

Instructions

Answers



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

Calculators

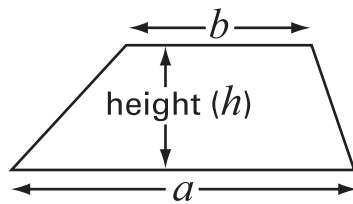


You **may** use a calculator in this test.

Formulae

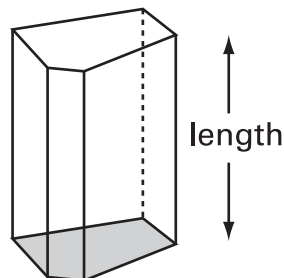
You might need to use these formulae.

Trapezium



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

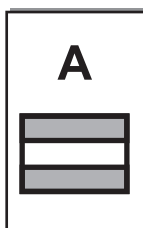
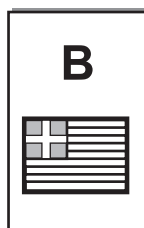
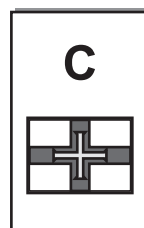
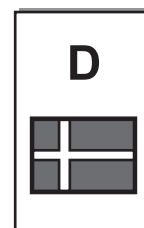
Prism



$$\text{Volume} = \text{area of cross-section} \times \text{length}$$

1. 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?

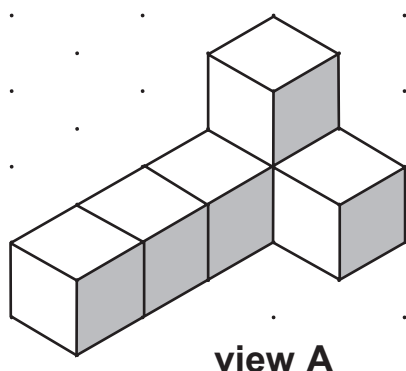
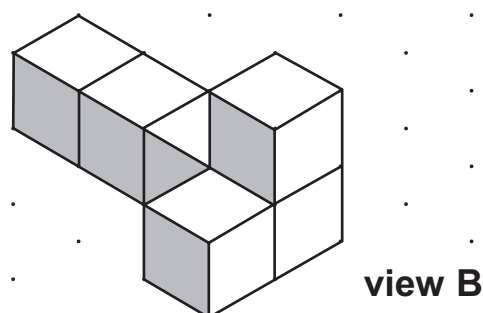


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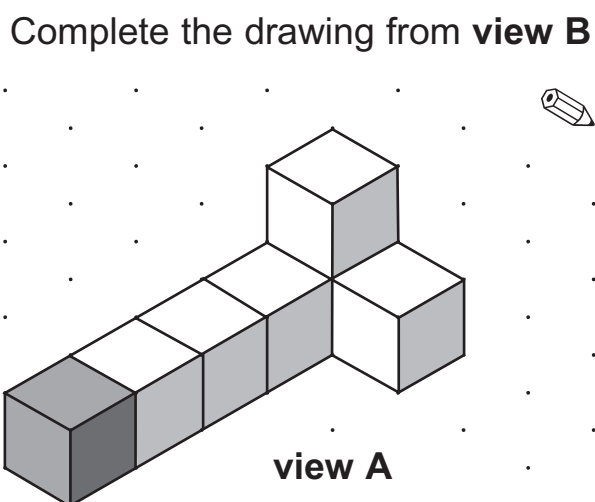
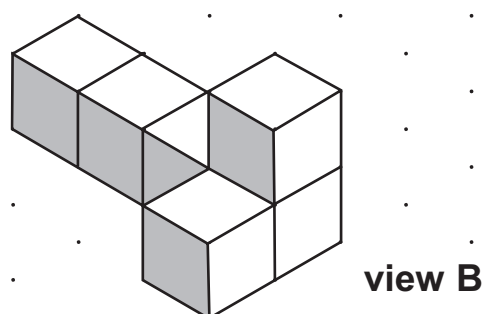
1 mark



