AQA

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____
I declare this is my own work.

GCSE
MATHEMATICS

F

Foundation Tier Paper 3 Calculator

Monday 7 November 2022 Morning Time allowed: 1 hour 30 minutes

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.
- Fill in the boxes at the top of this page.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or 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.

For Examiner's Use	
Pages	Mark
2–3	
4–5	
6–7	
8–9	
10–11	
12–13	
14–15	
16–17	
18–19	
20–21	
22–23	
24–25	
TOTAL	

Do not write outside the box

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°

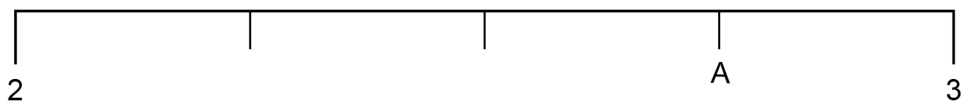
2 d is 6 more than c.

Circle the correct equation.

[1 mark]

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

3 Here is a number line.



Which number is at A?

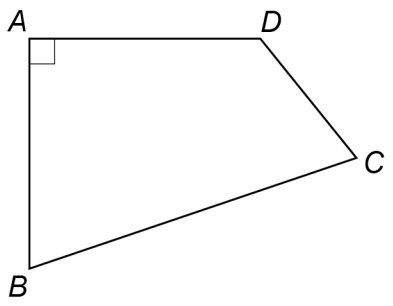
Circle your answer.

[1 mark]

2.3 2.55 2.6 2.75

Do not write outside the box

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 _____

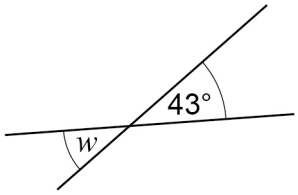
7

Turn over ►

Do not write outside the box

6 (a) Here are two straight lines.

Not drawn accurately



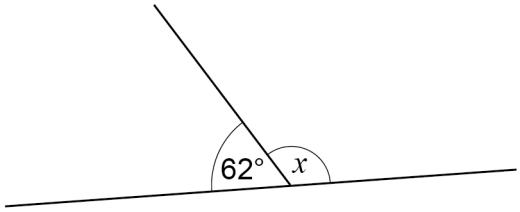
Write down the size of angle w.

[1 mark]

$w =$ _____ degrees

6 (b) Here are two different straight lines.

Not drawn accurately



Work out the size of angle x.

[1 mark]

_____

_____

$x =$ _____ degrees

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

Do not write outside the box

7 (a) Solve $12 - e = 0$

[1 mark]

$e =$ _____

7 (b) Solve $7f = 0$

[1 mark]

$f =$ _____

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

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

[2 marks]

Answer _____ , _____ , _____

7

Turn over ►

Do not write outside the box

9

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

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

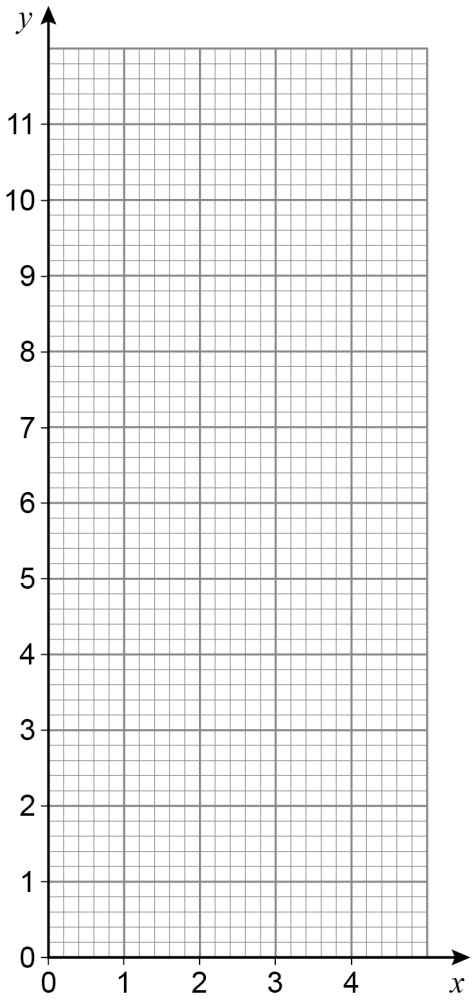
The y-values in the table make a different linear sequence.

9 (a) Complete the table.

