



*Caribbean
Primary*

Level 5

Mathematics

Workbook

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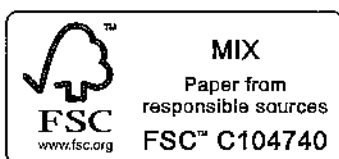
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Number concepts

1 Fill in $<$, $>$ or $=$ to make each statement true.

- | | | | |
|------------------|---------------|------------------|------------------|
| a $715 < 751$ | b $250 > 205$ | c $300 < 301$ | d $901 > 899$ |
| e $7\ 000 > 700$ | f $10 < 100$ | g $5\ 000 > 500$ | h $20 > 2$ |
| i $95 < 195$ | j $65 < 506$ | k $112 < 1\ 112$ | l $487 < 7\ 002$ |

2 Round off each price to the nearest 10 dollars.

- | | | | |
|--|--|--|---|
| a 
\$ 20 | b 
\$ 20 | c 
\$ 40 | d 
\$ 90 |
| e 
\$ 160 | f 
\$ 480 | g 
\$ 1890 | h 
\$ 5100 |

3 Write down all the factors of each number. Then write all the multiplication sentences you can use to make the number. The first one has been done for you as an example.

- a 15 Factors: 1 3 5 15
 $1 \times 15 = 15$ $15 \times 1 = 15$ $3 \times 5 = 15$ $5 \times 3 = 15$
- b 16 Factors: 1 2 4 8 16
 $1 \times 16 = 16$ $16 \times 1 = 16$ $2 \times 8 = 16$ $8 \times 2 = 16$ $4 \times 4 = 16$
- c 36 Factors: 1 2 6 18 36
 $1 \times 36 = 36$ $36 \times 1 = 36$ $2 \times 18 = 36$ $18 \times 2 = 36$ $6 \times 6 = 36$
- d 48 Factors: 1 2 3 4 6 8 12 16 24 48
 $1 \times 48 = 48$ $2 \times 24 = 48$ $3 \times 16 = 48$ $4 \times 12 = 48$ $6 \times 8 = 48$
 $48 \times 1 = 48$ $24 \times 2 = 48$ $16 \times 3 = 48$ $12 \times 4 = 48$ $8 \times 6 = 48$

More numbers

1 Complete the table.

Pair of numbers	Factors	Common factors	HCF
8 and 40	8: 1, 2, 4, 8 40: 1, 2, 4, 5, 8, 10, 20, 40	1, 2, 4, 8	8
18 and 45	18: 1, 2, 3, 6, 9, 18 45: 1, 3, 5, 9, 15, 45	1, 3, 9	9
45 and 54	45: 1, 3, 5, 9, 15, 45 54: 1, 2, 3, 6, 9, 18, 27, 54	1, 3, 9	9
28 and 32	28: 1, 2, 4, 7, 14, 28 32: 1, 2, 4, 8, 16, 32	1, 2, 4	4
36 and 48	36: 1, 2, 3, 4, 6, 9, 12, 18, 36 48: 1, 2, 3, 4, 6, 8, 12, 16, 24, 48	1, 2, 3, 4, 6, 12	12

2 Write five examples of each kind of number.

a Odd numbers:	<u>1</u>	<u>3</u>	<u>5</u>	<u>7</u>	<u>9</u>
b Even numbers:	<u>2</u>	<u>4</u>	<u>6</u>	<u>8</u>	<u>10</u>
c Composite numbers:	<u>4</u>	<u>6</u>	<u>8</u>	<u>9</u>	<u>10</u>
d Prime numbers:	<u>3</u>	<u>5</u>	<u>7</u>	<u>11</u>	<u>13</u>

3 Write the fractions in the correct columns in the table.

Common fraction	Improper fraction	Mixed number
$\frac{2}{5}$ $\frac{1}{10}$	$\frac{4}{3}$ $\frac{10}{3}$	$4\frac{1}{2}$ $10\frac{3}{10}$
$\frac{3}{7}$ $\frac{2}{9}$	$\frac{7}{3}$ $\frac{18}{5}$	$1\frac{9}{10}$ $4\frac{7}{8}$ $2\frac{1}{4}$
$\frac{9}{10}$ $\frac{1}{11}$	$\frac{19}{10}$	$18\frac{1}{2}$ $2\frac{8}{9}$

$4\frac{1}{2}$	$\frac{4}{3}$	$\frac{2}{5}$	$\frac{3}{7}$	$\frac{7}{3}$	$\frac{9}{10}$	$1\frac{9}{10}$	$\frac{19}{10}$	$18\frac{1}{2}$
$\frac{1}{10}$	$\frac{10}{3}$	$10\frac{3}{10}$	$4\frac{7}{8}$	$\frac{18}{5}$	$\frac{2}{9}$	$\frac{1}{11}$	$2\frac{8}{9}$	$2\frac{1}{4}$





















- 4 Round the numbers to complete the table.

Number	8 458	9 445	8 999	3 987	1 255
Rounded to the nearest hundred	8 500	9 400	9 000	4 000	1 300
Rounded to the nearest thousand	8 000	9 000	9 000	4 000	1 000

- 5 Draw lines to match equivalent pairs.

$\frac{1}{5}$	$\frac{1}{2}$	$\frac{3}{2}$	$\frac{4}{40}$	$\frac{15}{4}$	$\frac{2}{5}$
$\frac{4}{20}$	$1\frac{1}{2}$	$\frac{50}{100}$	$3\frac{3}{4}$	$\frac{1}{10}$	$\frac{40}{100}$

- 6 Work out the rule and draw the next two terms in each pattern.

1st term	2nd term	3rd term	4th term	5th term
				
				
				
				

- 7 Read the rules. Then write the first five numbers in each pattern.

a The first term is 8 and each term is found by adding 4 to the previous term.

8 12 16 20 24

b The first term is 243 and each term is found by dividing the previous term by 3.

243 81 27 9 3

c The second term is 11. Each term is one less than the previous term.

12 11 10 9 8

Quick calculations

- 1 a Time yourself. Complete as many division facts as you can in one minute. Your teacher will set a stopwatch.

$100 \div 10 = 10$	$49 \div 7 = 7$	$18 \div 3 = 6$	$70 \div 10 = 7$	$28 \div 4 = 7$
$72 \div 8 = 9$	$36 \div 6 = 6$	$25 \div 1 = 25$	$85 \div 5 = 17$	$63 \div 9 = 7$
$81 \div 9 = 9$	$27 \div 3 = 9$	$40 \div 2 = 20$	$42 \div 6 = 7$	$32 \div 4 = 8$
$36 \div 3 = 12$	$90 \div 10 = 9$	$48 \div 8 = 6$	$60 \div 4 = 15$	$45 \div 5 = 9$
$60 \div 5 = 12$	$54 \div 3 = 18$	$72 \div 9 = 8$	$99 \div 1 = 99$	$45 \div 9 = 5$
$10 \div 2 = 5$	$24 \div 6 = 4$	$16 \div 8 = 2$	$32 \div 2 = 16$	$54 \div 6 = 9$
$48 \div 6 = 8$	$64 \div 8 = 8$	$80 \div 10 = 8$	$56 \div 7 = 8$	$21 \div 3 = 7$
$28 \div 7 = 4$	$36 \div 4 = 9$	$16 \div 4 = 4$	$48 \div 4 = 12$	$100 \div 1 = 100$
$25 \div 5 = 5$	$54 \div 9 = 6$	$35 \div 7 = 5$	$12 \div 6 = 2$	$36 \div 9 = 4$
$30 \div 10 = 3$	$22 \div 2 = 11$	$18 \div 9 = 2$	$12 \div 4 = 3$	$28 \div 2 = 14$

- b Shade all the blocks that you worked out correctly. Express your score as a fraction out of 50.

50

- 2 Each row, column and diagonal in a magic square has the same sum. Complete these magic squares. You may not repeat any numbers in the same square.

a

8	3	4
1	5	9
6	7	2

b

7	0	5
2	4	6
3	8	1

c

4	9	1
2	5	7
8	0	6

- 3 A pharmacist has to work out how many pills she needs for each prescription. Write a multiplication sentence to work out each total.



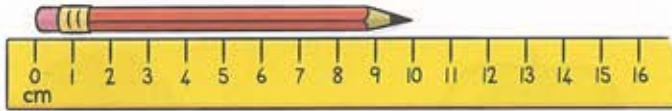
$$22 \times 3 = 66$$



$$12 \times 4 = 48$$

Measuring length

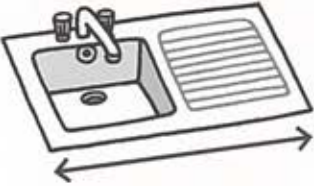
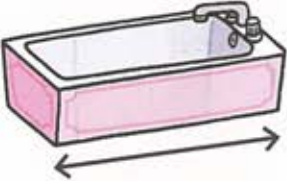




1 How long is the pencil?



a 10 cm

b 100 mm

2 Write the unit you would use to measure each length. Estimate and then measure each item.

Length	Unit	My estimate	Measured length
	Centimetres		
	Metres		
	Centimetres		
	Centimetres		
	Metres		
	Millimetres		

More measuring

1 Write the units you would use to measure each mass.

a a vitamin tablet

b an apple

c a ladybird



Milligrams



Grams



Milligrams

2 Calculate the total capacity of each set of containers in millilitres. Show your working. Write the total amount in millilitres.

a



$$1.5 \times 1000$$

1500 ml

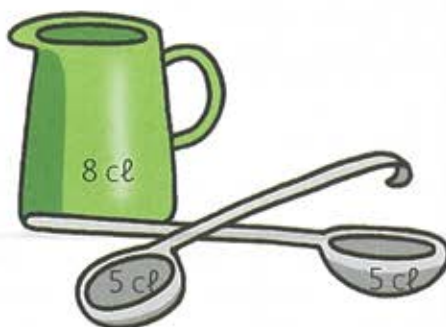
b



$$250 + 500$$

750 ml

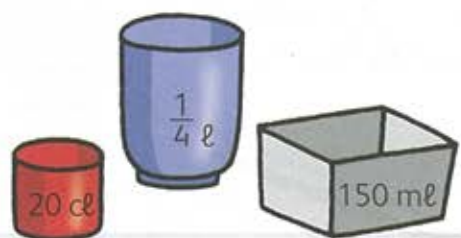
c



$$18 \times 100$$

180 ml

d



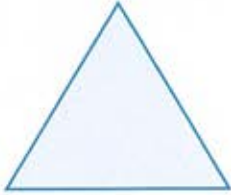
$$200 + 250 + 150$$

600 ml

Shapes

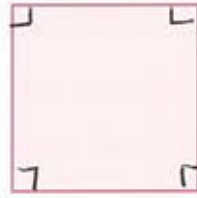
- 1 **a** Write the name of each shape and mark all the right angles.
- b** Draw and label the diameter and radius of the circle.

A



Triangle

B



Square

C



Rectangle

D



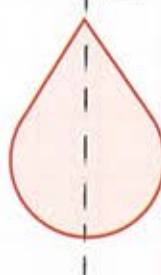
Circle

- 2 Draw lines of symmetry on each shape. Tick the shapes that are polygons.

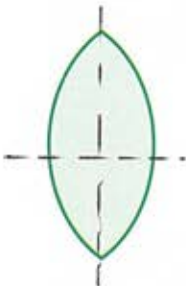
a



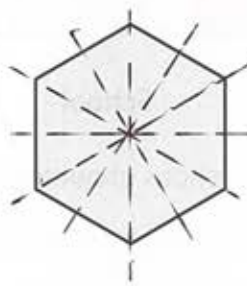
b



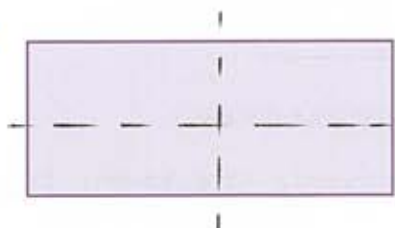
c



d



e



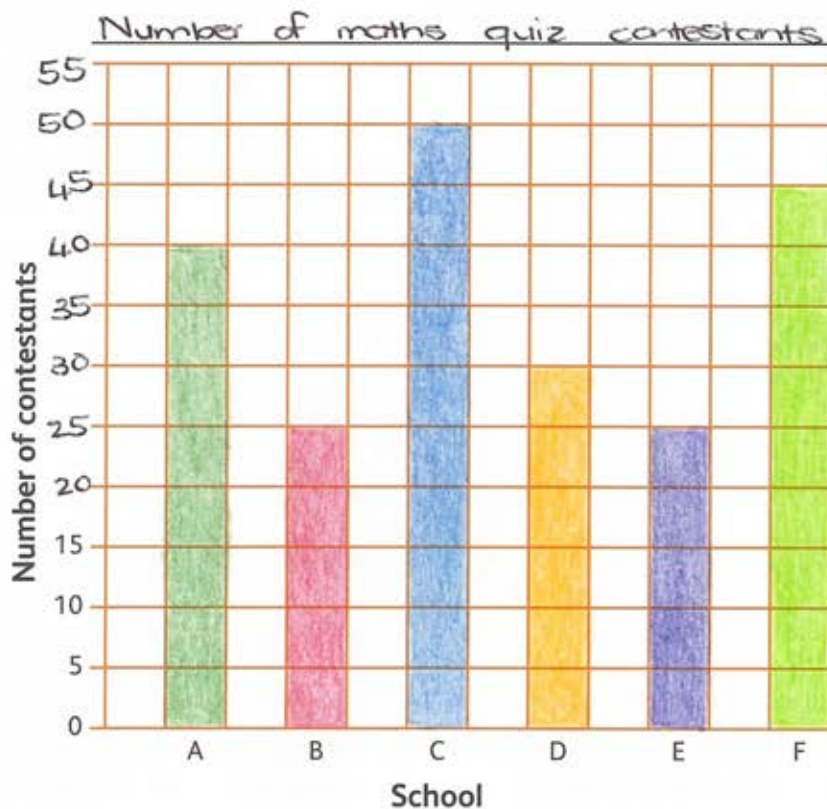
f



Data and graphs

1 Complete the bar graph to show the data in the table.

School	Number of contestants in the mathematics quiz
A	40
B	25
C	50
D	30
E	25
F	45



Remember to insert a heading for your graph here.

2 Answer these questions about the graph.

- Which school had the most contestants? C
- Which schools have the same number of contestants? B & E
- How many contestants were there altogether? 215
- Can you tell which school won the competition? Explain your answer.

No, we are only told how many children took part.

Topic 2

Number sense (1)

Numbers and place value

1 Write the numbers.

a 26 530 = 20 000 + 6 000 + 500 + 30

b 39 647 = 30 000 + 9 000 + 600 + 40 + 7

c 11 080 = 10 000 + 1 000 + 80 + 0

d 80 506 = 80 000 + 500 + 6

e 20 083 = 20 000 + 80 + 3

2 Draw lines to match each number name to the correct number.

Twenty-three thousand four hundred and eight	20 323
Twenty-three thousand four hundred and eighty	28 403
Twenty thousand three hundred and twenty-three	23 408
Twenty-eight thousand four hundred and three	23 804
Twenty-three thousand eight hundred and four	23 480

3 Write the next five numbers in each sequence.

a 1 000, 3 000, 5 000, 7 000, 9 000, 11 000, 13 000, 15 000

b 12 000, 13 000, 14 000, 15 000, 16 000, 17 000, 18 000, 19 000

c 24 000, 23 000, 22 000, 21 000, 20 000, 19 000, 18 000, 17 000

d 32 000, 42 000, 52 000, 62 000, 72 000, 82 000, 92 000, 102 000

e 23 500, 23 000, 22 500, 22 000, 21 500, 21 000, 20 500, 20 000

4 Fill in <, > or = to make each statement true.

a 12 567 12 100

b 19 003 19 300

c 10 000 + 2 000 + 80 12 008

d 20 000 + 5 000 + 20 + 9 25 429

Cross number challenge

Try to fit all the numbers onto the grid.

Numbers can only be written from left to right or from top to bottom.

Cross the numbers off the list as you place them.

The first number has been placed for you.

There is only one correct solution.

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

2-digit numbers

22
40
50
51
62
84
87

3-digit numbers

144
156
216
245
275
306
639
740
751
872
925
934

4-digit numbers

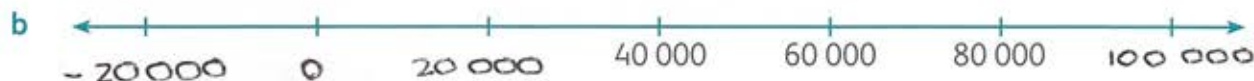
1 929
2 881
4 006
4 235
4 382
5 116
6 751

5-digit numbers

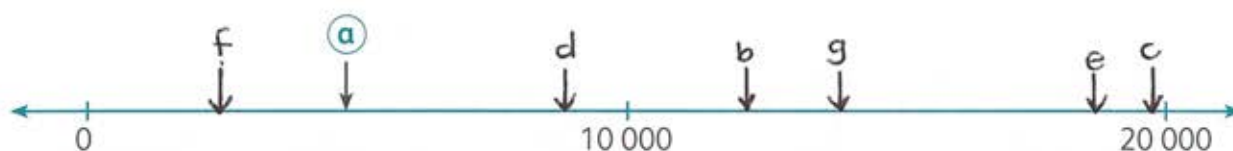
17 614
23 120
32 032
45 334
63 214

Number lines

1 Fill in the missing numbers on each number line.



2 Estimate where each number will go on this number line. Show the position of each number with an arrow and a letter. The first one has been done as an example.



a 5 000

b 12 750

c 19 999

d 9 000

e 19 000

f 2 500

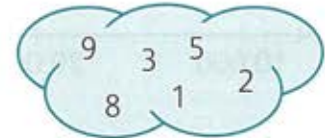
g 14 000

Compare and order numbers

- 1 Choose any five of the six digits given in the bubbles and write them in the blocks to make each statement true.

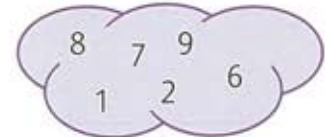
a $12\ 824 <$

1	2	9	8	5
---	---	---	---	---



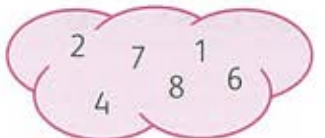
b $19\ 000 >$

1	8	7	2	6
---	---	---	---	---



c $23\ 607 <$

2	4	7	8	1
---	---	---	---	---



d $17\ 999 >$

1	8	3	2	7
---	---	---	---	---



e $99\ 204 <$

9	9	7	2	3
---	---	---	---	---



f $16\ 000 >$

1	4	7	3	6
---	---	---	---	---



- 2 Five contestants took part in a television singing competition. The viewers voted to choose the top three to go to the next round. The results were:

Ajamu 45 324 votes

Rihanna 64 325 votes

Jaymsie 45 654 votes

Menaka 64 512 votes

Omi 45 754 votes

Write the number of votes in order from most to fewest.

64 512, 64 325, 45 754, 45 654, 45 324

Complete the Top 3 list:

Top 3

Going to next round

1 Menaka

2 Rihanna

3 Omi

Rounding numbers

1 Round the numbers to the place given in each column.

Number	To the nearest ten	To the nearest hundred	To the nearest thousand
12 564	12 560	12 600	13 000
12 899	12 900	12 900	13 000
14 653	12 650	14 700	15 000
17 224	17 220	17 200	17 000
68 456	68 460	68 500	68 000
76 599	76 600	76 600	77 000
23 907	23 910	23 900	24 000
34 612	34 610	34 600	35 000
45 809	45 810	45 800	46 000
19 999	20 000	20 000	20 000

2 The numbers in the first column have been rounded to the nearest hundred. Circle all the numbers in the second column that could have been rounded off to get that number.

3 400	3 276	3 352	3 389	3 399	3 349	3 427
6 700	6 642	6 654	6 701	1 073	6 756	6 627
1 200	1 190	1 240	1 211	1 476	1 327	1 099
3 500	3 714	3 058	3 456	3 546	3 628	3 099
2 900	2 879	2 929	2 902	2 855	2 895	2 999
1 000	1 009	998	999	1 045	947	995

Topic 3

Computation (1)

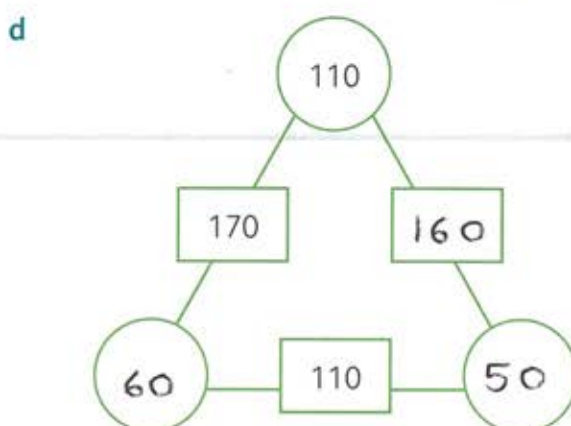
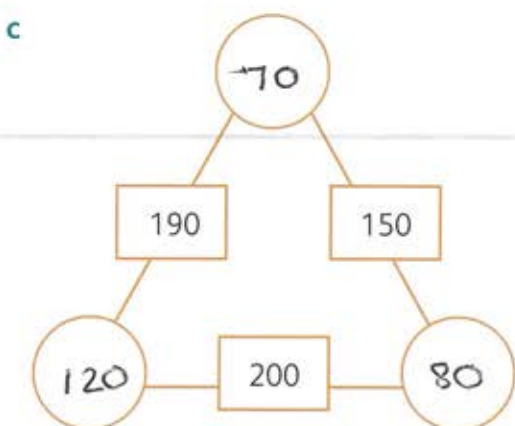
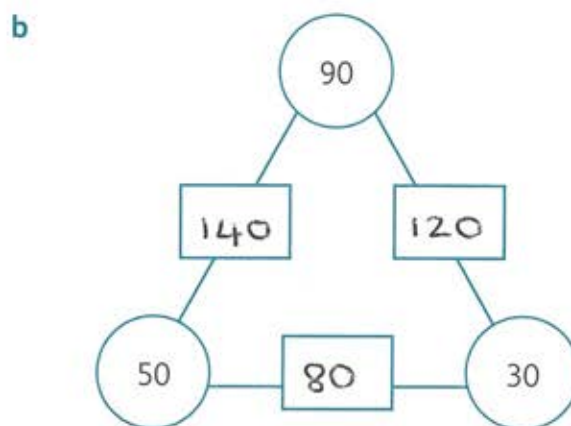
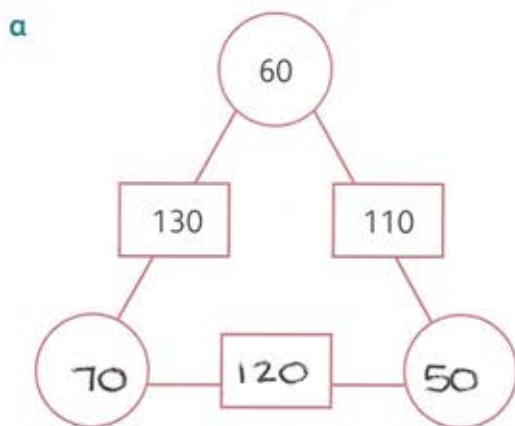
Mental strategies

1 Complete the addition grids.

+	8	9	10	12
27	35	36	37	39
84	92	93	94	96
132	140	141	142	144
160	168	169	170	172
349	357	358	359	361

+	100	75	64	99
50	150	125	114	149
75	175	150	139	174
123	223	198	187	222
204	304	279	268	303
370	470	445	434	469

2 In these triangles, the number in the block is the sum of the two numbers at the end of each side. Work out all the missing values.



- 3 Complete the subtraction grids. Subtract the second number from the first.

		1st number			
2nd number	—	80	98	125	209
	8	72	90	117	201
	9	71	89	116	200
	11	69	87	114	198
	12	68	86	113	197

		1st number				
2nd number	—	400	420	507	880	999
	50	350	370	457	830	949
	99	301	321	408	781	900
	101	299	319	406	779	898
	250	150	170	257	630	749

- 4 Look at the starting number on the screen. Fill in the operation sign and the number that will give you the result shown on the end screen.

	Start	Operation	Number	End
a	406	+	50	456
b	726	+	100	826
c	109	+	700	809
d	342	—	200	142
e	342	—	50	292
f	1 454	—	450	1 004
g	2 000	—	1 100	900

Addition

Calculate the total population of the four biggest towns in each country.

