Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel International GCSE (9–1)

Wednesday 4 June 2025

Morning (Time: 2 hours)

Paper reference **4WM2H/01R**

Mathematics A (Modular)

UNIT 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 unit 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.

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P 8 1 6 3 7 A 0 1 3 2

Pearson

International GCSE Mathematics

Formulae sheet – Higher Tier

Arithmetic series

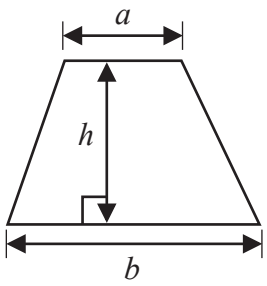
Sum to n terms, $S_n = \frac{n}{2}[2a + (n-1)d]$

The quadratic equation

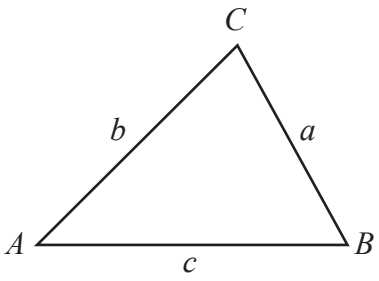
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by:

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

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



Trigonometry



In any triangle ***ABC***

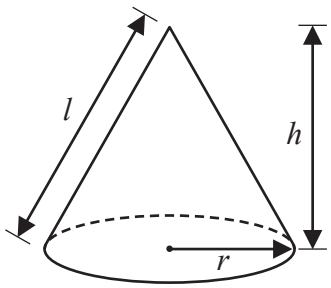
Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

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

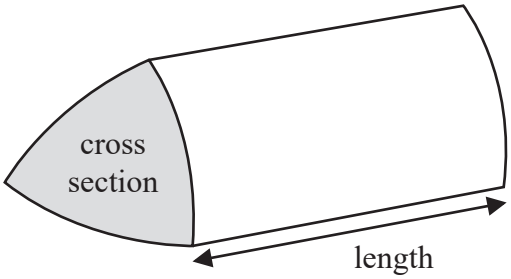
Area of triangle $= \frac{1}{2}ab\sin C$

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

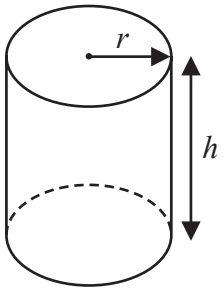
Curved surface area of cone $= \pi rl$



Volume of prism
= area of cross section × length

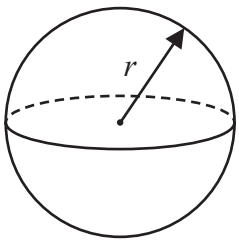


Volume of cylinder $= \pi r^2 h$
Curved surface area of cylinder $= 2\pi rh$



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

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



Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working

1 The table shows information about the weights, in kilograms, of 50 dogs.

Weight (w kg)	Frequency
$4 < w \leqslant 8$	5
$8 < w \leqslant 12$	17
$12 < w \leqslant 16$	15
$16 < w \leqslant 20$	9
$20 < w \leqslant 24$	4

(a) Write down the modal class.

..... kg

(1)

(b) Work out an estimate for the mean weight of the 50 dogs.

..... kg

(4)

(Total for Question 1 is 5 marks)

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2 Write 1400 as a product of powers of its prime factors.
Show your working clearly.

.....

(Total for Question 2 is 3 marks)

3 Solve the simultaneous equations

$$3x + 2y = 10$$
$$3x - 4y = 16$$

Show clear algebraic working.

$x =$ .....

$y =$ .....

(Total for Question 3 is 3 marks)

