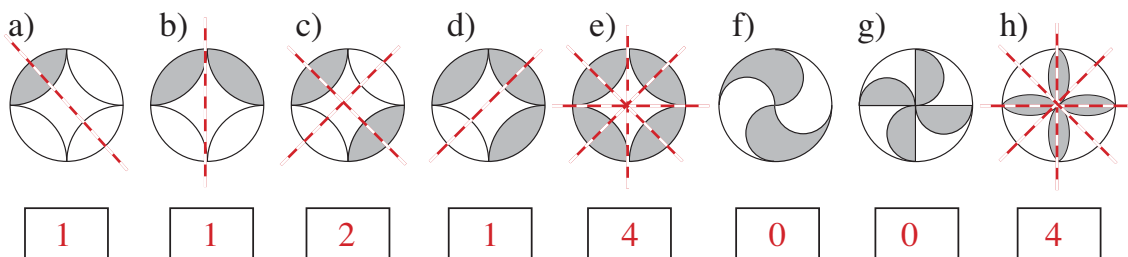


1

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

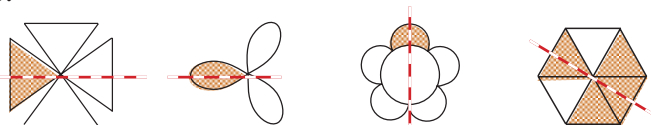


2

Colour each shape so that it has:

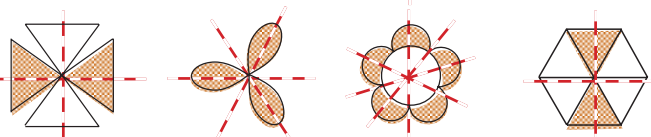
a) exactly one mirror line

E.g:



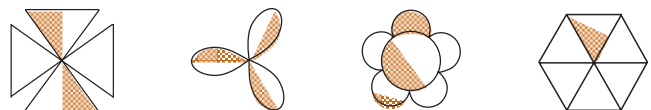
b) more than one mirror line

E.g:



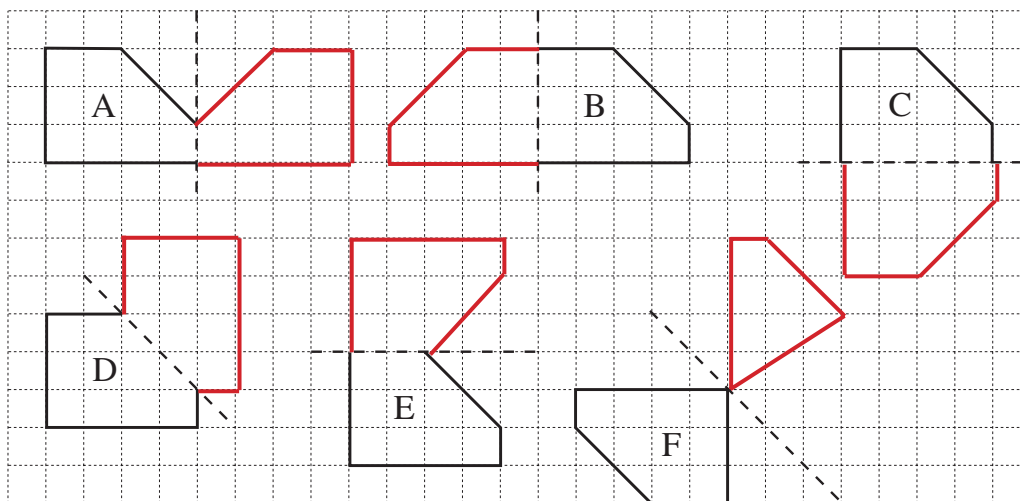
c) no mirror lines.

E.g:



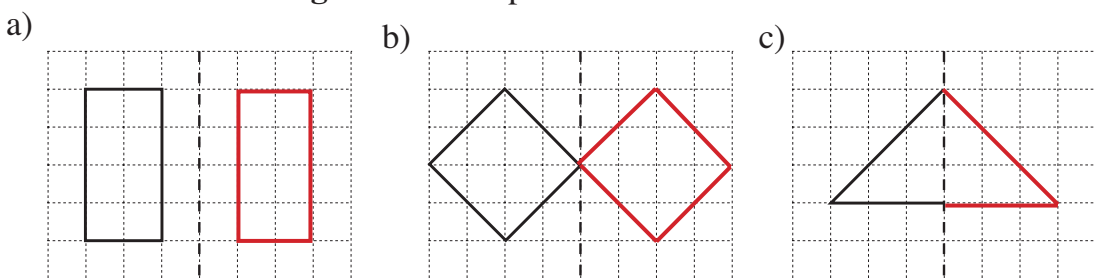
3

Reflect the shape in different ways. The broken lines are the mirror lines.



4

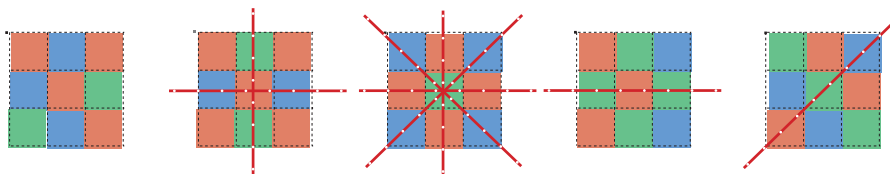
Draw the **mirror image** of each shape.



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:



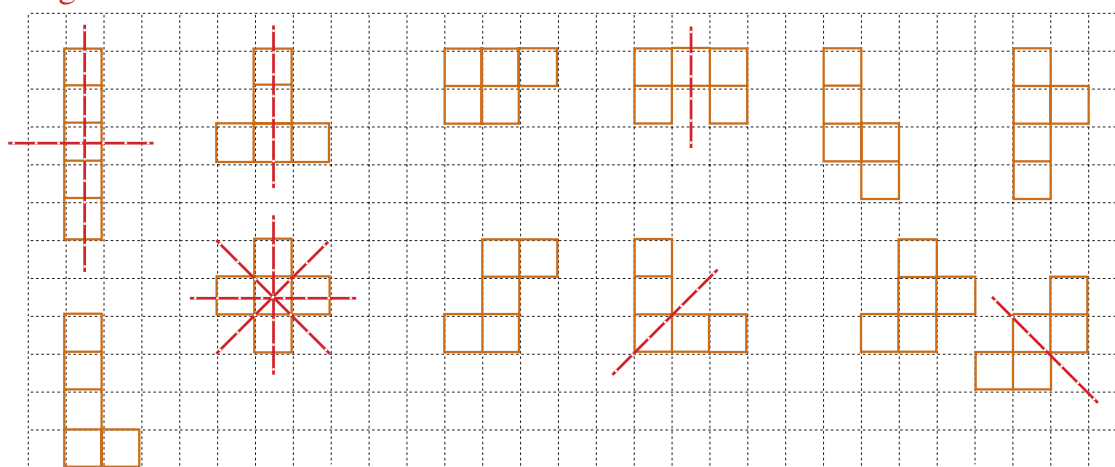
If a pattern is symmetrical, then draw in the mirror line(s).

2

Draw a line around 5 unit squares in different ways.

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

E.g:

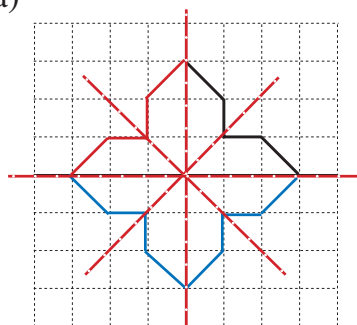


3

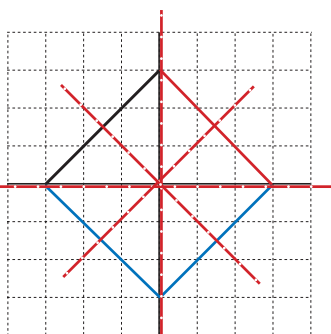
Reflect the shape in one **axis** first. Then reflect the shape and its mirror image in the other **axis**. Draw the mirror lines of the whole shape.

E.g:

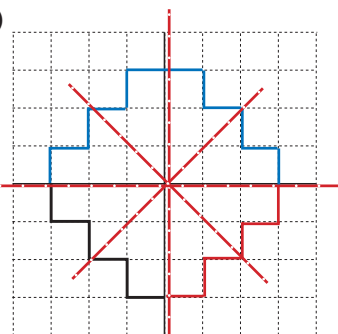
a)



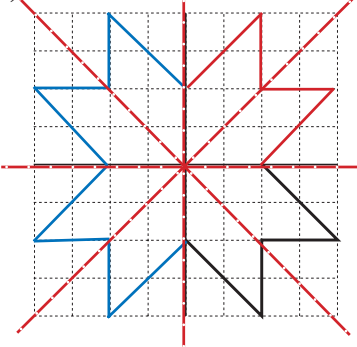
b)



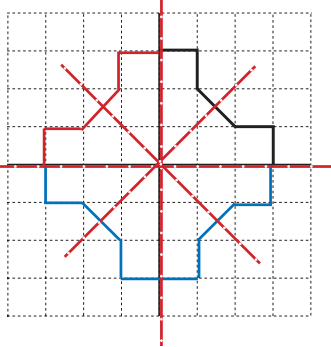
c)



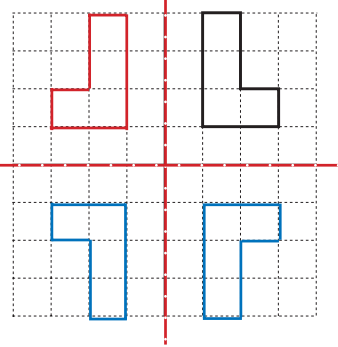
d)



e)

