A

AQA

Surname _____

Forename(s) _____

Centre Number _____

Candidate Number _____

Candidate Signature _____
I declare this is my own work.

GCSE
MATHEMATICS

F

Foundation Tier   **Paper 3 Calculator**

8300/3F

Monday 7 November 2022   **Morning**

Time allowed: 1 hour 30 minutes

At the top of the page, write your surname and forename(s), your centre number, your candidate number and add your signature.
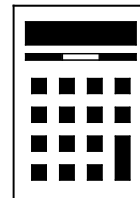
[Turn over]

MATERIALS

For this paper you must have:

- a calculator

- mathematical instruments

- the Formulae Sheet (enclosed).

INSTRUCTIONS

- Use black ink or black ball-point pen. Draw diagrams in pencil.

- Answer ALL questions.

- You must answer the questions in the spaces provided. Do not write on blank pages.

- If you need extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).

- Do all rough work in this book. Cross through any work you do not want to be marked.

INFORMATION

- The marks for questions are shown in brackets.

- The maximum mark for this paper is 80.

- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to this answer book.

ADVICE

In all calculations, show clearly how you work out your answer.

DO NOT TURN OVER UNTIL TOLD TO DO SO

Answer ALL questions in the spaces provided.

1 **What is the CLOCKWISE turn from North to East?**

Circle your answer. [1 mark]

45°   **90°**   **270°**   **315°**

2 d **is 6 more than** c**.**

Circle the correct equation. [1 mark]

$d = 6c$ $c = 6d$

$d = c + 6$ $c = d + 6$

3   **Here is a number line.**

```
|--------|--------------|--------------|----------|
2                                          A         3
```
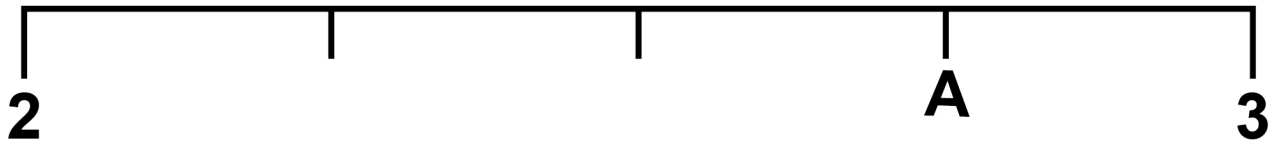
Which number is at A?

Circle your answer.   **[1 mark]**

2.3   **2.55**   **2.6**   **2.75**
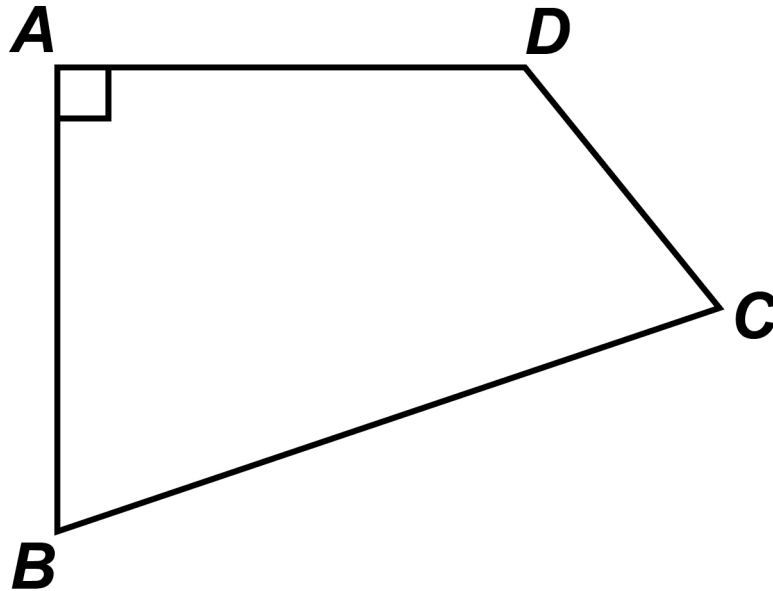
[Turn over]

4 **In the quadrilateral, which angle is OBTUSE?**

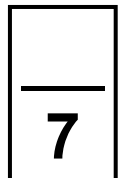**Circle your answer. [1 mark]**

ADC   *BAD*   *CBA*   *DCB*

5 (a) Write down the TWO prime
numbers between 25 and 35
[2 marks]

Answer _____ and _____

5 (b) Write down ONE cube number
between 100 and 300 [1 mark]