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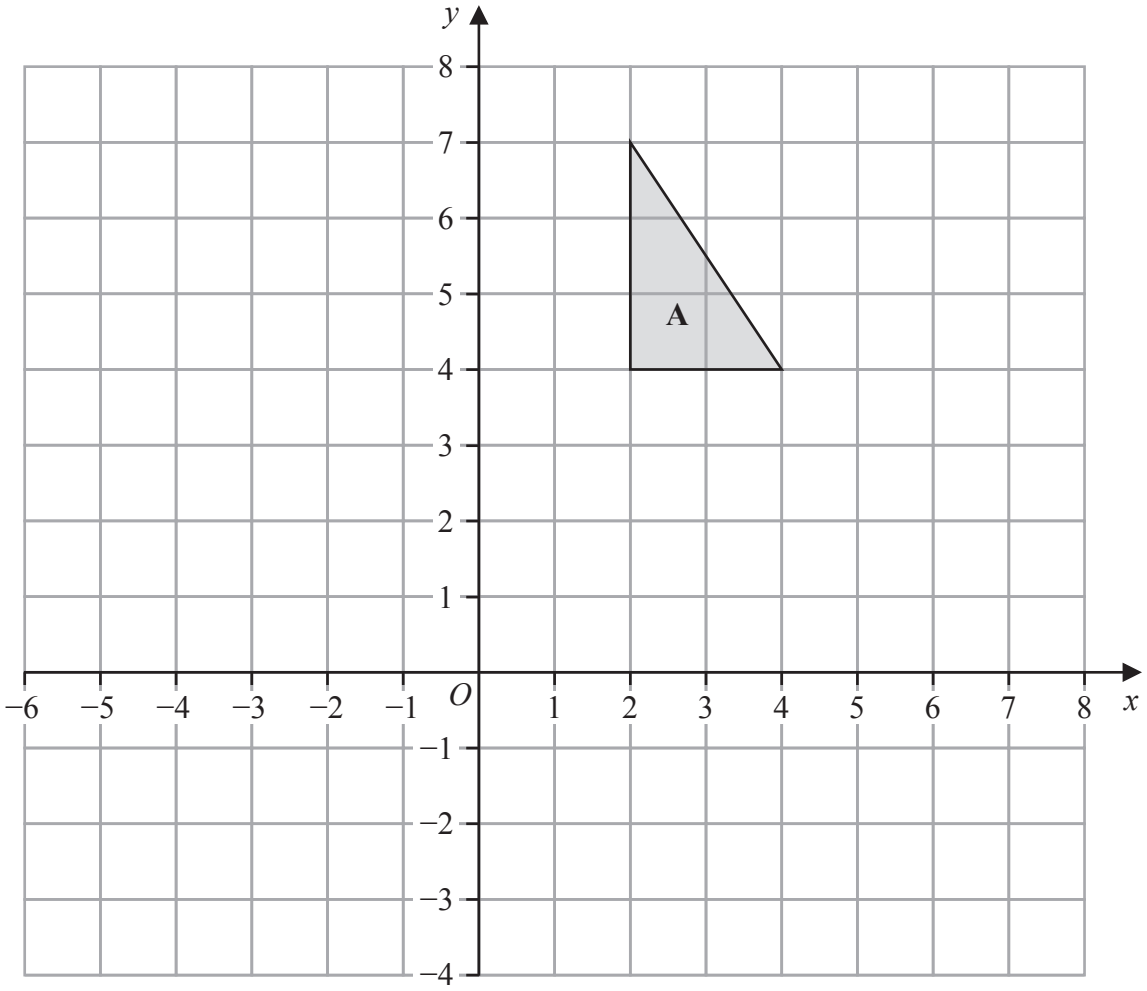
TURN OVER FOR QUESTION 4

