AQA

GCSE
MATHEMATICS

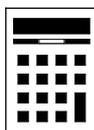**F**

Foundation Tier

Paper 3 Calculator

Shadow paper based on November 2022 question paper

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	

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Answer **all** questions in the spaces provided.

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

Circle your answer.

[1 mark]

45°   90°   270°   315°

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

Circle the correct equation.

[1 mark]
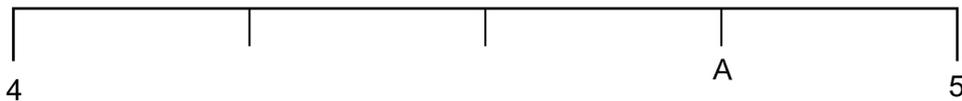
$d = 6c$ $c = 6d$ $d = c - 6$ $c = d - 6$

3 Here is a number line.

Which number is at A?

Circle your answer.

[1 mark]

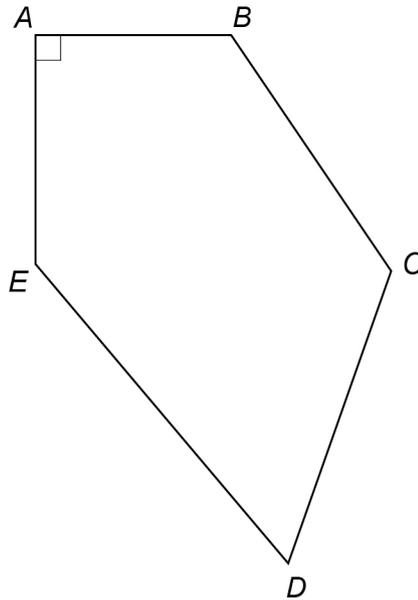4.3   4.75   4.6   4.55

4   In the pentagon, which angle is **acute**?

Circle your answer.

[1 mark]

ABC   BCD   CDE   EAB

5 (a)   Write down **two** prime numbers between 20 and 30
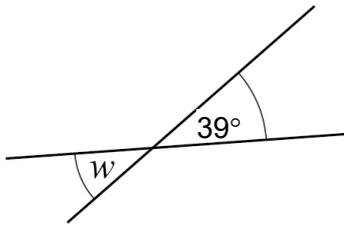
[2 marks]

Answer _____ and _____

5 (b)   Write down **one** cube number between 50 and 150

[1 mark]

Answer _____

7

Turn over ▶

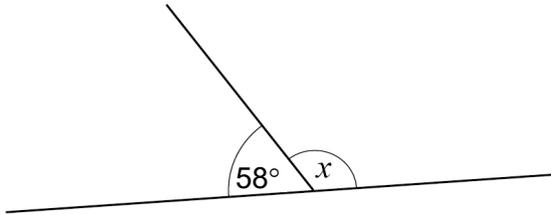**6 (a)** Here are two straight lines.

Not drawn accurately

39°

w

Write down the size of angle *w*.

[1 mark]

w = _____ degrees

6 (b) Here are two different straight lines.

Not drawn accurately

58° *x*

Work out the size of angle *x*.

[1 mark]

_____

_____

x = _____ degrees

6 (c) In a triangle, two of the angles are 61° and 53°.

Work out the size of the third angle.

[1 mark]

_____

_____

Answer _____ degrees

7 (a) Solve $15 - a = 2$

[1 mark]

_____

$a =$ _____

7 (b) Solve $-6h = 0$

[1 mark]

_____

$h =$ _____

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

32%   0.305 $\dfrac{3}{10}$

[2 marks]

