ELITE MATHEMATICS

Modular Unit 2

Linear to Modular | Regional papers

Student question book

31 question entries | 120 marks

Linear questions reorganised for Modular practice. Not an original Pearson Modular examination.

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Student edition | June 2026 | Elite Mathematics

Question 2

3 marks

June 2026 | 4MA1/1HR | Prime factorisation

2 Write 504 as a product of powers of its prime factors.
Show your working clearly.

.....

(Total for Question 2 is 3 marks)

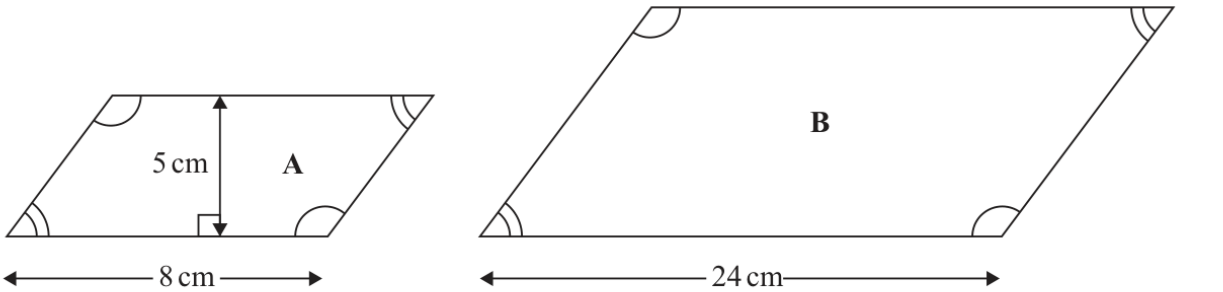
Question 6

3 marks

June 2026 | 4MA1/1HR | Area of similar figures

6

Diagram **NOT** accurately drawn



A and **B** are similar parallelograms.

Work out the area of **B**

..... cm^2

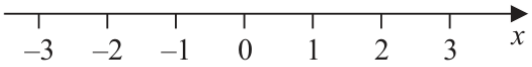
(Total for Question 6 is 3 marks)

Question 7

5 marks

June 2026 | 4MA1/1HR | Linear inequalities

7



(a) Represent the inequality $x < 1$ on the number line above.

(1)

$2 \leqslant y + 3 < 7$
y is an integer.

(b) Write down all the possible values of y

.....

(2)

(c) Solve the inequality $8 - 5w > -10$

.....

(2)

(Total for Question 7 is 5 marks)

Question 9

3 marks

June 2026 | 4MA1/1HR | Combined means

9 Caleb owns 11 sheep.

The mean weight of all 11 sheep is 77 kg
The mean weight of 8 of the sheep is 75.2 kg

Work out the mean weight of the other 3 sheep.

..... kg

(Total for Question 9 is 3 marks)

Question 10

3 marks

June 2026 | 4MA1/1HR | Compound interest

10 Arwa invests 200 000 yen in a savings account for 3 years.
She gets 1.4% per year compound interest.

Work out how much money Arwa will have in her savings account at the end of 3 years.
Give your answer correct to the nearest yen.

..... yen

(Total for Question 10 is 3 marks)

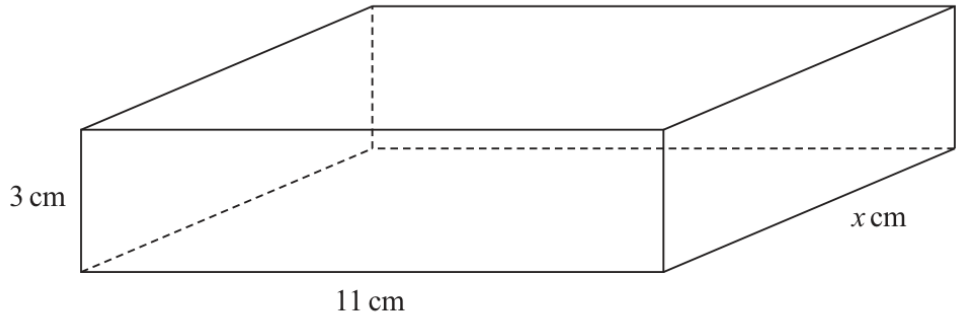
Question 11

4 marks

June 2026 | 4MA1/1HR | Cuboid volume and surface area

11 The diagram shows a solid cuboid.

Diagram **NOT** accurately drawn



The cuboid measures 3 cm by 11 cm by x cm

The volume of the cuboid is 264 cm^3

Work out the total surface area of the cuboid.