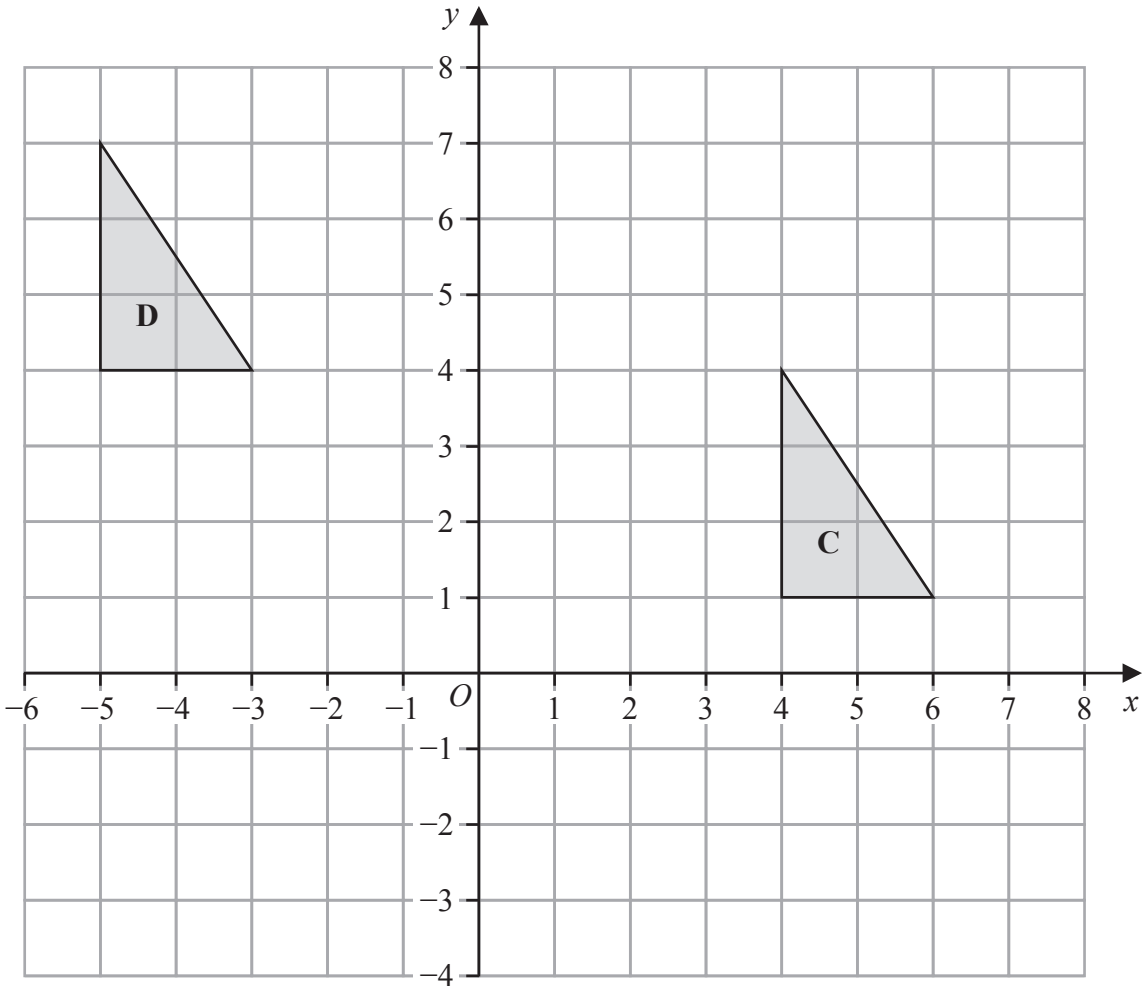
4



(a) On the grid above, rotate triangle **A** 90° anticlockwise about $(1, 2)$

Label your triangle **B**

(2)



(b) Describe fully the single transformation that maps triangle **C** onto triangle **D**

.....

.....

(2)

(Total for Question 4 is 4 marks)

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5 Joshua is going to cover a floor with tiles for a customer.
The area of the floor is $45\,m^2$

Joshua buys one box of tiles for each $1.5\,m^2$ of floor area.
Each box of tiles costs £64

Joshua also buys 5 bags of tile adhesive.
Each bag of tile adhesive costs £12

Joshua charges the customer £3000

Work out his percentage profit.
Give your answer correct to one decimal place.

.....%

(Total for Question 5 is 5 marks)

6 (a) Write 82 000 000 in standard form.

.....

(1)

(b) Write 5.8×10^{-6} as an ordinary number.

.....

(1)

(c) Write 160×10^{300} in standard form.

.....

(1)

(Total for Question 6 is 3 marks)

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7 The mean of 7 numbers is 60

The mean of 3 of the numbers is 46

Work out the mean of the other 4 numbers.

.....

(Total for Question 7 is 3 marks)

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8 In a sale, normal prices are reduced by 15%

The sale price of a dishwasher is 612 Swiss francs.

Work out the normal price of the dishwasher.

