Please check the examination details below before entering your candidate information

| Candidate surname | Other names |
|---|---|
| | |

Centre Number | Candidate Number

# Pearson Edexcel International GCSE

## Friday 7 November 2025

Morning (Time: 2 hours)

Paper reference **4MA1/2H**

# Mathematics A

**PAPER 2H**
**Higher Tier**



**You must have:** Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

## Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used**.
- You must **NOT** write anything on the formulae page.
  Anything you write on the formulae page will gain NO credit.

## Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

## Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

*Turn over* ▶

P79789A

©2025 Pearson Education Ltd.
M:1/1/1/1/

P 7 9 7 8 9 A 0 1 2 8

Pearson

**International GCSE Mathematics**

**Formulae sheet – Higher Tier**

**Arithmetic series**

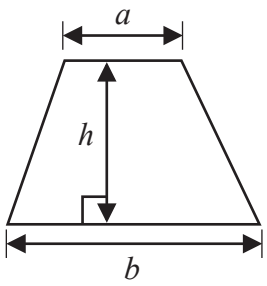
Sum to $n$ terms, $S_n = \frac{n}{2}[2a + (n-1)d]$

**The quadratic equation**

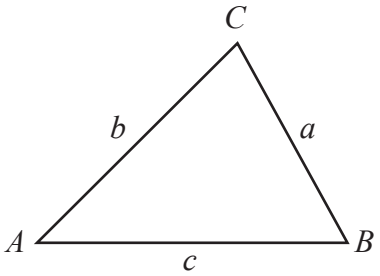
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

**Area of trapezium** $= \frac{1}{2}(a+b)h$




**Trigonometry**




**In any triangle** ***ABC***

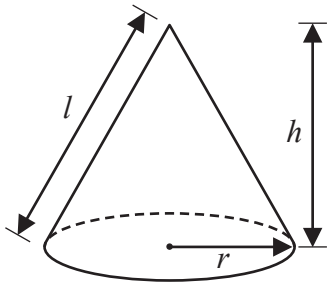
**Sine Rule** $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

**Cosine Rule** $a^2 = b^2 + c^2 - 2bc\cos A$

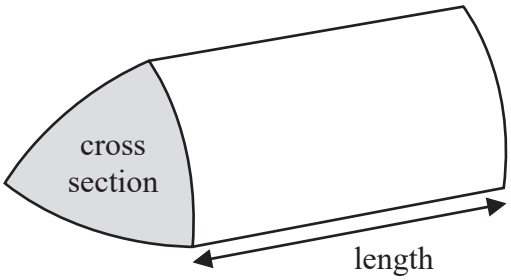
**Area of triangle** $= \frac{1}{2}ab\sin C$

**Volume of cone** $= \frac{1}{3}\pi r^2 h$

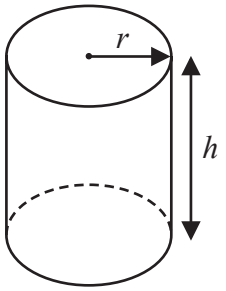
**Curved surface area of cone** $= \pi rl$




**Volume of prism**
= area of cross section × length

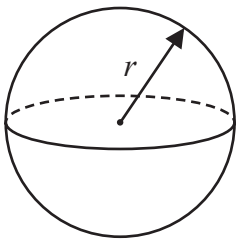



**Volume of cylinder** $= \pi r^2 h$
**Curved surface area of cylinder** $= 2\pi rh$




**Volume of sphere** $= \frac{4}{3}\pi r^3$

**Surface area of sphere** $= 4\pi r^2$




DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**Answer ALL TWENTY SIX questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

**1** The point $P$ has coordinates (3, 4)
The point $Q$ has coordinates (9, 16)

$M$ is the midpoint of the line $PQ$

Find the coordinates of $M$

(..... , .....)

**(Total for Question 1 is 2 marks)**

**2** Solve the simultaneous equations

$$5x + y = 11$$
$$3x - y = 9$$

Show clear algebraic working.