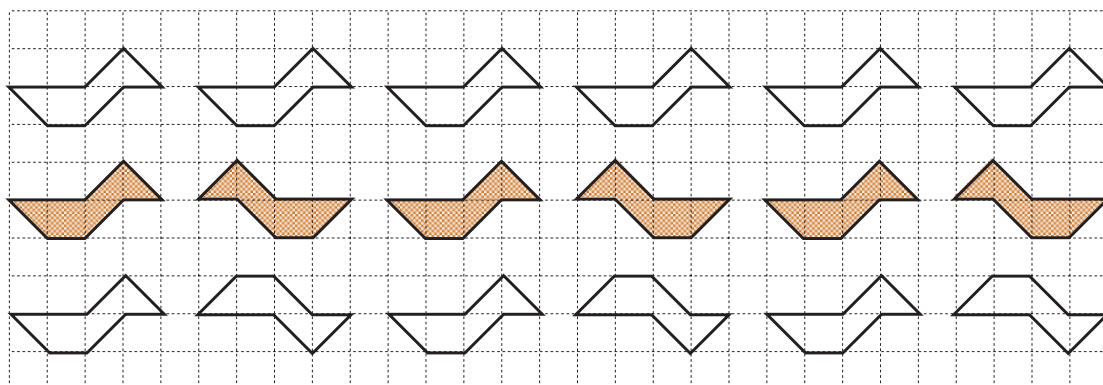


f)



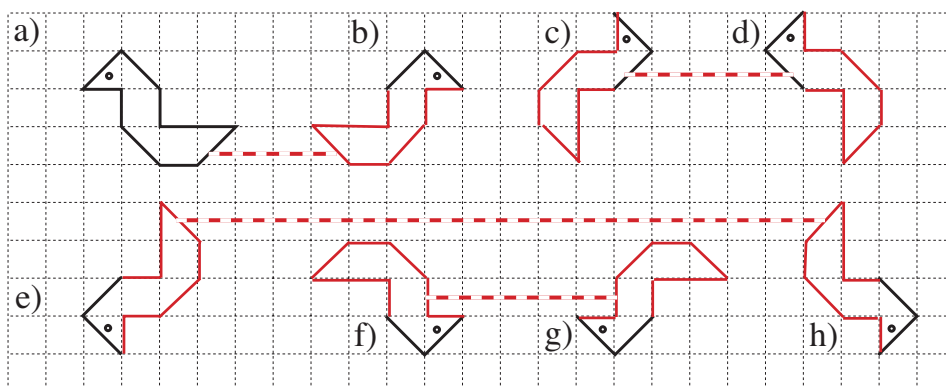
1

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.

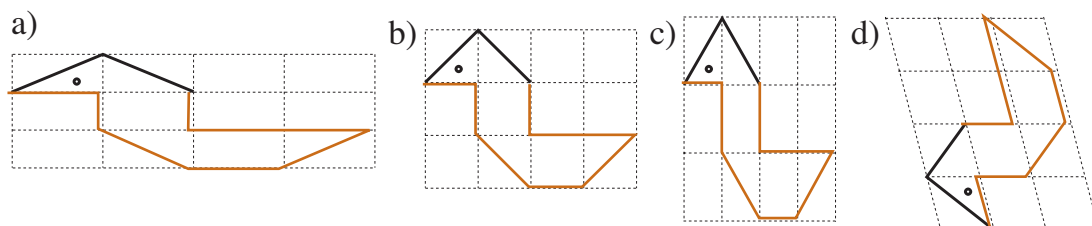


Join up the pairs which are mirror images of each other.



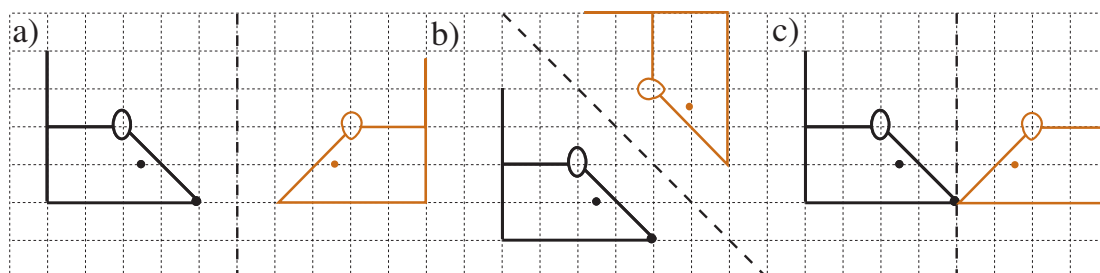
3

Draw the duck on these grids.



4

Draw the mirror image of the mouse.

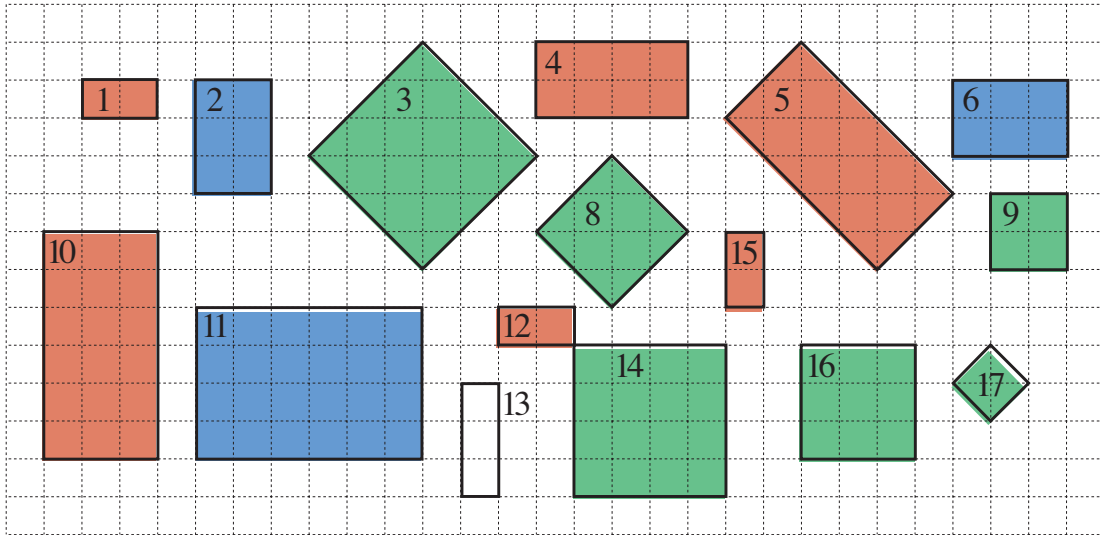


1

Colour in the same colour shapes which are **similar** to

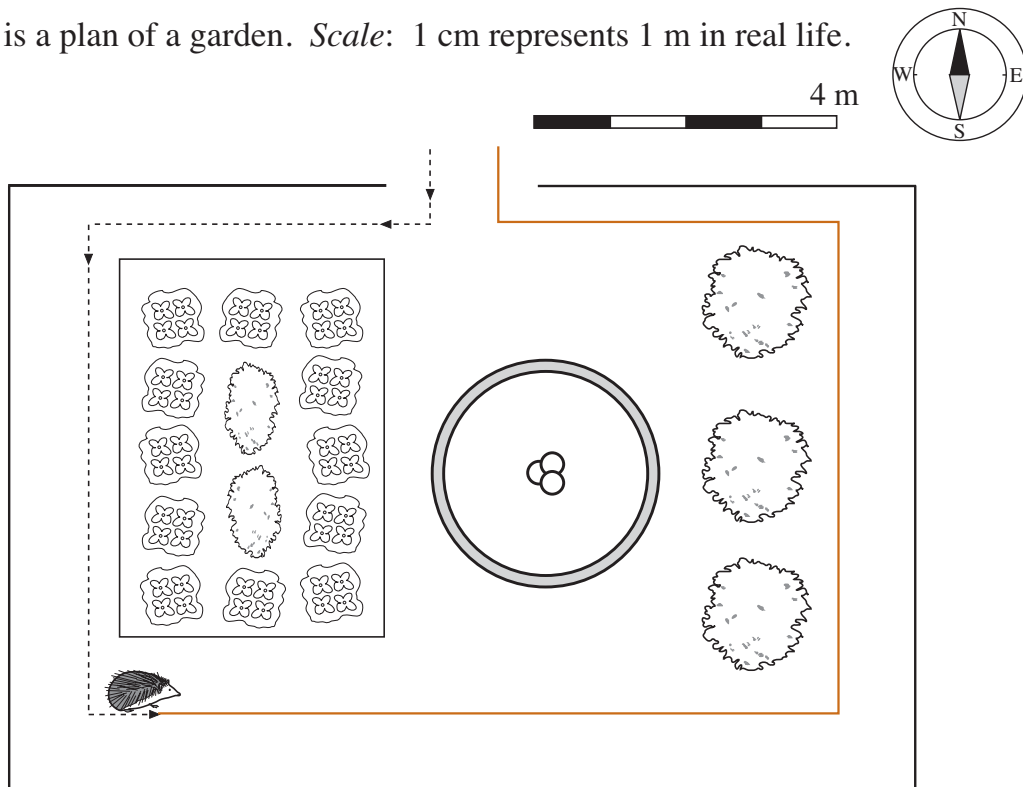
- i) rectangle 1 ii) rectangle 2 iii) rectangle 3.

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.



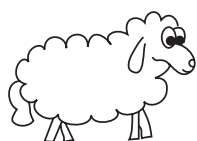
- a) In which direction does the entrance face? N
- b) In real life, what is the: i) length of the garden, L = 12 m
 ii) width of the garden? W = 8 m
(or vice versa)
- c) The broken line shows *Hedgehog's* route. Draw where he goes next if he walks 9 m East, then 6.5 m North, then 4.5 m West, then 1 m North.

