Mathematics test

Paper 1
Calculator not allowed

Please read this page, but do not open the booklet until your teacher tells you to start. Write your name and the name of your school in the spaces below. If you have been given a pupil number, write that also.

First name _____

Last name _____

School _____

Pupil number

Remember

- The test is 1 hour long.
- You **must not** use a calculator for any question in this test.
- You will need: pen, pencil, rubber, ruler, tracing paper and mirror (optional).
- Some formulae you might need are on page 3.
- This test starts with easier questions.
- Try to answer all the questions.
- Write all your answers and working on the test paper – do not use any rough paper.
- Check your work carefully.
- Ask your teacher if you are not sure what to do.

For marker's use only

Total marks	

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2

Instructions

Answers

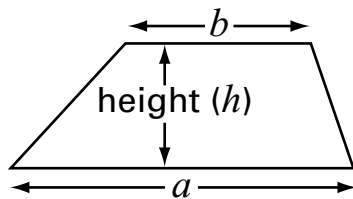This means write down your answer or show your working and write down your answer.

Calculators

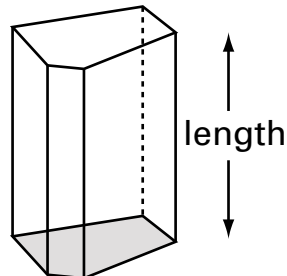You **must not** use a calculator to answer any question in this test.

Formulae
You might need to use these formulae.

Trapezium

Area = $\dfrac{(a+b)}{2} \times h$

Prism

Volume = area of cross-section × length

1. Work out

238 + 1487 = ...

723 − 154 = ...

2. Look at the diagram.

A (2, 3)   B (5, 3)

D   C (5, 1)
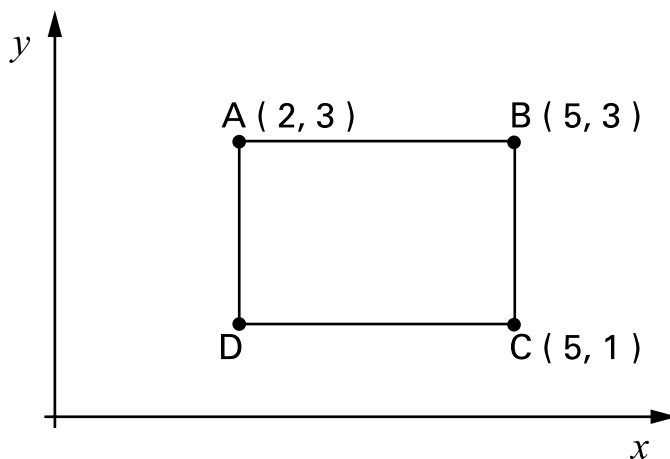
(a) The point K is **halfway** between points B and C

What are the coordinates of point K?

(,   )
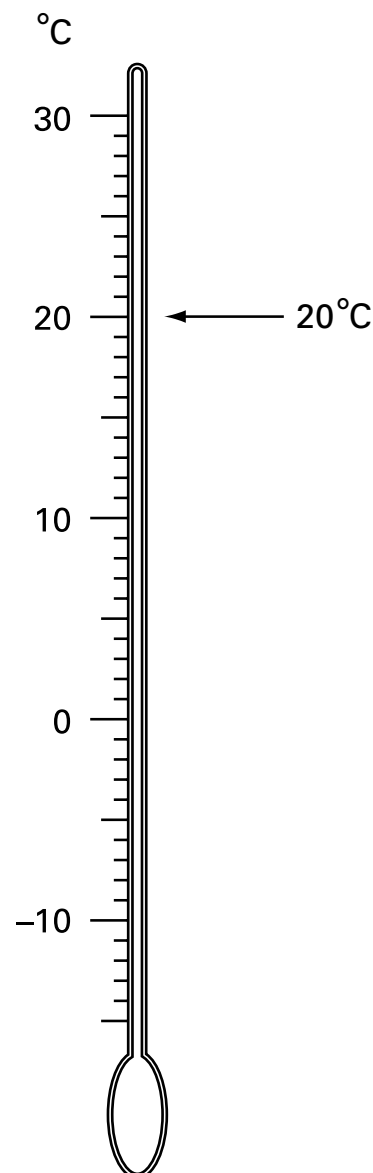
(b) Shape ABCD is a rectangle.

What are the coordinates of point D?

(,   )

4

3. The arrow by this thermometer shows a temperature of 20°C

°C

30

20 ← 20°C

10

0

−10

(a) In New York the temperature was **−2°C**

In Atlanta the temperature was **7°C warmer**.

What was the temperature in Atlanta?

. . . .°C

1 mark

(b) In Amsterdam the temperature was **3°C**

In Helsinki the temperature was **−8°C**

How many degrees warmer was it in Amsterdam than in Helsinki?

. . . .°C

1 mark

4. (a) Fill in the missing numbers.

50% of . . . . = 27

. . . . .
1 mark

a quarter of . . . . = 27

. . . . .
1 mark

(b) Write numbers in each space below to make the calculation correct.