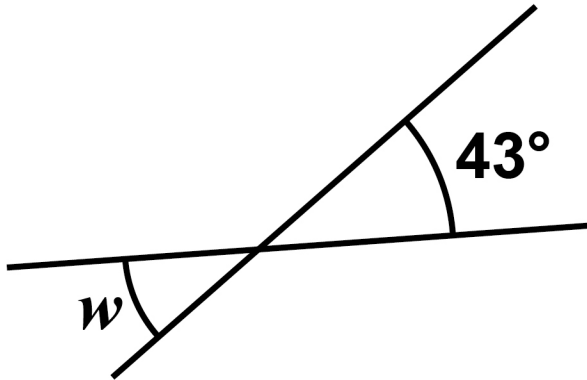Answer _____

7

6 (a) Here are two straight lines.
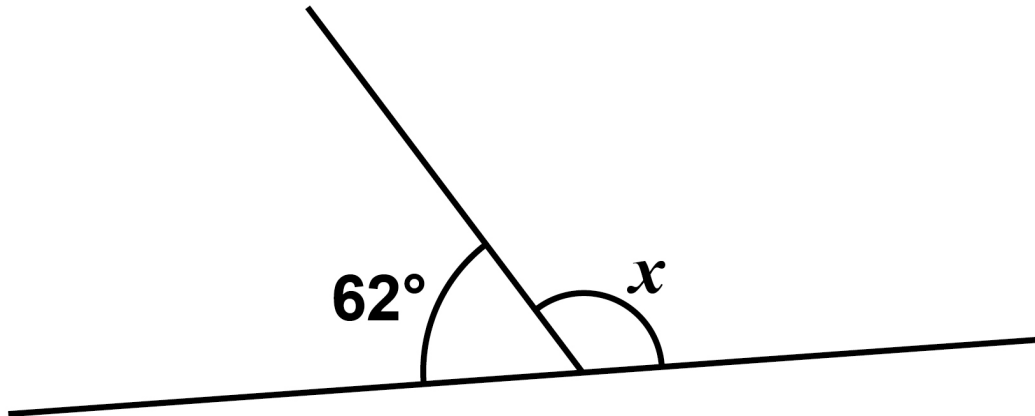
The diagram is not drawn accurately.

Write down the size of angle w.
[1 mark]

$w =$ _____ **degrees**

6 (b) Here are two different straight lines.

The diagram is not drawn accurately.

Work out the size of angle x.
[1 mark]

_____

_____

_____

x = _____ degrees

[Turn over]

6 (c) **In a triangle, two of the angles are 51° and 74°.**

Work out the size of the third angle.
[1 mark]

_____

_____

_____

Answer _____ **degrees**

7 (a) Solve $12 - e = 0$ [1 mark]

_____

_____

e = _____

7 (b) Solve $7f = 0$ [1 mark]

_____

_____

f = _____

[Turn over]

8 **Put these probabilities in order, starting with the LEAST likely.**

72%   **0.705** $\frac{7}{10}$

[2 marks]

_____

_____

_____

_____

Answer _____ , _____ , _____

$\frac{}{7}$

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[Turn over]

9

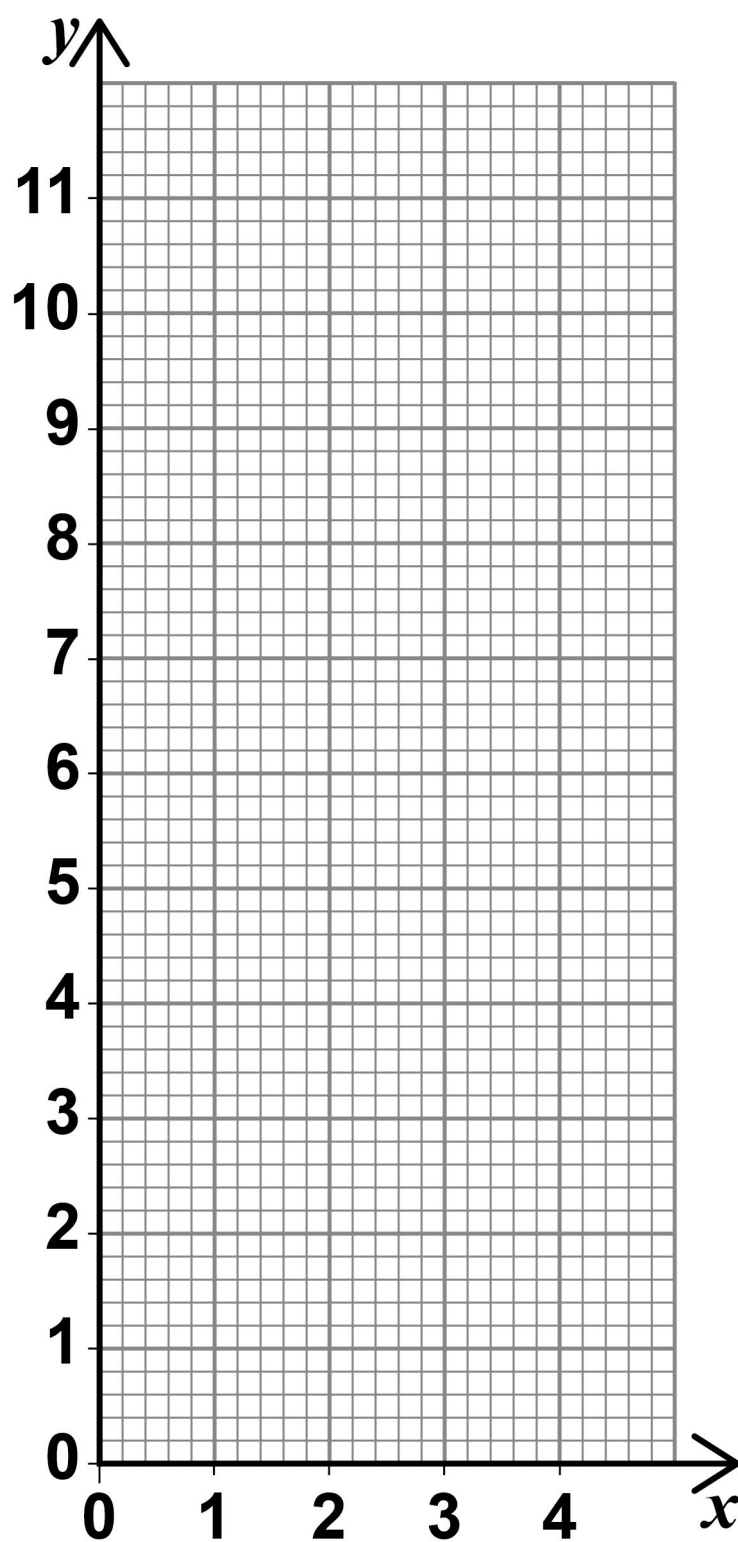| x	0	2	4	6	8	
y	3	7	11		19	23

The x-values in the table make a linear sequence.

