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)

## Friday 7 November 2025

Morning (Time: 2 hours)

Paper reference **4WM2H/01**

# 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.

*Turn over* ▶

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P 8 1 6 4 5 A 0 1 2 8

Pearson

**International GCSE Mathematics**

**Formulae sheet – Higher Tier**

**Arithmetic series**

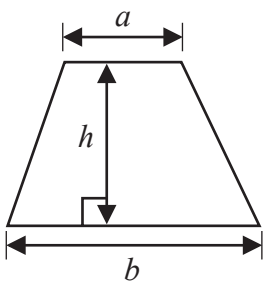
Sum to $n$ terms, $S_n = \frac{n}{2}[2a + (n-1)d]$

**The quadratic equation**

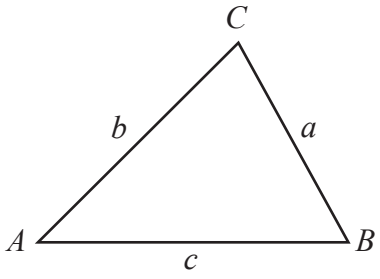
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by:

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

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




**Trigonometry**




**In any triangle *ABC***

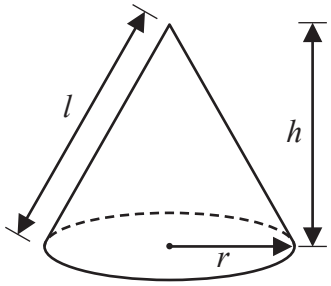
**Sine Rule** $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

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

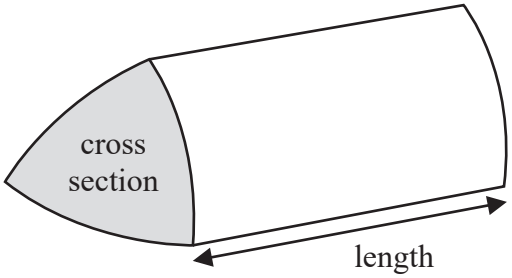
**Area of triangle** $= \frac{1}{2}ab\sin C$

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

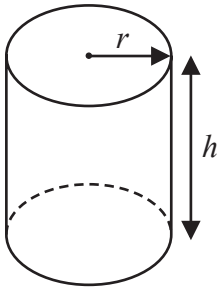
**Curved surface area of cone** $= \pi rl$




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

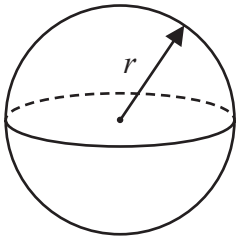



**Volume of cylinder** $= \pi r^2 h$
**Curved surface area of cylinder** $= 2\pi rh$




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

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

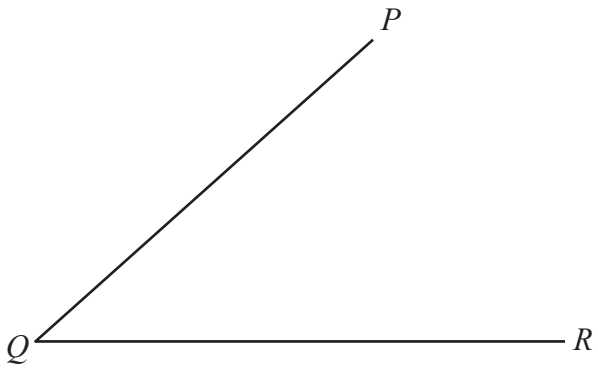


**Answer ALL TWENTY SIX questions.**

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

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

**1** Using ruler and compasses only, construct the bisector of angle *PQR*
You must show all your construction lines.




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

**2** The table gives information about the heights, in cm, of 60 flowers in Abby's garden.

| Height ($h$ cm) | Frequency |
|---|---|
| $0 < h \leqslant 10$ | 17 |
| $10 < h \leqslant 20$ | 9 |
| $20 < h \leqslant 30$ | 16 |
| $30 < h \leqslant 40$ | 14 |
| $40 < h \leqslant 50$ | 4 |

Work out an estimate for the mean height of these flowers.

..... cm

**(Total for Question 2 is 4 marks)**

**3** Solve the simultaneous equations

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

Show clear algebraic working.

$x =$ .....

$y =$ .....