$x =$ .....

$y =$ .....

**(Total for Question 2 is 3 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**3** A box contains only

9 red bricks
43 blue bricks
and some yellow bricks

$\frac{7}{20}$ of the bricks are yellow bricks.

Each brick weighs 35 grams.

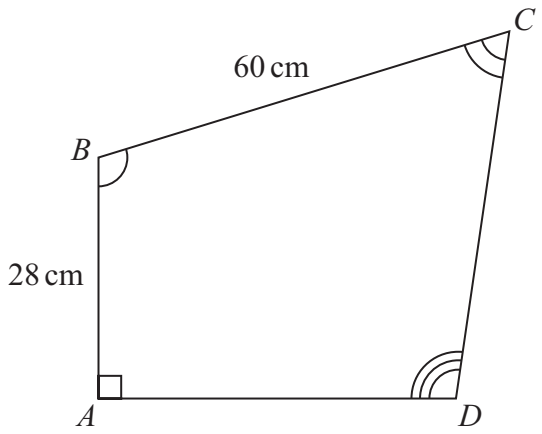
Work out the total weight of the yellow bricks.

..... grams

**(Total for Question 3 is 4 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**4** Here are three similar quadrilaterals.



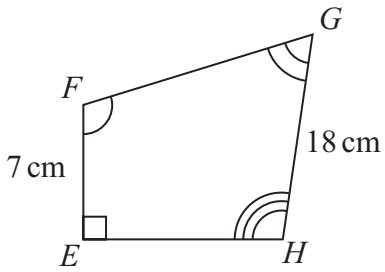
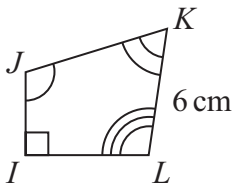




Diagram **NOT** accurately drawn




Work out the length of *JK*

..... cm

**(Total for Question 4 is 3 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**5** Otis sells ice creams.

On Friday, Otis sells 75 ice creams.
On Saturday, Otis sells 87 ice creams.

(a) Work out the percentage increase in the number of ice creams Otis sells from Friday to Saturday.

..... %

**(3)**

Claudia buys an ice cream machine for 960 Swiss francs.

The value of the ice cream machine depreciates by 20% each year.

(b) Work out the value of the ice cream machine at the end of 3 years.

..... Swiss francs

**(3)**

**(Total for Question 5 is 6 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**6** A large circle with centre $O$ contains 3 identical small circles.
Each circle touches two other circles.

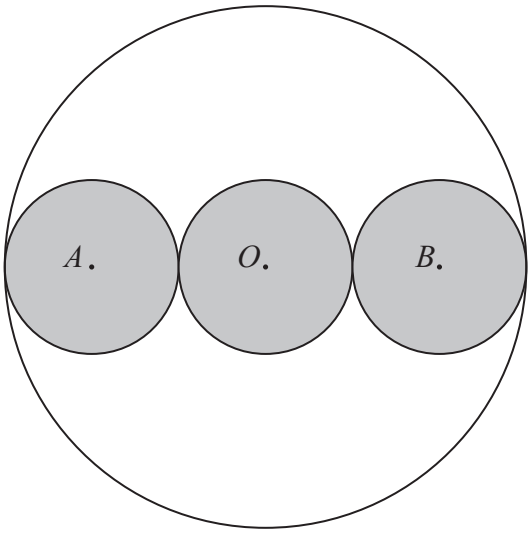



Diagram **NOT** accurately drawn

$A$, $O$ and $B$ are the centres of the small circles.
$AOB$ is a straight line.

The circumference of the large circle is 160 cm

Work out the area of one small circle.
Give your answer correct to 3 significant figures.

..... $cm^2$

**(Total for Question 6 is 5 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**7** (i) Factorise $x^2 + 2x - 48$

.....

**(2)**

(ii) Hence, solve $x^2 + 2x - 48 = 0$

.....