The y-values in the table make a different linear sequence.

9 (a) Complete the table. **[2 marks]**

9 (b) On the opposite page, draw a straight line passing through the points (0, 3), (2, 7) and (4, 11) **[2 marks]**

9 (c) Use the graph, on the opposite page, to work out the value of y when $x = 3$ **[1 mark]**

$y =$ _____

10 (a) **When 5 is added to a negative number, the answer can be POSITIVE**

Give ONE example to show that this is correct. [1 mark]

_____

_____

_____

10 (b) **When 5 is added to a negative number, the answer can be NEGATIVE**

Give ONE example to show that this is correct. [1 mark]

_____

_____

_____

10 (c) **When a number is doubled, the answer is always greater than the original number**

Give ONE example to show that this is NOT correct. [1 mark]

_____

_____

_____

[Turn over]

8

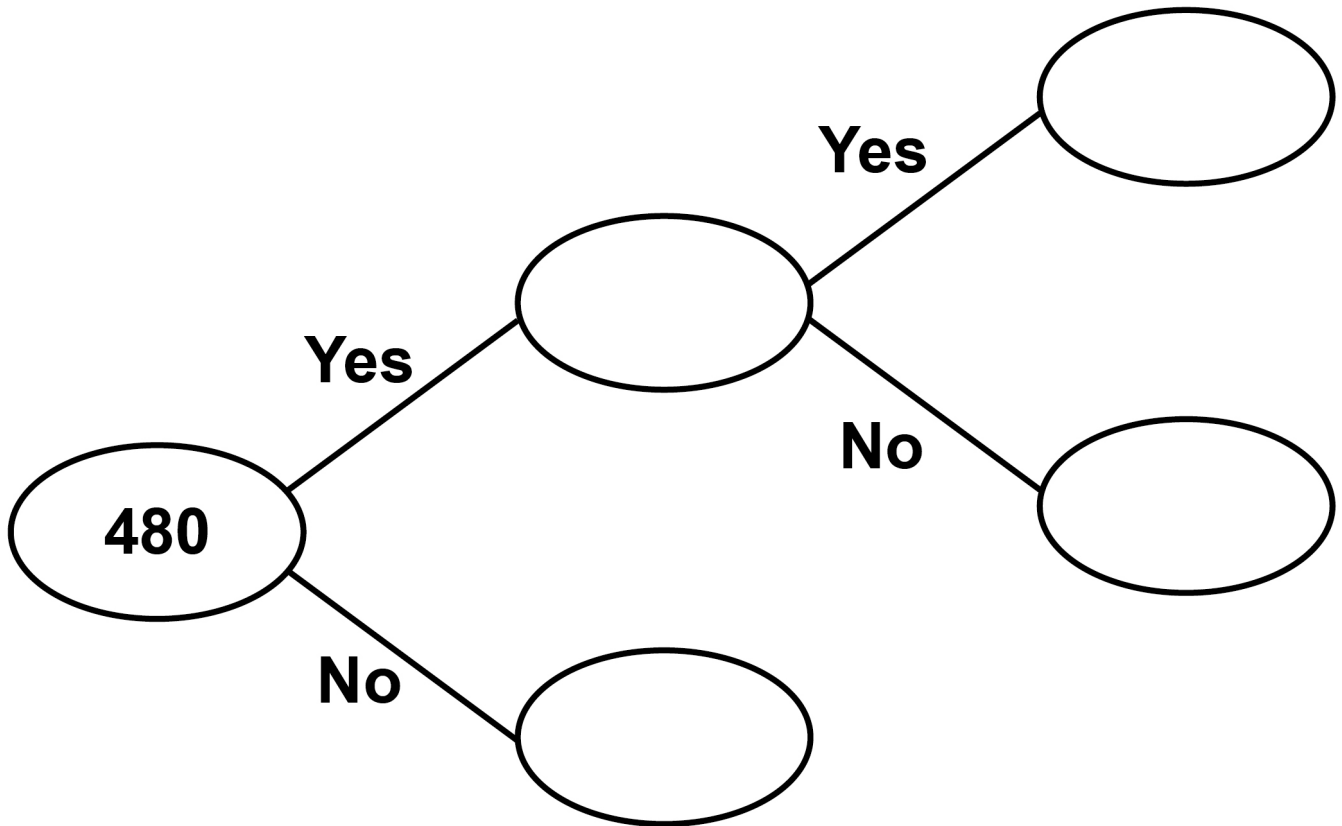**11**   **480 people are asked if they eat sushi.**

20% say Yes.

$\frac{2}{3}$ **of the people who say Yes eat sushi at least once a month.**

Complete the frequency tree, on the opposite page. [4 marks]

Eat sushi

**At least
once a month**

Yes

480

Yes

No

No

[Turn over]

12 Event A has taken place every 4 years.

Event B has taken place every 3 years.
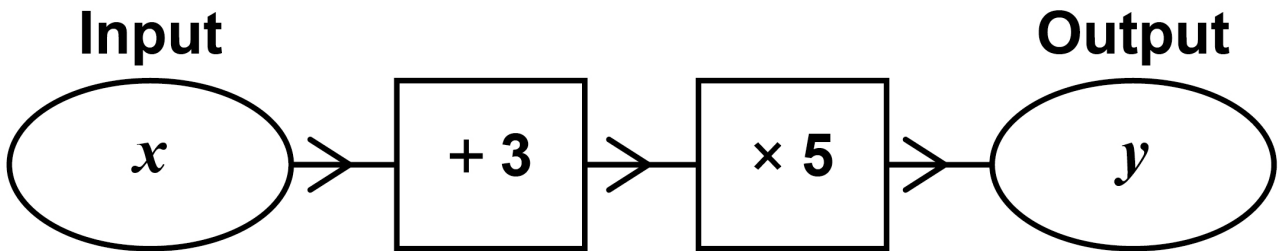
Both events took place in 2019

Work out the last year, before 2019, when both events took place.
[2 marks]

_____

_____

_____

_____

_____

Answer _____

13 **Luke wants to make a number machine so that** $y = 5x + 3$

Here is his attempt.

