# AQA

Please write clearly in block capitals.

Centre number ☐☐☐☐☐    Candidate number ☐☐☐☐

Surname _____

Forename(s) _____

Candidate signature _____

## GCSE MATHEMATICS

## PREDICTED TOPIC PAPER

## Good Chance **F**

**June 2025**　　　　　　　　**Paper 2  Calculator**

### 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
- You may ask for more answer paper, grapn 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 | |
| TOTAL | |

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

## Q1.

When a spinner is spun, it shows

      Blue (B) or Green (G) or Red (R) or White (W).

When a coin is tossed, it shows

      Heads (H) or Tails (T).

The spinner is spun and the coin is tossed.

Complete this list of possible outcomes.

      **BH**

**(Total 2 marks)**

## Q2.

Match each expression on the left with one on the right.
One has been done for you.



$a + 6$

$a + 3 + 2$

$a + 5$

$a + 3 \times 2$

$3a + 6$

$a \times 3 \times 2$
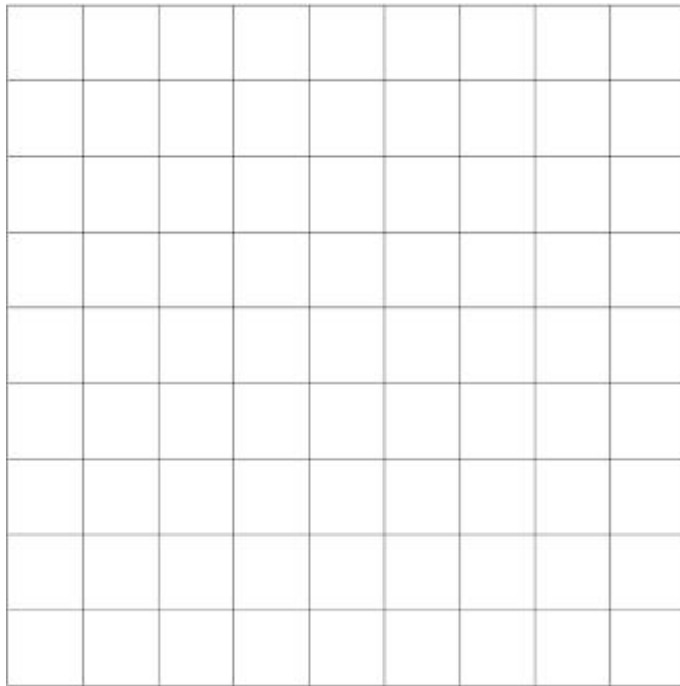
$6a$

$a \times 3 + 2$

$3a + 2$

**(Total 3 marks)**

**Q3.**

The table shows information about the birds in a garden.

| Bird | Number |
|---|---|
| Robin | 2 |
| Sparrow | 5 |
| Wren | 3 |
| Lark | 1 |

Draw a bar chart to show the information.

**(Total 3 marks)**

**Q4.**

$c > 4$      $d < 4$      $c - d = 6$

Work out a possible pair of values for $c$ and $d$.

_____

_____

_____

_____

$c =$ _____      $d =$ _____

**(Total 2 marks)**

*www.youtube.com/@Mr_D_Does_Maths*

**Turn over ▶**
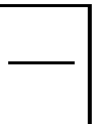
**Q5.**

$w$ is greater than 1 **and** less than 2

$x$ is greater than 0 **and** less than 1

$$w + x = 2.6$$

Work out a possible pair of values for $w$ and $x$.

_____

_____

_____

$w =$ _____   $x =$ _____

**(Total 2 marks)**

**Q6.**

A game has four cards labelled A, B, C and D.

Ellie picks two of the cards at random.

Complete the list of the **six** possible pairs of cards she could pick.

| AB |
|----|
|    |
|    |
|    |
|    |
|    |

**(Total 2 marks)**

**Q7.**

Here are two straight lines.
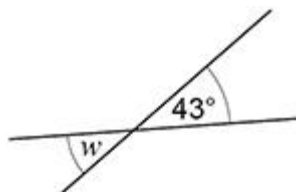
43°  $w$   Not drawn accurately

Write down the size of angle $w$.

$w =$ _____ degrees

**(Total 1 mark)**

**Q8.**

Here are two different straight lines.
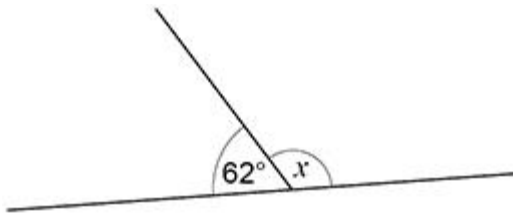


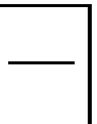Not drawn accurately

Work out the size of angle $x$.

_____

_____

$x =$ _____ degrees

**(Total 1 mark)**

**Q9.**

In a triangle, two of the angles are 51° and 74°.

Work out the size of the third angle.

_____

_____

Answer _____ degrees

**(Total 1 mark)**

**Turn over ▶**

# Q10.

There are 135 passengers on a plane.

3 of the passengers in Business Class are flying for the first time.

In total, there are 15 passengers in Business Class.

$\frac{1}{4}$ of the passengers **not** in Business Class are flying for the first time.
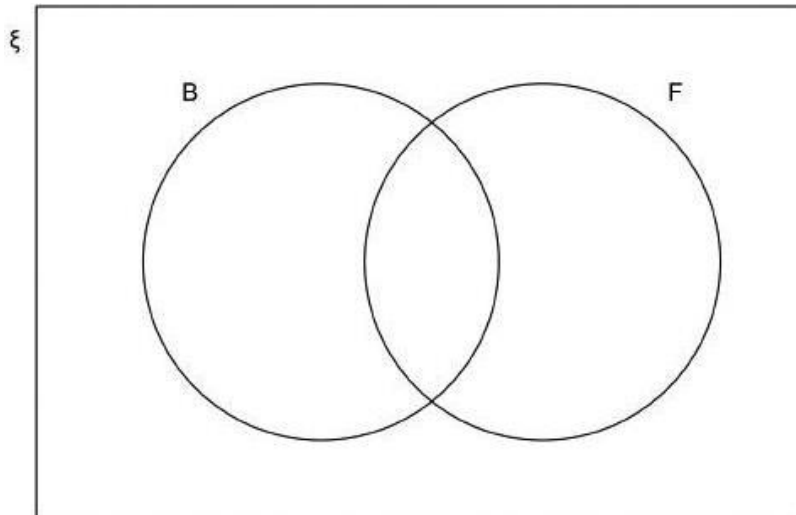
(a)   In the Venn diagram,

ξ = passengers on the plane

B = passengers in Business Class

F = passengers flying for the first time.

Complete the Venn diagram.