St Lucia

Town	Population
Castries	65 656
Vieux Fort	16 284
Gros Islet	25 210
Dennerly	12 599
<i>Total</i>	<i>119 749</i>

Grenada

Town	Population
St George's	33 559
Gouyave	3 378
Grenville	2 476
Victoria	2 256
<i>Total</i>	<i>41 669</i>

Antigua and Barbuda

Town	Population
St John's	22 634
All Saints	3 412
Liberta	2 239
Potters Village	2 067
<i>Total</i>	<i>30 352</i>

St Vincent and the Grenadines

Town	Population
Kingstown	24 518
Georgetown	1 680
Byera Village	1 365
Biabou	1 050
<i>Total</i>	<i>28 613</i>

St Kitts and Nevis

Town	Population
Basseterre	12 920
Fig Tree	2 922
Market Shop	2 568
Saint Paul's	2 460
<i>Total</i>	<i>20 870</i>

Dominica

Town	Population
Roseau	16 571
Portsmouth	3 633
Marigot	2 669
Berekua	2 608
<i>Total</i>	<i>25 481</i>

Barbados

Town	Population
Bridgetown	98 511
Speightstown	3 634
Oistins	2 285
Bathsheba	1 765
<i>Total</i>	<i>106 195</i>

Subtraction

1 There is a mistake in each subtraction. Find it and circle it.

Then work out the correct answer.

a
$$\begin{array}{r} 1082 \\ - 946 \\ \hline \end{array}$$
 $\textcircled{936} \times$

$$\begin{array}{r} 1082 \\ - 946 \\ \hline 136 \end{array}$$

b
$$\begin{array}{r} 8700 \\ - 2432 \\ \hline \end{array}$$
 $\textcircled{6278} \times$

$$\begin{array}{r} 8700 \\ - 2432 \\ \hline 6268 \end{array}$$

c
$$\begin{array}{r} 1245 \\ + 7540 \\ \hline \end{array}$$
 $\textcircled{8700} \times$

$$\begin{array}{r} 1245 \\ + 7540 \\ \hline 8785 \end{array}$$

d
$$\begin{array}{r} 21439 \\ + 3000 \\ \hline \end{array}$$
 $\textcircled{51}439 \times$

$$\begin{array}{r} 21439 \\ + 3000 \\ \hline 24439 \end{array}$$

2 Complete the table.

Calculation	Round figures to nearest thousand	Estimated answer	Actual answer
32 233 – 19 233	32 000 – 19 000	13 000	13 000
28 686 – 27 544	29 000 – 28 000	1 000	1 142
12 456 – 9 656	12 000 – 10 000	2 000	2 800
63 412 – 45 987	63 000 – 46 000	17 000	17 425
27 814 – 9 408	28 000 – 9 000	19 000	18 406

Mixed operations

1 Which operation sign is missing from each calculation?

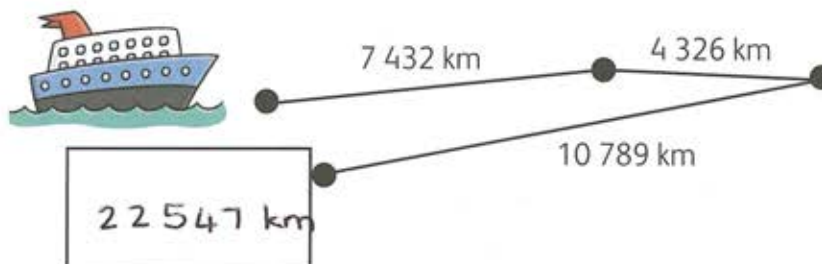
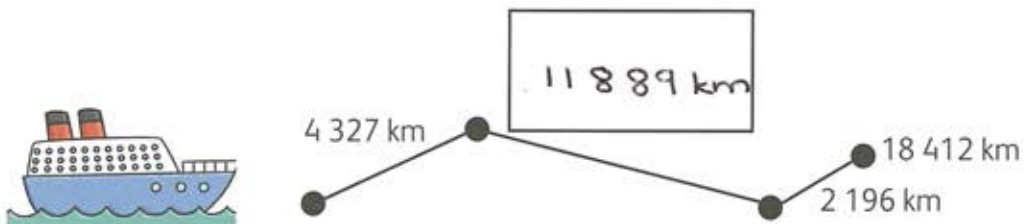
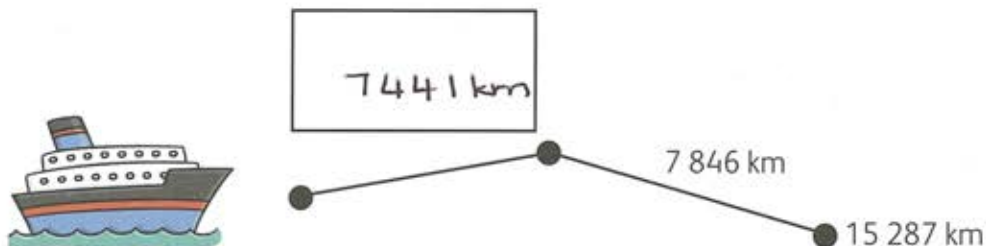
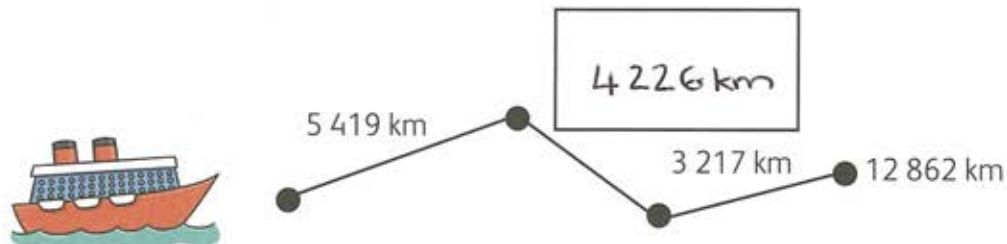
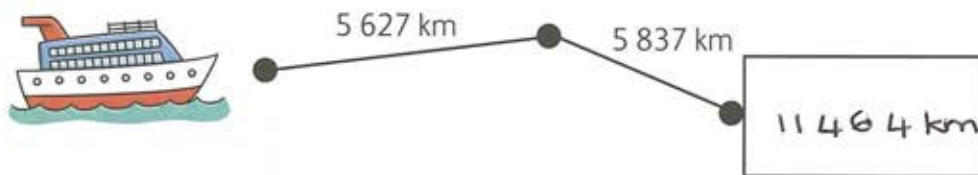
a $12\,345 \boxed{+} 13\,346 = 25\,691$

b $23\,000 \boxed{-} 8\,999 = 14\,001$

c $65\,412 \boxed{-} 12\,439 = 52\,973$

d $12\,398 \boxed{+} 14\,899 = 27\,297$

2 The diagrams show the journey of different cruise ships. Distances are in kilometres. Work out the missing distances for each journey and write them in the box provided.

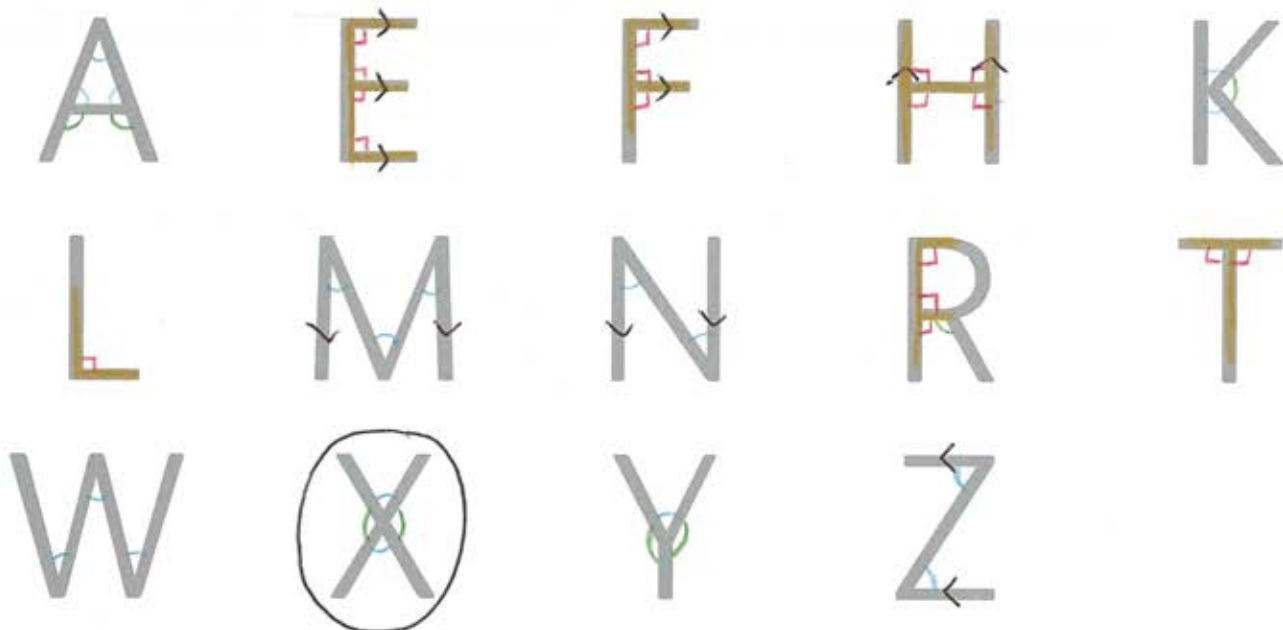


Lines and angles

Find eight things that have right angles in and around your classroom. Draw a picture or paste a photograph of each item. Then mark where it has right angles.

Identify lines and angles

- 1 Look at these capital letters.
 - a Mark all the right angles in red, acute angles in blue and obtuse angles in green.
 - b Use arrows to mark parallel lines.
 - c Go over the perpendicular lines with a different colour.
 - d Circle the letter that is formed by a pair of intersecting lines.



- 2 Look at the three letters below. Explain in your own words why they don't form any angles.

- a S Only curved line segment
- b C No straight line segments
- c O Close shape with only curved lines

- 3 Draw hands on the clocks to show each type of angle. Write the time shown on each clock.

a right angle

b acute angle

c obtuse angle



3 o'clock

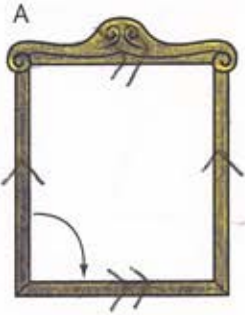


1 o'clock

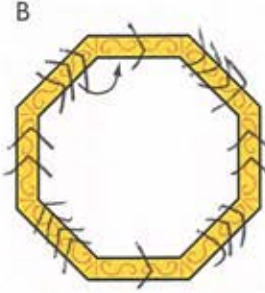


5 o'clock

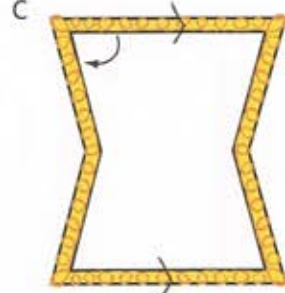
- 4 For each picture frame:
- a write the type of angle marked
 - b draw arrows to show parallel sides
 - c draw over the perpendicular sides in a different colour.



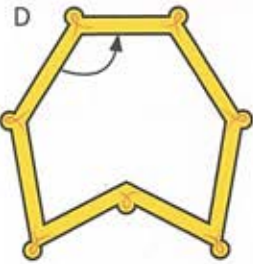
Right angle



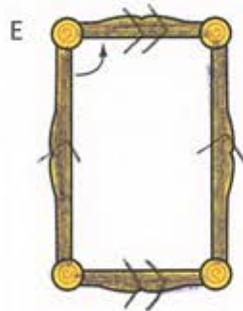
Obtuse angle



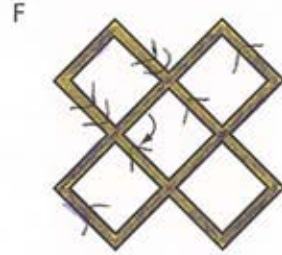
Acute angle



Obtuse angle



Right angle



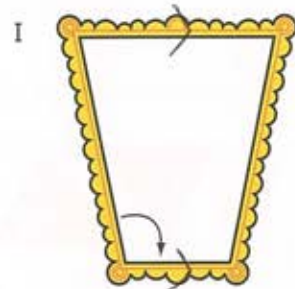
Right angle



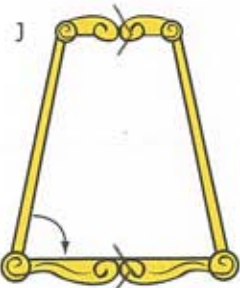
Right angle



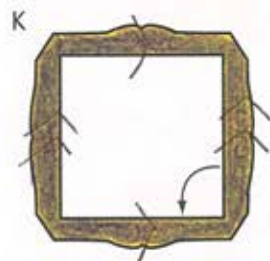
Acute angle



Obtuse angle



Acute angle



Right angle

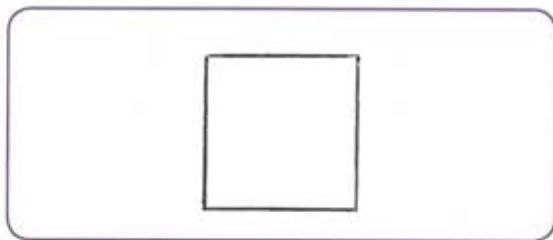


Acute angle

2-D shapes

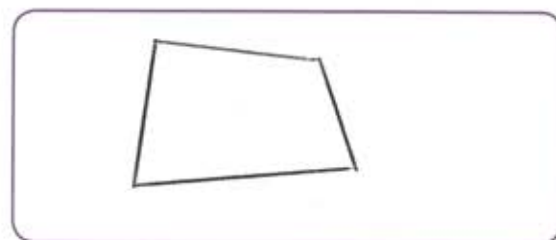
1 Follow each set of instructions. Then name the shape you have drawn.

- a Draw a polygon using four lines of equal length. All the corners should be right angles.



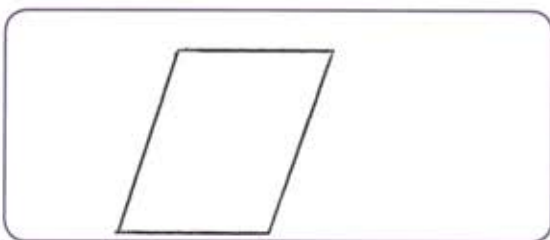
Square

- b Draw a polygon using four lines of unequal length.



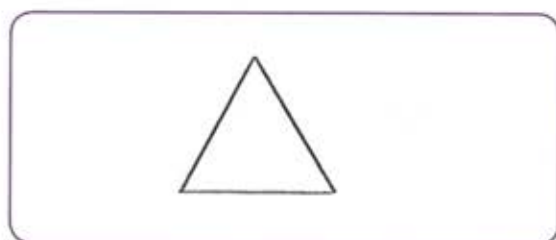
Trapezium

- c Draw a polygon that has two sets of opposite angles equal in length, but no right angles.



Parallelogram

- d Draw a polygon using three lines of any length.



Triangle

2 Describe the kind of triangles used to make each pattern.



Triangles used: Equilateral triangles

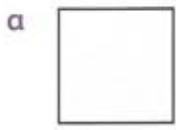


Triangles used: Right angle triangles

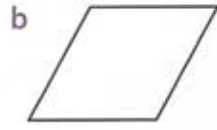


Triangles used: Scalene triangles, equilateral and right angle triangles

- 3 Each shape from **a** to **h** is a square, rectangle, parallelogram or irregular quadrilateral. Identify each shape.



Square



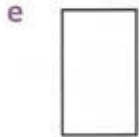
Parallelogram



Parallelogram



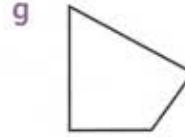
Trapezium



Rectangle



Parallelogram

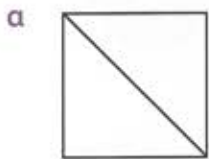


Irregular quad.



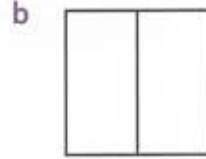
Rectangle

- 4 For each shape shown, say what shapes it has been built of. Then write down what the final shape is called.



Shapes: Triangles

Name: Square



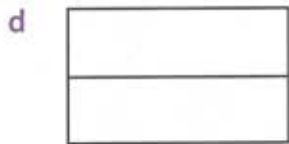
Rectangles

Square



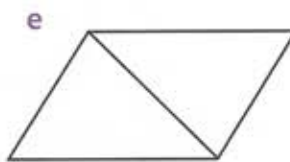
Squares

Rectangle



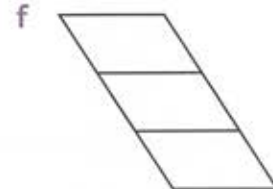
Shapes: Rectangles

Name: Rectangle



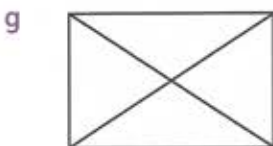
Triangles

Parallelogram



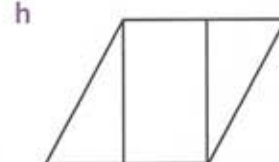
Parallelograms

Parallelogram



Shapes: 2 triangles ; or 4 triangles

Name: Rectangle



Triangles ; rectangle

Parallelogram

Circles

1 Does the arrow in each diagram represent a radius, a diameter or a circumference?

a



Circumference

b



Radius

c



Diameter

d



Circumference

e



Radius

f



Diameter

2 Measure the diameter, radius and circumference of each circle from a to f. (Hint: You can use a piece of string or thread to help you measure the circumference.)

a

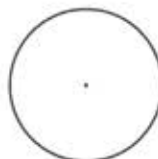


d = 1 cm

r = $\frac{1}{2}$ cm

c = 4 cm

b



d = 2 cm

r = 1 cm

c = 7 cm

c



d = $1\frac{1}{2}$ cm

r = 0.8 cm

c = 6 cm

d



d = 18 mm

r = 9 mm

c = 6 cm

e



d = 6 mm

r = 3 mm

c = 2 cm

f



d = 8 mm

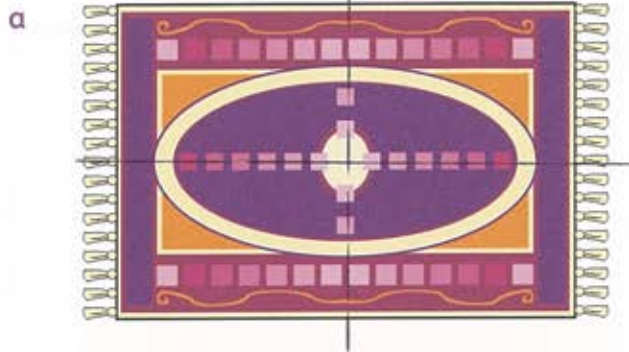
r = 4 mm

c = 3 cm

Congruent shapes

Describe the shapes and pattern of each carpet below.

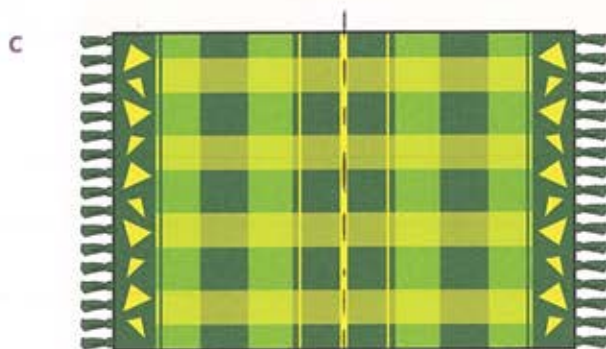
- 1 Include the shapes you can see in the design. Are they polygons or not? List them next to the carpets.
- 2 Include the shapes that are congruent. Mark them on the design.
- 3 Does the carpet have symmetry? If so, draw a line of symmetry.



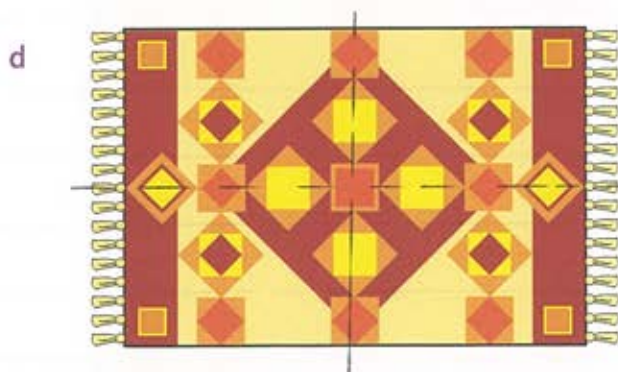
Squares, rectangles, ovals
Pink squares on edges are
congruent
Smaller pink squares in centre
are congruent.



Stars, squares, triangles
Congruent: Purple & yellow stars
Purple & yellow Δ in corners
Yellow & blue Δ in centre



Squares, triangles, rectangles
Congruent: larger yellow Δ on edge
Smaller yellow Δ
Squares on carpet



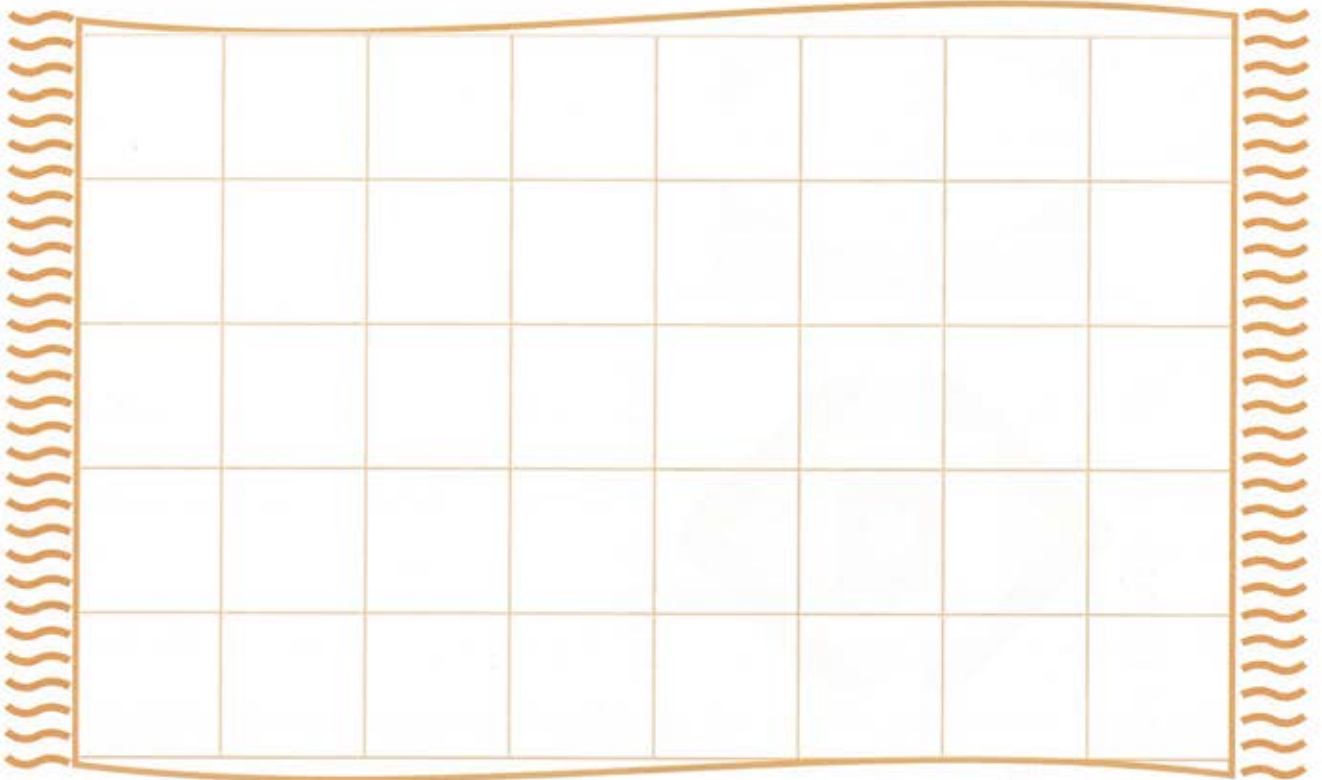
Squares, rectangles
Congruent: Squares on edge
Squares in centre

Draw your own design

Design a carpet of your own. Your design should use some or all of the geometry ideas you learnt about in this topic. It should also have some congruent shapes.

