Instructions

Answers

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

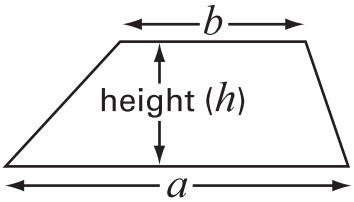
Calculators

You **may** use a calculator in this test.

Formulae

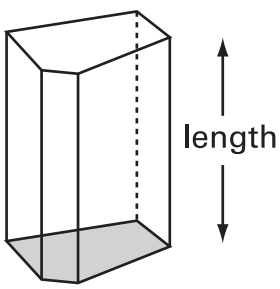
You might need to use these formulae.

Trapezium



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

Prism

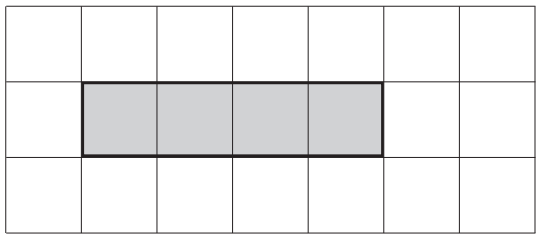


Volume = area of cross-section $\times$ length

1. The shaded rectangle has

an **area** of **4cm²**

and a **perimeter** of **10cm**.



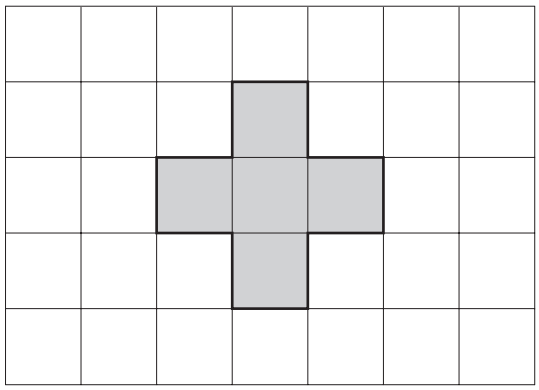
(a) Look at the cross-shape.

Fill in the gaps below.

The cross-shape has

an **area** of . . . . . **cm²**

and a **perimeter** of . . . . . **cm**.

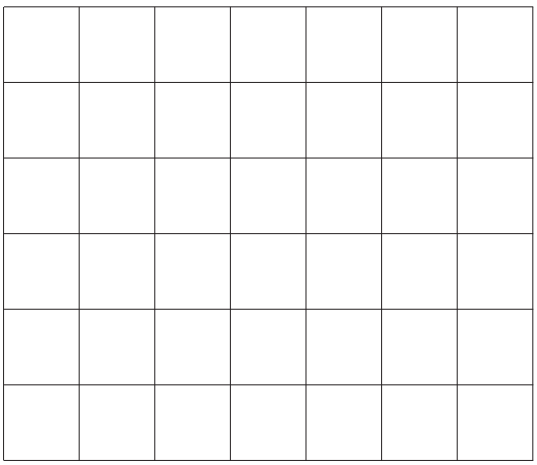


. . . .

. . . .

2 marks

(b) Draw a shape with an **area** of **6cm²**



. . . .

1 mark

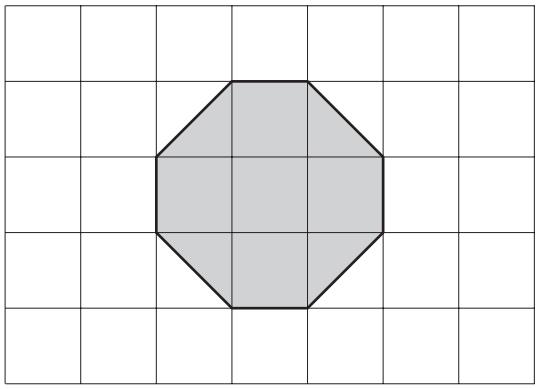
(c) What is the **perimeter** of your shape?

. . . . . cm

. . . .

1 mark

(d) Look at the octagon.



What is the area of the octagon?

. . . . . cm^2

1 mark

(e) Explain how you know that the perimeter of the octagon is **more than 8cm**.

. . . .

1 mark

2. A class has some gold tokens and some silver tokens.
The tokens are all the same size.

(a) The teacher puts **4 gold tokens** and **1 silver token** in a bag.

Leah is going to take one token out of the bag without looking.
She says:

> There are two colours, so it is **just as likely** that I will get a gold token as a silver token.