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

**4** Pete plants a total of 960 trees in a park.
He plants only apple trees, cherry trees and pear trees such that

number of apple trees : number of cherry trees : number of pear trees = 6 : 7 : 3

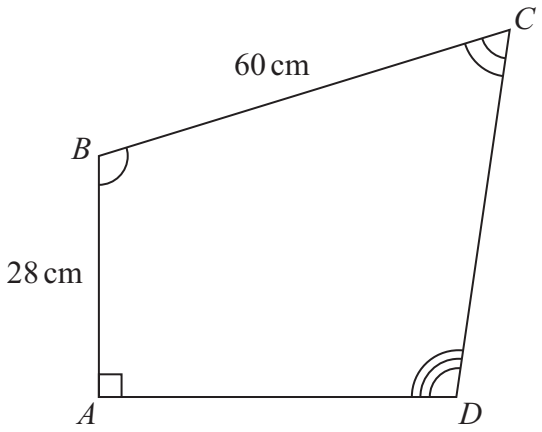
65% of the cherry trees will grow morello cherries.

Work out the number of trees that will grow morello cherries.

.....

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

**5** Here are three similar quadrilaterals.



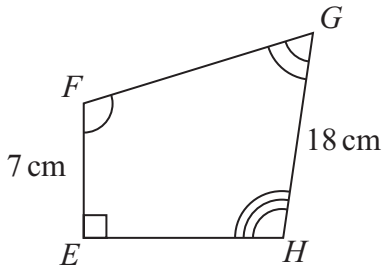
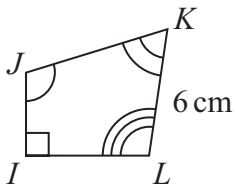




Diagram **NOT** accurately drawn




Work out the length of *JK*

..... cm

**(Total for Question 5 is 3 marks)**

**6** 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 6 is 6 marks)**

**7** *ABCDE* is a regular pentagon and *APQE* is a rectangle.

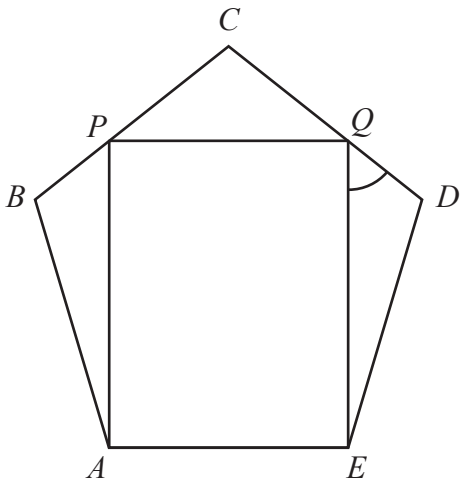



Diagram **NOT** accurately drawn

*BPC* and *DQC* are straight lines.

Work out the size of angle *EQD*
Show your working clearly.

.....°

**(Total for Question 7 is 4 marks)**

**8** Shop A and shop B have offers for buying the same type of chair.

| Shop A | Shop B |
|---|---|
| 25% off the normal price | $\frac{2}{9}$ off the normal price |
| Sale price 240 euros | Sale price 245 euros |

The normal price of the chair in shop A is more than the normal price of the chair in shop B

How much more?
Show your working clearly.

..... euros

**(Total for Question 8 is 4 marks)**

**9** (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 9 is 3 marks)**

**10** There are 5 potatoes in a bag.
The mean weight of the 5 potatoes is 217 grams.

One more potato, of weight 175 grams, is put into the bag.

Work out the mean weight of the 6 potatoes in the bag.