**(1)**

**(Total for Question 7 is 3 marks)**

**8** (a) Write $5.76 \times 10^4$ as an ordinary number.

.....

**(1)**

(b) Work out $\dfrac{3 \times 10^5 + 8 \times 10^3}{4 \times 10^{-2}}$

Give your answer in standard form.

.....

**(2)**

**(Total for Question 8 is 3 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**9** Mark has three bags, bag A, bag B and bag C

Bag A contains 120 counters.
The probability of taking at random a red counter from bag A is 0.45

Bag B contains 80 counters.
The probability of taking at random a red counter from bag B is 0.3

Bag C is empty.

Mark puts all the counters from bag A and bag B into bag C

Mark takes at random a counter from bag C

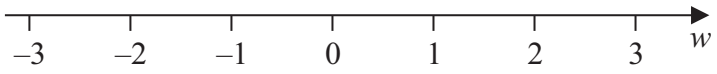
Work out the probability that he takes a red counter.

.....

**(Total for Question 9 is 3 marks)**

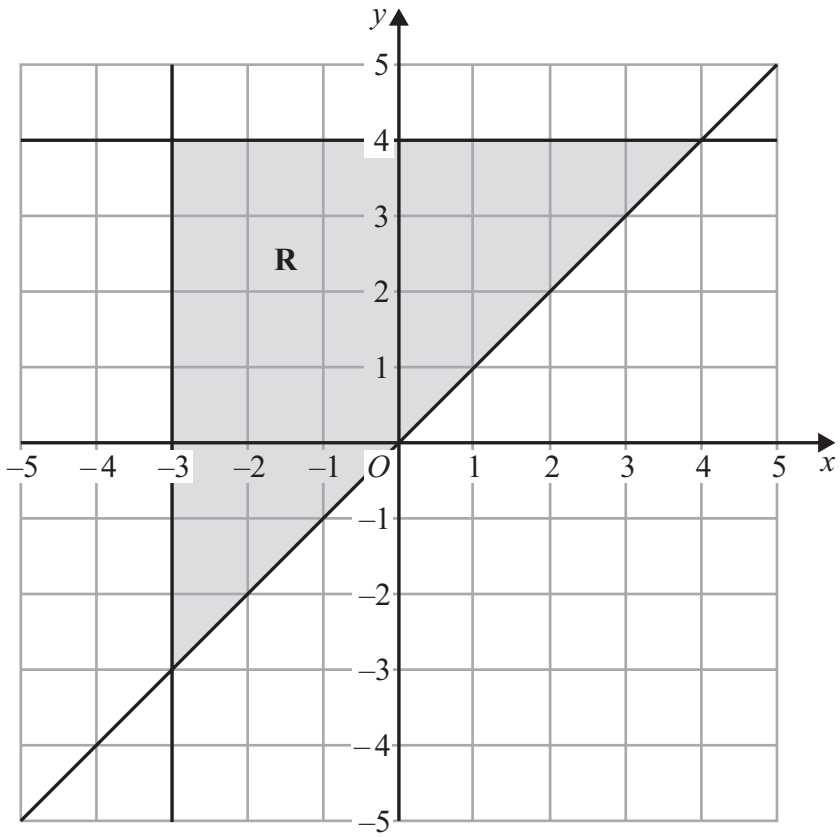
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**10** (a) On the number line, represent the inequality $w < 1$




**(1)**

The region **R**, shown shaded in the diagram, is bounded by three straight lines.




(b) Write down the three inequalities that define the region **R**

.....

.....

.....