. . . . ÷ . . . . = 27

. . . . .
1 mark

5.

My clock shows:

```
09:15
```

The hours and the minutes are both **multiples of 3**

```
09:15
```
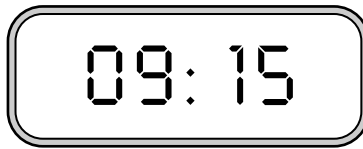
multiple of 3   multiple of 3
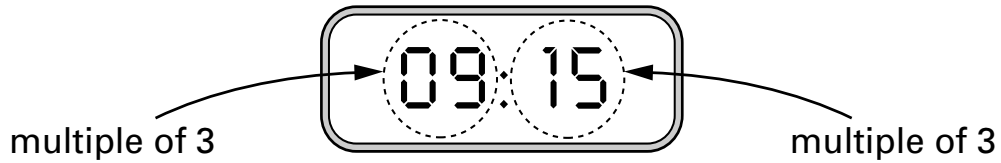
(a) Write a **different time** when the hours and the minutes are both multiples of 3

multiple of 3   multiple of 3
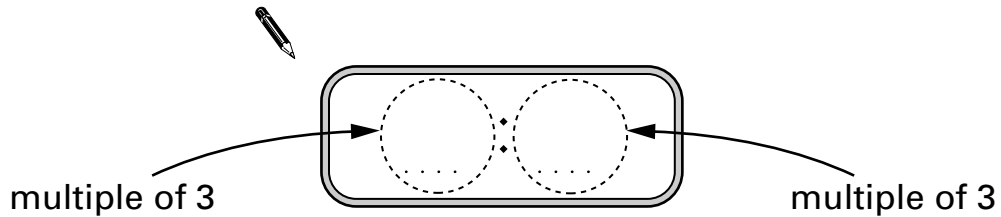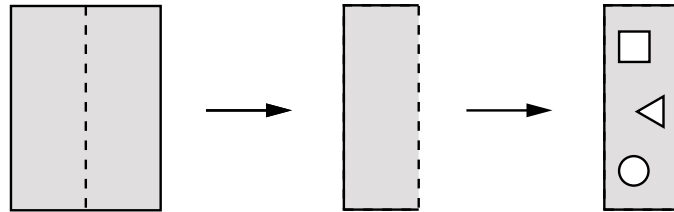
1 mark

(b) Later, my clock shows:

```
11:58
```
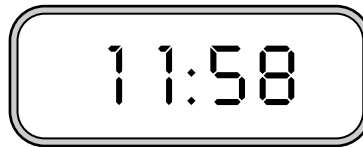
How many minutes will it be before
the hours and the minutes are both **multiples of 6**?
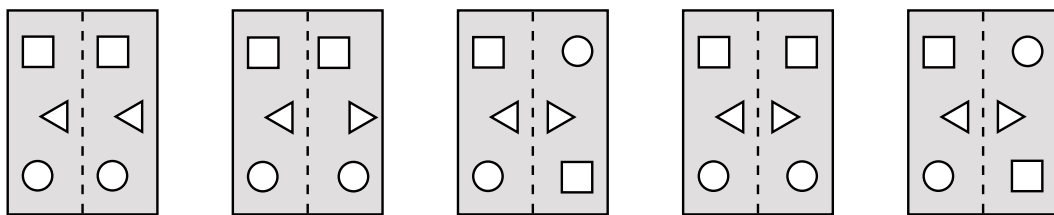
. . . . minutes

1 mark

6. (a) I start with a rectangle of paper.
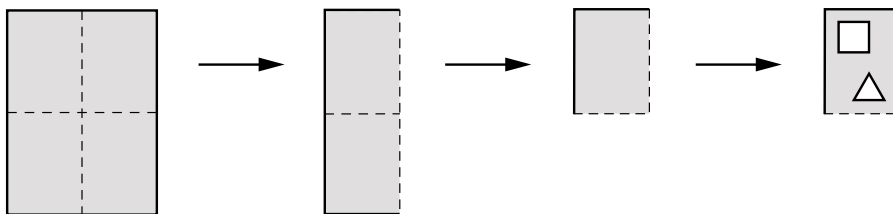
I fold it in half, then I cut out three shapes.

Then I unfold my paper.

Circle the diagram below that shows what my paper looks like now.
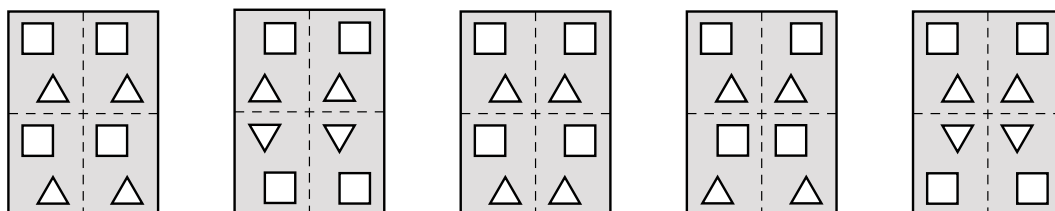
(b) I start again with a different rectangle of paper.

