1 Write below each pattern the number of **mirror lines** it has.

a)   b)   c)   d)   e)   f)   g)   h)

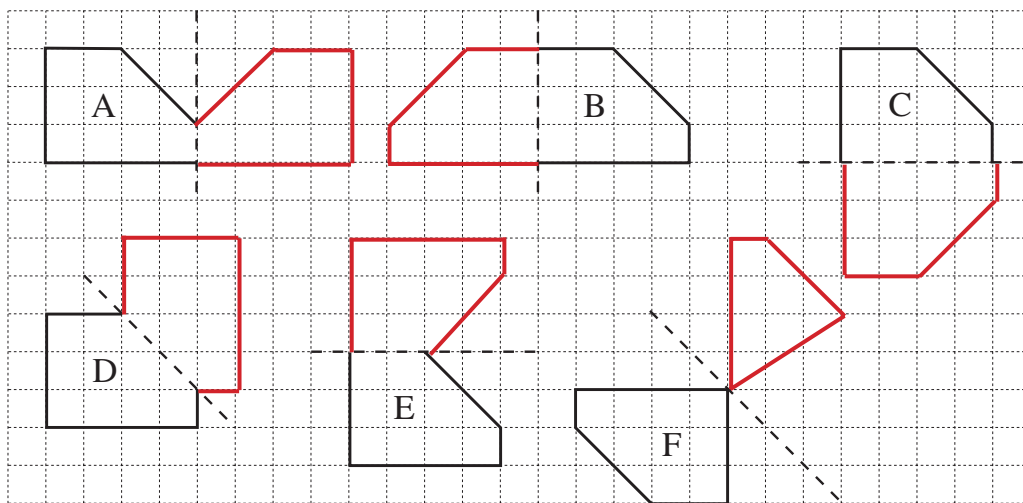| 1 | 1 | 2 | 1 | 4 | 0 | 0 | 4 |
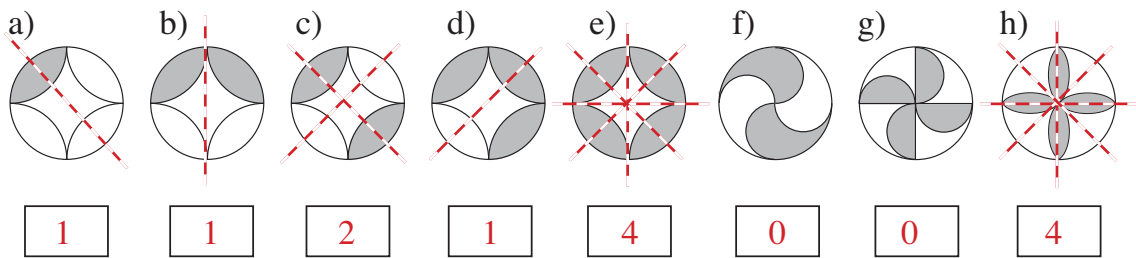
2 Colour each shape so that it has:

a)   exactly one mirror line
E.g:

b)   more than one mirror line
E.g:
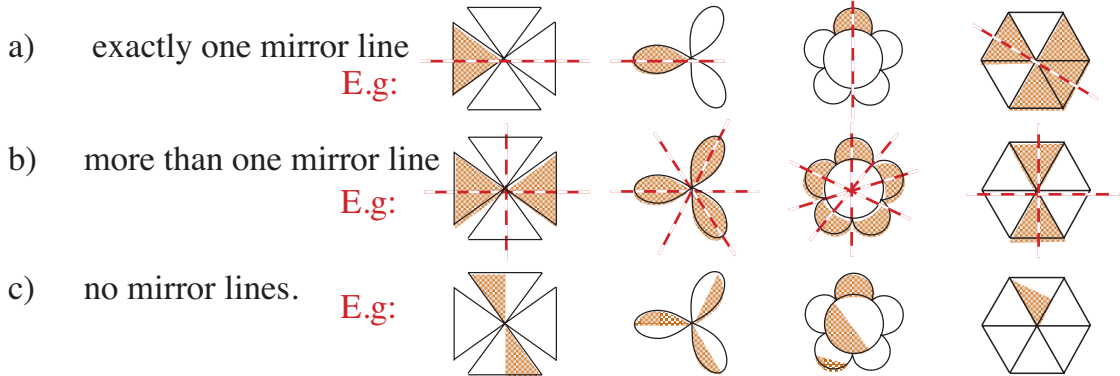
c)   no mirror lines.
E.g:

3 Reflect the shape in different ways. The broken lines are the mirror lines.
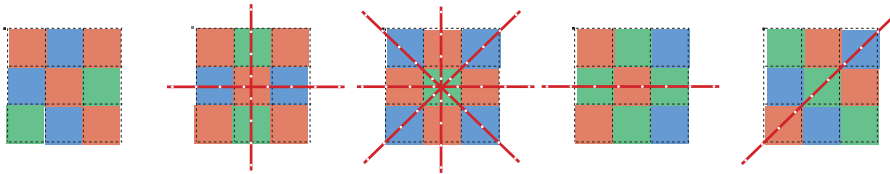
A   B   C

D   E   F

4 Draw the **mirror image** of each shape.

a)   b)   c)
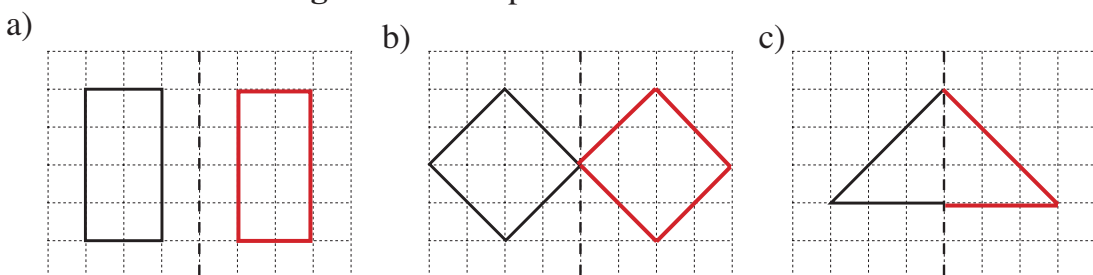
1 Colour the unit squares using only 3 colours. Do not use the same colour for adjoining unit squares. Make every large square different.
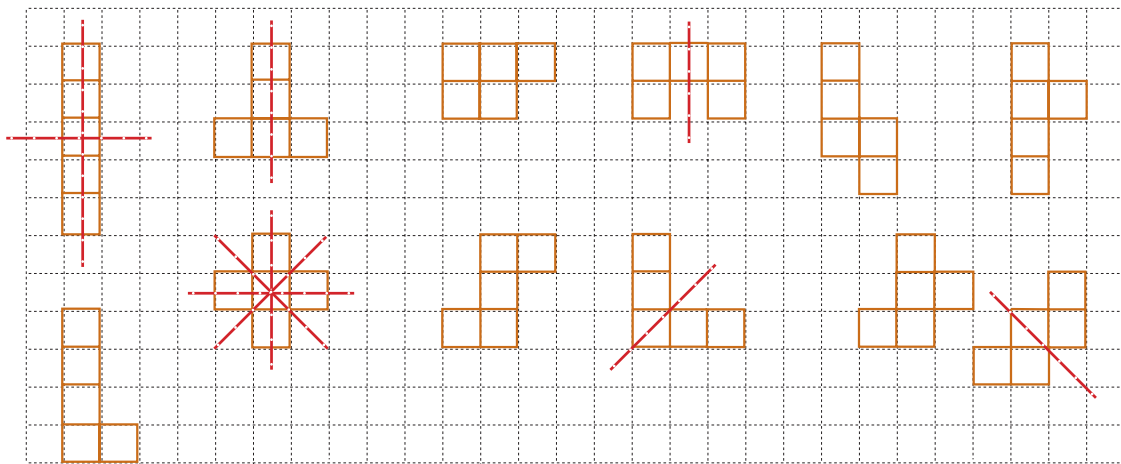
E.g:

If a pattern is symmetrical, then draw in the mirror line(s).

2 Draw a line around 5 unit squares in different ways.

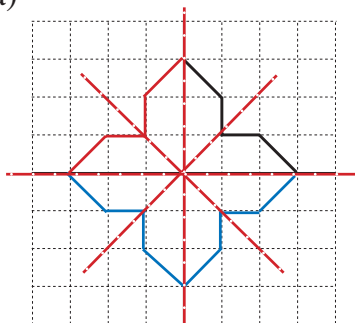If a shape is **symmetrical**, draw in any mirror lines.
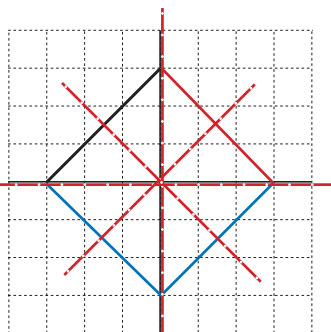
E.g:

3 Reflect the shape in one **axis** first. Then reflect the shape and its mirror image in the other **axis**. Draw the mirror lines of the whole shape.

