

Please check the examination details below before entering your candidate information

Candidate surname					Other names				
Centre Number					Candidate Number				

Pearson Edexcel Level 1/Level 2 GCSE (9–1)

Aiming for Grade 7

Paper reference	1MA1/3H
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Mathematics

PAPER 3 (Calculator)

Higher Tier

32 marks 30 minutes



You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator, Formulae Sheet (enclosed). 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.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.

Information

- The total mark for this paper is 32. There are 12 questions.
- Questions have been broadly arranged in an ascending order of mean difficulty, as found by students achieving Grade 7 in the Summer and November 2023 examinations.
- Questions marked with an asterisk (*) also appear on the Higher Tier paper.
- 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.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer all questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** (a) (i) Write $x^2 - 8x + 3$ in the form $(x - a)^2 - b$ where a and b are integers.

.....
(2)

- (ii) Hence, write down the coordinates of the turning point on the graph
of $y = x^2 - 8x + 3$

(..... ,)
(1)

- (b) Solve $7x^2 + 8x - 5 = 0$

Give your solutions correct to 3 significant figures.

.....
(3)

Alex has to find the solutions of the quadratic equation $3k^2 + 10k - 8 = 0$

Here is his working and answer.

$$(3k - 2)(k + 4) = 0$$

$$k = 2 \text{ or } k = -4$$

- (c) What mistake has Alex made?

.....
.....
.....
(1)

(Total for Question 1 is 7 marks)

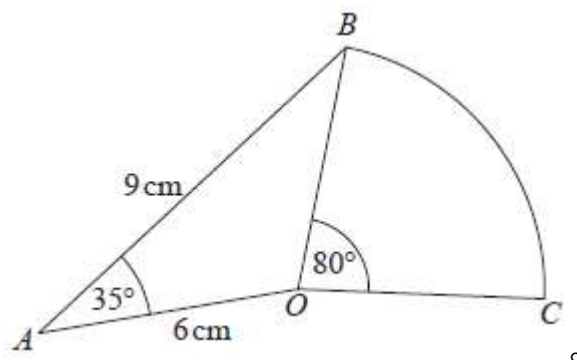
- 2 Make m the subject of $k = p + \frac{2m}{5}$

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

- *3 It takes 14 hours for 5 identical pumps to fill a water tank.
How many hours would it take 4 of these pumps to fill another water tank of the same size?

..... hours
(Total for Question 3 is 2 marks)

- 4 OAB is a triangle.
 OBC is a sector of a circle, centre O .

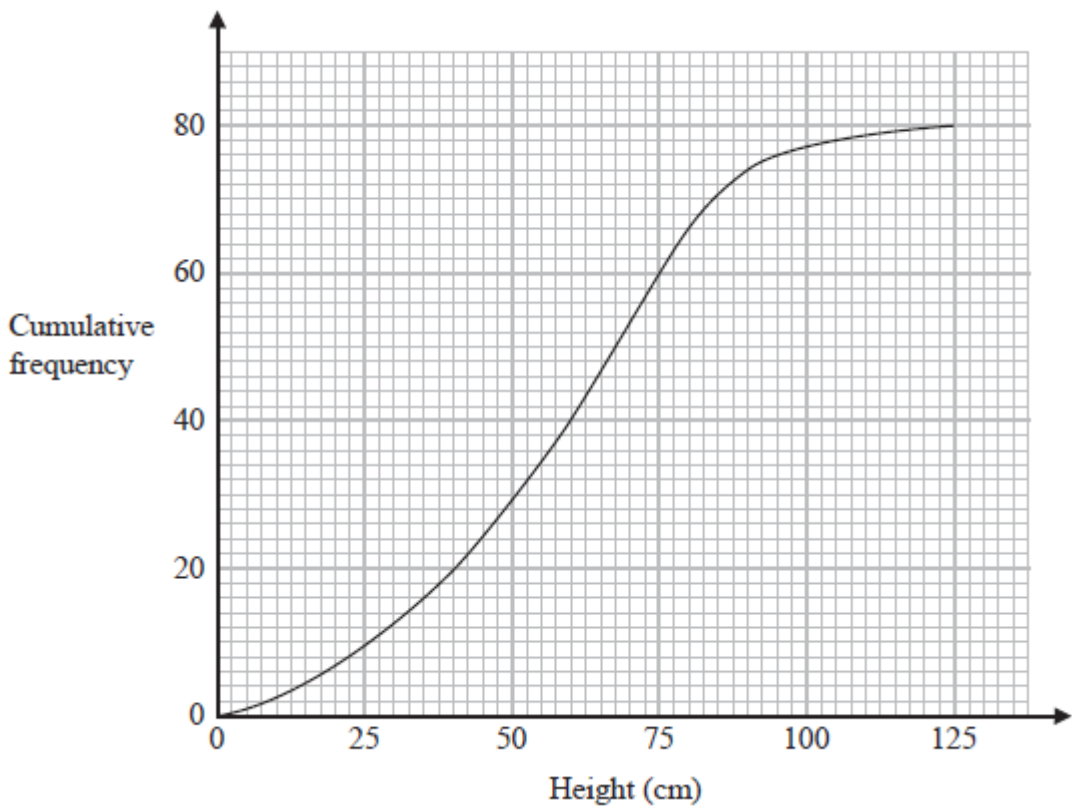


Calculate the area of OBC .
Give your answer correct to 3 significant figures.