..... Swiss francs

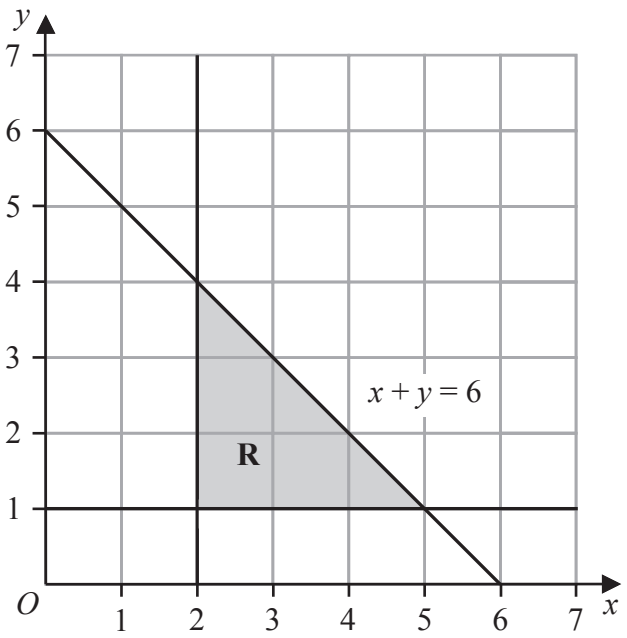
(Total for Question 8 is 3 marks)

9 (a) Solve the inequality $3x - 22 > 8x - 40$
Show clear algebraic working.

.....

(3)

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**

.....

.....

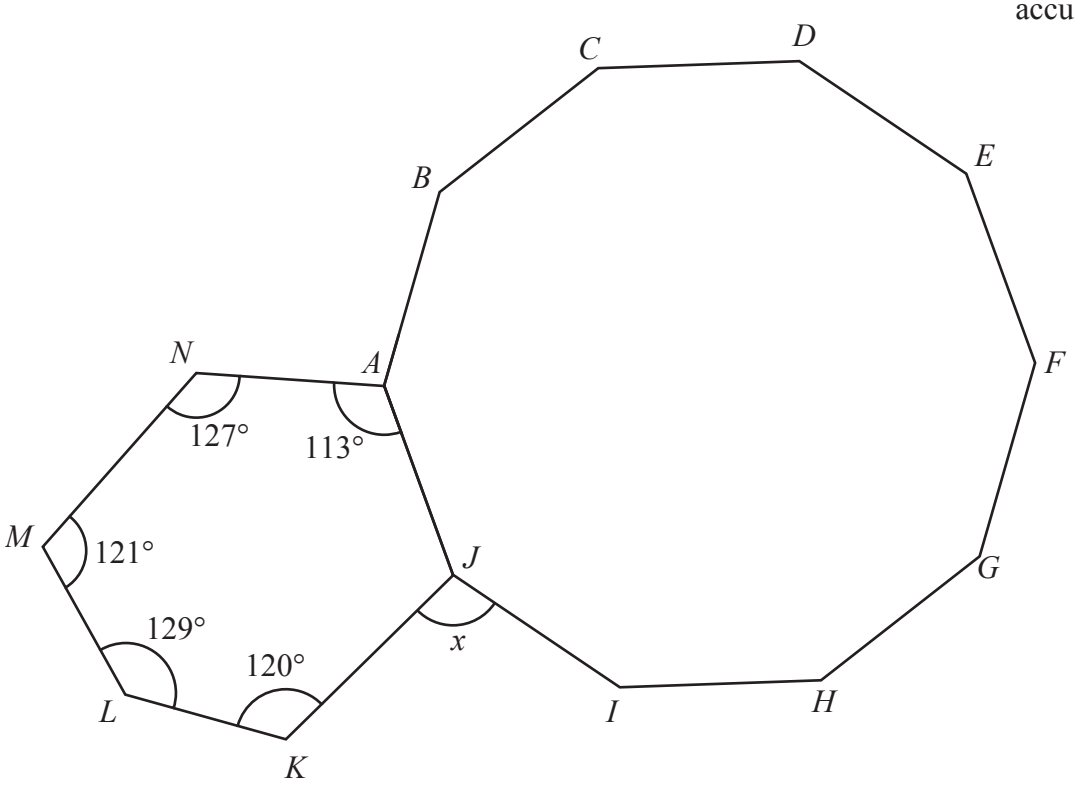
.....

