$$

1130

6. [Large Number ×,÷]

$\frac{840}{10} =$

84

7. [Decimal +,–]

$$\begin{array}{r} 5\,2.3 \\ +\,2\,6.3 \\ \hline \end{array}$$

78.6

8. [Decimal ×,÷]

$$\begin{array}{r} 0.9 \\ \times\quad 2 \\ \hline \end{array}$$

1.8

9. [Fraction +,–]

$\frac{7}{9} - \frac{3}{9} =$ $\frac{4}{9}$

10. [Fraction ×,÷]

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

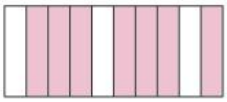
11. [Percentages]

Write as a percentage:

15 out of 100. 15%

12. [Decimals / Fractions / Percentages]

What percentage of the shape is shaded?



70%

13. [Integers]

Which location has the lowest altitude?

A) 1000 m above sea level
Bangalore (India)

B) 85 m below sea level
Death Valley (USA)

C) 24 m above sea level
London (England)

B

14. [Rates / Ratios]

Simplify the ratio 4 : 6

2 : 3

15. [Exponents / Square Roots]

Write the power as a product:

$2^2 =$ 2×2

16. [Order of Operations] *

$12 + 8 - 9 =$ 11

17. [Exploring Numbers]

Which number is the largest?

A) 3086
B) 3806
C) 3068

B

18. [Multiples / Factors / Primes]

List all the multiples of 4 up to 20.

4, 8, 12, 16, 20

19. [Number Patterns]

Complete the pattern:

6, 13, 20, 27, 34, 41 , 48

20. [Expressions]

Simplify $y + y$ $2y$

21. [Substitution] *

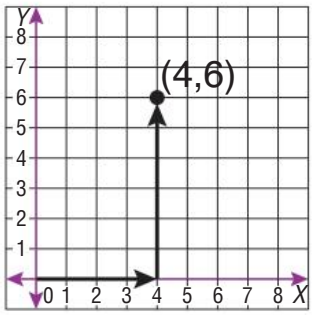
If $y = 2$, find the value of $y + 6$ 8

22. [Equations]

$4 +$ 6 $= 10$

23. [Rules / Graphs]

Start at the origin. Move 4 units to the right along the x-axis and then up 6 units. Plot a point. What are the coordinates of the point?



(4 , 6)

24. [Units of Measurement / Time] *

3 days = 72 hours

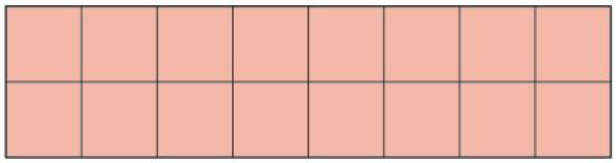
25. [Perimeter] *

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

4 cm

26. [Area / Volume]

Find the area of the rectangle.

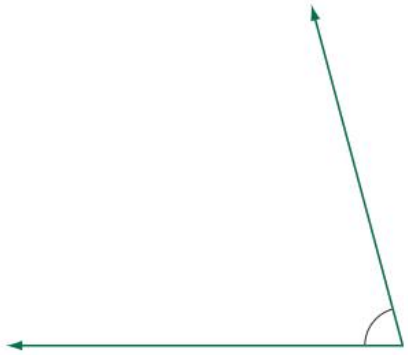


Area = 1 cm²

16 cm²

27. [Shapes]

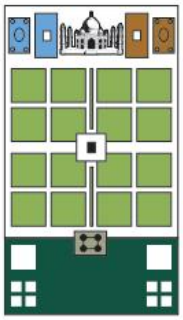
Use a protractor to measure this angle.



75°

28. [Location / Transformation]

From the main gateway of the Taj Mahal you face the tomb. Is the Mosque on your left or right?



TAJ MAHAL - INDIA

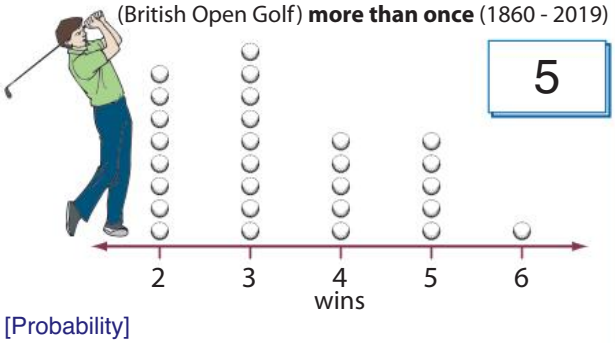
Tomb
Main Gateway
Garden & water displays
Mosque
Rest House

left

29. [Statistics]

How many players have won the golf Open Championship 5 times?

Players who won the Open Championship
(British Open Golf) **more than once** (1860 - 2019)



5

30. [Probability]

There are 12 white, 30 red and 18 blue Lego pieces in a box. What is the largest number of pieces you could draw from the box without taking a white piece?

48

31. [Problem Solving 1] *

If it takes June five minutes to cut a log into two pieces, how long would it take her to cut a log into six pieces? [Hint: Draw a diagram!]

25 min

32. [Problem Solving 2]

Move one match to make this equation correct. [Can you find all 3 solutions?]

2 + 2 = 4 or
3 + 1 = 4 or
3 + 2 = 5

33. [Problem Solving 3] *

Twelve students sit for an exam which has a maximum score of 100. The average of the twelve scores achieved by the students in the exam was 95. What is the minimum mark a student could have scored?

40

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MATHS MATE

BLUE

Term 1 - Sheet 2

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Late night TV is educational. It teaches you that you should have gone to bed earlier.