ξ

B          F

(4)

(b)   One of the passengers is chosen at random.

Write down the probability that the passenger is in Business Class.

Answer _____

(1)
(Total 5 marks)
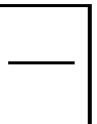
**Q11.**

Here is a map of Cuba.

1.5 cm represents 200 km



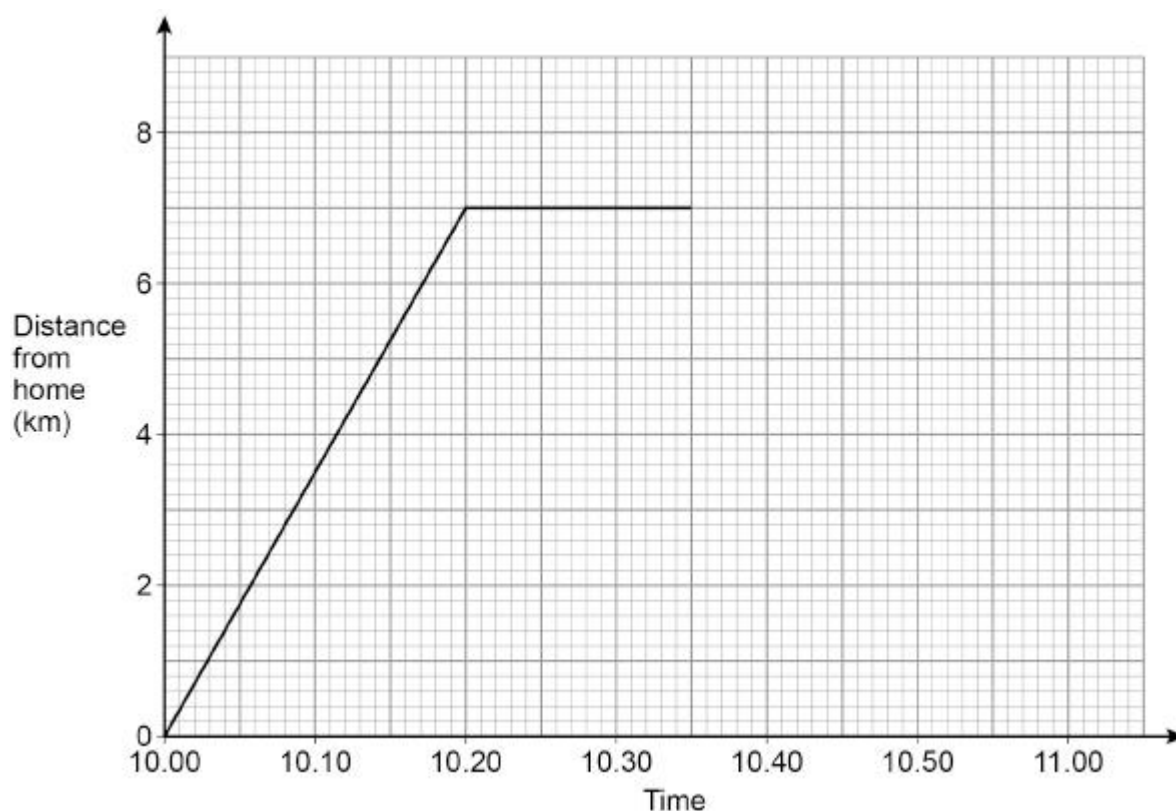Work out the actual distance from Havana to Holguin.

_____

_____

_____

_____

Answer _____ km

**(Total 3 marks)**

**Turn over ▶**

# Q12.

Scarlett leaves home at 10.00 to cycle to the supermarket.

Here is part of a distance-time graph of her trip to the supermarket.



(a) She arrives at the supermarket at 10.20

How far is the supermarket from her home?

Answer _____ km

**(1)**

(b) She leaves the supermarket at 10.35

How long does she stay at the supermarket?

Answer _____ minutes

**(1)**

(c) Scarlett cycles home at a constant speed using the same route.
It takes her 3 minutes longer than her journey to the supermarket.

Complete the distance-time graph.

_____

_____

**(2)**
**(Total 4 marks)**

## Q13.

Circle the value of the digit 9 in   0.094

$$\frac{9}{100} \qquad \frac{9}{10} \qquad \frac{1}{90} \qquad \frac{1}{9}$$
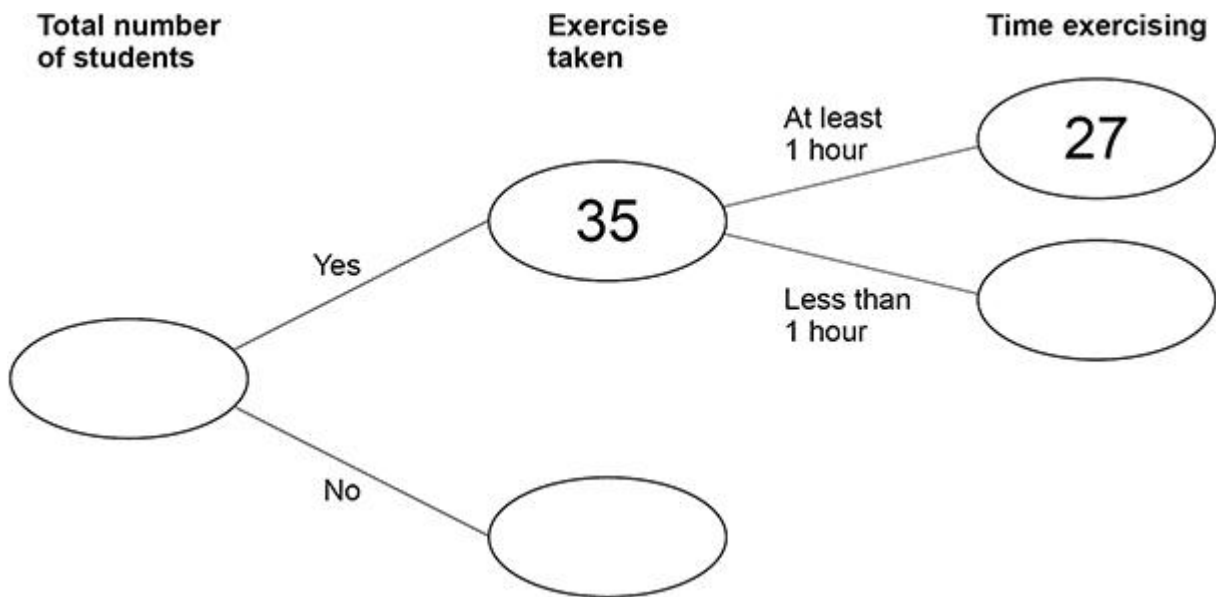
**(Total 1 mark)**

## Q14.

Some students were asked about their daily exercise.