E.g:

a)

b)

c)
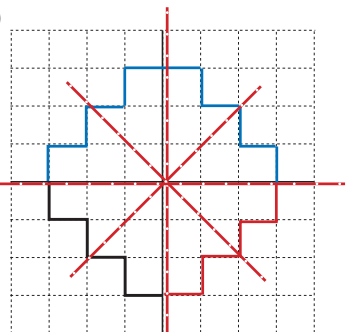
d)
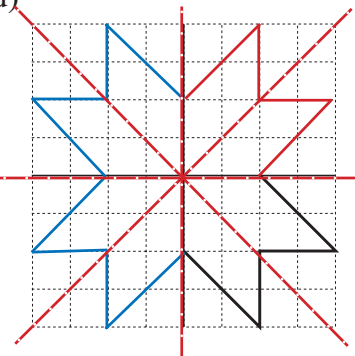
e)

f)

1 Colour the row in which the ducks are mirror images of each other.

2 Complete the drawings so that each duck is exactly the same as the first duck.

a)   b)   c)   d)

e)   f)   g)   h)

Join up the pairs which are mirror images of each other.

3 Draw the duck on these grids.

a)   b)   c)   d)
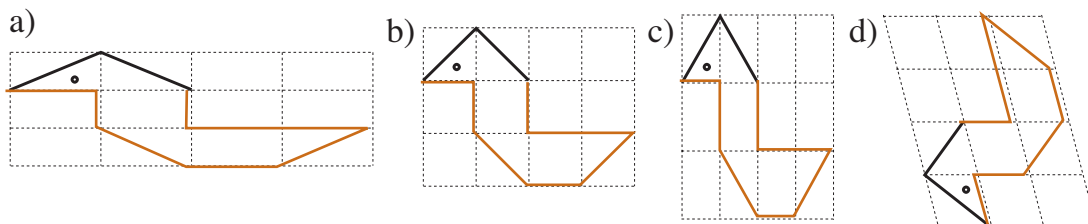
4 Draw the mirror image of the mouse.

a)   b)   c)
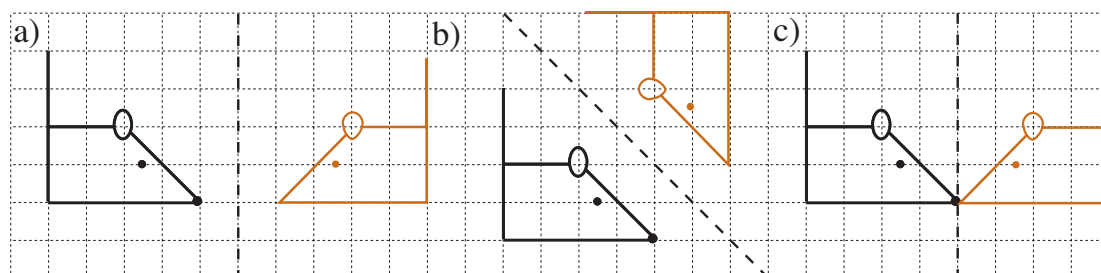
1 Colour in the same colour shapes which are **similar** to

i)   rectangle 1   ii)   rectangle 2   iii) rectangle 3.

Use a different colour for each set of shapes.
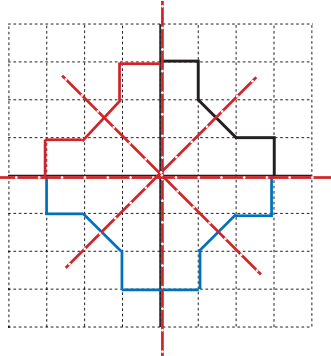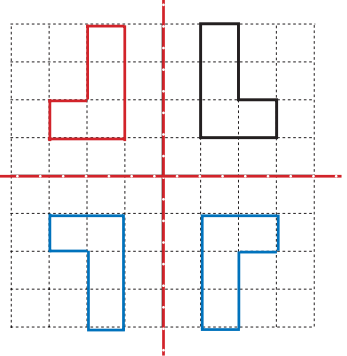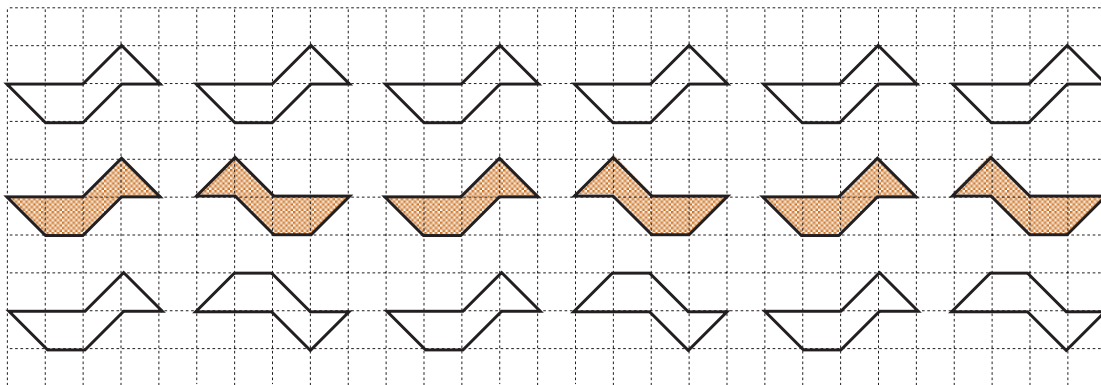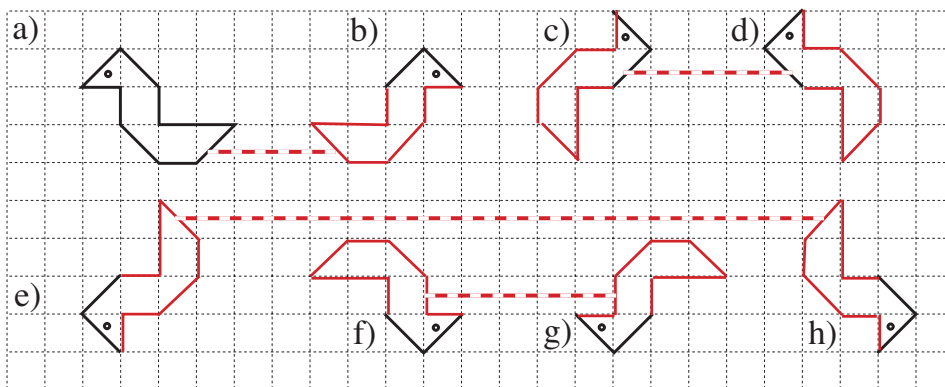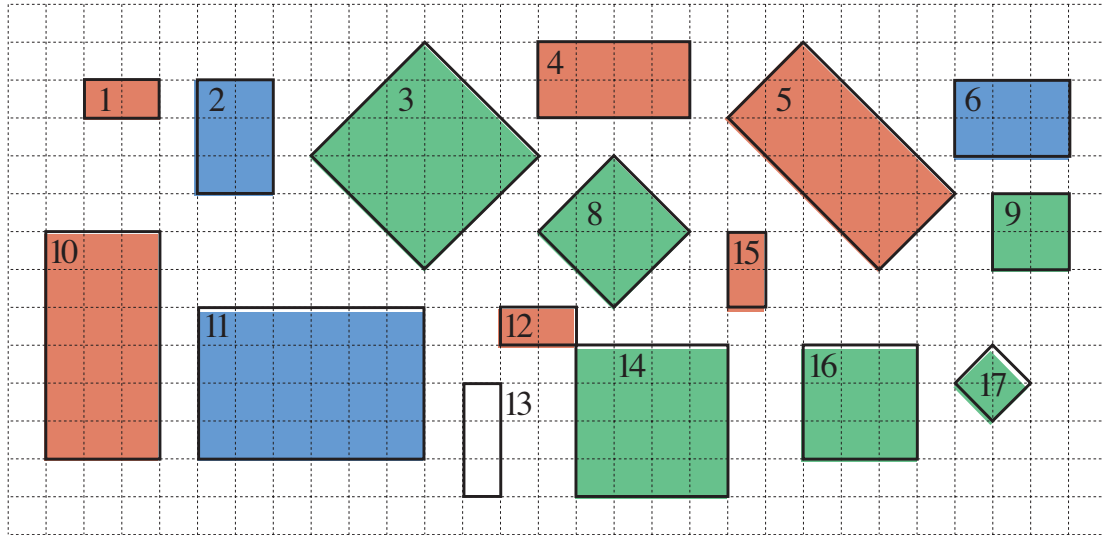