..... grams

**(Total for Question 10 is 3 marks)**

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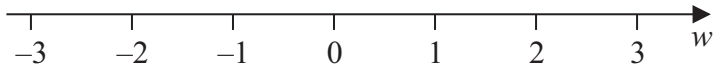
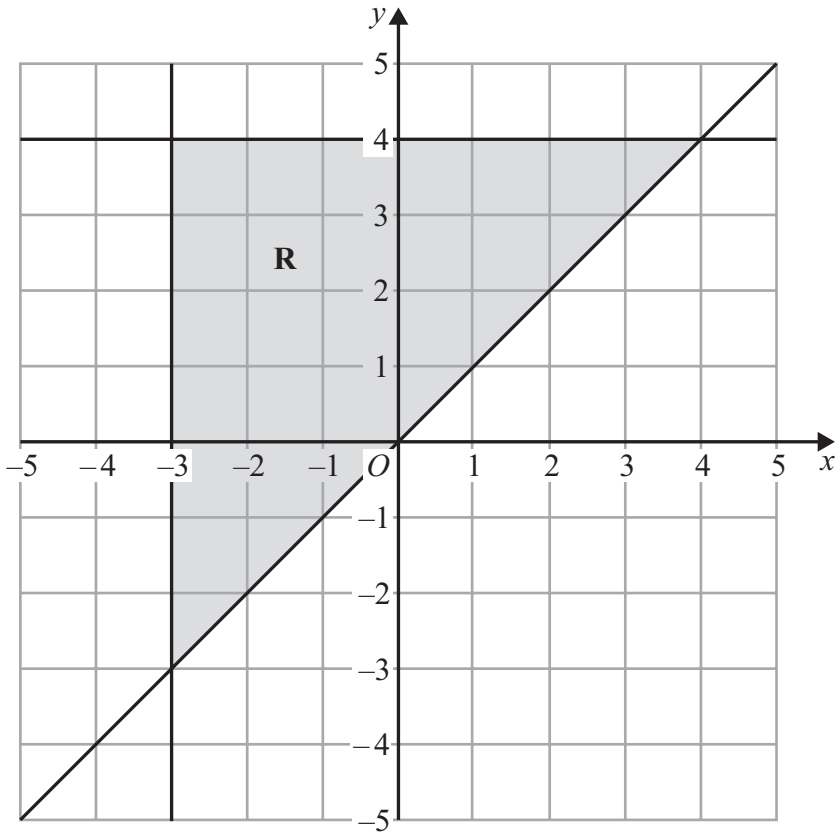
**11** (a) On the number line, represent the inequality $w < 1$




**(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 11 is 4 marks)**

**12** The value of a house

- decreased by 5% from the end of 2021 to the end of 2022
- increased by 20% from the end of 2022 to the end of 2023
- increased by 6.5% from the end of 2023 to the end of 2024

Calculate the percentage by which the value of the house increased from the end of 2021 to the end of 2024

.....%

**(Total for Question 12 is 3 marks)**

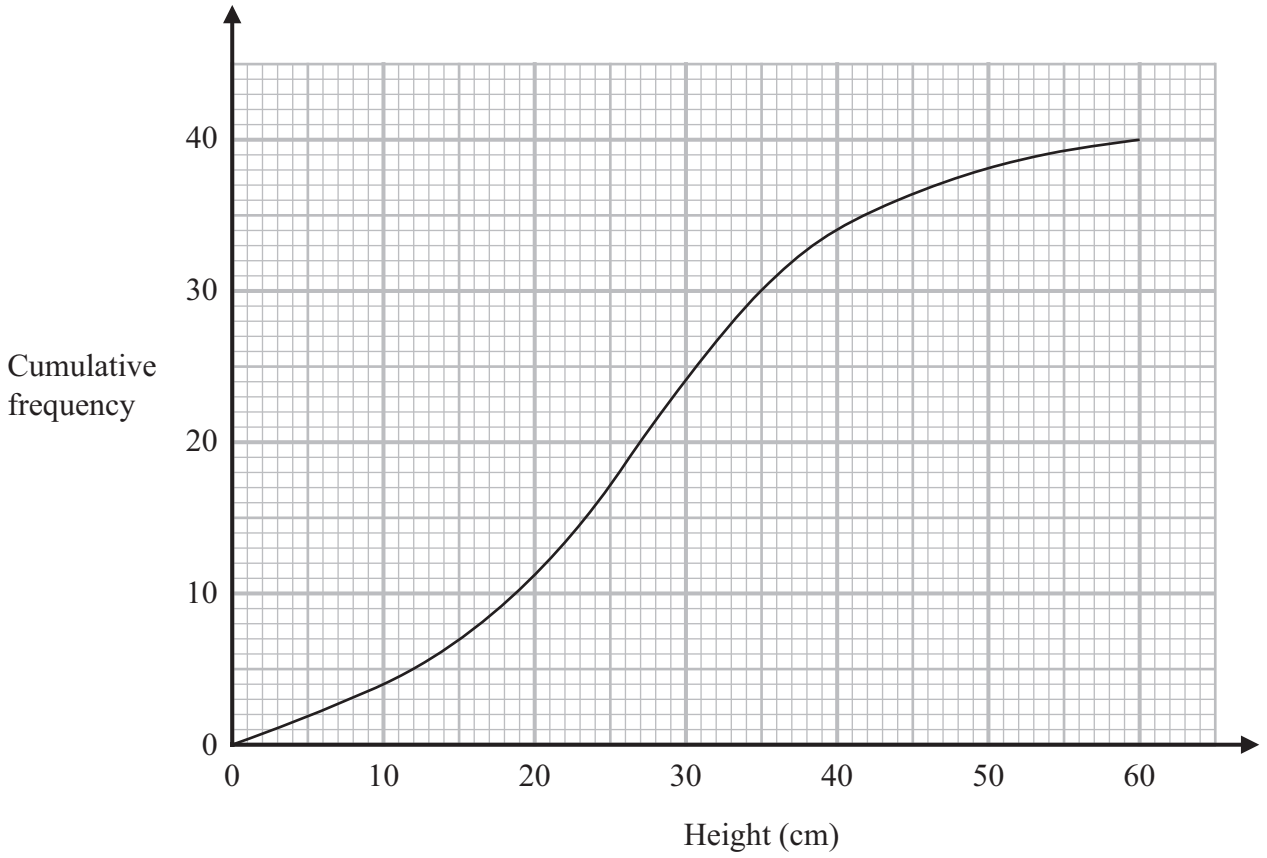
**13** Work out $\left(9 \times 10^{80}\right)^3$