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

	19	11	10	18	12	13	15	16	14	17
– 10	9	1	0	8	2	3	5	6	4	7

3. [× Whole Numbers to 12]

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

4. [÷ Whole Numbers to 12]

	6	12	2	18	14	8	20	4	10	16
÷ 2	3	6	1	9	7	4	10	2	5	8

5. [Large Number +,–]

$$\begin{array}{r} 2\,9\,4\,9 \\ -\quad 4\,2\,2 \\ \hline \end{array}$$

2527

6. [Large Number ×,÷]

$\frac{1200}{100} =$

12

7. [Decimal +,–]

$$\begin{array}{r} 5.3\,1 \\ +\ 2.7\,4 \\ \hline \end{array}$$

8.05

8. [Decimal ×,÷]

$$\begin{array}{r} 0.7 \\ \times\quad 3 \\ \hline \end{array}$$

2.1

9. [Fraction +,–]

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

10. [Fraction ×,÷]

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

11. [Percentages]

Write as a percentage:
40 out of 100.

40%

12. [Decimals / Fractions / Percentages]

What fraction of the shape is shaded?

or $\frac{2}{6}$ $\frac{1}{3}$

13. [Integers]

Who won the 2019 Masters? [Hint: In golf the lowest score wins.]

A) –8 J. Harding
B) +2 C. Smith
C) –13 T. Woods

C

14. [Rates / Ratios]

Simplify the ratio 12 : 2

6 : 1

15. [Exponents / Square Roots]

Write the product as a power:
$4 \times 4 \times 4 \times 4 =$ 4^4

16. [Order of Operations] *

$14 - 8 + 7 =$ 13

17. [Exploring Numbers]

Which number is the largest?

A) 17 904
B) 17 490
C) 17 940

C

18. [Multiples / Factors / Primes]

List all the multiples of 7 up to 35.

7, 14, 21, 28, 35

19. [Number Patterns]

Complete the pattern:

3, 12, 21, 30, 39, 48, 57

20. [Expressions]

Simplify
$x + x + x + x$

$4x$

21. [Substitution] *

If $n = 5$, find the value of $n + n + n$

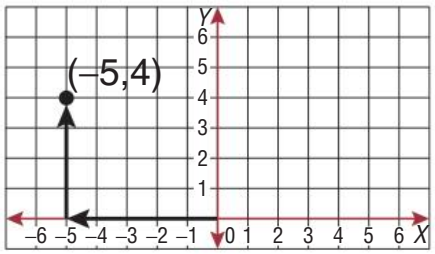
15

22. [Equations]

$9 +$ 8 $= 17$

23. [Rules / Graphs]

Start at the origin. Move 5 units to the left along the x-axis and then up 4 units. Plot a point. What are the coordinates of the point?



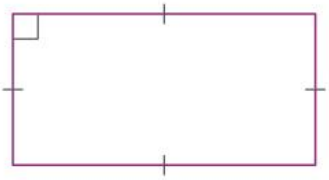
(–5 , 4)

24. [Units of Measurement / Time] *

15 minutes = 900 seconds

25. [Perimeter] *

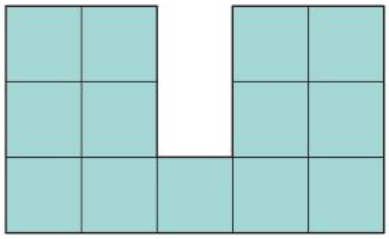
Use a ruler to find the perimeter of the rectangle in millimetres.



120 mm

26. [Area / Volume]

Find the area of the polygon.

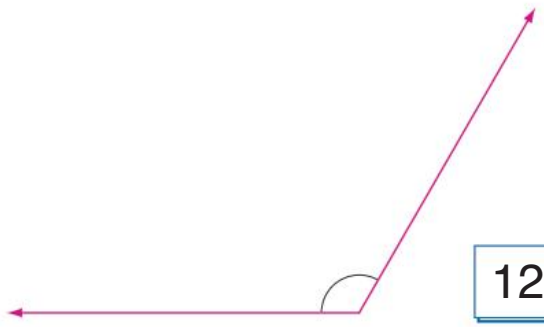


Area = 1 cm²

13 cm²

27. [Shapes]

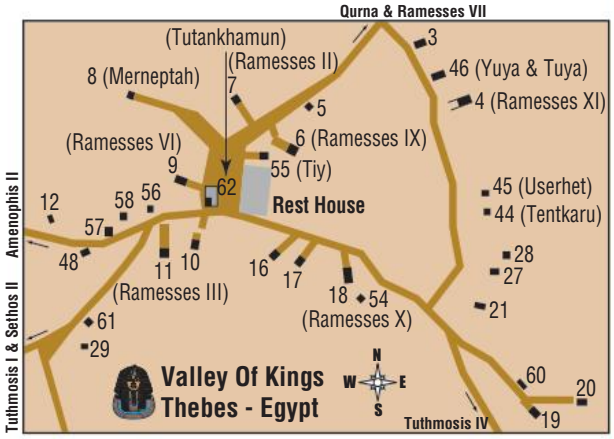
Use a protractor to measure this angle.



120°

28. [Location / Transformation]

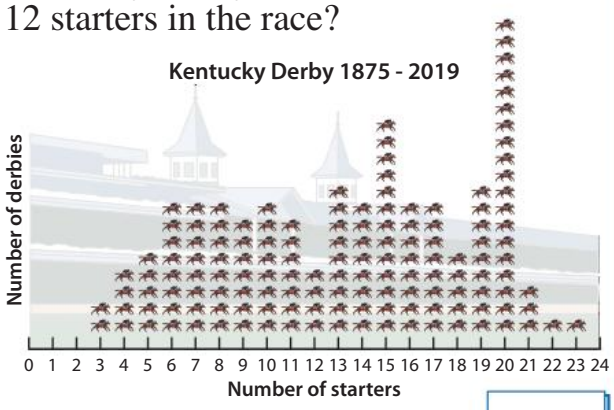
Which tomb number is west of tomb number 7, Ramesses II?



8

29. [Statistics]

How many times in the history of the Kentucky Derby has there been 12 starters in the race?



4

30. [Probability]

How many people do you need to gather to be sure that at least two of them have birthdays in the same month?

13

31. [Problem Solving 1] *

What two consecutive numbers add to 257?

128, 129

32. [Problem Solving 2] *

What is the lowest positive integer greater than 1, which when divided by 5 or 8 leaves a remainder of 1?

