Instructions

Formulae

You might need to use these formulae.

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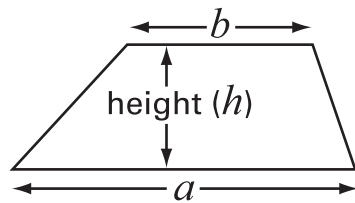
Area = $\dfrac{(a+b)}{2} \times h$

Prism
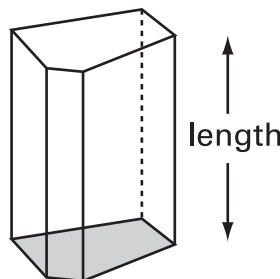
Volume = area of cross-section × length

1.   The shaded rectangle has

an **area** of **4cm^2**

and a **perimeter** of **10cm**.
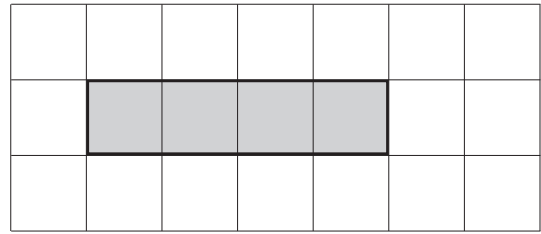
(a)   Look at the cross-shape.

Fill in the gaps below.

The cross-shape has

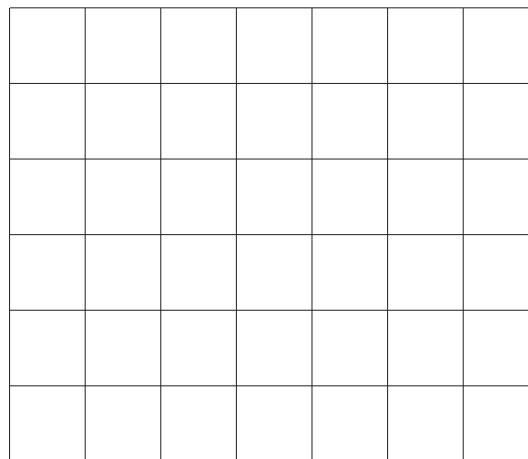an **area** of . . . . . **cm^2**

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

. . . .
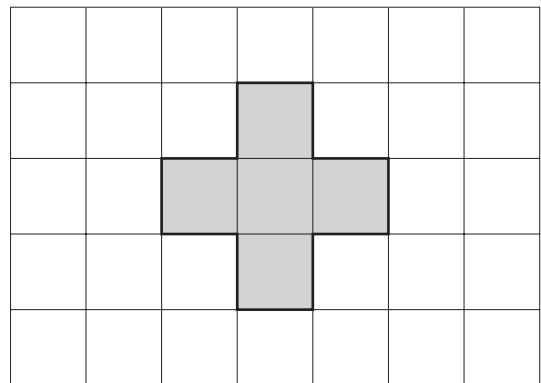
. . . . .
2 marks

(b)   Draw a shape with an **area** of **6cm^2**

. . . .
1 mark

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

. . . . **cm**

. . . .
1 mark

(d)   Look at the octagon.
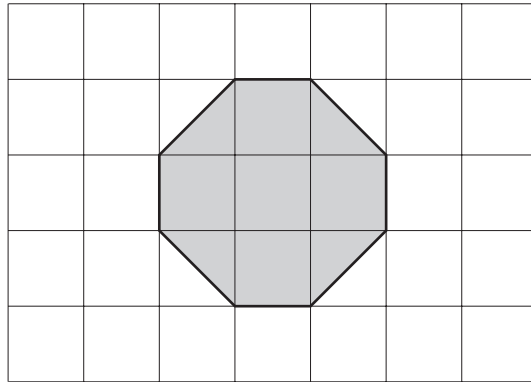
What is the area of the octagon?

. . . . cm^2

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

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?

£

. . . .
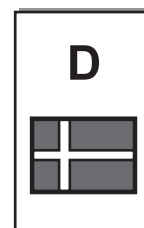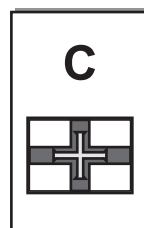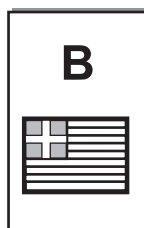1 mark

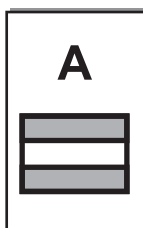(c) How much is each person's share of the cost?