**(3)**

**(Total for Question 10 is 4 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**11** The diagram shows a right-angled triangle $ABC$

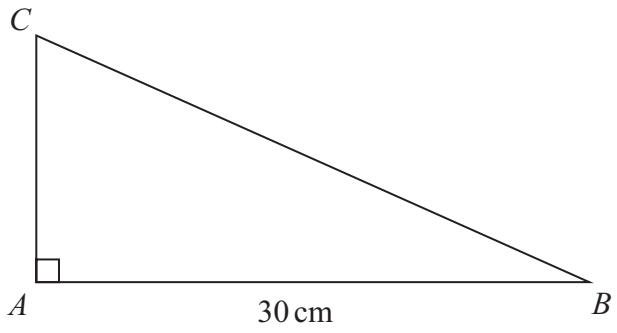



Diagram **NOT** accurately drawn

Area of triangle $ABC = 240\,\text{cm}^2$

Work out the perimeter of triangle $ABC$

..... cm

**(Total for Question 11 is 4 marks)**

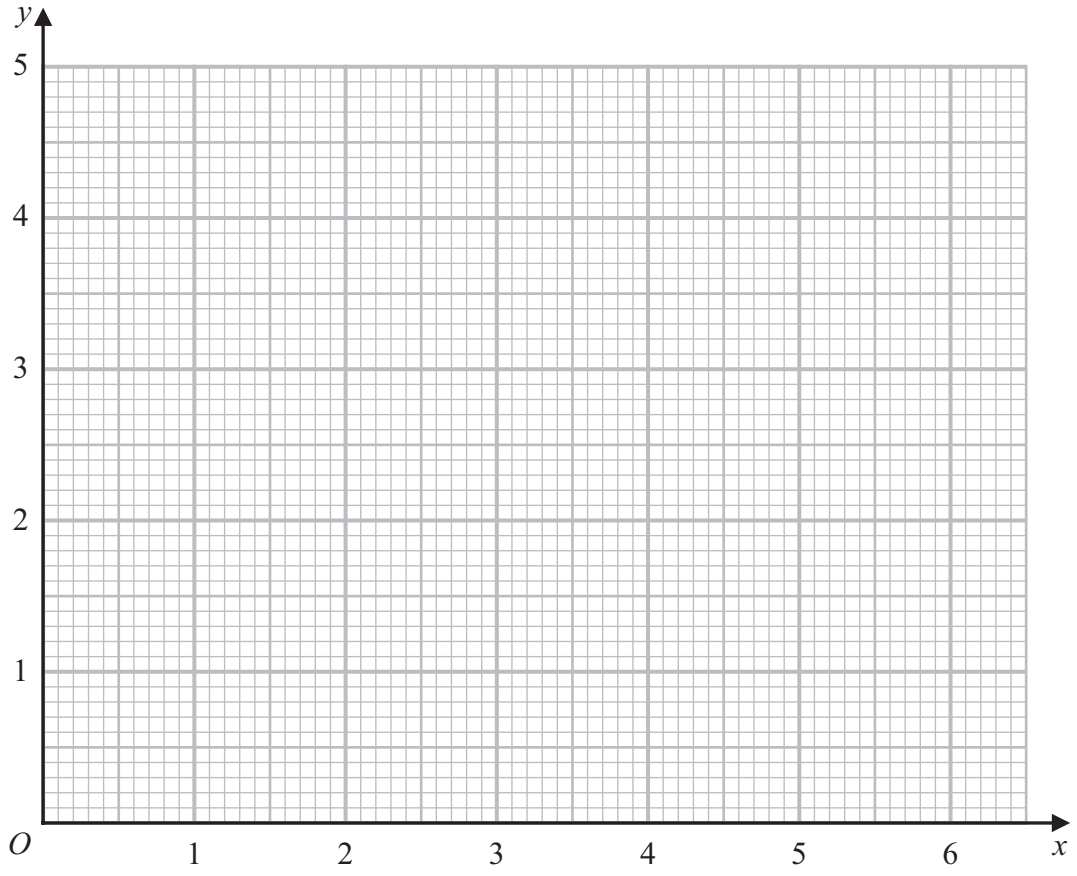
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**12** (a) Complete the table of values for $y = \frac{1}{2}\left(x + \frac{4}{x}\right)$

| $x$ | 0.5 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| $y$ | 4.25 | | | 2.17 | 2.5 | 2.9 | 3.33 |

**(1)**

(b) Draw the graph of $y = \frac{1}{2}\left(x + \frac{4}{x}\right)$ for $0.5 \leqslant x \leqslant 6$




**(2)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

(c) By drawing a suitable line on the grid, find estimates for the solutions of the equation $x + \frac{4}{x} = 6$

Give your answers correct to one decimal place.