Input

x

+ 3

× 5

Output

y

What mistake has he made?
[1 mark]

_____

_____

_____

7

14   **Circle the solid that has six edges.**
[1 mark]

      triangular-based pyramid
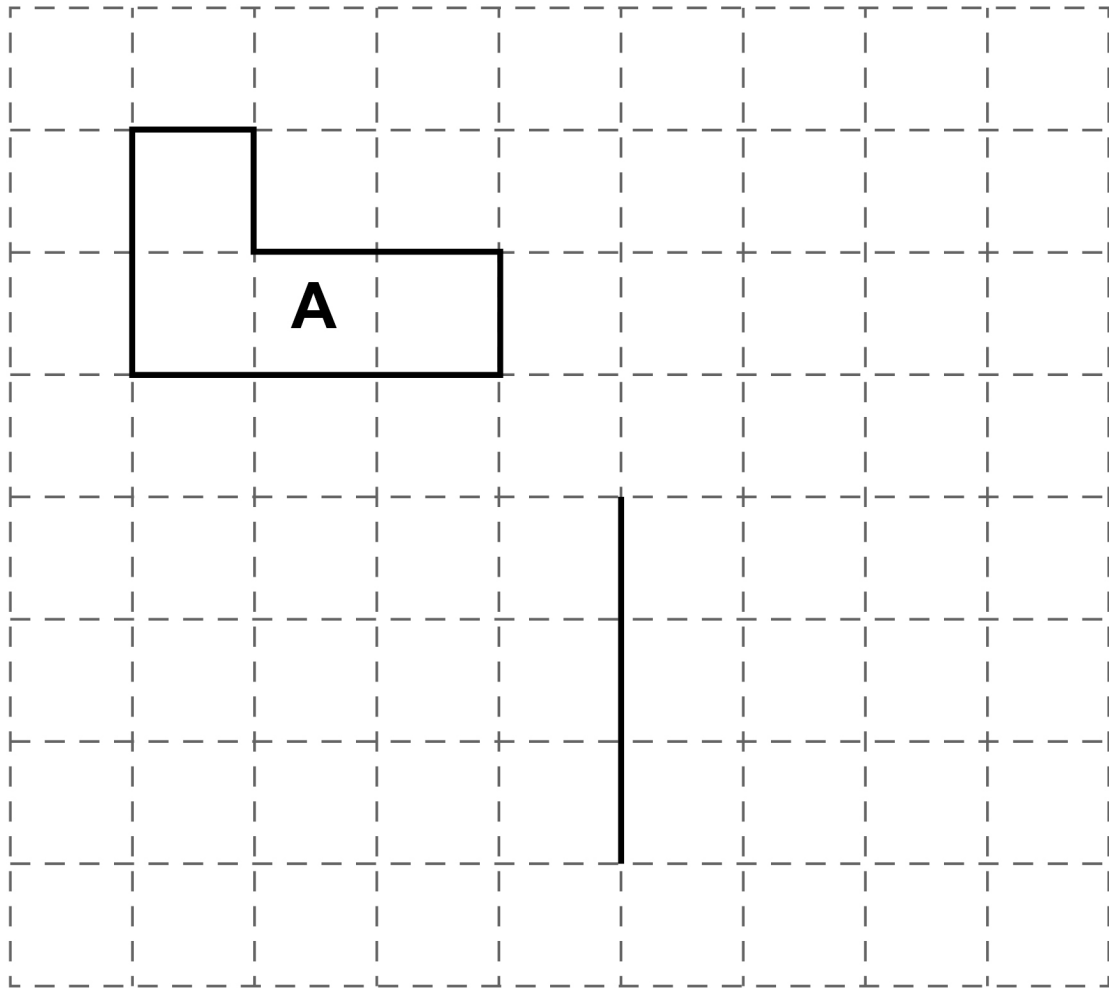
      sphere

      cube

      cylinder

15 (a) **On the grid, shape A is shown.**
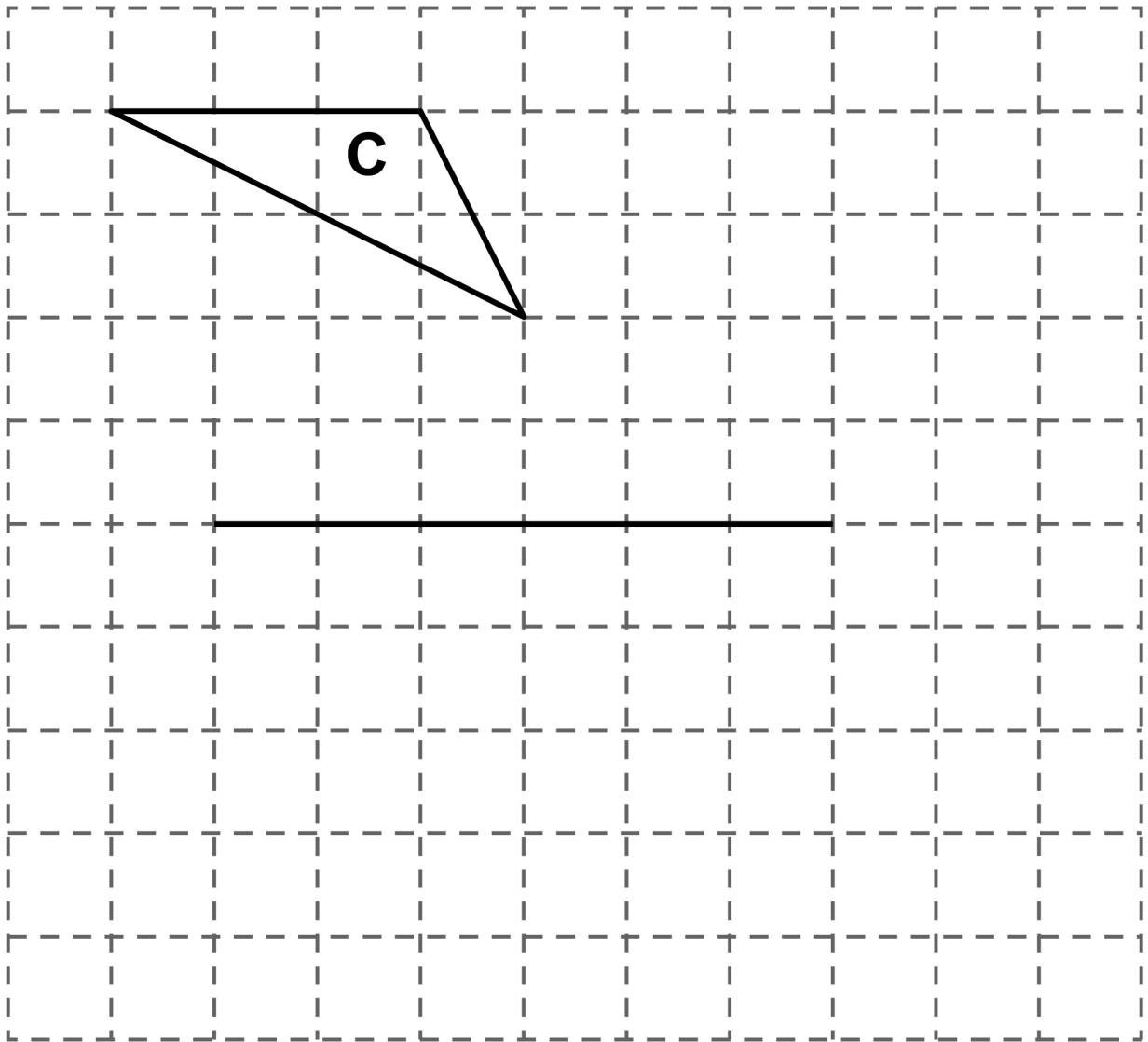