_____

_____

_____

Answer _____ , _____ , _____

7

Turn over ▶

9

x	0	2	4	6	8	
y	11	7	3		−5	−9

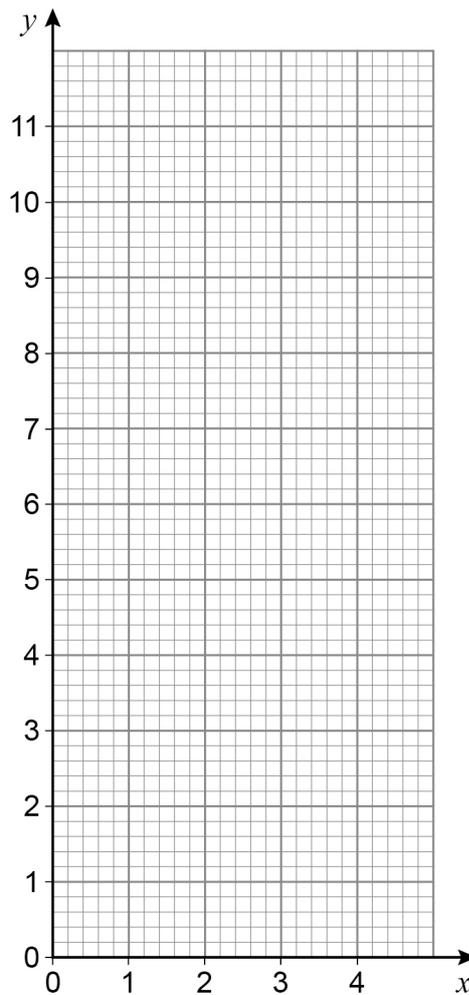The x-values in the table make a linear sequence.

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, 11), (2, 7) and (4, 3)

[2 marks]

9 (c) Use the graph to work out the value of y when $x = 1$

[1 mark]

$y =$ _____

10 (a)

When –6 is added to a positive number, the answer can be **positive**

Give **one** example to show that this is correct.

[1 mark]

_____

_____

10 (b)

When –6 is subtracted from a negative number, the answer can be **positive**

Give **one** example to show that this is correct.

[1 mark]

_____

_____

10 (c)

When a number is halved, the answer is always smaller than the original number

Give **one** example to show that this is **not** correct.
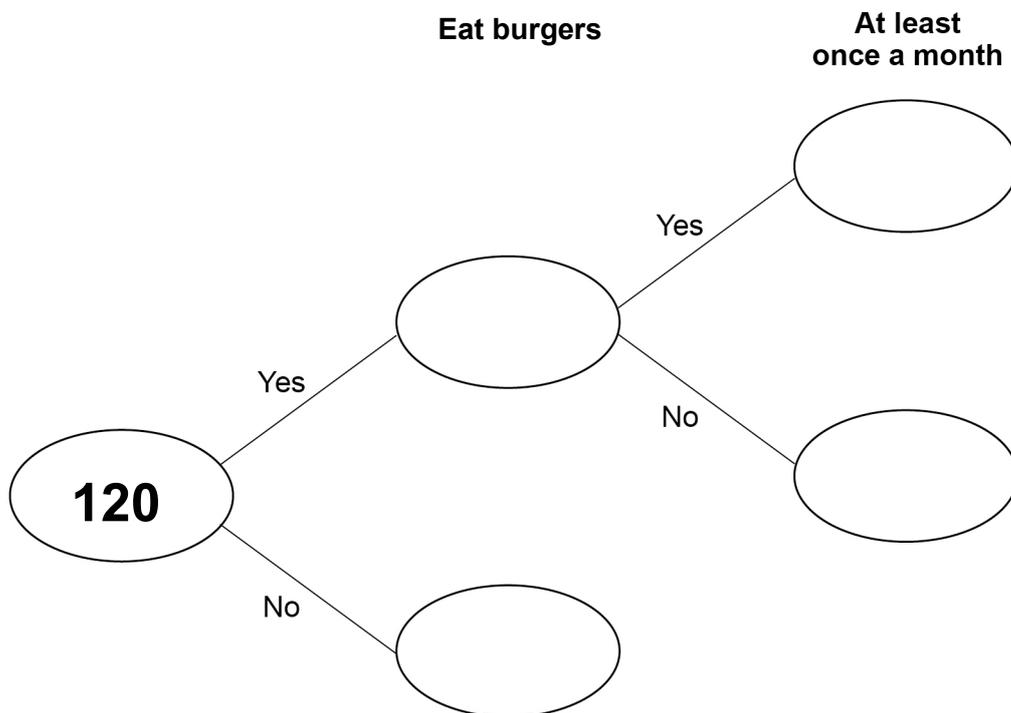
[1 mark]

_____

_____

Turn over ▶

11 120 people are asked if they eat burgers.

70% say Yes.

$\frac{3}{4}$ of the people who say Yes eat burgers at least once a month.

Complete the frequency tree.

[4 marks]

Eat burgers

At least once a month

```
                                              ( )
                                          Yes
                        ( )
                    Yes           No
                                              ( )
      ( 120 )
                No
                        ( )
```
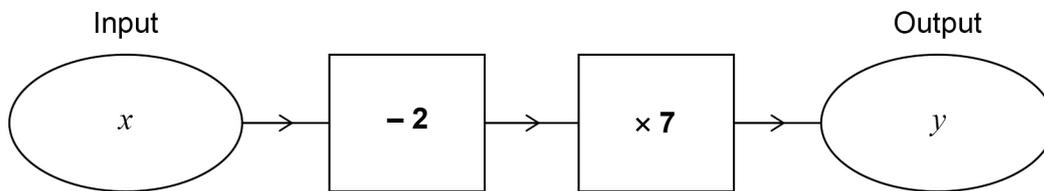
12 Event A has taken place every 5 years.