You can use the grid lines to help you draw your design, but they don't need to be part of the design.

Write notes below your completed carpet to explain how you used geometry in your design.



Topic 5

Number sense (2)

Factors and multiples

1 Write the correct mathematical term for each definition. Choose from the box.

Complete the table by giving examples using numbers.

product factor prime number composite number prime factor
highest common factor multiple lowest common multiple

Mathematical term	Definition	Numerical example
Lowest common multiple	Lowest number that is a multiple of two or more given numbers	$12 = \text{LCM of } 3 \text{ \& } 4$
Factor	A number into which the given number divides exactly	$6 = 1, 2, 3, 6$
Prime Number	A number with only two factors, itself and 1	$3 = 1, 3$
Product	The result of multiplying two numbers	$2 \times 6 = 12$
Highest common factor	The highest number that will divide exactly into a given set of numbers	$4 = \text{HCF of } 8 \text{ \& } 12$
Prime factor	A prime number that can be divided exactly into the given number	$6 = 2 \times 3$
Multiple	A number that divides exactly into another number	$4 = 4, 8, 12 \dots$
Composite Number	A number with more than two factors	$8 = 1, 2, 4, 8$

2 Tick the correct statements. Correct the false statements.

20 is a multiple of 10



25 is a multiple of 10



12 is a multiple of 1



6 is a factor of 38



25 is a

multiple of 5

6 is a

factor of 36

2 is a factor of every even number



All prime numbers are odd



1 is a multiple of every whole number



Beside 2, all other prime numbers are odd

1 is a factor of every whole number.

Factors

1 Write the factor pairs for each number.

a

10	
1	10
2	5

b

18	
1	18
2	9
3	6

c

24	
1	24
2	12
3	8
4	6

2 Check these lists of factors. Cross out any incorrect numbers. Write in any missing factors.

a

Factors of 40					
1	2	4	5	10	
	10	20	40	8	

b

Factors of 48				
1	2	4	6	
3	12	48	24	
16	8			

c

Factors of 64					
1	2	4	8	16	
32	4	64			

d

Factors of 72						
1	2	3	4	6	8	9
		12	36	72		
18	24					

e

Factors of 81				
1	3	9	80	
	27	81		

f

Factors of 96					
1	2	3	4	5	6
12	16	24	48	96	
	32				

Multiples

1 Write the missing multiples in each set.

a 4, 8, 12, 16, 20, 24, 28, 32, 36, 40

b 16, 20, 24, 28, 32, 36, 40, 44

c 9, 18, 27, 36, 45, 54, 63, 72

d 16, 24, 32, 40, 48, 56, 64, 72

2 Write the multiples.

a 5th multiple of 8: 40

b 6th multiple of 9: 54

c 12th multiple of 3: 36

d 100th multiple of 7: 700

3 Tick the columns that apply to each number.

	Multiple of 2	Multiple of 3	Multiple of 4	Multiple of 5	Multiple of 2 and 3	Multiple of 3 and 4	Multiple of 4 and 5
24	✓	✓	✓		✓	✓	
9		✓					
18	✓	✓			✓		
30	✓	✓		✓	✓		
36	✓	✓	✓		✓	✓	
50	✓			✓			
11							
48	✓	✓	✓		✓	✓	
16	✓		✓				
25				✓			
20	✓		✓	✓			✓
22	✓						
60	✓	✓	✓	✓	✓	✓	✓

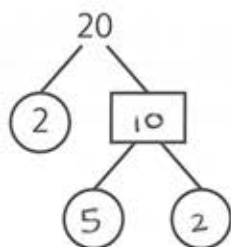
Prime factors

Complete the factor trees.

The circles may only contain prime factors.

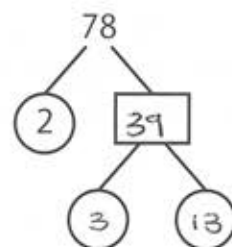
Write each number as a product of its prime factors.

1



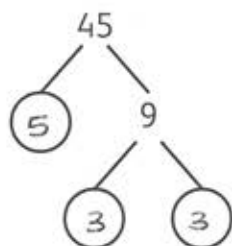
$$20 = 2 \times 2 \times 5$$

2



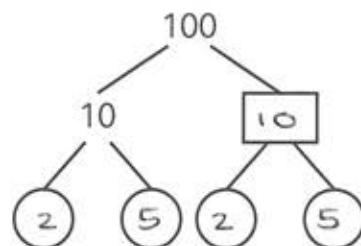
$$78 = 2 \times 3 \times 13$$

3



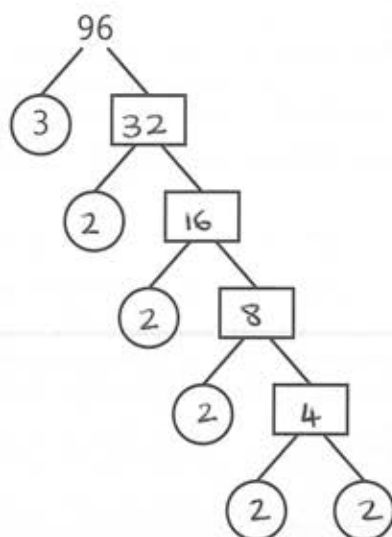
$$45 = 3 \times 3 \times 5$$

4



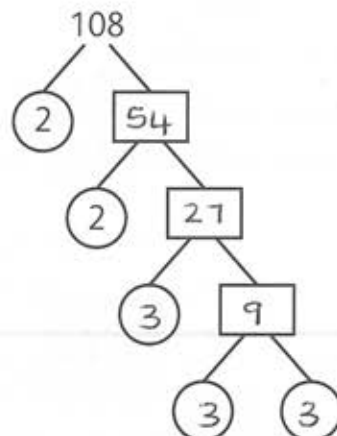
$$100 = 2 \times 2 \times 5 \times 5$$

5



$$96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$$

6



$$108 = 2 \times 2 \times 3 \times 3 \times 3$$

Classifying numbers

- 1 Write the numbers from the box in the correct place in the table. A number may fit into more than one category.

1	2	10	11	17	5	19	21	27
7	3	8	33	10	15	23	31	35
37	39	40	41	43	45	48	50	55

Category	Numbers
Prime and even	2
Prime and odd	3, 5, 7, 11, 17, 19, 23, 31, 37, 41, 43
Composite and even	10, 8, 40, 48, 50
Composite and odd	1, 21, 27, 33, 15, 39, 35, 45, 55

- 2
- Colour all the odd numbers that are also prime red.
 - Colour all the odd numbers that are composite green.
 - What does the pattern look like? *Star*

3	2	4	9	8	10	5
12	23	14	15	18	17	20
22	24	29	21	41	28	30
39	49	63	0	65	51	75
46	48	67	27	17	52	54
56	37	58	33	62	31	62
7	64	66	35	70	72	47

6

Multiplication and division facts

1



More multiplication

1 Fill in $<$, $>$ or $=$ to make each set of facts true.

a 7×8 $<$ 9×6

b 6×4 $<$ 5×5

c 3×8 $=$ 2×12

d 6×6 $>$ 5×7

e 5×4 $<$ 8×3

f 9×5 $<$ 8×8

2 Calculate mentally. Write the answers only.

a $2 \times 10 =$ 20

b $20 \times 10 =$ 200

c $200 \times 10 =$ 2000

d $2\,000 \times 10 =$ 20000

e $20 \times 10 =$ 200

f $20 \times 200 =$ 4000

3 Write each multiplication problem in columns. Then solve the problems.

a 320×2

$$\begin{array}{r} 320 \\ \times 2 \\ \hline 640 \\ \hline \\ \hline \end{array}$$

b 140×2

$$\begin{array}{r} 140 \\ \times 2 \\ \hline 280 \\ \hline \\ \hline \end{array}$$

c 112×3

$$\begin{array}{r} 112 \\ \times 3 \\ \hline 336 \\ \hline \\ \hline \end{array}$$

d 111×5

$$\begin{array}{r} 111 \\ \times 5 \\ \hline 555 \\ \hline \\ \hline \end{array}$$

e 27×12

$$\begin{array}{r} 27 \\ \times 12 \\ \hline 54 \\ + 270 \\ \hline 324 \\ \hline \end{array}$$

f 13×13

$$\begin{array}{r} 13 \\ \times 13 \\ \hline 39 \\ + 130 \\ \hline 169 \\ \hline \end{array}$$

g 16×18

$$\begin{array}{r} 16 \\ \times 18 \\ \hline 128 \\ + 160 \\ \hline 288 \\ \hline \end{array}$$

h 102×23

$$\begin{array}{r} 102 \\ \times 23 \\ \hline 306 \\ + 2040 \\ \hline 2346 \\ \hline \end{array}$$

Division

1 Divide. Show your working.

a
$$\begin{array}{r} 19 \\ 5 \overline{)95} \\ \underline{-5} \\ 45 \\ \underline{-45} \\ 0 \end{array}$$

b
$$\begin{array}{r} 23 \\ 3 \overline{)81} \\ \underline{-6} \\ 21 \\ \underline{-21} \\ 0 \end{array}$$

c
$$\begin{array}{r} 12 \\ 7 \overline{)84} \\ \underline{-7} \\ 14 \\ \underline{-14} \\ 0 \end{array}$$

d
$$\begin{array}{r} 40 \\ 2 \overline{)80} \end{array}$$

e
$$\begin{array}{r} 67 \text{ r } 1 \\ 5 \overline{)336} \\ \underline{-30} \\ 36 \\ \underline{-35} \\ 1 \end{array}$$

f
$$\begin{array}{r} 215 \\ 4 \overline{)860} \\ \underline{-4} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

g
$$\begin{array}{r} 103 \\ 6 \overline{)618} \end{array}$$

h
$$\begin{array}{r} 104 \\ 8 \overline{)832} \end{array}$$

2 Solve each division problem. Show your working.

- a A carton contains 858 handkerchiefs. If a magician gives 3 handkerchiefs to each audience member, how many audience members can he supply using a single carton?

$$\begin{array}{r} 286 \\ 3 \overline{)858} \\ \underline{-6} \\ 25 \\ \underline{-24} \\ 18 \end{array}$$

He can supply 286 audience members with handkerchiefs.

- b A box contains 810 bingo boards. Each player receives 5 boards. How many players can one box supply?

$$\begin{array}{r} 162 \\ 5 \overline{)810} \\ \underline{-5} \\ 31 \\ \underline{-30} \\ 10 \end{array}$$

One box can supply 162 players

- c A wheel of cheese has a mass of 35 kg. The chef cuts 7 kg of cheese each night for the cheese board. How many nights does a wheel of cheese last?

$$\begin{array}{r} 5 \\ 7 \overline{)35} \end{array}$$

A wheel of cheese will last 5 nights.

Practice long division

1 Find the missing numbers to complete these long divisions.

a

				↓		↓
			2	0	r	7
2	3	4	6	7		
		4	6	↓		
			0	7		

b

			↓			↓
			3	1	r	2
2	7	8	3	9		
		8	1	↓		
			2	9		
		-	2	7		
				2		

c

			↓		↓
			1	3	1
1	9	2	4	8	9
	-	1	9	↓	↓
			5	8	↓
	-		5	7	↓
				1	9
				1	9
					0

d

			↓		↓
			1	3	5
2	7	3	6	4	5
	-	2	7	↓	↓
			9	4	↓
	-		8	1	↓
			1	3	5
	-		1	3	5
					0

2 Divide. Show your working in the space provided.

			1	9	5	1	r	3
1	2	2	3	4	1	5		
	-	1	2					
		1	10	4				
	-	1	0	8				
				6	1			
			-	6	0			
					1	5		

$$\begin{array}{r} -12 \\ \hline 3 \end{array}$$

Topic 7

Measurement (1)

Estimate and measure mass

- 1 Estimate the mass of each item in the table. Then use a scale to check your measurement. How close was your estimate to the actual mass? Write down the difference between your estimate and the actual mass.

Item	Estimate	Actual mass	Difference
Homework diary			
Ruler			
Stapler			
Glue stick			
Pen			
Scissors			
Eraser			

- 2 Choose the most suitable mass for each item. Write it under the picture.

137 g

58 g

2.5 kg

12 g

500 g

1 t

a bag of flour



2.5 kg

b loaf of bread



500 g

c pile of bricks



1 t

d tennis ball



58 g

e key



12 g

f smartphone



137 g

How many make up a kilogram?

Choose eight different fruits or vegetables. Draw and label each item in the first column. For each item, estimate what you think its mass is. Then measure its mass on a kitchen scale. Use your measurement to work out approximately how many of each item make up 1 kilogram.

	Name and picture of fruit or vegetable	My estimate of its mass in grams	My measurement of its mass in grams	How many would make up 1 kg?
1				
2				
3				
4				
5				
6				
7				
8				

Working with units of mass

1 Convert from kg to g.

a $3 \text{ kg} = \underline{3000} \text{ g}$

b $1\frac{3}{5} \text{ kg} = \underline{1600} \text{ g}$

c $21 \text{ kg } 45 \text{ g} = \underline{21045} \text{ g}$

d $\frac{6}{8} \text{ kg} = \underline{750} \text{ g}$

e $9\frac{3}{4} \text{ kg} = \underline{9075} \text{ g}$

f $10\frac{1}{4} \text{ kg} = \underline{10025} \text{ g}$

2 Convert from g to kg.

a $1500 \text{ g} = \underline{1\frac{1}{2}} \text{ kg}$

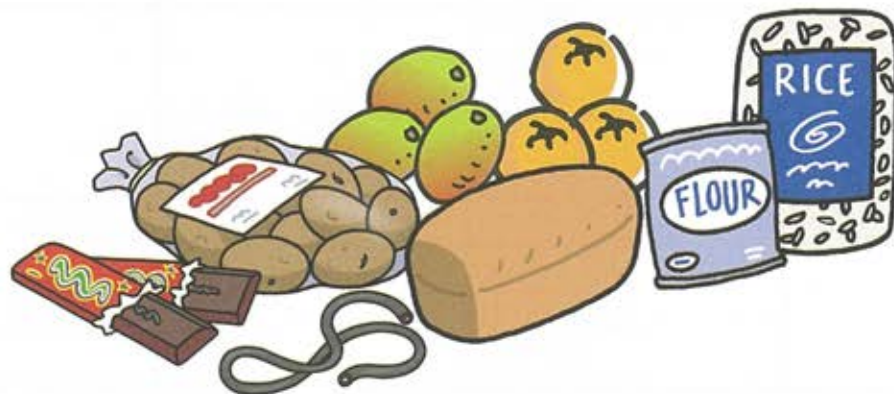
b $3800 \text{ g} = \underline{38} \text{ kg}$

c $12000 \text{ g} = \underline{12} \text{ kg}$

d $450 \text{ g} = \underline{0.45} \text{ kg}$

e $1200 \text{ g} = \underline{1.2} \text{ kg}$

f $1090 \text{ g} = \underline{1.09} \text{ kg}$



3 Work out the total mass of each set of items.

a 750 g lemons, 1.2 kg oranges and 4 kg mangoes

$0.750 + 1.2 + 4 = 5.950 \text{ kg}$

b $2\frac{1}{2} \text{ kg}$ beans, 1 kg dried peas and 800 g onions

$2500 + 1000 + 800 = 4300 \text{ g} / 4.3 \text{ kg}$

c 1 kg oats, 750 g chocolate cereal and 1 kg 250 g breakfast muesli

$1000 + 750 + 1250 = 3000 \text{ g} / 3 \text{ kg}$

Problem-solving

4 Solve these word problems. Show all your workings.

a A builder's pickup truck can carry a load of up to 500 kg at a time.

The builder needs to transport 2600 tons of bricks to a site. $2600 \times 2 = 5200$ trips
How many trips must she make?

b A tube of ointment has a mass of 20 g.

The pharmacy receives a delivery of tubes. The total mass of the parcel is 705 g.

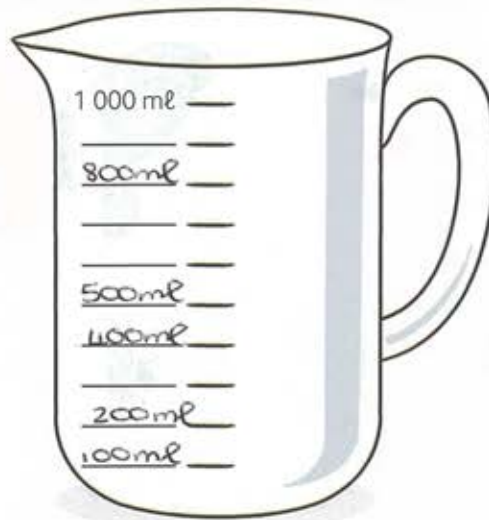
The packaging materials have a mass of 225 g.

How many tubes are in the parcel? $(705 - 225) \div 20 = 480 \div 20 = 24$
24 tubes in the parcel

Capacity

- 1 This measuring jug has a capacity of 1 litre. The line at the top of the jug shows the 1 litre mark. Write these measurements in the correct places on the scale.

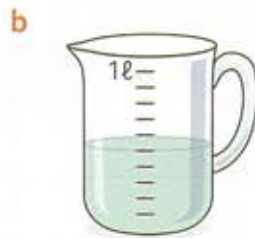
a 100 ml b 200 ml c 800 ml d 500 ml e 400 ml



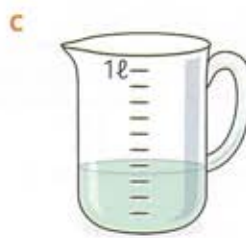
- 2 Write the approximate amount of water shown in each jug in millilitres.



800 ml



500 ml

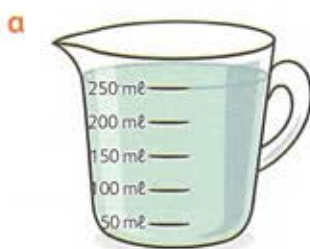


350 ml



200 ml

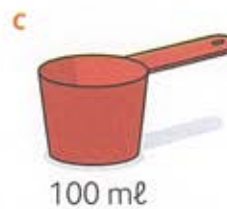
- 3 For each container, write how many times you would need to fill it and pour it into the jug in Question 1 to make 1 litre?



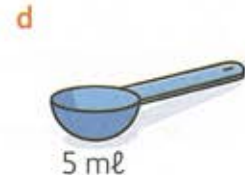
4 times



2 times



10 times



200 times

Estimate and measure length

- 1 For each animal below:
- estimate the length of its body in mm and write it in the table
 - measure the length in mm and write it in the table
 - calculate the difference between your estimate and the measured length.



	My estimate	Actual measurement	Difference
a	10 mm	12 mm	2 mm
b	5 mm	5 mm	0 mm
c	10 mm	10 mm	0 mm
d	10 mm	7 mm	3 mm
e	7 mm	9 mm	2 mm
f	90 mm	55 mm	35 mm

- 2 Measure the line segments. Write the lengths in cm, mm or a combination of both units.

a A B

6 cm / 60 mm

b C D

65 mm / 60 mm 5 mm

c E F

4 cm / 40 mm

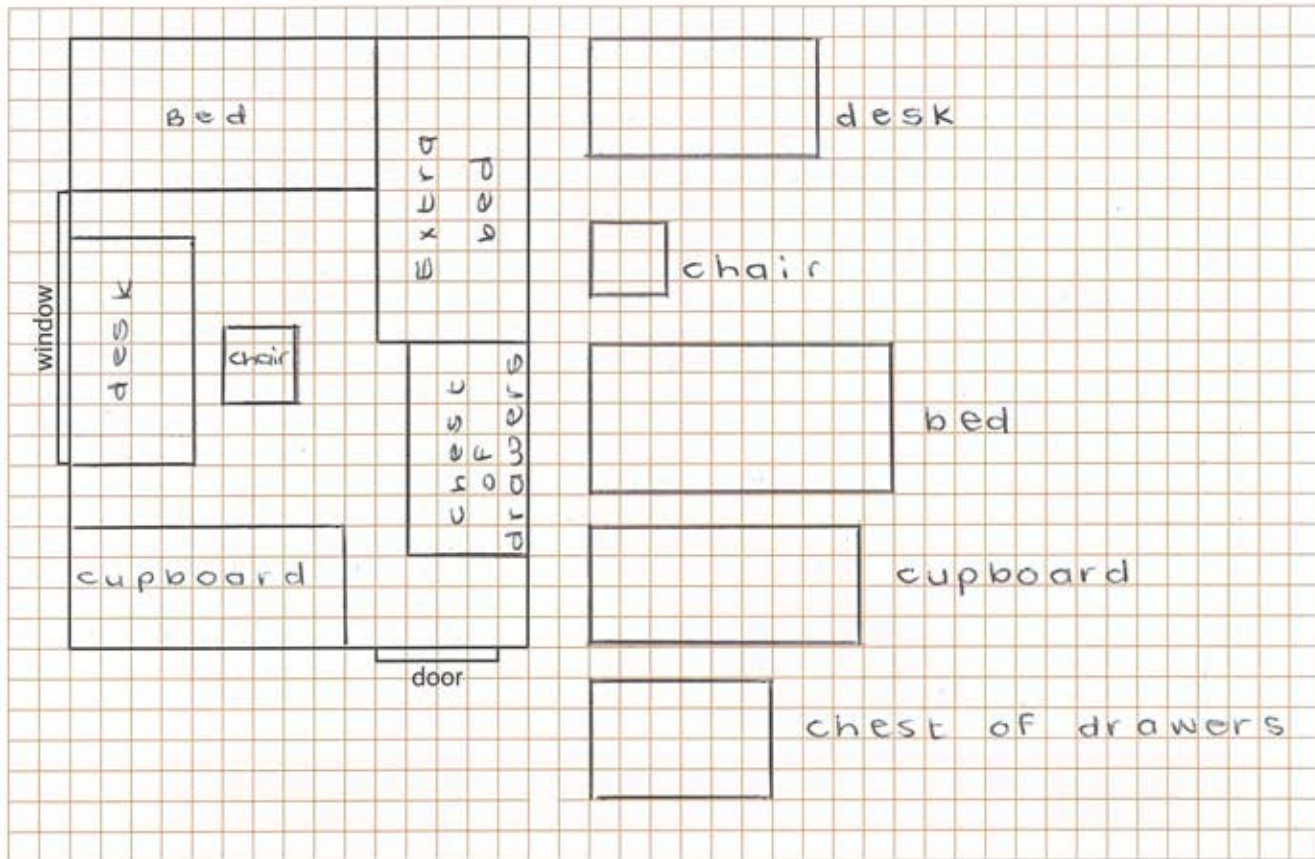
d G H

85 mm / 80 mm 5 mm

Scale drawing

This is a plan of Maria's room.

Each block on the plan represents 20 cm in reality.