Explain why Leah is **wrong**.

✎

. . . .
1 mark

(b) How many **more silver** tokens should the teacher put in the bag to make it just as likely that Leah will get a gold token as a silver token?

✎

. . . .

. . . .
1 mark

(c) Jack has a different bag with **8** tokens in it.

It is **more likely** that Jack will take a gold token than a silver token from his bag.

How many **gold** tokens might there be in Jack's bag?

✎

. . . .

. . . .
1 mark

3. A book shows two ways to change °C to °F

exact rule	**approximate rule**
multiply the °C temperature by 1.8 then add 32	double the °C temperature then add 30

(a) Fill in the gaps.

Using the **exact** rule, **25°C** is . . . . . °F . . . .
1 mark

Using the **approximate** rule, **25°C** is . . . . . °F . . . .
1 mark

(b) Fill in the gaps.

Using the **exact** rule, **0°C** is . . . . . °F

Using the **approximate** rule, **0°C** is . . . . . °F . . . .
1 mark

(c) Show that at **10°C**, the exact rule and the approximate rule give the same answers.

. . . .

. . . .
2 marks

4. (a) A club wants to take **3000 people** on a journey to London.

The club secretary says:

> We can go in coaches.
> Each coach can carry **52** people.

How many coaches do they need for the journey?

Show your working.

. . . . .

. . . . . coaches . . . . .

2 marks

(b) Each coach costs **£420**

What is the **total cost** of the coaches?

£ . . . . .

1 mark

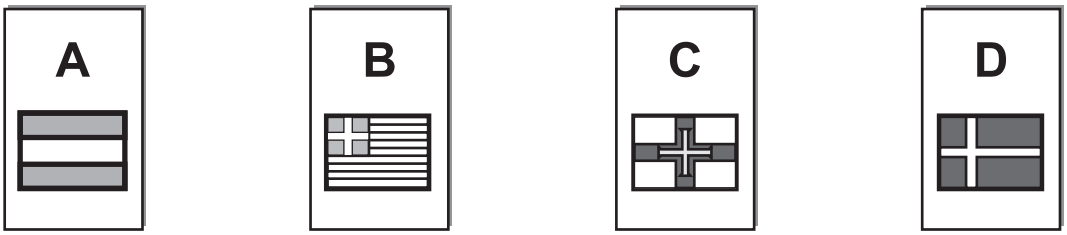
(c) How much is each person's share of the cost?

£ . . . . .

1 mark

5. In each box of cereal there is a free gift of a card.
You cannot tell which card will be in a box. Each card is equally likely.

There are **four** different cards: A, B, C or D



(a) **Zoe** needs card **A**
Her brother **Paul** needs cards **C** and **D**
They buy one box of cereal.

What is the probability that the card is one that **Zoe** needs?

. . . . 1 mark

What is the probability that the card is one that **Paul** needs?

. . . . 1 mark

(b) Then their mother opens the box.
She tells them the card is **not card A**

Now what is the probability the card is one that **Zoe** needs?

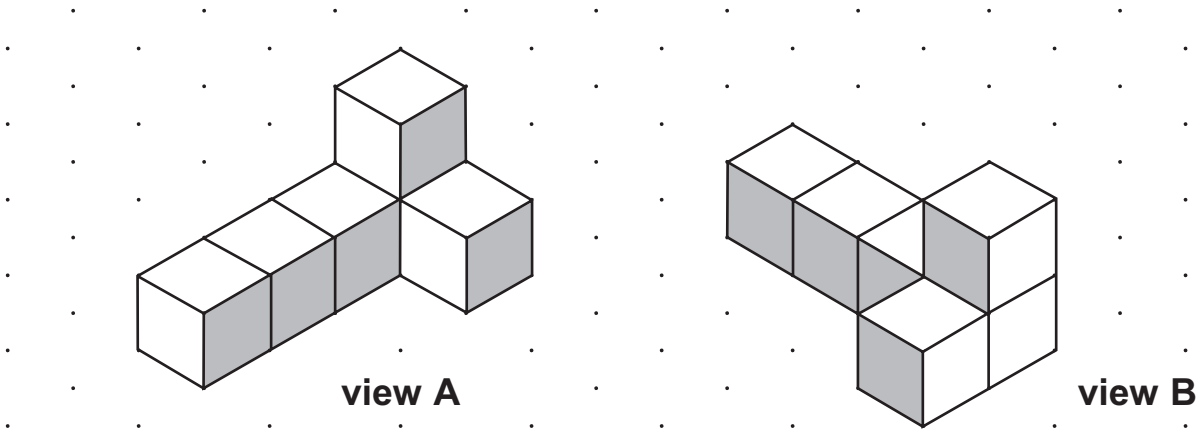
. . . . 1 mark

What is the probability that the card is one that **Paul** needs?