(a)    12 **more** students answered Yes than answered No.

Complete the frequency tree.

**Total number of students**        **Exercise taken**        **Time exercising**

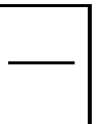At least 1 hour — 27

35

Yes

Less than 1 hour

No

**(3)**

(b)    One of the 35 students who answered Yes is chosen at random.

What is the probability that they exercise for at least 1 hour?

Answer _____

**(1)**

**(Total 4 marks)**

**Turn over ▶**

## Q15.

Jamil is on holiday in France.

The cost of a room in a hostel is 27 euros.

Convert the cost to £

Use     £1 = 1.2 euros

Answer £ _____

**(Total 2 marks)**

## Q16.

Jamil is on holiday in France.

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

Answer _____ litres

**(Total 3 marks)**

**Q17.**

The result of a game is Win, Lose or Draw.

After 80 games

     relative frequency of the result Win is 0.4

     relative frequency of the result Lose is 0.25

How many of the games had the result Draw?

_____

_____

_____

_____

Answer _____

**(Total 3 marks)**

**Q18.**

Circle the value of the digit 3 in the number 10.23

$$\frac{3}{1000} \qquad \frac{3}{100} \qquad \frac{3}{10} \qquad 3$$

**(Total 1 mark)**

**Q19.**

Circle the number **greater** than   −0.9

$$-0.901 \qquad -0.89 \qquad -0.91 \qquad -\frac{9}{10}$$

**(Total 1 mark)**

**Q20.**

Each side of a square is made 3 times as long.
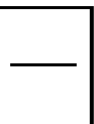
What happens to the perimeter?

Circle your answer.

$$\times 3 \qquad \times 6 \qquad \times 9 \qquad \times 12$$

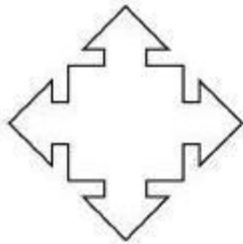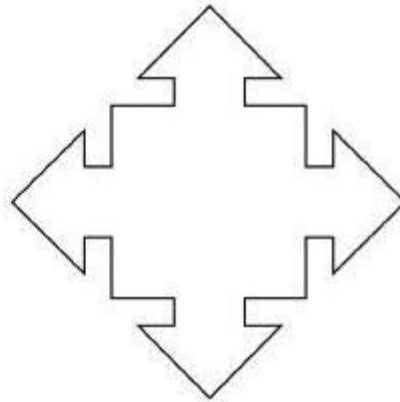**(Total 1 mark)**

**Turn over ▶**

**Q21.**

Here are two similar shapes, A and B.

Not drawn accurately



A                                          B

length of edges in A : length of edges in B = 2 : 5
The perimeter of A is 210 mm

Work out the perimeter of B.

_____

_____

_____

_____

Answer _____ mm

**(Total 2 marks)**

**Q22.**

(a)    A circle has radius 4.2 cm

Work out the length of the circumference.
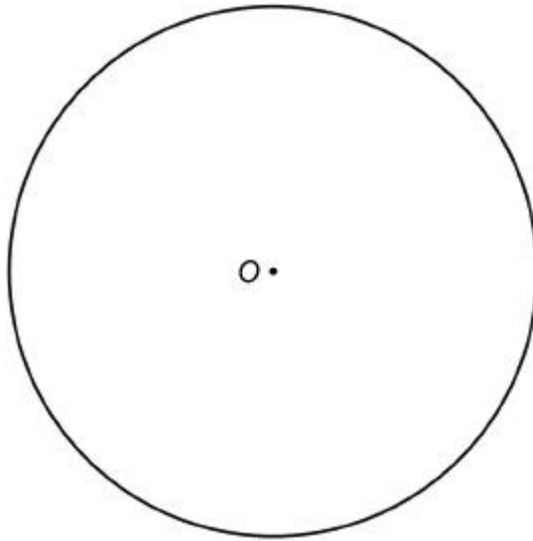
Give your answer to 1 decimal place.

_____

_____

_____

_____

_____

_____

Answer _____ cm

(3)

(b)   The circle below has centre $O$.

Draw a sector on the circle.

**(1)**
**(Total 4 marks)**

## Q23.

One of the angles in a triangle is 60°

Tick a box for each statement.

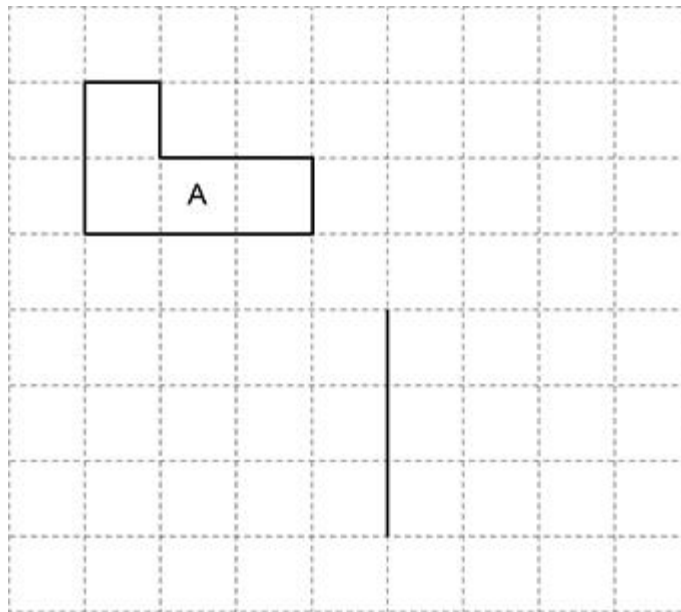|  | **Must be true** | **Cannot be true** | **Might be true** |
|---|---|---|---|
| The triangle is equilateral |  |  |  |
| The triangle has at least one other acute angle |  |  |  |
| The triangle is right-angled |  |  |  |
| The other two angles are each less than 60° |  |  |  |

**(Total 4 marks)**

**Turn over ▶**
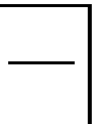
**Q24.**

On the grid, shape A is shown.

