

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 8

Paper reference	1MA1/2H
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Mathematics

PAPER 2 (Calculator)

Higher Tier

36 marks 35 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 36. There are 13 questions.
- Questions have been broadly arranged in an ascending order of mean difficulty, as found by students achieving Grade 8 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.

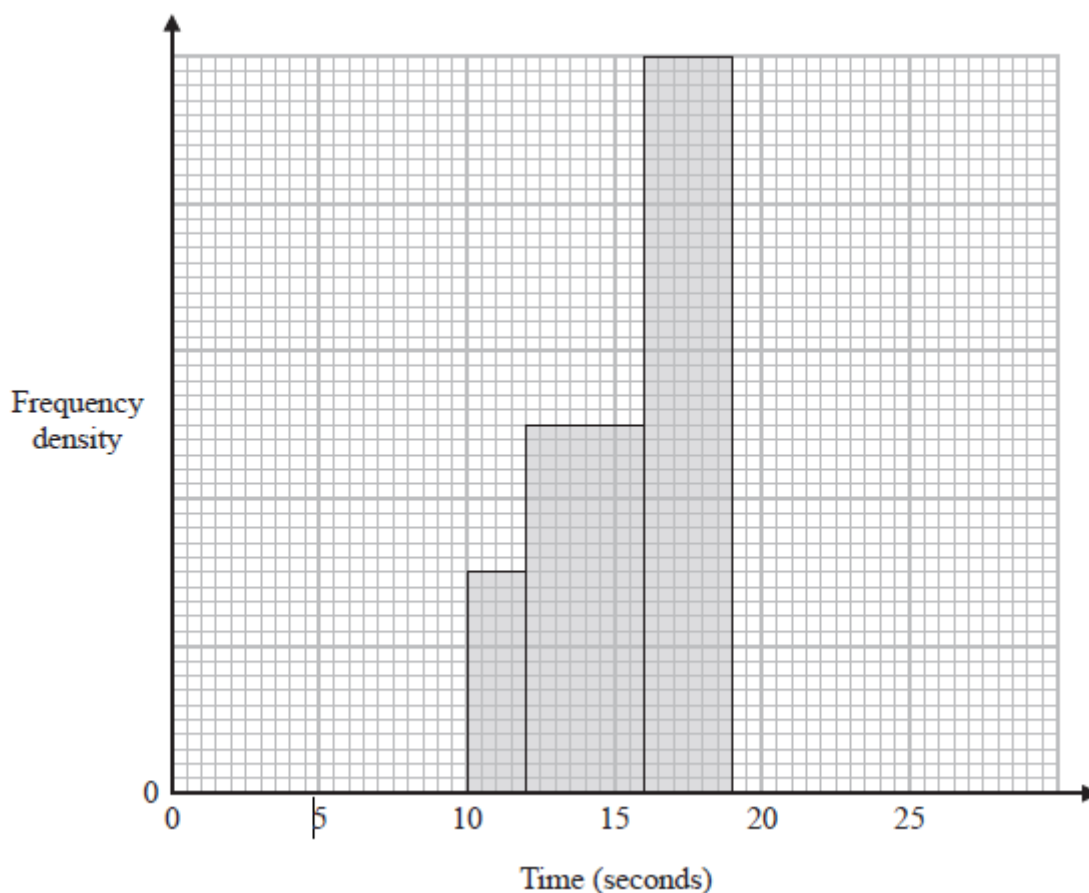
Answer all questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 The incomplete table and the incomplete histogram give information about the times taken by some students to run a race.

Time (t seconds)	Frequency
$10 < t \leq 12$	
$12 < t \leq 16$	10
$16 < t \leq 19$	15
$19 < t \leq 21$	9
$21 < t \leq 26$	7



None of these students had a time for the race such that $t < 10$ or $t > 26$

(a) Use the histogram to complete the table. (1)

(b) Use the table to complete the histogram. (2)

(Total for Question 1 is 3 marks)