2. I make a model with 6 cubes.
The drawings show my model from **different views**.



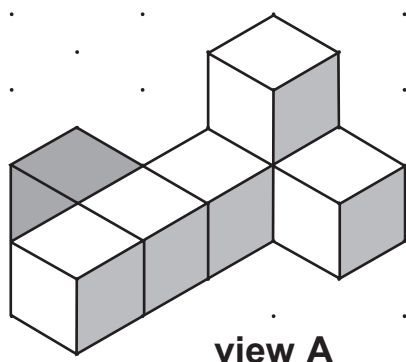
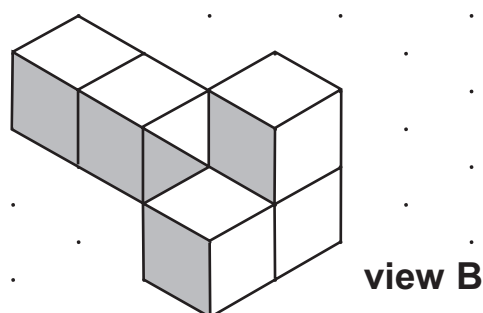
- (a) I join one more cube to my model.
The drawing from **view A** shows where I join the cube.



1 mark

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

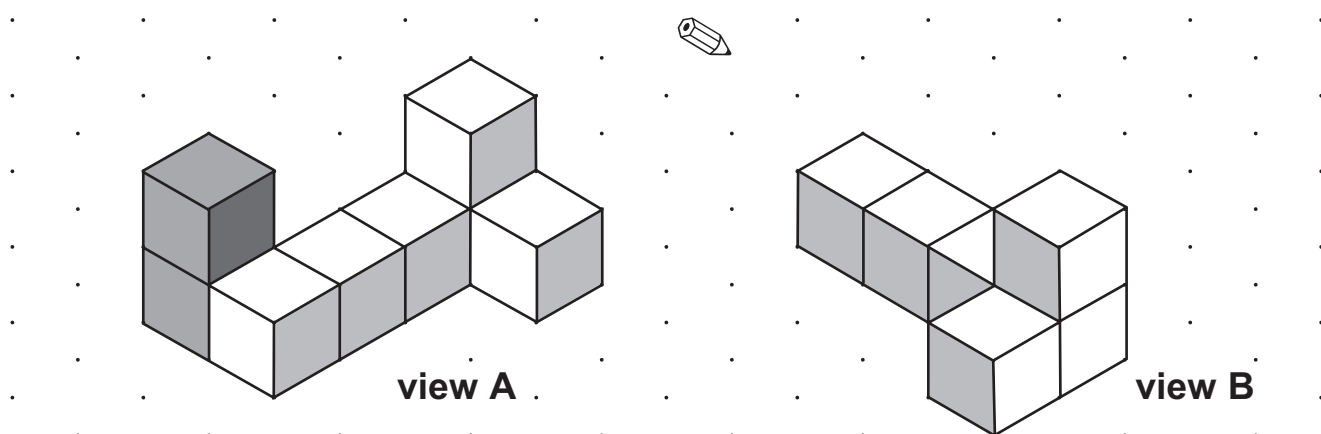
Complete the drawing from **view B**



1 mark

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

Complete the drawing from **view B**



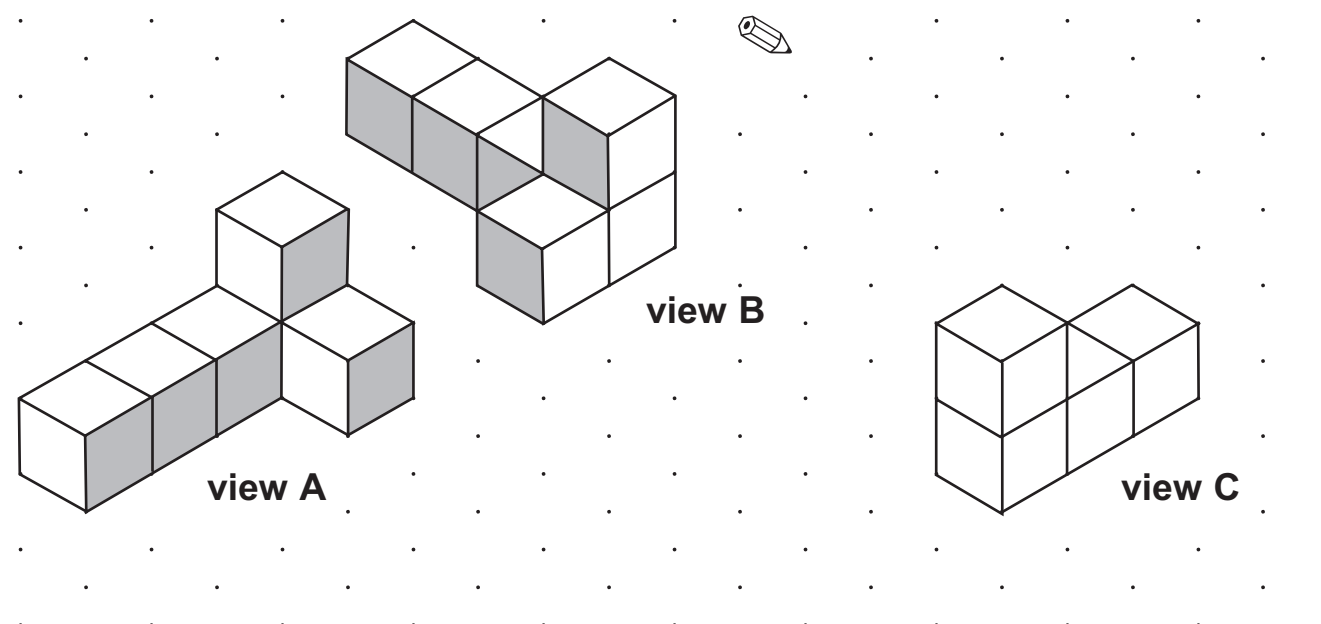
- (d) I start again with my original model of 6 cubes.