(3)

(Total for Question 9 is 6 marks)

10 The diagram shows a regular 10-sided polygon *ABCDEFGHIJ* and a hexagon *AJKLMN*

Diagram **NOT** accurately drawn

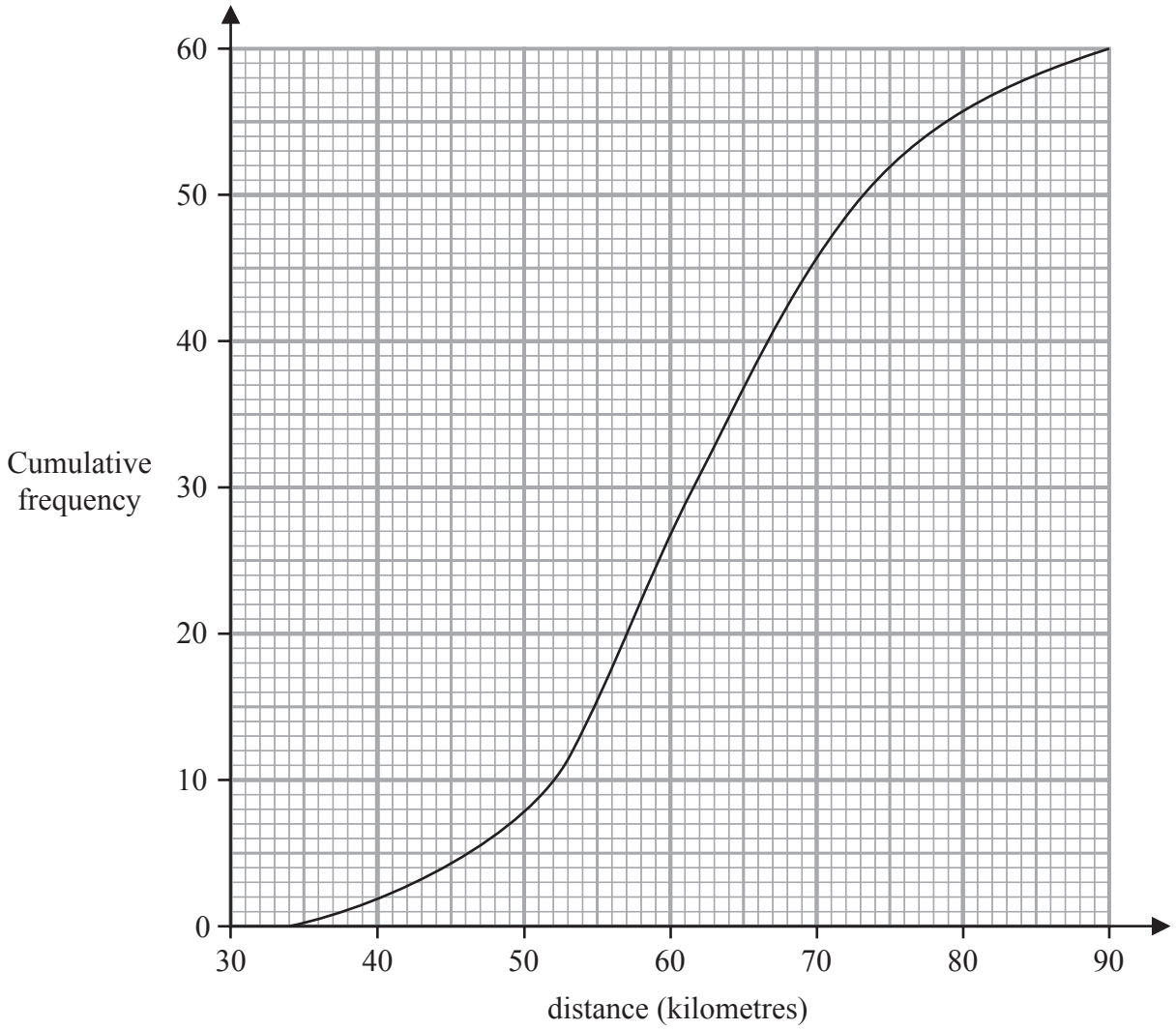


Work out the size of the angle marked x
Show your working clearly.

.....°

(Total for Question 10 is 5 marks)

11 The cumulative frequency graph shows information about the distance, in kilometres, Ehrick drives each day for 60 days.