2 This is a plan of a garden. *Scale*: 1 cm represents 1 m in real life.

4 m
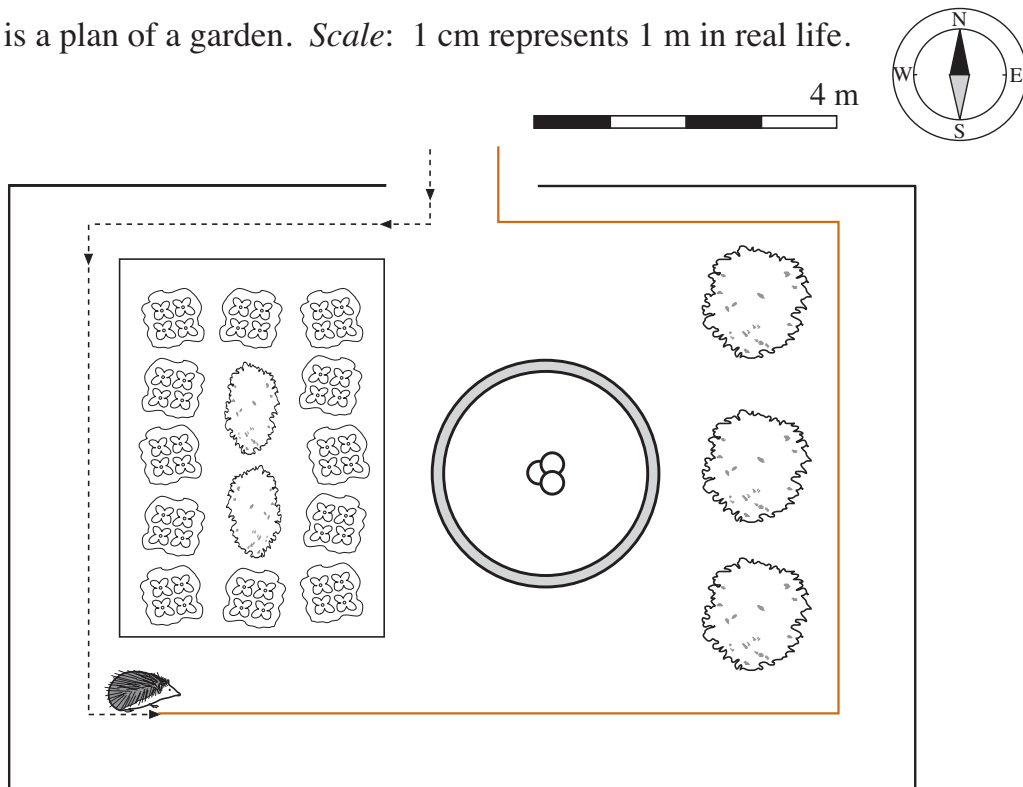
a)   In which direction does the entrance face?   N

b)   In real life, what is the: i)   length of the garden,   L =   12 m

                                         ii)   width of the garden?   W =   8 m

(or *vice versa*)

c)   The broken line shows *Hedgehog*'s route. Draw where he goes next if he
       walks 9 m East, then 6.5 m North, then 4.5 m West, then 1 m North.

1 Colour any large shape which is **similar** to the small shaded shape inside it.

a)   b)   c)   d)   e)   f)

g)   h)   i)   j)
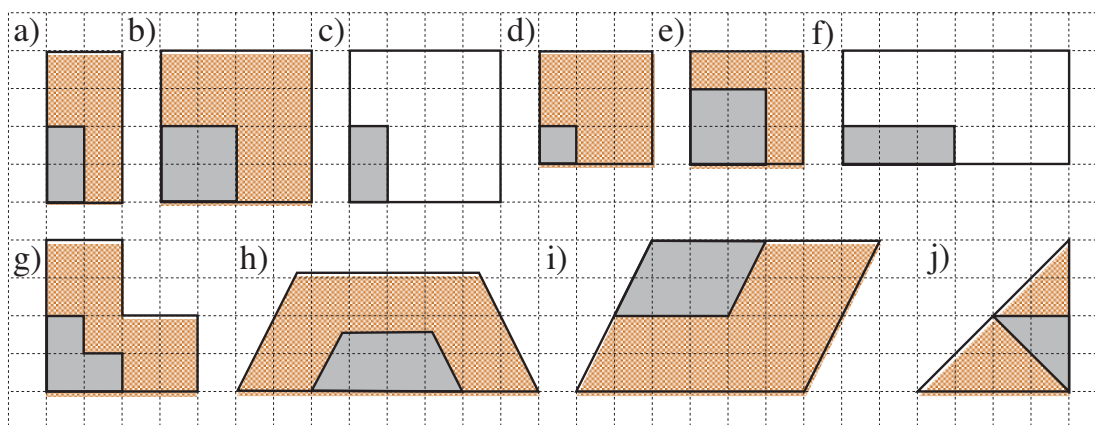
2 Colour **similar** shapes in the same colour.

a)   b)   c)

d)   e)   f)   g)

h)   i)   j)
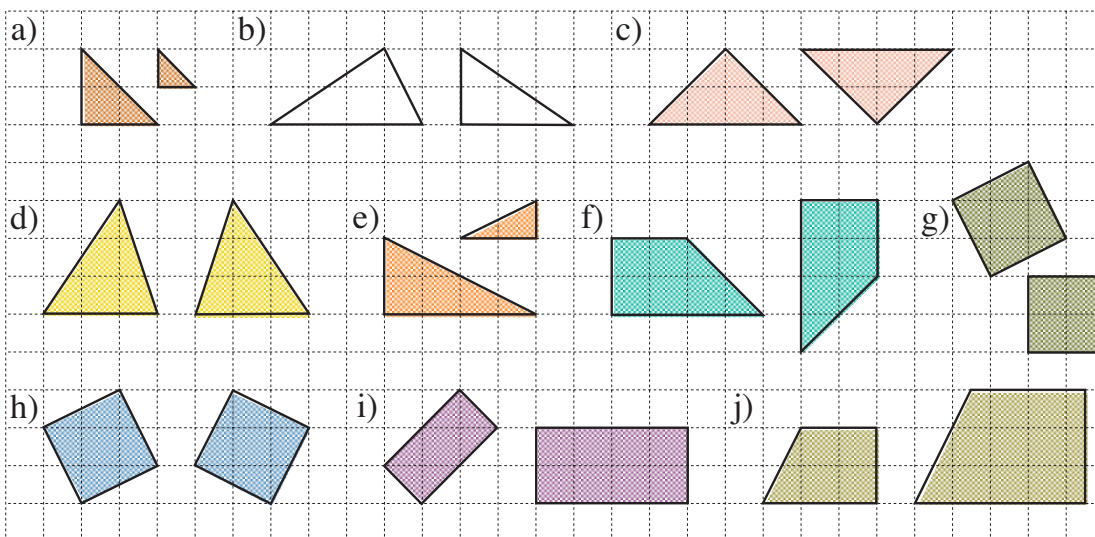
3
a)   Write the letters of **similar** shapes below.

Similar: A, D, E, I;
  B, G;   C, H

b)   Draw over **parallel** lines in the same colour.

c)   Mark **right angles** with *red* squares.

A   B   C   D

E

F

G   H   I
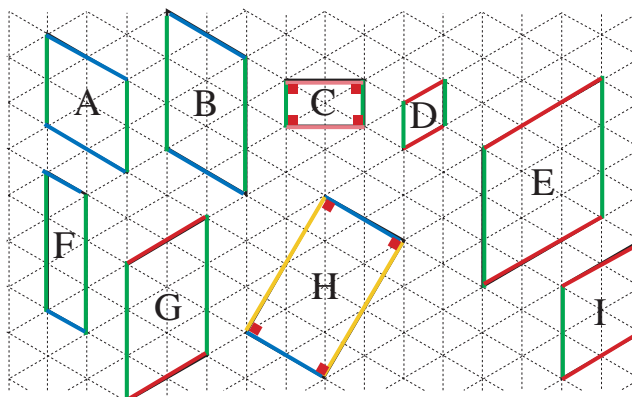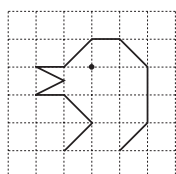
4
a)   Copy this bird's head in your exercise books.

b)   Enlarge it to 2 times and 3 times its size.

Accurate drawings on squared paper.

1

This picture is a smaller copy of a larger picture.

Scale: 1 mm on the copy means 1 cm on the real picture.

a) By how much was the real picture reduced?
    .... 1 tenth .....

b) How long were the sides of the real picture?
    ..... 32 cm .... and ..... 40 cm ....

c) How long is the perimeter of this copy? $P = 2 \times$ width $+ 2 \times$ height
    ....
    $= 2 \times 32$ mm $+ 2 \times 40$ mm
    $= 64$ mm $+ 80$ mm $= 144$ mm

d) What length of wood would be needed to make a frame for the real picture?
    P of real picture $= 10 \times 14$ cm 4 mm
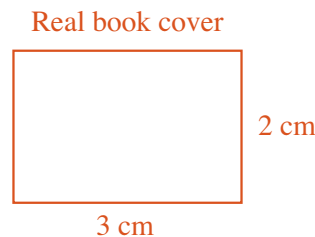 $= 144$ cm (1 m 44 cm)

2

This is an enlarged copy of the front cover of a tiny book.

Printed by Domble Land Press

❄
Wonderland
Tales
❄

Dizzy Domble's

4 cm

6 cm

Draw the real book cover if the smaller side is 2 cm long.

Real book cover

2 cm

3 cm

What is the length of the larger side of the real book?   The larger side is 3 cm long.

3

This is the ground plan of a room.

Scale: 1 mm on the plan means 10 cm in real life.
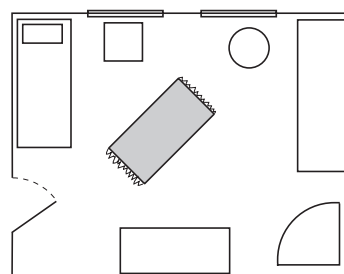
a) In the **plan**, measure the
    i)   width of the room: 45 mm ....
    ii) length of the room: 35 mm ......

b) In **real life**:
    i)   what is the width of the door?   .. 70 cm ....
    ii)   what is the width of each window?   .. 100 cm ....
    iii) what length of wood would be needed to make the skirting board around the bottom of the walls?