1 mark

The drawing shows it from **view A** and from **view B**

I start to draw it from a different view.

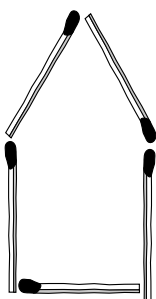
Complete the drawing from **view C**



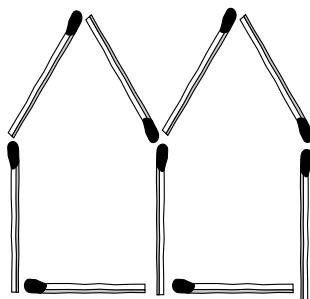
1 mark



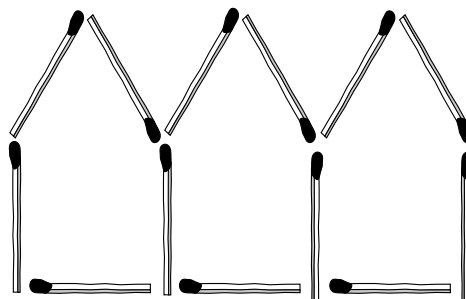
3. You can make 'huts' with matches.



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.

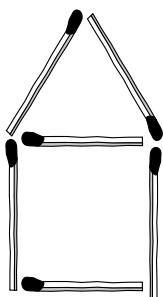


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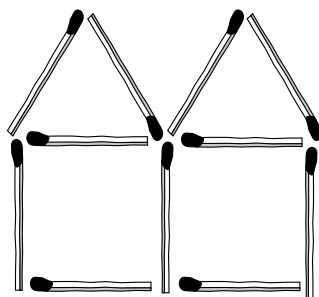
..... huts

.....
2 marks

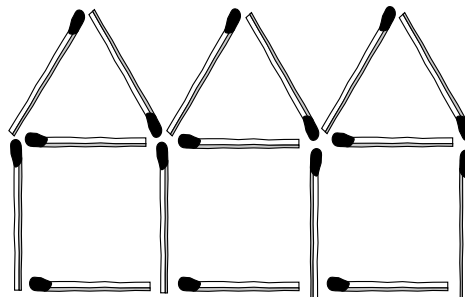
(c) Andy makes different 'huts' with matches.