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

..... kilometres
(1)

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

..... kilometres
(2)

(c) Work out the percentage of days that Ehrick drives for more than 75 kilometres.
Give your answer correct to one decimal place.
Show your working clearly.

..... %

(3)

Tomas and Alison record the number of kilometres that they drive each day for 60 days.
The table gives information about their results.

	Interquartile range
Tomas	28 kilometres
Alison	15 kilometres

(d) Which of Tomas or Alison is more consistent in the number of kilometres that they drive.
Give a reason for your answer.

.....

.....

(1)

(Total for Question 11 is 7 marks)

12 Osman buys a car for $16 000

The car depreciates at a rate of 12% each year for the first 2 years.
In the third year, the car depreciates at a rate of x%

At the end of 3 years, the value of the car is $11 461.12

Work out the value of x

.....

(Total for Question 12 is 3 marks)

13 The distance from Earth to Andromeda Galaxy is 1.6×10^{11} astronomical units.

- 1 astronomical unit $= 1.5 \times 10^{8}$ km
- 1 light year $= 9.5 \times 10^{12}$ km

Work out the distance, in light years, from Earth to Andromeda Galaxy.
Give your answer in standard form, correct to 2 significant figures.

..... light years

(Total for Question 13 is 3 marks)

14 Make k the subject of $p = \dfrac{8k^2 + 5}{7 - 3k^2}$

.....

(Total for Question 14 is 4 marks)

15 A, B and C are points on a circle, centre O

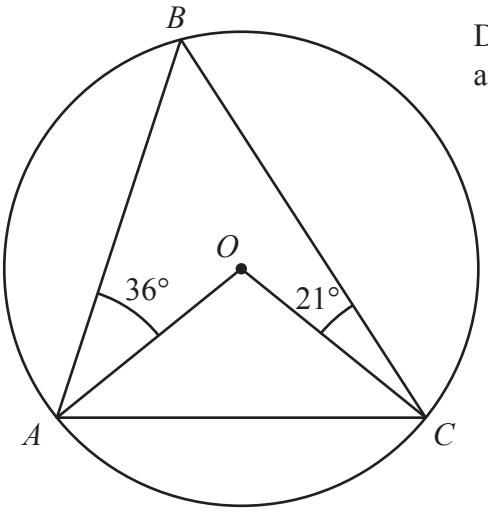


Diagram **NOT** accurately drawn

Angle $BAO = 36°$
Angle $BCO = 21°$

Work out the size of angle ACO

.....°

(Total for Question 15 is 3 marks)

16 OAB is a triangle.

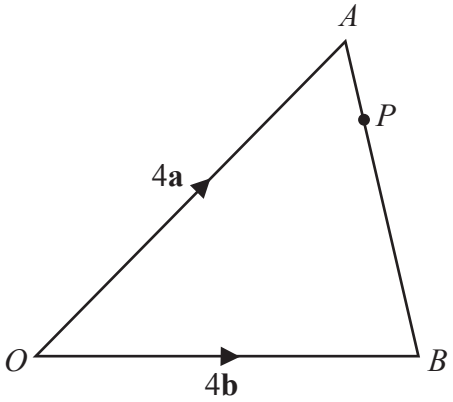


Diagram **NOT** accurately drawn

$\overrightarrow{OA} = 4\mathbf{a}$

$\overrightarrow{OB} = 4\mathbf{b}$

P is the point on AB such that $AP : PB = 1 : 3$

(a) Write down $\overrightarrow{AB}$ in terms of **a** and **b**

.....

(1)

(b) Express $\overrightarrow{OP}$ in terms of **a** and **b**
Give your answer in its simplest form.

.....

(2)

(Total for Question 16 is 3 marks)

17 The function g is defined as

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

(a) State the value of x that cannot be included in any domain of g

.....

(1)

(b) Express the inverse function g^{-1} in the form $g^{-1}(x) = \ldots$

$g^{-1}(x) =$ .....