I fold it in half, then in half again, then I cut out two shapes.

Then I unfold my paper.

Circle the diagram below that shows what my paper looks like now.

(c) I start with a square of paper.

I fold it in half, then in half again, then I cut out one shape.

Then I unfold my paper.

Circle the diagram below that shows what my paper looks like now.
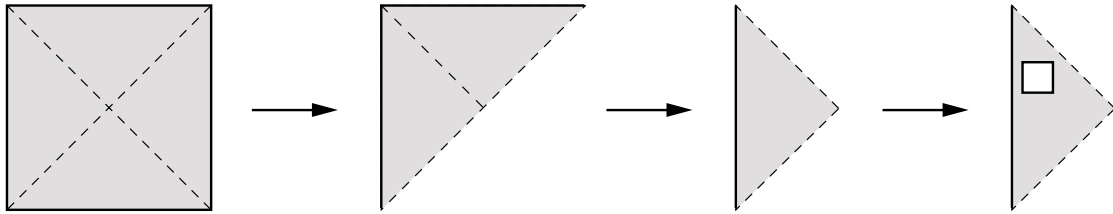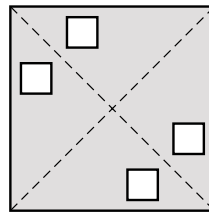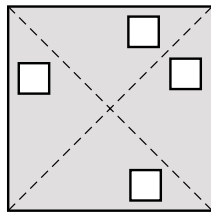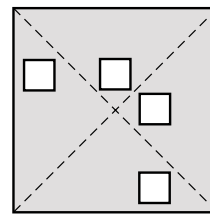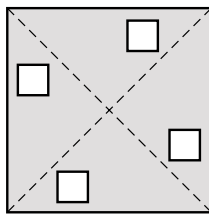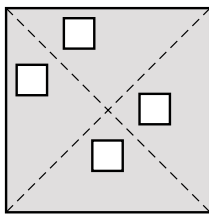
  9

7. The diagram shows how many miles there are between junctions on a motorway.

junction (**6**)

junction (**5**)

22 miles

3 miles

junction (**4**)

15 miles

junction (**3**)

7 miles

junction (**2**)
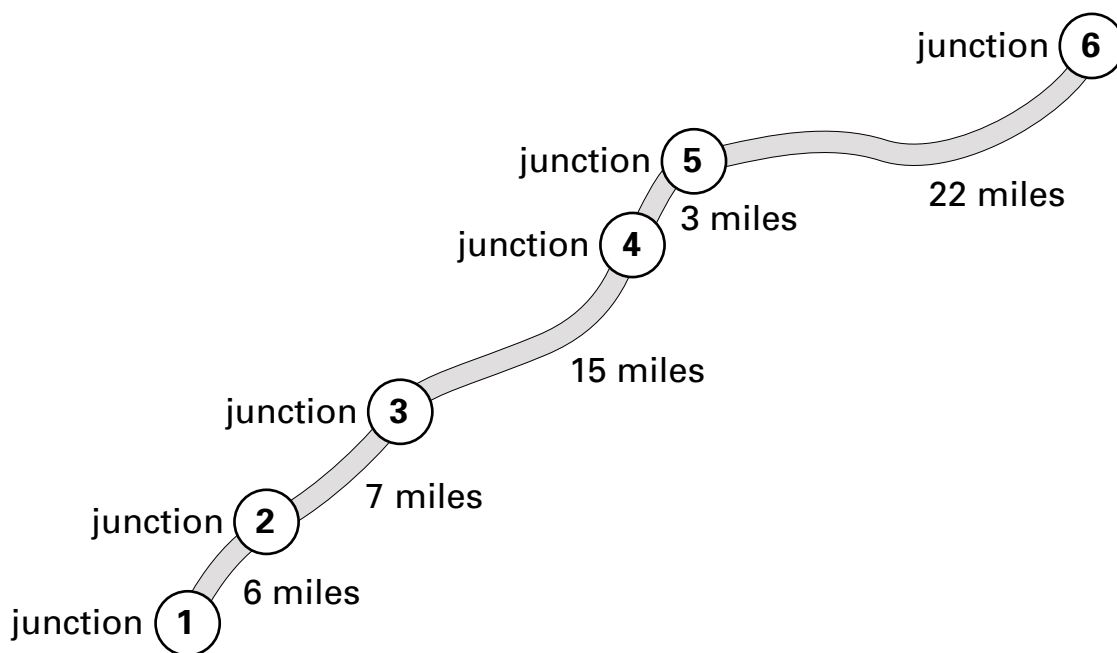
6 miles

junction (**1**)

(a) How many miles is it from (**2**) to (**4**)?

. . . . miles

. . . . .
1 mark

(b) Which junction is **31 miles** from (**1**)?

. . . .

. . . . .
1 mark

(c) Mr Patel uses the motorway.

He drives from (**2**) to (**3**) and **back again** from (**3**) to (**2**)

He does this **every day** for **five days**.

How many miles does he drive on the motorway altogether?

. . . . miles

. . . . .
1 mark

10

8. (a) Write the answers.