..... cm^2

(Total for Question 11 is 4 marks)

Question 12

3 marks

June 2026 | 4MA1/1HR | Simultaneous linear equations

12 Solve the simultaneous equations

$$4x + 4y = 5$$
$$x + 2y = 1$$

Show clear algebraic working.

$x =$ .....

$y =$ .....

(Total for Question 12 is 3 marks)

Question 14

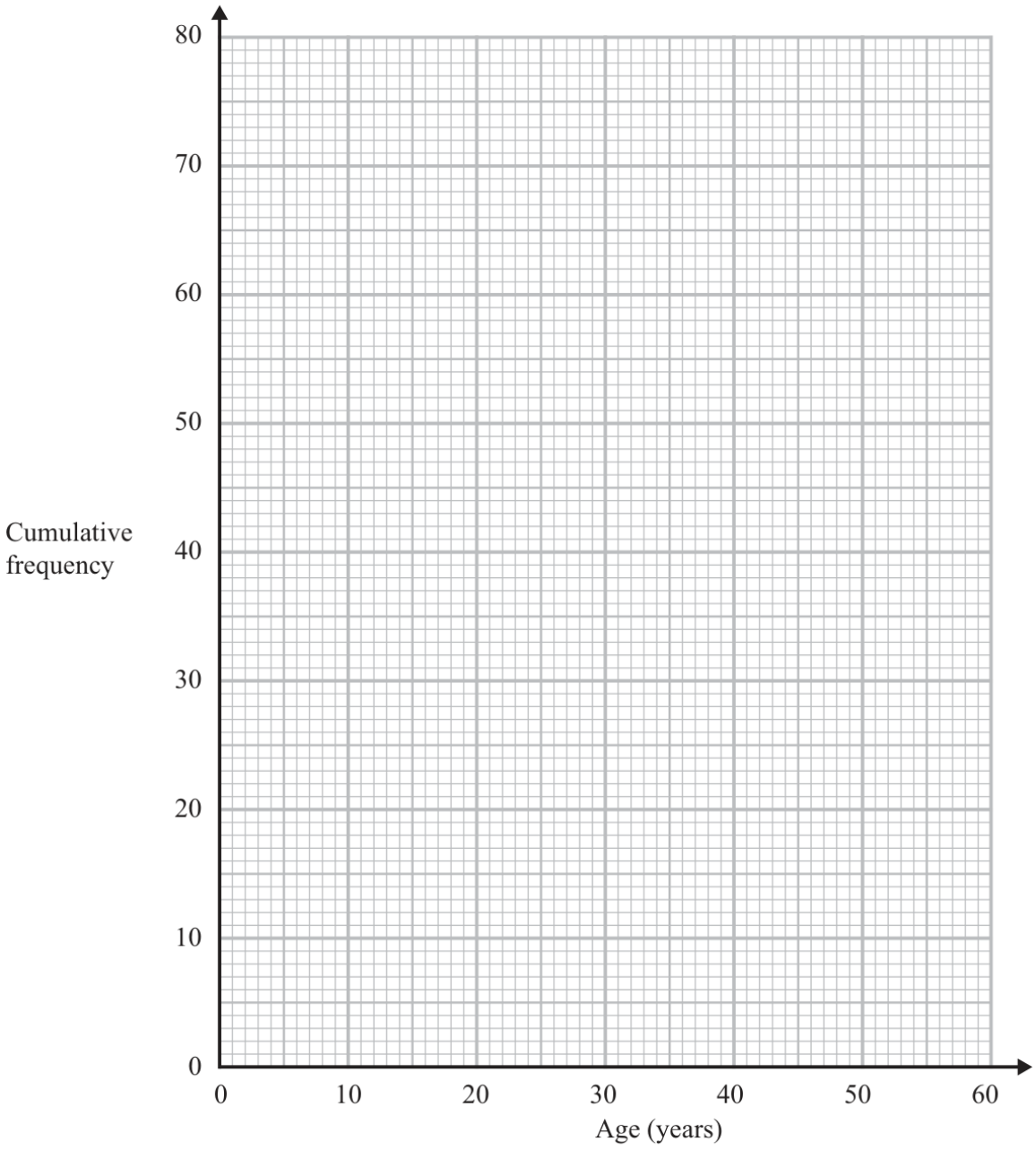
4 marks

June 2026 | 4MA1/1HR | Cumulative frequency

14 The cumulative frequency table gives information about the ages, in years, of 80 people who went to a cinema on Saturday.