Give your answer in standard form.

.....

**(Total for Question 13 is 2 marks)**

**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)**

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)**

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

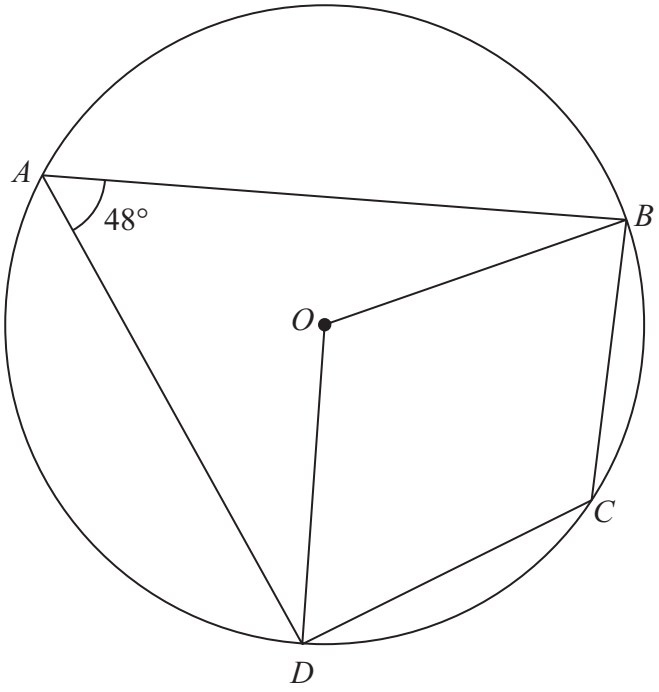


Diagram **NOT** accurately drawn

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)**

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**16** 11 people were asked how long, in minutes, they stayed in a coffee shop last Friday.

Here are the results.

14 15 16 18 19 20 22 25 28 40 50

Work out the interquartile range of these times.

..... minutes

**(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)**

**18** Make $w$ the subject of the formula $p = \sqrt{\dfrac{7w + y}{cw + k}}$

.....

**(Total for Question 18 is 4 marks)**

**19** A sphere has a diameter of 24 cm

Find the surface area of the sphere.
Give your answer correct to 3 significant figures.

..... $cm^2$

**(Total for Question 19 is 2 marks)**

**20** Solve the simultaneous equations

$$x^2 + y^2 = 3xy - 11$$
$$y = x + 2$$

Show clear algebraic working.

.....

**(Total for Question 20 is 5 marks)**

**21** The functions f and g are defined as

$$f(x) = 5x - 3$$

$$g(x) = 4x^2 + 16x - 9 \qquad \text{where} \quad x \geqslant -2$$

(a) Find g( –1)

.....

**(1)**

(b) Find fg($x$)

Give your answer in its simplest form.

fg($x$) = .....