. . . . 1 mark

6. I make a model with 6 cubes.

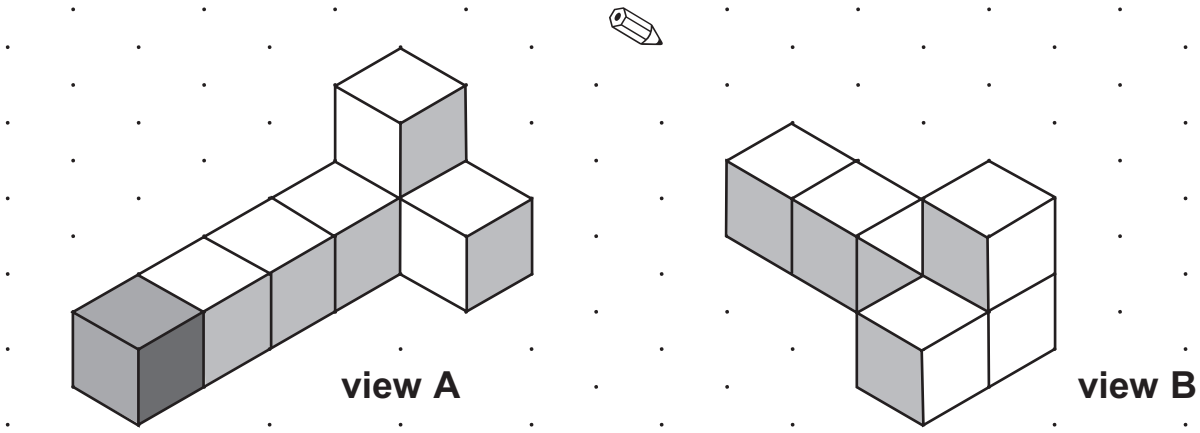
The drawings show my model from **different views**.



(a) I join one more cube to my model.

The drawing from **view A** shows where I join the cube.

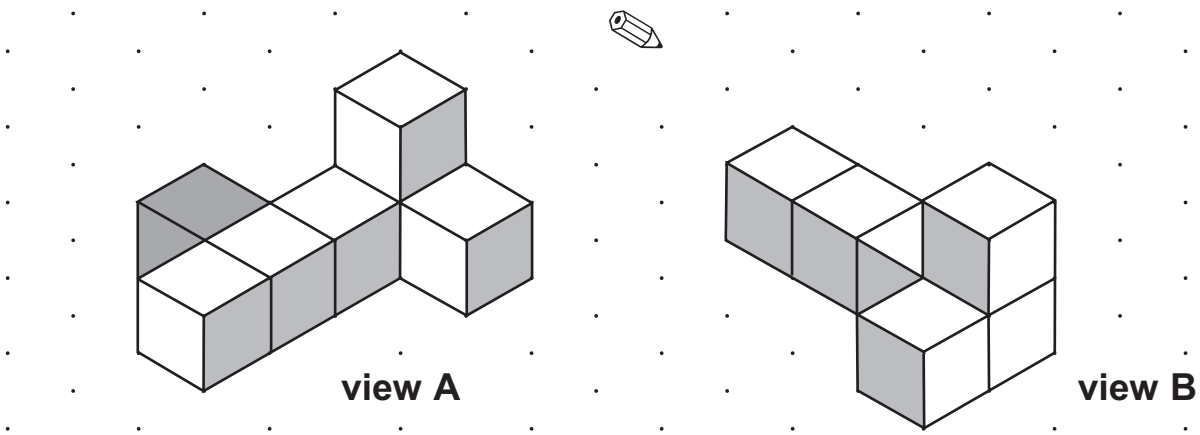
Complete the drawing from **view B**



1 mark

(b) Then I move the cube to a different position.