$(4 + 2) \times 3 =$ . . . .

$4 + (2 \times 3) =$ . . . .

. . . .
1 mark

(b) Work out the answer to

$(2 + 4) \times (6 + 3 + 1)$

. . . .

. . . .
1 mark

(c) Put brackets in the calculation to make the answer **50**

$4 + 5 + 1 \times 5$

. . . .
1 mark

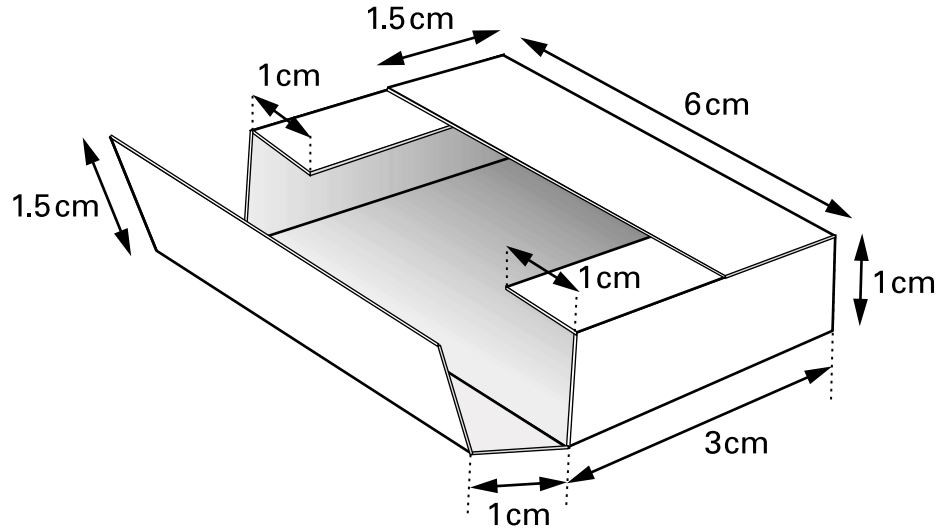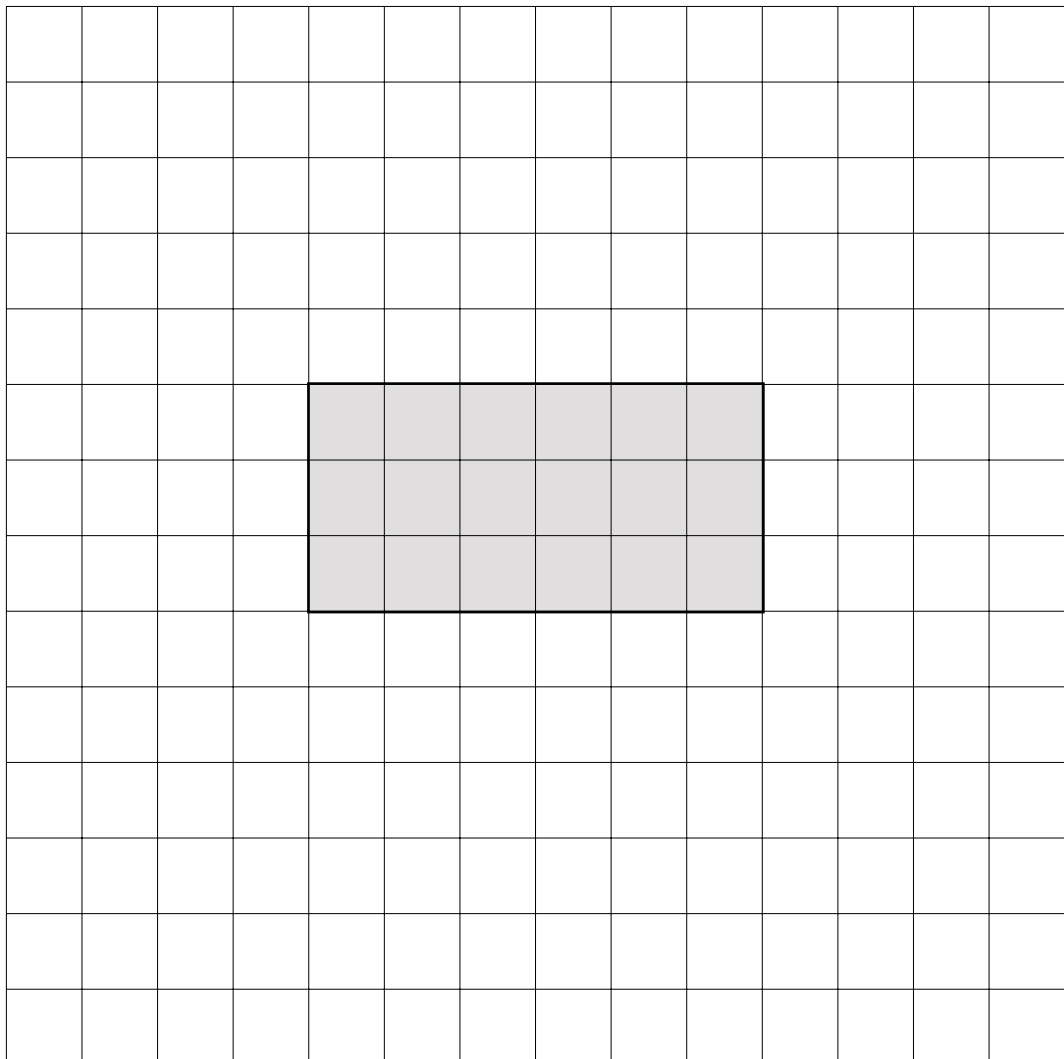(d) Now put brackets in the calculation to make the answer **34**

$4 + 5 + 1 \times 5$

. . . .
1 mark

11

9. The diagram shows a box.

Complete the **net** for the box.