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



4. 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

5. Calculate



8% of £26.50 =

£

1 mark

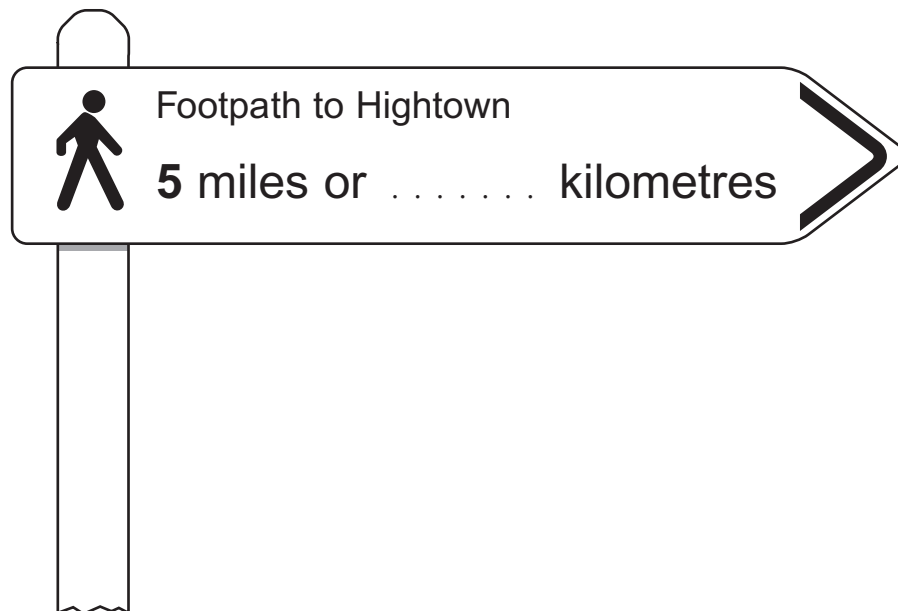
 $12\frac{1}{2}\%$ of £98 =

£

1 mark

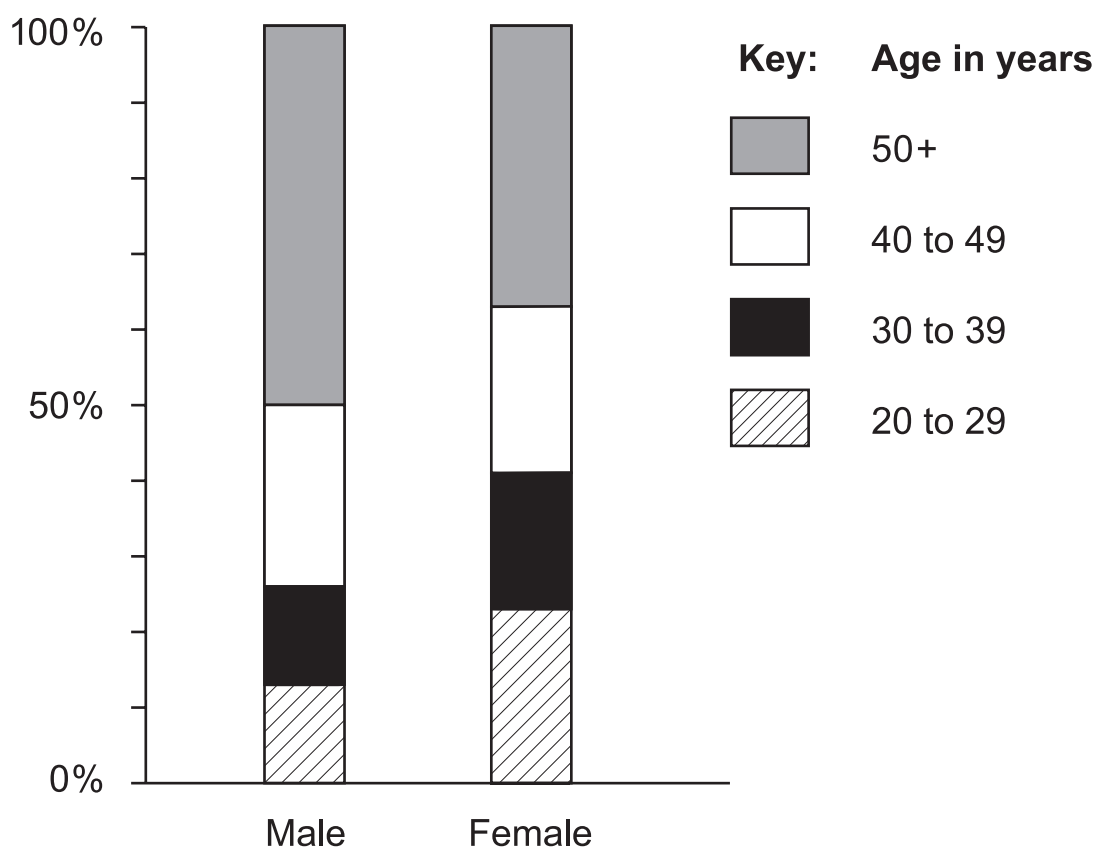
6. How many kilometres are there in **5 miles**?