    Length of skirting board:
    $2 \times (450$ cm $+ 350$ cm$) - 70$ cm
    $= 2 \times 800$ cm $- 70$ cm
    $= 1600$ cm $- 70$ cm
    $= 1530$ cm $(= 15$ m 30 cm)

Page 94

1 These solids have been built from unit cubes.
Join up the solids which are **mirror images** of each other.
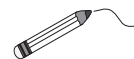
A   B   C   D

2	1
1	1

1	2
1	1

1	1
1	2

1	1
2	1

2 Build these solids. How many units did you use for each one?

a)   4 unit cubes

b)   8 unit cubes

c)   4 2-unit cuboids

d)   6 2-unit cuboids

e)   4 2-unit cuboids

3 Write how many unit cubes have been used to build each of these **cuboids**.

Think about what is the relationship between them.

a) i)   1 unit cube
$(1 \times 1 \times 1)$

ii)   8 unit cubes
$(2 \times 2 \times 2)$

iii) 27 unit cubes
$(3 \times 3 \times 3)$

iv) 64 unit cubes
$(4 \times 4 \times 4)$

b) i)   2 unit cubes
$(2 \times 1 \times 1)$

ii)   16 unit cubes
$(4 \times 2 \times 2)$

iii) 54 unit cubes
$(6 \times 3 \times 3)$

iv) 128 unit cubes
$(8 \times 4 \times 4)$

c) i)   8 unit cubes
$(4 \times 2 \times 1)$

ii)   64 unit cubes
$(8 \times 4 \times 2)$

iii) 216 unit cubes
$(12 \times 6 \times 3)$

1 Write as many 3-digit numbers as you can from the numbers 2, 3, 5 and 7.

235	325	523	723
237	327	527	725
253	352	532	732
257	357	537	735
273	372	572	752
275	375	573	753

2 a) Build solids from unit cubes to match each of these ground plans.

i)

1	2	3
1	2	3
1	2	3

ii)

3	2	1
2	2	1
1	1	1

iii)

2	1	2
2	2	1
1	1	1
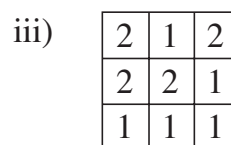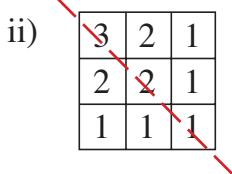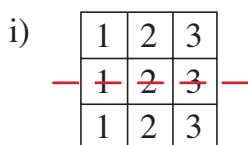
b) How many unit cubes are needed to build each solid?

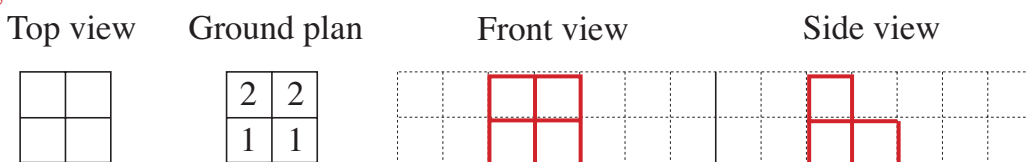i)   18 unit cubes   ii)   14 unit cubes   iii)   13 unit cubes

c) Which solid is **symmetrical**? Draw the **line of symmetry** (mirror line).
Solids in i) and ii) are symmetrical.

3 a) Rita built a solid from 6 unit cubes. She drew how it looks from above and made a ground plan.

Draw in the grid what Rita's solid would look like from the front and side.

E.g:

Top view   Ground plan   Front view   Side view

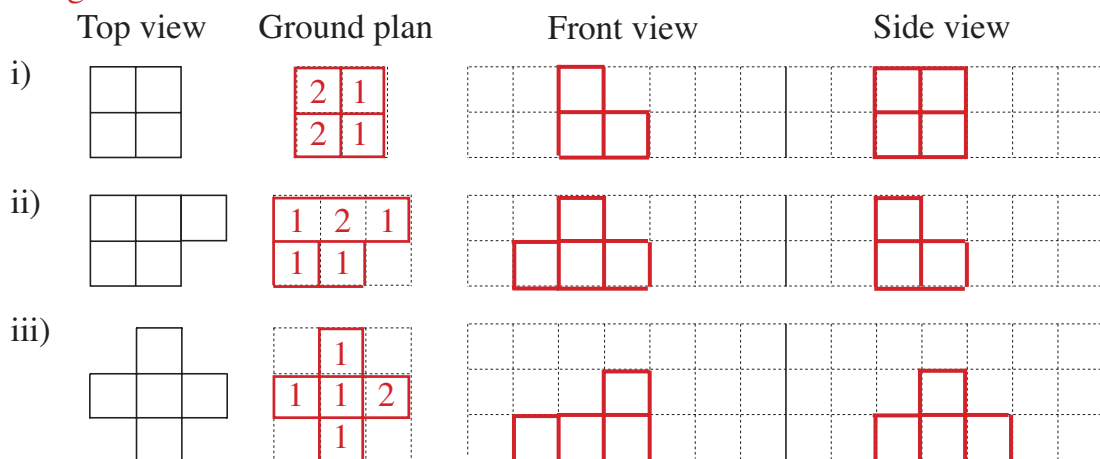| 2 | 2 |
| 1 | 1 |

b) Build solids from 6 unit cubes to match the views from the top.

Make a ground plan and draw the front and side views in the grids.

E.g:

Top view   Ground plan   Front view   Side view

i)

| 2 | 1 |
| 2 | 1 |

ii)

| 1 | 2 | 1 |
| 1 | 1 | |

iii)

	1	
1	1	2
	1	

1
Draw a *red* line around the rectangles which have 1 half shaded.
Draw a *blue* line around the rectangles which have 1 third shaded.
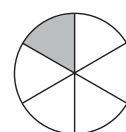Draw a *green* line around the rectangle which has 1 quarter shaded.
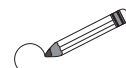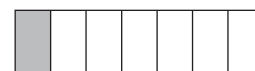
a)   b)   c)   d)

e)   f)   g)   h)

2
a)   Anna invited 5 friends to her birthday party. She cut her cake into 6 equal pieces. What part of the cake did each child get?
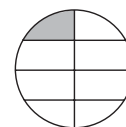
. Each child had one sixth of the cake. . . . .

b)   How was the block of ice-cream divided up if each person at the table got 1 seventh of it?

. The block was divided into 7 equal parts. . . . . . .

c)   This is how *Mrs Mouse* cut up the cheese to give to her 8 children. Did they each get 1 eighth of the cheese?

. No. The parts shown are not of equal sizes. . . . .

3
Colour the parts of the shapes given.
E.g:

a)   b)   c)   d)   e)
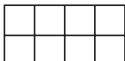
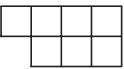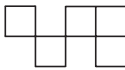4 eighths   3 quarters   1 half   3 eighths   1 third
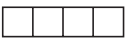
4
A strip of paper is 1 unit long. What is the value of each shaded part?

1 unit

a)   1 half
b)   1 third
c)   1 quarter
d)   1 sixth
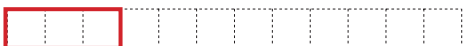e)   1 ninth
f)   1 tenth
g)   1 twelfth

1 This is 1 unit.
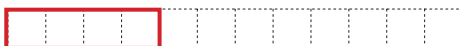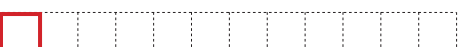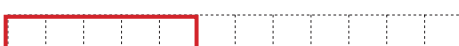
What part of this unit is each of these drawings?

a) 4 eighths
2 quarters
1 half

b) 2 eighths
1 quarter

c) 1 eighth

d) 4 eighths
2 quarters; 1 half

e) 7 eighths

f) 5 eighths
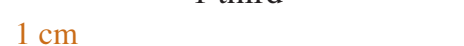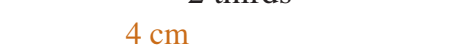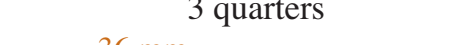
2 This rectangle is 1 unit:

Draw:

a)   1 half

b)   1 sixth

c)   1 quarter

d)   1 third

e)   2 halves

f)   1 twelfth

g)   5 sixths

h)   5 twelfths

3 A line is 1 unit long. Measure and colour over these parts of the line.

a) 3 cm — 1 half   6 cm — 2 halves (= 1)

b) 2 cm — 1 third   4 cm — 2 thirds

c) 1 cm — 1 sixth   4 cm — 4 sixths (= 2 thirds)

d) 15 mm — 1 quarter   45 mm — 3 quarters

e) 12 mm — 1 fifth   36 mm — 3 fifths

4 Which positive whole numbers can be written instead of the letters?

$a \times 1$ half < 1 a: 1 . . . .

$b \times 1$ half $= 1$ b: 2 . . . .

$c \times 1$ half > 1 c: 3, 4, 5, ...

$d \times 1$ quarter < 1 d: 1, 2, 3 . . . .

$e \times 1$ quarter $= 1$ e: 4 . . . .

$f \times 1$ quarter > 1 f: 5, 6, 7, ...