. . . .

. . . .

. . . .

3 marks

10. (a)   Look at these fractions.

$$\frac{1}{2} \qquad \frac{1}{3} \qquad \frac{5}{6}$$

Mark each fraction on the number line.

The first one is done for you.

0   1

$$\frac{1}{2}$$
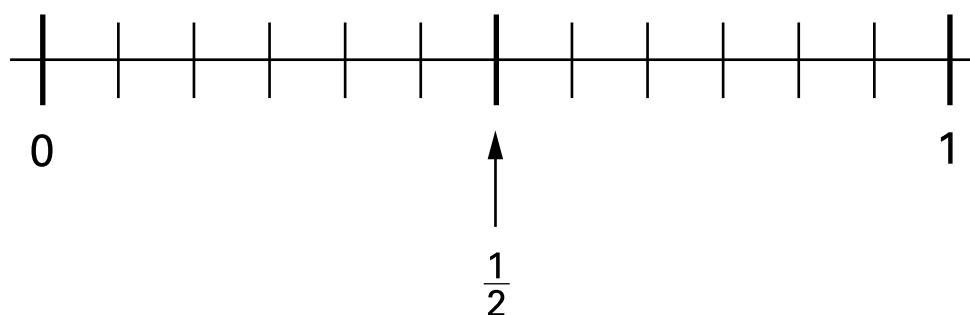
. . . .
1 mark

(b)   Fill in the missing numbers in the boxes.

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

$$\frac{1}{2} = \frac{12}{\boxed{}}$$

$$\frac{1}{\boxed{}} = \frac{6}{24}$$

. . . .

. . . .
2 marks

11. Mark and Kate each buy a family pack of crisps.

Each family pack contains **ten bags** of crisps.

The table shows how many bags of each flavour are in each family pack.

flavour	number of bags
plain	5
vinegar	2
chicken	2
cheese	1

(a) Mark is going to take a bag of crisps at random from his family pack.

Complete these sentences.

The probability that the flavour will be . . . . is $\frac{1}{2}$

. . . . .
1 mark

The probability that the flavour will be **cheese** is . . . .

. . . . .
1 mark

(b) Kate ate **two bags** of **plain** crisps from her family pack of 10 bags.

Now she is going to take a bag at random from the bags that are left.

What is the probability that the flavour will be **cheese**?

. . . . .
1 mark

(c) A shop sells **12 bags** of crisps in a large pack.

I am going to take a bag at random from the large pack.

The table below shows the probability of getting each flavour.