Event B has taken place every 3 years.

Both events took place in 2022

Work out the next year, after 2022, when both events will next take place.

[2 marks]

Answer _____

13 Louisa wants to make a number machine so that $y = 7x - 2$

Here is her attempt.

Input

Output

What mistake has she made?

[1 mark]

7

Turn over ▶

Shadow paper based on November 2022 question paper

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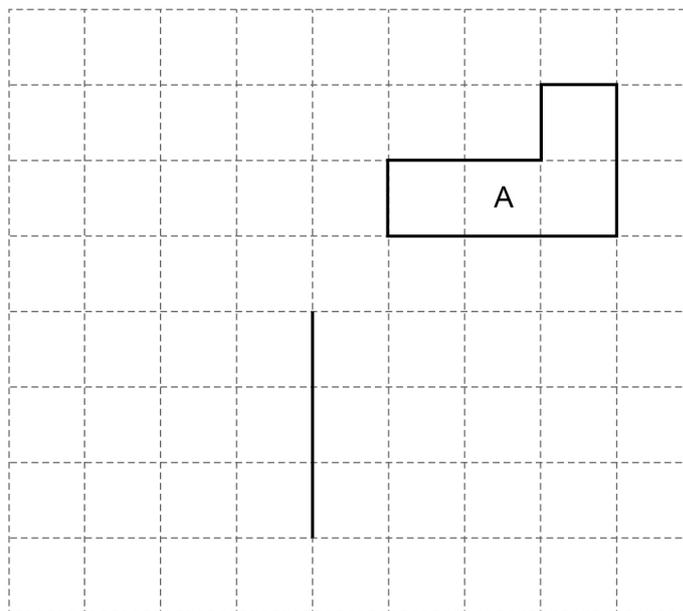**14** Circle the solid that has twelve edges.

[1 mark]

tetrahedron sphere cuboid cylinder

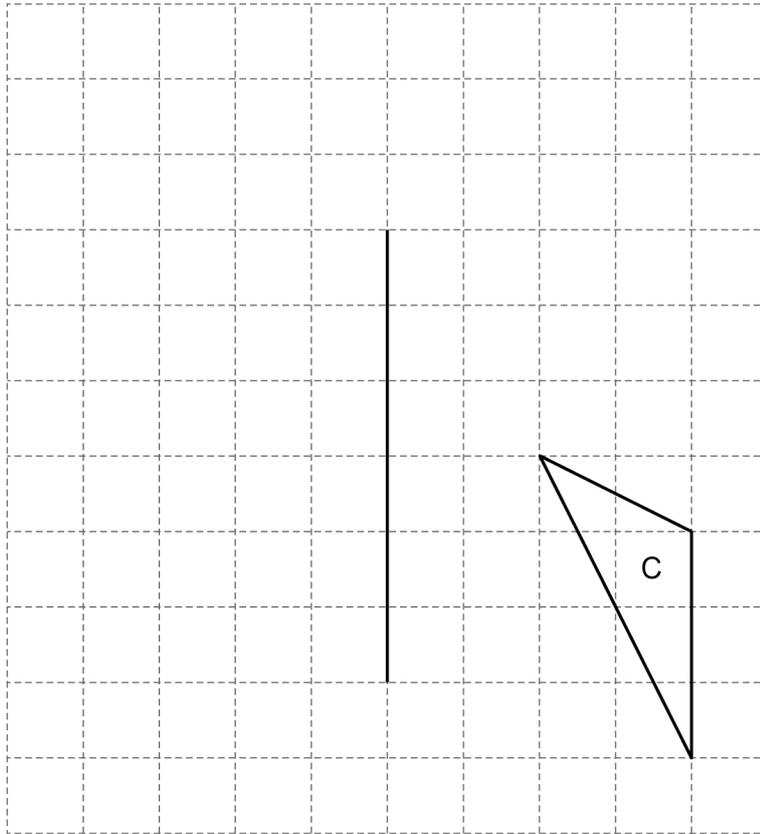**15 (a)** On the grid, shape A is shown.

One side of shape B is also shown.