[2 marks]

9 (b) Draw a straight line passing through the points (0, 3), (2, 7) and (4, 11)

[2 marks]



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9 (c) Use the graph 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]

_____

_____

8

Do not write outside the box

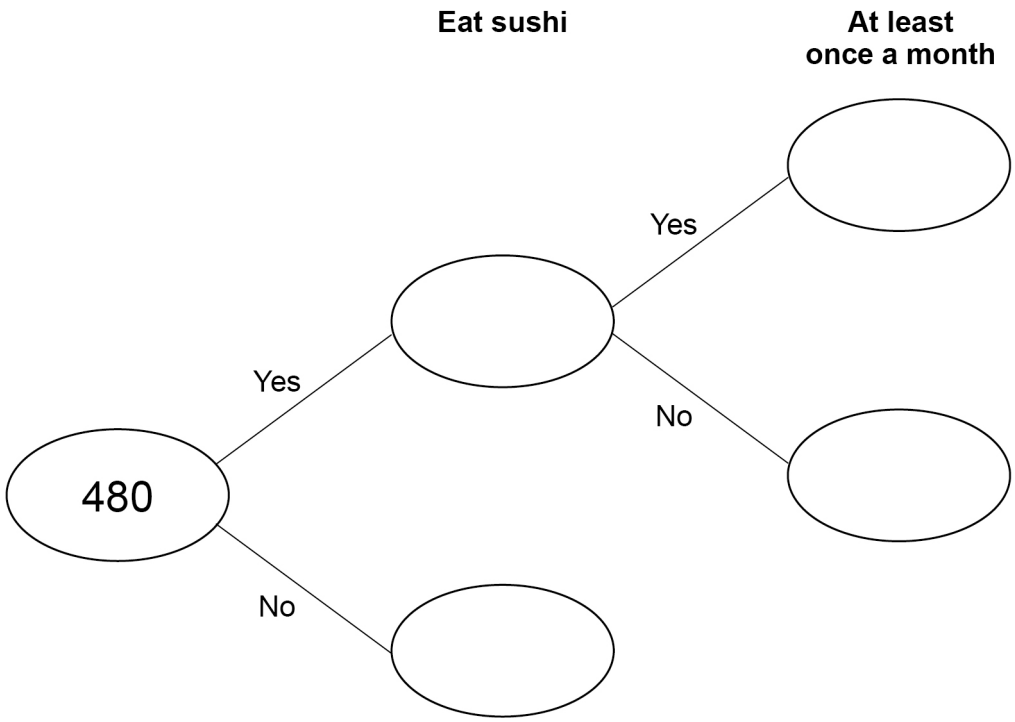
11 480 people are asked if they eat sushi.

20% say Yes.

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

Complete the frequency tree.

[4 marks]



Do not write outside the box

12 Event A has taken place every 4 years.

Event B has taken place every 3 years.

Both events took place in 2019

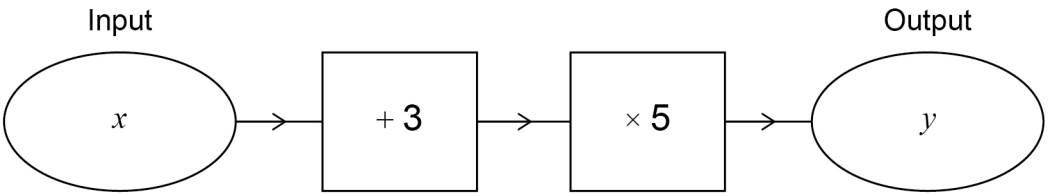
Work out the last year, before 2019, when both events took place.

[2 marks]

Answer _____

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

Here is his attempt.



What mistake has he made?

[1 mark]

7

Turn over ►

Do not write outside the box

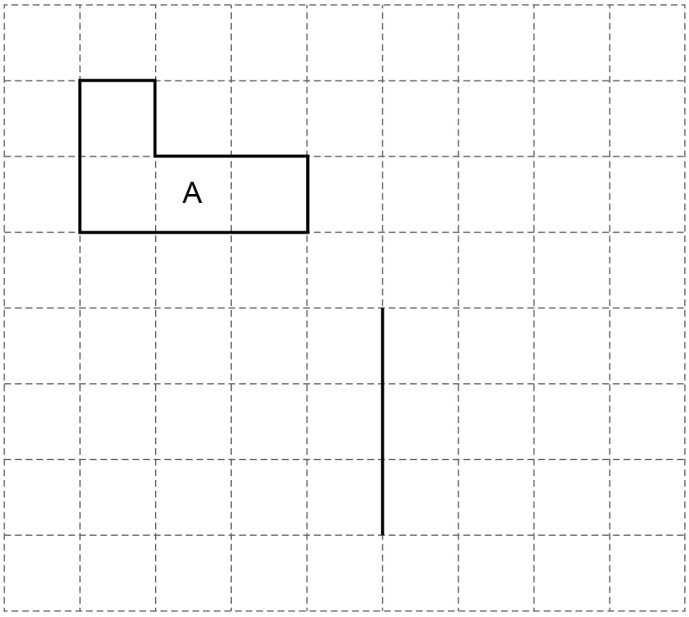
14 Circle the solid that has six edges.