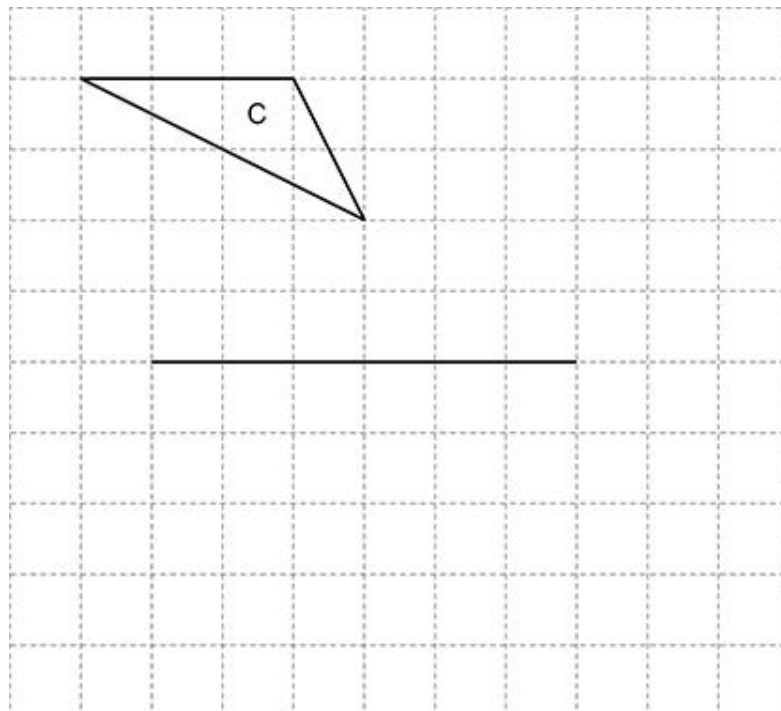One side of shape B is also shown.

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

**(Total 1 mark)**

**Q25.**

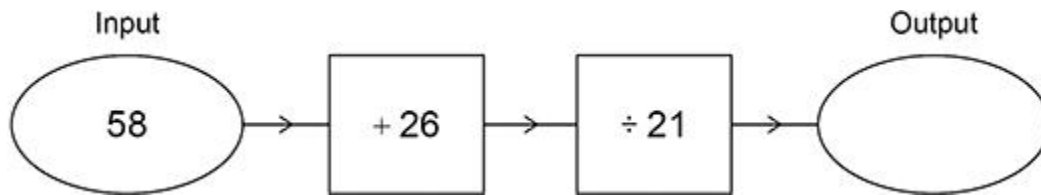On this grid, shape C is shown.

One side of shape D is also shown.

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

**(Total 1 mark)**
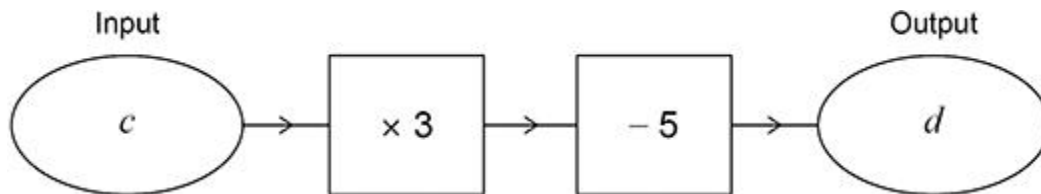
**Q26.**

Here is a number machine.

Input                                                      Output

$58$  →  $+26$  →  $÷21$  →

Work out the output.

_____

_____

Answer _____

**(Total 1 mark)**

**Q27.**

Here is a number machine.

Input                                                      Output

$c$  →  $×3$  →  $-5$  →  $d$

Work out a formula for $d$ in terms of $c$.

_____

_____

Answer _____

**(Total 2 marks)**

**Turn over ▶**

**Q28.**

Carly's total annual pay = salary + bonus

|  | **Salary** | **Bonus** |
|---|---|---|
| **Last year** | £26 000 | £4000 |
| **This year** | 6% increase | 9% decrease |

Work out the percentage change in her total annual pay.

State whether it is an increase or a decrease.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____
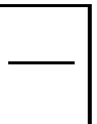
**(Total 4 marks)**

**Q29.**

An equilateral triangle has side length 16 metres.

Using ruler and compasses only, construct a scale drawing of the triangle.

Use the scale        1 centimetre represents 2 metres.
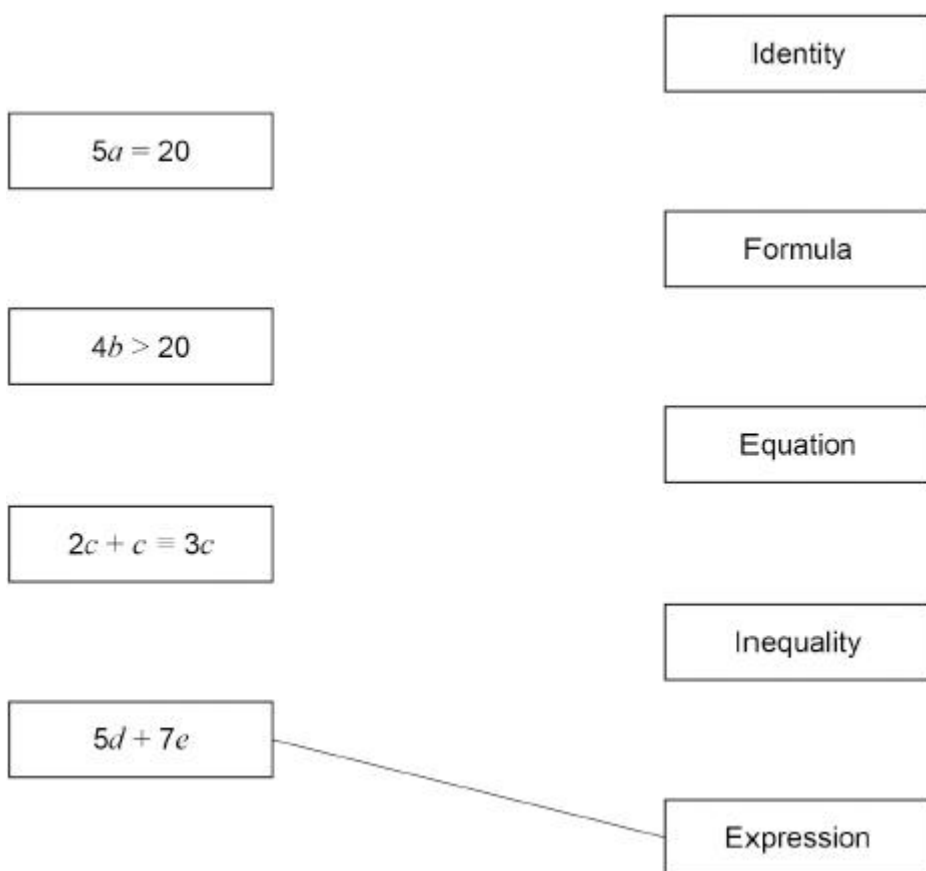
**Scale**: 1 cm represents 2 m

**(Total 3 marks)**

**Turn over ▶**

**Q30.**

Match the algebra to the correct description.

One has been done for you.