41

33. [Problem Solving 3] *

In a set of seven numbers, the average of the first four is 15 and the average of the last three is 8. What is the average of all seven numbers?

12

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MATHS MATE

BLUE

Term 1 - Sheet 3

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

There are no dumb questions, only dumb answers.

1. [+ Whole Numbers to 10]

	7	2	9	4	1	10	5	6	8	3
+ 5	12	7	14	9	6	15	10	11	13	8

2. [– Whole Numbers to 10]

	10	7	6	13	5	12	14	8	9	11
– 4	6	3	2	9	1	8	10	4	5	7

3. [× Whole Numbers to 12]

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

4. [÷ Whole Numbers to 12]

	60	110	120	90	50	30	80	70	40	100
÷ 10	6	11	12	9	5	3	8	7	4	10

5. [Large Number +,–]

$$\begin{array}{r} 5\,7\,2\,6 \\ -\,3\,1\,0\,2 \\ \hline \end{array}$$

2624

6. [Large Number ×,÷]

$$\frac{310\,000}{1000} =$$

310

7. [Decimal +,–]

$$\begin{array}{r} 5.7\,9 \\ +\,1.4\,0 \\ \hline \end{array}$$

7.19

8. [Decimal ×,÷]

$3\overline{)0.9}$ = 0.3

9. [Fraction +,–]

$\frac{3}{7} + \frac{2}{7} =$ $\frac{5}{7}$

10. [Fraction ×,÷] *

$4 \times \frac{3}{7} =$ $1\frac{5}{7}$

11. [Percentages]

Write as a percentage:
7 out of 100. 7%

12. [Decimals / Fractions / Percentages]

What fraction of the shape is shaded?

$\frac{3}{8}$

13. [Integers]

Which location has the highest temperature?

A) –179°C Titan (moon of Saturn)
B) –60°C Mt Everest
C) –90°C Antarctica

B

14. [Rates / Ratios]

Simplify the ratio 10 : 25

2 : 5

15. [Exponents / Square Roots]

Write the power as a product:
$5^3 =$ $5 \times 5 \times 5$

16. [Order of Operations] *

$48 \div 8 \div 2 =$ 3

17. [Exploring Numbers]

$36\,809 < 36\,980$
True or false? true

18. [Multiples / Factors / Primes] *

List the common multiples of 2 and 3 up to 28.

6, 12, 18, 24

19. [Number Patterns]

Complete the pattern:
0.2, 1, 1.8, 2.6, 3.4, 4.2, 5

20. [Expressions]

Simplify
$h + h - h$ h

21. [Substitution] *

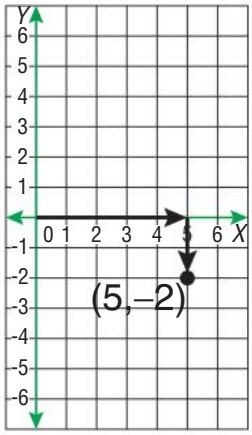
If $w = 3$, find the value of $9 - w$ 6

22. [Equations]

7 + 15 = 22

23. [Rules / Graphs]

Start at the origin. Move 5 units to the right along the x-axis and then down 2 units. Plot a point. What are the coordinates of the point?



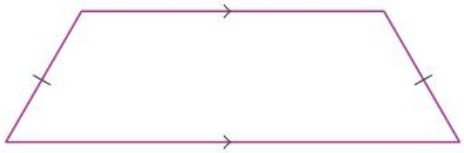
(5 ,–2)

24. [Units of Measurement / Time] *

180 min = 3 h

25. [Perimeter] *

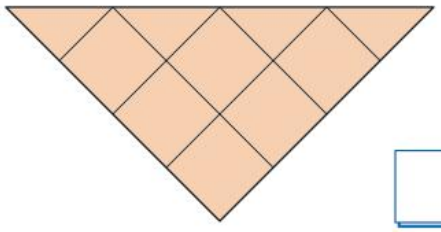
Use a ruler to find the perimeter of the trapezium in millimetres.



140 mm

26. [Area / Volume]

Find the area of the triangle.



Area = 1 cm²

8 cm²

27. [Shapes]

Use a protractor to measure this angle.

25°

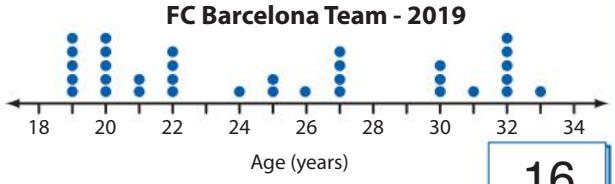
28. [Location / Transformation]

From the start, Leon walks east along Stott Tce. He takes the second street on the left and then the second street on the right. Where is Leon headed?

Todd Mall

29. [Statistics]

How many FC Barcelona players are under the age of 23?



16

30. [Probability]

Of the 400 songs in a playlist, 150 are pop songs. How many songs do you need to play on a shuffle setting to be sure you will hear a pop song?

251

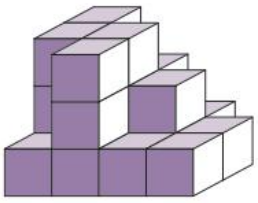
31. [Problem Solving 1] *

The digits 3, 4, 5, 6 and 7 are arranged to form even, five-digit numbers. What is the hundreds digit in the largest of these numbers?

5

32. [Problem Solving 2]

Some cubes have been removed from an array of $4 \times 3 \times 3$. How many cubes remain?



21

33. [Problem Solving 3] *

In how many ways can 24 be written as the sum of two different prime numbers?

(5,19) (7,17) (11,13)

3

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MATHS MATE

BTU BLUE

Term 1 - Sheet 4

Name: .....