[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.



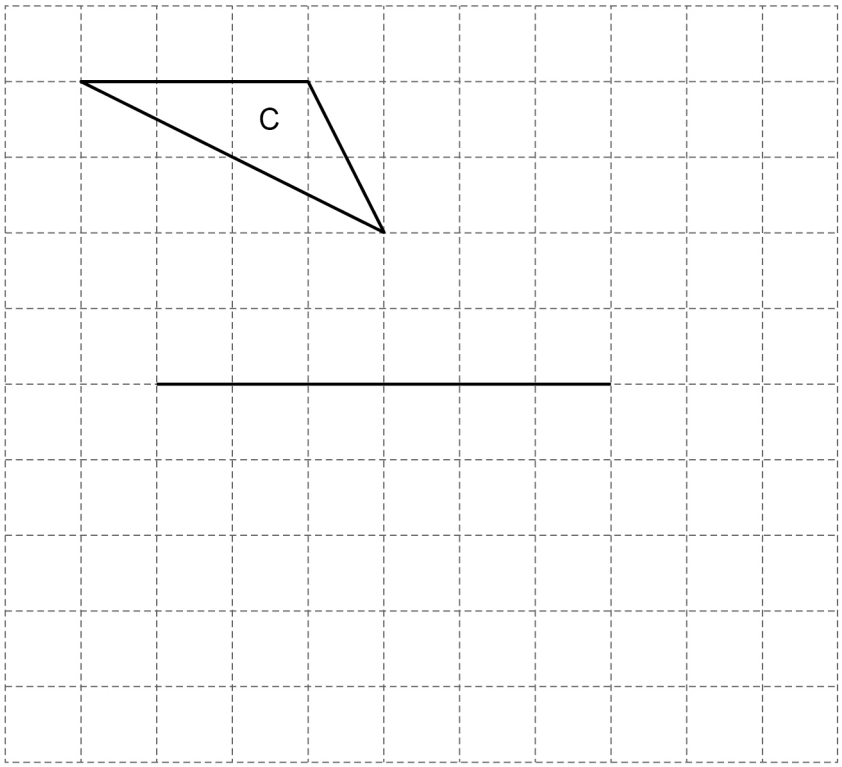
Complete shape B so that it is congruent to shape A.

[1 mark]

Do not write outside the box

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

One side of shape D is also shown.



Complete shape D so that it is an enlargement of shape C with scale factor 2

[1 mark]