..... cm^2
(Total for Question 4 is 4 marks)

5 Alan grew 80 plants of the same type outside.

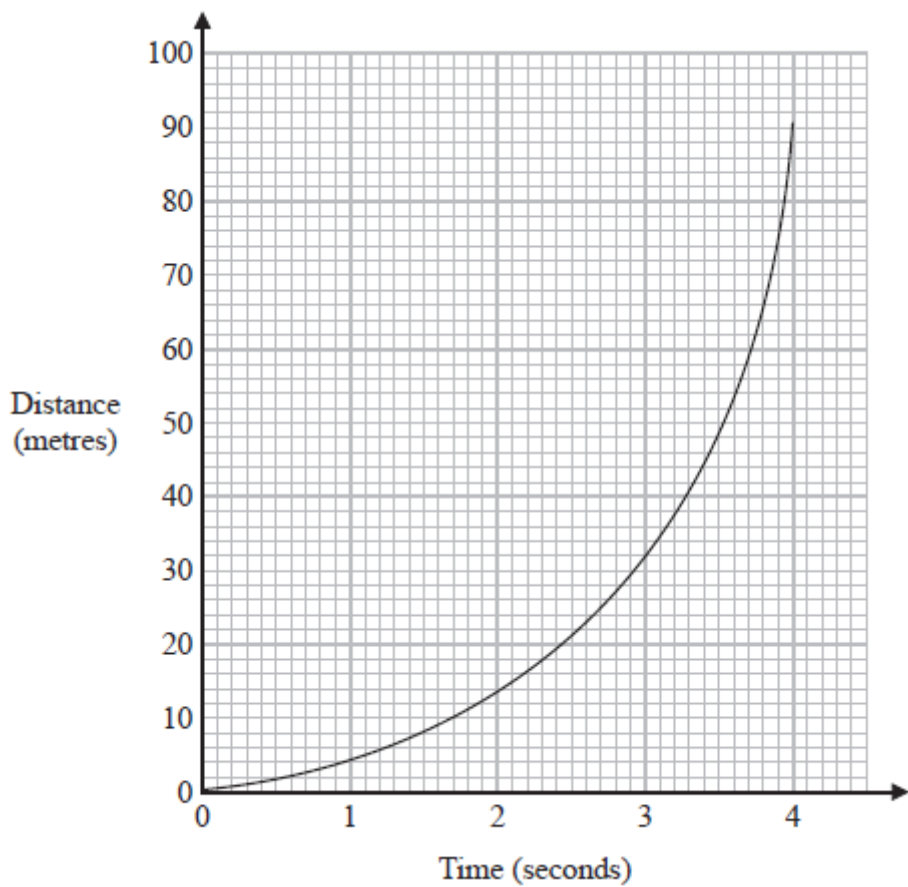
The cumulative frequency graph shows information about the heights, in cm, of these plants.



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

..... cm
(Total for Question 5 is 2 marks)

6 Here is a distance-time graph.



Find an estimate of the gradient of the graph at time 2.5 seconds.
You must show how you get your answer.

.....
(Total for Question 6 is 3 marks)

***7** Seija works at a weather station.

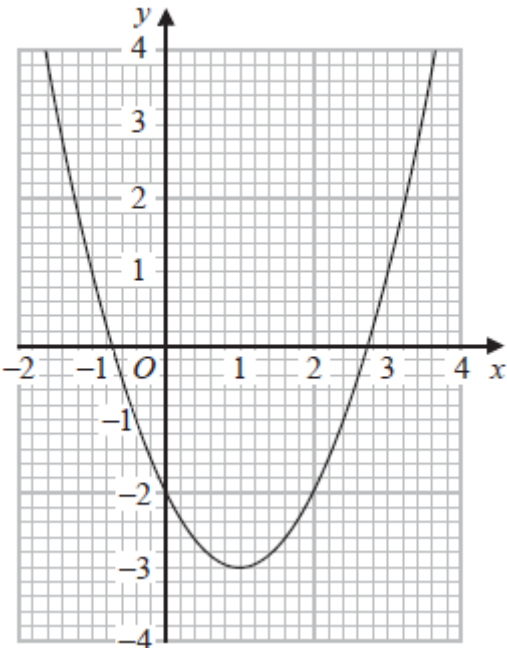
The table gives information about the temperature, $T\text{ }^{\circ}\text{C}$, at midday for each of 50 cities in the UK on Tuesday.