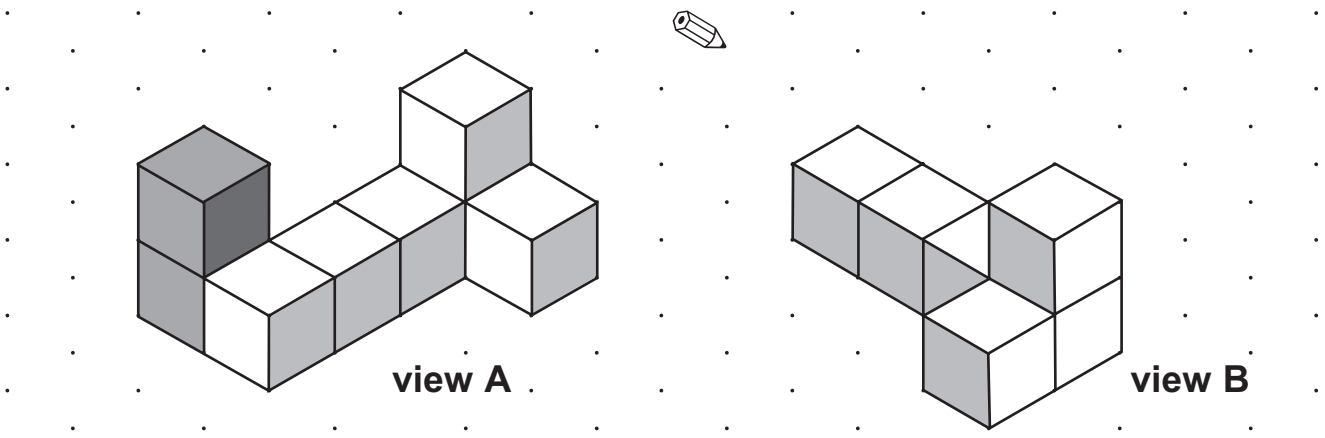
Complete the drawing from **view B**



1 mark

(c) I add two cubes to make a different shape.