Identity

$5a = 20$

Formula

$4b > 20$

Equation

$2c + c \equiv 3c$

Inequality

$5d + 7e$

Expression

**(Total 3 marks)**

## Q31.

(a)  Complete the table of values for    $y = x^2 - x - 2$

| $x$ | −2 | −1 | 0 | 1 | 2 | 3 |
|-----|-----|-----|-----|-----|-----|-----|
| $y$ |  |  | −2 | −2 |  | 4 |

**(2)**

(b)  Draw the graph of    $y = x^2 - x - 2$    for values of $x$ from −2 to 3
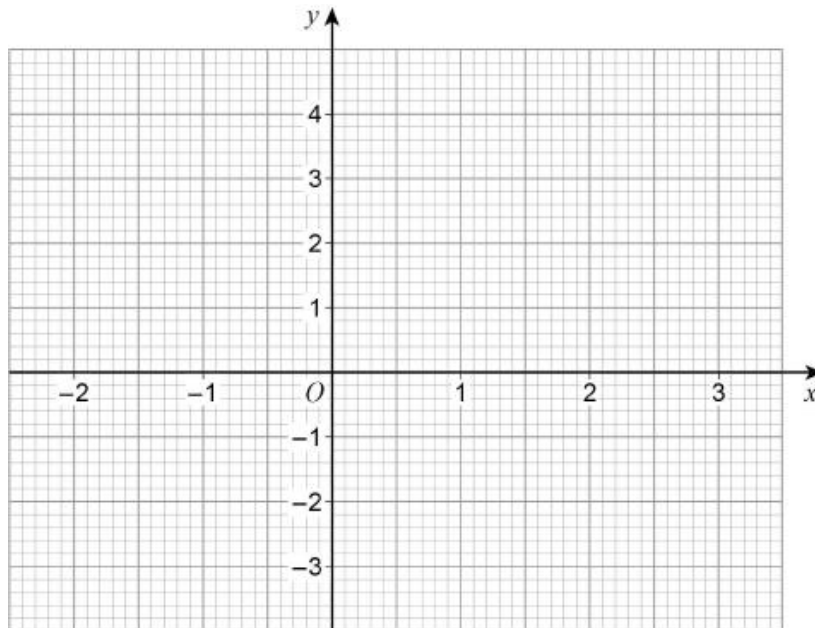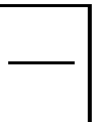


**(2)**
**(Total 4 marks)**

## Q32.

Bruce and Clark share an amount of money in the ratio    $7 : n$

Bruce gets 35% of the money.

Work out the value of $n$

Answer _____

**(Total 2 marks)**

**Turn over ▶**

**Q33.**

Mia wants to borrow £6000 and repay it, with interest, after two years.

She sees two offers for loans.

| **Offer 1** |
|---|
| Compound interest |
| 3% per year |

| **Offer 2** |
|---|
| Compound interest |
| First year 1% |
| Second year 5% |

Mia says,

"I will pay back the same amount because the average of 1% and 5% is 3%"

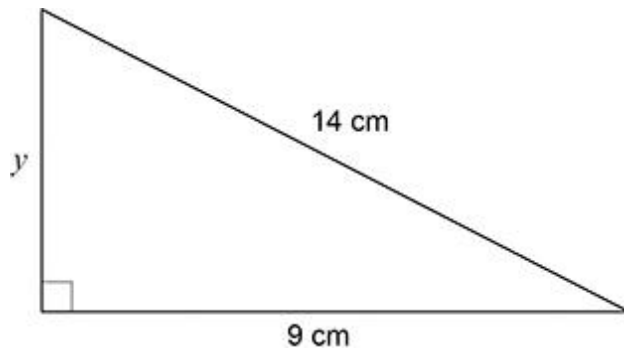Is she correct?
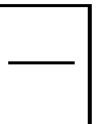
You **must** show your working.

_____

_____

_____

_____

_____

_____

_____

_____

**(Total 3 marks)**

**Q34.**

Here is a triangle.



14 cm

$y$

9 cm

Not drawn
accurately

Use Pythagoras' theorem to work out the value of $y$.

Give your answer as a decimal.

_____

_____

_____

_____

_____

_____

$y =$ _____ cm

**(Total 3 marks)**

**Turn over ▶**

## Q35.

Here is a right-angled triangle.

Not drawn accurately



13 cm    16 cm    x
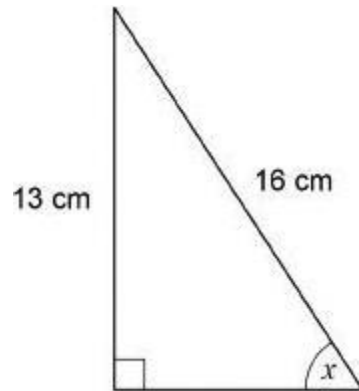
Use trigonometry to work out the size of angle $x$.