1

Practise calculation.

- a) $60 + 120 \div 6 =$ 80 b) $689 - 50 \times 3 =$ 539
 c) $100 \times 7 + 3 =$ 703 d) $250 \div 5 + 20 =$ 70
 e) $(379 + 221) \div 3 =$ 200 f) $320 \div 8 - 4 =$ 36
 g) $250 \times 4 - 160 \div 8 =$ 980 h) $1450 - 70 \div 10 =$ 1443

2



Larry Lamb has done his homework. He had to write 4 numbers in different ways. Mark his work and correct any mistakes.

Help him to finish the last number.

- a) 4 H + 5 T + 3 U, 400 + 50 + 3, $4 \times 100 + 5 \times \overset{10}{100} + 3 \times 1$
 b) 1 T + 8 H + 7 U, ~~187 U~~ ^{1807 U}, MDCCCVII, $1 \times 1000 + 8 \times 100 + 7 \times 1$
 c) 9 H + 2 T, 92 T, ~~CMII~~, ~~CMXX~~ $9 \times 100 + 2 \times 10 + 0 \times 1$
 E.g:
 d) 269: 2 H + 6 T + 9 U, 269 U, CCLXIX, $2 \times 100 + 6 \times 10 + 9 \times 1$

3

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

- a) b) c)

4

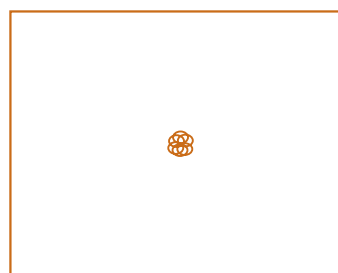
The sides of a rectangular pond are 4 m 50 cm and 3 m 50 cm.

Draw a plan of the pond. Use a ruler. Let 1 m in real life be 1 cm on your plan.

How long in real life is the wall around the pond?

$$P = 450 \text{ cm} + 350 \text{ cm} + 450 \text{ cm} + 350 \text{ cm} \\ = 1600 \text{ cm} \\ = 16 \text{ m}$$

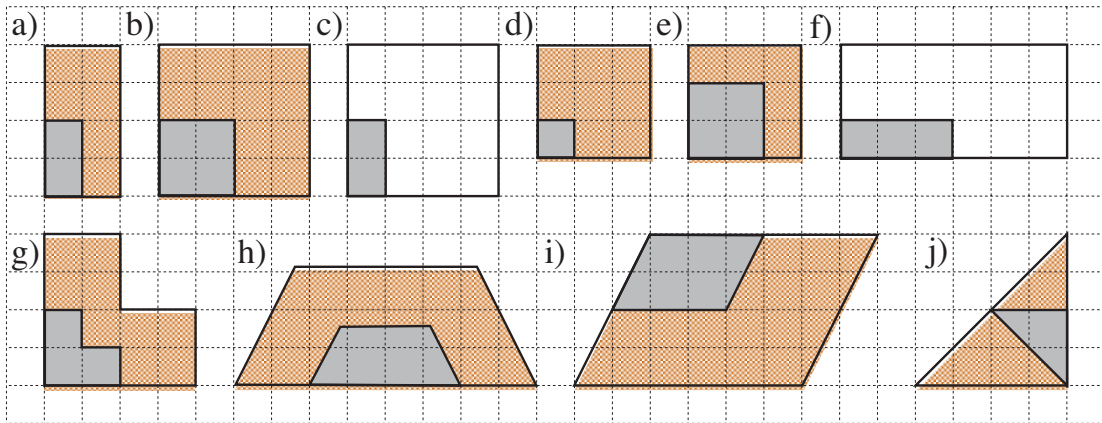
Draw a water lily in the middle of the pond.



Plan of pond.
1 cm represents 1 m.

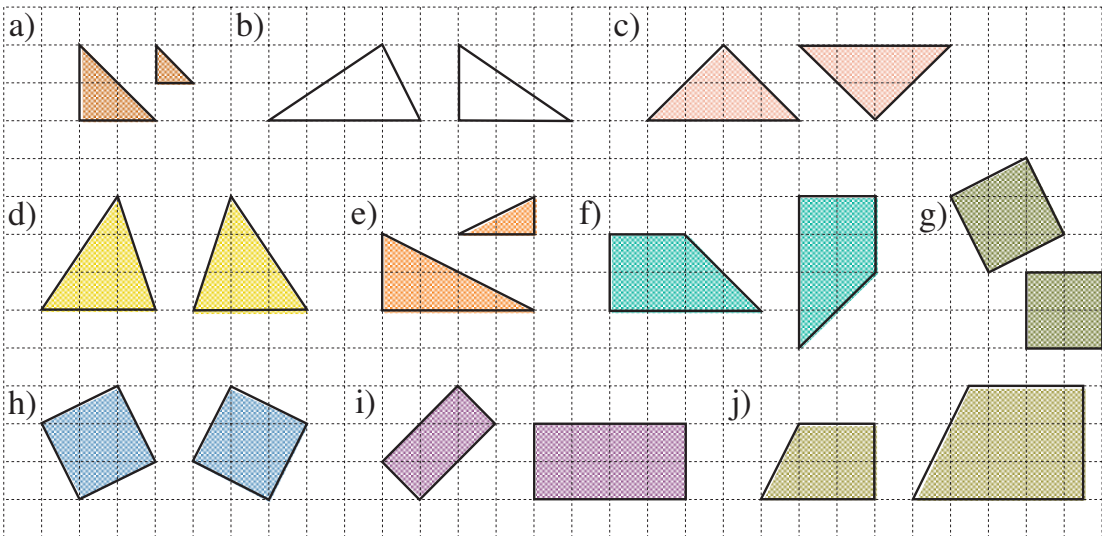
1

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



2

Colour **similar** shapes in the same colour.



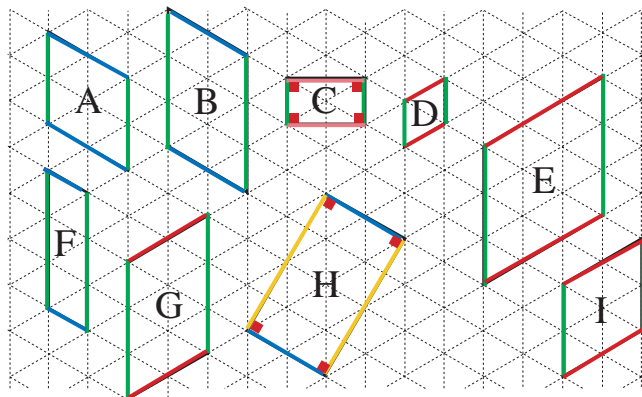
3

a) Write the letters of **similar** shapes below.

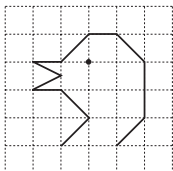
Similar: A, D, E, I;
B, G; C, H

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

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



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

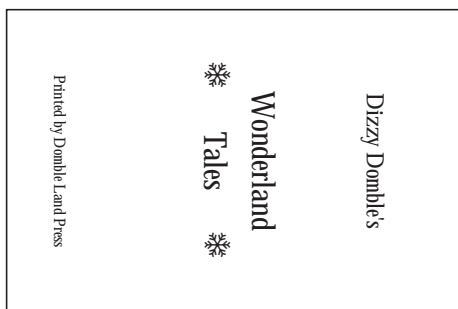
This picture is a smaller copy of a larger picture.
Scale: 1 mm on the copy means 1 cm on the real picture.



- 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? $P = 2 \times \text{width} + 2 \times \text{height}$
 $= 2 \times 32 \text{ mm} + 2 \times 40 \text{ mm}$
 $= 64 \text{ mm} + 80 \text{ mm} = 144 \text{ mm}$
- d) What length of wood would be needed to make a frame for the real picture?
 $P \text{ of real picture} = 10 \times 14 \text{ cm } 4 \text{ mm}$
 $= 144 \text{ cm } (1 \text{ m } 44 \text{ cm})$

2

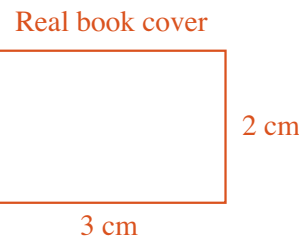
This is an enlarged copy of the front cover of a tiny book.



4 cm

6 cm

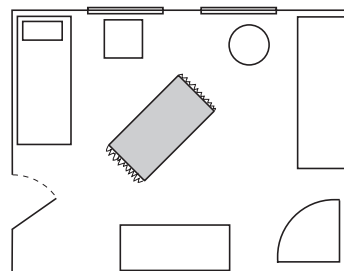
Draw the real book cover if the smaller side is 2 cm long.



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



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** ($12 \times 6 \times 3$)

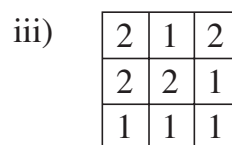
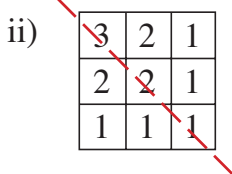
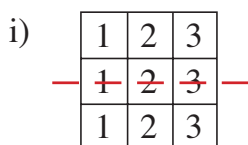
1

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.



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

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

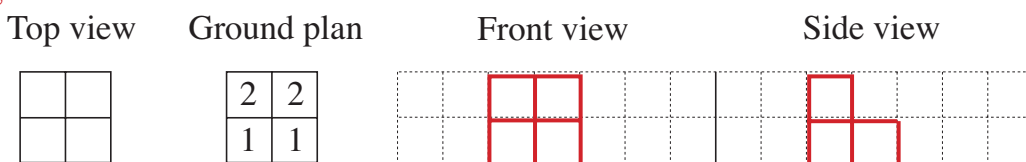
c) Which solid is **symmetrical**? Draw the **line of symmetry** (mirror line).
Solids in i) and ii) are symmetrical.