**(2)**

$g(x) = 4x^2 + 16x - 9$ where $x \geqslant -2$

(c) Express the inverse function $g^{-1}$ in the form $g^{-1}(x) = ...$

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

**(4)**

**(Total for Question 21 is 7 marks)**

**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)**

**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)**

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**24** The diagram shows a quadrilateral $OABC$

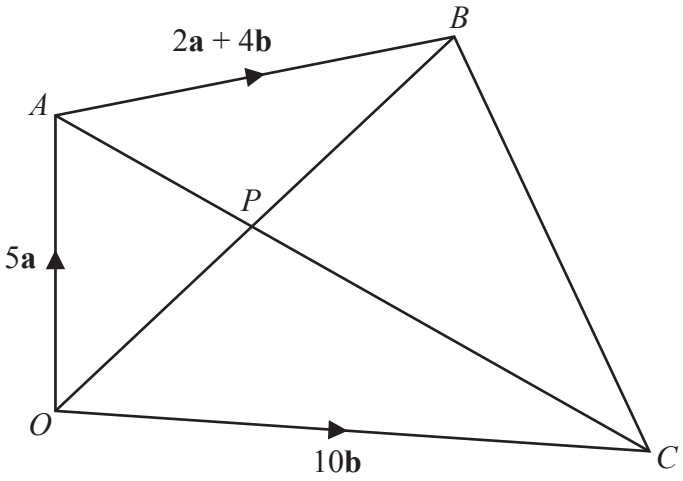



Diagram **NOT** accurately drawn

$\overrightarrow{OA} = \mathbf{5a}$ $\overrightarrow{OC} = \mathbf{10b}$ $\overrightarrow{AB} = \mathbf{2a} + \mathbf{4b}$

(a) Find $\overrightarrow{AC}$ in terms of **a** and **b**

$\overrightarrow{AC} =$ .....

**(1)**

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

$\overrightarrow{OB} =$ .....

**(1)**

The point $P$ is such that $APC$ and $OPB$ are straight lines.

(c) Using a vector method, find $\overrightarrow{OP}$ in terms of **a** and **b**
Give your answer in its simplest form.
Show your working clearly.

$\overrightarrow{OP}$ = .....

**(4)**

**(Total for Question 24 is 6 marks)**

**25** A curve has equation $y = f(x)$

There is one minimum point on this curve.

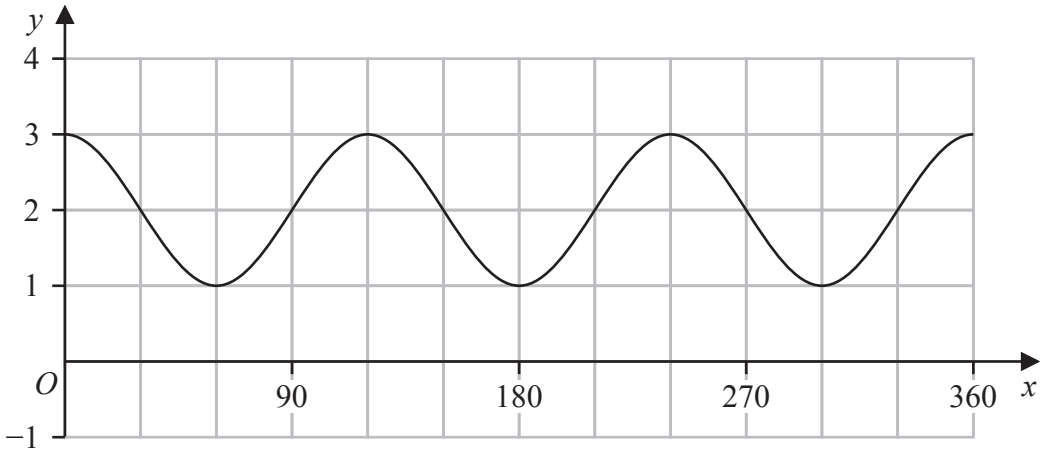
The coordinates of this minimum point are $(8, 1)$

(a) Write down the coordinates of the minimum point on the curve with equation $y = f(4x)$

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

**(1)**

The diagram shows the graph of $y = \cos(ax) + b$ for $0 \leqslant x \leqslant 360$




(b) (i) Find the value of $a$

$a =$ .....

**(1)**

(ii) Find the value of $b$

$b =$ .....

**(1)**

**(Total for Question 25 is 3 marks)**

**26** 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 26 is 5 marks)**

**TOTAL FOR UNIT IS 100 MARKS**

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