1 Draw a line around:
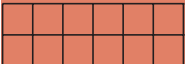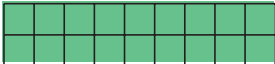
E.g:
a)   1 half   b)   1 quarter   c)   1 third
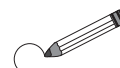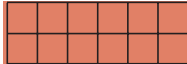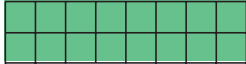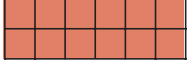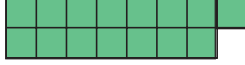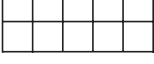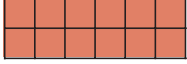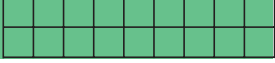
2 Fill in the missing numbers. If 1 unit is [figure] , what are these parts?

a)

| 1 | half | 2 | halves | 3 | halves |

b)

| 1 | third | 2 | thirds | 3 | thirds | 4 | thirds |

c)

| 1 | quarter | 2 | quarters | 3 | quarters | 4 | quarters | 5 | quarters |

d)

| 1 | sixth | 2 | sixths | 3 | sixths | 5 | sixths | 6 | sixths |

| 7 | sixths | 9 | sixths |
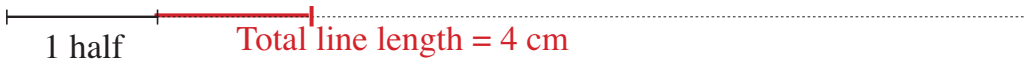
Colour:
• *red* the shapes = 1
• *green* the shapes > 1

3 Draw the whole unit if this is:

a)
    1 half   Total line length = 4 cm

b)
    1 quarter   Total line length = 12 cm

c)
    1 fifth   Total line length = 10 cm

d)
    1 third   Total line length = 12 cm
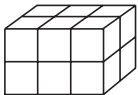
1 If this solid is 1 unit: , what part of a unit are these solids?

a)

11 twelfths

b)
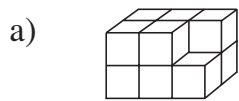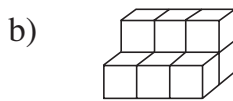
9 twelfths; 3 quarters

c)
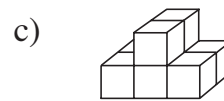
8 twelfths; 4 sixths;
2 thirds

d)
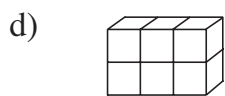
6 twelfths;
3 sixths;1 half

e)
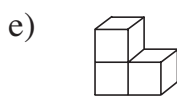
3 twelfths; 1 quarter

f)

5 twelfths

g)
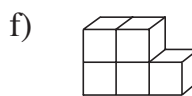
4 twelfths; 2 sixths;
1 third

2 Only the minute hand is on the clock. What part of an hour does it show?

a)
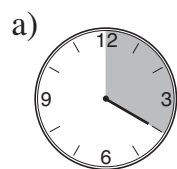
20 minutes

1 third
of an hour

b)
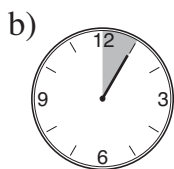
5 minutes

1 twelfth
of an hour

c)
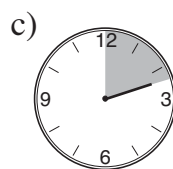
12 minutes

1 fifth
of an hour

d)
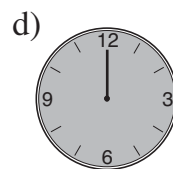
60 minutes

1 whole
hour

e)
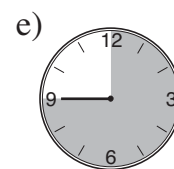
45 minutes

3 quarters
of an hour

3 Fill in the missing numbers.

a)   2 fifths + [3] fifths = 1   b)   3 quarters + [1] quarters = 1

c)   2 sixths + [4] sixths = 1   d)   5 eighths + [3] eighths = 1

e)   3 tenths + [7] tenths = 1   f) 5 hundredths + [95] hundredths = 1

4 Fill in the missing numbers.

a)   half a metre = [50] cm   b)   half a kg = [500] g

1 fifth of a metre = [20] cm   1 quarter of a kg = [250] g

1 tenth of a metre = [10] cm   1 tenth of a kg = [100] g

3 quarters of a metre = [75] cm   3 quarters of a kg = [750] g

3 fifths of a metre = [60] cm   5 tenths of a kg = [500] g

7 tenths of a metre = [70] cm   2 fifths of a kg = [400] g

11 hundredths of a metre = [11] cm   9 hundredths of a kg = [90] g

1   Write in the missing sign to make the statement correct. Check on the grids.

a)   349 + 572 < 727 $\boxed{+}$ 199

$$C: \begin{array}{ccc} & 3 & 4 & 9 \\ + & 5 & 7 & 2 \\ \hline & 9 & 2 & 1 \end{array} \quad < \quad \begin{array}{ccc} & 7 & 2 & 7 \\ + & 1 & 9 & 9 \\ \hline & 9 & 2 & 6 \end{array}$$

b)   942 – 443 > 849 $\boxed{-}$ 367

$$C: \begin{array}{ccc} & 9 & 4 & 2 \\ - & 4 & 4 & 3 \\ \hline & 4 & 9 & 9 \end{array} \quad > \quad \begin{array}{ccc} & 8 & 4 & 9 \\ - & 3 & 6 & 7 \\ \hline & 4 & 8 & 2 \end{array}$$

2   Write as many different 3-digit numbers as you can from these numbers, using each digit only once.

a)   7, 8 and 9   789, 798, 879, 897, 978, 987

b)   3, 4, 5 and 6   345, 346, 354, 356, 364, 365,

435, 436, 453, 456, 463, 465,

534, 536, 543, 546, 563, 564,

634, 635, 643, 645, 653, 654

3   Write these numbers in the correct place in the diagrams.

0, 4, 13, 30, 72, 95, 100, 321, 679, 1000, 1006, 1027, 2000

a)

Even	Odd
0 4 72 100 30 1006 1000 2000	13 321 95 679 1027

b)

Whole tens	Not whole tens
0 30 100 1000 2000	13 321 4 95 679 72 1006 1027

c)

3-digit	Not 3-digit
100 321 679	0 4 72 13 30 95 1006 1000 1027 2000

d)

Whole hundreds	Not whole hundreds
100 0 1000 2000	13 95 321 4 72 679 1027 1006 30

4   Which numbers can be written instead of the shapes?

a)   440 – 10 × ☆ = 315 + 45   b)   726 – 571 + ⌒ > 161

☆ : 8   ⌒ : 7, 8, 9, ...

Check: 440 – 10 × 8 = 440 – 80 = 360   *Check:* E.g: 726 – 571 + 8 = 155 + 8

                                                                    = 163 > 161

1 Tick the operations which answer the problem and then do the calculations.

Lee had a £10 note and 22 p. He spent £2.56, then his sister gave him 35 p.
How much money does Lee have now?

In pence: ✗ $1022 + 256 – 35$ = ...

✗ $1022 – 256 – 35$ = ...

✓ $1022 – 256 + 35$ = $766 + 35 = 801$ (p) . . . .

✗ $1022 + 256 + 35$ = ...

✓ $1022 – (256 – 35)$ = $1022 – 221 = 801$ (p) . . . .

2 Make a plan, do the calculation and write the answer in a sentence.

Hetty Hedgehog had 347 apple pips. She got 172 orange pips from her Mum.
Then she swapped 268 apple pips for grape pips with a friend.

How many pips does *Hetty Hedgehog* have now?

Plan: $347 + 172 – 268 + 268 =$

(or $347 + 172 =$)

C:

	3	4	7
+	1	7	2
	5	1	9

Answer: Hetty Hedghog has 519 pips now.

3 a) A 2 litre bottle was full of water. We poured out 35 cl of water.
How much water is left in the bottle? $200\ cl – 35\ cl = 165\ cl$ (= 1 litre 65 cl)
. . . 165 cl of water is left in the bottle. . . . .

b) A 2 litre bottle contained 35 cl of water. We poured in another 35 cl of
water. How much water is in the bottle now? $35\ cl + 35\ cl = 70\ cl$
. . . 70 cl of water is in the bottle now. . . . .

c) A 2 litre bottle contained 36 cl of water. We poured out 10 cl 9 ml of water.
How much water is left in the bottle? $36\ cl – 10\ cl\ 9\ ml = 360\ ml – 109\ ml$
. . . 251 ml of water is left in the bottle. . . . . $= 251\ ml$
. . . . $(= 25\ cl\ 1\ ml)$

4 Last April, it rained on 3 fifths of the days.

a) On how many days did it rain? $3 × (30 ÷ 5) = 18$
It rained on 18 days. . . . .

b) Did it rain on more than half the days? No . . . . . .

c) What part of April was dry? 2 fifths of April was dry.