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.

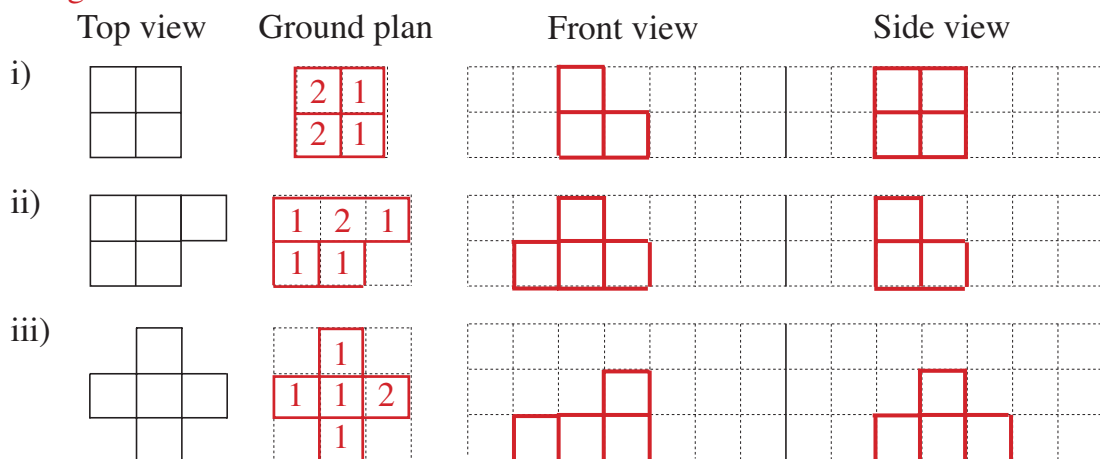
E.g:



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

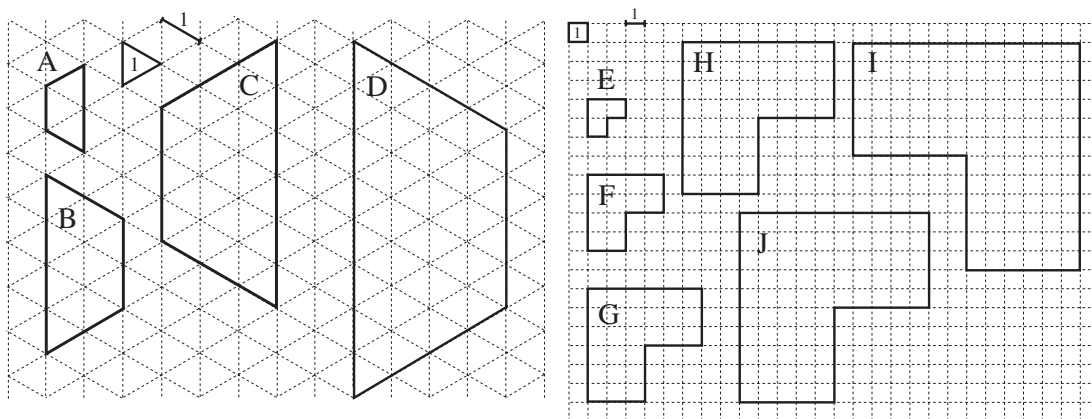
Make a ground plan and draw the front and side views in the grids.

E.g:



1

How many of the units shown are the area and perimeter of shapes A to J?



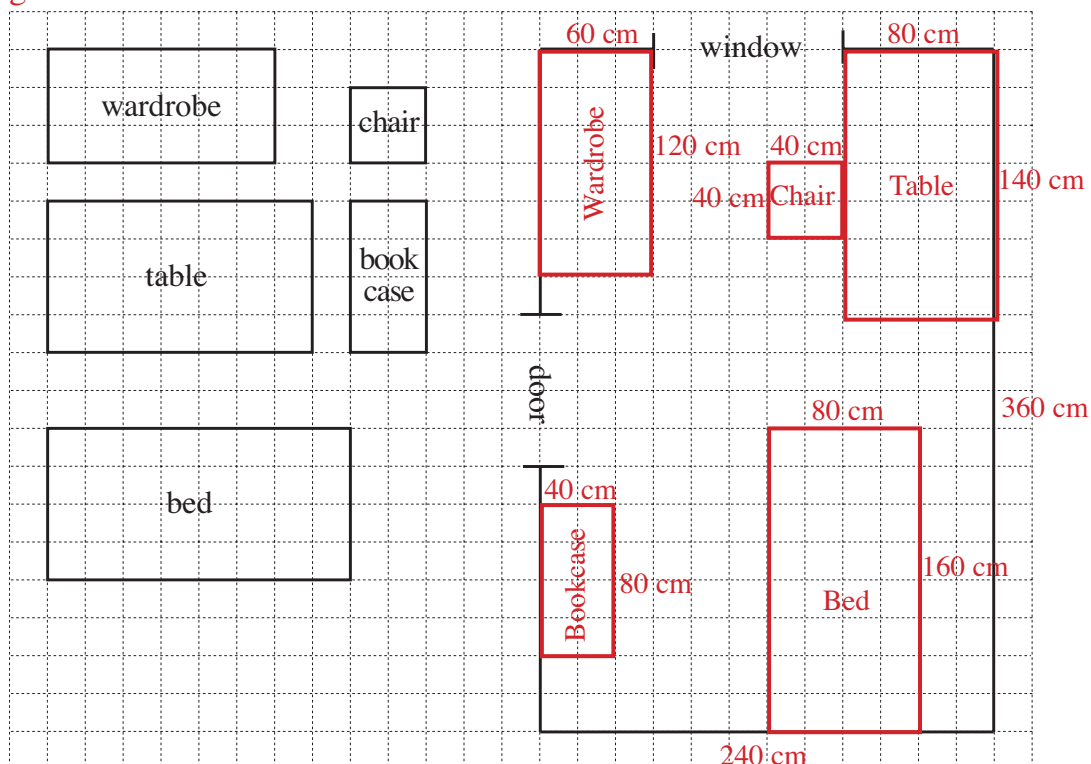
Area: A B C D units
 E F G H I J units

Perimeter: A B C D units
 E F G H I J units

2

How would you fit the furniture into the bedroom? Draw a plan to show it.

E.g:

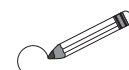


The scale of the plan is: 1 mm on the plan → 4 cm in real life.

Measure in the plan the sides of the room and the items of furniture.
 Calculate the **real** lengths and write them beside each line in the plan.

1

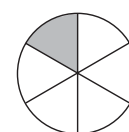
Circle in *red* the rectangles which have 1 half shaded.
 Circle in *blue* the rectangles which have 1 third shaded.
 Circle in *green* the rectangle which has 1 quarter shaded.



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?



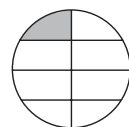
. Each child had one sixth of the cake,

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

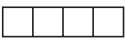



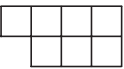
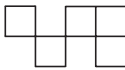
A strip of paper is 1 unit long. What is the value of each shaded part?

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


1

This is 1 unit. 



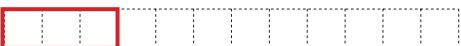


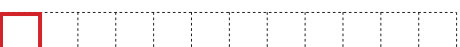

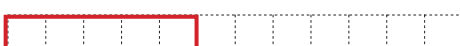
What part of this unit is each of these drawings?

- 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





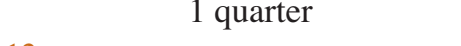




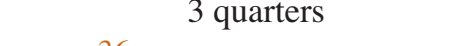
This rectangle is 1 unit: 

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
- b)  **2 cm**
 1 third
- c)  **1 cm**
 1 sixth
- d)  **15 mm**
 1 quarter
- e)  **12 mm**
 1 fifth
-  **6 cm**
 2 halves (= 1)
-  **4 cm**
 2 thirds
-  **4 cm**
 4 sixths (= 2 thirds)
-  **45 mm**
 3 quarters
-  **36 mm**
 3 fifths

4

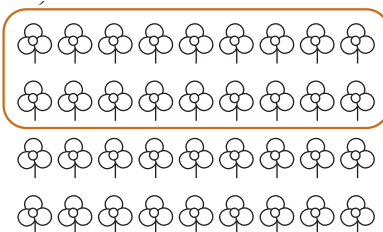
Which positive whole numbers can be written instead of the letters?

- $a \times 1 \text{ half} < 1$ $a: .1 \dots \dots \dots$ $b \times 1 \text{ half} = 1$ $b: .2 \dots \dots \dots$
 $c \times 1 \text{ half} > 1$ $c: .3, 4, 5, \dots \dots$ $d \times 1 \text{ quarter} < 1$ $d: .1, 2, 3 \dots \dots$
 $e \times 1 \text{ quarter} = 1$ $e: .4 \dots \dots \dots$ $f \times 1 \text{ quarter} > 1$ $f: .5, 6, 7, \dots \dots$

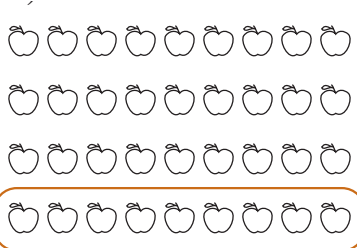
1

Circle:
E.g:

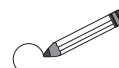
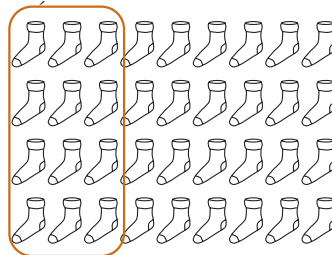
a) 1 half



b) 1 quarter



c) 1 third



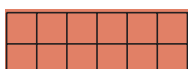
2

Fill in the missing numbers. If 1 unit is , what are these parts?