Age (a years)	Cumulative frequency
$0 < a \leqslant 10$	19
$0 < a \leqslant 20$	37
$0 < a \leqslant 30$	52
$0 < a \leqslant 40$	63
$0 < a \leqslant 50$	73
$0 < a \leqslant 60$	80

(a) On the grid below, draw a cumulative frequency graph for this information.



(2)

(b) Use your graph to find an estimate for the median age of the 80 people.

..... years

(1)

(c) Use your graph to find an estimate for the number of the 80 people aged 16 and under.

.....

(1)

(Total for Question 14 is 4 marks)

Question 15

3 marks

June 2026 | 4MA1/1HR | Regular polygons and a concave pentagon

15

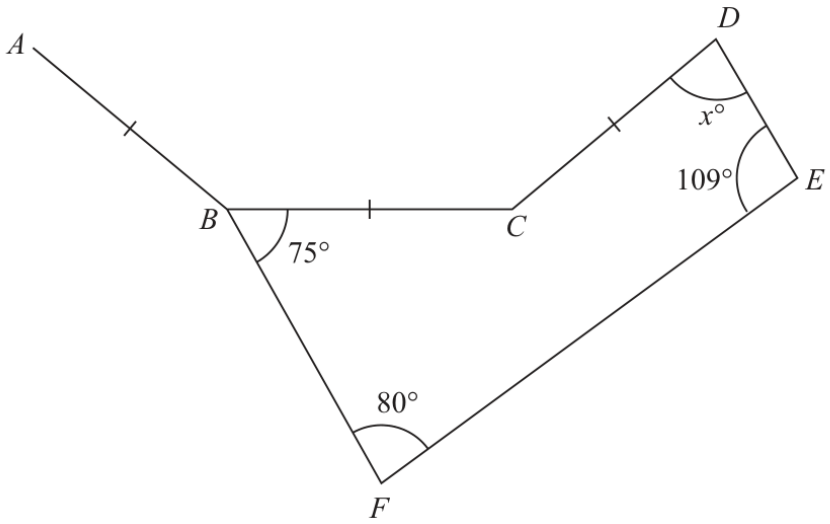


Diagram **NOT** accurately drawn

BCDEF is a pentagon.
AB, *BC* and *CD* are three sides of a regular 10-sided polygon.

Find the value of x

$x =$ .....

(Total for Question 15 is 3 marks)

Question 17

5 marks

June 2026 | 4MA1/1HR | Differentiation and stationary points

17 $y = x^3 + 5x^2 - 8x$

(a) Find $\dfrac{dy}{dx}$

$\dfrac{dy}{dx} =$ .....

(2)

The curve with equation $y = x^3 + 5x^2 - 8x$ has two stationary points, P and Q
The x-coordinate of P is less than the x-coordinate of Q

(b) Work out the coordinates of P
Show clear algebraic working.

(..... , ...)

(3)

(Total for Question 17 is 5 marks)

Question 19

5 marks

June 2026 | 4MA1/1HR | Circle theorem angle reasoning

19 P, Q, R and S are points on a circle, centre O

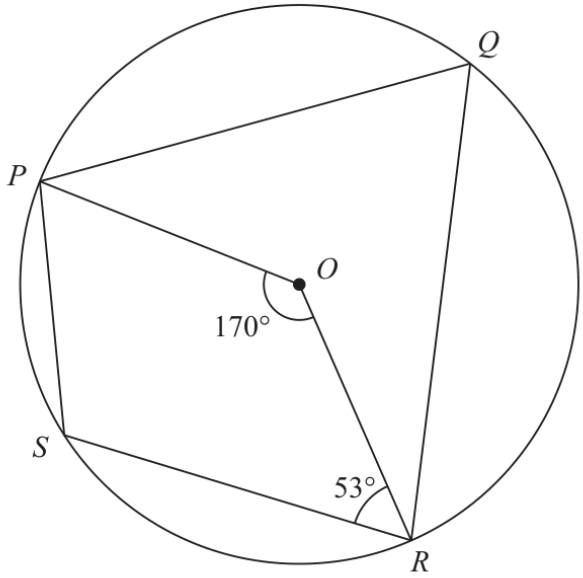


Diagram **NOT** accurately drawn

Angle $POR = 170°$ Angle $ORS = 53°$

Find the size of angle SPO
Give a reason for each stage of your working.

.....°

.....