Temperature ($T\text{ }^{\circ}\text{C}$)	Frequency
$10 < T \leq 15$	2
$15 < T \leq 20$	8
$20 < T \leq 25$	13
$25 < T \leq 30$	21
$30 < T \leq 35$	6

Calculate an estimate for the mean temperature.

..... $^{\circ}\text{C}$
(Total for Question 7 is 3 marks)

***8** Here is the graph of $y = x^2 - 2x - 2$



Write down an estimate for one of the roots of $x^2 - 2x - 2 = 0$

.....
(Total for Question 8 is 1 mark)

***9** A and B are numbers such that

$$A = 2^2 \times 3^4 \times 7$$

$$B = 3^2 \times 7^2$$

Find the lowest common multiple (LCM) of A and B .

.....
(Total for Question 9 is 2 marks)

10 Here are the first six terms of a quadratic sequence.

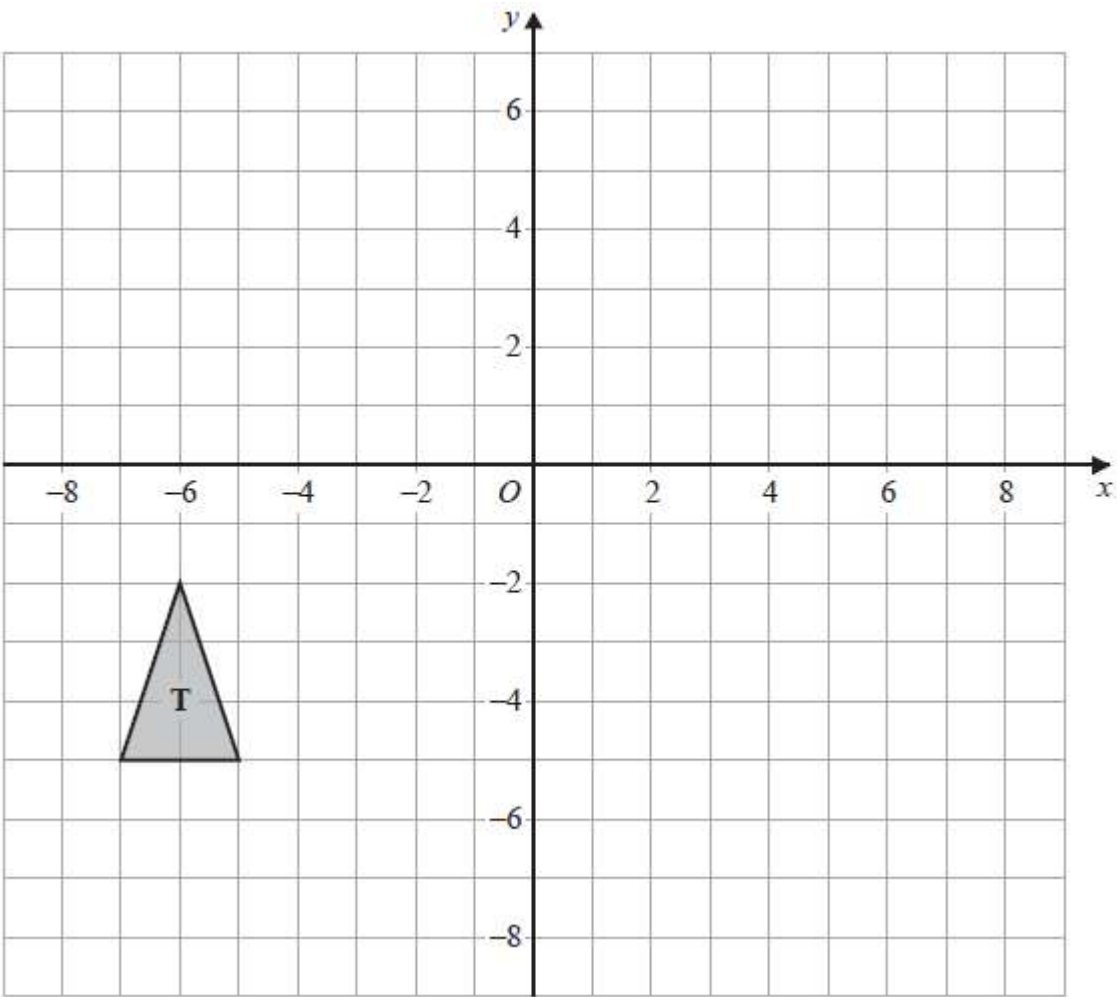
5 11 21 35 53 75

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

.....
(Total for Question 10 is 2 marks)

11 Factorise $a^2 - b^2$

.....
(Total for Question 11 is 1 mark)



On the grid, enlarge triangle **T** by scale factor -2 with centre of enlargement $(-2, -2)$

(Total for Question 12 is 2 marks)

TOTAL FOR PAPER IS 32 MARKS