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

Parent's Signature:

QUOTE OF THE WEEK

Be yourself. Who else is better qualified?
Frank Giblin

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

	13	15	6	14	7	9	11	8	10	12
– 5	8	10	1	9	2	4	6	3	5	7

3. [× Whole Numbers to 12]

	2	8	1	4	5	7	6	9	3	10
× 2	4	16	2	8	10	14	12	18	6	20

4. [÷ Whole Numbers to 12]

	15	27	12	30	24	18	9	21	36	33
÷ 3	5	9	4	10	8	6	3	7	12	11

5. [Large Number +,–]

$$\begin{array}{r} 8\,1\,9\,7 \\ -\,1\,0\,3\,2 \\ \hline \end{array}$$

7165

6. [Large Number ×,÷]

$$\frac{57\,000}{100} =$$

570

7. [Decimal +,–]

$$\begin{array}{r} 4.2\,6 \\ +\,1.3\,8 \\ \hline \end{array}$$

5.64

8. [Decimal ×,÷]

$$6\overline{)3.6} = 0.6$$

9. [Fraction +,–]

$$\frac{3}{8} + \frac{4}{8} = \frac{7}{8}$$

10. [Fraction ×,÷] *

$$7 \times \frac{2}{5} = 2\frac{4}{5}$$

11. [Percentages]

Write as a percentage:
23 out of 100.

23%

12. [Decimals / Fractions / Percentages]

What percentage of the shape is shaded?

40%

13. [Integers]

Which insect can endure the lowest temperature?

A) –24°C cucujus beetle
B) –51°C gall wasp larvae
C) –10°C stink bug
D) –184°C red flat bark beetle

D

14. [Rates / Ratios]

Simplify the ratio 5 : 90

1 : 18

15. [Exponents / Square Roots]

Write the product as a power:

$3 \times 3 \times 3 \times 3 \times 3 =$ 3^5

16. [Order of Operations] *

$24 \div 3 \times 4 =$ 32

17. [Exploring Numbers]

$4075 > 4507$
True or false?

false

18. [Multiples / Factors / Primes] *

List the common multiples of 2 and 4 up to 20.

4, 8, 12, 16, 20

19. [Number Patterns]

Complete the pattern:

$\frac{3}{9}, \frac{4}{9}, \frac{5}{9}, \frac{6}{9}, \frac{7}{9}, \frac{8}{9}$

20. [Expressions]

Simplify
$t - t + t + t$

$2t$

21. [Substitution] *

If $p = 9$, find the value of $p + p - 5$

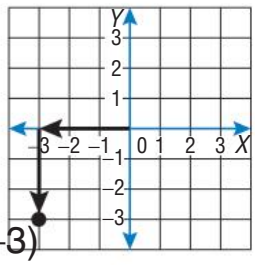
13

22. [Equations]

10 + 13 = 23

23. [Rules / Graphs]

Start at the origin. Move 3 units to the left along the x–axis and then down 3 units. Plot a point. What are the coordinates of the point?



(−3,−3)

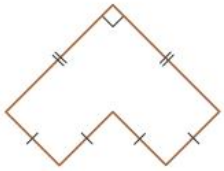
(−3,−3)

24. [Units of Measurement / Time] *

$4\frac{1}{2}$ hours = 270 minutes

25. [Perimeter] *

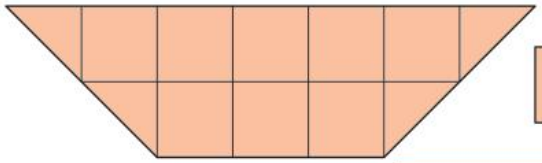
Use a ruler to find the perimeter of the polygon in centimetres.



8 cm

26. [Area / Volume]

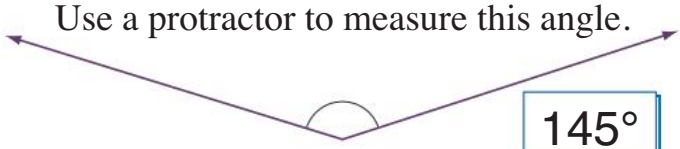
Find the area of the trapezium.



10 cm²

27. [Shapes]

Use a protractor to measure this angle.



145°

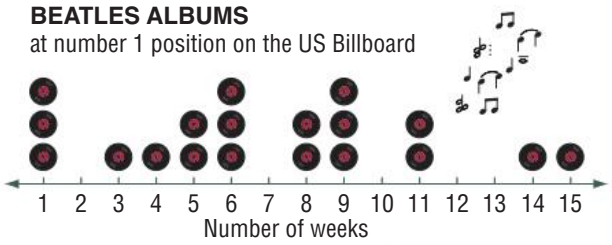
28. [Location / Transformation]

Penny travels southeast from Dandenong. Her bus turns right at the next town and right at the town after that. Where is Penny headed?

Cowes

29. [Statistics]

'Sgt. Pepper's Lonely Hearts Club Band' was The Beatles album that held the number one position on the US Billboard for the longest period of time. For how long was this album at number one?



15 weeks

30. [Probability]

Tom has 6 blue discs and 12 red discs in his pocket. How many discs does he need to take out of his pocket to make sure he has at least 4 blue discs?

16

31. [Problem Solving 1] *

Each shape represents a different whole number.

▲ + ▲ + ■ = 23

▲ × ■ = 60

What are the values of ▲ and ■?

▲ = 4 ■ = 15

32. [Problem Solving 2] *

Four students ran in the 800 m race:

- Martina finished 2 m ahead of Ling
- Yina finished ahead of Tanya
- Tanya was 2 m ahead of Martina

Who won the race?

Yina

33. [Problem Solving 3]

Fill in the missing digits.

$$\begin{array}{r} 1\,\boxed{2}\,2 \\ \boxed{9}\,4\,\boxed{5} \\ +\quad 9\,7\,1 \\ \hline 2\,\boxed{0}\,3\,8 \end{array}$$

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MATHS MATE

BLUE

Test 1

Covering worksheets

1.1 - 1.4

Name: .....