April

Sun	1	8	15	22	29
Mon	2	9	16	23	30
Tue	3	10	17	24	
Wed	4	11	18	25	
Thu	5	12	19	26	
Fri	6	13	20	27	
Sat	7	14	21	28	

1 Write the temperature below the thermometers. Write in the missing sign.

a)

| 6 | °C | > | 1 | °C |

b)

| ⁻3 | °C | > | ⁻9 | °C |

c)

| ⁻5 | °C | < | 2 | °C |
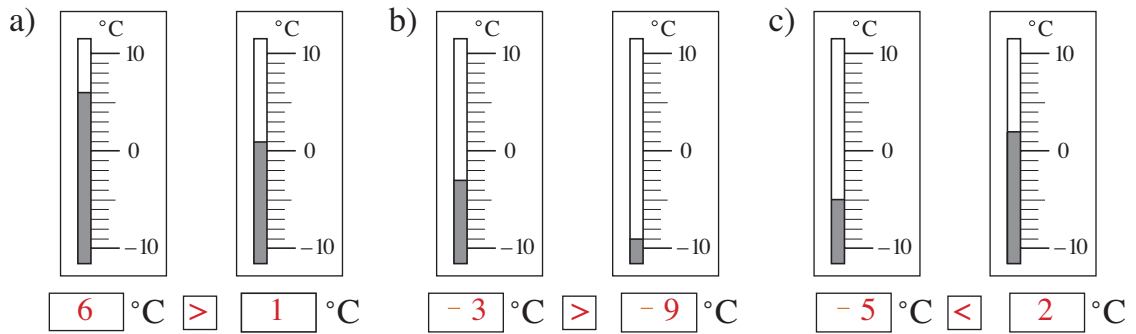
2 Mark the temperatures on the thermometers. Which is higher and by how much?

a)

5 °C [>] − 5 °C

| 10 | °C |

b)

− 9 °C [<] 0 °C

| 9 | °C |

c)

− 1 °C [>] − 10 °C

| 9 | °C |
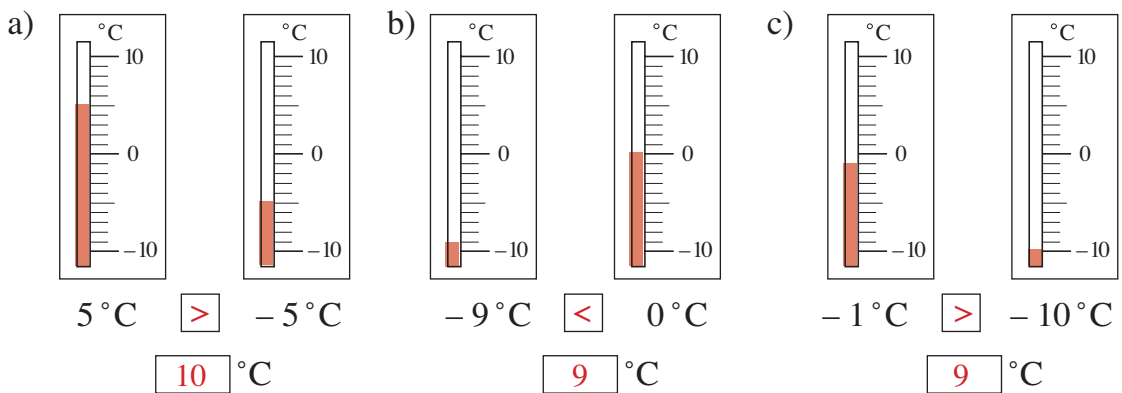
3 How much does each child have?

Who has more? Write in the missing sign.

① means £1 in cash

⎡ − 1 ⎤ means £1 in debt

a) Ann   Paul

2 [>] ⁻2

b) Ben   Rose

0 [=] 0

c) Colin   Sonia

⁻2 [<] 1
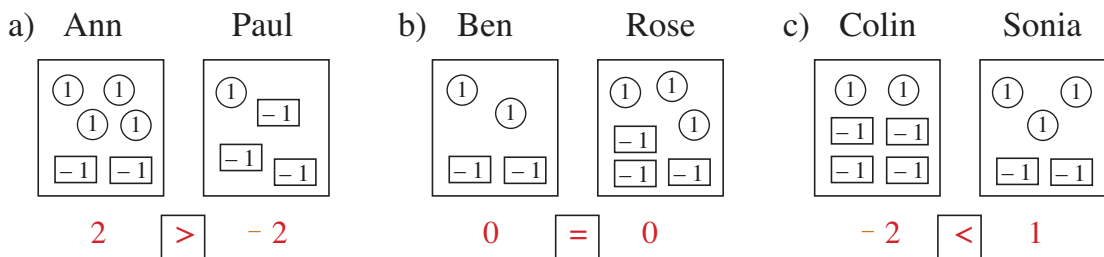
4 Complete the drawings to make the statements correct.
E.g:

a)   Alice's balance is − £6:   ① ① ⎡−1⎤ ⎡−1⎤ ⎡−1⎤ ⎡−1⎤ ⎡−1⎤ ⎡−1⎤ ⎡−1⎤ ⎡−1⎤

b)   Barry's balance is   £3:   ① ① ① ⎡−1⎤ ⎡−1⎤ ① ①

c)   Carol's balance is   £0:   ① ① ① ① ⎡−1⎤ ⎡−1⎤ ⎡−1⎤ ⎡−1⎤

d)   Dan's balance is   − £4:   ① ① ① ⎡−1⎤ ⎡−1⎤ ⎡−1⎤ ⎡−1⎤ ⎡−1⎤ ⎡−1⎤ ⎡−1⎤

e)   Eve's balance is   £5:   ① ① ① ① ① ① ⎡−1⎤

1   Join up the fruit to the corresponding point on the number line.
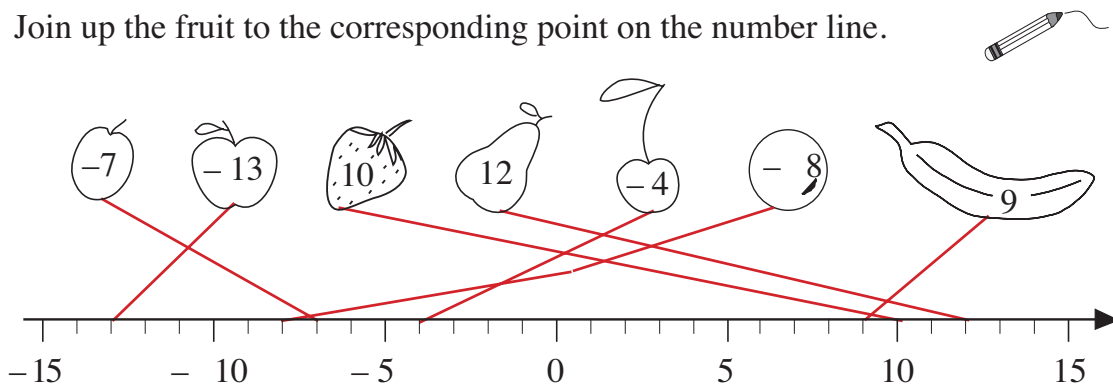
2   How much money does each child really have?

Write the amounts in increasing order.

① means £1 in cash

–1 means £1 in debt

Lisa	Charlie	Billy	Clare	Diane
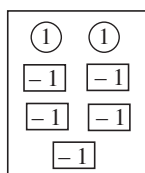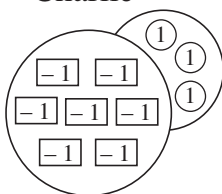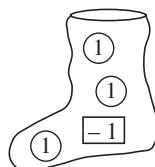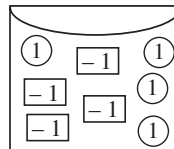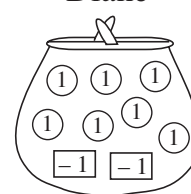
– £3   £– 4   £2   £0   £5

£– 4 < £– 3 < £0 < £2 < £5

3   Draw two different ways of showing these amounts. Use ① and –1

E.g:

a)   – £3 = –1 –1 –1   = –1 –1 –1 ① ①

b)   £3   = ① ① ①   = ① ① ① ① ① –1 –1

c)   £0   = ① –1   = ① ① –1 –1

4   Wendy went to Austria for a winter holiday. One day, she decided to note down the outside temperature every hour. She made this table to show her data.

Time (hours)	7	8	9	10	11	12	13	14	15	16	17	18	19
Temperature (°C)	– 9	– 10	– 6	– 2	0	3	6	8	9	7	4	– 1	– 3

a)   When was it: i) coldest 8.00 am or 08.00 hours   ii) warmest? 3.00 pm or 15.00 hours

b)   Write the temperatures in increasing order.

–10 < –9 < –6 < –3 < –2 < –1 < 0 < 3 < 4 < 6 < 7 < 8 < 9

1 How much is in the picture? Fill in the missing numbers.

50 50 50 50 50 50 50 50 50 50 ⎫
50 50 50 50 50 50 50 50 50 50 ⎬ 1000
50 50 50 50 50 50 50 50 50 50 ⎫
50 50 50 50 50 50 50 50 50 50 ⎬ 1000

$2 \times 1000 = 2000$

400   400   400   400   400

$5 \times 400 = 2000$

What is 30×50? ...1500...

2 Write additions and multiplications about the pictures.
E.g:

a) ① ① ① ①
    ① ① ① ①
    ① ① ① ①

b) 10 10 10 10
    10 10 10 10
    10 10 10 10

c) 100 100 100 100
    100 100 100 100
    100 100 100 100

$4 + 4 + 4 = 12$ $40 + 40 + 40 = 120$ $400 + 400 + 400 = 1200$

$3 + 3 + 3 + 3 = 12$ $30 + 30 + 30 + 30 = 120$ $300 + 300 + 300 + 300 = 1200$

$4 \times 3 = 12$ $40 \times 3 = 120$ $3 \times 400 = 1200$

$3 \times 4 = 12$ $30 \times 4 = 120$ $4 \times 300 = 1200$

3 Three brothers were each left 257 dollars in their American uncle's will.
How much did their uncle leave them in total? Fill in the missing numbers.

A: 100 100   50   ⑤ ②
B: 100 100   50   ⑤ ② $3 \times (\boxed{200} + \boxed{50} + \boxed{7})$
C: 100 100   50   ⑤ ②

$3 \times \boxed{200} + 3 \times \boxed{50} + 3 \times \boxed{7} = \underline{600 + 150 + 21 = 771}$

600   150   21   Their uncle left them 771 dollars.