One side of shape B is also shown.

Complete shape B so that it is congruent to shape A. [1 mark]

[Turn over]

15 (b)   On this grid, shape C is shown.

One side of shape D is also shown.

Complete shape D, on the opposite page, so that it is an enlargement of shape C with scale factor 2
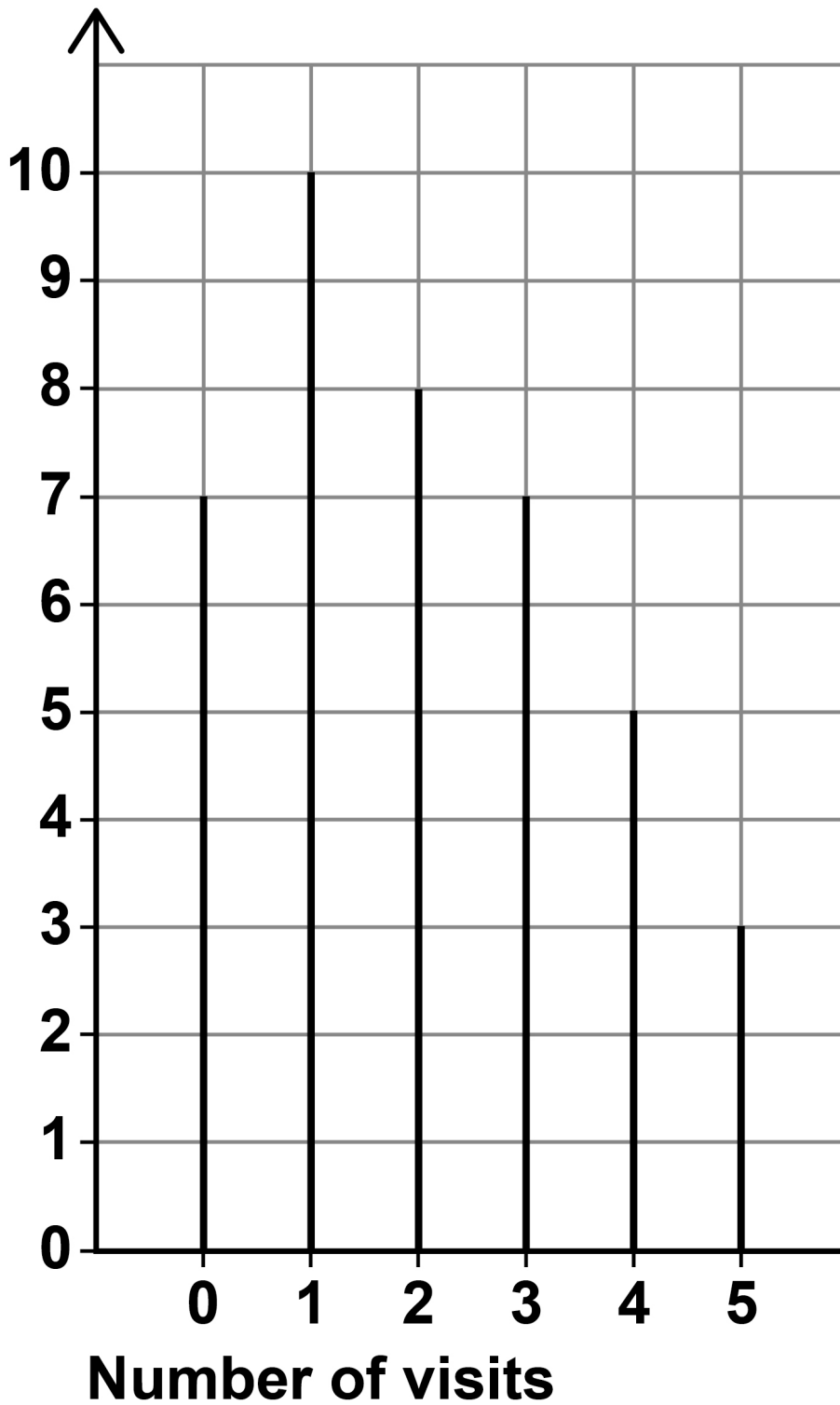**[1 mark]**