Use the probabilities to work out **how many bags** of each flavour are in this large pack.
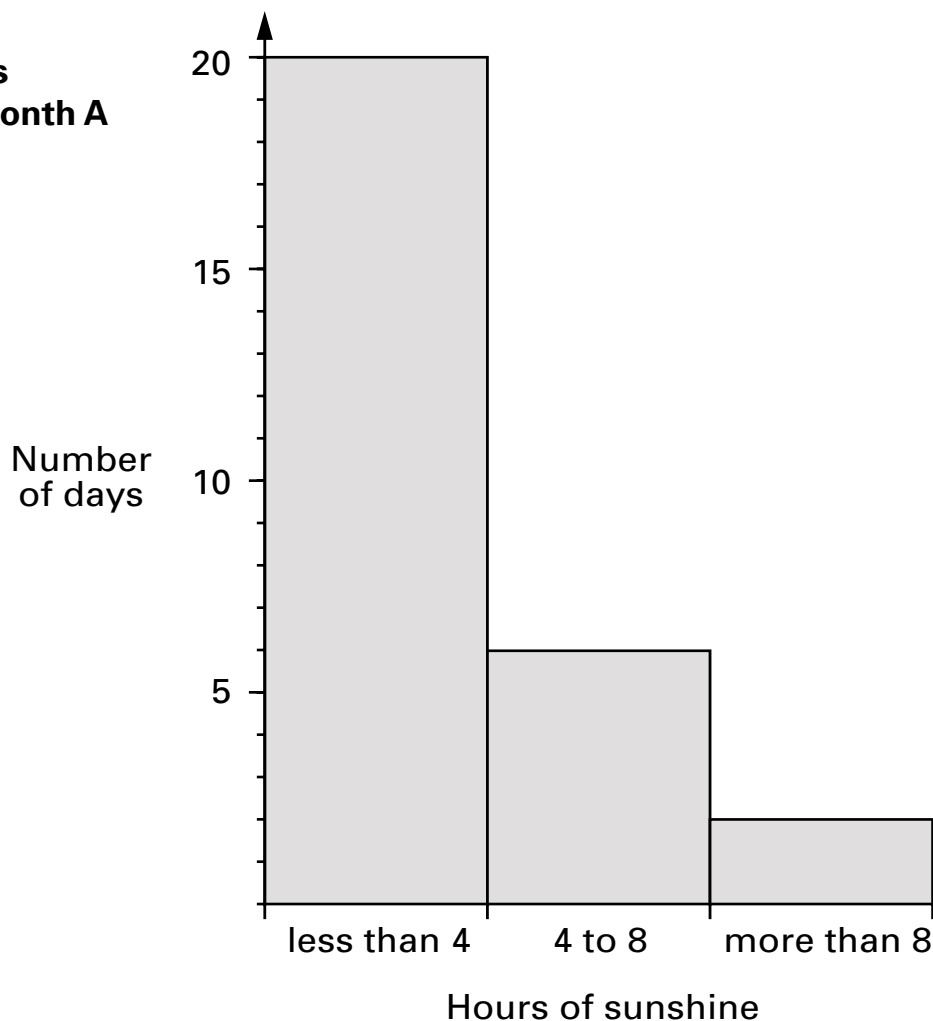
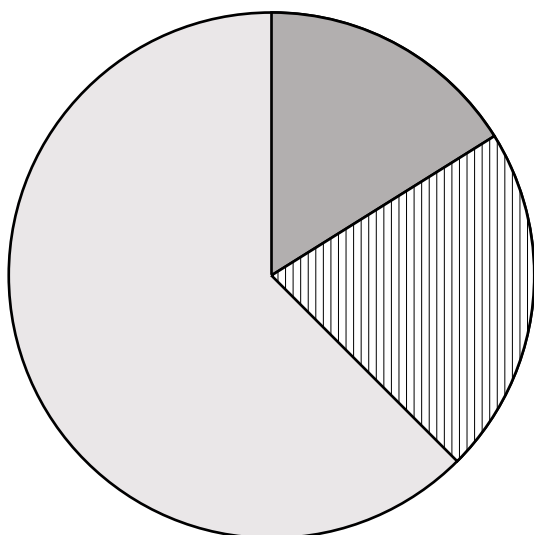| flavour	probability	number of bags
plain	$\frac{7}{12}$	
vinegar	$\frac{1}{4}$	
chicken	$\frac{1}{6}$	
cheese	0	

. . . .

. . . .
2 marks

12. The diagrams show the number of hours of sunshine in two different months.

Number of hours of sunshine in month A

Number of days

20

15

10

5

less than 4   4 to 8   more than 8

Hours of sunshine

Number of hours of sunshine in month B

Key:

number of days with less than 4 hours

number of days with 4 to 8 hours

number of days with more than 8 hours

16

(a) How many days are there in **month A**?

Tick (✓) the correct box.

✎ 28 ☐ 29 ☐ 30 ☐ 31 ☐ not possible to tell ☐

1 mark

(b) How many days are there in **month B**?

Tick (✓) the correct box.

✎ 28 ☐ 29 ☐ 30 ☐ 31 ☐ not possible to tell ☐

1 mark

(c) Which month had more hours of sunshine?

Tick (✓) the correct box.
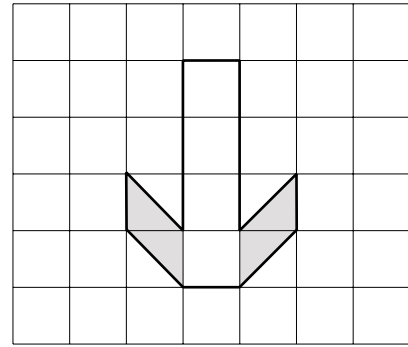
✎ month A ☐   month B ☐

Explain how you know.

✎

1 mark

13. (a) What **fraction** of this shape is shaded?

Write your fraction as simply as possible.
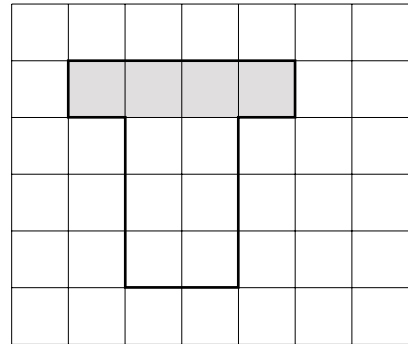
. . . .

. . . . .
1 mark

(b) What **percentage** of this shape is shaded?

. . . . %

. . . . .
1 mark

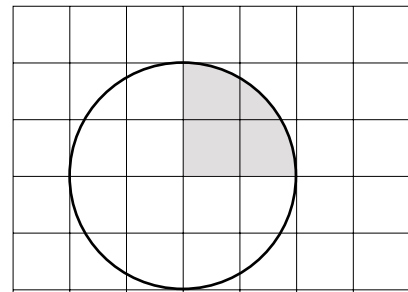(c) Which shape has the **greater percentage** shaded?