.....

**(2)**

**(Total for Question 12 is 5 marks)**

**13** (a) Simplify fully $\left(\frac{125x^6}{y^{15}}\right)^{\frac{2}{3}}$

.....

**(2)**

Given that $4^n = \frac{4^m}{64^p}$

(b) Express $n$ in terms of $m$ and $p$

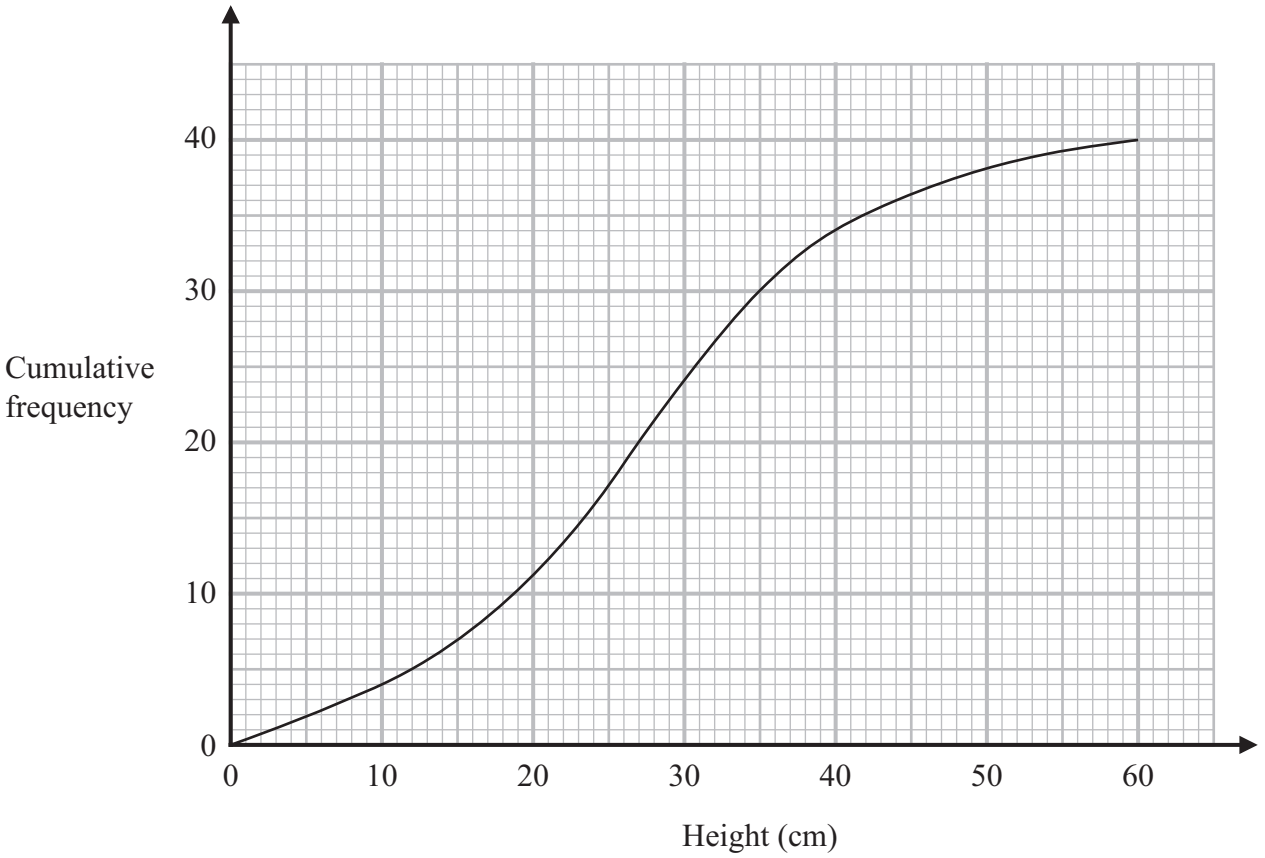
$n =$ .....