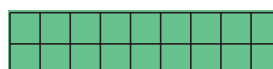
a)



1 half



2 halves



3 halves

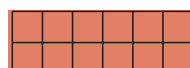
b)



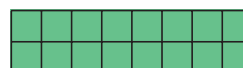
1 third



2 thirds



3 thirds



4 thirds

c)



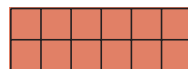
1 quarter



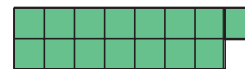
2 quarters



3 quarters



4 quarters



5 quarters

d)



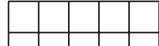
1 sixth



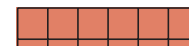
2 sixths



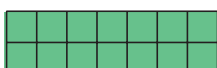
3 sixths



5 sixths



6 sixths



7 sixths



9 sixths

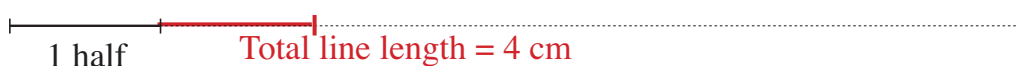
Colour:

- red the shapes = 1
- green the shapes > 1

3

Draw the whole unit if this is:

a)



b)



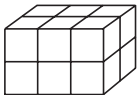
c)

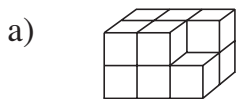


d)

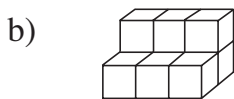


1

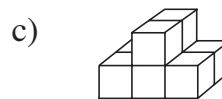
If this solid is 1 unit: , what part of a unit are these solids?



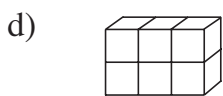
11 twelfths



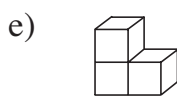
9 twelfths; 3 quarters



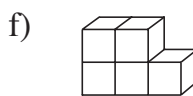
8 twelfths; 4 sixths;
2 thirds



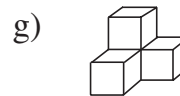
6 twelfths;
3 sixths; 1 half



3 twelfths; 1 quarter



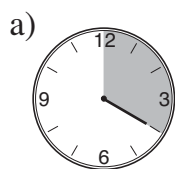
5 twelfths



4 twelfths; 2 sixths;
1 third

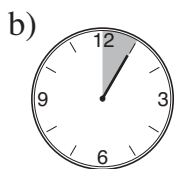
2

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



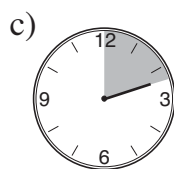
20 minutes

1 third
of an hour



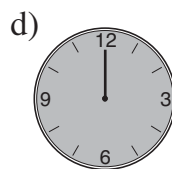
5 minutes

1 twelfth
of an hour



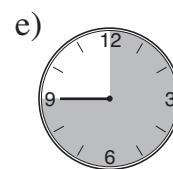
12 minutes

1 fifth
of an hour



60 minutes

1 whole
hour



45 minutes

3 quarters
of an hour

3

Fill in the missing numbers.

a) 2 fifths + fifths = 1

b) 3 quarters + quarters = 1

c) 2 sixths + sixths = 1

d) 5 eighths + eighths = 1

e) 3 tenths + tenths = 1

f) 5 hundredths + hundredths = 1

4

Fill in the missing numbers.

a) half a metre = cm

b) half a kg = g

1 fifth of a metre = cm

1 quarter of a kg = g

1 tenth of a metre = cm

1 tenth of a kg = g

3 quarters of a metre = cm

3 quarters of a kg = g

3 fifths of a metre = cm

5 tenths of a kg = g

7 tenths of a metre = cm

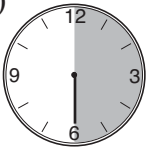
2 fifths of a kg = g


11 hundredths of a metre = cm

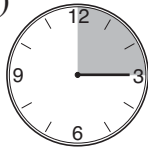
9 hundredths of a kg = g

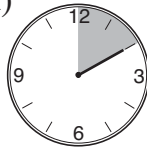
1


Only the minute hands are on the clocks. How many minutes do they show?

a)  half an hour
 min.

b)  1 twelfth of an hour
 min.

c)  1 quarter of an hour
 min.

d)  1 sixth of an hour
 min.

e)  1 tenth of an hour
 min.

2

How many millimetres are in these parts of 10 cm?

a) 1 half mm

b) 1 fifth mm

c) 1 tenth mm

d) 1 quarter mm

3

Fill in the missing numbers. ('min' means 'minutes' and 'hrs' means 'hours')

a) half an hour = min

3 quarters of an hour = min

3 fifths of an hour = min

2 thirds of an hour = min

5 sixths of an hour = min

3 tenths of an hour = min

2 and a half hours = min

b) half a day = hrs

2 thirds of a day = hrs

3 quarters of a day = hrs

5 eighths of a day = hrs

1 twelfth of a day = hrs

1 and a half days = hrs

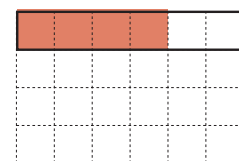
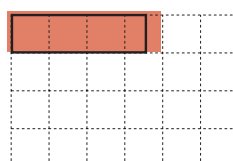
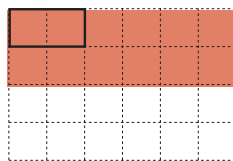
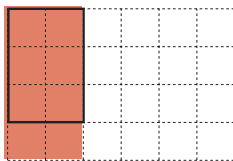
5 half days = hrs

4

Draw 1 unit if this is:

E.g:

a) 3 quarters b) 1 sixth c) 7 eighths d) 1 and a half

**5**

Draw a line 14 cm long. Colour over 3 sevenths of it.



1

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

a) $349 + 572 < 727$ 199

C:

3	4	9	7	2	7		
+	5	7	2	+	1	9	9
9	2	1	<	9	2	6	

b) $942 - 443 > 849$ 367

C:

9	4	2	8	4	9		
-	4	4	3	-	3	6	7
4	9	9	>	4	8	2	

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

b)

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

c)

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

d)

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

4

Which numbers can be written instead of the shapes?

a) $440 - 10 \times \star = 315 + 45$

b) $726 - 571 + \smile > 161$

$\star : \dots 8 \dots$

$\smile : \dots 7, 8, 9, \dots$

Check: $440 - 10 \times 8 = 440 - 80 = 360$

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: **✗** $1022 + 256 - 35 = \dots\dots\dots$
 ✗ $1022 - 256 - 35 = \dots\dots\dots$
 ✓ $1022 - 256 + 35 = \dots 766 + 35 = 801 \text{ (p)} \dots\dots\dots$
 ✗ $1022 + 256 + 35 = \dots\dots\dots$
 ✓ $1022 - (256 - 35) = \dots 1022 - 221 = 801 \text{ (p)} \dots\dots\dots$

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: $347 + 172 - 268 + 268 = \dots\dots\dots$
 (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? $200 \text{ cl} - 35 \text{ cl} = 165 \text{ cl} (= 1 \text{ litre } 65 \text{ cl})$
 ... 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? $35 \text{ cl} + 35 \text{ cl} = 70 \text{ cl}$
 ... 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? $36 \text{ cl} - 10 \text{ cl } 9 \text{ ml} = 360 \text{ ml} - 109 \text{ ml} = 251 \text{ ml}$
 ... 251 ml of water is left in the bottle. (= 25 cl 1 ml)

4

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



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

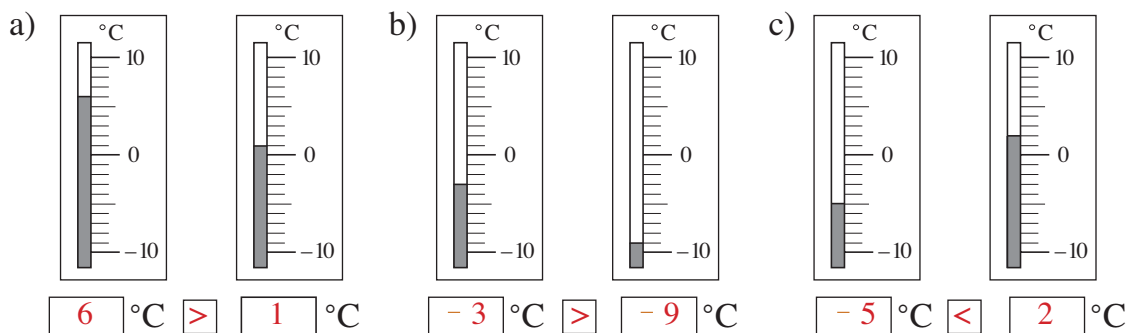
b) Did it rain on more than half the days? No

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	

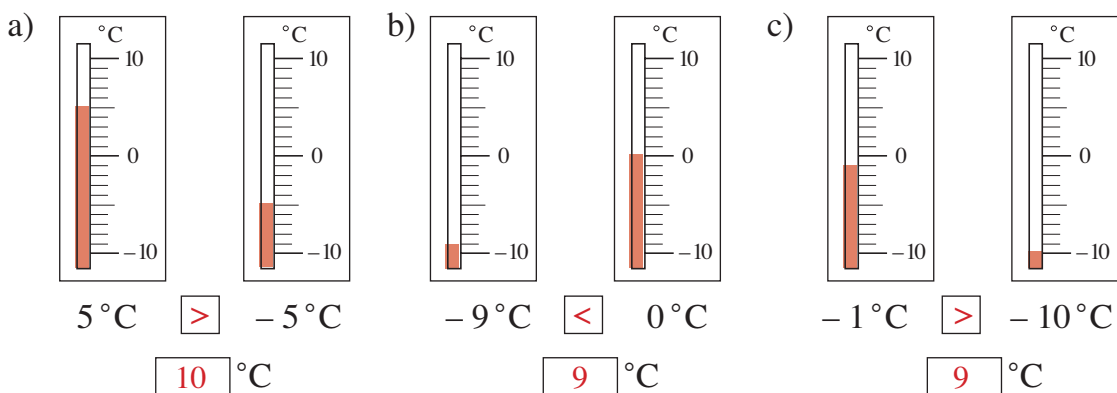
1

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



2

Mark the temperatures on the thermometers. Which is higher and by how much?