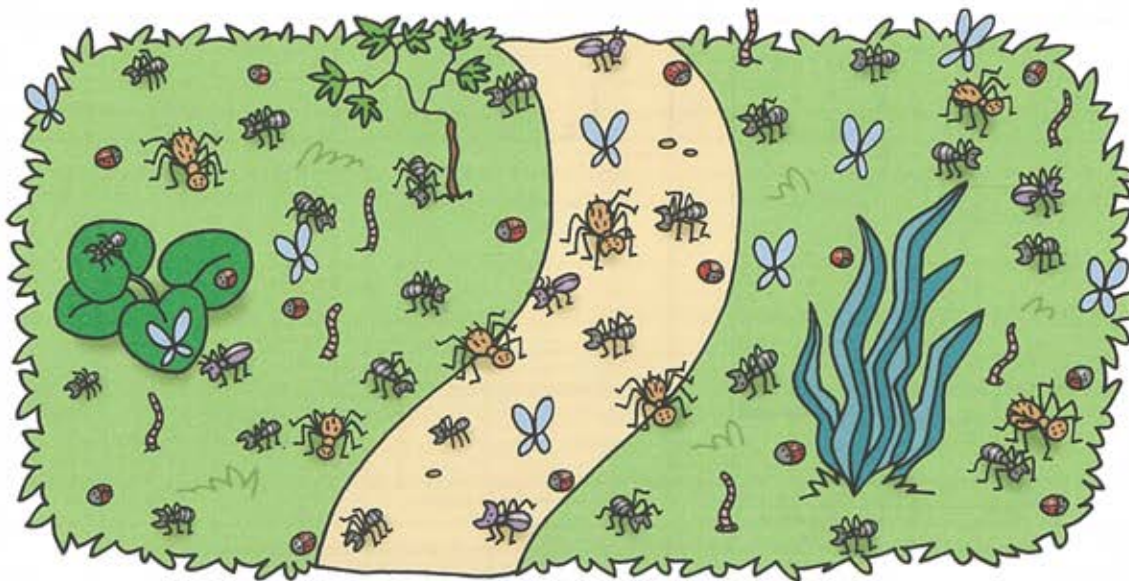


- 1
 - a How long is the room? 400cm
 - b How wide is the room? 300cm
 - c How wide is the door? 80cm
- 2 Maria wants to arrange the furniture in her room. She worked out how much space each item would take up:
 - * desk $1\frac{1}{2}$ m long by 80 cm wide
 - * chair $\frac{1}{2}$ m by $\frac{1}{2}$ m
 - * bed 2 m long by 1 m wide
 - * cupboard 180 cm long by 80 cm wide
 - * chest of drawers 1 m 20 cm long by 80 cm wide.
 - a Draw a scaled outline of each piece of furniture next to the plan.
 - b Work in pencil and show how you would arrange the furniture in the room.
 - c Maria's cousin is coming to stay. She wants to fit another bed the same size as hers in the room. Show how she could do this.

Observe and record

Joshua went on an observation walk in his garden. He counted the number of different insects and small animals that he found.

- 1 Use the data in the picture. Complete the frequency table.



Type of animal	Tally	Frequency
Spiders		7
Ants		23
Worms		7
Butterflies		9
Ladybird beetles		15
Other beetles		5

- 2 What problems might you encounter trying to count insects in a garden?

The move around a lot so you could lose count

- 3 How could you overcome these problems?

Collect them in a jar and release them once you have counted them.

Questionnaires

Some students made up these questions to collect data.

- 1 Read each question and answer it as best you can.
- 2 Below each one, describe what is wrong with it or what makes it unclear or difficult to answer.
- 3 Rewrite either the question or the answer blocks to improve each one.

How many times a day do you check your phone messages?

1–2 times ☐ 2–5 times ☐ 5–10 times ☐ 10–20 times ☐ 20 or more ☐

How much time does it take you to do your homework?

Not very long ☐ More than an hour ☐ A really long time ☐

New technology makes our lives easier, doesn't it?

Yes ☐ No ☐

How much money do you spend on clothes?

Not a lot ☐ A lot ☐ Too much ☐

How many glasses of water do you drink a day?

2 glasses ☐ 4 glasses ☐ 6 glasses ☐ 8 glasses ☐

Fruit juice survey

Read the questionnaire and complete it as best you can.

Questionnaire

Age: years

Gender: Male ☐ Female ☐

What is your favourite fruit juice flavour? Tick one.

Orange ☐ Mango ☐ Pineapple ☐ Fruit punch ☐ Other ☐

If you ticked Other, please specify which flavour you like: _____

What is your second favourite flavour? Tick one.

Orange ☐ Mango ☐ Pineapple ☐ Fruit punch ☐ Other ☐

If you ticked Other, please specify which flavour you like second best: _____

How many fruit juices do you drink each day? (1 juice = 250 ml)

0-2 ☐ 3-5 ☐ 6-8 ☐ More than 8 ☐

Do you think fruit juice is healthier than soda?

Yes ☐ No ☐

Give a reason for your answer.

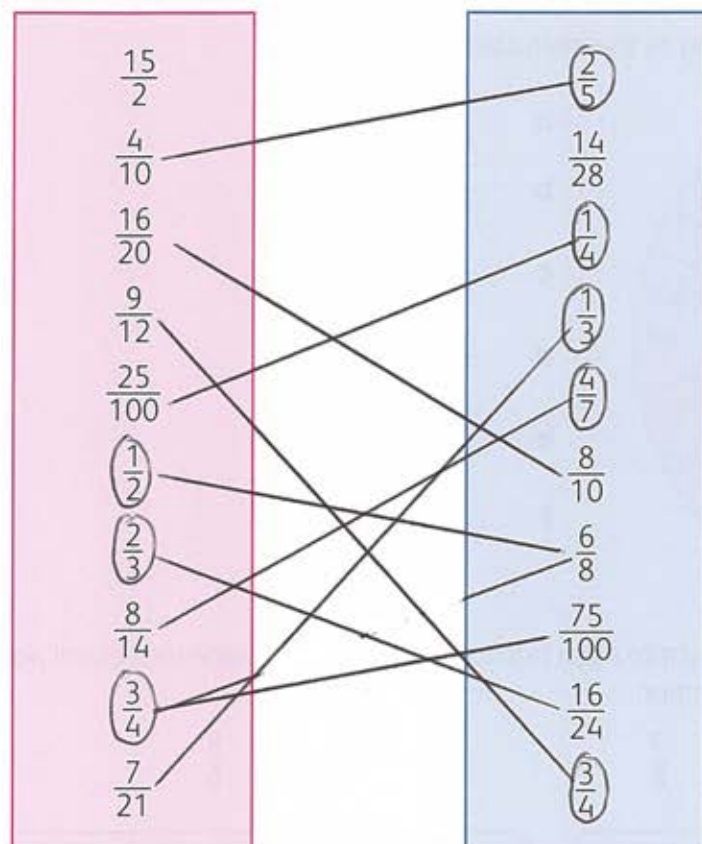
1 What data does this questionnaire provide?

2 Are the questions clear and simple? Explain.

3 How would you change or improve this questionnaire to collect similar data?

Revisiting fractions

- 1 Draw lines to make pairs of equivalent fractions.
- 2 Circle all the fractions that are in their simplest form.



- 3 Write each of these fractions in the correct place in the table.

$\frac{2}{3}$ $3\frac{1}{5}$ $\frac{4}{3}$ $\frac{6}{2}$ $5\frac{1}{2}$ $\frac{1}{6}$ $5\frac{2}{3}$ $\frac{3}{8}$

Proper fractions	$\frac{2}{3}$	$\frac{1}{6}$	$\frac{3}{8}$
Improper fractions	$\frac{4}{3}$	$\frac{6}{2}$	
Mixed numbers	$3\frac{1}{5}$	$5\frac{1}{2}$	$5\frac{2}{3}$

4 Complete the statements to make them true.

a $\frac{1}{2} = \frac{\boxed{3}}{\boxed{6}}$

b $\frac{3}{4} = \frac{\boxed{9}}{\boxed{12}}$

c $\frac{3}{5} = \frac{\boxed{6}}{\boxed{10}}$

d $\frac{7}{8} = \frac{\boxed{14}}{\boxed{16}}$

e $\frac{7}{12} = \frac{\boxed{28}}{\boxed{48}}$

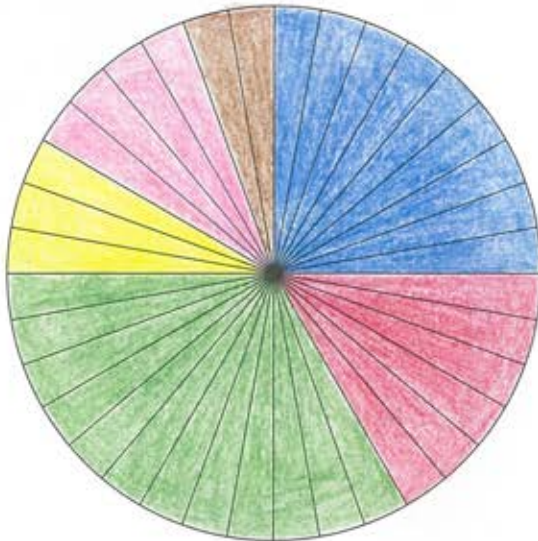
f $\frac{\boxed{60}}{\boxed{100}} = \frac{3}{5}$

g $\frac{5}{8} = \frac{15}{\boxed{24}}$

h $\frac{4}{\boxed{6}} = \frac{2}{3}$

i $\frac{20}{\boxed{48}} = \frac{5}{12}$

5 Colour fractions of the circle according to the instructions.



a $\frac{1}{4}$ blue

b $\frac{1}{6}$ red

c $\frac{1}{3}$ green

d $\frac{1}{12}$ yellow

e $\frac{1}{9}$ pink

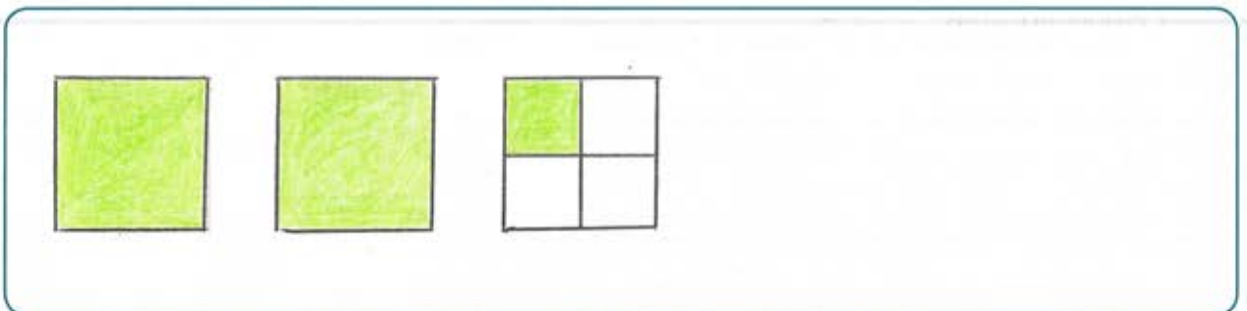
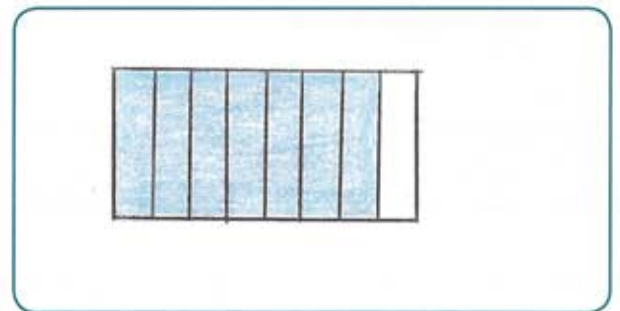
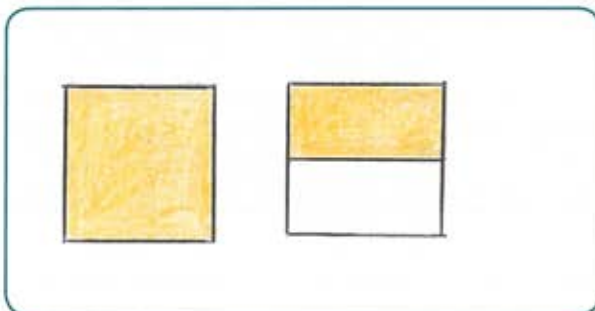
f $\frac{1}{18}$ brown

6 Draw your own shaded shapes to illustrate each fraction. First divide a shape into equal parts. Then shade it to show the correct fraction.

a $1\frac{1}{2}$

b $\frac{7}{8}$

c $\frac{9}{4}$



Compare and order fractions

1 Fill in $<$, $>$ or $=$ to make each statement true.

a $\frac{1}{5} \boxed{<} \frac{1}{2}$

b $\frac{1}{3} \boxed{>} \frac{1}{6}$

c $\frac{1}{2} \boxed{=} \frac{2}{4}$

d $\frac{2}{3} \boxed{>} \frac{2}{5}$

e $\frac{4}{7} \boxed{>} \frac{4}{8}$

f $\frac{2}{4} \boxed{=} \frac{6}{12}$

g $\frac{4}{7} \boxed{>} \frac{5}{9}$

h $\frac{14}{15} \boxed{>} \frac{9}{10}$

i $\frac{7}{8} \boxed{>} \frac{9}{27}$

j $\frac{3}{14} \boxed{<} \frac{6}{21}$

k $\frac{8}{9} \boxed{<} \frac{11}{12}$

l $\frac{5}{7} \boxed{<} \frac{3}{5}$

2 Write the fractions and mixed numbers in the correct positions on the number line.

$\frac{1}{2}$

$1\frac{7}{8}$

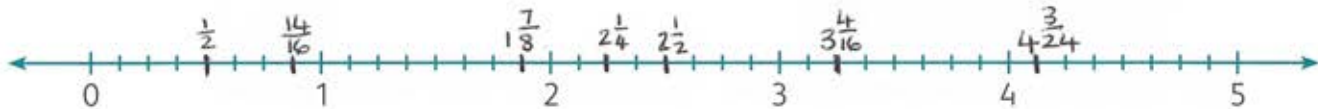
$2\frac{1}{4}$

$3\frac{4}{16}$

$4\frac{3}{24}$

$2\frac{1}{2}$

$\frac{14}{16}$



3 Write each fraction in the correct position on the number line.

$\frac{3}{9}$

$\frac{1}{4}$

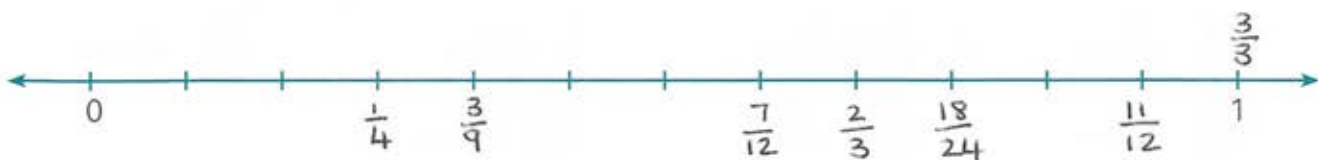
$\frac{2}{3}$

$\frac{7}{12}$

$\frac{18}{24}$

$\frac{11}{12}$

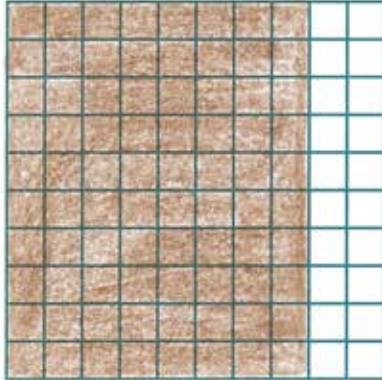
$\frac{3}{3}$



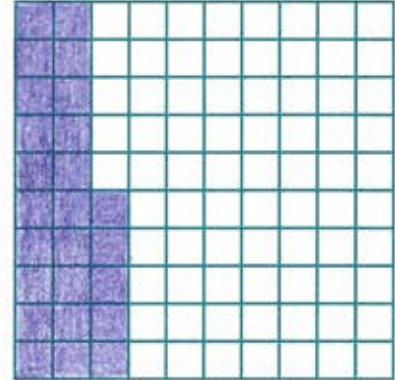
Decimals

1 Shade part of each whole square to match the decimal fraction.

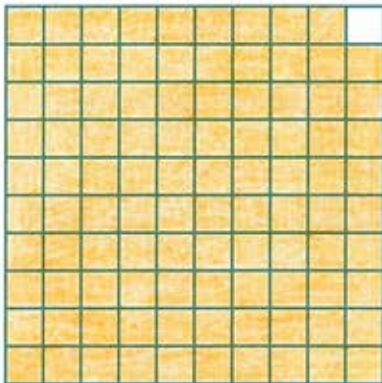
a 0.8



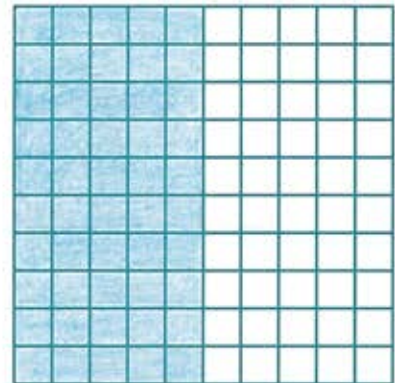
b 0.25



c 0.99



d 0.5



2 What fraction of each square in Question 1 is not shaded? Write your answers as decimal fractions.

a 0.2 unshaded

b 0.75 unshaded

c 0.01 unshaded

d 0.5 unshaded

3 Write the letter to match each decimal to the equivalent fraction.

a 0.73

b 0.8

c 0.35

d 0.5

e 0.99

f 0.28

g 0.2

$\frac{35}{100}$ c

$\frac{8}{10}$ b

$\frac{1}{2}$ d

$\frac{73}{100}$ a

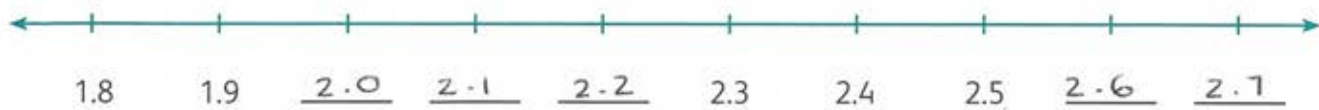
$\frac{20}{100}$ g

$\frac{28}{100}$ f

$\frac{99}{100}$ e

4 Complete the missing numbers on each number line.

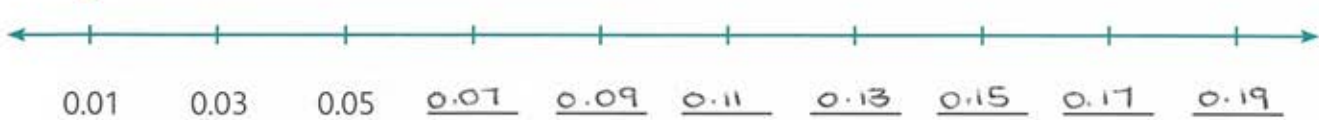
a



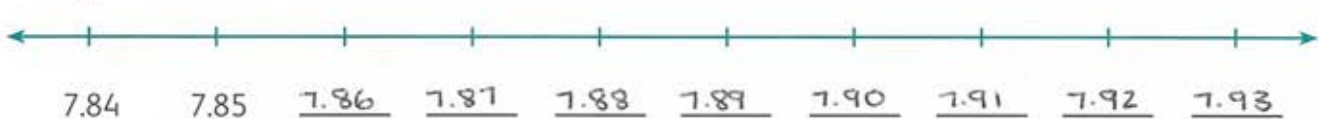
b



c



d



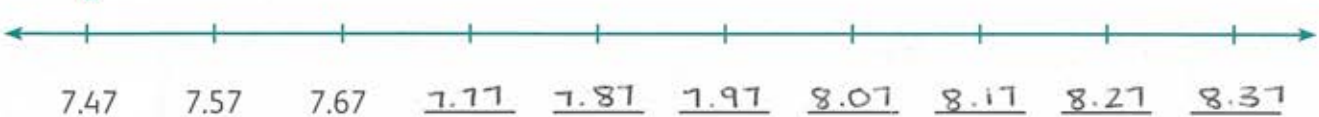
e



f



g



h



5 Fill in $<$, $=$ or $>$ between each pair of decimals.

a $1.2 \boxed{>} 1.02$

b $4.33 \boxed{>} 4.3$

c $0.3 \boxed{<} 3.1$

d $0.5 \boxed{>} 0.05$

e $0.05 \boxed{>} 0.01$

f $70.7 \boxed{<} 75.01$

g $2.28 \boxed{>} 0.5$

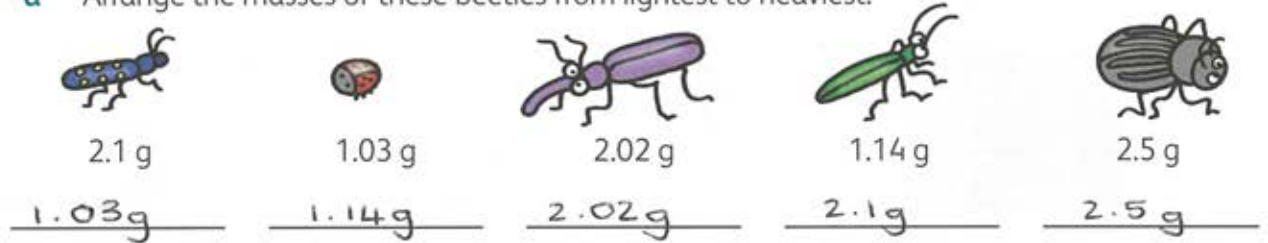
h $3.09 \boxed{<} 9.03$

i $1.11 \boxed{>} 0.99$

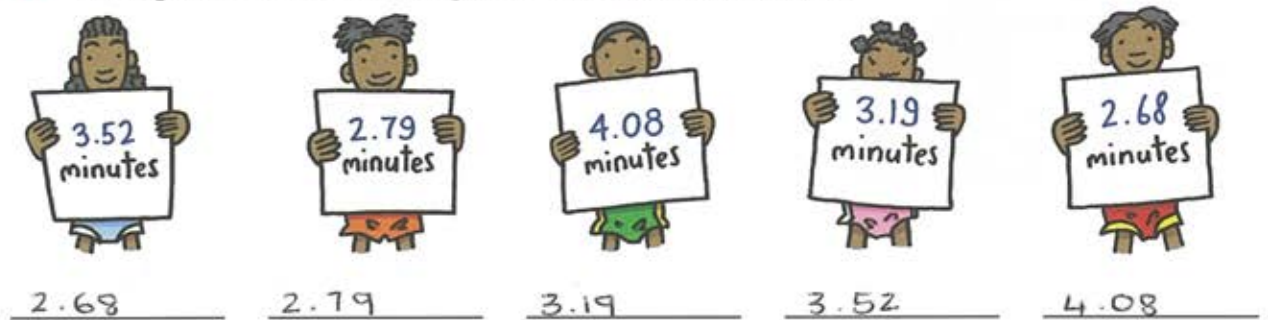
Compare and order decimals

1 Arrange each set of decimals in order.

a Arrange the masses of these beetles from lightest to heaviest.



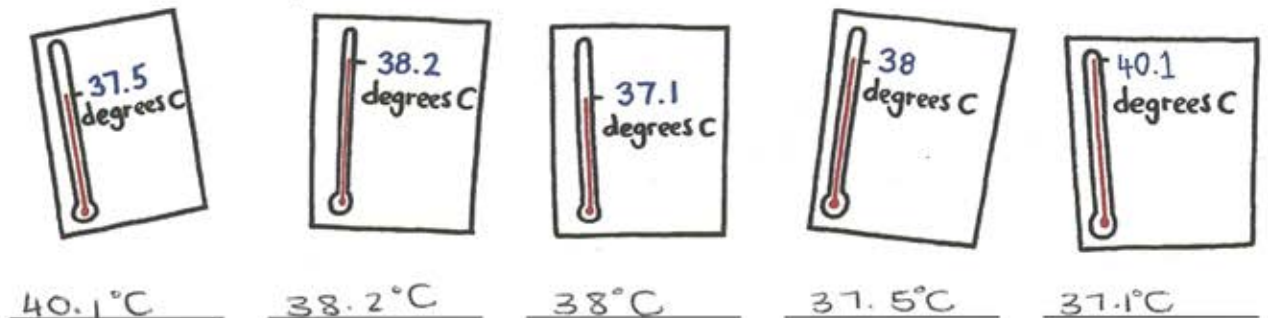
b Arrange the runners' finishing times from fastest to slowest.



c Arrange the prices from cheapest to most expensive.



d Arrange the temperatures from hottest to coldest.



2 I would like the bigger portion. Which one should I choose? Circle the correct answer.



Half an apple or
0.45 of an apple?



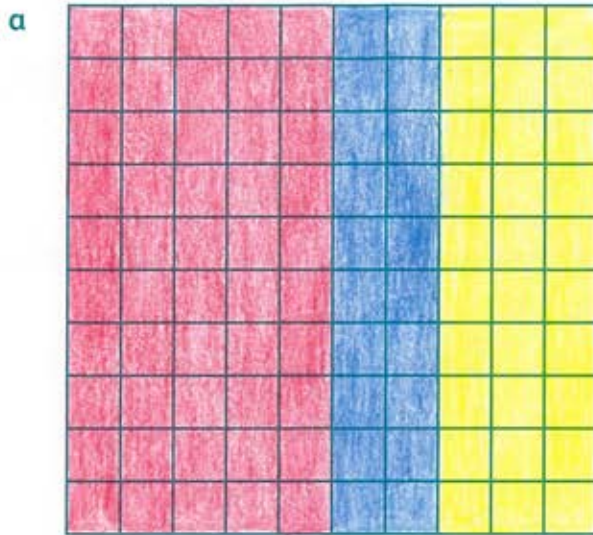
0.3 of a banana or
 $\frac{1}{3}$ of a banana?