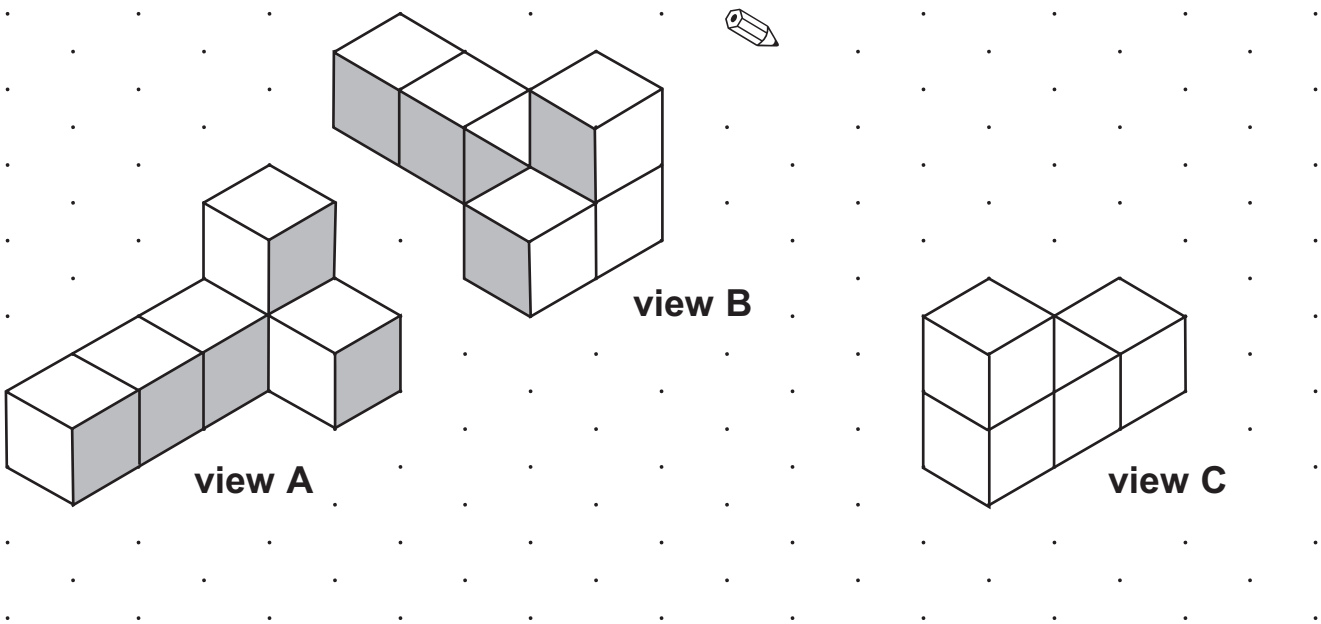
Complete the drawing from **view B**



1 mark

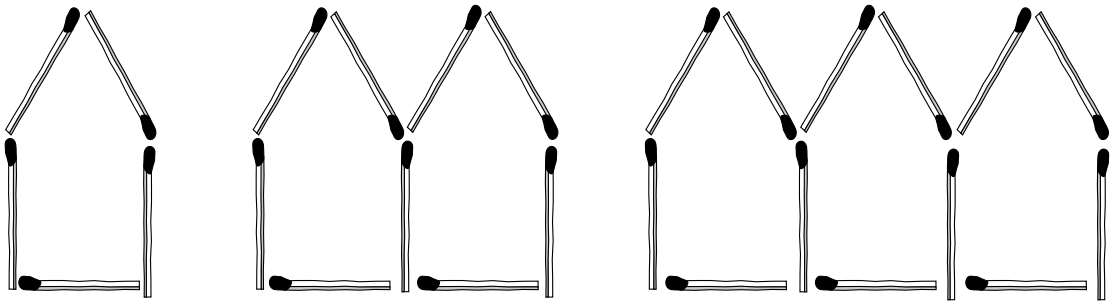
(d) I start again with my original model of 6 cubes.
The drawing shows it from **view A** and from **view B**
I start to draw it from a different view.

Complete the drawing from **view C**



1 mark

7. You can make 'huts' with matches.



1 hut needs 5 matches

2 huts need 9 matches

3 huts need 13 matches

A rule to find how many matches you need is

$$m = 4h + 1$$

m stands for the number of matches.

h stands for the number of huts.

(a) **Use the rule** to find how many matches you need to make **8** huts.

Show your working.

. . . .

. . . . . matches . . . .

2 marks

(b) I use **81 matches** to make some huts.

How many huts do I make?

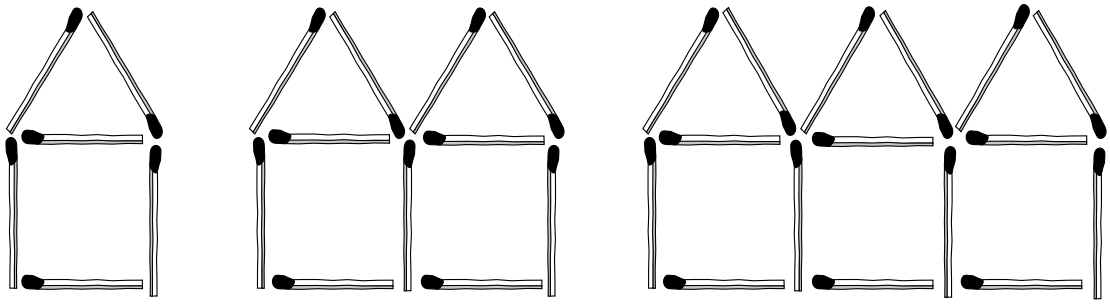
Show your working.

. . . .

. . . . . huts . . . .

2 marks

(c) Andy makes different ‘huts’ with matches.



1 hut needs 6 matches

2 huts need 11 matches

3 huts need 16 matches

Circle the rule below that shows how many matches he needs.

Remember: m stands for the number of matches.

h stands for the number of huts.

$m = h + 5$ $m = 4h + 2$ $m = 4h + 3$

$m = 5h + 1$ $m = 5h + 2$ $m = h + 13$

1 mark

8. A school has a new canteen.

A special person will be chosen to perform the opening ceremony.

The names of all the pupils, all the teachers and all the canteen staff are put into a box.

One name is taken out at random.

A pupil says:

> There are only three choices.
> It could be a pupil, a teacher or one of the canteen staff.
> The probability of it being a **pupil** is $\frac{1}{3}$

The pupil is **wrong**. Explain why.