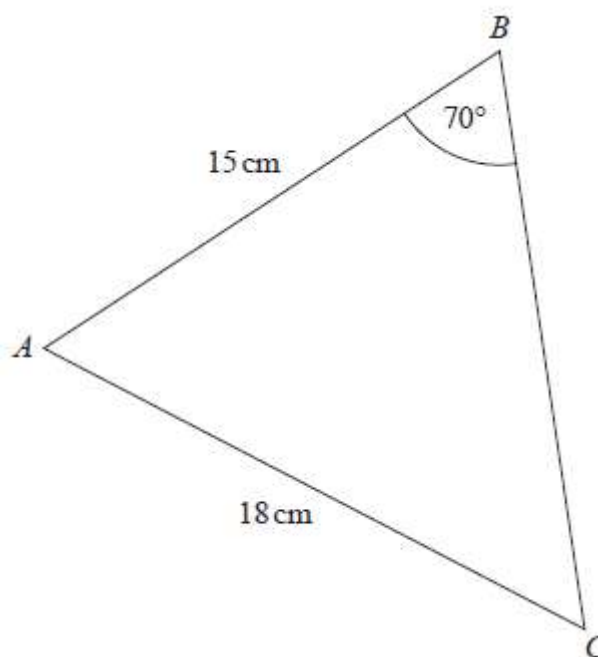
- 2 Show that $\frac{x^2 - x - 6}{2x^2 - 5x - 3}$ can be written in the form $\frac{ax + b}{cx + d}$ where a, b, c and d are integers.

(Total for Question 2 is 3 marks)

- 3 ABC is a triangle.

Calculate the size of angle BAC .

Give your answer correct to 1 decimal place.



.....°

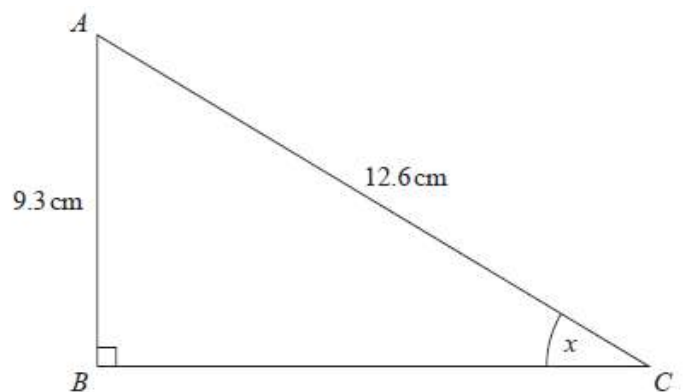
(Total for Question 3 is 4 marks)

- 4 Show that the equation $x^3 + 2x - 6 = 0$ can be rearranged to give $x = \frac{6}{x^2 + 2}$

Total for Question 4 is 1 mark)

- 5 ABC is a right-angled triangle.

$AB = 9.3$ cm correct to the nearest mm.
 $AC = 12.6$ cm correct to the nearest mm.



Calculate the lower bound for the size of the angle marked x .
You must show all your working.

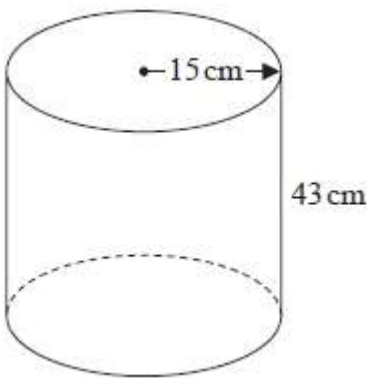
.....°

(Total for Question 5 is 3 marks)

***6** The diagram shows an empty tank in the shape of a cylinder.

The cylinder has radius 15 cm and height 43 cm.

Water flows into the tank at a rate of 0.47 litres per minute.



Calculate the number of minutes it will take to completely fill the tank.
Give your answer correct to the nearest minute.

..... minutes

(Total for Question 6 is 4 marks)

7 The functions f and g are such that

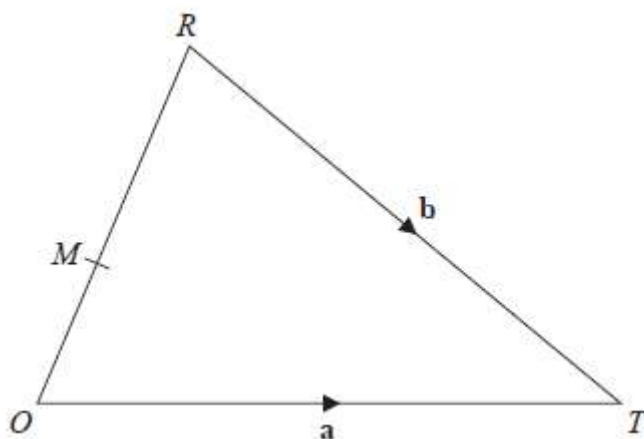
$$f(x) = (2x + 3)^2 \quad \text{and} \quad g(x) = 2x - 1$$