£

. . . .
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

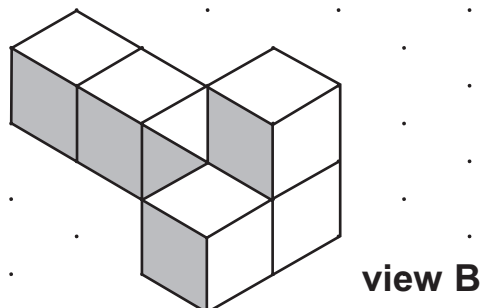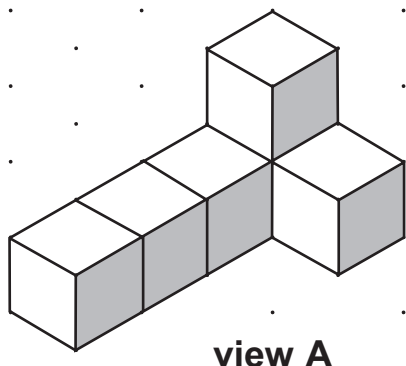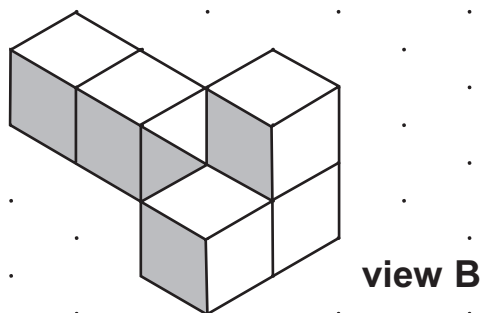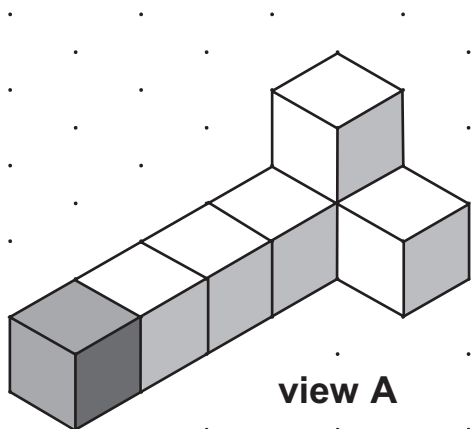What is the probability that the card is one that **Paul** needs?

. . . .

1 mark

6. I make a model with 6 cubes.

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

view A **view B**

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

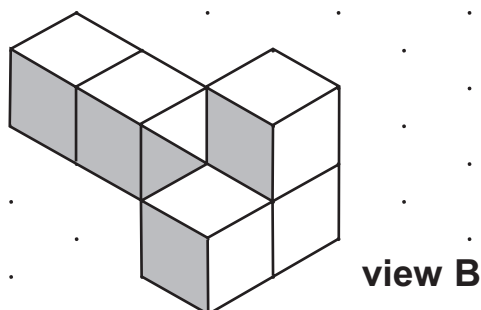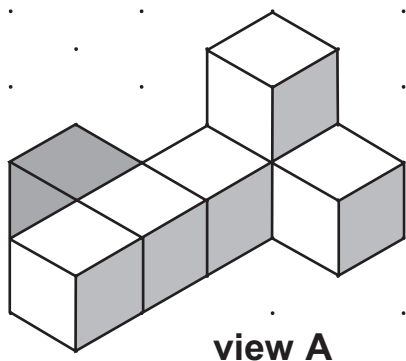The drawing from **view A** shows where I join the cube.