**(2)**

**(Total for Question 13 is 4 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**14** The cumulative frequency graph shows information about the heights of 40 plants that Greta has grown.




(a) Use the graph to find an estimate for the median height.

..... cm

**(1)**

(b) Use the graph to find an estimate for the interquartile range of the heights.

..... cm

**(2)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

Plants with a height greater than 40 cm are premium plants.
Greta sells all the premium plants for 30 euros each.

(c) Work out the total amount of money Greta receives for the premium plants.

..... euros

**(2)**

**(Total for Question 14 is 5 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**15** $A$, $B$, $C$ and $D$ are points on a circle with centre $O$

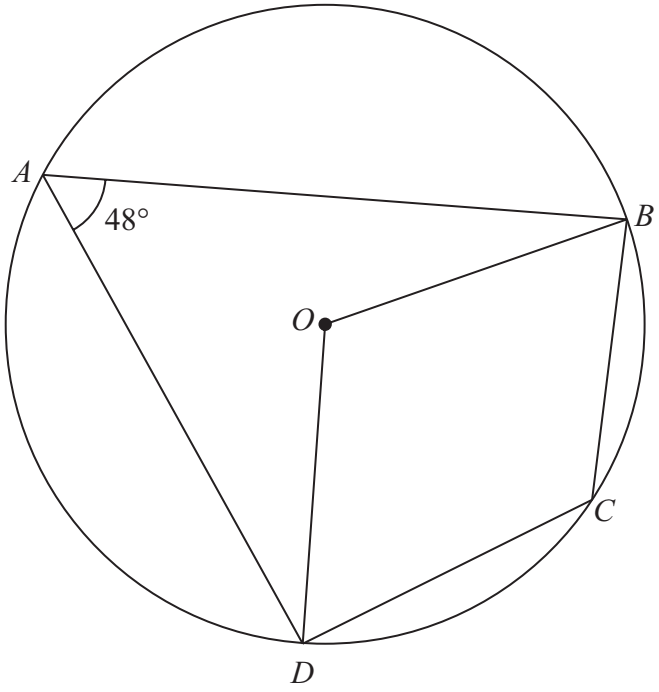



Diagram **NOT** accurately drawn

Angle $DAB = 48°$

(a) (i) Work out the size of the obtuse angle $DOB$

.....°

**(1)**

(ii) Give a reason for your answer.

.....

.....

**(1)**

(b) (i) Work out the size of angle $BCD$

.....°

**(1)**

(ii) Give a reason for your answer.

.....

.....

**(1)**

**(Total for Question 15 is 4 marks)**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**16** Use algebra to show that $0.3\dot{7}\dot{8} = \frac{25}{66}$