1. [+ Whole Numbers to 10]

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

2. [– Whole Numbers to 10]

	12	10	8	14	7	5	13	11	6	9
– 4	8	6	4	10	3	1	9	7	2	5

3. [× Whole Numbers to 12]

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

4. [÷ Whole Numbers to 12]

	100	50	40	90	20	70	30	80	110	60
÷ 10	10	5	4	9	2	7	3	8	11	6

5. [Large Number +,–]

$$\begin{array}{r} 6\,5\,9\,0 \\ -\,2\,3\,4\,0 \\ \hline \end{array}$$

4250

6. [Large Number ×,÷]

$$\frac{96\,000}{100} =$$

960

7. [Decimal +,–]

$$\begin{array}{r} 2.7\,5 \\ +\,6.1\,9 \\ \hline \end{array}$$

8.94

8. [Decimal ×,÷]

$$\begin{array}{r} 0.8 \\ \times\quad 4 \\ \hline \end{array}$$

3.2

9. [Fraction +,–]

$\frac{3}{10} + \frac{4}{10} =$ $\frac{7}{10}$

10. [Fraction ×,÷]

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

11. [Percentages]

Write as a percentage:

37 out of 100. 37%

12. [Decimals / Fractions / Percentages]

What percentage of the shape is shaded?

40%

13. [Integers]

Which state has the lowest recorded temperature?

A) –13ºC Tasmania
B) –11ºC Victoria
C) –23ºC NSW

C

14. [Rates / Ratios]

Simplify the ratio 12 : 16

3 : 4

15. [Indices / Square Roots]

Write the product as a power:

$9 \times 9 \times 9 \times 9 =$ 9^4

16. [Order of Operations]

$12 + 3 - 8 =$ 7

17. [Exploring Numbers]

Which number is the largest?

A) 20 543
B) 20 345
C) 20 534

A

18. [Multiples / Factors / Primes]

List the common multiples of 2 and 5 up to 35.

10, 20, 30

19. [Number Patterns]

Complete the pattern:

4, 9, 14, 19, 24, 29 , 34

20. [Expressions]

Simplify $g + g$ $2g$

21. [Substitution]

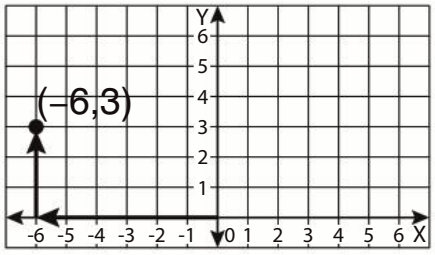
If $d = 7$, find the value of $d + 9$ 16

22. [Equations]

8 + 6 = 14

23. [Coordinates]

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



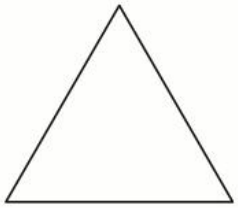
(–6, 3)

24. [Units of Measurement / Time]

6 hours = 360 minutes

25. [Perimeter]

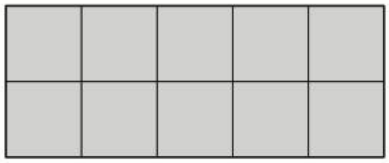
Use a ruler to find the perimeter of the equilateral triangle in centimetres.



9 cm

26. [Area / Volume]

Find the area of the rectangle.

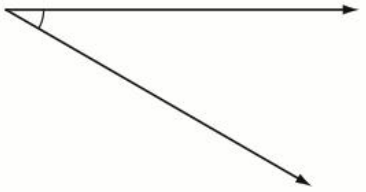


Area = 1 cm^2

10 cm^2

27. [Shapes]

Use a protractor to measure this angle.



30°

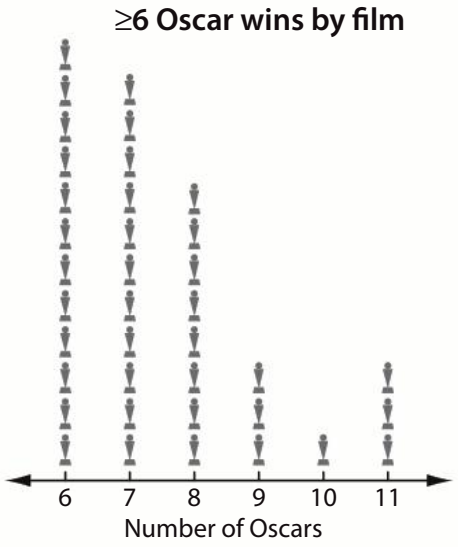
28. [Location / Transformation]

Which of these Italian cities is west of Cremona?

Turin

29. [Statistics]

How many films have won nine or more Oscars?



7

30. [Probability]

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

21

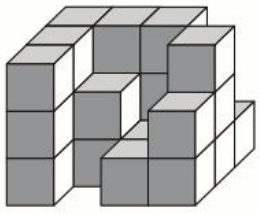
31. [Problem Solving 1]

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

4

32. [Problem Solving 2]

Some cubes have been removed from an array of $4 \times 3 \times 3$. How many cubes remain?



25

33. [Problem Solving 3]

Each of the digits 1 to 9 appears once in the sum below. Fill in the missing digits.

OR

$$\begin{array}{r} 6\ 4\ 2 \\ +\ 1\ 9\ 5 \\ \hline 8\ 3\ 7 \end{array}$$

$$\begin{array}{r} 1\ 4\ 2 \\ +\ 6\ 9\ 5 \\ \hline 8\ 3\ 7 \end{array}$$

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MATHS MATE

BLUE

Test 1

Covering worksheets

1.1 - 1.4

Name: .....

1. [+ Whole Numbers to 10]

	8	4	2	7	1	5	10	9	3	6
+ 5	13	9	7	12	6	10	15	14	8	11

2. [– Whole Numbers to 10]

	15	11	17	14	16	10	18	12	19	13
– 10	5	1	7	4	6	0	8	2	9	3

3. [× Whole Numbers to 12]

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

4. [÷ Whole Numbers to 12]

	10	2	6	16	4	12	20	14	8	18
÷ 2	5	1	3	8	2	6	10	7	4	9

5. [Large Number +,–]

$$\begin{array}{r} 5\,8\,0\,7 \\ -\,2\,2\,0\,3 \\ \hline \end{array}$$

3604

6. [Large Number ×,÷]

$$\frac{25\,000}{100} =$$

250

7. [Decimal +,–]

$$\begin{array}{r} 4.2\,6 \\ +\,5.3\,7 \\ \hline \end{array}$$

9.63

8. [Decimal ×,÷]

$$\begin{array}{r} 0.3 \\ \times\quad 9 \\ \hline \end{array}$$

2.7

9. [Fraction +,–]

$\frac{1}{9} + \frac{4}{9} =$ $\frac{5}{9}$

10. [Fraction ×,÷]

$\frac{2}{9} \times 4 =$ $\frac{8}{9}$

11. [Percentages]

Write as a percentage:
82 out of 100. 82%

12. [Decimals / Fractions / Percentages]

What percentage of the shape is shaded?