Complete the drawing from **view B**

view A **view B**

1 mark

(b) Then I move the cube to a different position.
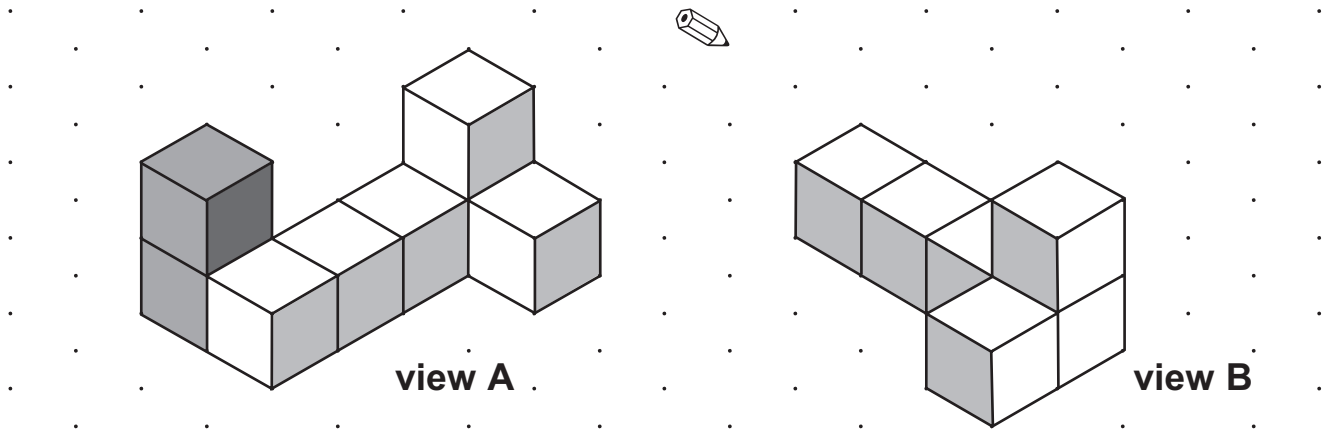
Complete the drawing from **view B**

view A **view B** 1 mark

(c)   I add two cubes to make a different shape.
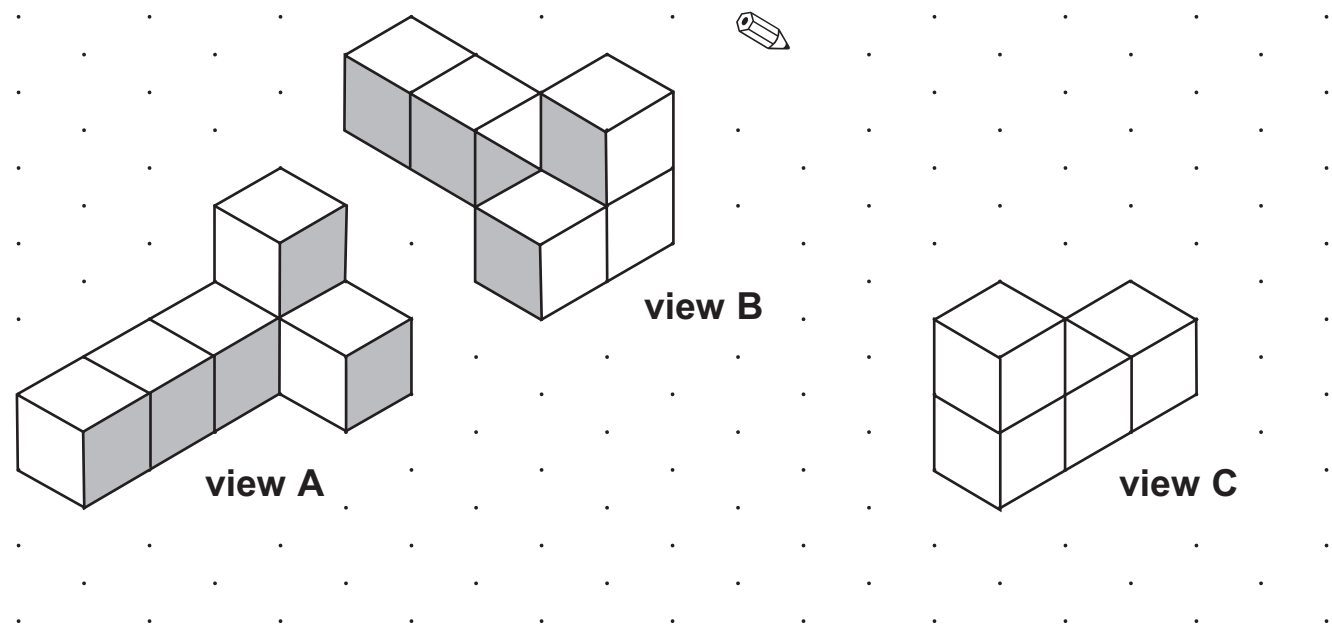
Complete the drawing from **view B**

view A

view B

(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.