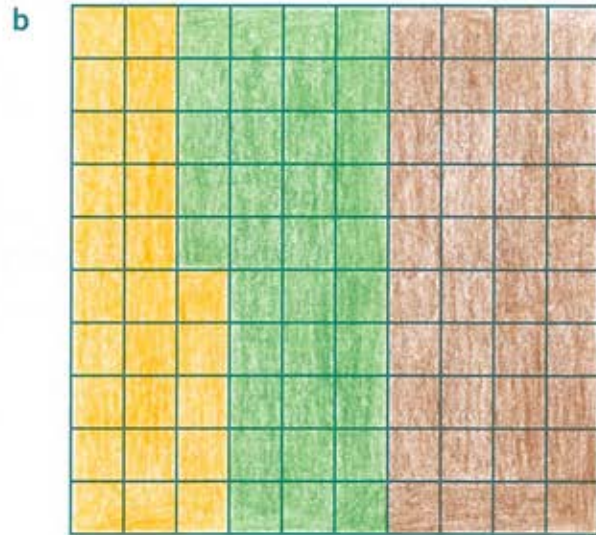
6.82 cm of licorice
or $6\frac{7}{8}$ cm?

Percentages

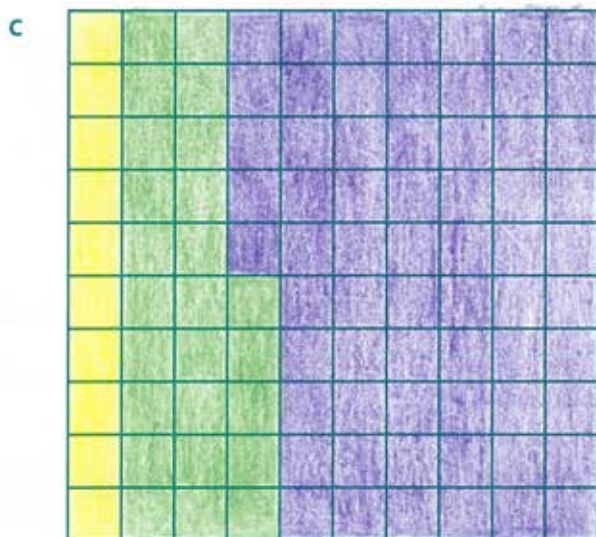
1 For each diagram, follow the instructions to shade the percentage given.



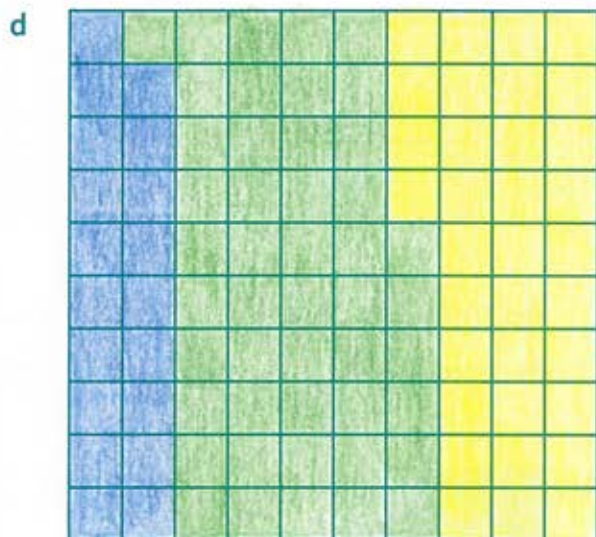
Shade 50% red. Shade 20% blue.
Shade the rest yellow. 30 % is yellow.



Shade 25% orange. Shade 35% green.
Shade the rest brown. 40 % is brown.



Shade 10% yellow. Shade 25% green.
Shade the rest purple. 65 % is purple.



Shade 19% blue. Shade 47% green.
Shade the rest yellow. 34 % is yellow.

2 These fractions have denominators of 100. Express them as percentages.

- | | |
|--|--|
| a $\frac{1}{100} = \underline{1} \%$ | b $\frac{5}{100} = \underline{5} \%$ |
| c $\frac{23}{100} = \underline{23} \%$ | d $\frac{97}{100} = \underline{97} \%$ |
| e $\frac{19}{100} = \underline{19} \%$ | f $\frac{35}{100} = \underline{35} \%$ |
| g $\frac{47}{100} = \underline{47} \%$ | h $\frac{81}{100} = \underline{81} \%$ |

Fractions, decimals and percentages

- 1 These fractions have denominators that are multiples of 10. Convert them to fractions out of 100. Then express them as percentages.

a $\frac{4}{10} = \frac{40}{100} = 40\%$

b $\frac{4}{10} = \frac{40}{100} = 40\%$

c $\frac{12}{10} = \frac{120}{100} = 120\%$

d $\frac{13}{20} = \frac{65}{100} = 65\%$

e $\frac{23}{50} = \frac{46}{100} = 46\%$

f $\frac{16}{1000} = \frac{1.6}{100} = 1.6\%$

- 2 These fractions have different denominators. Convert them to fractions out of 100. Then express them as percentages.

a $\frac{1}{4} = \frac{25}{100} = 25\%$

b $1\frac{3}{4} = \frac{103}{100} = 103\%$

c $\frac{4}{5} = \frac{80}{100} = 80\%$

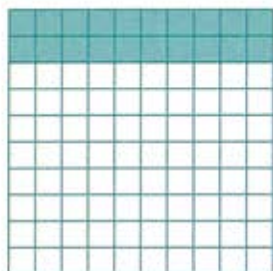
d $\frac{4}{25} = \frac{16}{100} = 16\%$

e $\frac{1}{2} = \frac{50}{100} = 50\%$

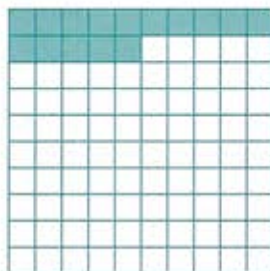
f $5\frac{1}{2} = \frac{550}{100} = 550\%$

- 3 For each diagram below, express the fraction first as a decimal and then as a percentage.

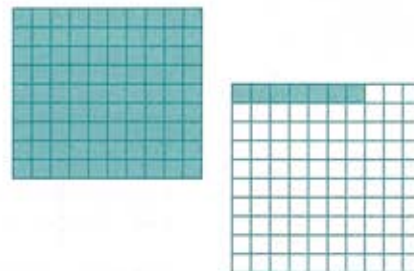
a



b



c



Decimal: $\frac{20}{100}$ (0.2)

Decimal: $\frac{15}{100}$ (0.15)

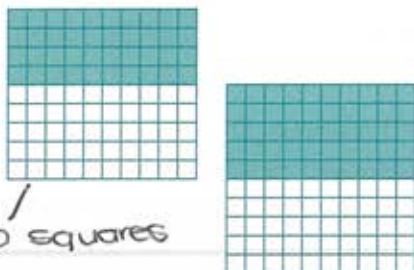
Decimal: $\frac{100}{100}$ (1.0)

Percentage: 20%

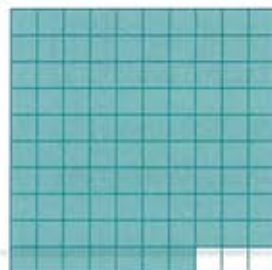
Percentage: 15%

Percentage: 100%

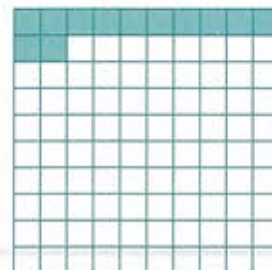
d



e



f



Decimal: 0.44 0.5

Decimal: $\frac{97}{100}$ (0.97)

Decimal: $\frac{12}{100}$ (0.12)

Percentage: 44.4% 50%

Percentage: 97%

Percentage: 12%

Fractions and percentages

1 Rewrite each sentence by writing the percentages as fractions in their simplest form.

a The team won 75% of their games this season.

The team won $\frac{3}{4}$ of their games this season.

b 25% of the schoolchildren came down with flu this season.

$\frac{1}{4}$ of the schoolchildren came down with flu this season.

c 90% of the beans grew into healthy plants.

$\frac{9}{10}$ of the beans grew into healthy plants.

d 50% of the babies born were boys.

$\frac{1}{2}$ of the babies born were boys.

e In a box of apples, 85% were red and 15% were green.

In a box of apples, $\frac{17}{20}$ were red and $\frac{3}{20}$ were green.

f 70% of the teachers were women and the rest were men.

$\frac{7}{10}$ of the teachers were women and the rest were men.

2 Write each child's test score as a percentage.

a

Name: Laura
Score: $\frac{15}{20}$

75%

b

Name: Conor
Score: $\frac{20}{25}$

80%

c

Name: Jess
Score: $\frac{47}{50}$

94%

d

Name: Sanja
Score: $\frac{7}{10}$

70%

e

Name: Michael
Score: $\frac{19}{20}$

95%

f

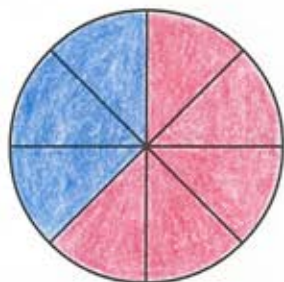
Name: Abi
Score: $\frac{40}{50}$

80%

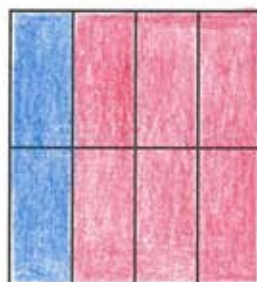
Ratio

1 Colour in the diagrams using the given ratios of blue to red sections.

a 3:5



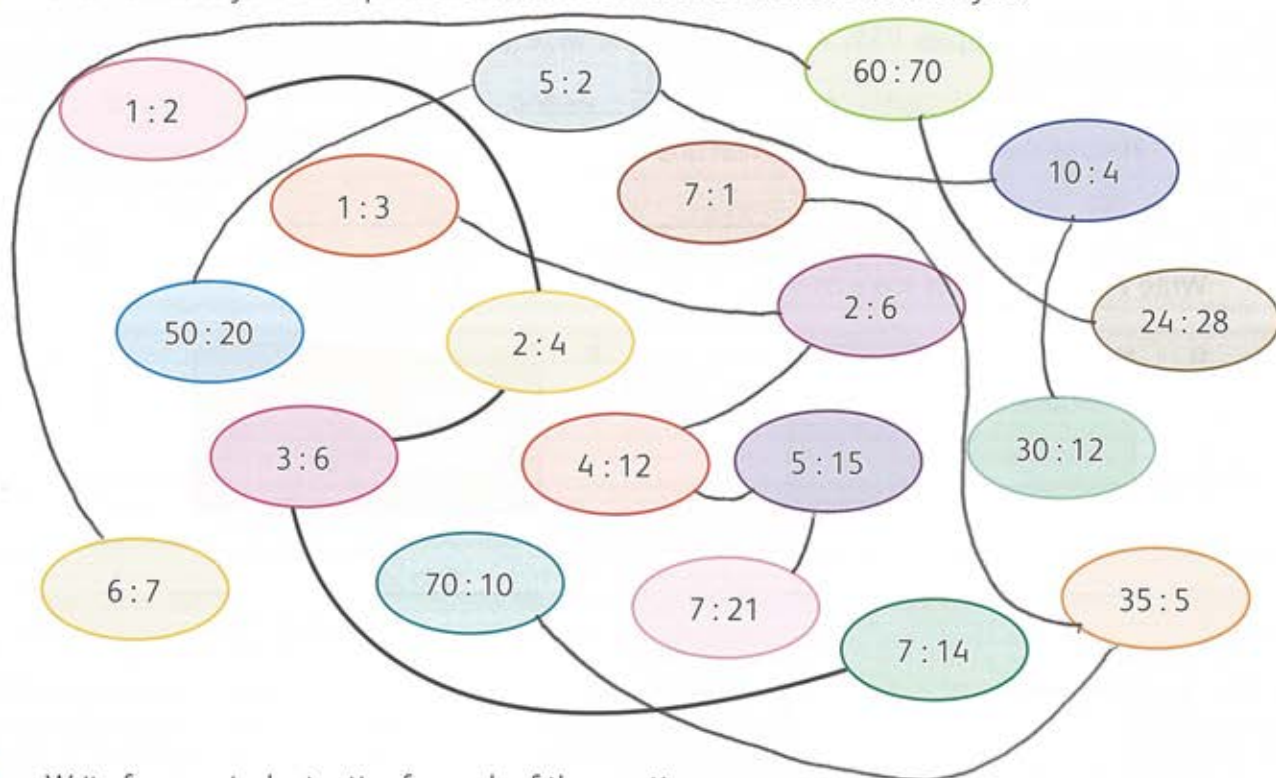
b 2:6



c 1:4



2 Draw a line to join the equivalent ratios. The first one has been done for you.



3 Write four equivalent ratios for each of these ratios.

a 1:2:1 2:4:2 3:6:3 4:8:4 5:10:5

b 3:4 6:8 9:12 30:40 300:400

c 1:3:5 2:6:10 10:30:50 3:9:15 4:12:20

4 Simplify these ratios.

a 24:3 8:1

b 18:20 9:10

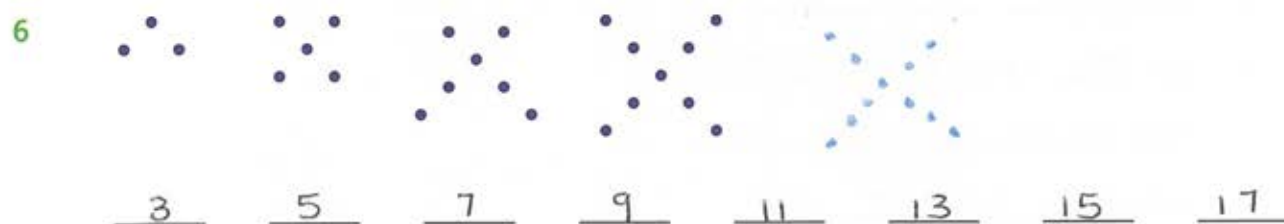
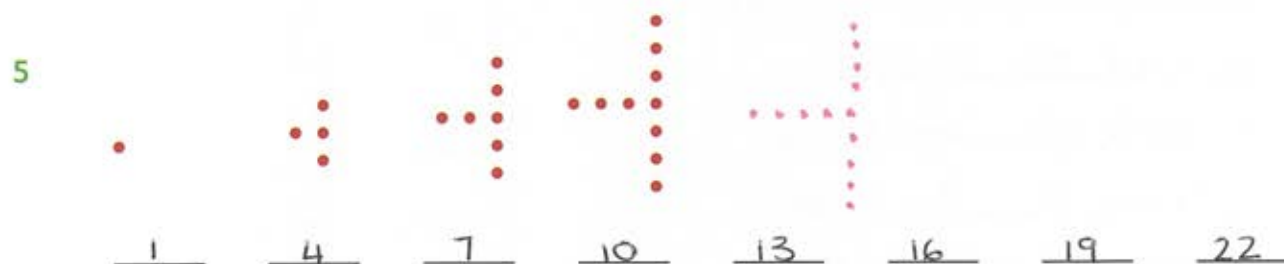
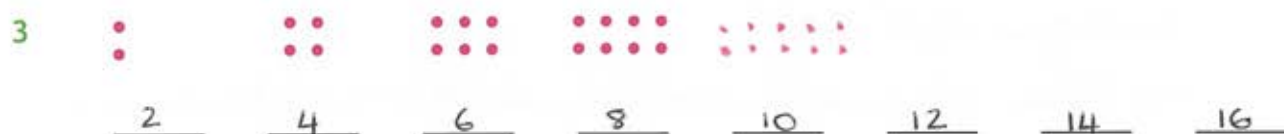
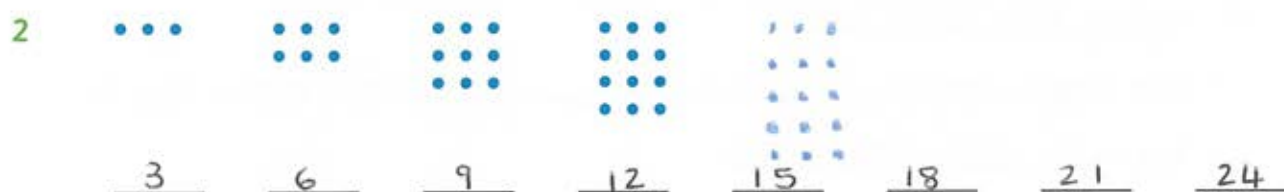
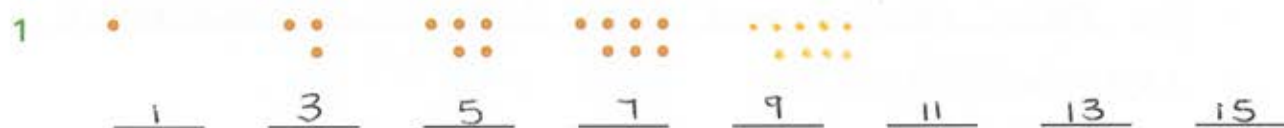
c 95:100 19:20

Patterns and sequences

Draw the next shape in each pattern.

Write the number sequence each pattern represents.

Work out the next three numbers in each sequence.



Rules for sequences

1 Write the rule for each sequence and use it to work out the next three numbers in each sequence.

a 11, 13, 15, 17, 19, 21, 23

Rule: Start at 11 and add 2 to each new term

b 21, 30, 39, 48, 57, 66, 75

Rule: Start at 21 and add 9 to each new term

c 2, 4, 8, 16, 32, 64, 128

Rule: Start at 2 and multiply each new term by 2

d 1, 5, 25, 125, 625, 3125

Rule: Start at 1 and multiply each new term by 5.

e 2, 6, 18, 54, 162, 486, 1458

Rule: Start at 2 and multiply each new term by 3.

f 3, 9, 27, 81, 243, 729

Rule: Start at 3 and multiply each new term by 3.

g 0.001, 0.01, 0.1, 1, 10, 100, 1000

Rule: Start at 0.001 and multiply each new term by 10.

h 1 000, 500, 250, 125, 62 $\frac{1}{2}$, 31 $\frac{1}{4}$

Rule: Start at 1000 and divide each new term by 2.

2 What are the missing numbers in each sequence? Compare your answers with a partner. Tell your partner how you worked them out.

a 1, 3, 9, 27, 81, 243

b 59, 54, 49, 44, 39, 34

c 1, 2, 4, 8, 16, 32, 64

d 157, 147, 137, 127, 117

e 81, 27, 9, 3, 1, $\frac{1}{3}$

f 93, 85, 77, 69, 61, 53, 45

g 122, 223, 324, 425, 526, 627

h 176, 88, 44, 22, 11, 5 $\frac{1}{2}$

Unknown values and equations

- 1 Each flow diagram gives the rule for a sequence. Work out the first ten numbers in each sequence starting with $n = 1$.

a $n \longrightarrow \boxed{+7} \longrightarrow ?$

1 8 15 22 29 36 43 50 57 64

b $n \longrightarrow \boxed{\times 5} \longrightarrow \boxed{-1} \longrightarrow ?$

1 4 19 94 469 2344 11719 58594 292969 1464844

c $n \longrightarrow \boxed{\times 2} \longrightarrow \boxed{-1} \longrightarrow ?$

1 1 1 1 1 1 1 1 1 1

d $n \longrightarrow \boxed{\times n} \longrightarrow ?$

1 1 1 1 1 1 1 1 1 1

e $n \longrightarrow \boxed{\div 2} \longrightarrow ?$

0.5 0.25 0.125 0.0625 0.03125 0.015625 0.0078125

- 2 Check these answers. Write true or false.

a $x + 14 = 30$, so $x = 16$ True

b $y \div 3 = 18$, so $y = 6$ False

c $100 \div x + 2 = 12$, so $x = 12$ False

d $(x + 4) \times 3 = 70$, so $x = 3$ False

- 3 Find three possible values of x and y in each equation.

a $140 \div 20 = x \times y$

$x = 7; y = 1$

$x = 1; y = 7$

$x = \frac{1}{2}; y = 14$

b $40 - 20 = x + y$

$x = 15; y = 5$

$x = 5; y = 15$

$x = 19; y = 1$

Topic 11

Measurement (2)

Perimeter

1 Estimate and then measure the perimeter of each shape.



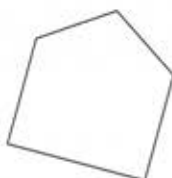
a Estimate: $20 + 25 + 24$

Measurement: $15 + 20 + 21 = 56 \text{ mm}$



b Estimate: $2 + 2 + 3 + 3 \text{ (cm)}$

Measurement: $17 + 17 + 25 + 25 = 84 \text{ mm}$



c Estimate: $10 + 10 + 15 + 15 + 20$

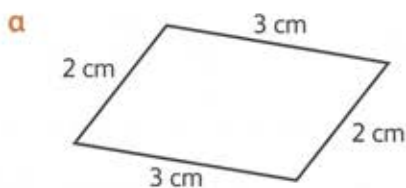
Measurement: $19 + 15 + 12 + 12 + 15 = 73 \text{ mm}$



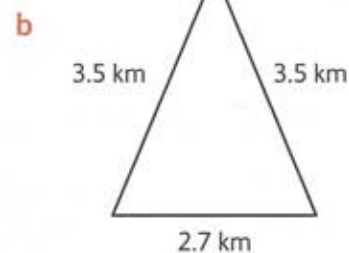
d Estimate: $20 + 20 + 30 + 30$

Measurement: $18 + 18 + 21 + 21 = 78 \text{ mm}$

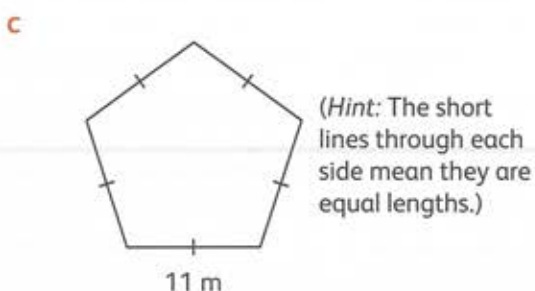
2 Calculate the perimeter of each shape. Show your calculations.