Find $g^{-1}(x)$

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

(Total for Question 7 is 2 marks)

8 ORT is a triangle.



$$\vec{OT} = \mathbf{a} \quad \vec{RT} = \mathbf{b}$$

M is the point on OR such that $OM : MR = 2 : 3$

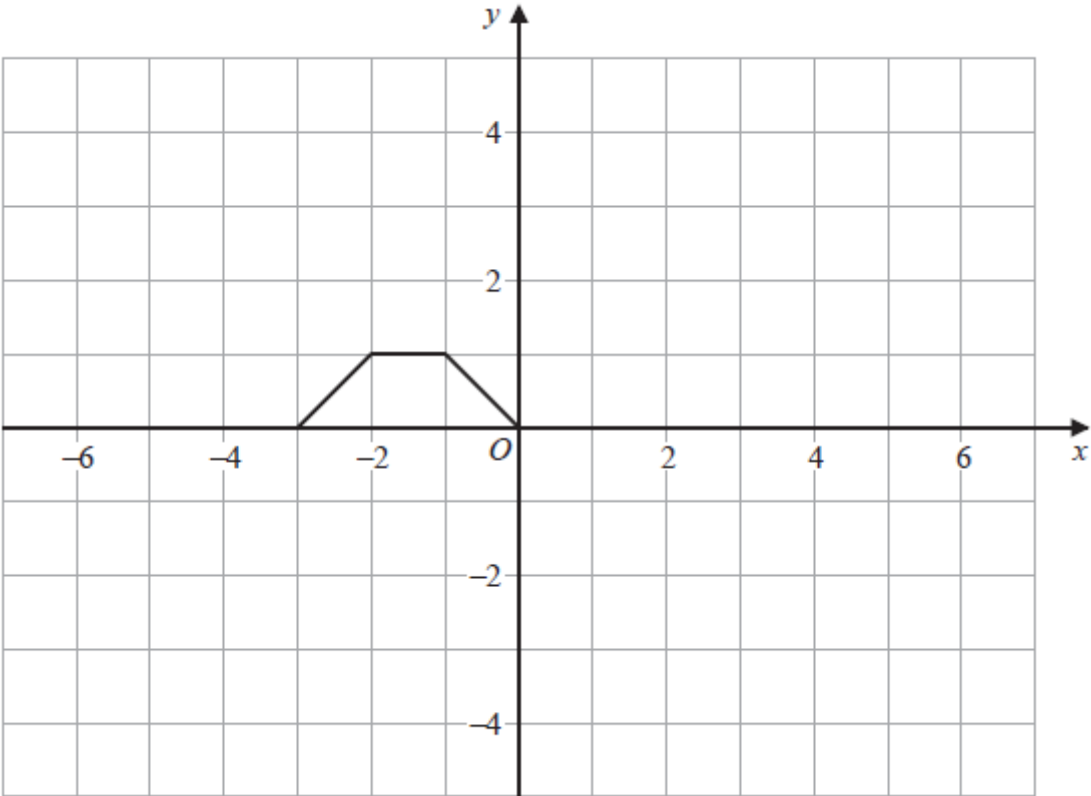
Express $\vec{MT}$ in terms of $\mathbf{a}$ and $\mathbf{b}$.
Give your answer in its simplest form.

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(Total for Question 8 is 4 marks)