Complete the missing part of the sign.



1 mark

7. 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

-
- (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.

☐

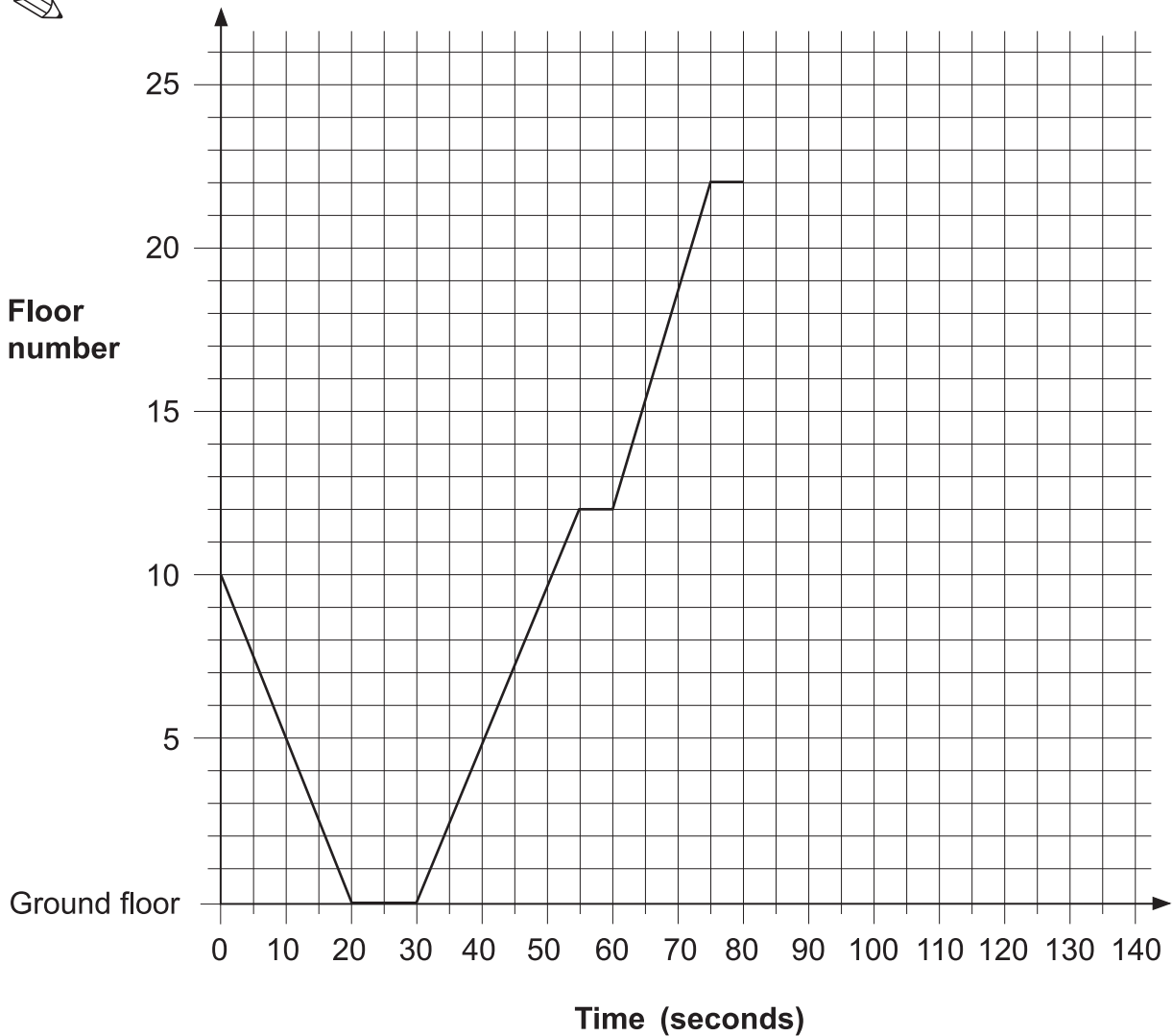
Explain how you used the chart to decide.



1 mark



8. 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



9. (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?

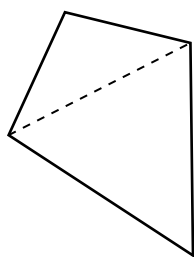
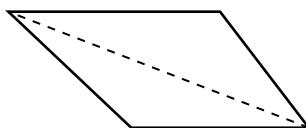
Show your working.