[Turn over]

3

16   **40 students were asked the number of visits they made to a gym one week.**

The chart, on the opposite page, shows information about the results.

16 (a)   **Write down the modal number of visits. [1 mark]**

Answer _____

Number of students

Number of visits

[Turn over]

BLANK PAGE

16 (b) **Work out the mean number of visits.**

Give your answer as a decimal.
[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____

16 (c) **One of the 40 students is chosen at random.**

Work out the probability that the student visited the gym AT LEAST once. [2 marks]

_____

_____

_____

_____

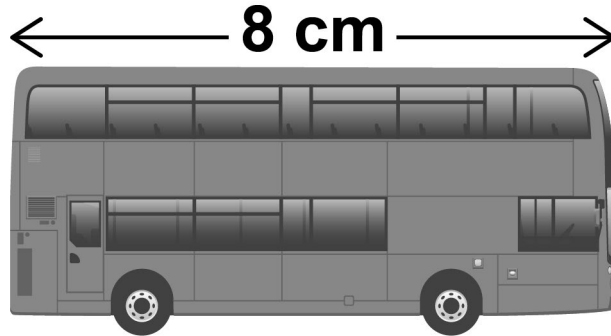**Answer** _____

6

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[Turn over]

17   This scale drawing of a bus has length 8 cm

← 8 cm →

SCALE   1 cm represents 1.65 m

The actual length of the bus is 3.8 times the actual length of a car.

Work out the actual length of the car.

Give your answer in metres, to the nearest centimetre. [3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____ **metres**

[Turn over]

18 **11 identical full tins of red paint hold a total of 3630 ml**

All the paint from 4 of these tins is poured into an empty bucket.

The bucket can hold 2500 ml

Tins of white paint each hold 140 ml

Can all the white paint from 9 tins be added to the bucket?

You MUST show your working.
[4 marks]

_____

_____

_____

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_____

_____

_____

19 **The largest possible value of n is 2**

Circle the correct inequality.
[1 mark]

$n \leqslant 2$ $\qquad\qquad$ $n < 2$

$n \geqslant 2$ $\qquad\qquad$ $n > 2$

8

20 **Jamil is on holiday in France.**

20 (a) **The cost of a room in a hostel is 27 euros.**

Convert the cost to £

Use £1 = 1.2 euros [2 marks]

_____

_____

_____

_____

Answer £ _____

20 (b) **Jamil rides a motorbike.**

The motorbike uses one litre of petrol for every 14 miles.

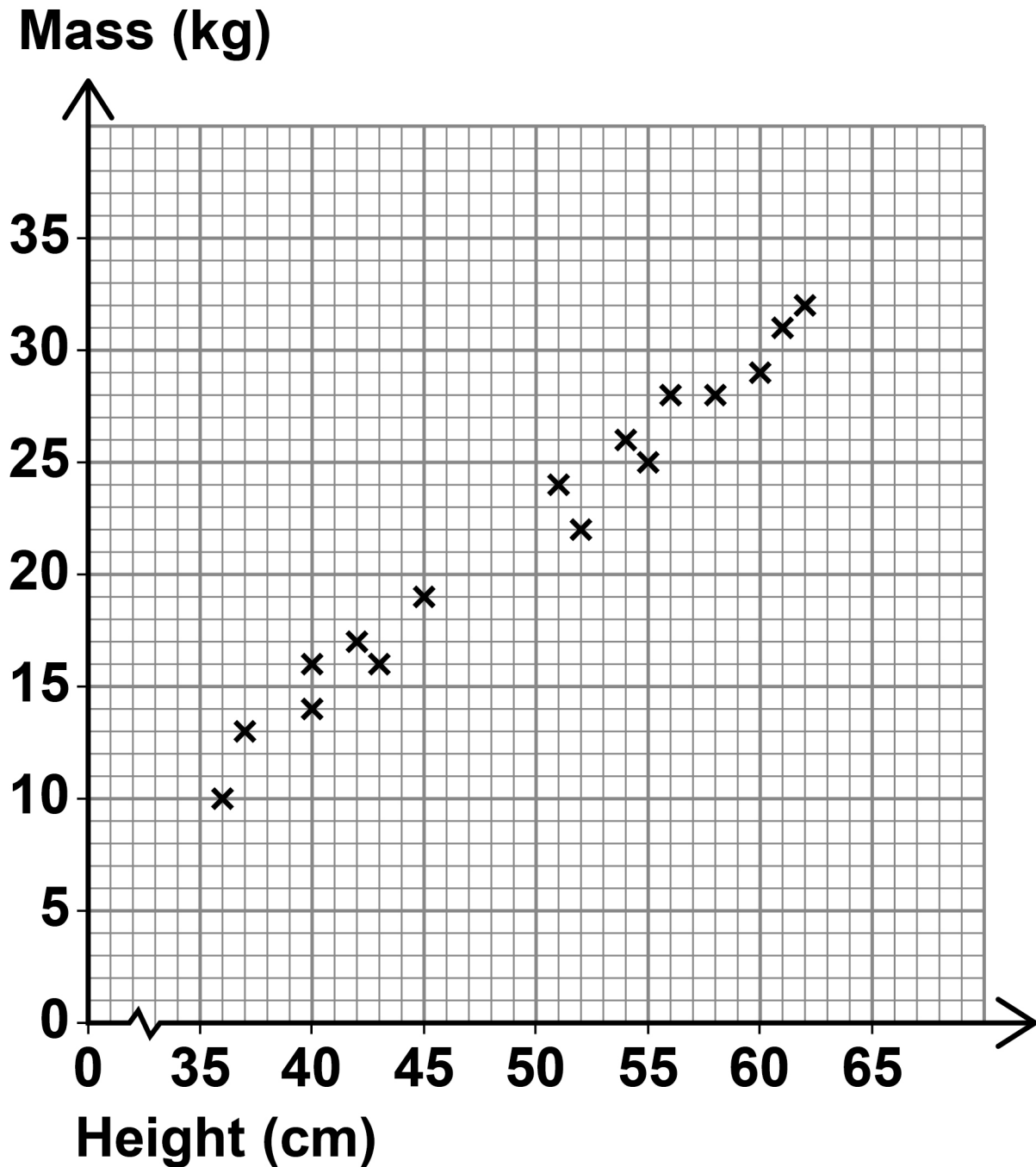How many litres of petrol does the motorbike use to go
168 kilometres?