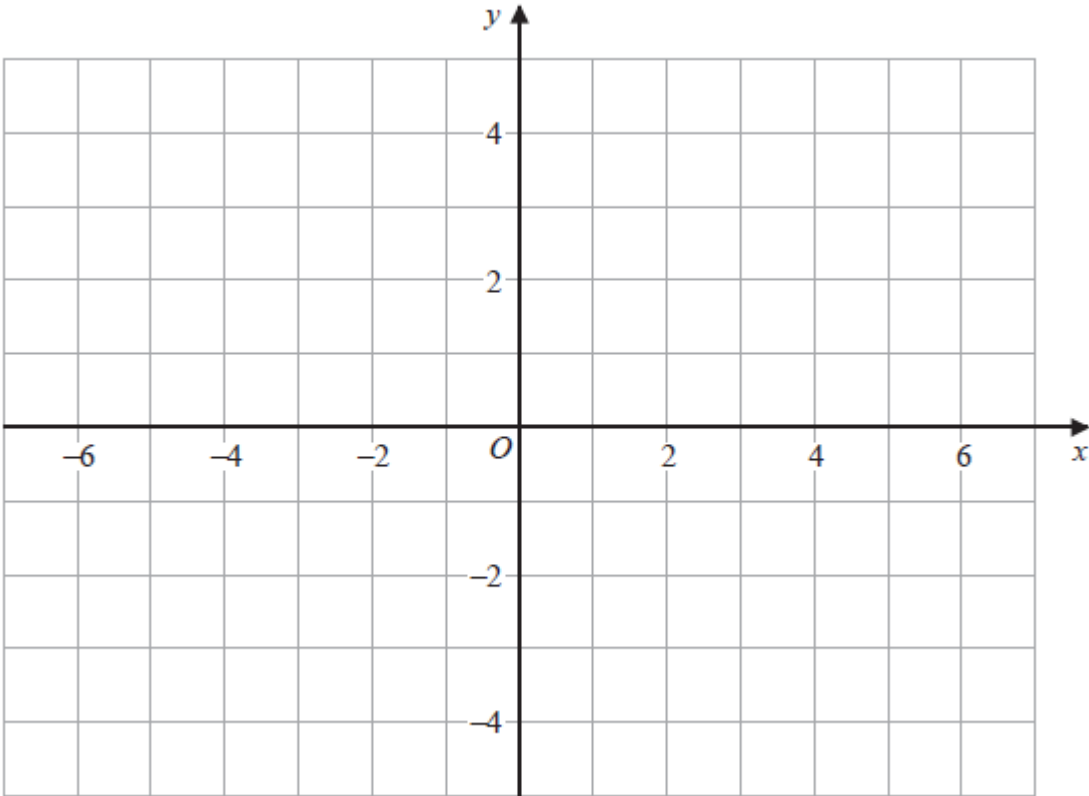
- 9 Prove algebraically that $0.0\dot{7}2\dot{3}$ can be written as $\frac{241}{3330}$

(Total for Question 9 is 3 marks)

10 Here is the graph of $y = f(x)$



On the grid below, draw the graph of $y = f(x) - 4$



(Total for Question 10 is 1 mark)

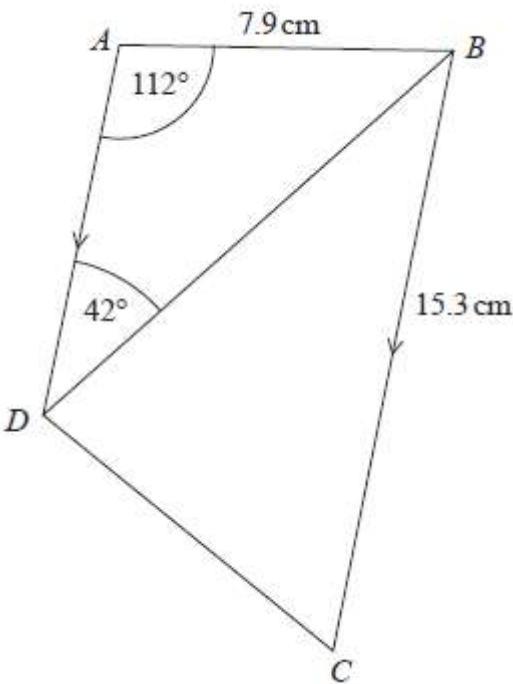
***11** Work out the value of the reciprocal of 0.625

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(Total for Question 11 is 1 mark)

12 $ABCD$ is a trapezium.

AD is parallel to BC .

Calculate the area of triangle BCD .
Give your answer correct to 1 decimal place.



..... cm^2
(Total for Question 12 is 4 marks)

- 13** A is the point with coordinates $(7, 13)$
 B is the point with coordinates $(-3, 21)$
 C is the point with coordinates $(15, 23)$
 M is the midpoint of AB .
 N is the midpoint of BC .
Work out the distance between M and N .
Give your answer correct to 1 decimal place.

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(Total for Question 13 is 3 marks)

TOTAL FOR PAPER IS 36 MARKS