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

[1 mark]

15 (b) On this grid, shape C is shown.
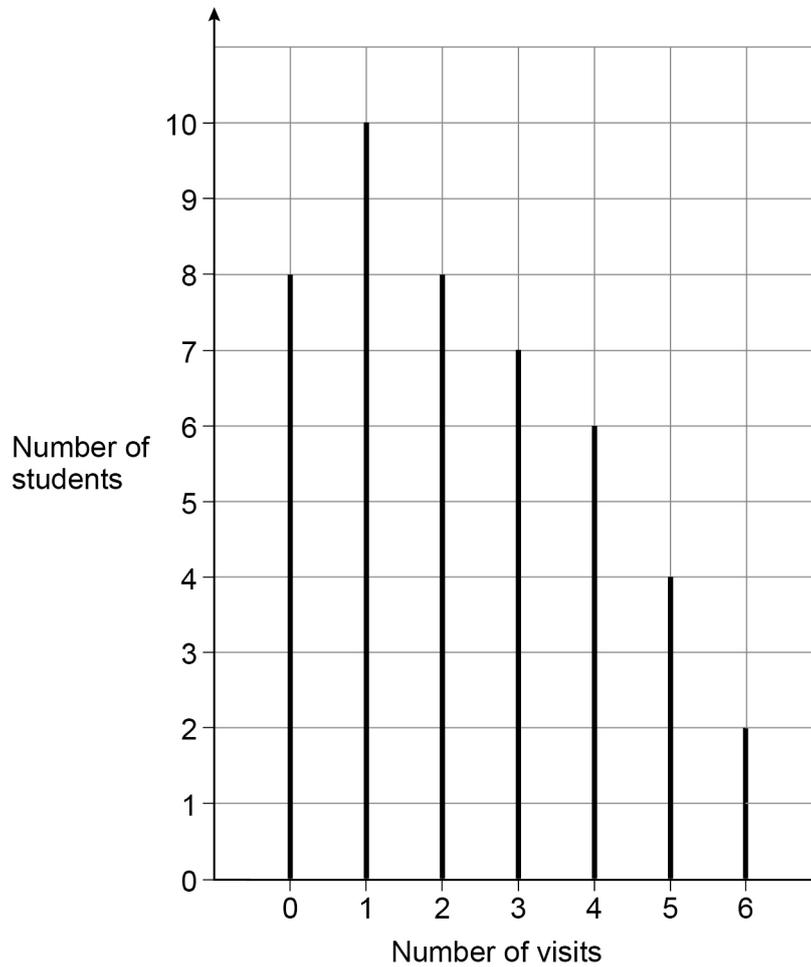
One side of shape D is also shown.

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

16 45 students were asked the number of visits they made to a cinema in one month.

The chart shows information about the results.

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

[1 mark]

Answer _____

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

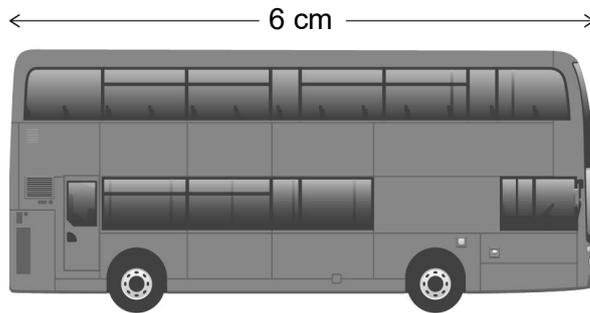Give your answer to two decimal places.

[3 marks]

Answer _____

16 (c) One of the 45 students is chosen at random.

Work out the probability that the student visited the cinema **no more than** once.

[2 marks]

Answer _____

Turn over ▶

6

17   This scale drawing of a London bus has length 6 cm

←————— 6 cm —————→

Scale   1 cm represents 2.25 m

The actual length of the London bus is 2.6 times the actual length of a van.

Work out the actual length of the van.

Give your answer in metres, to the nearest centimetre.

[3 marks]

Answer _____ metres

18 13 identical full tins of blue paint hold a total of 4615 ml

All the paint from 5 of these tins is poured into an empty bucket.

The bucket can hold 3000 ml

Tins of white paint each hold 165 ml

Can all the white paint from 7 tins be added to the bucket?

You **must** show your working.

[4 marks]

19 The smallest possible value of n is 18

Circle the correct inequality.