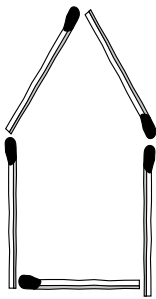Complete the drawing from **view C**

view B

view A

view C

1 mark

7.   You can make 'huts' with matches.
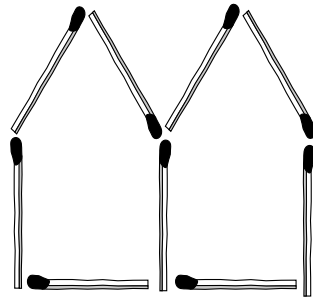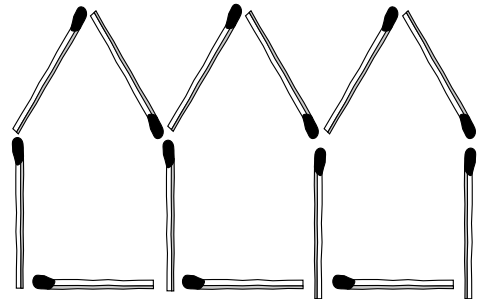
1 hut needs   2 huts need   3 huts need
5 matches   9 matches   13 matches

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

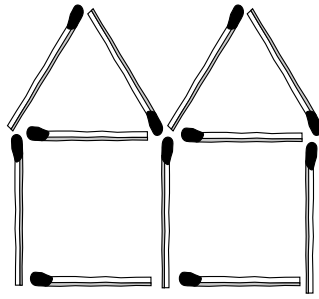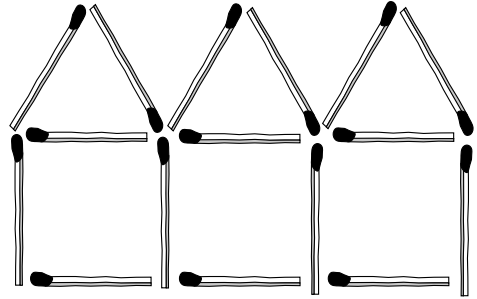2 marks

(c) Andy makes different 'huts' with matches.
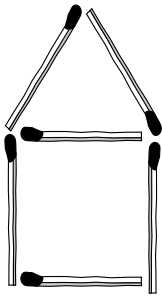
1 hut needs
6 matches

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.

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

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

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 = £ [   ]

. . . .
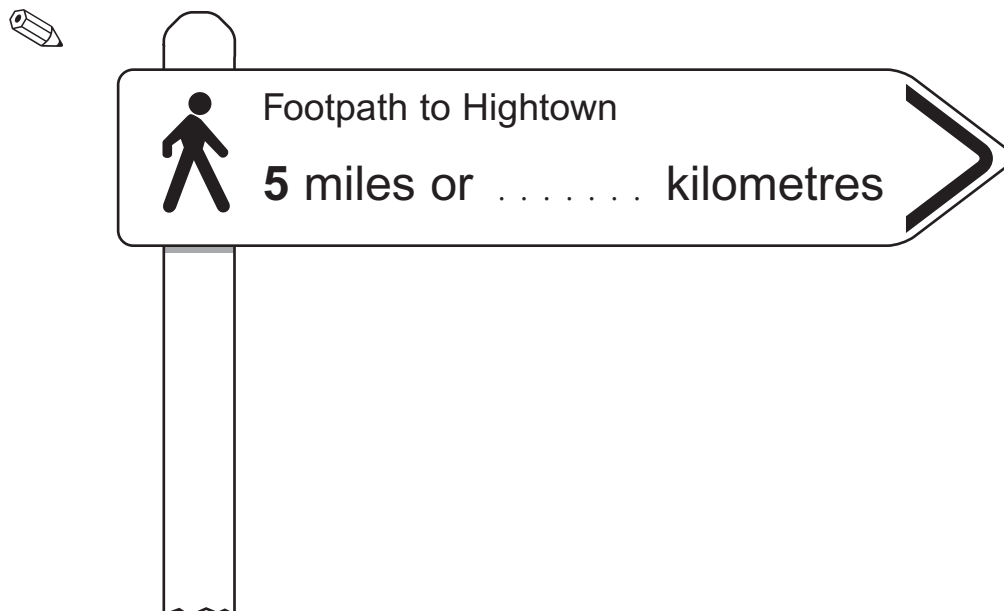1 mark

✎ $12\frac{1}{2}$% of £98 = £ [   ]

. . . .
1 mark

10.   How many kilometres are there in **5 miles**?

Complete the missing part of the sign.