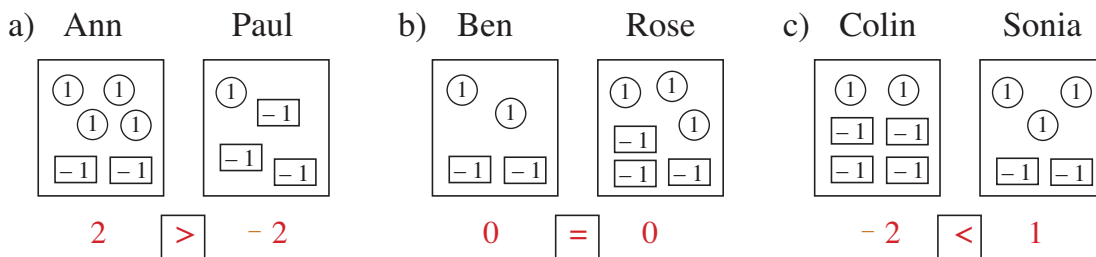
3

How much does each child have?

① means £1 in cash

Who has more? Write in the missing sign.

-1 means £1 in debt



4

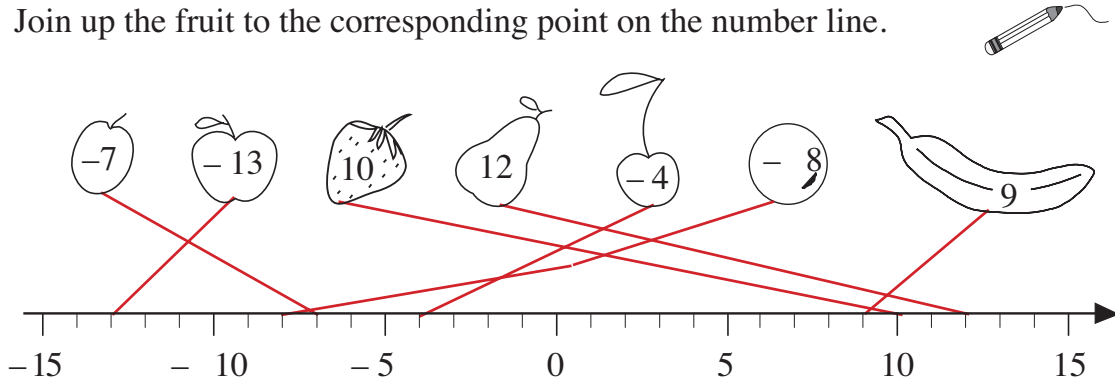
Complete the drawings to make the statements correct.

E.g:

- a) Alice's balance is -£6: ① ① -1 -1 -1 -1 -1 -1 -1 -1 -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

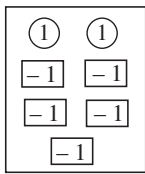
How much money does each child really have?

Write the amounts in increasing order.

① means £1 in cash

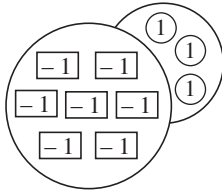
[-1] means £1 in debt

Lisa



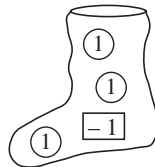
£ - 3

Charlie



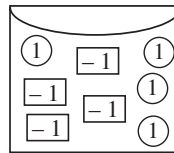
£ - 4

Billy



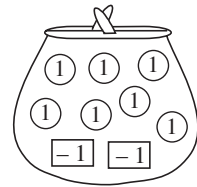
£2

Clare



£0

Diane



£5

£ - 4 < £ - 3 < £0 < £2 < £5

3

Draw two different ways of showing these amounts. Use ① and [-1]

E.g:

a) $-\text{£}3 =$ [-1] [-1] [-1] $=$ [-1] [-1] [-1] [1] [1]

b) $\text{£}3 =$ [1] [1] [1] $=$ [1] [1] [1] [1] [1] [-1] [-1]

c) $\text{£}0 =$ [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

Which positive whole numbers can be written instead of the shapes?

a) $936 + \triangle < 541 + 449$ $\triangle : \dots 1, 2, 3, \dots, 53 \dots$

b) $500 - 69 < 333 + \bigcirc \leq 433$ $\bigcirc : \dots 99, 100 \dots$

2

Round these numbers to the nearest ten.

a) $1876 \approx \boxed{1880}$ b) $555 \approx \boxed{560}$ c) $210 \approx \boxed{210}$

d) $99 \approx \boxed{100}$ e) $-4 \approx \boxed{0}$ f) $-8 \approx \boxed{-10}$

3

Continue the sequences.

a) $950, 800, 650, \dots 500, 350, 200, 50, -100, -250, \dots$

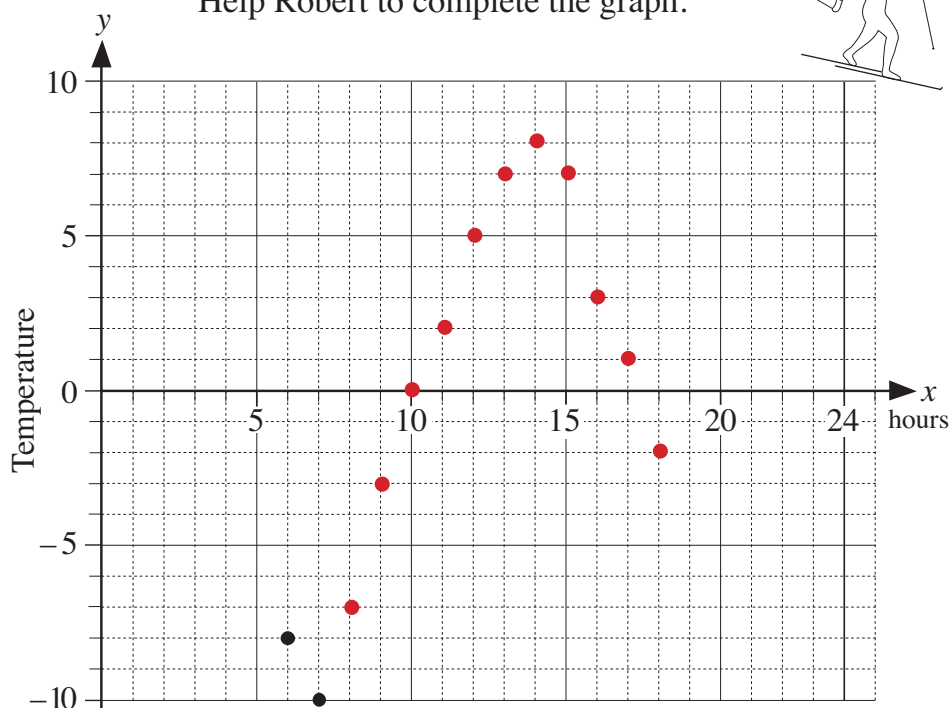
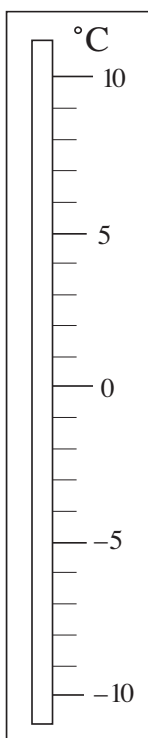
b) $-10, -8, -6, \dots -4, -2, 0, 2, 4, 6, 8, 10, \dots$

4

Robert went on a skiing holiday to Andorra. One day, he read the thermometer outside his hotel every hour from 6.00 am to 6.00 pm. These are his data.

Time (hours)	6	7	8	9	10	11	12	13	14	15	16	17	18
Temperature (°C)	-8	-10	-7	-3	0	2	5	7	8	7	3	1	-2

Help Robert to complete the graph.



1

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

$2 \times 1000 = 2000$
 $5 \times 400 = 2000$

What is 30×50 ? ... 1500 ...

2

Write additions and multiplications about the pictures.

E.g:

a) $\begin{matrix} \textcircled{1} & \textcircled{1} & \textcircled{1} & \textcircled{1} \\ \textcircled{1} & \textcircled{1} & \textcircled{1} & \textcircled{1} \\ \textcircled{1} & \textcircled{1} & \textcircled{1} & \textcircled{1} \end{matrix}$	b) $\begin{matrix} \textcircled{10} & \textcircled{10} & \textcircled{10} & \textcircled{10} \\ \textcircled{10} & \textcircled{10} & \textcircled{10} & \textcircled{10} \\ \textcircled{10} & \textcircled{10} & \textcircled{10} & \textcircled{10} \end{matrix}$	c) $\begin{matrix} \textcircled{100} & \textcircled{100} & \textcircled{100} & \textcircled{100} \\ \textcircled{100} & \textcircled{100} & \textcircled{100} & \textcircled{100} \\ \textcircled{100} & \textcircled{100} & \textcircled{100} & \textcircled{100} \end{matrix}$
$4 + 4 + 4 = 12$	$40 + 40 + 40 = 120$	$400 + 400 + 400 = 1200$
$3 + 3 + 3 + 3 = 12$	$30 + 30 + 30 + 30 = 120$	$300 + 300 + 300 + 300 = 1200$
$4 \times 3 = 12$	$40 \times 3 = 120$	$3 \times 400 = 1200$
$3 \times 4 = 12$	$30 \times 4 = 120$	$4 \times 300 = 1200$

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: $\begin{matrix} \boxed{100} & \boxed{100} & \boxed{50} & \textcircled{5} & \textcircled{2} \end{matrix}$	} $3 \times (\boxed{200} + \boxed{50} + \boxed{7})$
B: $\begin{matrix} \boxed{100} & \boxed{100} & \boxed{50} & \textcircled{5} & \textcircled{2} \end{matrix}$	
C: $\begin{matrix} \boxed{100} & \boxed{100} & \boxed{50} & \textcircled{5} & \textcircled{2} \end{matrix}$	
$3 \times \boxed{200} + 3 \times \boxed{50} + 3 \times \boxed{7} = \underline{\underline{600 + 150 + 21 = 771}}$	
$\boxed{600} \quad \boxed{150} \quad \boxed{21}$	Their uncle left them 771 dollars.