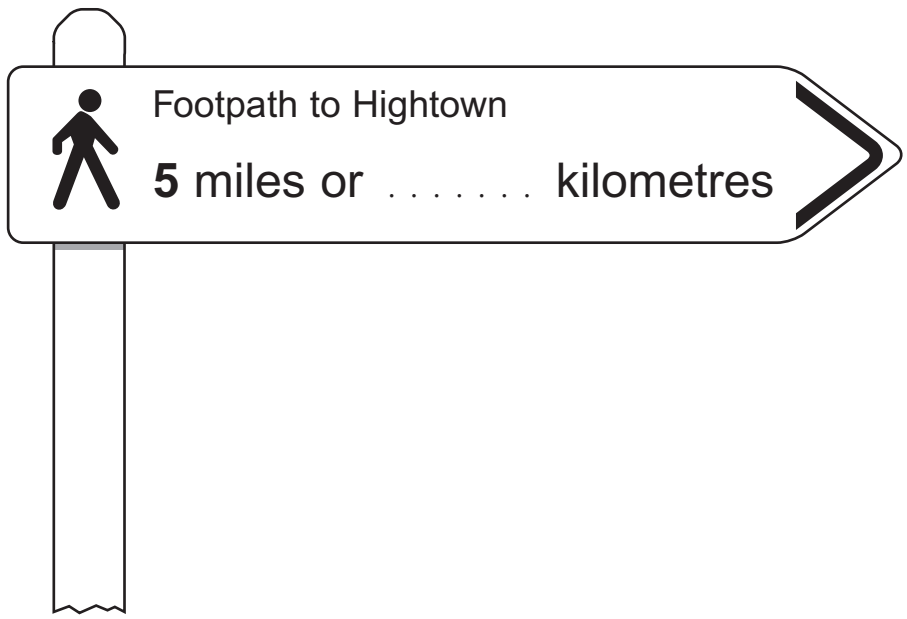
. . . .
1 mark

9. Calculate

8% of £26.50 = £ . . . .
1 mark

$12\frac{1}{2}$% of £98 = £ . . . .
1 mark

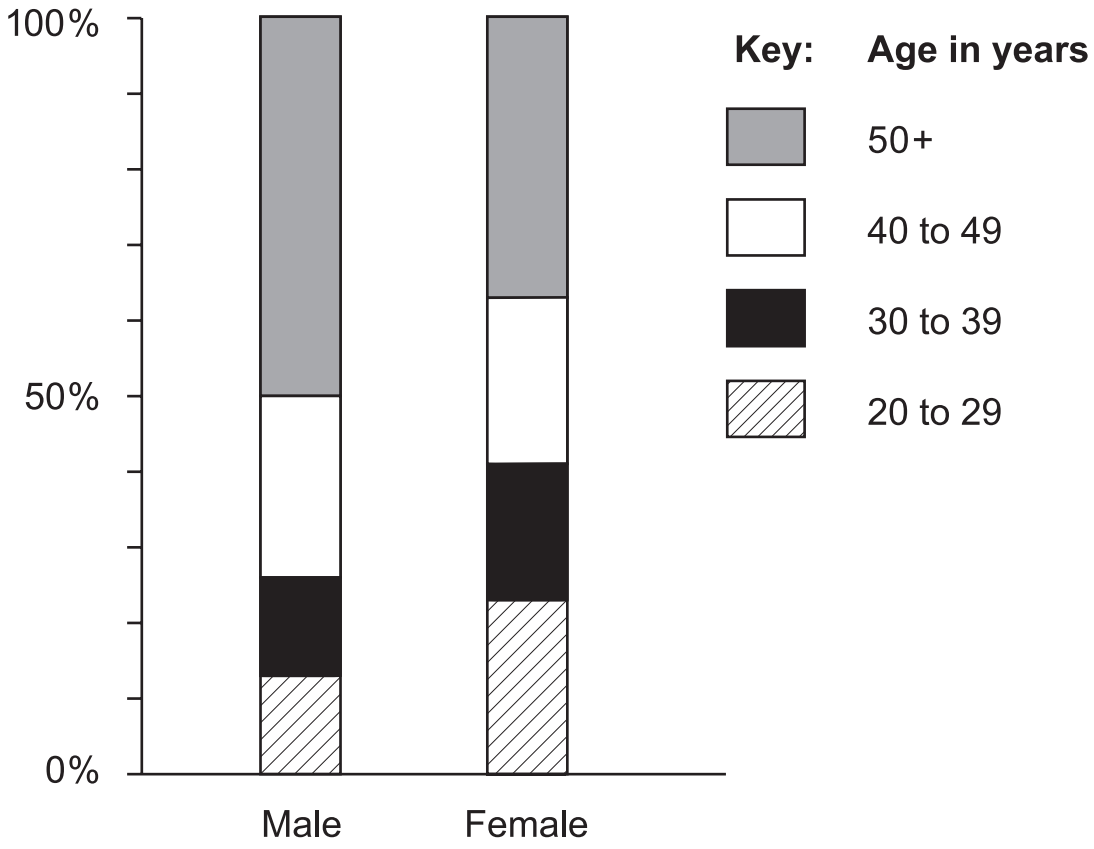
10. How many kilometres are there in **5 miles**?
Complete the missing part of the sign.