(Total for Question 19 is 5 marks)

Question 20

5 marks

June 2026 | 4MA1/1HR | Linked direct proportions

20 y is directly proportional to t^2
$y = 40$ when $t = 4$

t is directly proportional to the cube root of x
$t = 12$ when $x = 8$

Work out the value of y when $x = 27$

$y =$ .....

(Total for Question 20 is 5 marks)

Question 23

7 marks

June 2026 | 4MA1/1HR | Domain, composite and inverse functions

23 The function f is such that $f(x) = \frac{1}{x}$

(a) Write down the value of x that cannot be included in any domain of f

.....

(1)

The function g is such that $g(x) = 4x^2 - 8x + 15$
The domain of g is $x \geqslant 1$

(b) Work out $gf(0.5)$

.....

(2)

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

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

(4)

(Total for Question 23 is 7 marks)

Question 24

4 marks

June 2026 | 4MA1/1HR | Equation of a tangent to a circle

24 The centre of a circle is the point with coordinates (3, 1)

The point P with coordinates (7, 6) lies on the circle.

The line **L** is the tangent to the circle at P

Find an equation for **L**
Give your answer in the form $ax + by + c = 0$ where a, b and c are integers.

.....

(Total for Question 24 is 4 marks)

Question 25

6 marks

June 2026 | 4MA1/1HR | Vector geometry and line division

25

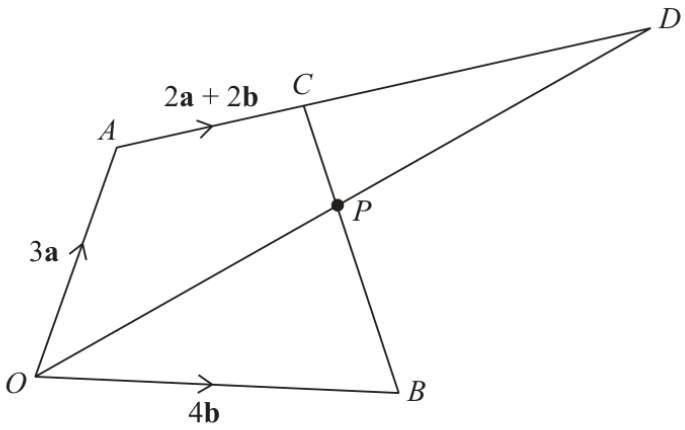


Diagram **NOT** accurately drawn

$\overrightarrow{OA} = 3\mathbf{a}$ $\overrightarrow{OB} = 4\mathbf{b}$ $\overrightarrow{AC} = 2\mathbf{a} + 2\mathbf{b}$ $\overrightarrow{CD} = \frac{3}{2} \times \overrightarrow{AC}$

P is the point on BC such that OPD is a straight line.

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

.....

(2)

(b) Find the ratio $OP : PD$
Show your working clearly.

.....

(4)

(Total for Question 25 is 6 marks)

Question 2

2 marks

June 2026 | 4MA1/2HR | Arithmetic sequences

2 Here are the first five terms of an arithmetic sequence.

14 8 2 –4 –10

Find an expression, in terms of n, for the nth term of this sequence.

.....

(Total for Question 2 is 2 marks)

Question 4 | parts b

2 marks

June 2026 | 4MA1/2HR | Linear equations, substitution and algebraic indices

$P = c^2 - 5d$

(b) Work out the value of P when $c = -7$ and $d = 3$

$P =$ .....

(2)

Question 5

5 marks

June 2026 | 4MA1/2HR | Ratio

5 Sarah and Dej each give some money to charity **A** and to charity **B**

Sarah shares \$400 between charity **A** and charity **B** in the ratio 2 : 3

Dej shares \$375 between the two charities.
He gives twice as much money to charity **B** as he gives to charity **A**

Dej gives more money to charity **B** than Sarah gives to charity **B**

How much more?

\$.....

(Total for Question 5 is 5 marks)

Question 6

4 marks

June 2026 | 4MA1/2HR | Statistics: median, mode and range

6 Mika has six cards.
There is a number on each card.
The cards are arranged with the numbers in order of size.
Three of the numbers are hidden.



The mode of the six numbers is 8
The range of the six numbers is 7
The sum of the six numbers is 31

Work out the median of the six numbers.

.....

(Total for Question 6 is 4 marks)

Question 7

3 marks

June 2026 | 4MA1/2HR | Standard form

7 (a) Write 4×10^{-5} as an ordinary number.

.....

(1)

(b) Work out $(6 \times 10^{158}) \times (2 \times 10^{72})$
Give your answer in standard form.

.....