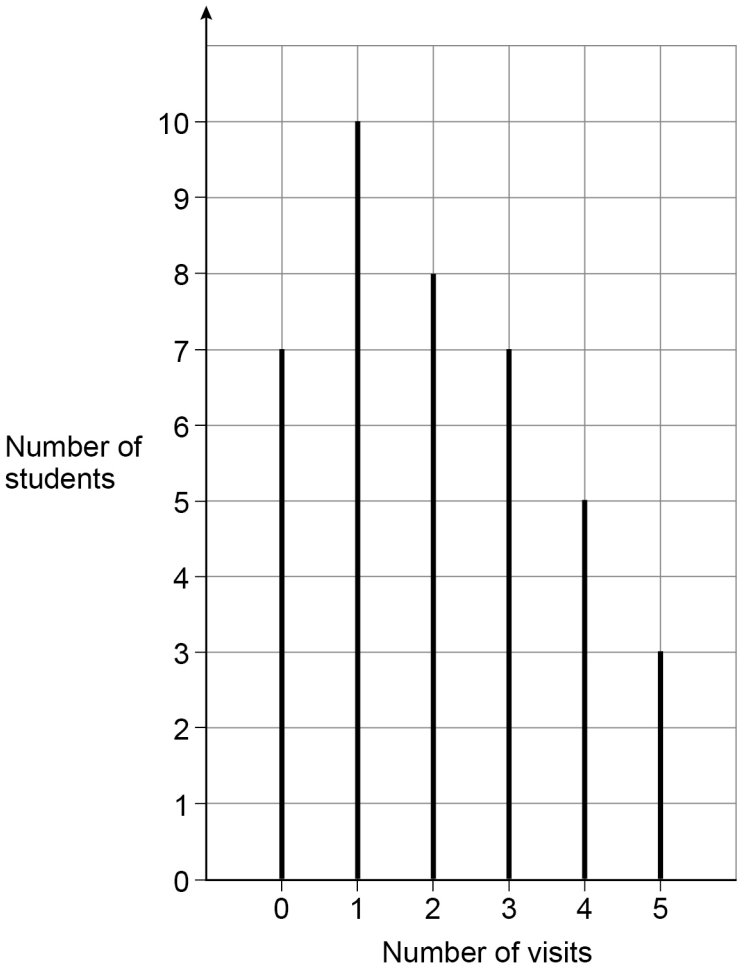
Turn over for the next question

3

Do not write outside the box

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

The chart shows information about the results.



16 (a) Write down the modal number of visits.

[1 mark]

Answer _____

Do not write outside the box

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]

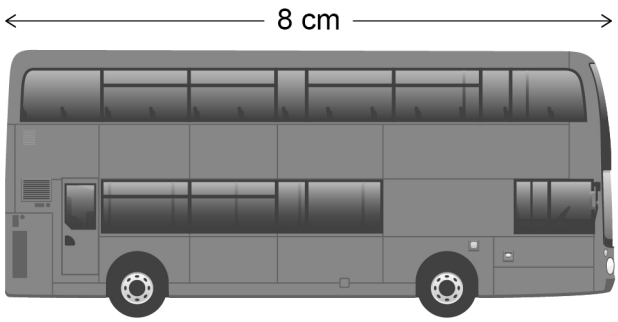
Answer _____

6

Turn over ►

Do not write outside the box

17 This scale drawing of a bus has length 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

Do not write outside the box

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]

19 The largest possible value of n is 2

Circle the correct inequality.

[1 mark]

$n \leqslant 2$ $\quad$ $n < 2$ $\quad$ $n \geqslant 2$ $\quad$ $n > 2$

8

Turn over ►

Do not write outside the box

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?

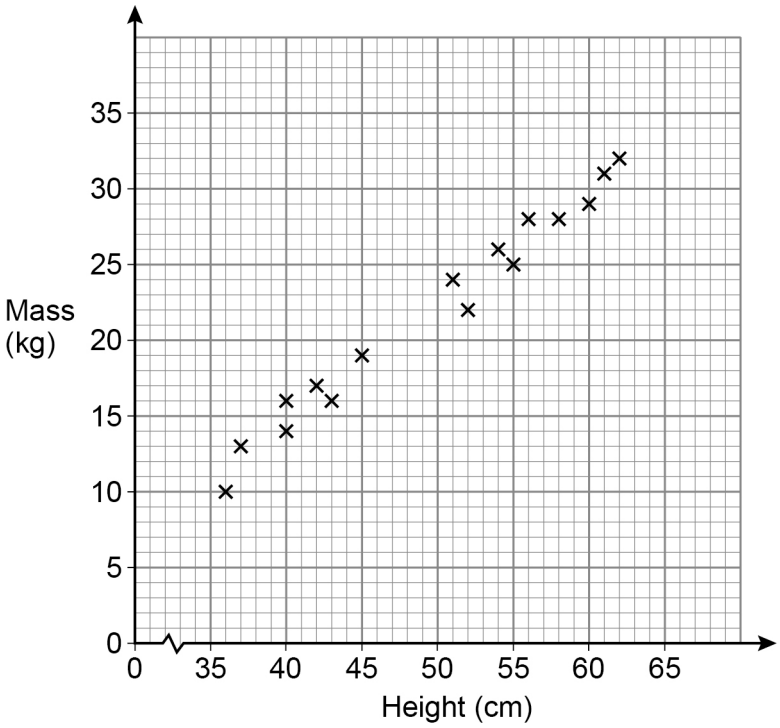
Use 8 kilometres = 5 miles

[3 marks]