**(Total for Question 16 is 2 marks)**

**17** $T$ is inversely proportional to $\sqrt{m}$

$T = 15$ when $m = 36$

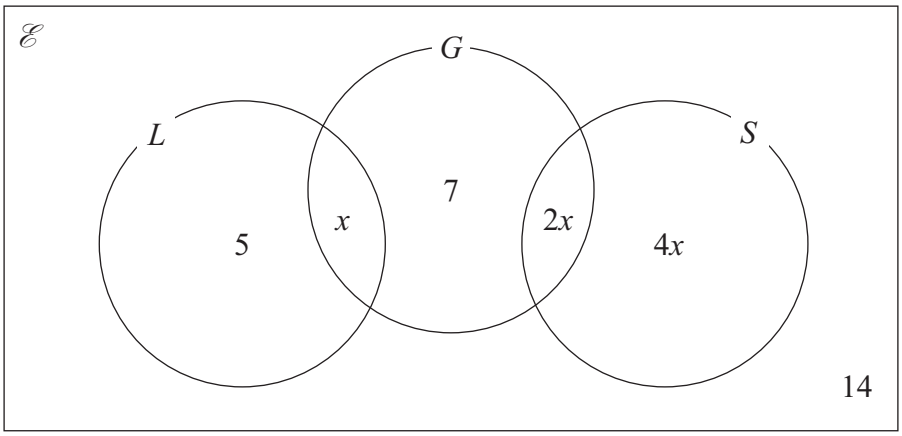
Find a formula for $T$ in terms of $m$

**(Total for Question 17 is 3 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**18** Bianca asked 40 students which of the languages Latin ($L$), Greek ($G$) and Sanskrit ($S$) they study.

The Venn diagram gives some information about her results.
It shows the number of students in each subset.




One of these students is selected at random.
Work out the probability that this student studies Latin or Sanskrit.

.....

**(Total for Question 18 is 3 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**19** The functions f and g are such that

$$f(x) = 3x - 2 \qquad g(x) = \frac{x}{2x - 1}$$

(a) Find g(3)

.....

**(1)**

(b) Find gf($x$)
Give your answer in its simplest form.

gf($x$) = .....

**(2)**

**(Total for Question 19 is 3 marks)**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**20** Here is a quadratic equation.

$$ax^2 + 4x + c = 0$$

The solutions of this equation are given by $x = \dfrac{-4 \pm 2\sqrt{39}}{10}$

Find the value of $a$ and the value of $c$
Show your working clearly.

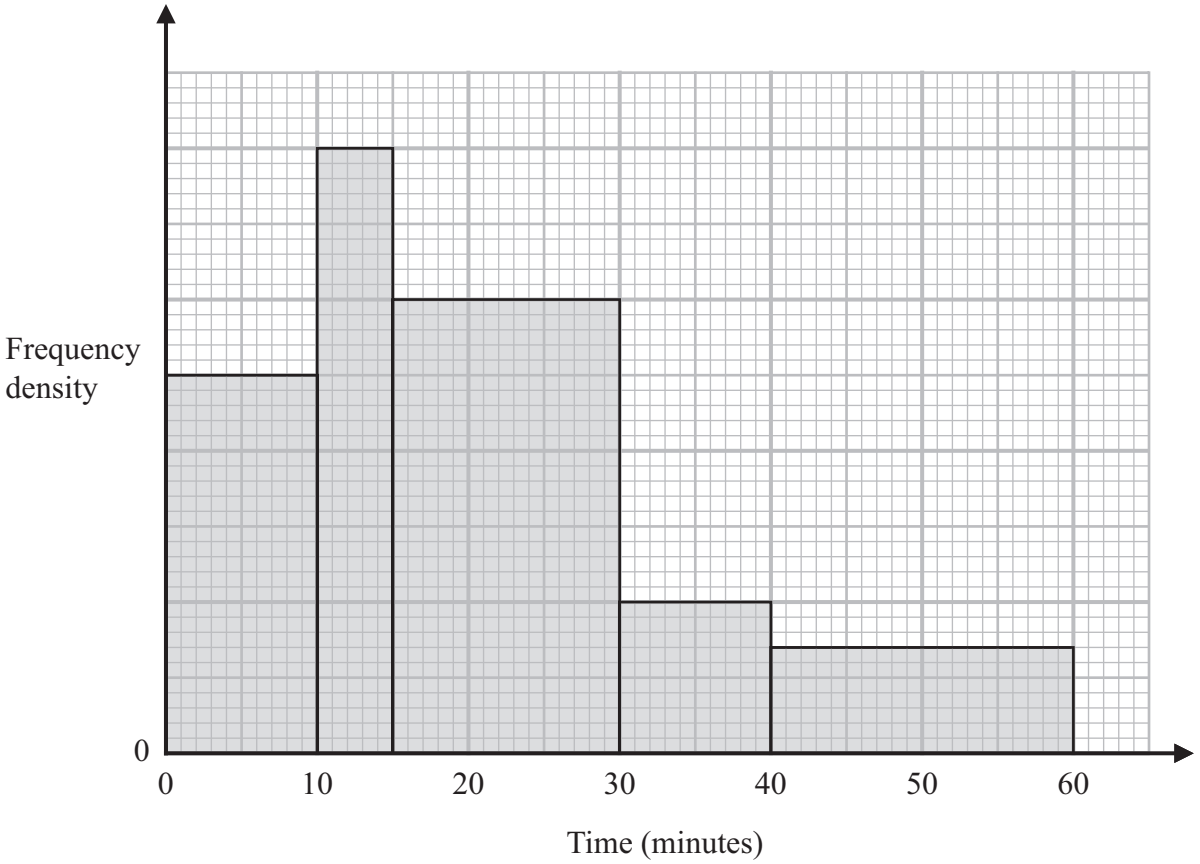
$a =$ .....