Use   8 kilometres = 5 miles
[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____ litres

[Turn over]

21 **The scatter graph shows the height and mass of some dogs.**

Mass (kg)

Height (cm)

21 (a) The scatter graph shows positive correlation.

Describe the relationship between the height and mass of the dogs. [1 mark]

_____

_____

_____

_____

21 (b) Use a line of best fit to estimate the mass of a dog with height 48 cm [2 marks]

Answer _____ kg

[Turn over]

8

22 *ABCDE* is a pentagon.

The diagram is not drawn accurately.

A ←————— 14 cm —————→ E

11 cm

10 cm

D

7 cm

B

←—————— 20 cm ——————→ C
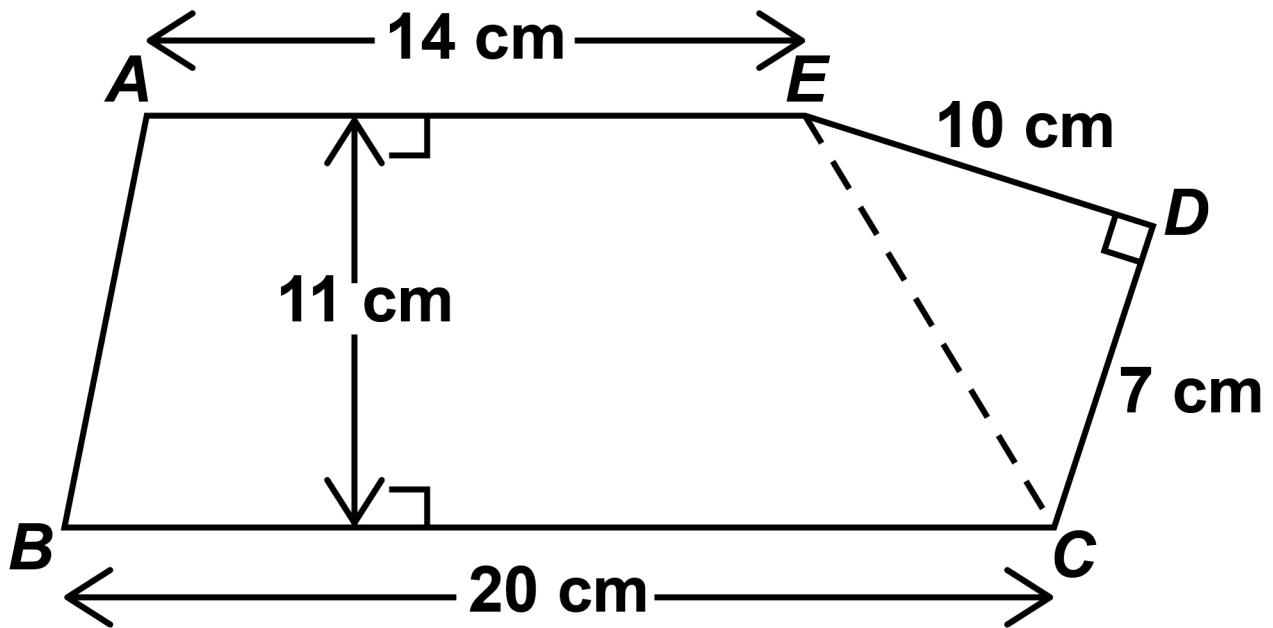
Work out the area of the pentagon.
[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____ cm^2

[Turn over]

23 **Joe, Kim and Lisa each have an amount of money.**

Joe has £72

Joe's amount : Kim's amount = 6 : 5

Lisa's amount is $1\frac{1}{2}$ times Joe's amount.

Show that, in total, they have LESS than £250 [3 marks]

_____

_____

_____

_____

_____

_____

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_____

_____

[Turn over]

| 6 |

24 **A solid statue has volume 512 cm^3**

The statue has mass 3.6 kilograms.

density of iron = 7.87 grams per cubic centimetre

Is the statue made of iron?

You MUST show your working.
[3 marks]

_____

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_____

[Turn over]

25 (a) Here is the rule for a sequence.