4 Write the results. Underline the operation which is impossible.

$3 \times 0 = 0$ $30 \div 3 = 10$ $8 \times 3 = 24$ $16 \div 2 = 8$ $5 \times 3 = 15$

$4 \times 5 = 20$ $15 \div 5 = 3$ $8 \times 6 = 48$ $24 \div 4 = 6$ $20 \div 5 = 4$

$6 \times 2 = 12$ $14 \div 2 = 7$ $9 \times 8 = 72$ $\underline{10 \div 0 =}$ $6 \times 4 = 24$

$10 \times 9 = 90$ $20 \div 2 = 10$ $4 \times 3 = 12$ $24 \div 8 = 3$ $54 \div 9 = 6$

1 Fill in the missing numbers.

a) 4 × [3] = 12   [28] ÷ 4 = 7   [8] × 5 = 40   45 ÷ [5] = 9

b) 3 × [8] = 24   [18] ÷ 6 = 3   [0] × 7 = 0   28 ÷ [7] = 4

c) 5 × [7] = 35   [15] ÷ 3 = 5   [2] × 8 = 16   6 ÷ [2] = 3

d) 6 × [8] = 48   [30] ÷ 5 = 6   [1] × 9 = 9   2 ÷ [1] = 2

e) 9 × [8] = 72   [32] ÷ 8 = 4   [9] × 6 = 54   63 ÷ [9] = 7

2 Write additions and multiplications about the pictures.
E.g:

a) ② ② ②
②② ②②
② ② ②

6 + 6 + 6 = 18

3 × 3 × 2 = 18

9 × 2 = 18

b) (20) (20) (20)
(20) (20) (20)
(20) (20) (20)
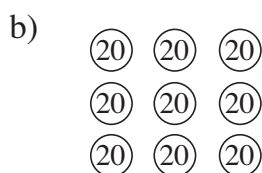
60 + 60 + 60 = 180

3 × 3 × 20 = 180

9 × 20 = 180

c) (200) (200) (200)
(200) (200) (200)
(200) (200) (200)
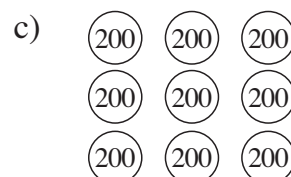
600 + 600 + 600 = 1800

3 × 3 × 200 = 1800

9 × 200 = 1800

3 Fill in the missing products. Note how they change.

a) 5 × 3 = 15   50 × 3 = 150   5 × 30 = 150   5 × 300 = 1500   50 × 30 = 1500

b) 8 × 2 = 16   80 × 2 = 160   8 × 20 = 160   8 × 200 = 1600   80 × 20 = 1600

c) 3 × 3 = 9   30 × 3 = 90   3 × 30 = 90   3 × 300 = 900   30 × 30 = 900

d) 4 × 5 = 20   40 × 5 = 200   4 × 50 = 200   4 × 500 = 2000   40 × 50 = 2000

4 How many pennies does each person have? Calculate in different ways.

John   Katy   Lorna   Michael

(10) (2)   (100) (20)   (50) (2) (1)   (500) (20) (10)
(10) (2)   (100) (20)   (50) (2) (1)   (500) (20) (10)
(10) (2)   (100) (20)   (50) (2) (1)   (500) (20) (10)
(10) (2)   (100) (20)
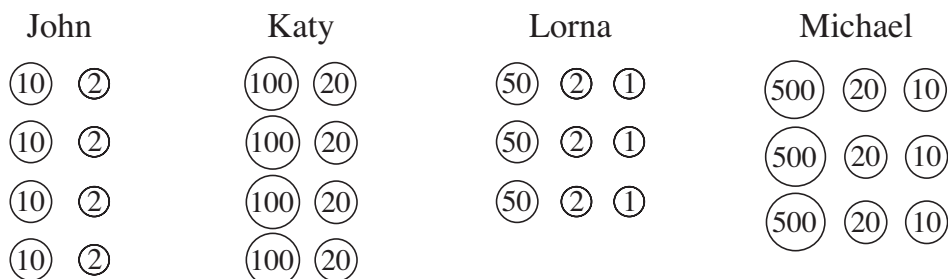
E.g:

John: 40 p + 8 p = 48 p; 4 × 10 p + 4 × 2 p = 48 p; 4 × 12 p = 48 p

Katy: 400 p + 80 p = 480 p; 4 × 100 p + 4 × 20 p = 400 p + 80 p = 480 p

Lorna: 150 p + 6 p + 3 p = 159 p; 3 × 50 p + 3 × 2 p + 3 × 1 p = 159 p; 3 × 53 p = 159 p

Michael: 1500 p + 60 p + 30 p = 1590 p;
3 × 500 p + 3 × 20 p + 3 × 10 p = 1500 p + 60 p + 30 p= 1590 p;
3 × 530 p = 1590 p

1   Fill in the missing products.

a) $6 \times 10 = \boxed{60}$ b) $5 \times 10 = \boxed{50}$ c) $30 \times 3 = \boxed{90}$

    $6 \times 4 = \boxed{24}$ $5 \times 7 = \boxed{35}$ $5 \times 3 = \boxed{15}$

    $6 \times 14 = \boxed{84}$ $5 \times 17 = \boxed{85}$ $35 \times 3 = \boxed{105}$

2   Fill in the missing products.

a) $3 \times 24 = \boxed{72}$ b) $6 \times 12 = \boxed{72}$ c) $3 \times 12 = \boxed{36}$

    $3 \times 240 = \boxed{720}$ $6 \times 120 = \boxed{720}$ $3 \times 120 = \boxed{360}$

3   Estimate the product (P). Is the estimate more or less than the exact product?

a) 227×4 i)   Rounding 227 to the nearest hundred:

                $P \approx \boxed{200} \times 4 = \boxed{800}$ $P \;(>) \;\boxed{800}$

          ii)   Rounding 227 to the nearest ten:

                $P \approx \boxed{230} \times 4 = \boxed{920}$ $P \;(<) \;\boxed{920}$

b) 468×6 i)   Rounding 468 to the nearest hundred:

                $P \approx \boxed{500} \times 6 = \boxed{3000}$ $P \;(<) \;\boxed{3000}$

          ii)   Rounding 468 to the nearest ten:

                $P \approx \boxed{470} \times 6 = \boxed{2820}$ $P \;(<) \;\boxed{2820}$

4   Estimate the product by rounding to the nearest ten.

a) $162 \times 5 \approx \boxed{160} \times 5 = \boxed{800}$ $162 \times 5 \;(>) \;\boxed{800}$

b) $177 \times 4 \approx \boxed{180} \times 4 = \boxed{720}$ $177 \times 4 \;(<) \;\boxed{720}$

c) $315 \times 3 \approx \boxed{320} \times 3 = \boxed{960}$ $315 \times 3 \;(<) \;\boxed{960}$

d) $231 \times 4 \approx \boxed{230} \times 4 = \boxed{920}$ $231 \times 4 \;(>) \;\boxed{920}$

5   In your exercise book, estimate, calculate and check the answer. Write it below.

Grandpa gave £1.35 to each of his 4 grandchildren. How much did he give them altogether? $135 \text{ p} \times 4 = 540 \text{ p}$ . . . . He gave them £5.40 altogether. . . . . . .

1

Write a plan, estimate the answer to the nearest 10 p, then do the calculation.

Ribbon costs £2.54 per metre.
How much do 3 metres cost?

£1 £1   £1 £1   £1 £1
2 50 2   2 50 2   2 50 2
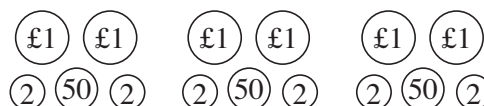
Plan: Cost of 1 metre: £2.54 = 254 p; cost of 3 metres = 3 × 254 p

Estimate: 3 × 254 ≈ 3 × 250 = 3 × 200 + 3 × 50 = 750 (p)

Calculation: 3 × 254 = 3 × 200 + 3 × 50 + 3 × 4 = 762 (p)

Answer: 3 metres of ribbon cost 762 p (= £7.62)

2

Estimate the result in your head first, then do the calculation.

a) 32 × 30 = 960   24 × 20 = 480   16 × 50 = 800   38 × 20 = 760

b) 14 × 60 = 840   17 × 50 = 850   13 × 70 = 910   21 × 40 = 840

c) 56 × 30 = 1680   40 × 37 = 1480   89 × 20 = 1780   50 × 34 = 1700

3

Three classes have each raised £321 for charity. How much have they raised altogether? Estimate in your head, then complete the drawing and calculations.

Hundreds	Tens	Units
100 100 100	10 10	①
100 100 100	10 10	①
100 100 100	10 10	①

H	T	U
3	2	1
3	2	1
3	2	1
9	6	3

+

H	T	U
3	2	1	× 3
9	6	3

3	2	1	× 3
9	6	3

Answer: They have raised £963 altogether.

4

Think about what the diagram means. Fill in the missing numbers.