30%

13. [Integers]

Which continent has the lowest recorded temperature?

A) –33°C South America
B) –68°C Asia
C) –24°C Africa

B

14. [Rates / Ratios]

Simplify the ratio 16 : 24

2 : 3

15. [Indices / Square Roots]

Write the product as a power:
$8 \times 8 \times 8 \times 8 \times 8 =$ 8^5

16. [Order of Operations]

$13 - 9 + 4 =$ 8

17. [Exploring Numbers]

Which number is the largest?

A) 18 067
B) 18 706
C) 18 670

B

18. [Multiples / Factors / Primes]

List the common multiples of 3 and 4 up to 40.

12, 24, 36

19. [Number Patterns]

Complete the pattern:

5, 11, 17, 23, 29, 35 , 41

20. [Expressions]

Simplify
$e + e$ $2e$

21. [Substitution]

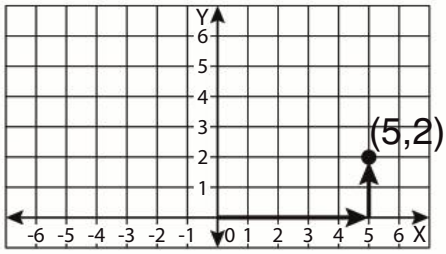
If $g = 6$, find the value of $8 + g$ 14

22. [Equations]

$8 +$ 5 $= 13$

23. [Coordinates]

Start at the origin. Move 5 units to the right along the *x*-axis and then up 2 units. Plot a point. What are the coordinates of the point?



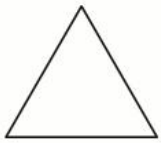
(5 , 2)

24. [Units of Measurement / Time]

8 minutes = 480 seconds

25. [Perimeter]

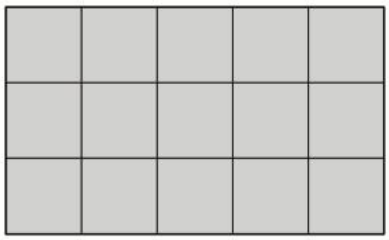
Use a ruler to find the perimeter of the equilateral triangle in centimetres.



6 cm

26. [Area / Volume]

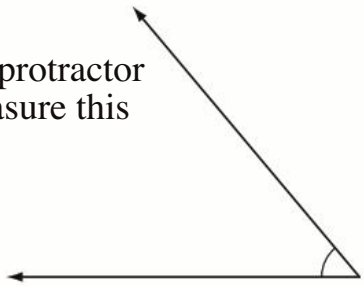
Find the area of the rectangle.



15 cm²

27. [Shapes]

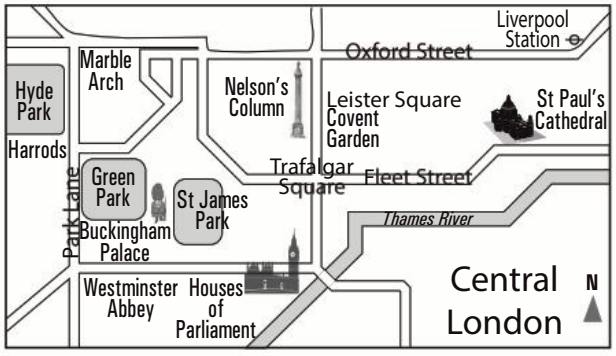
Use a protractor to measure this angle.



50°

28. [Location / Transformation]

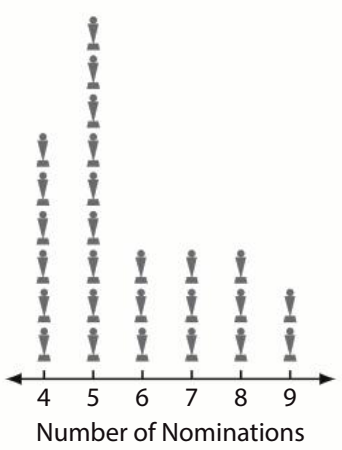
Which park is west of Nelson's Column?



Hyde Park

29. [Statistics]

How many actors have received nine nominations for 'best actor'?



Spencer Tracy & Laurence Olivier

2

30. [Probability]

There are 25 blue, 10 red and 15 yellow marbles in a bag. How many marbles do you have to select to make sure you have at least one yellow marble?

36

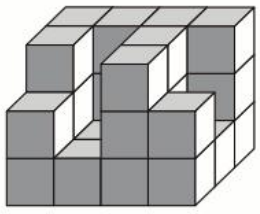
31. [Problem Solving 1]

The digits 1, 3, 6, 7 and 9 are arranged to form odd, five-digit numbers. What is the tens digit in the smallest of these numbers?

7

32. [Problem Solving 2]

Some cubes have been removed from an array of $4 \times 3 \times 3$. How many cubes remain?



28

33. [Problem Solving 3]

Each of the digits 1 to 9 appears once in the sum below. Fill in the missing digits.