(3)

(Total for Question 17 is 4 marks)

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18

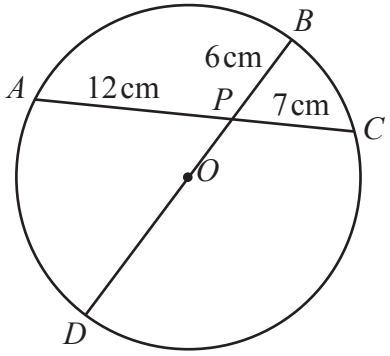


Diagram **NOT** accurately drawn

A, B, C and D are points on a circle, centre O

DB is a diameter of the circle.
AC and DB intersect at the point P

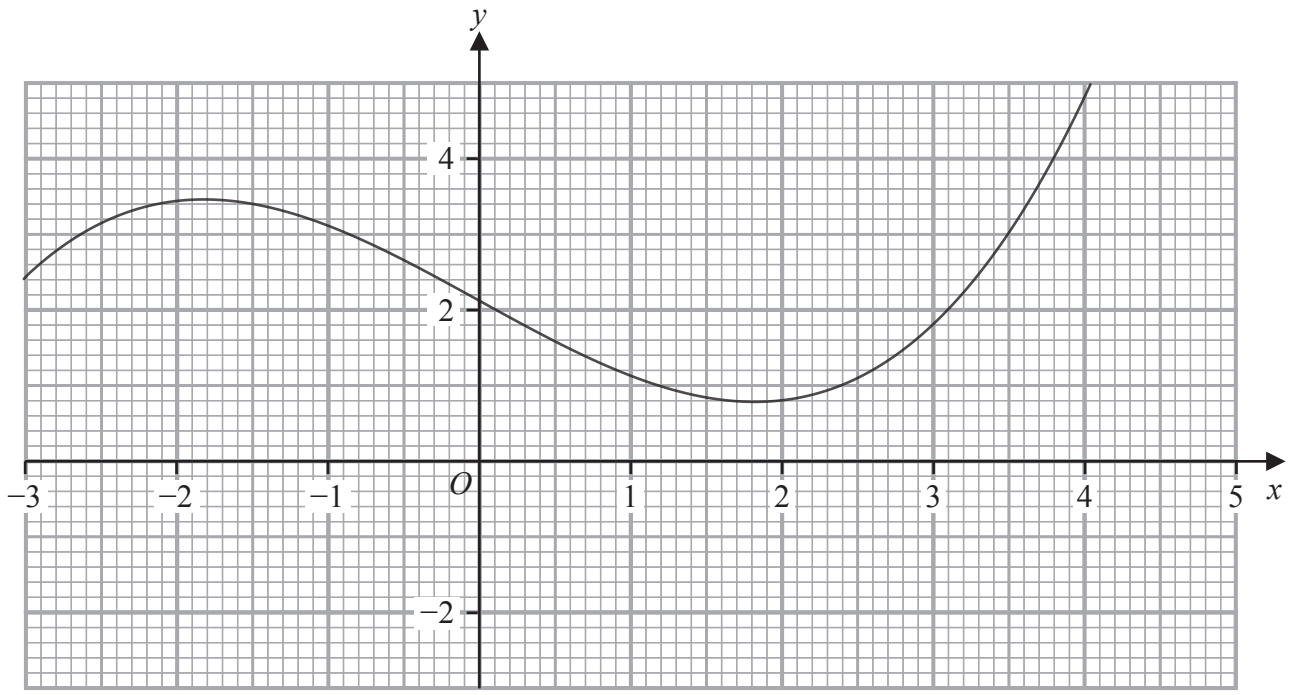
$AP = 12\,\text{cm}$ $PC = 7\,\text{cm}$ $PB = 6\,\text{cm}$

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

..... cm^2

(Total for Question 18 is 3 marks)

19 The diagram shows the graph of $y = f(x)$



Find an estimate for the gradient of the graph at the point where $x = 3$
Show your working clearly.

.....

(Total for Question 19 is 3 marks)

20 Solve the inequality $2x^2 - 7x - 15 > 0$

Show clear algebraic working.

.....

(Total for Question 20 is 3 marks)

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21 The diagram shows a solid cuboid.

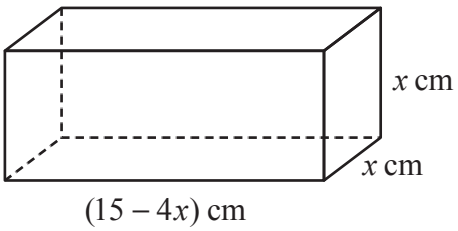


Diagram **NOT** accurately drawn

The volume of the cuboid is V cm^3

Find the maximum value of V

.....