(2)

(Total for Question 7 is 3 marks)

Question 8

3 marks

June 2026 | 4MA1/2HR | Reverse percentages

8 Lauren's salary increased by 4%
After the increase, her salary was 36 400 euros.

Work out Lauren's salary before the increase.

..... euros

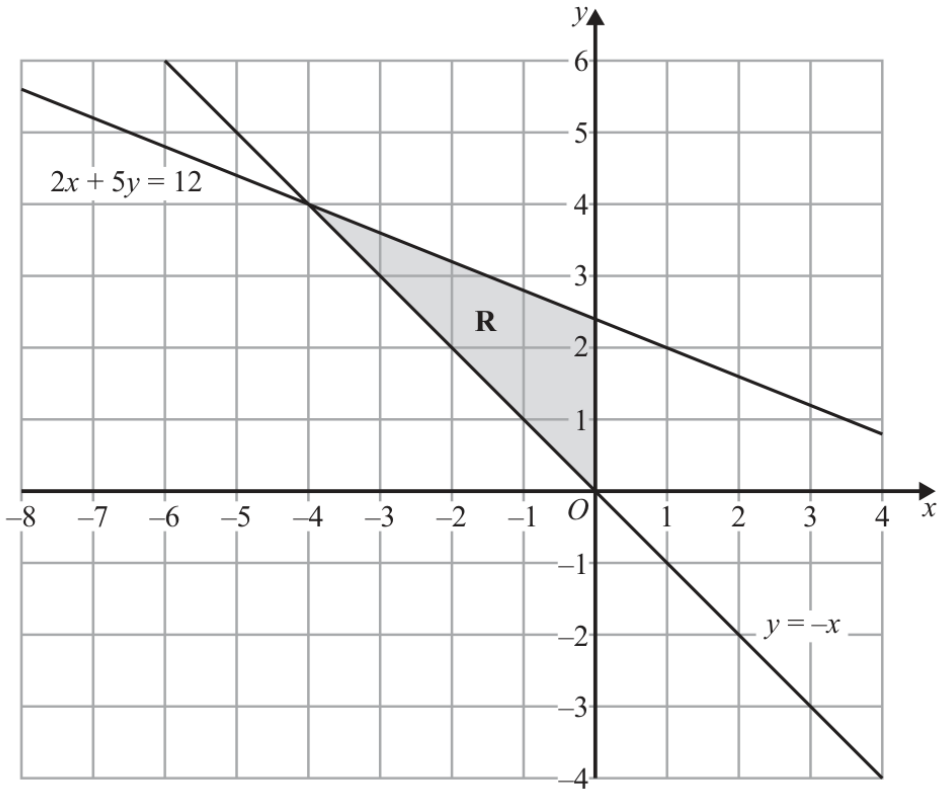
(Total for Question 8 is 3 marks)

Question 12

3 marks

June 2026 | 4MA1/2HR | Graphical inequalities

12



The region **R**, shown shaded in the diagram, is bounded by the y-axis and the straight lines with equations

$$y = -x$$

$$2x + 5y = 12$$

Write down the three inequalities that define **R**

.....

.....

.....

(Total for Question 12 is 3 marks)

Question 15

2 marks

June 2026 | 4MA1/2HR | Interquartile range

15 Mina recorded the times taken, in minutes, by 11 people to complete a puzzle.
Here are her results.

2 2 3 6 7 9 9 12 13 17 20

Find the interquartile range of these times.

..... minutes

(Total for Question 15 is 2 marks)

Question 18

2 marks

June 2026 | 4MA1/2HR | Vectors

18 Here are two vectors.

$$\overrightarrow{AB} = \begin{pmatrix} 4 \\ 5 \end{pmatrix} \qquad \overrightarrow{CB} = \begin{pmatrix} -2 \\ 8 \end{pmatrix}$$

Find $\overrightarrow{AC}$ as a column vector.

$$\overrightarrow{AC} = \begin{pmatrix} \ldots\ldots \\ \ldots\ldots \end{pmatrix}$$

(Total for Question 18 is 2 marks)

Question 20

3 marks

June 2026 | 4MA1/2HR | Rearranging formulae

20 Make x the subject of $y = \dfrac{3x+5}{4-2x}$

.....

(Total for Question 20 is 3 marks)

Question 22

5 marks

June 2026 | 4MA1/2HR | Nonlinear simultaneous equations

22 Solve the simultaneous equations

$$y^2 = x^2 + 7$$
$$y = 3x - 5$$

Show clear algebraic working.