Tick (✓) the correct box.

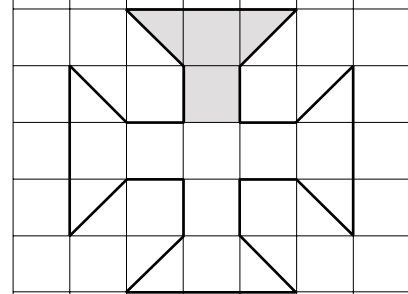☐ Shape A

☐ Shape B

☐ Both the same

Explain how you know.

Shape A

Shape B

. . . . .
1 mark

18

14. (a)   A football club is planning a trip.

The club hires **234** coaches. Each coach holds **52** passengers.

How many passengers is that altogether?

Show your working.

. . . . passengers

. . . .

. . . .
2 marks

(b)   The club wants to put one first aid kit into each of the 234 coaches.

These first aid kits are sold in **boxes of 18**

How many boxes does the club need?
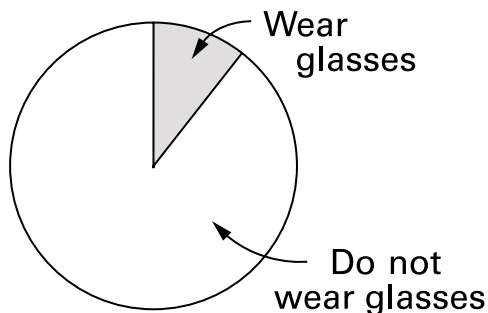
. . . . boxes

. . . .
1 mark

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20

15. There are **60 pupils** in a school.

6 of these pupils wear glasses.

(a) The pie chart is not drawn accurately.

What should the angles be?
Show your working.

. . . . ° and . . . . °

2 marks

(b) Exactly **half** of the 60 pupils in the school are boys.

From this information, what **percentage of boys** in this school **wear glasses**?
Tick (✓) the correct box below.

5% ☐   6% ☐   10% ☐

20% ☐   50% ☐   not possible to tell ☐

1 mark

16. Ali, Barry and Cindy each have a bag of counters.

They do not know how many counters are in each bag.

They know that

> Barry has **two more** counters than Ali.
>
> Cindy has **four times as many** counters as Ali.
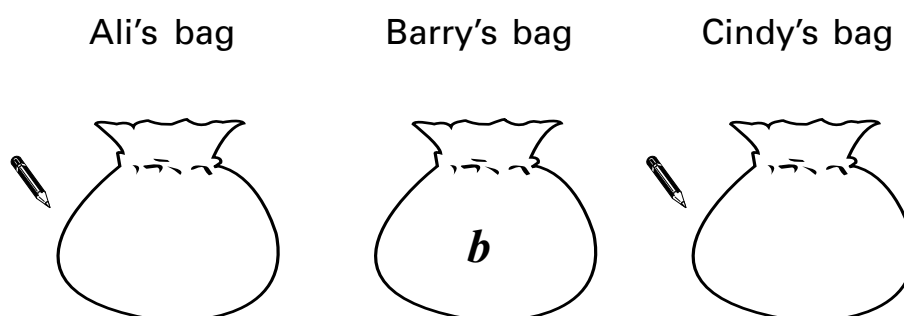
(a) Ali calls the number of counters in her bag a

Write **expressions using a** to show the number of counters in Barry's bag and in Cindy's bag.

Ali's bag   Barry's bag   Cindy's bag

a

. . . . .
1 mark

(b) Barry calls the number of counters in his bag b

Write **expressions using b** to show the number of counters in Ali's bag and in Cindy's bag.
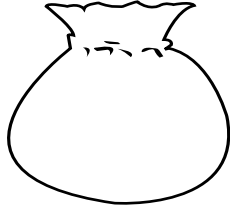
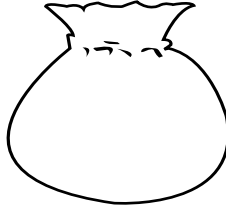Ali's bag   Barry's bag   Cindy's bag

b

. . . . .

. . . . .
2 marks

(c) Cindy calls the number of counters in her bag c

Ali's bag	Barry's bag	Cindy's bag

c
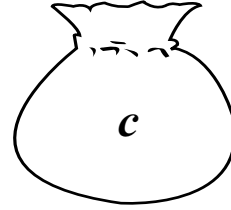
Which of the expressions below shows the number of counters in **Barry's** bag?

Circle the correct one.