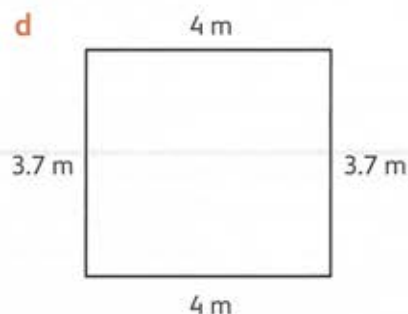
$$\underline{3 + 3 + 2 + 2 = 10 \text{ cm}}$$



$$\underline{3.5 + 3.5 + 2.7 = 9.7 \text{ km}}$$



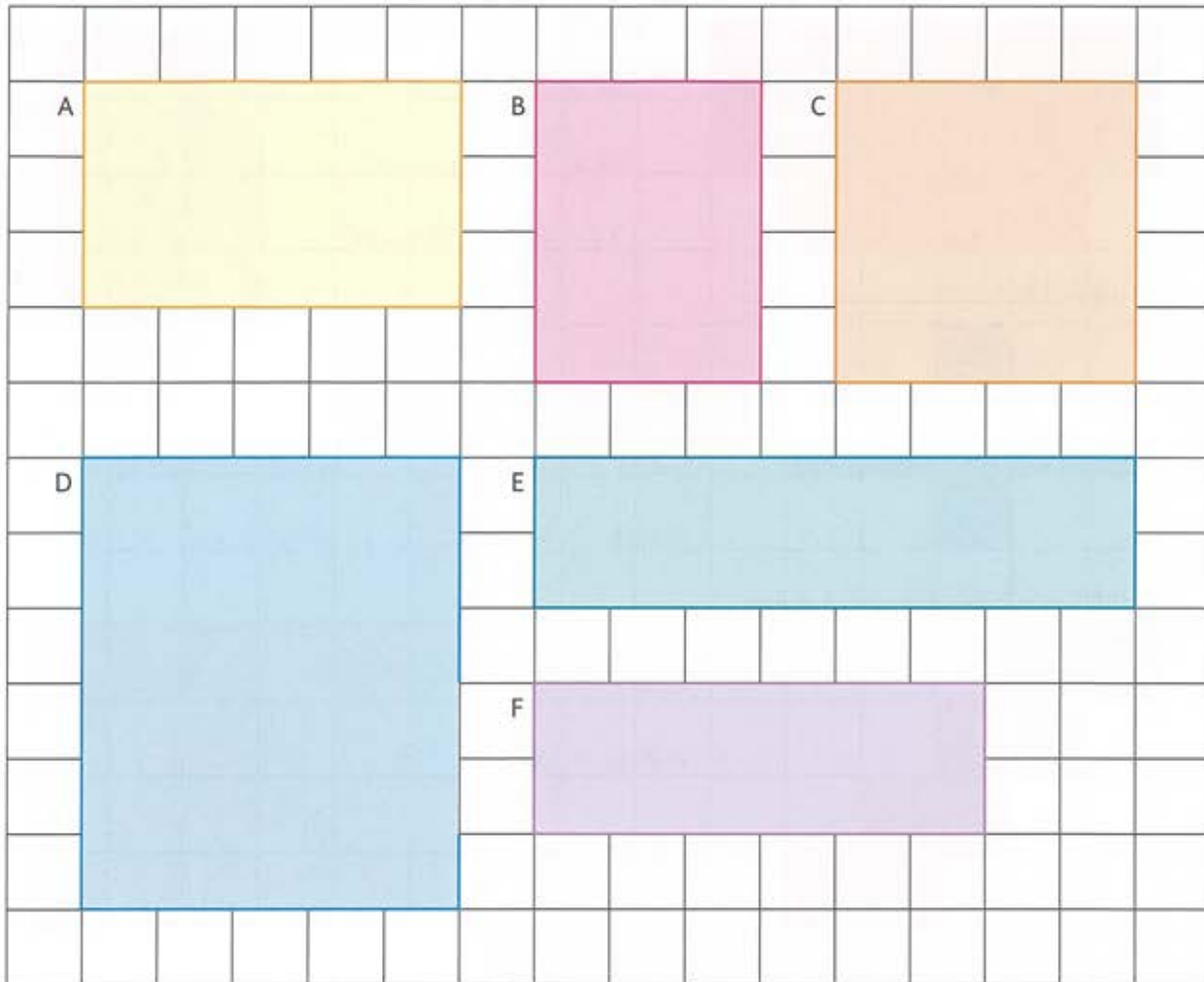
$$\underline{11 \times 5 = 55 \text{ m}}$$



$$\underline{4 + 3.7 + 4 + 3.7 = 15.4 \text{ m}}$$

Perimeter and area

- 1 Calculate the area and perimeter of each shape. The squares on the grid are 1 cm long and 1 cm wide. Record your workings and your answers in the table.



Shape	Perimeter	Area
A	$(3 \times 2) + (5 \times 2) = 16 \text{ cm}$	$5 \times 3 = 15 \text{ cm}^2$
B	$(3 \times 2) + (4 \times 2) = 14 \text{ cm}$	$3 \times 4 = 12 \text{ cm}^2$
C	$4 \times 4 = 16 \text{ cm}$	$4 \times 4 = 16 \text{ cm}^2$
D	$(5 \times 2) + (6 \times 2) = 22 \text{ cm}$	$5 \times 6 = 30 \text{ cm}^2$
E	$(2 \times 2) + (8 \times 2) = 20 \text{ cm}$	$2 \times 8 = 16 \text{ cm}^2$
F	$(2 \times 2) + (6 \times 2) = 16 \text{ cm}$	$2 \times 6 = 12 \text{ cm}^2$

- 2 Which shapes have the same area but different perimeters?

B and F ; C and E

Area

- 1 Draw lines on each shape to make rectangles. Calculate the area of each rectangle and add the areas to find the total area of the shape.


A		$6 \times 2 = 12 \text{ cm}^2$ $4 \times 1 = 4 \text{ cm}^2$ $12 + 4 = 16 \text{ cm}^2$	
Total area: <u>16 cm²</u>			
B		$2 \times 1 = 2 \text{ cm}^2$ $2 \times 1 = 2 \text{ cm}^2$ $3 \times 1 = 3 \text{ cm}^2$	
Total area: <u>7 cm²</u>			$2 + 2 + 3 = 7 \text{ cm}^2$
C		$2 \times 1 = 2 \text{ cm}^2$ $2 \times 4 = 8 \text{ cm}^2$	
Total area: <u>8 cm²</u>			
D		$1 \times 2 = 2 \text{ cm}^2$ $1 \times 5 = 5 \text{ cm}^2$ $1 \times 3 = 3 \text{ cm}^2$ $(2 \times 4) + (5 \times 2) + 3 = 8 + 10 + 3 = 21 \text{ cm}^2$	
Total area: <u>21 cm²</u>			

- 2 Next to shapes A and B, draw another shape with the same area but different perimeter.
- 3 Next to shapes C and D, draw another shape with the same perimeter but different area.

Sort it out!

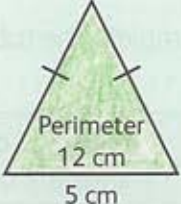
Match the calculation in each block to an answer in the circles. Colour the shape and the circle to match.

1




Area = 16cm²

2



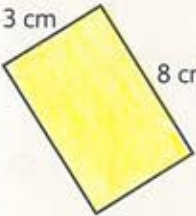
Side = 5cm

3



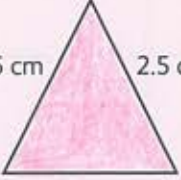
Area = 25cm²

4




Area = 24cm²

5



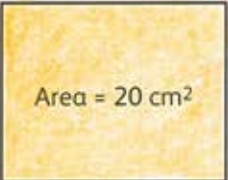
Perimeter = 11cm

6



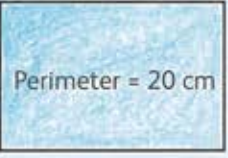
Area = 12cm²

7



Length = 5cm

8



Length = 6cm

24 cm²

6 cm

12 cm²

11 cm

$3\frac{1}{2}$ cm
5 cm

5 cm

16 cm²







25 cm²

Topic 12

Shape and space (2)

3-D shapes

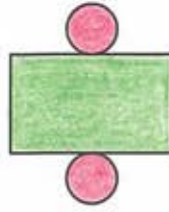
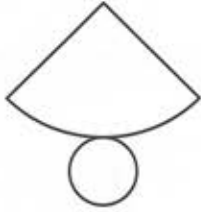
This table shows some real-life objects. Complete the table for each object.
Add your own example in the last row.

	Real-life object	3-D shape	Number and shape/s of faces	Number of edges	Number of vertices
1		Cuboid / rectangular prism	6	12	8
2		Cylinder	3	2	0
3		Cylinder	3	2	0
4		Sphere	1	1	0
5		Cube	6	12	8
6		Cone	2	1	1
7					

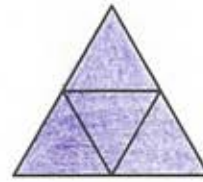
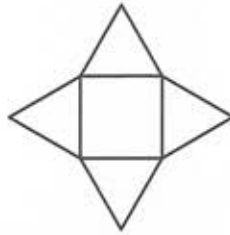
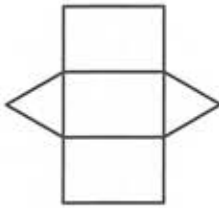
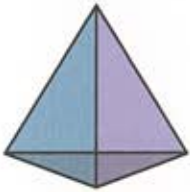
Nets of 3-D shapes

For each solid, shade the correct pattern that would make the solid shape when folded.

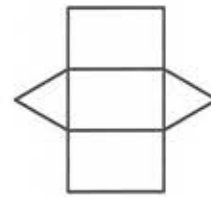
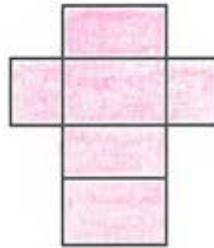
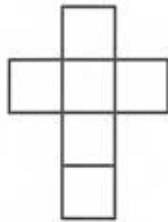
1



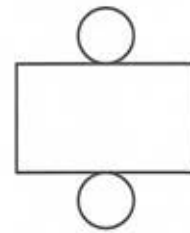
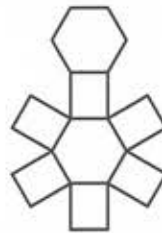
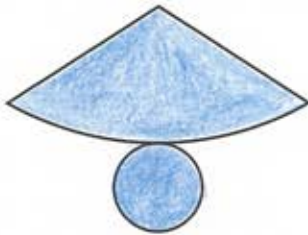
2



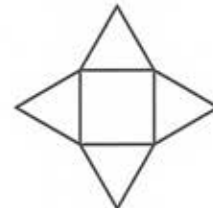
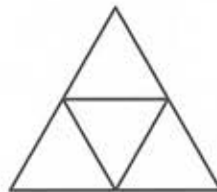
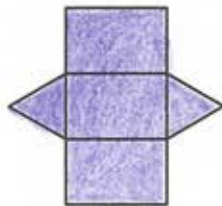
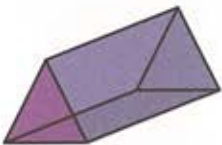
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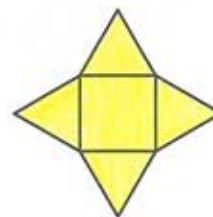
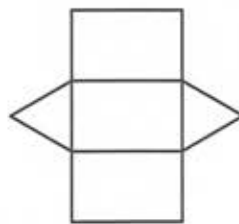
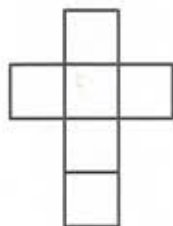
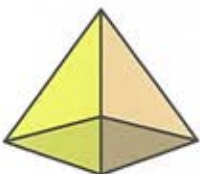
4



5



6

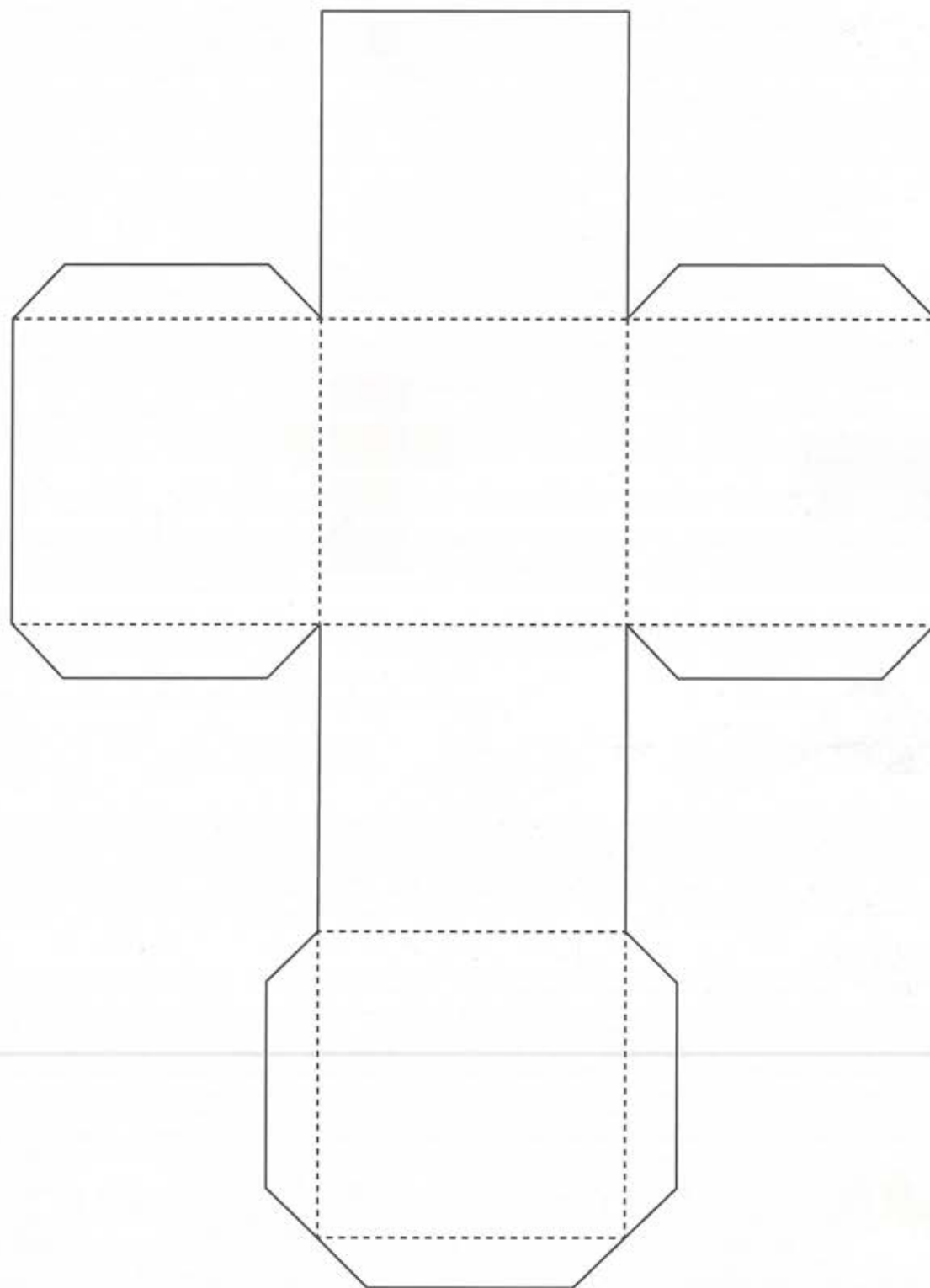


Make a cube

Trace or photocopy this net of a cube and glue it onto thin card.

Cut along the solid lines.

Fold along the dotted lines and glue the flaps to the sides to make a model cube.

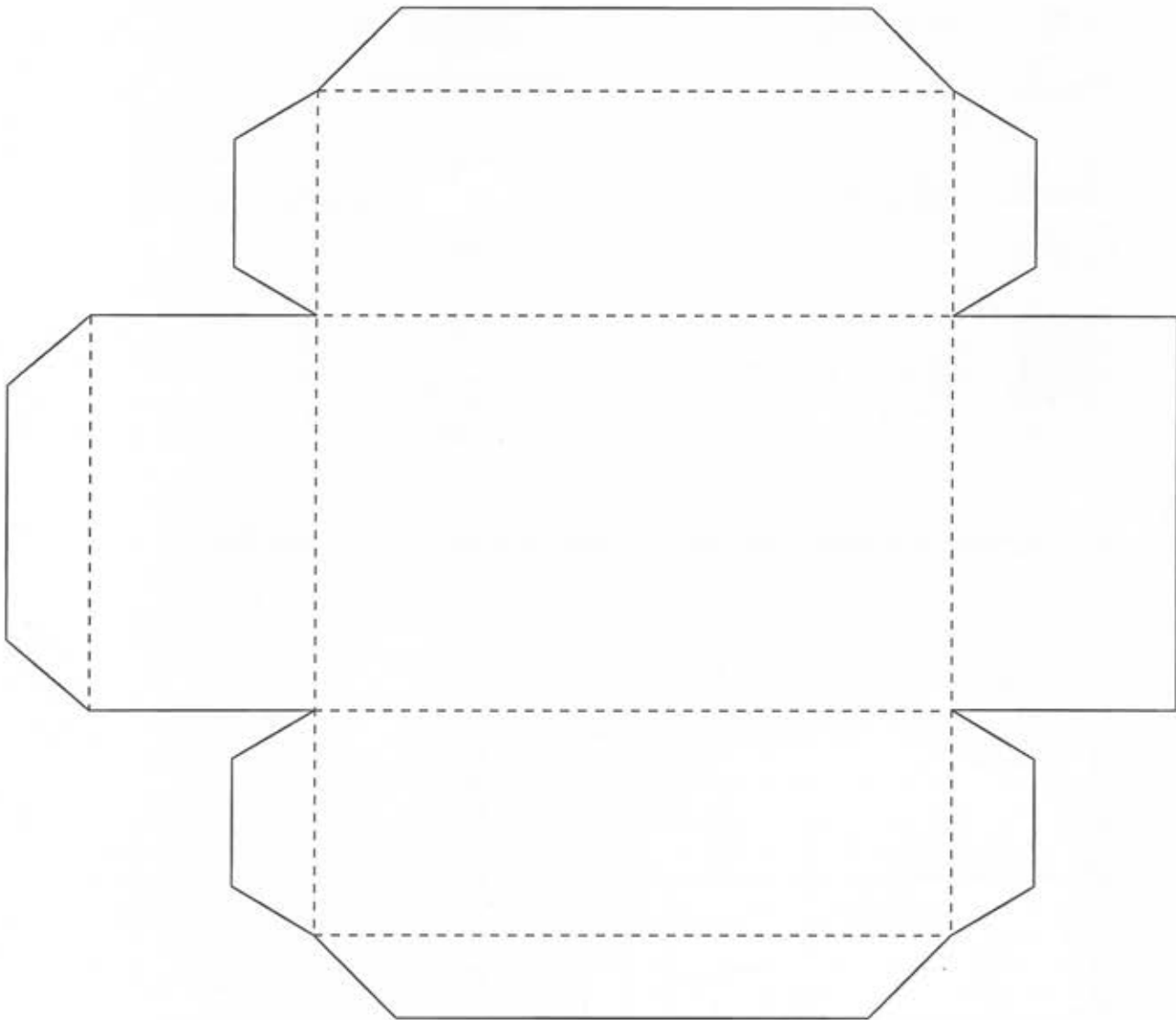


Make an open cuboid box

Trace or photocopy this net of a cube and glue it onto thin card.

Cut along the solid lines.

Fold along the dotted lines to make a model open cuboid box.



Coordinate systems

1 Draw these landmarks on the map below.



(2, 10) (3, 10) (4, 10)
(4, 9) (5, 9)

Palm trees



(6, 6) (8, 11)

Volcanoes



(11, 6) (4, 4)

Harbours



(7, 5)

Buried treasure



(12, 2) (2, 3)

Shipwrecks



(8, 8) (9, 8)

Hills



(5, 4) (10, 6) (3, 11)

Towns



(2, 8) (7, 3)

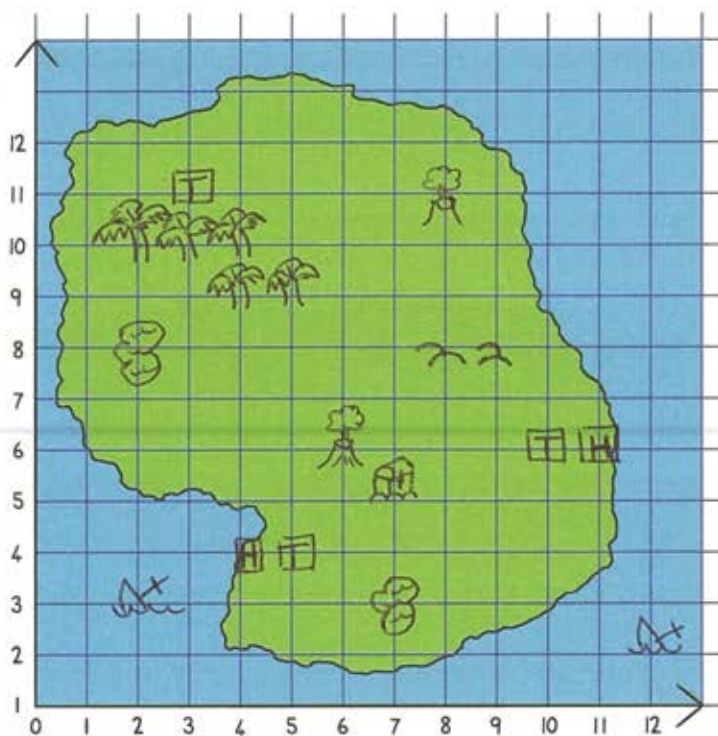
Lakes

2 Add three more landmarks to the map. List them here and give their coordinates.

_____ (____, ____)

_____ (____, ____)

_____ (____, ____)



Topic 13 Computation (3)

Timed practice

Give yourself 1 minute to complete each set of calculations. You can write your answers as improper fractions, proper fractions or mixed numbers. Check your answers with a partner.

Set 1

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

c $\frac{9}{8} - \frac{6}{8} = \frac{3}{8}$

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

g $\frac{19}{20} - \frac{16}{20} = \frac{3}{20}$

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

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

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

d $\frac{4}{11} + \frac{7}{11} = \frac{11}{11} / 1$

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

h $\frac{28}{15} - \frac{14}{15} = \frac{14}{15}$

j $\frac{7}{10} + \frac{2}{10} = \frac{9}{10}$

l $\frac{7}{5} - \frac{5}{5} = \frac{2}{5}$

Set 2

a $1\frac{8}{9} - \frac{8}{9} = 1$

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

e $5\frac{11}{12} + 2 = 7\frac{11}{12}$

g $\frac{7}{10} - \frac{7}{10} = 0$

i $\frac{7}{2} + 1\frac{1}{2} = \frac{10}{2} / 5$

k $7\frac{1}{2} - 7 = \frac{1}{2}$

b $2\frac{3}{4} - \frac{5}{4} = \frac{6}{4} / 1\frac{2}{4}$

d $2\frac{9}{10} - \frac{2}{10} = 2\frac{7}{10}$

f $5\frac{11}{12} - 2 = 3\frac{11}{12}$

h $\frac{7}{10} + \frac{7}{10} = \frac{14}{10} / 1\frac{4}{10}$

j $7\frac{1}{2} - \frac{1}{2} = 7$

l $7\frac{1}{2} + \frac{1}{2} = 7\frac{2}{2} / 8$

Set 3

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

c $7\frac{6}{9} - \frac{2}{3} = 7$

e $\frac{9}{16} - \frac{1}{4} = \frac{5}{16}$

g $3\frac{4}{7} - 2\frac{1}{7} = 1\frac{3}{7}$

i $100\frac{1}{2} - 1\frac{1}{2} = 99$

k $5\frac{24}{25} - \frac{1}{5} = 5\frac{19}{25}$

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

d $1\frac{8}{10} - 1\frac{1}{5} = \frac{6}{10}$

f $4\frac{2}{3} + 1\frac{1}{6} = 5\frac{5}{6}$

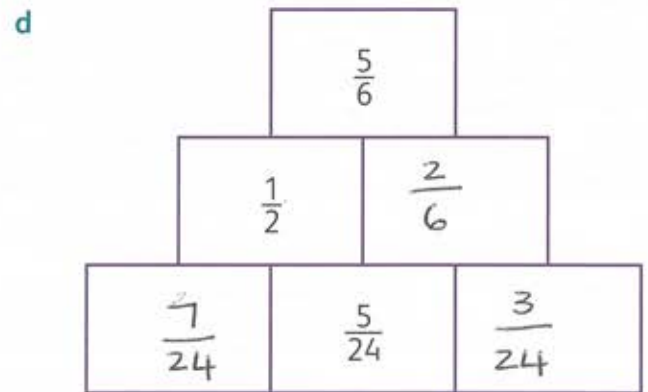
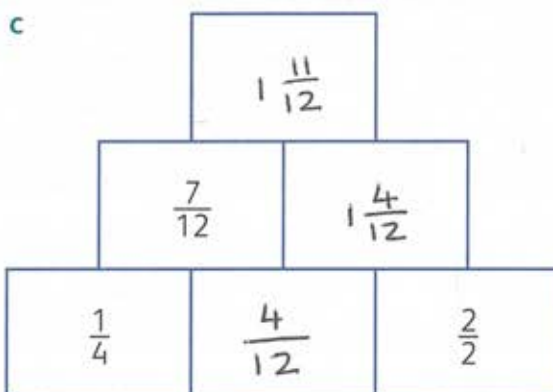
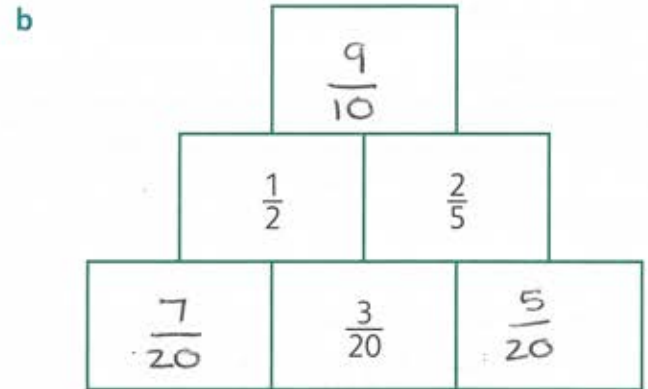
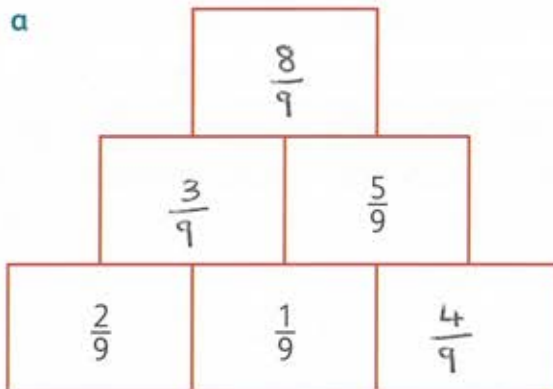
h $4\frac{4}{5} - \frac{1}{10} = 4\frac{7}{10}$

j $97\frac{3}{4} - \frac{4}{8} = 97\frac{2}{8}$

l $7\frac{1}{2} + \frac{1}{2} = 7\frac{2}{2} / 8$

Fraction puzzles

- 1 As you move up each pyramid, the fraction in each block is the sum of the two blocks below it. Use addition and subtraction to work out the missing fractions.