OR

$$\begin{array}{r} 1\,6\,7 \\ +\ 3\,2\,8 \\ \hline 4\,9\,5 \end{array} \qquad \begin{array}{r} 3\,6\,7 \\ +\ 1\,2\,8 \\ \hline 4\,9\,5 \end{array}$$

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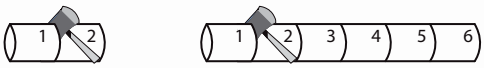
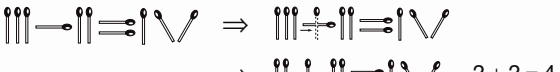
1.1

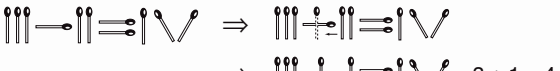
31. **Hint:** *Draw a diagram!*
Solution: One cut is necessary to cut a log into two pieces. Five cuts are necessary to cut a log into six pieces. The time required is 5 times greater than 5 minutes: $5 \times 5 = 25$ min
It takes June **25** minutes to cut a log into six pieces.

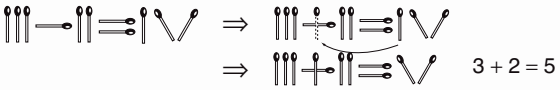


32. **Hint:** *Make a model. Use trial and error.*
Solution: A possible solution is:



The other solutions are:





33. **Hint:** *Find the total score for all 12 exams.*
Solution: The total score for all 12 exams is
$12 \times 95 = 1140$
11 students must get the maximum mark for the remaining student to get the minimum mark.
$11 \times 100 = 1100$
Consider the remaining score: $1140 - 1100 = 40$
The minimum mark a student could have scored is **40**.

1.2

31. **Hint:** *The numbers will be close to a half of 257.*
Solution: If $257 \div 2 = 128.5$ then try 128 and 129.
$128 + 129 = 257$
The two consecutive numbers that add to 257 are **128** and **129**.

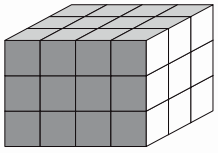
32. **Hint:** *Find common multiples of 5 and 8.*
Solution: Common multiples of 5 and 8 in ascending order are: 40, 80, 120, 160, etc.
If the number leaves a remainder of 1 when divided by 5 or 8, then add 1 to each of these common multiples: 41, 81, 121, 161, etc.
The lowest positive integer in this list is **41**.

33. **Hint:** *Find the sum of the first 4 and the last 3 numbers.*
Solution: If the average of the first four numbers is 15 then the sum of the first four numbers must be
$15 + 15 + 15 + 15 = 60$
If the average of the last three numbers is 8 then the sum of the last three numbers must be
$8 + 8 + 8 = 24$
The sum of all 7 numbers is $60 + 24 = 84$
The average of all 7 numbers is $84 \div 7 =$ **12**

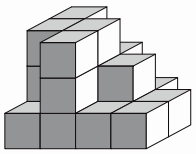
1.3

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**.

32. **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 $4 \times 3 \times 3$ cubes each complete layer would have:
$4 \times 3 = 12$ cubes



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

base layer	$12 - 1$	$= 11$ cubes
2nd layer	$12 - 6$	$= 6$ cubes
3rd layer	$12 - 8$	$= 4$ cubes
total		$= 21$ cubes

21 cubes remain in the diagram.

33. **Hint:** *List the prime numbers less than 24.*
Solution: The prime numbers less than 24 are:
2, 3, 5, 7, 11, 13, 17, 19 and 23
$2 + 22 = 24$ 22 is not a prime number
$3 + 21 = 24$ 21 is not a prime number
$5 + 19 = 24$
$7 + 17 = 24$
$11 + 13 = 24$
24 can be written as the sum of two different prime numbers in **3** ways.

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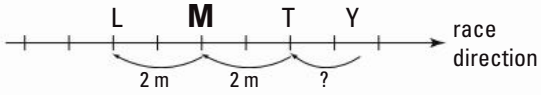
1.4

31. **Hint:** *Use trial and error. Remember order of operation rules. Begin by listing the factors of 60.*
Solution: The factors of 60 are: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60
As 30 and 60 are > 23 they can be discounted which also excludes 1 and 2.
Ask: "Which number doubled and added to another number will result in 23?"
Try 3 ⇒ 3 + 3 + 20 = 26
Try 4 ⇒ 4 + 4 + 15 = 23
Check 4 × 15 = 60
The values are ▲ = **4** and ■ = **15**

32. **Hint:** *Draw a diagram. Consider Martina's position as she is mentioned twice.*
Solution: There are three pieces of information provided:
(1) Martina finished 2 m ahead of Ling.



(2) Tanya was 2 m ahead of Martina.
(3) Yina finished ahead of Tanya.
Yina won the race.

33. **Hint:** *Start with the units column and work systematically.*
Solution:
Units: 2 + ? + 1 = 8 leads to ? = 5
Tens: ? + 4 + 7 ends in 3 leads to ? = 2 and 1 is carried over to the hundreds
Hundreds: 1 + ? + 9 + carry 1 ends in 0 and has a carry over of 2 to the thousands leads to ? = 9.

$$\begin{array}{rrrr} & {\scriptstyle 1} & & \\ & 1 & \boxed{2} & 2 \\ & \boxed{9} & 4 & \boxed{5} \\ + & 9 & 7 & 1 \\ \hline \Rightarrow & 2 & \boxed{0} & 3 \quad 8 \end{array}$$

1.5

31. **Hint:** *No hints needed.*
Solution: First period after recess finishes 50 minutes after 10:50 am at 11:40 am.
The second period finishes 50 minutes after 11:40 am at 12:30 pm.
Lunch hour finishes 60 minutes after 12:30 pm.
Lunch hour ends at **1:30 pm**.

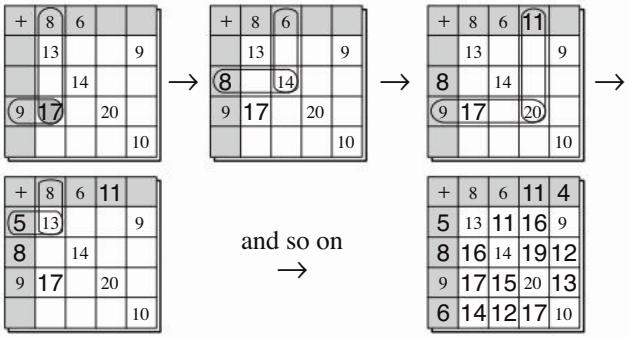
32. **Hint:** *Make an organised list.*
Solution: Each of the children has at least two brothers and one sister. Based on this fact, there are a minimum of 4 children in the family.
If there are two girls and two boys, then each boy cannot have at least two brothers. Or if there are one girl and three boys, then the girl cannot have at least one sister.
Therefore there must be 5 children in the family, two girls and three boys, so each of the children has at least two brothers and one sister.
The least number of children you might have is **5**.