73 × 3 = 2 1 9

7 0 × 3 + 3 × 3

2 1 0   9
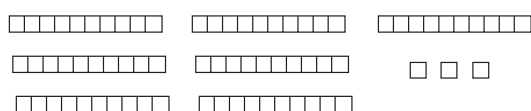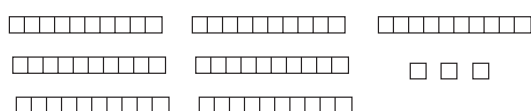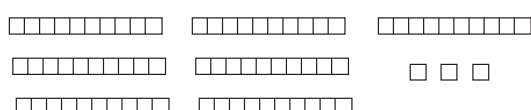
1 Fill in the missing products. Note how they change.

a) $60 \times 3 = \boxed{180}$ $60 \times 6 = \boxed{360}$ $60 \times 9 = \boxed{540}$ $60 \times 12 = \boxed{720}$

b) $40 \times 5 = \boxed{200}$ $40 \times 10 = \boxed{400}$ $40 \times 15 = \boxed{600}$ $40 \times 25 = \boxed{1000}$

c) $4 \times 2 = \boxed{8}$ $40 \times 2 = \boxed{80}$ $400 \times 2 = \boxed{800}$ $40 \times 20 = \boxed{800}$

d) $3 \times 5 = \boxed{15}$ $30 \times 5 = \boxed{150}$ $300 \times 5 = \boxed{1500}$ $30 \times 50 = \boxed{1500}$

e) $4 \times 24 = \boxed{96}$ $8 \times 12 = \boxed{96}$ $16 \times 6 = \boxed{96}$ $2 \times 48 = \boxed{96}$

   $4 \times 240 = \boxed{960}$ $8 \times 120 = \boxed{960}$ $16 \times 60 = \boxed{960}$ $2 \times 480 = \boxed{960}$

2 Fill in the missing products.

a) $5 \times 100 = \boxed{500}$ b) $4 \times 3 = \boxed{12}$ c) $7 \times 8 = \boxed{56}$

   $5 \times 20 = \boxed{100}$ $30 \times 3 = \boxed{90}$ $7 \times 30 = \boxed{210}$

   $5 \times 1 = \boxed{5}$ $200 \times 3 = \boxed{600}$ $7 \times 100 = \boxed{700}$

   $5 \times 121 = \boxed{605}$ $234 \times 3 = \boxed{702}$ $7 \times 138 = \boxed{966}$

3 Estimate first, then calculate using addition and multiplication.

a)
```
    2 0 2     E:    8 0 0
    2 0 2
    2 0 2
  + 2 0 2          2 0 2 × 4
    8 0 8          8 0 8
```

b)
```
    3 0 2     E:    9 0 0
    3 0 2
  + 3 0 2          3 0 2 × 3
    9 0 6          9 0 6
```

c)
```
                 E:    8 0 0
    4 2 3
  + 4 2 3          4 2 3 × 2
    8 4 6          8 4 6
```

d)
```
    2 0 1
    2 0 1
    2 0 1     E: 1 0 0 0
    2 0 1
  + 2 0 1          2 0 1 × 5
  1 0 0 5        1 0 0 5
```

4

a) Kate bought 3 chocolate bars at 82 pence each. How much did she pay altogether?

   Answer: Kate paid 246 p (= £2.46) altogether.

```
Th H T U
      8 2 × 3
    2 4 6
```

b) A brick weighs 4 kg. How heavy are 412 bricks?

   Answer: 412 bricks weigh 1648 kg.

```
Th H T U
    4 1 2 × 4
  1 6 4 8
```

1 Estimate first, then complete the addition and multiplication.

a)
```
    7 1    E: 70 × 6 = 420
    7 1
    7 1
    7 1
    7 1
+   7 1           7 1 × 6
  4 2 6         4 2 6
```

b) E: 200 × 4 = 800
```
    2 0 1
    2 0 1
    2 0 1
+   2 0 1       2 0 1 × 4
  8 0 4         8 0 4
```

c) E: 530 × 2 = 1060
```
    5 3 4
+   5 3 4         5 3 4 × 2
  1 0 6 8       1 0 6 8
```

d) E: 210 × 5 = 1050
```
    2 1 1
    2 1 1
    2 1 1
    2 1 1
+   2 1 1         2 1 1 × 5
  1 0 5 5       1 0 5 5
```

2 Estimate first, then do the multiplications.

a) E: 8 0 0
```
4 2 2 × 2
8 4 4
```
E: 1 2 0 0
```
4 2 2 × 3
1 2 6 6
```
E: 1 6 0 0
```
4 2 2 × 4
1 6 8 8
```

b) E: 9 0 0
```
3 2 1 × 3
9 6 3
```
E: 1 2 0 0
```
4 2 1 × 3
1 2 6 3
```
E: 1 8 0 0
```
6 2 1 × 3
1 8 6 3
```

c) E: 1 6 0
```
8 4 × 2
1 6 8
```
E: 1 2 0 0
```
8 0 4 × 2
1 6 0 8
```
E: 1 6 0 0
```
4 0 2 × 4
1 6 0 8
```

3 a) Each flower on an apple tree has 5 petals. How many petals are on a branch with 243 flowers?

Answer: There are 1215 flowers on the branch.

Th	H	T	U	
	2	4	3	× 5
1	2	1	5	

b) Workmen laid 106 m of pavement a day from Monday to Friday. How many metres did they lay in a week?

Answer: They laid 530 m in a week.

Th	H	T	U	
	1	0	6	× 5
	5	3	0	

1 Complete the table.

(Do the calculations in your exercise books if you need to.)

a	b	c	$a \times c$	$a \times b$	$b \times c$
400	5	3	1200	2000	15
450	6	4	1800	2700	24

2 Fill in the missing numbers.

a)

936
312
240   80 (3) 310   930
150
450

b)

720
120
1200   200 (6) 150   006
140
840

c)

640
160
328   82 (4) 212   848
405
1620
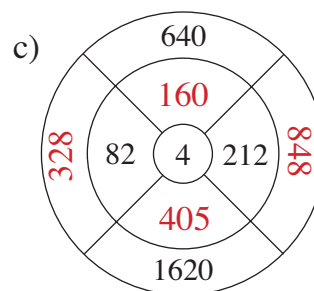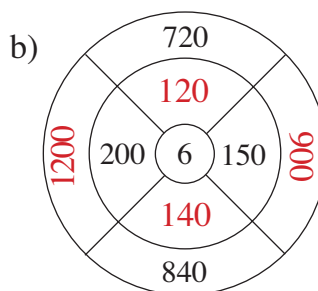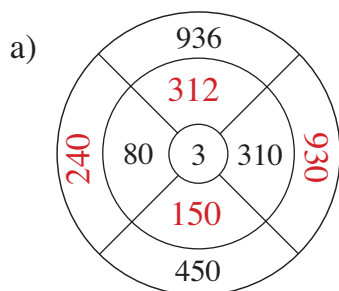
3 Calculate the products.

a)
```
    2 6 × 5
1 3 0
```
```
    5 2 × 6
3 1 2
```
```
    4 4 × 4
1 7 6
```
```
1 0 6 × 9
9 5 4
```

b)
```
    4 4 2 × 2
    8 8 4
```
```
    2 0 8 × 7
1 4 5 6
```
```
    4 0 7 × 3
1 2 2 1
```
```
    3 0 5 × 0
          0
```

c)
```
    2 0 7 × 9
1 8 6 3
```
```
    1 1 6 × 6
    6 9 6
```
```
    2 7 5 × 1
    2 7 5
```
```
    3 0 7 × 6
1 8 4 2
```

4 Fill in the missing factors.

a)
```
4 1 3 × 2
8 2 6
```
```
3 2 1 × 3
9 6 3
```
```
2 3 4 × 2
4 6 8
```
```
1 0 6 × 6
6 3 6
```

b)
```
2 0 4 × 3
6 1 2
```
```
2 1 6 × 4
8 6 4
```
```
1 3 5 × 2
2 7 0
```
```
2 1 7 × 4
8 6 8
```

c)
```
1 5 2 × 4
6 0 8
```
```
1 7 1 × 5
8 5 5
```
```
1 5 1 × 6
9 0 6
```
```
1 8 3 × 3
5 4 9
```

1

a) How many triangles can you see in this diagram? ...5...

b) How many triangles would you see in

   i) 51 of these diagrams

		5	1	×	5
	2	5	5		

   Answer: ..255.triangles.....

   ii) 102 of these diagrams?

1	0	2	×	5		or
5	1	0				

2	5	5	×	2
5	1	0		

   Answer: 510 triangles.......

2

a) How many circles make this teddy bear's head? ...6...

b) How many circles would you need to draw to make

   i) 72 teddy bear heads

		7	2	×	6
	4	3	2		

   Answer: ..432.circles......

   ii) 105 teddy bear heads?

1	0	5	×	6
6	3	0		

   Answer: ..630.circles.......

3

There are 24 hours in 1 day. How many hours are there in

a) 1 week

	2	4	×	7
1	6	8		

b) 4 weeks?

1	6	8	×	4
6	7	2		

1 week = [7] days = [168] hrs   4 weeks = [28] days = [672] hrs

4

Is it possible to answer the questions with the data given? Colour [Yes] or [No]

a) A car goes at a steady speed and covers 125 m in 1 minute.
   What distance does it cover in 8 minutes?   ✓Yes   [No]

b) Jenny weighed herself and her weight was 29 kg.
   What is the total weight of 9 children?   [Yes]   No✓

c) Uncle Andrew put up fence posts an equal distance apart.
   He used 9 fence posts. How long was the fence?   [Yes]   No✓

d) A centipede has 478 legs. How many legs do 3 centipedes have?   ✓Yes   [No]

5

A bee flies steadily at 217 mm per second.

Complete the table.

Time (seconds)	1	2	5	0	4	10
Distance (mm)	217	434	1085	0	868	2170