- 2 In each magic square, the sum of each row, column and diagonal is the same. Work out the missing numbers.

a

$2\frac{2}{10}$	$9\frac{9}{10}$	$4\frac{4}{10}$
$7\frac{7}{10}$	$5\frac{1}{2}$	$3\frac{3}{10}$
$6\frac{3}{5}$	$1\frac{1}{10}$	$8\frac{4}{5}$




b




$\frac{1}{12}$	$\frac{11}{48}$	$\frac{3}{48}$
$\frac{5}{48}$	$\frac{1}{8}$	$\frac{7}{48}$
$\frac{3}{16}$	$\frac{1}{48}$	$\frac{1}{6}$




Domino subtraction




Each domino represents a fraction.




Draw dots on the empty dominoes to make each subtraction correct.




1  -  = 




3  -  = 




5  -  = 




7  -  = 




9  -  = 




11  -  = 




13  -  = 




15  -  = 



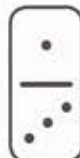
2  -  = 




4  -  = 




6  -  = 

8  -  = 

10  -  = 

12  -  = 

14  -  = 

16  -  = 

Multiply fractions

1 Complete the grid.

\times	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{3}{4}$	$\frac{2}{5}$	$\frac{3}{8}$	$\frac{4}{7}$	5
$\frac{2}{3}$	$\frac{2}{6}$	$\frac{2}{9}$	$\frac{1}{2}$	$\frac{4}{15}$	$\frac{1}{4}$	$\frac{8}{21}$	$\frac{10}{3}$
$\frac{3}{4}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{9}{16}$	$\frac{3}{10}$	$\frac{9}{32}$	$\frac{3}{7}$	$\frac{15}{4}$
$\frac{5}{6}$	$\frac{5}{12}$	$\frac{5}{18}$	$\frac{5}{8}$	$\frac{1}{3}$	$\frac{5}{16}$	$\frac{10}{21}$	$\frac{25}{6}$
$\frac{7}{8}$	$\frac{7}{16}$	$\frac{7}{24}$	$\frac{21}{32}$	$\frac{7}{20}$	$\frac{21}{64}$	$\frac{1}{2}$	$\frac{35}{8}$
$\frac{9}{10}$	$\frac{9}{20}$	$\frac{3}{10}$	$\frac{27}{40}$	$\frac{9}{25}$	$\frac{27}{80}$	$\frac{18}{35}$	$\frac{9}{2}$
$3\frac{1}{2}$	$\frac{7}{4}$	$\frac{7}{6}$	$\frac{21}{8}$	$\frac{7}{5}$	$\frac{21}{16}$	2	$\frac{35}{2}$
$\frac{3}{5}$	$\frac{3}{10}$	$\frac{1}{5}$	$\frac{9}{20}$	$\frac{6}{25}$	$\frac{9}{40}$	$\frac{12}{35}$	3
$\frac{7}{12}$	$\frac{7}{24}$	$\frac{7}{36}$	$\frac{7}{16}$	$\frac{7}{30}$	$\frac{7}{32}$	$\frac{1}{3}$	$\frac{35}{12}$
$\frac{3}{2}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{9}{8}$	$\frac{3}{5}$	$\frac{9}{16}$	$\frac{6}{7}$	$\frac{15}{2}$

2 Calculate.

- $\frac{1}{2}$ of 20 minutes 10 minutes
- $\frac{1}{10}$ of 4 metres $\frac{4}{10}$ metres / 0.4 metres
- $\frac{1}{4}$ of 2 litres $\frac{1}{4}$ litre
- $\frac{9}{10}$ of \$30.00 \$ 27.00
- $\frac{3}{8}$ of \$40.00 \$ 15.00
- $\frac{1}{2}$ of 28 kg 14 kg
- $\frac{1}{20}$ of 4 000 m 200m
- $\frac{2}{3}$ of \$90.00 \$ 60.00

More multiplying

1 Multiply. Show your workings.

a $\frac{1}{2} \times 5 = \frac{5}{2}$
 $\frac{1}{2} \times \frac{5}{1}$

c $\frac{2}{7} \times 3 = \frac{6}{7}$
 $\frac{2}{7} \times \frac{3}{1}$

e $\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$
 $\frac{1}{2} \times \frac{1}{3}$

g $\frac{1}{10} \times \frac{15}{18} = \frac{3}{36}$
 $\frac{1}{10} \times \frac{15}{18} \times \frac{3}{3}$

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

d $\frac{4}{5} \times 6 = \frac{24}{5}$
 $\frac{4}{5} \times \frac{6}{1}$

f $\frac{4}{5} \times \frac{7}{16} = \frac{28}{80} = \frac{7}{20}$
 $\frac{4}{5} \times \frac{7}{16} \times \frac{4}{4}$

h $\frac{81}{100} \times \frac{5}{9} = \frac{9}{20}$
 $\frac{81}{100} \times \frac{5}{9} \times \frac{4}{4}$

2 Solve each problem. Show your workings.



I buy half a watermelon. Half of it gets eaten. How much is left?

$\frac{1}{2}$ of 1 = $\frac{1}{2} \times \frac{1}{1}$
 = $\frac{1}{2}$
 $\frac{1}{2}$ of what was bought
 is left.



I buy a quarter pound of butter. I use a third of it to make biscuits. How much is left?

$\frac{1}{4} \times \frac{1}{3}$
 = $\frac{1}{12}$ pound



I buy $2\frac{1}{2}$ kg of potatoes. I use $\frac{3}{4}$ of the potatoes to make mash. How much is left?

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



I buy a container of milk that holds $3\frac{1}{4}$ pints. I use $\frac{2}{3}$ of the milk to make pancakes. How much is left?

$\frac{1}{3} \times \frac{13}{4}$
 = $\frac{13}{12} = 1\frac{1}{12}$ pint

Divide it up

How much does each person get? Use division. Show all your workings.



1 $2\frac{1}{2}$ muffins shared equally among 4 children
 $\frac{5}{2} \div 4 = \frac{5}{2} \times \frac{1}{4} = \frac{5}{8}$ each

2 $1\frac{3}{4}$ cakes shared equally among 10 people
 $\frac{7}{4} \div 10 = \frac{7}{4} \times \frac{1}{10} = \frac{7}{40}$ each

3 $5\frac{1}{2}$ pies shared equally among 9 children
 $\frac{11}{2} \div 9 = \frac{11}{2} \times \frac{1}{9} = \frac{11}{18}$ each

4 8 cookies shared equally among 24 children
 $8 \div 24 = \frac{8}{1} \times \frac{1}{24} = \frac{8}{24} = \frac{1}{3}$ each

5 $1\frac{7}{8}$ kg of cookies shared equally among 5 people
 $\frac{15}{8} \div 5 = \frac{15}{8} \times \frac{1}{5} = \frac{3}{8}$ kg each











6 $2\frac{1}{3}$ cakes shared equally among 12 people
 $\frac{7}{3} \div 12 = \frac{7}{3} \times \frac{1}{12} = \frac{7}{36}$ each

7 $\frac{3}{4}$ of a tart shared equally among 16 people
 $\frac{3}{4} \div 16 = \frac{3}{4} \times \frac{1}{16} = \frac{3}{64}$

8 $4\frac{1}{3}$ cakes shared equally among 15 people
 $\frac{13}{3} \div 15 = \frac{13}{3} \times \frac{1}{15} = \frac{13}{45}$

Add and subtract decimals

This range of planks is for sale at the hardware store.

A		0.25 m	F		1.8 m
B		0.5 m	G		2.4 m
C		0.75 m	H		3 m
D		1.2 m	I		3.8 m
E		1.6 m	J		5 m

Work out the total lengths of the following sets of planks. Add in columns and show all your workings.

a Plank A + plank B

$$\begin{array}{r} 0.25 \\ + 0.50 \\ \hline 0.75\text{m} \end{array}$$

b Plank A + plank F

$$\begin{array}{r} 0.25 \\ + 1.80 \\ \hline 2.05\text{m} \end{array}$$

c Plank I + plank E

$$\begin{array}{r} 3.8 \\ + 1.6 \\ \hline 5.4\text{m} \end{array}$$

d Plank C + plank E

$$\begin{array}{r} 0.75 \\ + 1.60 \\ \hline 2.35\text{m} \end{array}$$

e Plank F + plank G

$$\begin{array}{r} 1.8 \\ + 2.4 \\ \hline 4.2\text{m} \end{array}$$

f Plank I + plank G

$$\begin{array}{r} 3.8 \\ + 2.4 \\ \hline 6.2\text{m} \end{array}$$

g Plank D + plank I

$$\begin{array}{r} 1.2 \\ + 3.8 \\ \hline 5.0\text{m} \end{array}$$

h 5 × plank I

$$\begin{array}{r} 3.8 \\ \times 5 \\ \hline 19.0\text{m} \end{array}$$

i 10 × plank G

$$\begin{array}{r} 2.4 \\ \times 10 \\ \hline 24.0\text{m} \end{array}$$

j 2 × plank H + 4 × plank C

$$\begin{aligned} & (2 \times 3) + (4 \times 0.75) \\ & 6 + 3 \\ & = 9\text{m} \end{aligned}$$

$$\begin{array}{r} 0.75 \\ \times 4 \\ \hline 3.00 \end{array}$$

k 5 × plank D + 7 × plank E

$$\begin{aligned} & (5 \times 1.2) + (7 \times 1.6) \\ & 6.0 + 11.2 = 17.2\text{m} \end{aligned}$$

$$\begin{array}{r} 1.2 \\ \times 5 \\ \hline 6.0 \\ 1.6 \\ \times 7 \\ \hline 11.2 \end{array}$$

Decimal problems

1 Complete the magic squares.

a

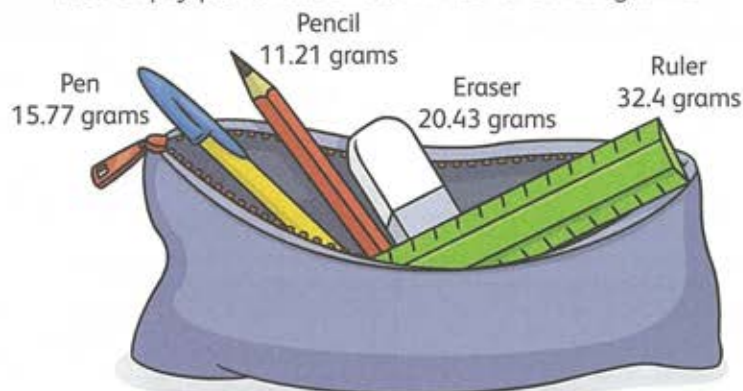
1.2	0.2	1.6
1.4	1	0.6
0.4	1.8	0.8

b

0.14	0.09	0.1
0.07	0.11	0.15
0.12	0.13	0.08

Problem-solving

- 2 The masses of different stationery items is given below.
The empty pencil case has a mass of 33.53 grams.



The number of items in the pencil case and the total mass are given below.
Work out what items the pencil case could contain in each case.

- a One pen and one pencil
Total mass: 60.51 g
- b Two pencils and one eraser
Total mass: 76.38 g
- c One pen and one ruler
Total mass: 81.7 g
- d One eraser and one pencil
Total mass: 65.17 g
- e Three pencils, one pen and one ruler
Total mass: 115.33 g
- f One eraser, two pens and one pencil
Total mass: 96.71 g

Working with decimals

An odometer tells you the mileage (distance travelled) in a vehicle.
This odometer shows that the car has travelled 508.32 km:



Instead of a decimal point, this odometer uses colours to indicate which numbers are decimal fractions.

1 How far must each driver travel before the odometer shows the next whole kilometre?



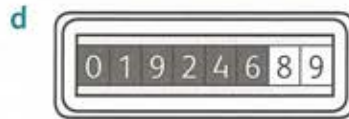
0.8 km



0.9 km



0.2 km



0.11 km



0.06 km



0.83 km

2 Work out how many more kilometres each driver has to travel before the odometer displays zeros in the tens, units, tenths and hundredths places.



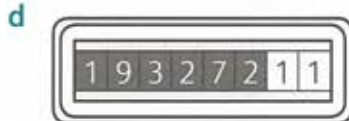
15.64 km



89.60 km



16.88 km



27.89 km



37.95 km



99.50 km

Multiplying by 10, 100 or 1 000

1 Complete the rules below. Give an example to illustrate each rule.

- a To multiply any decimal fraction by 10: Move the decimal point
one place to the right.
- b To multiply any decimal fraction by 100: Move the decimal point
two places to the right.
- c To multiply any decimal fraction by 1 000: Move the decimal
point three places to the right.

2 Complete the table. Check your answers using a calculator.

Number	$\times 10$	$\times 100$	$\times 1\,000$
12.4	124	1240	12400
0.9	9	90	900
1.4	14	140	1400
12	120	1200	12000
13.09	130.9	1309	13090
21.77	217.7	2177	21770
31.99	319.9	3199	31990
201.06	2010.6	20106	201060
23.9	239	2390	23900
11.3	113	1130	11300
123.45	1234.5	12345	123450

Calculate percentages

1 Calculate.

- a 50% of 100 people = 50 people
- b 70% of 100 oranges = 70 oranges
- c 95% of 100 buildings = 95 buildings
- d 20% of 200 people = 10 people
- e 60% of 150 cats = 90 cats
- f 18% of 450 pens = 81 pens

2 A farm has an area of 16 hectares. The table tells you what percentage of the land is used for each purpose. Work out the area in hectares.

Purpose	Percentage of total area	Area in hectares
Housing	1%	0.16 hectares
Farming bananas	50%	8 hectares
Farming mangoes	25%	4 hectares
Farming oranges	15%	2.4 hectares
Garden area	1%	0.16 hectares
Keeping chickens	5%	0.8 hectares
Unused	3%	0.48 hectares

3 A hairdresser raised all her prices by 15%. The card shows the old prices. Work out the new prices of her services.

Service	Old price	New price
Haircut (short hair)	\$45.00	<u>\$51.75</u>
Haircut (long hair)	\$68.00	<u>\$78.20</u>
Braids (short)	\$290.00	<u>\$333.50</u>
Braids (medium)	\$380.00	<u>\$437.00</u>
Braids (long)	\$500.00	<u>\$575.00</u>

Profit and loss

- 1 Look at the table. Discuss with your partner how you would complete it. Then complete the table by filling in the missing data in the appropriate columns.

Cost price	Selling price	Profit	Loss	% profit	% loss
\$35.00	\$42.00	\$ 7.00		20%	
\$500.00	\$ 400.00		\$100.00		20%
\$80.00	\$ 72.00		\$ 8.00		10%
\$78.00	\$ 117.00	\$ 39.00		50%	
\$2 850.00	\$ 2 137.50		\$ 712.50		25%
\$5 600.00	\$ 6000.00	\$400.00		7.14%	
\$19.50	\$29.25	\$ 9.75		50%	
\$45.50	\$ 27.30		\$18.20		40%

- 2 Work out the percentage profit or loss in each case. For each answer, underline 'profit' or 'loss' before you fill in the actual profit or loss and the percentage profit or loss.

- a I buy an item for \$10.00 and sell it for \$20.00.

Cost: \$10.00

Selling price: \$20.00

Profit or loss: \$10.00

Percentage profit or loss: 100%

- b I buy an item for \$170.00 and sell it for \$200.00.

Cost: \$170.00

Selling price: \$200.00

Profit or loss: \$30.00

Percentage profit or loss: 17.65%

- c I buy an item for \$80.00 and sell it for \$100.00.

Cost: \$80.00

Selling price: \$100.00

Profit or loss: \$20.00

Percentage profit or loss: 25%

- d I buy an item for \$1 500.00 and sell it for \$2 025.00.

Cost: \$1500.00

Selling price: \$2025.00

Profit or loss: \$525

Percentage profit or loss: 35%

Topic 14

Measurement (3)

Estimate, compare and measure time

- 1 Write the time at which you usually do each thing as 12-hour time and as 24-hour time.
 - a Get up in the morning _____
 - b Start school _____
 - c Finish school _____
 - d Play with friends _____
 - e Eat dinner _____
 - f Go to bed _____
- 2 Think about things you did yesterday during the day and during the night. Write what you were doing at each of these times:
 - a 01:00 _____
 - b 12:00 _____
 - c 18:30 _____
 - d 19:45 _____
- 3 Complete the chart by filling in an estimate of how long each event takes.

Event	Seconds	Minutes	Hours	Days	Weeks	Months	Years	Decades	Centuries
Sneezing	✓								
Making your bed		✓							
Growing into a very old man or woman								✓	
Baking cookies		✓	✓						
Smiling	✓								
Playing a cricket test match				✓					
Studying the history of the pyramids			✓	✓	✓				
Becoming an adult								✓	
Growing a palm tree from a coconut							✓	✓	
Travelling to Japan			✓						
Sending a spaceship to the Sun				✓	✓	✓			

Telling time

1 Write the times shown on these clocks using the 24-hour system. All times are after 12 noon.

a



13:30

b



14:45

c



17:20

d



18:55

e



21:15

f



19:05

2 Draw hands on the first clock to show the given time. Draw hands on the second clock to show the time a quarter of an hour earlier.

a 25 to 12



b 20 to 11



c 5 o'clock



d half past six



Different systems of writing time

Complete the table to give the times in three different ways:

- * in words
- * in 12-hour notation (a.m. and p.m. time)
- * in 24-hour notation.

In words	12-hour time	24-hour time
Half past seven in the morning	7:30 a.m.	07:30
Six o'clock in the evening	6:00 p.m.	18:00
Quarter past ten in the evening	10:15 p.m.	22:15
Nine o'clock at night	9:00 p.m.	21:00
Quarter to eleven at night	10:45 p.m.	22:45
Twenty-five to three in the afternoon	2:35 p.m.	14:35
Five minutes before midnight	11:55 p.m.	23:55
Five minutes past twelve in the morning	12:05 a.m.	00:05
Twenty-five to two in the afternoon	2:35 p.m.	14:35
Quarter to nine in the morning	8:45 a.m.	08:45
Five to eight at night	7:55 p.m.	19:55
Twenty-three to five in the afternoon	4:47 p.m.	16:47

Calculating times

Look at the board showing departure times for the ferry from Belize City.

DAILY DEPARTURES			
Belize City to Caye Caulker and San Pedro 8:00 a.m. 9:00 a.m. 10:30 a.m. 12:00 noon 1:30 p.m. 3:00 p.m. 4:00 p.m. To Caye Caulker only 5:30 p.m.	San Pedro to Caye Caulker and Belize City 7:00 a.m. 8:00 a.m. 9:30 a.m. 11:30 a.m. 1:00 p.m. 2:30 p.m. 3:30 p.m. To Caye Caulker only Mon to Fri 4:30 p.m. To Belize City Weekends and Public Holidays	Caye Caulker to Belize City 6:30 a.m. 7:30 a.m. 8:30 a.m. 10:00 a.m. 12:00 noon 1:30 p.m. 3:00 p.m. 4:00 p.m. On Weekends and Public Holidays 5:00 p.m.	Caye Caulker to San Pedro 7:00 a.m. 8:45 a.m. 10:00 a.m. 11:30 a.m. 1:00 p.m. 2:30 p.m. 4:00 p.m. 5:30 p.m.

- 1 Write the times using 24-hour notation.
 - a The earliest departure from Caye Caulker to Belize City is at 06:30.
 - b The last daily departure from Caye Caulker to San Pedro is at 17:30.
 - c The last daily departure from San Pedro to Caye Caulker and Belize City is at 15:30.
 - d The first departure after midday from Belize City to Caye Caulker and San Pedro is at 13:30.
- 2 Use the ferry departure times from Belize City to work out these waiting times.
 - a What is the longest waiting time between any two ferries departing from San Pedro on a normal working day?
Two hours.
 - b How long would you have to wait for the next ferry if you arrived at the ferry in Belize City at 15:15?
45 minutes
 - c How long would you have to wait for the next ferry if you arrived at the ferry in Caye Caulker at 13:15?
15 minutes

Money amounts

Write these amounts using symbols and numbers. Then draw the smallest collection of coins and notes you could use to make up each amount.

- 1 Four hundred and fifty-two dollars and nineteen cents

\$452.19

4 x \$100	1 x 10c
1 x \$50	1 x 5c
2 x \$1	2 x 2c

- 2 Seventy-eight dollars and twenty-five cents

\$78.25

1 x \$50	3 x \$1
1 x \$20	1 x 25c
1 x \$5	

- 3 Six hundred and eighty-nine dollars and ten cents

\$689.10

6 x \$100	1 x \$5
1 x \$50	4 x \$1
1 x \$20	1 x 10c
1 x \$10	

- 4 Two hundred and seven dollars and six cents

\$207.06

2 x \$100	1 x 5c
1 x \$5	1 x 1c
2 x \$1	

- 5 One thousand and fifteen dollars and fifty cents

\$1015.50

10 x \$100	2 x 25c
1 x \$10	
1 x \$5	

- 6 Ninety-nine dollars and ninety-nine cents

\$99.99

1 x \$50	3 x 25c
2 x \$20	2 x 10c
1 x \$5	2 x 2c
4 x \$1	

Working with money

A garden centre offers these products. Use the information in the picture to help you answer the questions.



- 1 Work out how much each of these purchases will cost.
 - a Two small plant pots, one large plant pot and three bags of soil \$ 46.12
 - b Five bags of soil, one large tree and three packets of seeds \$ 87.98
 - c One tray of flowers, one large tree and one small tree \$ 85.60
 - d Two small trees, two packets of seeds and one large plant pot \$ 75.30
- 2 The notice below gives the cost prices of the pots shown above. Work out the actual profit and percentage profit the garden centre makes on each pot.

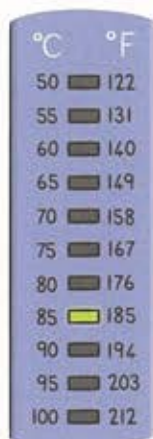
Item	Cost price
Small pot	\$3.45
Medium pot	\$6.40
Large pot	\$12.00

Item	Actual profit	Percentage profit
Small pot	<u>\$ 1.31</u>	<u>37.97%</u>
Medium pot	<u>\$ 2.88</u>	<u>45%</u>
Large pot	<u>\$ 6.60</u>	<u>55%</u>

Working with temperature

- 1 These thermometers show temperatures in degrees Celsius and Fahrenheit. Select the correct scale and write the temperature shown in degrees Celsius ($^{\circ}\text{C}$).