✎

Footpath to Hightown

5 miles or . . . . . . kilometres

. . . .
1 mark

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

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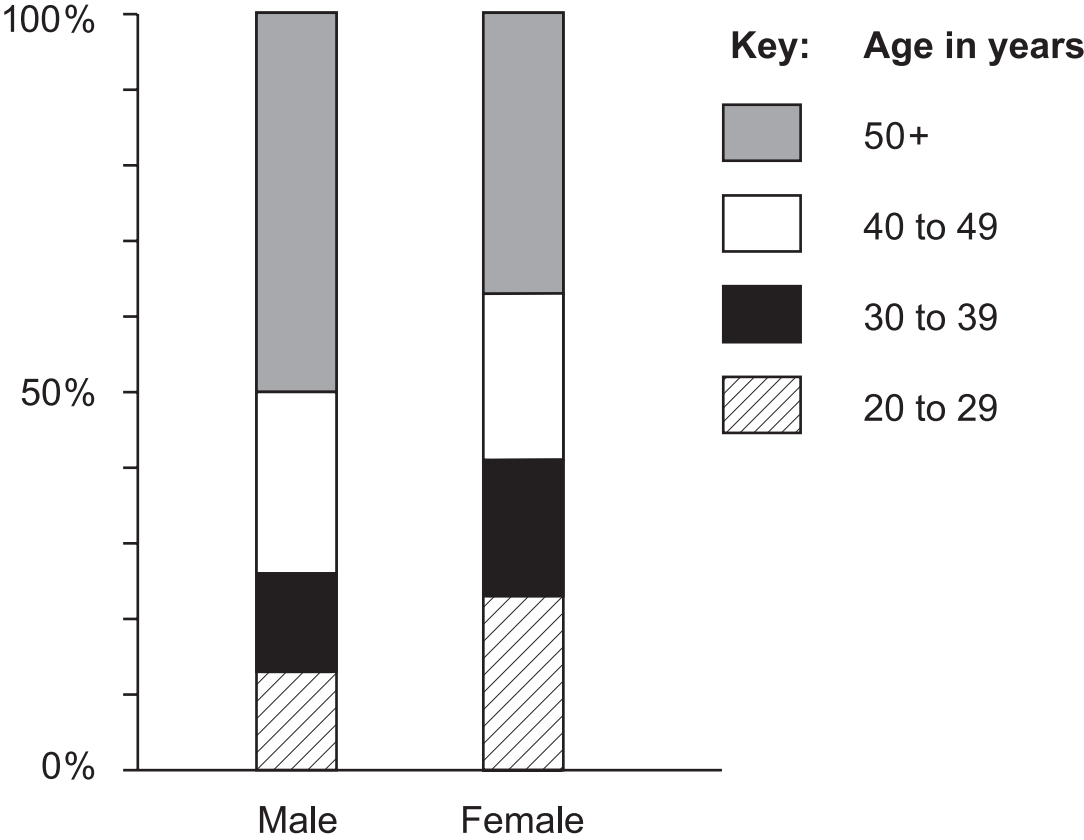
(a) The chart shows **24%** of male teachers will be aged 40 to 49

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

✎ . . . . %

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

✎ . . . . %

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+

. . . .