_____

_____

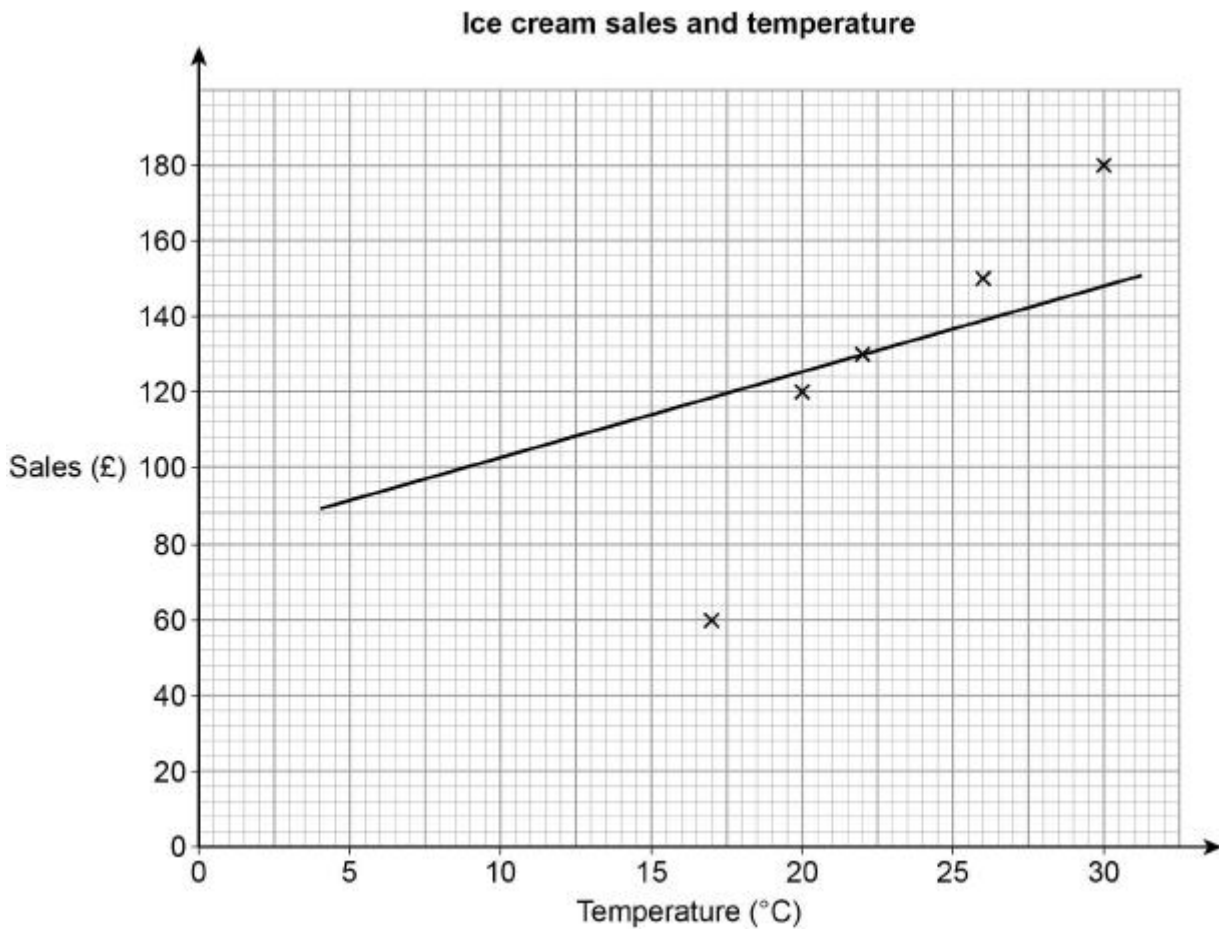_____

_____

_____

Answer _____ degrees

**(Total 2 marks)**

# Q36.

Lee sells ice creams.

The table shows the midday temperature and his sales for five days.

| | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 |
|---|---|---|---|---|---|
| **Temperature (°C)** | 30 | 26 | 17 | 22 | 20 |
| **Sales (£)** | 180 | 150 | 80 | 130 | 120 |

(a) He draws this scatter graph and line of best fit.



Ice cream sales and temperature

Write down **two** mistakes he has made.

Mistake 1 _____

_____

Mistake 2 _____

_____

**(2)**

**Turn over ▶**

(b)   Lee wants to work out the range of the five temperatures.

His calculation is     30 − 20 = 10

Is his method correct?

Tick a box.

Yes  ☐          No  ☐

Give a reason to support your answer.

_____

_____

**(1)**

(c)   The table shows Lee's costs.

| Ingredients | 15% of sales |
|---|---|
| Fuel | £7 per day |

Work out his total profit for the five days.

_____

_____

_____

_____
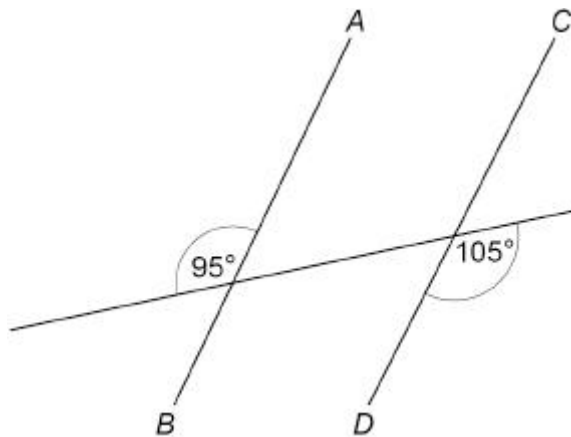
_____

_____

_____

Answer £ _____

**(5)**

**(Total 8 marks)**

**Q37.**

Here are three straight lines.

Not drawn
accurately

Are the lines *AB* and *CD* parallel?

Tick a box.

Yes ☐          No ☐
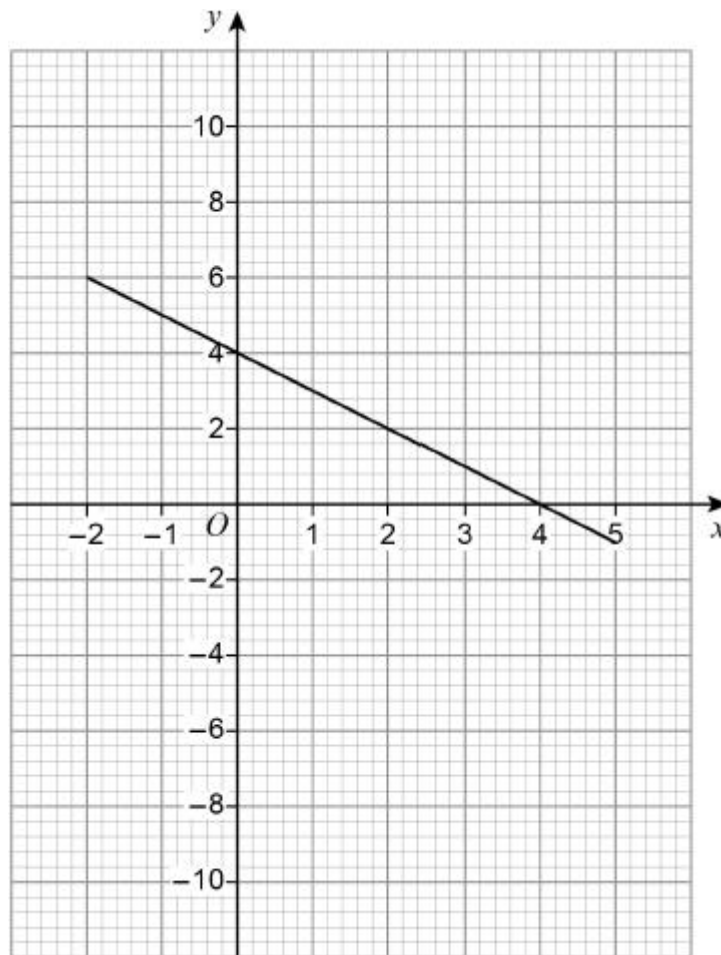
Show working to support your answer.

_____

_____

_____

_____

**(Total 2 marks)**

**Turn over ▶**

## Q38.

The graph of $y = 4 - x$ for values of $x$ from −2 to 5 is shown on the grid.

(a) On the grid, draw the graph of $y = 2x - 5$ for values of $x$ from −2 to 5.