(Total for Question 21 is 5 marks)

22 Solve the simultaneous equations

$$y^2 + 5y + x^2 = 12$$

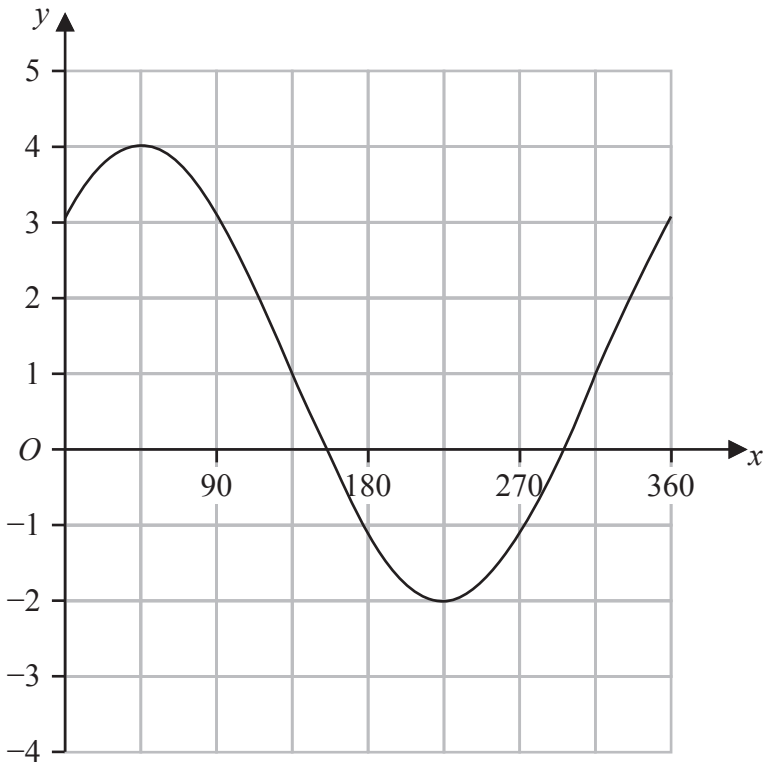
$$x = y + 5$$

Show clear algebraic working.

.....

(Total for Question 22 is 5 marks)

23 The graph of $y = a\sin(x + b)^\circ + c$ for $0 \leqslant x \leqslant 360$ is drawn on the grid below.



Find a suitable value for a, for b and for c

$a =$ .....

$b =$ .....

$c =$ .....

(Total for Question 23 is 3 marks)

24 An arithmetic series P has first term a and common difference d

The sum of the first 40 terms of P is 2070

An arithmetic series Q has first term $2a$ and common difference $3d$

The 25th term of Q is 186

Work out the sum of the first 40 terms of Q
Show clear algebraic working.

.....

(Total for Question 24 is 6 marks)

25 The diagram shows a solid hemisphere, H

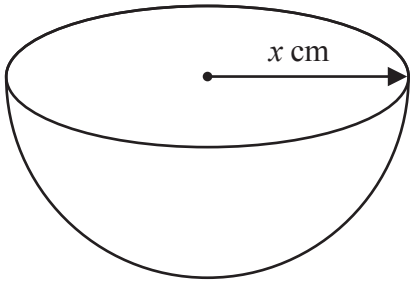


Diagram **NOT** accurately drawn

The radius of H is x cm
The volume of H is 6174π cm^3

A bowl is made by removing a solid hemisphere from H such that the uniform thickness of the bowl is 2 cm

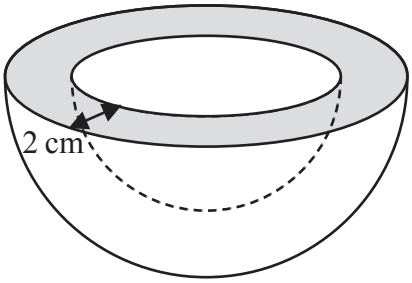


Diagram **NOT** accurately drawn

Work out the **total** surface area of the bowl.
Give your answer in terms of π

..... cm^2

(Total for Question 25 is 5 marks)

TOTAL FOR UNIT IS 100 MARKS

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