[1 mark]

$n \leqslant 18$ $\qquad$ $n < 18$ $\qquad$ $n \geqslant 18$ $\qquad$ $n > 18$

8

Turn over ▶

20 Jason is on holiday in Spain.

20 (a) The cost of a tent pitch at a campsite is 37.95 euros.

Convert the cost to £

Use £1 = 1.1 euros

[2 marks]

Answer £ _____

20 (b) Jason hires a car.

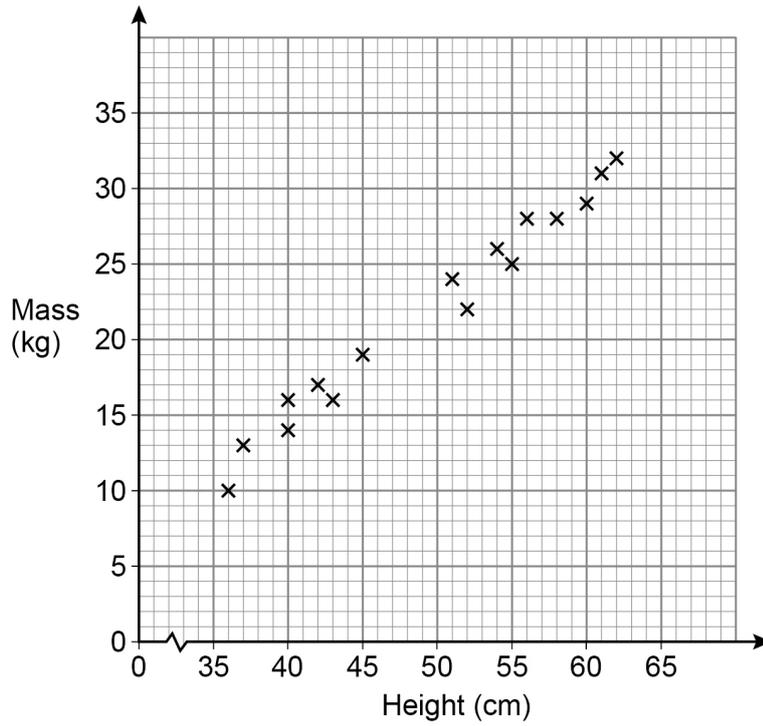The car uses one litre of petrol for every 9 miles.

How many litres of petrol does the car use to go 180 kilometres?

Use 8 kilometres = 5 miles

[3 marks]

Answer _____ litres

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

21 (a) The scatter graph shows positive correlation.

Describe the relationship between the height and mass of the monkeys.

[1 mark]

_____

_____

_____

21 (b) Use a line of best fit to estimate the height of a monkey with mass 22 kg

[2 marks]

Answer _____ cm

8

Turn over ▶

22   *ABCDE* is a pentagon.

Not drawn accurately

17 cm

13 cm

12 cm

9 cm

25 cm

A   E   D   B   C
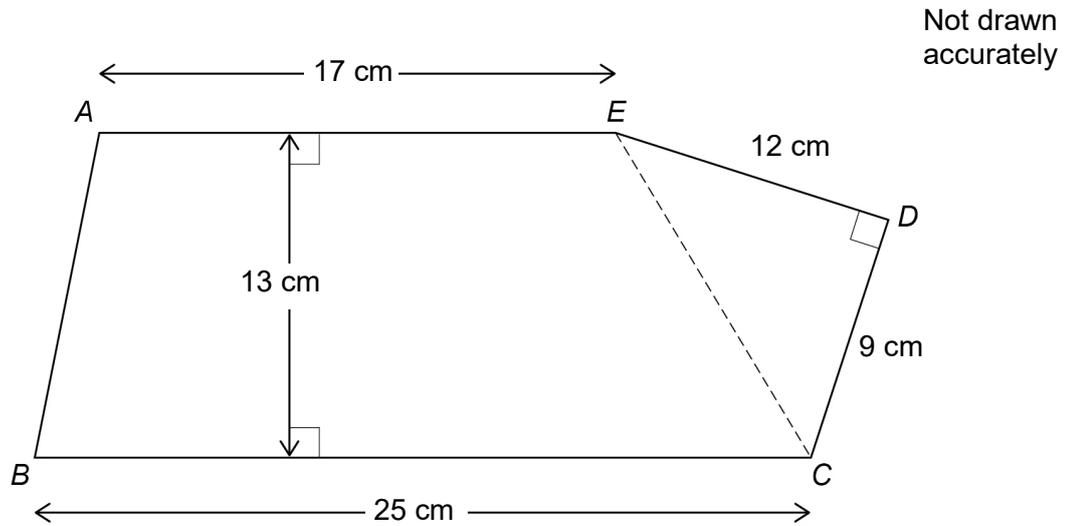
Work out the area of the pentagon.