After the first two terms, each term is the sum of the previous two terms

The 1st term is 33

The 2nd term is x

The 4th term is 73

Work out the value of x. [3 marks]

_____

_____

_____

_____

_____

$x =$ _____

4 7

25 (b) An expression for the nth term of a different sequence is $n - n^2$

Ruth says,

"All the terms will be negative because n^2 is always greater than n."

Is she correct?

Tick a box.

☐ Yes

☐ No

Give a reason for your answer.
[1 mark]

_____

_____

_____

_____

_____

_____

[Turn over]

| 7 |

26   *P* and *Q* are points.

The x-coordinate of *Q* is 4 MORE than the x-coordinate of *P*.

The y-coordinate of *Q* is 5 LESS than the y-coordinate of *P*.

Work out the gradient of the straight line through *P* and *Q*. [2 marks]

_____

_____

_____

_____

_____

_____

Answer _____

27 $m = pr$

p is halved and r is multiplied by 3

What happens to m ?

Circle your answer. [1 mark]

× 6   × $\dfrac{1}{6}$ × $\dfrac{3}{2}$ × $\dfrac{2}{3}$

[Turn over]

52

28 Here are the results after 250 spins of a coin.

HEADS	128
TAILS	122

The coin is spun an extra 50 times.

After all 300 spins, the relative frequency of Heads is 0.49

For the **EXTRA 50 SPINS**, work out

number of Heads : number of Tails
[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____ : _____

[Turn over]

29 Circle the equation where c is inversely proportional to d. [1 mark]

$c = \dfrac{1}{2}d$ $\qquad\qquad\qquad c = \dfrac{2}{d}$

$c = -2d$ $\qquad\qquad\qquad c = -\dfrac{2}{d^2}$
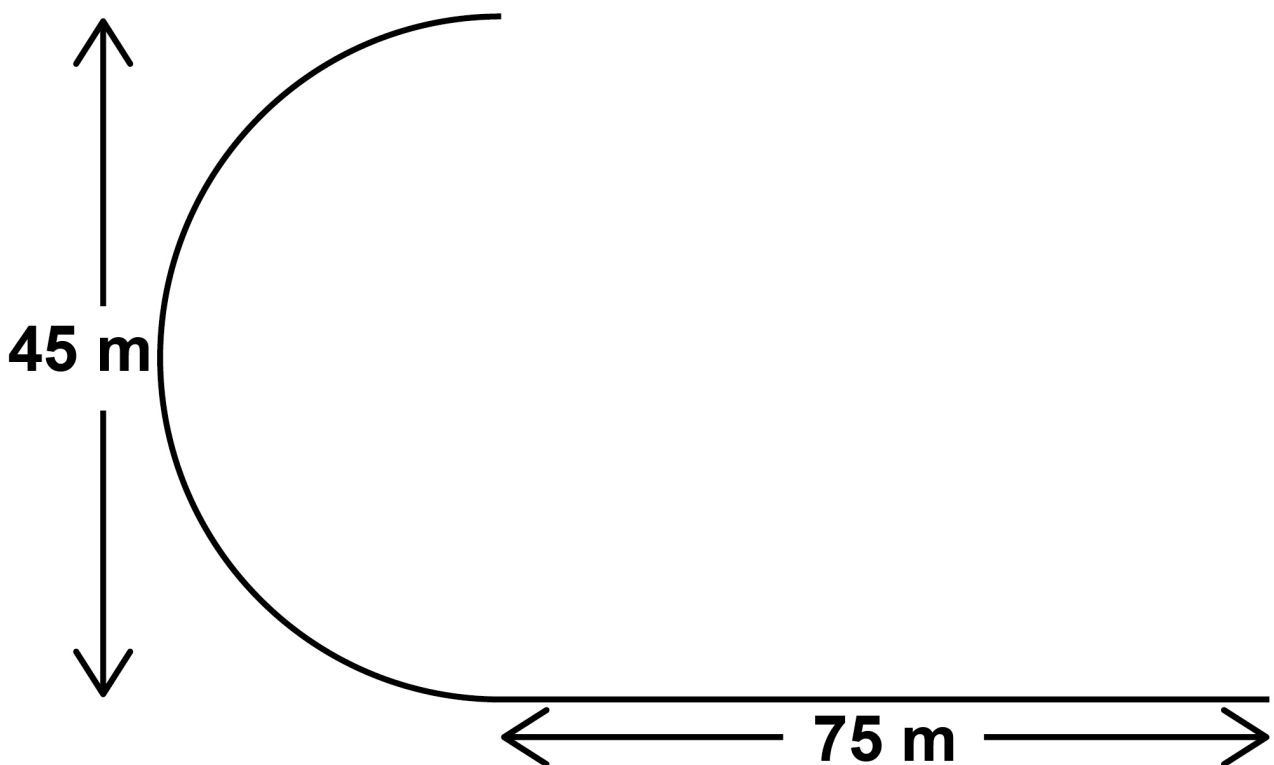
$\boxed{\dfrac{}{7}}$

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[Turn over]

30 **Part of a running track is the arc of a semicircle joined to a straight line.**

The semicircle has diameter 45 metres.

The straight line has length 75 metres.

The diagram is not drawn accurately.

45 m

75 m

Abby runs once along this part of the track in 18 seconds.

Work out her average speed.

Give your answer to 2 significant figures. [4 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____ **m/s**

[Turn over]

31 Here is some information about the members of clubs A and B.

	Number of members	Mean height of members
CLUB A	24	1.8 m
CLUB B	20	1.92 m

Work out

$$\frac{\text{total height of the members of club A}}{\text{total height of the members of club B}}$$

Give your answer as a decimal.
[2 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____

END OF QUESTIONS

6

Additional page, if required.

Write the question numbers in the left-hand margin.

Additional page, if required.

Write the question numbers in the left-hand margin.

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