(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
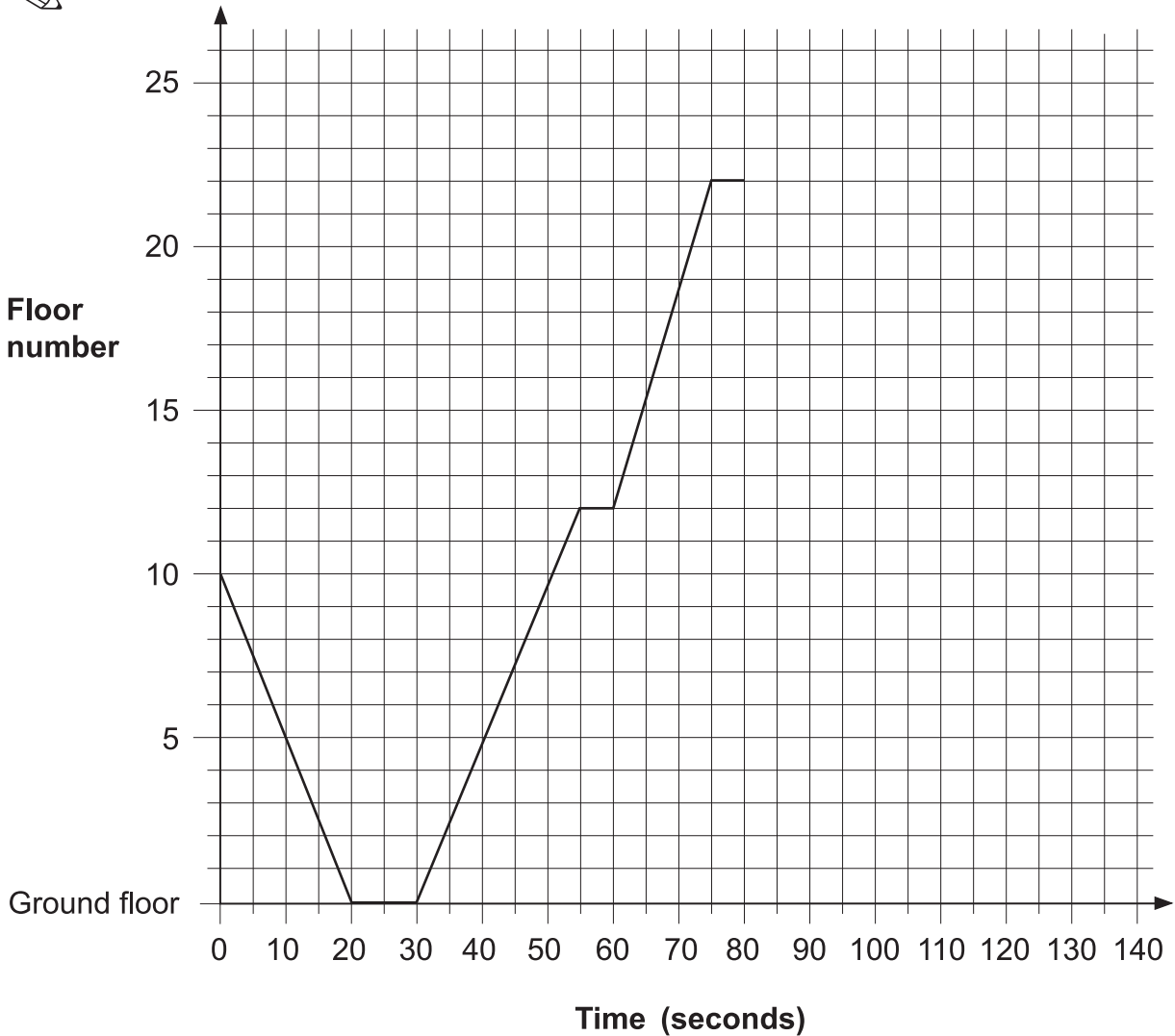be younger than male teachers. ☐

Explain how you used the chart to decide.

. . . . .

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

(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.

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

(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.

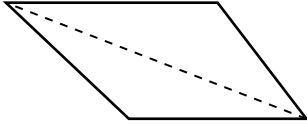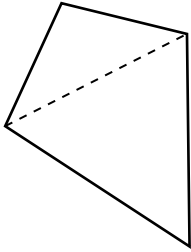What points might Ali have scored in his three games?
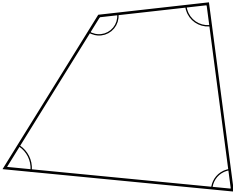Show your working.

. . . . and . . . . and . . . .

2 marks

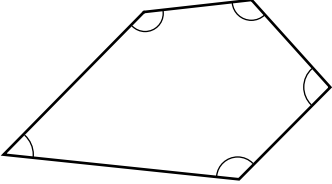**14.** (a)   Any quadrilateral can be split into 2 triangles.

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

. . . . .
1 mark

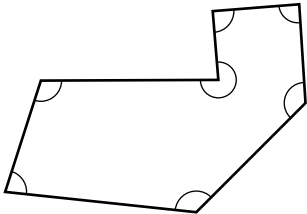(b)   What do the angles inside a
pentagon add up to?

. . . . °
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?
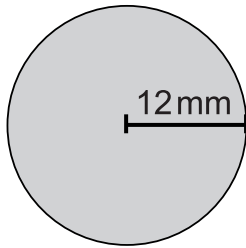
Show your working.

. . . . %

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