33. **Hint:** *Establish the relationship between the number of consecutive odd numbers and their sum.*
Solution: The relationship between the number of consecutive odd numbers and their sum is that....
"however many consecutive odd numbers you have, their sum is that number squared"
The first 5 odd numbers add to 5^2
$1 + 3 + 5 + 7 + 9 = 5^2 = 25$
The first 6 odd numbers add to 6^2:
$1 + 3 + 5 + 7 + 9 + 11 = 6^2 = 36$
The first 10 odd numbers add to 10^2, so the first 100 odd numbers add to 100^2:
$1 + 3 + 5 + 7 + 9 + \ldots\ldots + 199 = 100^2 = 10\,000$
The sum of the first 100 odd numbers is **10 000**.

1.6

31. **Hint:** *Use trial and error. Add the numbers on the clock face and divide by two.*
Solution:
1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 = 78
78 ÷ 2 = 39
Each half must add to 39 so by trial and error
4 + 5 + 6 + 7 + 8 + 9 = 39
and 10 + 11 + 12 + 1 + 2 + 3 = 39

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:** *Fraction means dividing the numerator by the denominator. Consider the results when dividing 11 by each of the given numbers.*
Solution: When dividing 11 by 2 or 3, the results are greater than 3.
When dividing 11 by 6, the result is less than 2.
When dividing 11 by 4, the result is $2\frac{3}{4}$ or 2.75 and when dividing 11 by 5, the result is $2\frac{1}{5}$ or 2.2
Of these two results, $2\frac{3}{4}$ is the closest to $2\frac{1}{2}$ or 2.5.
The fraction $\frac{11}{\mathbf{4}}$ is the closest to $2\frac{1}{2}$.

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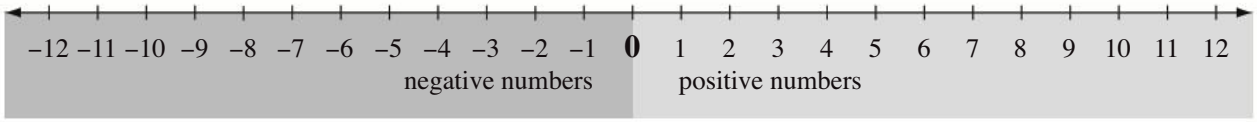
13. [Integers]

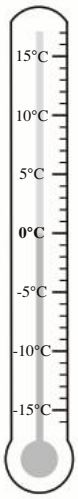
Skill 13.1 Comparing and ordering integers (1).

- 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

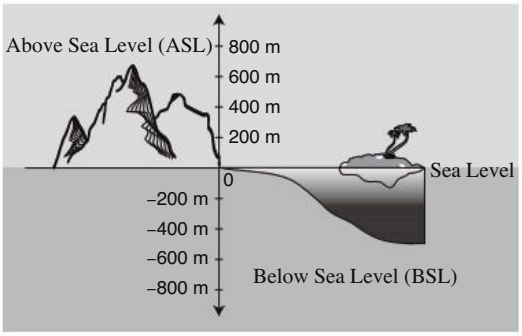
A negative number is always smaller than a positive number.





ALTITUDE

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

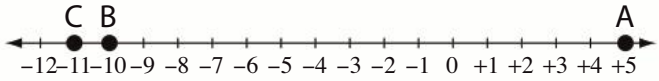


TEMPERATURE

Temperatures below zero are lower than temperatures above zero.

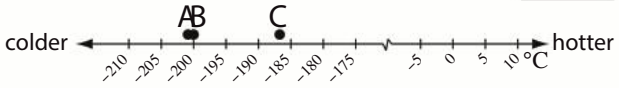
Q. Who won the 2010 Women's British Open Golf Tournament?
[Hint: In golf the lowest score wins.]
A) +5 K. Webb
B) –10 K. Hull
C) –11 Y. Tseng

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

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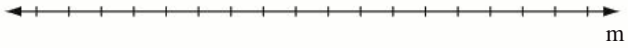
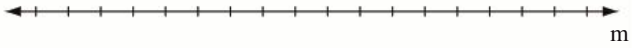
e) Which location has the lowest altitude?

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)



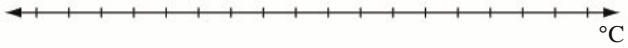
f) Which location has the highest altitude?

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)



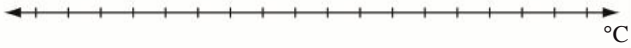
g) Which location recorded the lowest temperature?

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

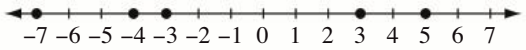


h) Which continent has the lowest recorded temperature?

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

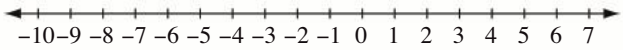


i) Arrange in ascending order:
−4, −7, 5, −3, 3

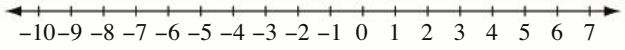


−7, −4, −3, 3, 5

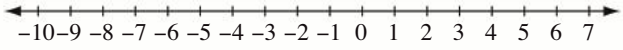
j) Arrange in order from largest to smallest:
0, 8, −9, 6, −4



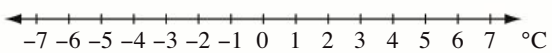
k) Arrange in descending order:
−10, 8, 1, −8, 4



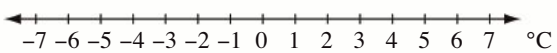
l) Arrange in order from smallest to largest:
−2, −6, 0, −3, 5



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



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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) $\square - 8 = 13$

? =

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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) $\square - 8 = 12$

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