$4c + 2$ $\qquad\qquad$ $4c - 2$ $\qquad\qquad$ $\dfrac{c}{4} + 2$

$\dfrac{c}{4} - 2$ $\qquad\qquad$ $\dfrac{c + 2}{4}$ $\qquad\qquad$ $\dfrac{c - 2}{4}$

1 mark

17. The diagram shows two isosceles triangles inside a parallelogram.

75° 75°

k

80°
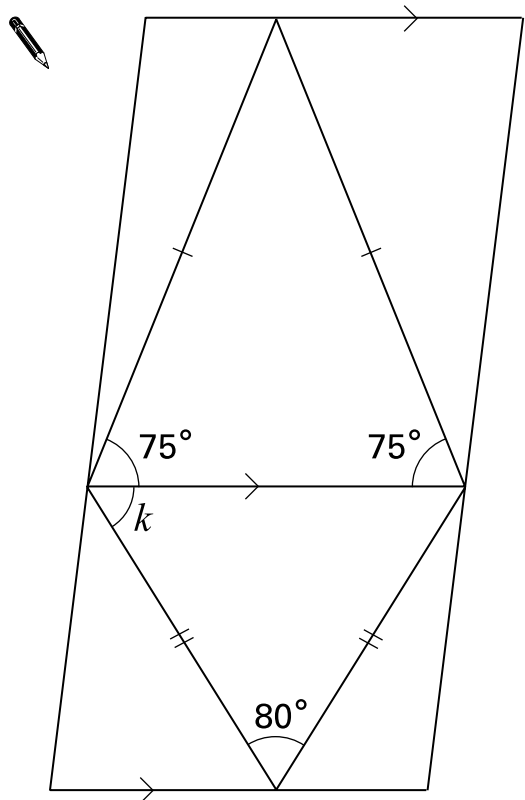
Not drawn accurately

(a) On the diagram, mark another angle that is 75°

Label it 75°

. . . .
1 mark

(b) Calculate the size of the angle marked k

Show your working.

. . . .
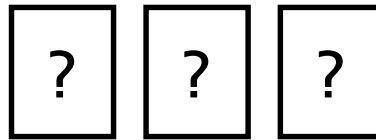
°
. . . .

. . . .
2 marks

24

18.   Here are three number cards.

The numbers are hidden.

| ? | ? | ? |

The **mode** of the three numbers is **5**

The **mean** of the three numbers is **8**

What are the three numbers?

Show your working.

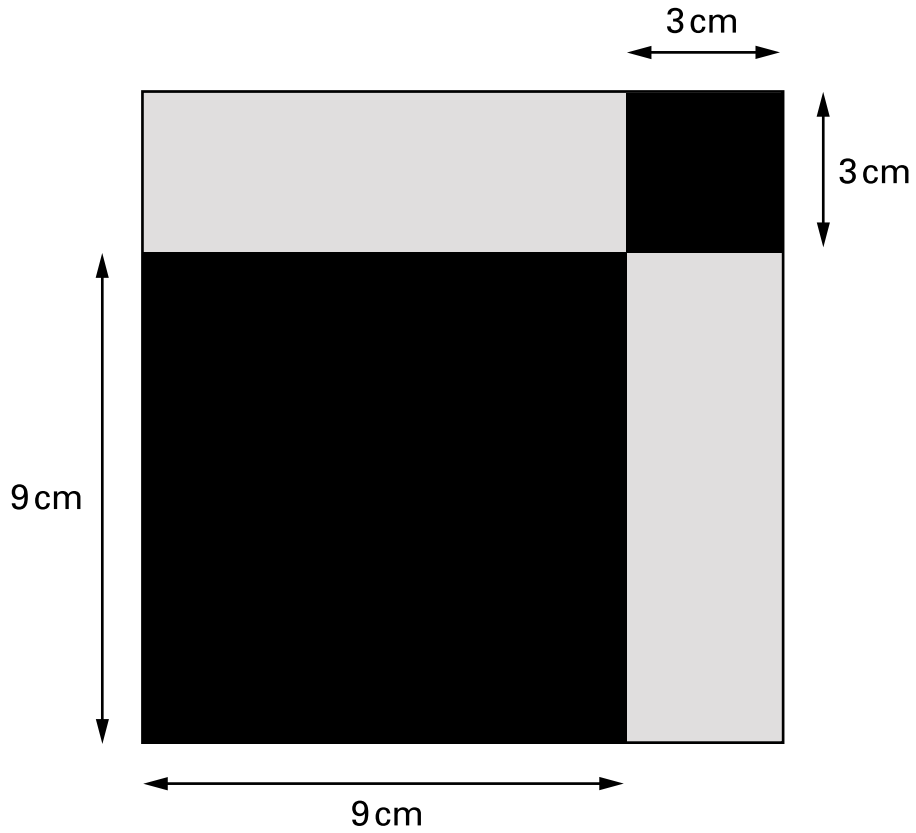. . . . . . . , ... , ... lambs

2 marks

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19.   On a farm **80** sheep gave birth.

30% of the sheep gave birth to two lambs.

The rest of the sheep gave birth to just one lamb.

In total, how many lambs were born?

Show your working.

. . . . lambs

2 marks

---

20. Two parts of this square design are shaded black.

Two parts are shaded grey.

Show that the ratio of black to grey is **5 : 3**

. . . .

. . . .

2 marks

21. (a) Solve this equation.

$$7 + 5k = 8k + 1$$

$k = $ . . . .

. . . .
1 mark

(b) Solve this equation. Show your working.

$$10y + 23 = 4y + 26$$

. . . .

$y = $ . . . .

. . . .
2 marks

          27   https://www.SATs-Papers.co.uk

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