. . . .
1 mark

11. A newspaper predicts what the ages of secondary school teachers will be in six years' time.

They print this chart.



(a) The chart shows **24%** of male teachers will be aged 40 to 49

About what percentage of female teachers will be aged 40 to 49?

. . . . . %

. . . .
1 mark

(b) About what percentage of **female** teachers will be aged **50+**?

. . . . . %

. . . .
1 mark

Graphic: Laura Sylvester/TES

(c) The newspaper predicts there will be about
20 000 male teachers aged 40 to 49

Estimate the number of male teachers that will be aged 50+

. . . . . .

. . . .
1 mark

(d) Assume the total number of male teachers will be about the same as the total number of female teachers.

Use the chart to decide which statement is correct.

Tick (✓) your answer.

Generally, male teachers will tend to be younger than female teachers. ☐

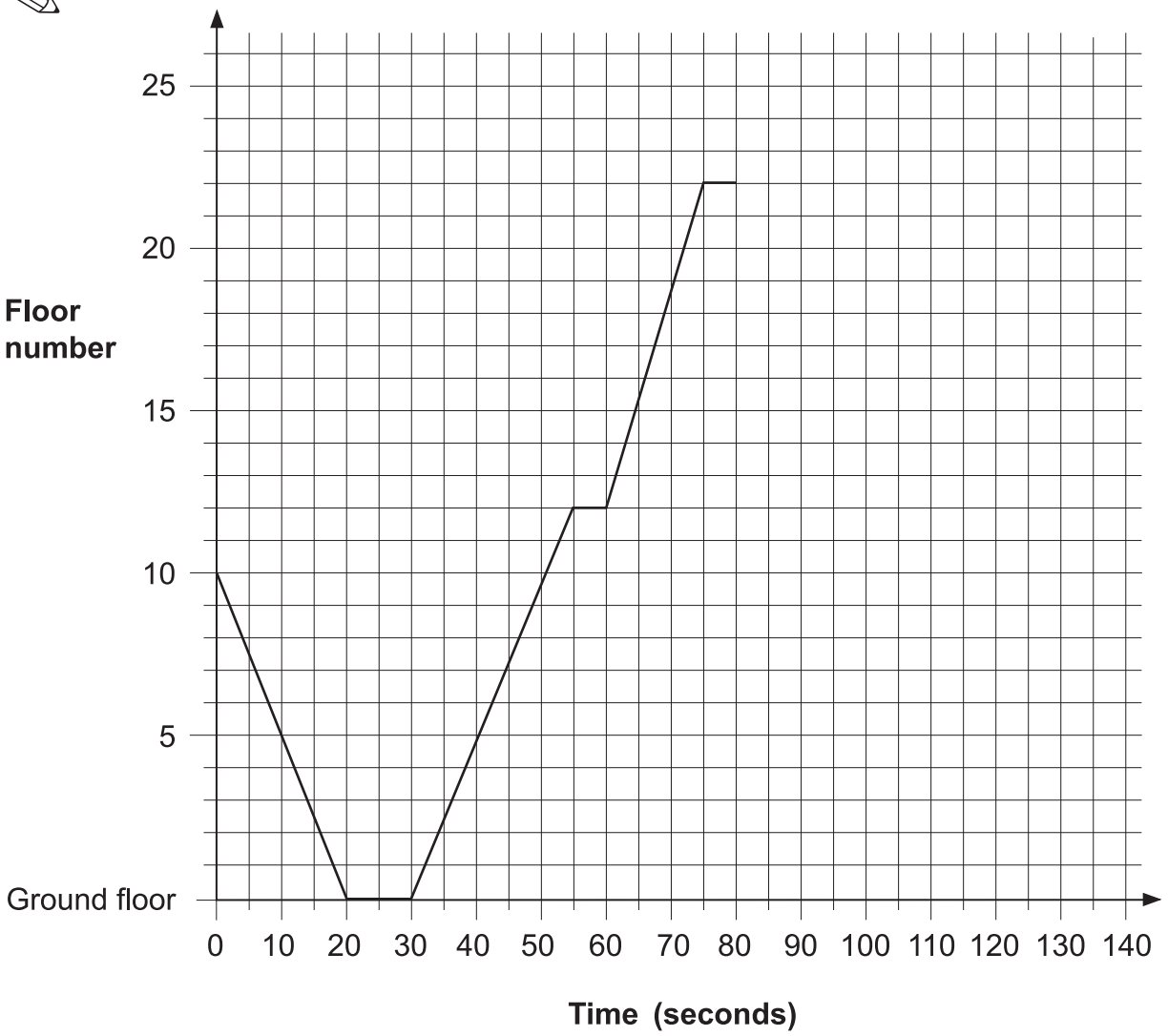
Generally, female teachers will tend to be younger than male teachers. ☐

Explain how you used the chart to decide.