4

Write the results. Underline the operation which is impossible.

$3 \times 0 = 0$	$30 \div 3 = 10$	$8 \times 3 = 24$	$16 \div 2 = 8$	$5 \times 3 = 15$
$4 \times 5 = 20$	$15 \div 5 = 3$	$8 \times 6 = 48$	$24 \div 4 = 6$	$20 \div 5 = 4$
$6 \times 2 = 12$	$14 \div 2 = 7$	$9 \times 8 = 72$	<u>$10 \div 0 =$</u>	$6 \times 4 = 24$
$10 \times 9 = 90$	$20 \div 2 = 10$	$4 \times 3 = 12$	$24 \div 8 = 3$	$54 \div 9 = 6$

1

Fill in the missing numbers.

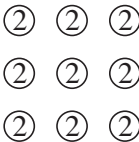
- a) $4 \times 3 = 12$ $28 \div 4 = 7$ $8 \times 5 = 40$ $45 \div 5 = 9$
- b) $3 \times 8 = 24$ $18 \div 6 = 3$ $0 \times 7 = 0$ $28 \div 7 = 4$
- c) $5 \times 7 = 35$ $15 \div 3 = 5$ $2 \times 8 = 16$ $6 \div 2 = 3$
- d) $6 \times 8 = 48$ $30 \div 5 = 6$ $1 \times 9 = 9$ $2 \div 1 = 2$
- e) $9 \times 8 = 72$ $32 \div 8 = 4$ $9 \times 6 = 54$ $63 \div 9 = 7$

2

Write additions and multiplications about the pictures.

E.g:

a)

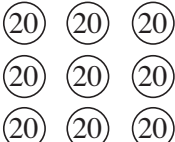


$$6 + 6 + 6 = 18$$

$$3 \times 3 \times 2 = 18$$

$$9 \times 2 = 18$$

b)

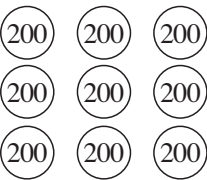


$$60 + 60 + 60 = 180$$

$$3 \times 3 \times 20 = 180$$

$$9 \times 20 = 180$$

c)



$$600 + 600 + 600 = 1800$$

$$3 \times 3 \times 200 = 1800$$

$$9 \times 200 = 1800$$






































3

Fill in the missing products. Note how they change.

- a) $5 \times 3 = 15$ $50 \times 3 = 150$ $5 \times 30 = 150$ $5 \times 300 = 1500$ $50 \times 30 = 1500$
- b) $8 \times 2 = 16$ $80 \times 2 = 160$ $8 \times 20 = 160$ $8 \times 200 = 1600$ $80 \times 20 = 1600$
- c) $3 \times 3 = 9$ $30 \times 3 = 90$ $3 \times 30 = 90$ $3 \times 300 = 900$ $30 \times 30 = 900$
- d) $4 \times 5 = 20$ $40 \times 5 = 200$ $4 \times 50 = 200$ $4 \times 500 = 2000$ $40 \times 50 = 2000$

4

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

John	Katy	Lorna	Michael
 	 	  	  
 	 	  	  
 	 	  	  
 	 		  

E.g:

John: $40 \text{ p} + 8 \text{ p} = 48 \text{ p}$; $4 \times 10 \text{ p} + 4 \times 2 \text{ p} = 48 \text{ p}$; $4 \times 12 \text{ p} = 48 \text{ p}$ Katy: $400 \text{ p} + 80 \text{ p} = 480 \text{ p}$; $4 \times 100 \text{ p} + 4 \times 20 \text{ p} = 400 \text{ p} + 80 \text{ p} = 480 \text{ p}$ Lorna: $150 \text{ p} + 6 \text{ p} + 3 \text{ p} = 159 \text{ p}$; $3 \times 50 \text{ p} + 3 \times 2 \text{ p} + 3 \times 1 \text{ p} = 159 \text{ p}$; $3 \times 53 \text{ p} = 159 \text{ p}$ Michael: $1500 \text{ p} + 60 \text{ p} + 30 \text{ p} = 1590 \text{ p}$; $3 \times 500 \text{ p} + 3 \times 20 \text{ p} + 3 \times 10 \text{ p} = 1500 \text{ p} + 60 \text{ p} + 30 \text{ p} = 1590 \text{ p}$; $3 \times 530 \text{ p} = 1590 \text{ p}$

1

Fill in the missing products.

$$\begin{array}{lll} \text{a)} & 6 \times 10 = \boxed{60} & \text{b)} & 5 \times 10 = \boxed{50} & \text{c)} & 30 \times 3 = \boxed{90} \\ & 6 \times 4 = \boxed{24} & & 5 \times 7 = \boxed{35} & & 5 \times 3 = \boxed{15} \\ & 6 \times 14 = \boxed{84} & & 5 \times 17 = \boxed{85} & & 35 \times 3 = \boxed{105} \end{array}$$

2

Fill in the missing products.

$$\begin{array}{lll} \text{a)} & 3 \times 24 = \boxed{72} & \text{b)} & 6 \times 12 = \boxed{72} & \text{c)} & 3 \times 12 = \boxed{36} \\ & 3 \times 240 = \boxed{720} & & 6 \times 120 = \boxed{720} & & 3 \times 120 = \boxed{360} \end{array}$$

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

$$\begin{array}{ll} \text{a)} & 227 \times 4 \\ & \text{i)} \quad \text{Rounding 227 to the nearest hundred:} \\ & \quad P \approx \boxed{200} \times 4 = \boxed{800} \quad P \text{ } \boxed{>} \quad \boxed{800} \\ & \quad \text{ii)} \quad \text{Rounding 227 to the nearest ten:} \\ & \quad P \approx \boxed{230} \times 4 = \boxed{920} \quad P \text{ } \boxed{<} \quad \boxed{920} \\ \text{b)} & 468 \times 6 \\ & \quad \text{i)} \quad \text{Rounding 468 to the nearest hundred:} \\ & \quad P \approx \boxed{500} \times 6 = \boxed{3000} \quad P \text{ } \boxed{<} \quad \boxed{3000} \\ & \quad \text{ii)} \quad \text{Rounding 468 to the nearest ten:} \\ & \quad P \approx \boxed{470} \times 6 = \boxed{2820} \quad P \text{ } \boxed{<} \quad \boxed{2820} \end{array}$$

4

Estimate the product by rounding to the nearest ten.

$$\begin{array}{lll} \text{a)} & 162 \times 5 \approx \boxed{160} \times 5 = \boxed{800} & 162 \times 5 \text{ } \boxed{>} \quad \boxed{800} \\ \text{b)} & 177 \times 4 \approx \boxed{180} \times 4 = \boxed{720} & 177 \times 4 \text{ } \boxed{<} \quad \boxed{720} \\ \text{c)} & 315 \times 3 \approx \boxed{320} \times 3 = \boxed{960} & 315 \times 3 \text{ } \boxed{<} \quad \boxed{960} \\ \text{d)} & 231 \times 4 \approx \boxed{230} \times 4 = \boxed{920} & 231 \times 4 \text{ } \boxed{>} \quad \boxed{920} \end{array}$$

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? $\underline{135 \text{ p}} \times 4 = 540 \text{ p}$ 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?



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
<input type="text" value="100"/> <input type="text" value="100"/> <input type="text" value="100"/>	<input type="text" value="10"/> <input type="text" value="10"/>	<input type="text" value="1"/>
<input type="text" value="100"/> <input type="text" value="100"/> <input type="text" value="100"/>	<input type="text" value="10"/> <input type="text" value="10"/>	<input type="text" value="1"/>
<input type="text" value="100"/> <input type="text" value="100"/> <input type="text" value="100"/>	<input type="text" value="10"/> <input type="text" value="10"/>	<input type="text" value="1"/>

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

H	T	U
3	2	1
9	6	3

× 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.

□□□□□□□□	□□□□□□□□	□□□□□□□□
□□□□□□□□	□□□□□□□□	□ □ □
□□□□□□□□	□□□□□□□□	□□□□□□□□
□□□□□□□□	□□□□□□□□	□ □ □
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□□□□□□□□	□□□□□□□□	□□□□□□□□

73 × 3 =

× + ×

1

Are the inequalities correct? Mark with a ✓ or a ✗. Correct the mistakes.

- a) $-8 < -2$ ✓ b) $-20 < -10$ ✗ c) $-5 < 5$ ✓ d) $-6 > -7$ ✓
 e) $-10 < -9$ ✓ f) $-15 > -20$ ✓ g) $0 < -1$ ✗ h) $-50 < -2$ ✓

2

Round these numbers to the next nearest ten.