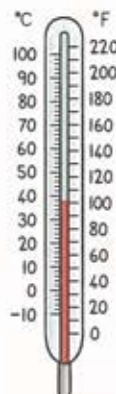
a

85 $^{\circ}\text{C}$

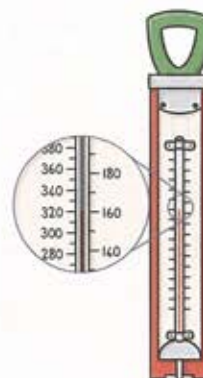
b

29.0 $^{\circ}\text{C}$

c

38 $^{\circ}\text{C}$

d

160 $^{\circ}\text{C}$

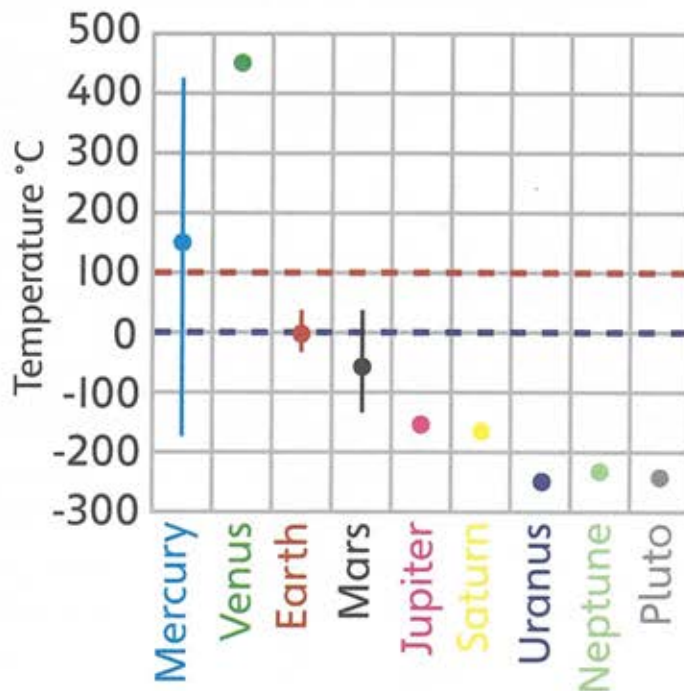
- 2 This table shows you the lowest recorded temperatures from some of the world's coldest places.

Place	Lowest recorded temperature (in $^{\circ}\text{C}$)
Rogers Pass (Montana, USA)	-56.6
Vostok (Antarctica)	-89.2
Fort Selkirk (Yukon, Canada)	-58.8
Prospect Creek (Alaska, USA)	-62.2
Oymyakon (Russia)	-71.2
Eismitte (Greenland)	-65

- a Which place has the coldest recorded temperature? Vostok
- b What is the difference between the temperature for Eismitte and the temperature for Prospect Creek? 2.8 $^{\circ}\text{C}$
- c How much colder was the temperature in Fort Selkirk than in Rogers Pass? 2.2 $^{\circ}\text{C}$
- d Work out the difference between the temperatures for Oymyakon and Eismitte.
6.2 $^{\circ}\text{C}$
- e Look at the temperature for Prospect Creek. What would the temperature be if it dropped another 3 degrees? -65.2 $^{\circ}\text{C}$

Space temperatures

This graph shows you the temperatures of the planets in our solar system. (Pluto is included, although it is scientifically classified as a dwarf planet.) Use the graph to find the answers to the questions.



- The planet with the highest temperature is Venus.
- The planet with the lowest temperature is Uranus.
- Why do you think some planets in the graph have a single dot to show the temperature, and some have a line? The dot only represents a constant temp. Those with a dot and line fluctuate.
- On which planets do you think water might be found in liquid form? Earth, Mercury, Mars
- On which planet is the temperature always higher than the boiling point of water? Venus.
- Which two planets have almost the same temperature as Pluto? Neptune and Uranus.
- The temperature on Mercury ranges between -180°C and 420°C.
- The temperature on Earth ranges between -30°C and 40°C.
- Scientists believe that besides Earth, Mars is most likely to be suitable for life. Use the graph to help you suggest a reason for this.
The temperatures are similar, with the same highest temperature.

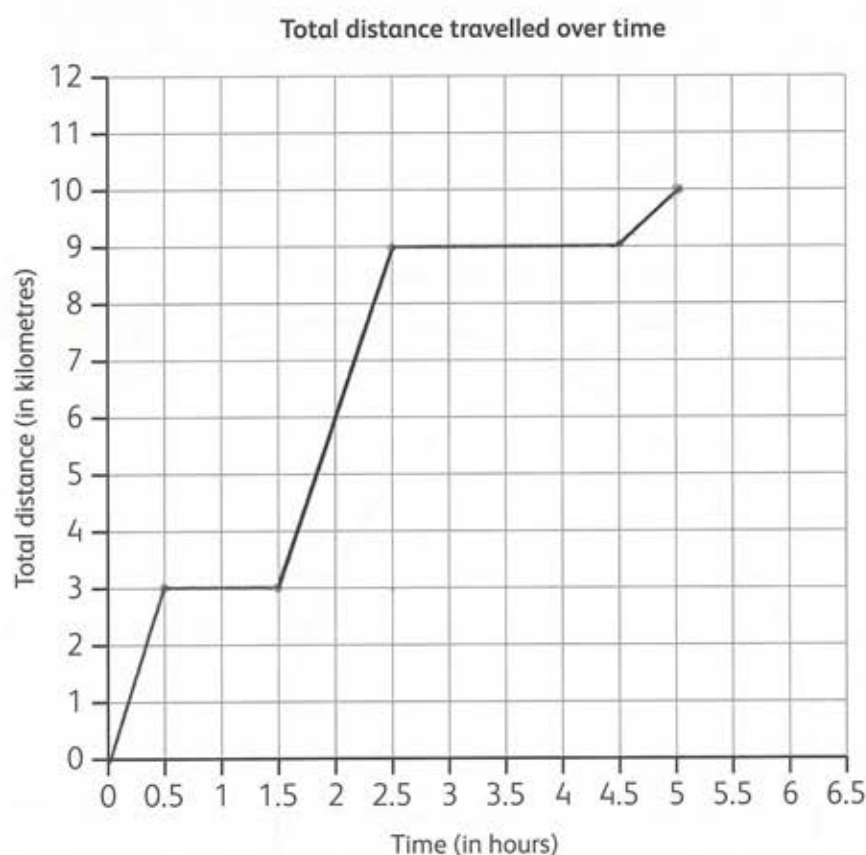
Topic 15

Data handling (2)

Representing data

1 Draw a graph to show the events in order on the grid below.

- * Byron walked for half an hour to the library, which is 3 km from his home.
- * He studied at the library for one hour.
- * He then walked to a friend's house. It took him one hour to walk 6 km at 6 km/h.
- * He visited his friend for two hours.
- * It took him half an hour to walk back to his house, which is 1 km from his friend's house.



2 Answer these questions by referring to the graph.

a How far did Byron walk in total?

10 km

b Did he spend longer walking or not walking?

No walking

c Did he always walk at the same speed? How can you tell?

Yes. He walk for $\frac{1}{2}$ hr to do 3 km & 1 hr to walk 6 km.

Venn diagrams

Read the passage below.

Then complete the Venn diagram. Use the summarised information from the passage. Enter at least three facts into each part of the diagram.

Butterflies and moths

Butterflies and moths are flying insects with patterned wings. They each have six legs and four wings. Both butterflies and moths go through four stages of metamorphosis: from an egg to a larva, then a pupa and finally the adult butterfly or moth that we see flying around.

While butterflies are active during the day, moths are mostly nocturnal animals. Moths have plump bodies and feathery antennae. When they rest, their wings are down and spread over their bodies. Butterflies have slender bodies with thin, straight antennae. They hold their wings together above their bodies when they are at rest.

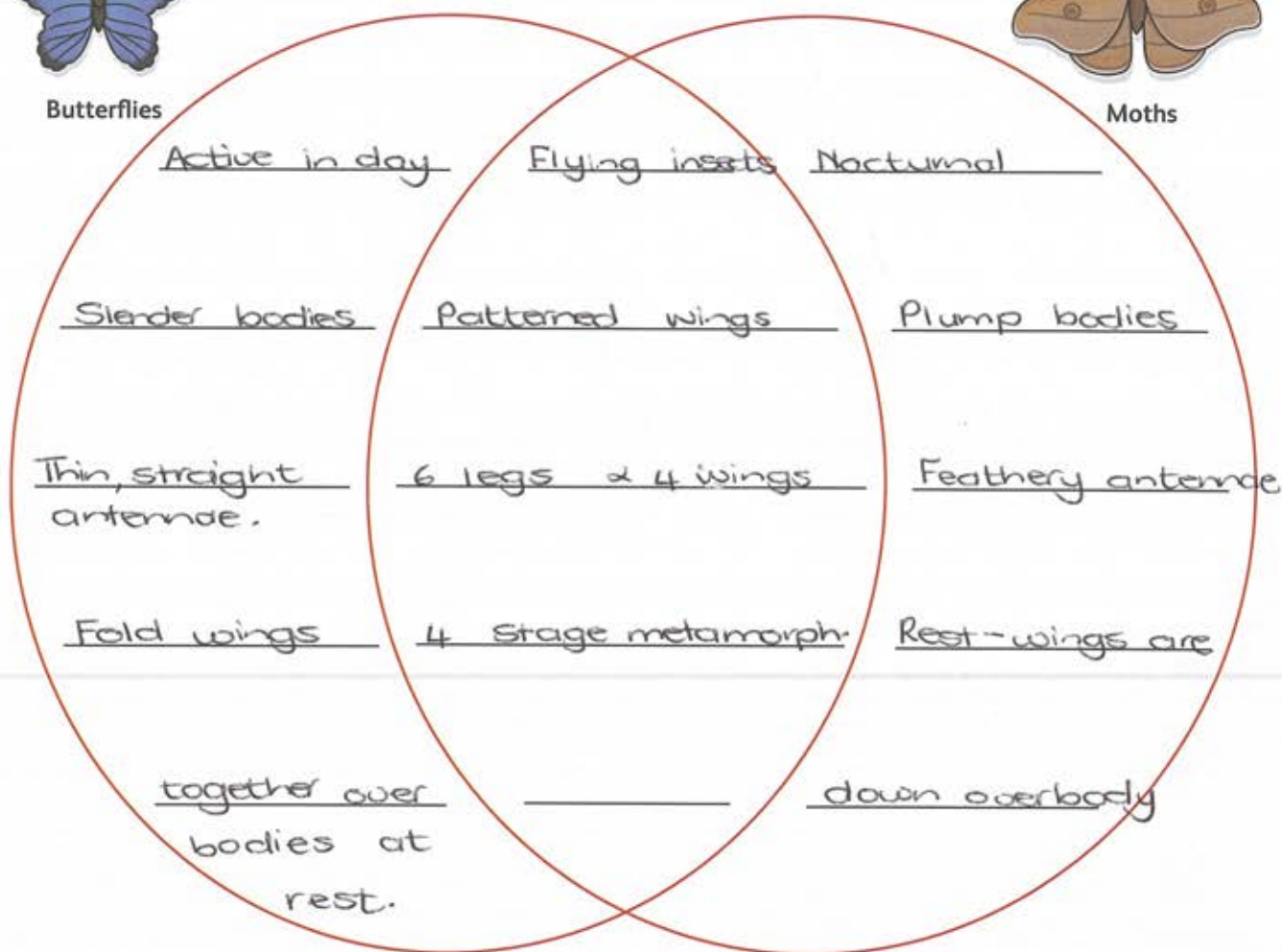


Butterflies

Characteristics of butterflies and moths



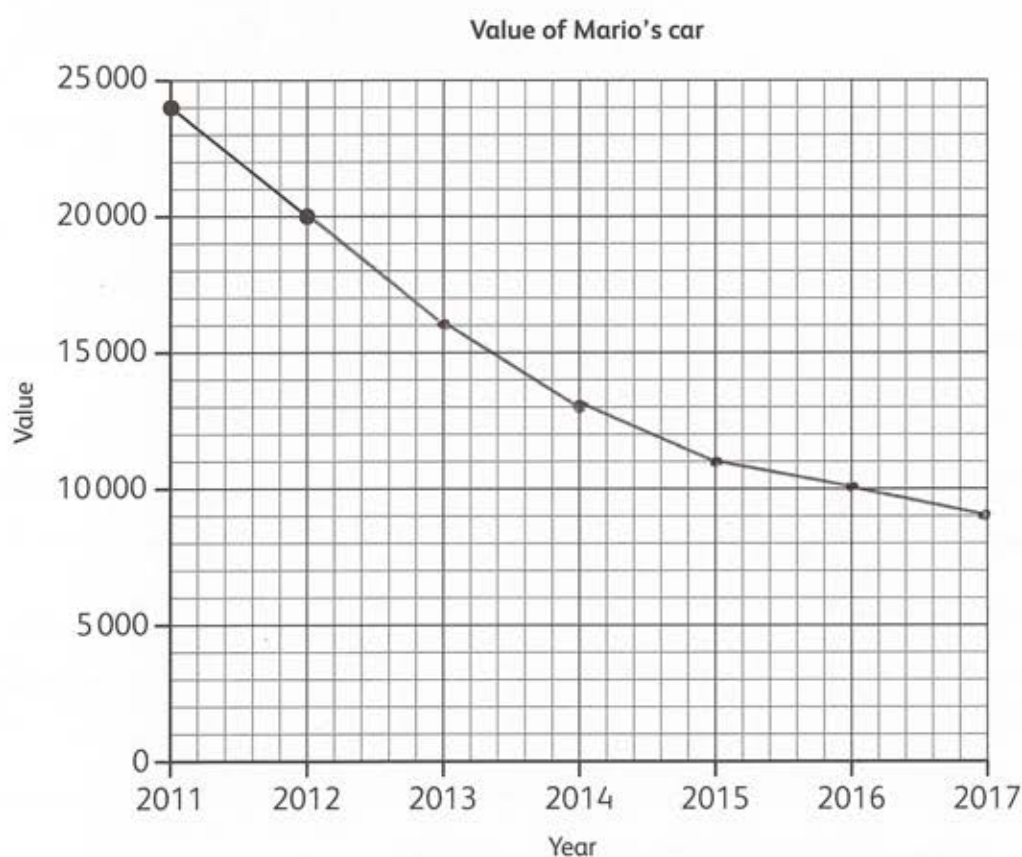
Moths



Drawing graphs

- 1 Use the data about the value of Mario's car to complete the line graph below.

Year	Value (in \$)
2011	24 000
2012	20 000
2013	16 000
2014	13 000
2015	11 000
2016	10 000
2017	9 000

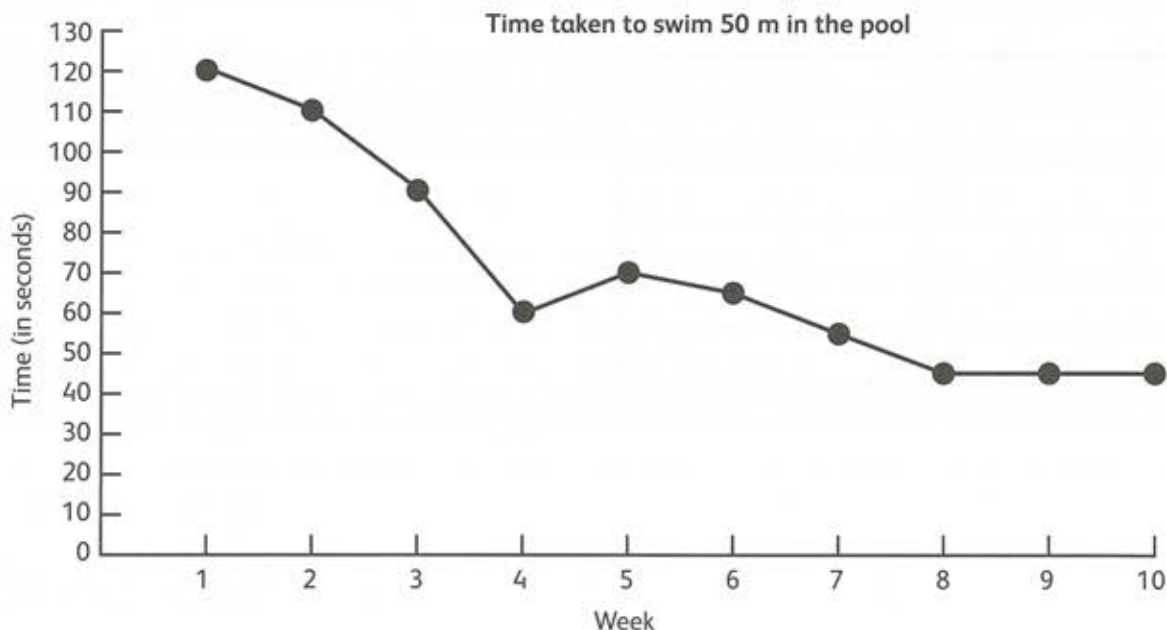


- 2 Write a few sentences to summarise what the graph shows.

Each year Mario's car is worth less money,
but the longer he has it, the less it
depreciates.

Line graphs

Sally decides that she wants to improve her time for the 50 m swim. She trains three times a week. At the end of each week, she times how long it takes her to swim 50 m in the pool. The line graph shows her progress. Use the graph to answer the questions that follow.



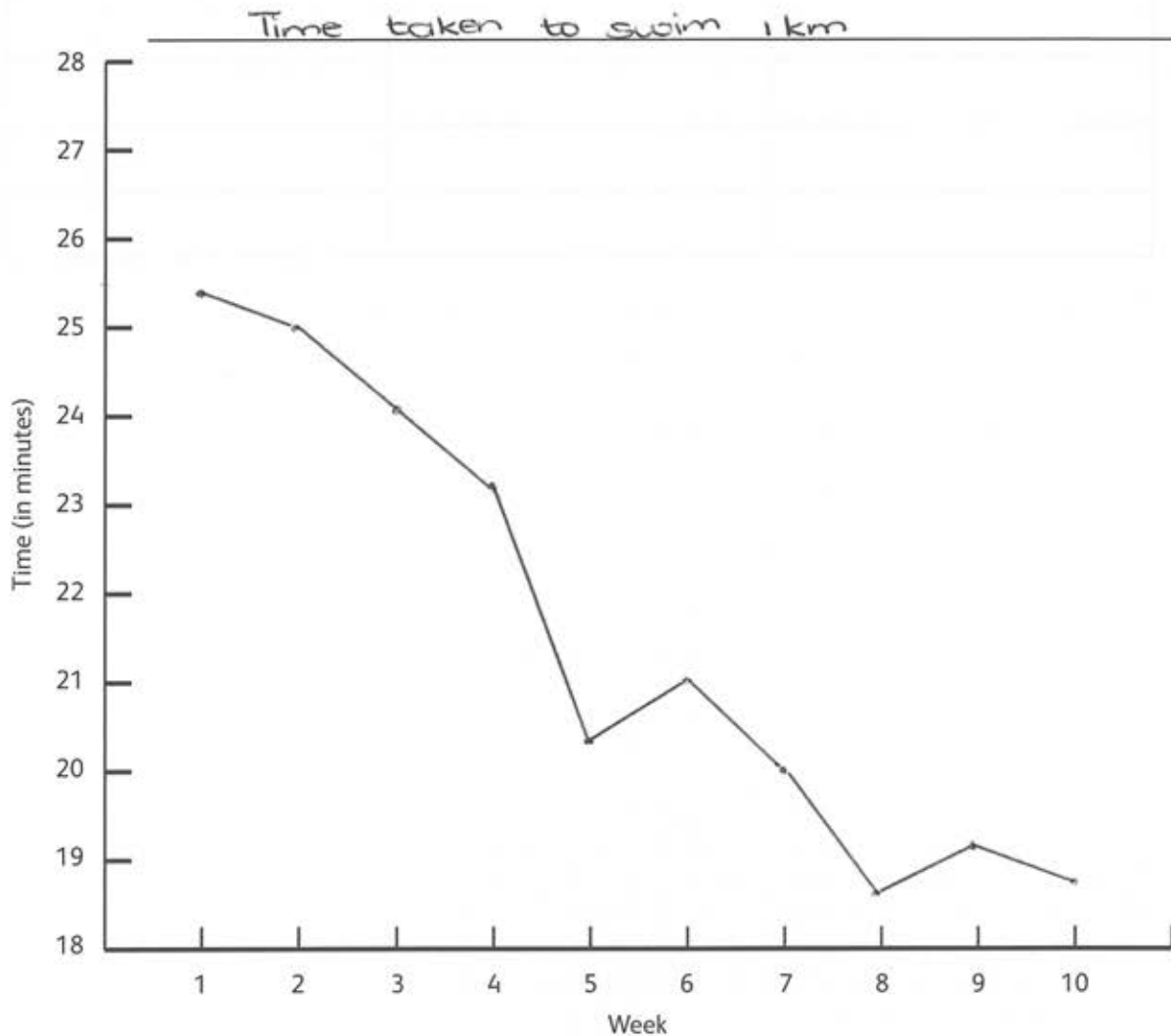
- 1 What does the line graph tell us about Sally's progress over the 10-week training period?
Her time improved
- 2 How many minutes did Sally take to complete the 50 m swim in the first week?
120 seconds = 2 minutes
- 3 How many weeks did it take Sally before she halved her original time?
4 weeks
- 4 By the end of the training period, how many seconds did Sally take off her original swimming time for the 50 m?
 $120 - 50 = 70$ seconds
- 5 Between which two weeks did Sally's time improve the most?
Weeks 3 and 4
- 6 Between which two weeks did Sally's time stay the same?
Weeks 8 and 9
- 7 Between which two weeks did Sally's time worsen?
Weeks 4 and 5

More line graphs

Danny is a long-distance swimmer. The table shows his times for swimming 1 kilometre over a 10-week training period. Danny's times are given in minutes and seconds.

Week	1	2	3	4	5	6	7	8	9	10
Time (in min and s)	25:45	25:00	24:10	23:15	20:55	21:05	20:17	18:59	19:50	19:01

- 1 Use the information from the table to plot Danny's progress over the 10-week period.



- 2 What does the graph show you about Danny's overall progress over the 10-week period?

He improved his time

- 3 How much faster did he swim in Week 10 than in Week 1? 6:44

- 4 What was the difference in Danny's times between Week 1 and Week 2? 0:45

- 5 Between which two weeks did Danny's time improve the most? Weeks 4 & 5

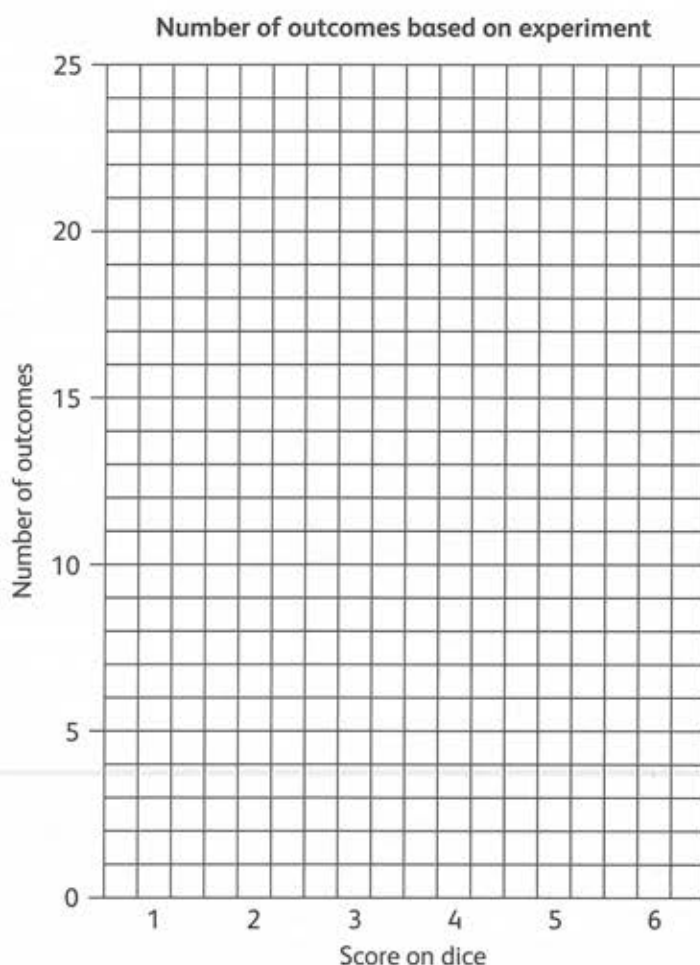
Probability

You are going to do an experiment. You will need a normal six-sided dice.

- 1 Roll your dice 60 times and complete the table to record your results.

Possible outcomes	Tally	Frequency

- 2 Draw a bar graph to show your results after rolling the dice 60 times.



- 3 Compare your results with those of your classmates. Are they all the same? Suggest why or why not.