. . . .
1 mark

12. The graph shows my journey in a lift.

I got in the lift at floor number 10



(a) The lift stopped at two different floors before I got to floor number 22

What floors were they?

floors . . . . . and . . . .

1 mark

(b) For how long was I in the lift while it was moving?

. . . . . seconds

1 mark

(c) After I got out of the lift at floor number 22, the lift went directly to the ground floor.

It took **45 seconds**.

On the graph, show the journey of the lift from floor 22 to the ground floor.

1 mark

13. (a) Paula played four games in a competition.
In **three** games, Paula scored **8** points each time.
In the other game she scored **no** points.

What was Paula's **mean** score over the **four** games?

. . . . . points . . . .
1 mark

(b) Jessie only played **two** games.
Her **mean** score was **3** points.
Her **range** was **4** points.

What points did Jessie score in her two games?

. . . . . and . . . .
1 mark

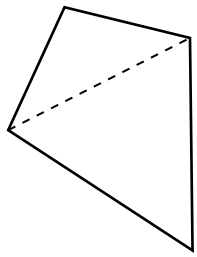
(c) Ali played **three** games.
His **mean** score was also **3** points.
His **range** was also **4** points.

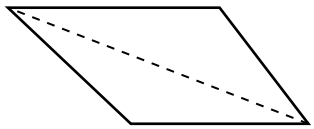
What points might Ali have scored in his three games?
Show your working.

. . . .

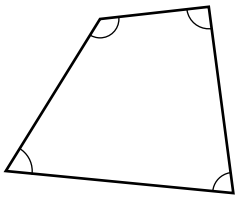
. . . . . and . . . . . and . . . .
2 marks

14. (a) Any quadrilateral can be split into 2 triangles.



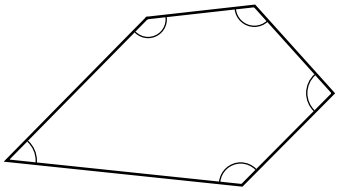


Explain how you know that the angles inside a **quadrilateral** add up to **360°**



. . . . .
1 mark

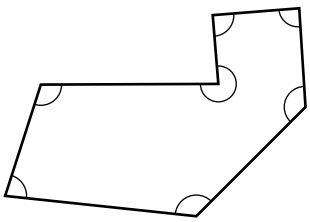
(b) What do the angles inside a **pentagon** add up to?



. . . . . °
. . . . .
1 mark

(c) What do the angles inside a **heptagon** (7-sided shape) add up to?

Show your working.



. . . . . °
. . . . .
. . . . .
2 marks

15. A garden centre sells plants for hedges.
The table shows what they sold in one week.

Plants	Number of plants sold	Takings
Beech	125	£212.50
Leylandii	650	£2437.50
Privet	35	£45.50
Hawthorn	18	£23.40
Laurel	5	£32.25
Total	**833**	**£2751.15**

(a) What percentage of the total number of plants sold was **Leylandii**?
Show your working.

. . . .

. . . . . %

. . . .
2 marks

(b) What percentage of the **total takings** was for Leylandii?
Show your working.

. . . .

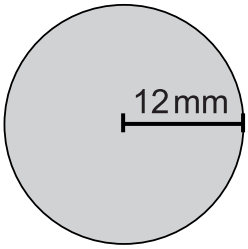
. . . . . %

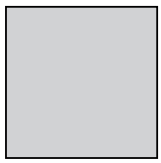
. . . .
2 marks

(c) Which is the **cheaper** plant, Beech or Privet?
Show working to explain how you know.

. . . .
1 mark

16. The diagram shows a circle and a square.





Not drawn accurately

(a) The radius of the circle is 12 mm.

What is the **area** of the circle to the nearest mm^2?

Show your working.

. . . .

. . . . . mm^2 . . . .

2 marks

(b) The **ratio** of the area of the **circle** to the area of the **square** is **2 : 1**

What is the area of the square to the nearest mm^2?

. . . . . mm^2 . . . .

1 mark

(c) What is the side length of the square?

Show your working.

. . . .

. . . . . mm . . . .

2 marks