[3 marks]

Answer _____ cm^2

23 Jenny, Kevin and Liqiu each have an amount of money.

Jenny has £96

Jenny's amount : Kevin's amount = 8 : 3

Liqiu's amount is $2\frac{1}{2}$ times Jenny's amount.

Show that, in total, they have **more** than £350

[3 marks]

Turn over for the next question

6

Turn over ▶

24 A gold statuette has volume 75 cm^3

The statuette has mass 1.44 kilograms.

density of gold = 19.2 grams per cubic centimetre

Is the statuette made of gold?

You **must** show your working.

[3 marks]

_____

_____

_____

_____

_____

_____

_____

_____

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 26

The 2nd term is x

The 4th term is 84

Work out the value of x.

[3 marks]

_____

_____

_____

_____

_____

_____

$x =$ _____

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

Jamie says,

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

Is he correct?

Tick a box.

☐ Yes   ☐ No

Give a reason for your answer.

[1 mark]

_____

_____

_____

7

Turn over ▶

26   *P* and *Q* are points.

        The *x*-coordinate of *Q* is 5 **less** than the *x*-coordinate of *P*.

        The *y*-coordinate of *Q* is 8 **more** 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 doubled and r is divided by 3

    What happens to m ?

    Circle your answer.

[1 mark]

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

28 Here are the results after 200 spins of a coin.

Heads	104
Tails	96

The coin is spun an extra 20 times.

After all 220 spins, the relative frequency of Heads is 0.55

For the **extra 20 spins**, work out   number of Heads : number of Tails

[3 marks]

_____

_____

_____

_____

_____

_____

_____

Answer _____ : _____

29 Circle the equation where c is proportional to d.

[1 mark]

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

7

Turn over ▶

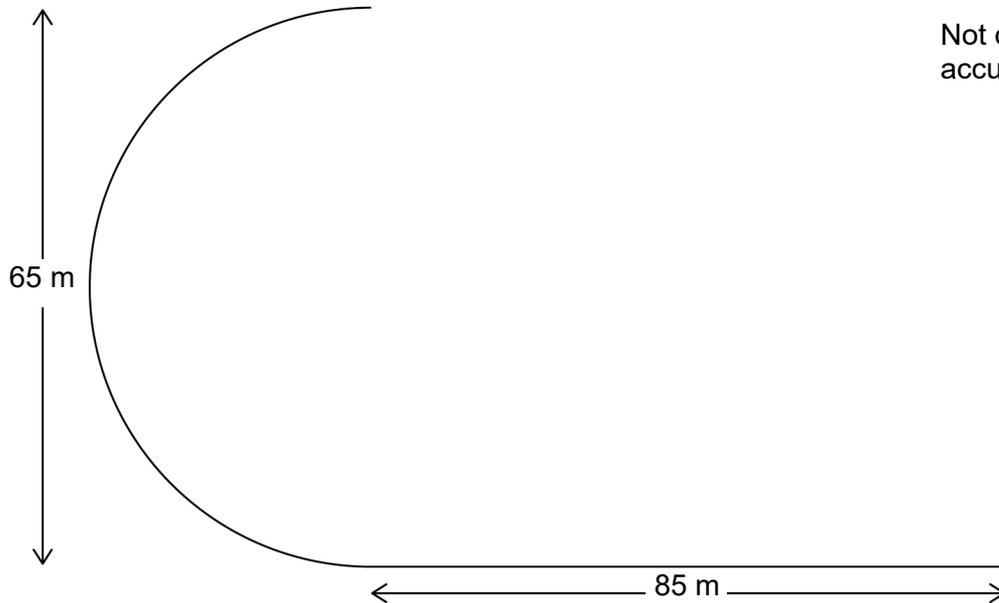**30** Part of a running track is the arc of a semicircle joined to a straight line.

The semicircle has diameter 65 metres.

The straight line has length 85 metres.

Not drawn accurately

65 m

85 m

Alison runs once along this part of the track in 24 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 gyms A and B.

	Number of members	**Mean weight of members**
Gym A	56	68 kg
Gym B	32	85 kg

Work out $\dfrac{\text{total weight of the members of gym A}}{\text{total weight of the members of gym B}}$

Give your answer as a decimal.

[2 marks]

Answer _____

END OF QUESTIONS

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