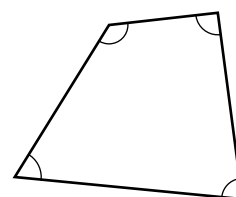
..... and and

.....
.....
2 marks

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

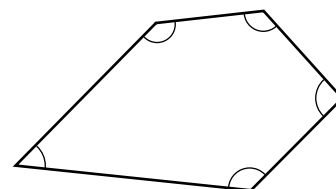


Explain how you know that the angles inside a **quadrilateral** add up to 360°



1 mark

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

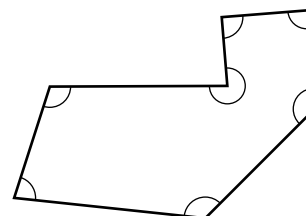


.....
°

1 mark

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

Show your working.



.....
°

2 marks



11. 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.



..... %

.....

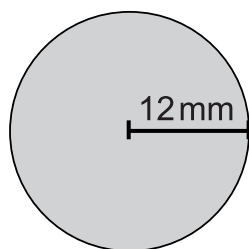
2 marks

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



1 mark

12. The diagram shows a circle and a square.



Not drawn accurately

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

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.



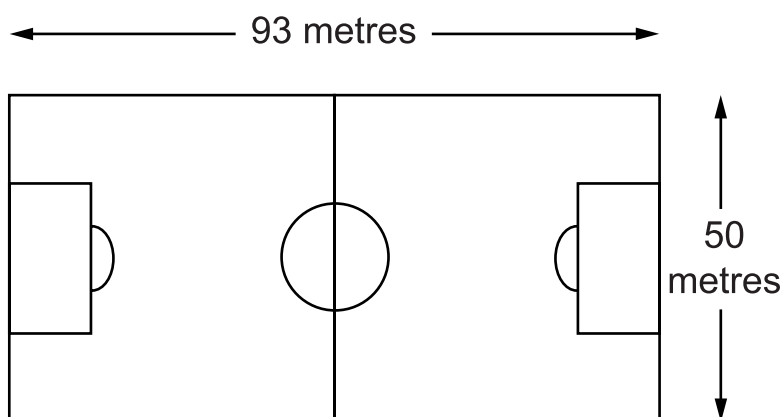
..... mm

.....

.....
2 marks



13. A groundsman marks out a football pitch.



- (a) He makes the pitch 93 metres long, to the nearest metre.

What is the **shortest possible** length of the pitch?



..... m

.....
1 mark

- (b) He makes the pitch 50 metres wide, to the nearest metre.

What is the **shortest possible** width of the pitch?



..... m

.....
1 mark

- (c) Des wants to know how many times he should run around the outside of this pitch to be sure of running **at least 3km**.

Use your answer to parts (a) and (b) to find how many times Des should run around the pitch.

You **must** show your working.



.....

.....

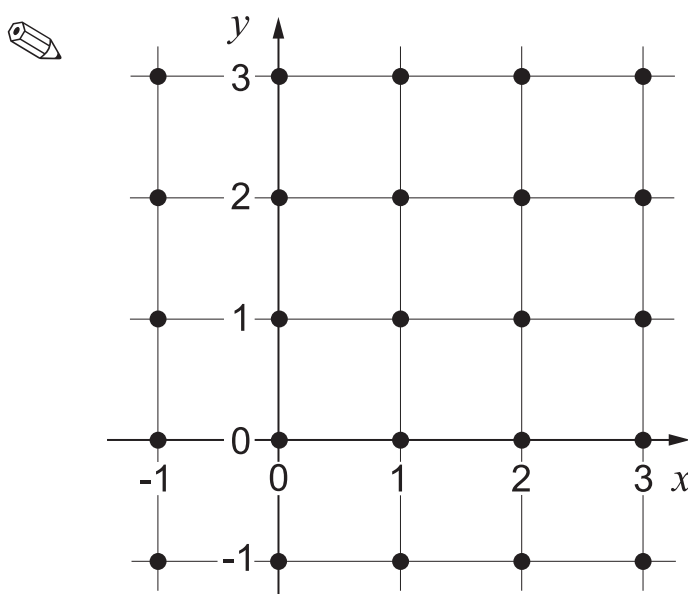
.....
2 marks

14. I am thinking of a point on the dotted grid below.
The co-ordinates of my point are (x, y)
You have 3 clues to find which of the dots is my point.