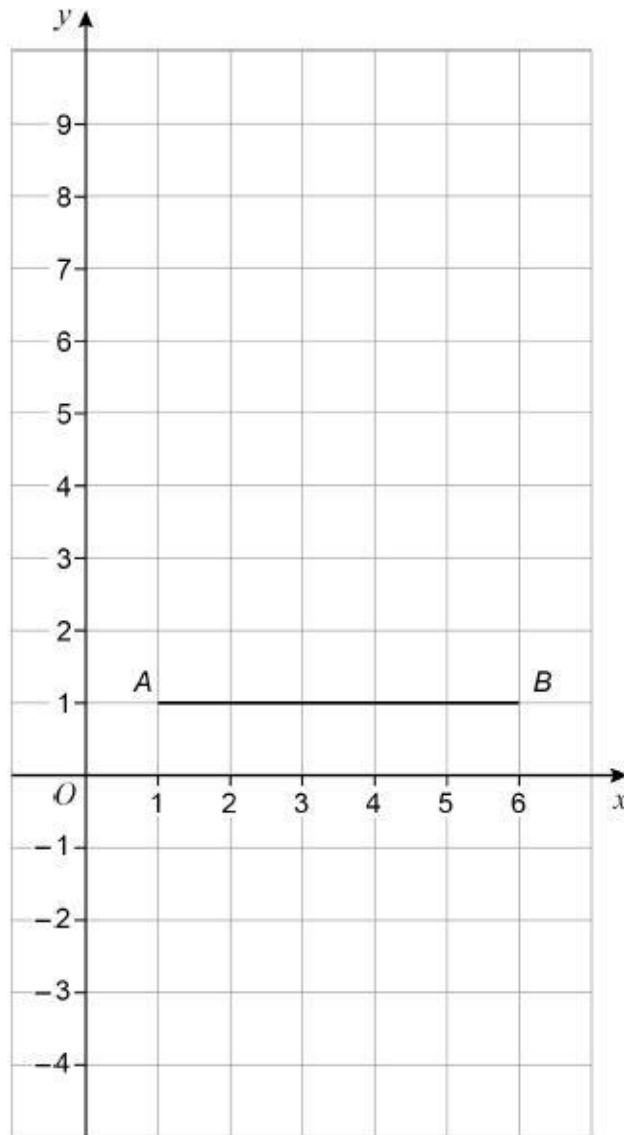
**(3)**

(b) Use your graph to solve $2x - 5 = 4 - x$

$x = $ _____

**(1)**

**(Total 4 marks)**

## Q39.

A line joins *A* (1, 1) and *B* (6, 1) on a centimetre grid.



*P* is a point on the line *AB* such that

AP : PB = 2 : 3

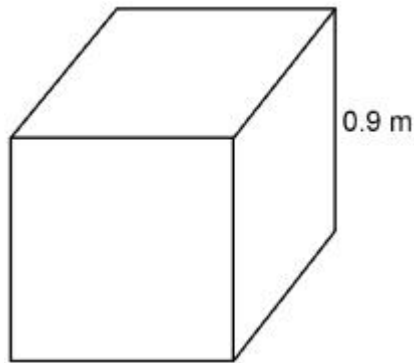*C* is a point such that

angle *APC* is 90°

and

*PC* = 4 cm

Write down the coordinates of the **two** possible points for *C*.

Answer ( _____ , _____ ) and ( _____ , _____ )

**(Total 3 marks)**

**Q40.**

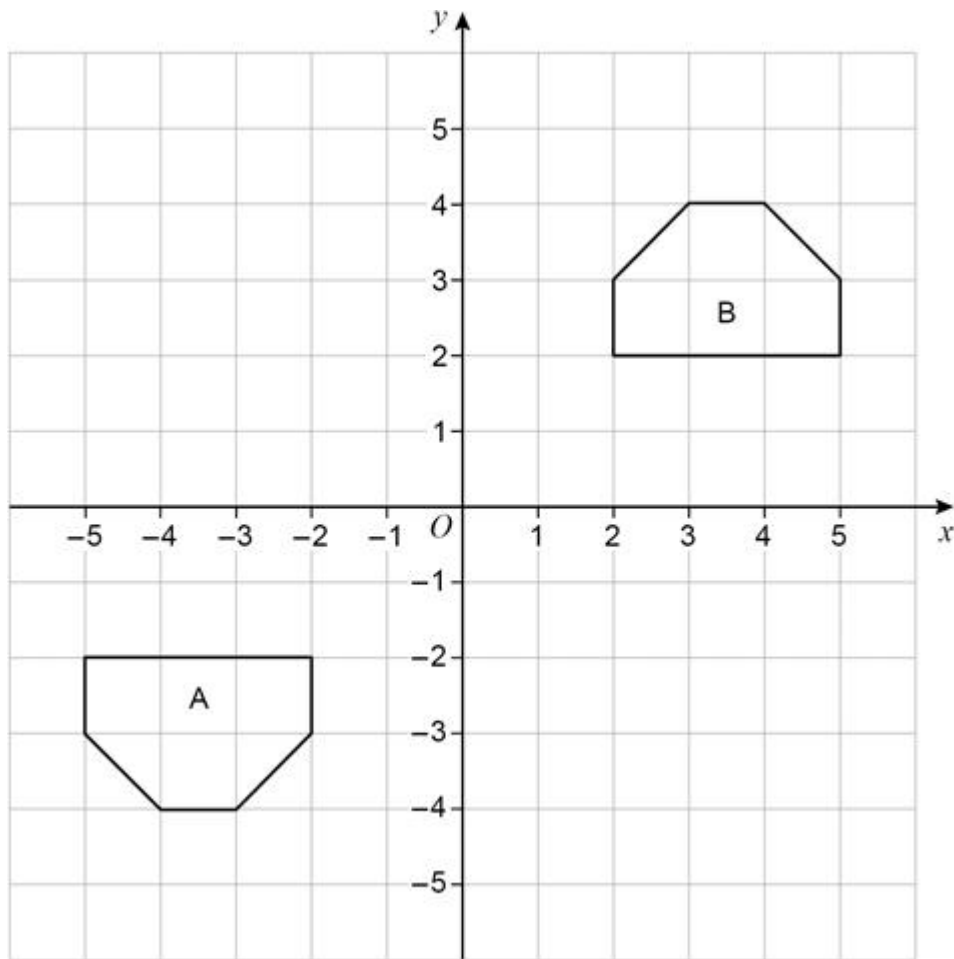A cube has edge length 0.9 metres.



0.9 m

Work out the **total** surface area of the cube.

Give your answer in **square centimetres**.

Answer _____ cm²

**(Total 3 marks)**

**Q41.**

Describe fully the **single** transformation that maps shape A to shape B.



_____

_____

_____

_____

**(Total 3 marks)**

**Turn over ▶**

**Q42.**

Here are the salaries, in £, of the 6 workers in a company.

18 300     20 700     21 500     21 500     21 500     99 000

(a)   Work out the mean salary.