$c =$ .....

**(Total for Question 20 is 3 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**21** The histogram shows information about the times, in minutes, that some trains arrived late at a station one day.




20 of these trains arrived between 10 minutes late and 15 minutes late.

No trains arrived more than 60 minutes late.

Work out an estimate for the number of these trains that arrived at least 25 minutes late.

.....

**(Total for Question 21 is 3 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**22** Curve **C** has equation $y = x^3 - 16x + 7$

At two points on **C**, the gradient is 11
The tangents to **C** at these two points have equations of the form $y = ax + b$

Work out the two possible values of $b$
Show clear algebraic working.

.....

**(Total for Question 22 is 6 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**23** Shape **P** is similar to shape **Q**

The table shows some information about shape **P** and shape **Q**

| | **Surface area ($cm^2$)** | **Volume ($cm^3$)** |
|---|---|---|
| Shape **P** | 200 | 672 |
| Shape **Q** | 450 | |

Work out the volume of shape **Q**

..... $cm^3$

**(Total for Question 23 is 3 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**24** $D = \dfrac{n}{p - q}$

$n$ = 10.3 correct to 1 decimal place
$p$ = 7.24 correct to 2 decimal places
$q$ = 4.39 correct to 2 decimal places

By considering bounds, work out the value of $D$ to a suitable degree of accuracy.
Show your working clearly.

.....

**(Total for Question 24 is 5 marks)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**25** The first term of an arithmetic series is 10
The 20th term of the series is 86

The sum of the first $N$ terms of the series is 5194

Work out the value of $N$
Show your working clearly.

$N =$ .....

**(Total for Question 25 is 5 marks)**

**Turn over for Question 26**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

**26** A solid cone is joined to a solid hemisphere to make the solid shown below.

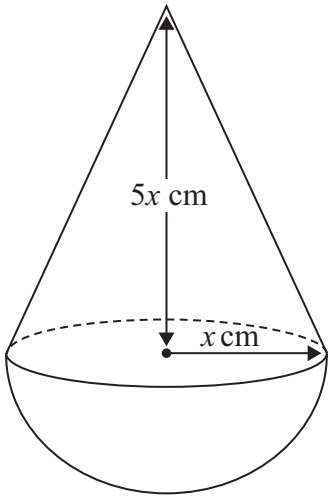



Diagram **NOT** accurately drawn

The cone is made from copper.
The density of copper is $9\,g/cm^3$

The hemisphere is made from a different metal.

The total mass of the solid is $4752\pi$ grams
The total volume of the solid is $504\pi\,cm^3$

Work out the density of the hemisphere.
Show your working clearly.

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

..... g/cm$^3$

**(Total for Question 26 is 6 marks)**

**TOTAL FOR PAPER IS 100 MARKS**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**BLANK PAGE**