(a) **First clue:** $x > 0$ and $y > 0$

Which dots **cannot** represent my point?

On the grid below, **cross them out** like this ✕



.....

2 marks

(b) **Second clue:** $x + y < 4$

Which other dots **cannot** represent my point?

This time, put a **square around them** like this $\boxed{\bullet}$

1 mark

(c) **Third clue:** $x > y$

What are the co-ordinates of my point?

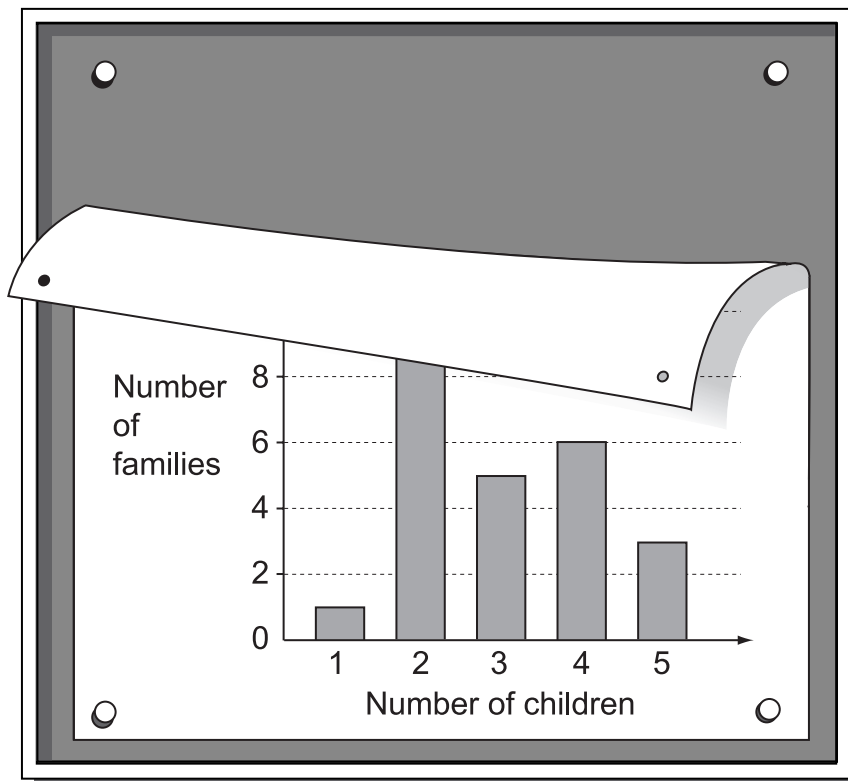
 (,)

1 mark



15. A class collected information about the number of children in each of their families.

The information was displayed in a frequency chart, but you cannot see all the information.



Call the number of families that have **two** children n

- (a) Show that the **total** number of children in all the families is $55 + 2n$



1 mark

- (b) Write an expression for the **total number of families**.



1 mark

(c) The **mean** number of children per family is **3**

What is the value of n ?

Show your working.

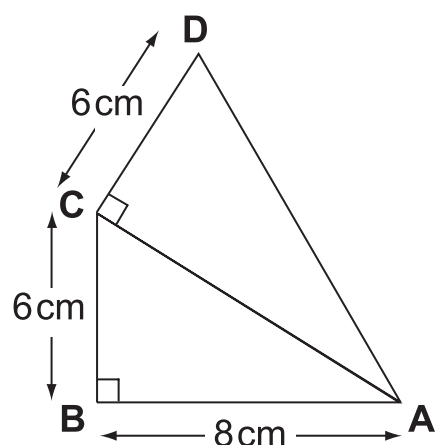


$n = \dots\dots\dots$

$\dots\dots\dots$
2 marks



16. ABC and ACD are both right-angled triangles.



Not drawn accurately

- (a) Explain why the length of AC is 10 cm.



1 mark

- (b) Calculate the length of AD

Show your working.



..... cm

2 marks

17. I have two bags of counters.

Bag A contains
12 red counters and
18 yellow counters.



Bag B contains
10 red counters and
16 yellow counters.



I am going to take one counter at random from either bag A or bag B

I want to get a **red** counter.
Which bag should I choose?

Show working to explain your answer.



. . . .

. . . .
2 marks