_____

_____

_____

_____

Answer £ _____

**(2)**

(b)   Why is the mean **not** the best average to represent the salaries?
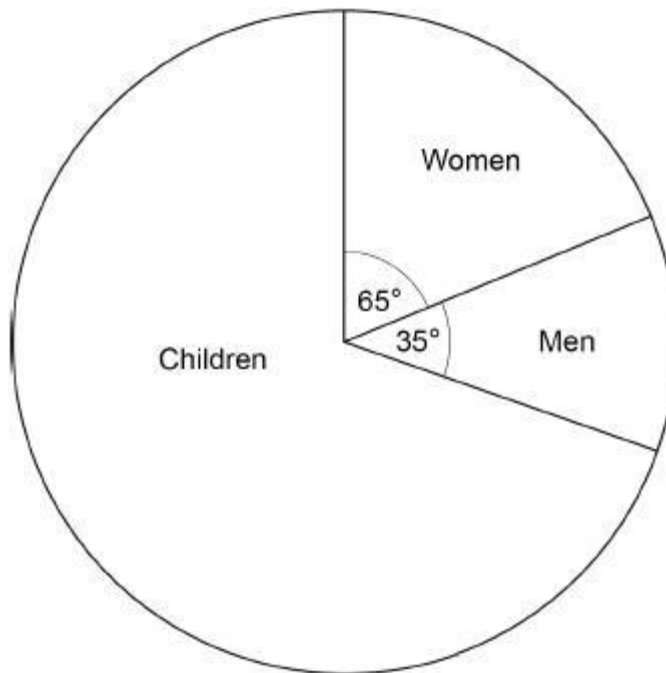
_____

_____

_____

**(1)**
**(Total 3 marks)**

## Q43.

The pie chart shows information about people at a theme park.

Not drawn accurately



There were 450 **more** women than men.

Work out the number of children.

_____

_____

_____

_____

_____

_____

Answer _____

**(Total 3 marks)**

**Turn over ▶**
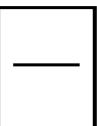
**Q44.**

(a) Rearrange     $m = p + 2$     to make $p$ the subject.

Answer _____

**(1)**

(b) Simplify     $5x^2 - x^2$

Answer _____

**(1)**

**(Total 2 marks)**

**Q45.**

Tom and Adil are the two runners in a 200-metre race.

Tom completes the race in 24 seconds.

Adil completes the race at an average speed of 28.8 kilometres per hour.

Who wins the race?

You **must** show your working.

Answer _____

**(Total 3 marks)**

**Q46.**

(a) Divide 120 in the ratio 1 : 4

Answer _____ : _____

**(2)**

(b) Write the ratio    7 : 4    in the form    $n$ : 1

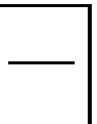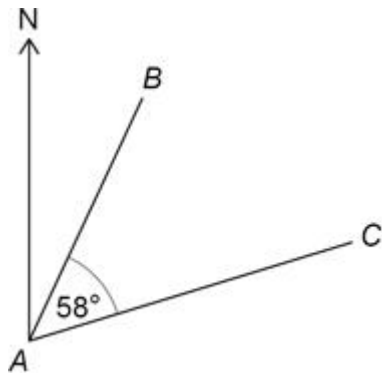Answer _____ : _____

**(1)**

**(Total 3 marks)**

**Q47.**

The length of a table is 110 cm to the nearest cm

Complete the error interval.

_____ cm ≤ length < _____ cm

**(Total 2 marks)**

**Turn over ▶**

**Q48.**

Not drawn
accurately

The 3-figure bearing of *B* from *A* is 021°

Work out the 3-figure bearing of *C* from *A*.

_____

_____

_____

Answer _____ °

**(Total 2 marks)**

**Q49.**

Using ruler and compasses, show the region inside the grid that is
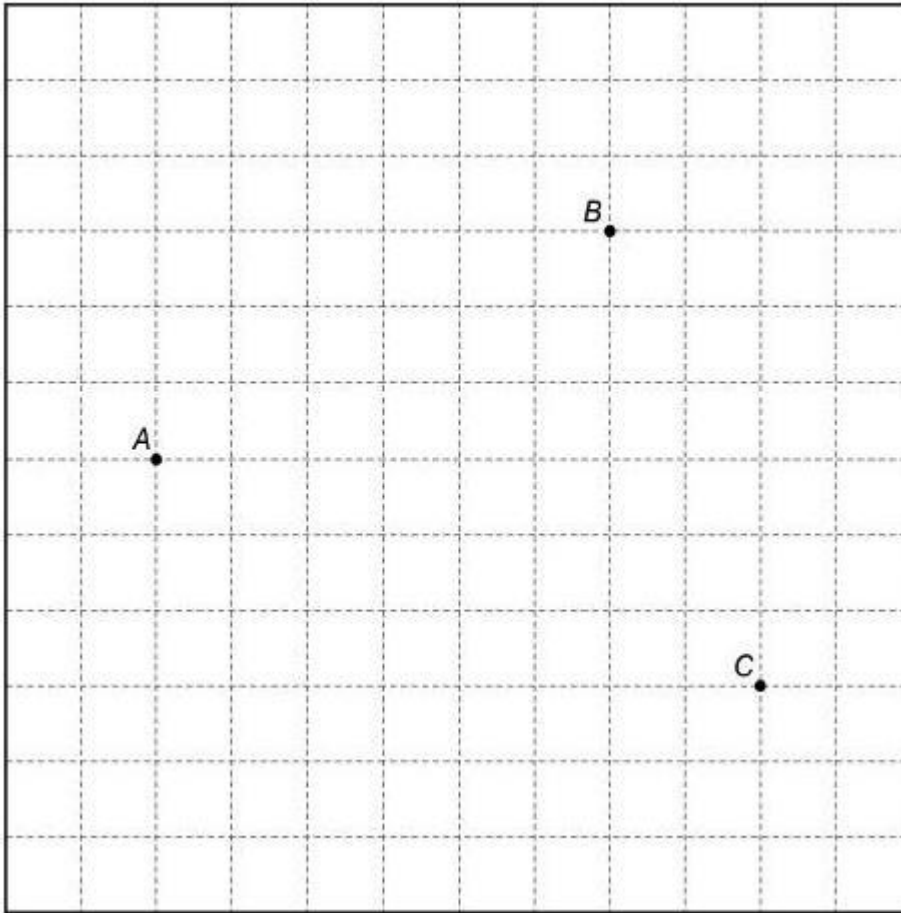
less than 4 cm from *A*

and

nearer to *B* than to *C*.

Label the region R.

Show all your construction lines.



**(Total 3 marks)**

**Turn over ▶**

**Q50.**

A forest has 6500 trees.

The trees are beech or maple.

number of beech : number of maple = 1.6 : 1

(a)     What fraction of the trees are beech?

_____

_____

_____

_____

Answer _____

**(2)**

(b)     Write   number of beech : number of maple   in the form   $1 : n$

Answer _____ : _____

**(1)**

**(Total 3 mark**

## END OF QUESTIONS

There are no questions printed on this page