Answer _____ litres

Do not write outside the box

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



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

8

Turn over ►

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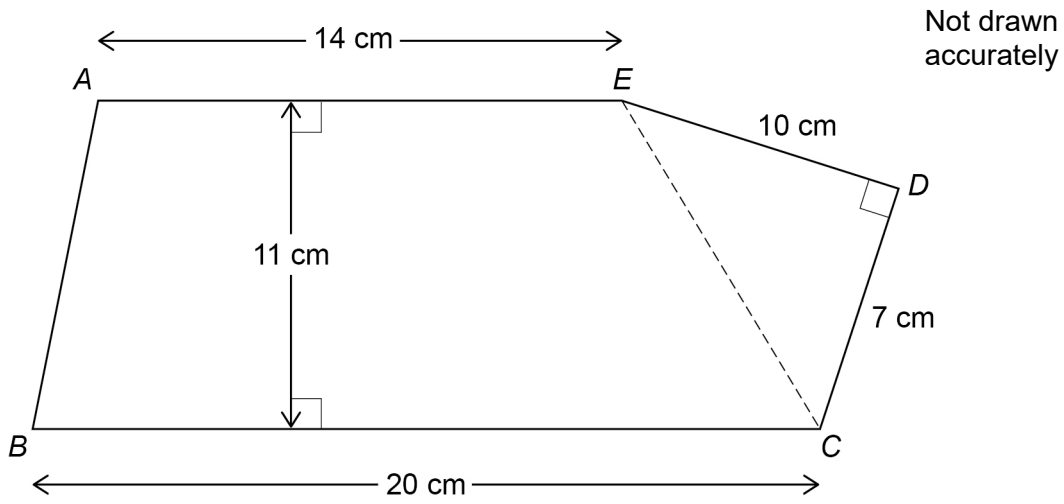
22 *ABCDE* is a pentagon.



Work out the area of the pentagon.

[3 marks]

Answer _____ cm^2

Do not write outside the box

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]

Turn over for the next question

6

Do not write outside the box

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]

Do not write outside the box

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]

$x =$ _____

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]

7

Turn over ►

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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]

$\times 6$ $\times \frac{1}{6}$ $\times \frac{3}{2}$ $\times \frac{2}{3}$

Do not write outside the box

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 _____ : _____

29 Circle the equation where c is inversely proportional to d.

[1 mark]

$c = \frac{1}{2}d$ $\quad$ $c = \frac{2}{d}$ $\quad$ $c = -2d$ $\quad$ $c = -\frac{2}{d^2}$

7

Turn over ►

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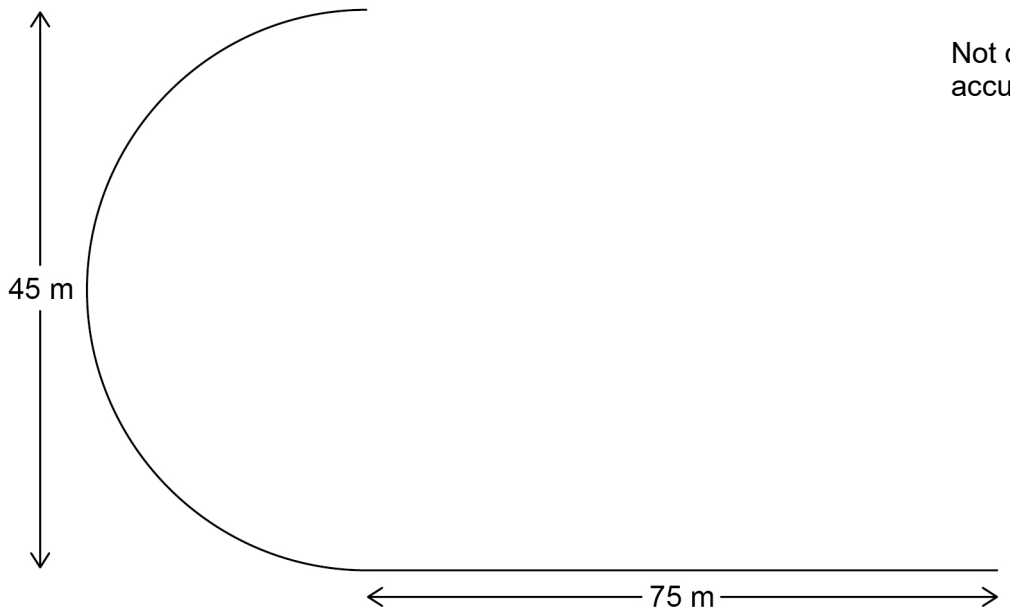
30 Part of a running track is the arc of a semicircle joined to a straight line.

The semicircle has diameter 45 metres.

The straight line has length 75 metres.



Not drawn accurately

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

Do not write outside the box

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

Give your answer as a decimal.

[2 marks]

Answer _____

END OF QUESTIONS

6

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ANSWER IN THE SPACES PROVIDED

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Question number	**Additional page, if required.** **Write the question numbers in the left-hand margin.**

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