(Total for Question 22 is 5 marks)

Question 23

5 marks

June 2026 | 4MA1/2HR | Similarity: area and volume scales

23 **K**, **L** and **M** are three similar solids.

volume of **K** : volume of **L** = 125 : 216

surface area of **K** : surface area of **M** = 4 : 9

The height of **M** is y% greater than the height of **L**

Work out the value of y
Show your working clearly.

$y =$ .....

(Total for Question 23 is 5 marks)

Question 24

4 marks

June 2026 | 4MA1/2HR | Sector arc and regular polygon

24

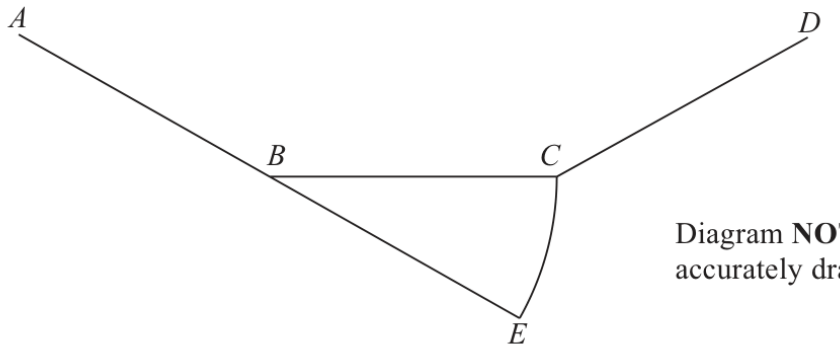


Diagram **NOT** accurately drawn

AB, *BC* and *CD* are three sides of a regular polygon.
ABE is a straight line.

BCE is a sector of a circle with centre *B* and radius 4.5 cm

The length of arc *CE* is $\frac{3}{10}\pi$ cm

Work out the sum of the interior angles of the regular polygon.

.....°

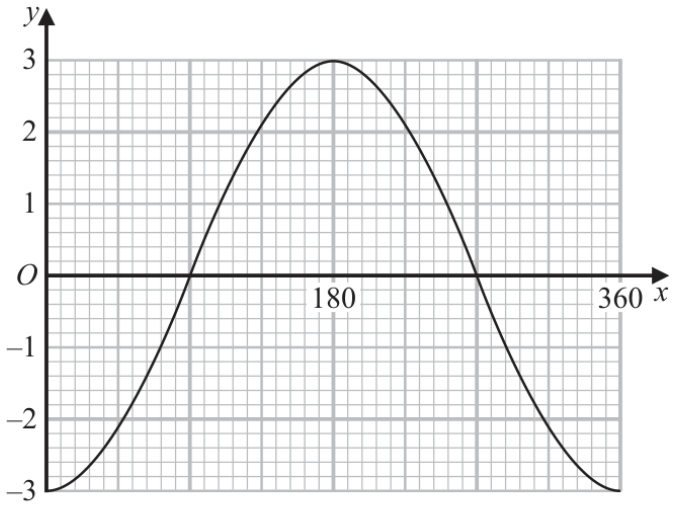
(Total for Question 24 is 4 marks)

Question 25

4 marks

June 2026 | 4MA1/2HR | Transformations of functions

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



Given that $a < 0$ and that $0 < b < 360$

(a) find the value of a and the value of b

$a =$ .....

$b =$ .....

(2)

A curve has equation $y = f(x)$
The point T with coordinates (p, q) lies on the curve.

(b) Find the coordinates of the image of T on the curve with equation

$$y = f(2x) + 5$$

Give your coordinates in terms of p and q

(..... , ...)

(2)

(Total for Question 25 is 4 marks)

Question 26

6 marks

June 2026 | 4MA1/2HR | Arithmetic series

26 Here are the first four terms of an arithmetic series.

$$(k + 2) \qquad (k + 5) \qquad (k + 8) \qquad (k + 11)$$

The sum of the first $2n$ terms of the series is 4 times the sum of the first n terms of the series.

Work out the numerical value of the 100th term of the series.
Show your working clearly.

.....

(Total for Question 26 is 6 marks)

Question 27

4 marks

June 2026 | 4MA1/2HR | Successive percentage increases

27 Bryan owns a house.

During 2024, the value of Bryan's house increased by $x\%$
During 2025, the value of Bryan's house increased by $2x\%$

Overall, during 2024 and 2025, the value of Bryan's house increased by 38.88%

Work out the value of x
Show clear algebraic working.

$x =$ .....

(Total for Question 27 is 4 marks)