- a) $1056 \approx 1060$ $705 \approx 710$ $112 \approx 120$
 b) $1966 \approx 1970$ $550 \approx 560$ $401 \approx 410$
 c) $-6 \approx 0$ $3 \approx 10$ $1005 \approx 1010$

3

Write these numbers as Roman numerals.

- a) 1250 b) 2628 c) 599 d) 1973 e) 444
 MCCL MMDCCXXVIII DXCIX MCMLXXIII CDXLIV

4

Draw a picture using straight lines. Choose a starting point. Write instructions on how you drew it for a friend to copy. (L: Left, R: Right, U: Up, D: Down)
 E.g:



Start, R14, D7, L1, U5, L12, D5, L1, U7.

5

Complete the drawing and the calculations.

$$\begin{array}{|c|c|} \hline 500 & 10 \\ \hline \end{array} \times 3 = \begin{array}{|c|c|} \hline 500 & 10 \\ \hline \end{array} \begin{array}{|c|c|} \hline 500 & 10 \\ \hline \end{array} \begin{array}{|c|c|} \hline 500 & 10 \\ \hline \end{array}$$

	5	1	2	
	5	1	2	
+	5	1	2	
	1	5	3	6

	5	1	2	×	3
	1	5	3	6	

1

Fill in the missing products. Note how they change.

- a) $60 \times 3 = 180$ $60 \times 6 = 360$ $60 \times 9 = 540$ $60 \times 12 = 720$
 b) $40 \times 5 = 200$ $40 \times 10 = 400$ $40 \times 15 = 600$ $40 \times 25 = 1000$
 c) $4 \times 2 = 8$ $40 \times 2 = 80$ $400 \times 2 = 800$ $40 \times 20 = 800$
 d) $3 \times 5 = 15$ $30 \times 5 = 150$ $300 \times 5 = 1500$ $30 \times 50 = 1500$
 e) $4 \times 24 = 96$ $8 \times 12 = 96$ $16 \times 6 = 96$ $2 \times 48 = 96$
 $4 \times 240 = 960$ $8 \times 120 = 960$ $16 \times 60 = 960$ $2 \times 480 = 960$

2

Fill in the missing products.

- a) $5 \times 100 = 500$ b) $4 \times 3 = 12$ c) $7 \times 8 = 56$
 $5 \times 20 = 100$ $30 \times 3 = 90$ $7 \times 30 = 210$
 $5 \times 1 = 5$ $200 \times 3 = 600$ $7 \times 100 = 700$
 $5 \times 121 = 605$ $234 \times 3 = 702$ $7 \times 138 = 966$

3

Estimate first, then calculate using addition and multiplication.

- a)

	2	0	2
	2	0	2
	2	0	2
+	2	0	2
	8	0	8

 E:

	8	0	0
--	---	---	---

 b)

	3	0	2
	3	0	2
+	3	0	2
	9	0	6

 E:

	9	0	0
--	---	---	---

	2	0	2	×	4
	8	0	8		

	3	0	2	×	3
	9	0	6		

c)

	4	2	3
+	4	2	3
	8	4	6

 E:

	8	0	0
--	---	---	---

 d)

	2	0	1	
	2	0	1	
	2	0	1	
+	2	0	1	
	1	0	0	5

 E:

	1	0	0	0
--	---	---	---	---

	4	2	3	×	2
	8	4	6		

	2	0	1	×	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
	7	1
	7	1
	7	1
	7	1
+	7	1
4	2	6

 $E: 70 \times 6 = 420$ b) $E: 200 \times 4 = 800$

	2	0	1
	2	0	1
	2	0	1
+	2	0	1
8	0	4	

	2	0	1	×	4
8	0	4			

c) $E: 530 \times 2 = 1060$ d) $E: 210 \times 5 = 1050$

	5	3	4
+	5	3	4
1	0	6	8

	5	3	4	×	2
1	0	6	8		

	2	1	1
	2	1	1
	2	1	1
	2	1	1
+	2	1	1
1	0	5	5

	2	1	1	×	5
1	0	5	5		

2

Estimate first, then do the multiplications.

a) $E: 800$ $E: 1200$ $E: 1600$

4	2	2	×	2
8	4	4		

4	2	2	×	3
1	2	6	6	

4	2	2	×	4
1	6	8	8	

b) $E: 900$ $E: 1200$ $E: 1800$

3	2	1	×	3
9	6	3		

4	2	1	×	3
1	2	6	3	

6	2	1	×	3
1	8	6	3	


c) $E: 160$ $E: 1200$ $E: 1600$

	8	4	×	2
1	6	8		

	8	0	4	×	2
1	6	0	8		

	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

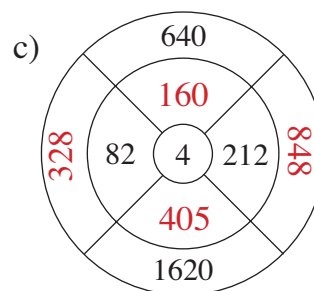
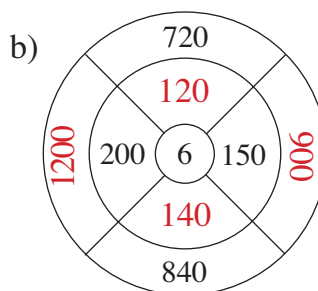
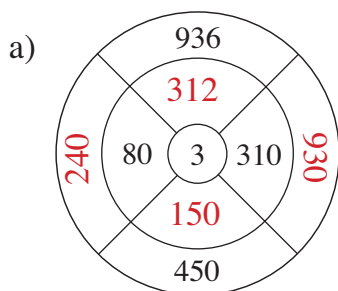
Complete the table.

(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.



3

Calculate the products.

a)
$$\begin{array}{r} 26 \times 5 \\ 130 \end{array}$$

b)
$$\begin{array}{r} 442 \times 2 \\ 884 \end{array}$$

c)
$$\begin{array}{r} 207 \times 9 \\ 1863 \end{array}$$

$$\begin{array}{r} 52 \times 6 \\ 312 \end{array}$$

$$\begin{array}{r} 208 \times 7 \\ 1456 \end{array}$$

$$\begin{array}{r} 116 \times 6 \\ 696 \end{array}$$

$$\begin{array}{r} 44 \times 4 \\ 176 \end{array}$$

$$\begin{array}{r} 407 \times 3 \\ 1221 \end{array}$$

$$\begin{array}{r} 275 \times 1 \\ 275 \end{array}$$

$$\begin{array}{r} 106 \times 9 \\ 954 \end{array}$$

$$\begin{array}{r} 305 \times 0 \\ 0 \end{array}$$

$$\begin{array}{r} 307 \times 6 \\ 1842 \end{array}$$

4

Fill in the missing factors.

a)
$$\begin{array}{r} 413 \times 2 \\ 826 \end{array}$$

$$\begin{array}{r} 321 \times 3 \\ 963 \end{array}$$

$$\begin{array}{r} 234 \times 2 \\ 468 \end{array}$$

$$\begin{array}{r} 106 \times 6 \\ 636 \end{array}$$

b)
$$\begin{array}{r} 204 \times 3 \\ 612 \end{array}$$

$$\begin{array}{r} 216 \times 4 \\ 864 \end{array}$$

$$\begin{array}{r} 135 \times 2 \\ 270 \end{array}$$

$$\begin{array}{r} 217 \times 4 \\ 868 \end{array}$$

c)
$$\begin{array}{r} 152 \times 4 \\ 608 \end{array}$$

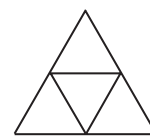
$$\begin{array}{r} 171 \times 5 \\ 855 \end{array}$$

$$\begin{array}{r} 151 \times 6 \\ 906 \end{array}$$

$$\begin{array}{r} 183 \times 3 \\ 549 \end{array}$$

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 ii) 102 of these diagrams?

	5	1	×	5	
2	5	5			

1	0	2	×	5	
5	1	0			

or

2	5	5	×	2	
5	1	0			

Answer: 255 triangles.....

Answer: 510 triangles.....

2

- a) How many circles make this teddy bear's head? ...6...
 b) How many circles would you need to make



- i) 72 teddy bear heads ii) 105 teddy bear heads?

	7	2	×	6	
4	3	2			

1	0	5	×	6	
6	3	0			

Answer: 432 circles.....

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

1

Calculate the answers using multiplication.

- a) Six workers earned £409 each.
How much did they earn altogether?

Answer: **They earned £ 2454 altogether.**

Th	H	T	U		
	4	0	9	×	6
2	4	5	4		

- b) A salesman drives 423 km each working day.
How far does he drive from Monday to Friday?

Answer: **He drives 2115 km altogether.**

Th	H	T	U		
	4	2	3	×	5
2	1	1	5		

2

Estimate in your head first, then do the additions and multiplications.

- a)

Hundreds	Tens	Units
100	10 10	1 1 1 1 1
+ -----		
100	10 10	1 1 1 1 1
100 100	10 10 10	

H	T	U
1	2	5
+		
1	2	5
2	5	0

H	T	U
1	2	5
×		
2	5	0

- b)

Thousands	Hundreds	Tens	Units
	100 100 100 100	10 10	1 1 1 1 1 1 1 1
+ -----			
	100 100 100 100	10 10	1 1 1 1 1 1 1 1
1000	100 100	10 10 10 10	1 1 1 1

Th	H	T	U
	4	2	8
+			
	4	2	8
1	2	8	4

	4	2	8	×	3
1	2	8	4		

3

Fill in the missing digits. Check that the multiplication is correct.

- a)

3	2	0	×	3
9	6	0		

4	3	2	×	2
8	6	4		

- b)

2	1	4	×	3
6	4	2		

1	6	1	×	5
8	0	5		

- c)

1	2	5	×	3
3	7	5		

1	8	2	×	4
7	2	8		

- d)

2	2	6	×	3
6	7	8		

1	7	2	×	4
6	8	8		