



Please check the examination details below before entering your candidate information

Candidate surname				Other names			
Centre Number				Candidate Number			
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GCSE (9-1)							
Predicted Paper 2026							
Morning (Time: 1 hour 30 minutes)				Paper reference		1MA1/2H	
Mathematics Paper 3 (Calculator) Higher Tier							
You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, 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.
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 80
- 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.
- Try to answer every question.
- Check your answers if you have time at the end.

Disclaimer

This paper has been carefully created to support students preparing for their exams by focusing on commonly tested topics. However, the content in this document is intended solely for educational purposes and does not guarantee coverage of all possible exam material.

While every effort has been made to ensure the accuracy of the questions, this document should not be considered as a substitute for official resources or professional guidance. It is important to note that the topics in this paper may or may not align with actual exam content, as variations often occur between exam cycles.

Students are encouraged to use this paper as a supplementary tool and to revise all topics outlined in their curriculum for comprehensive preparation. Regular practise with a variety of resources is key to building confidence and achieving success in exams.

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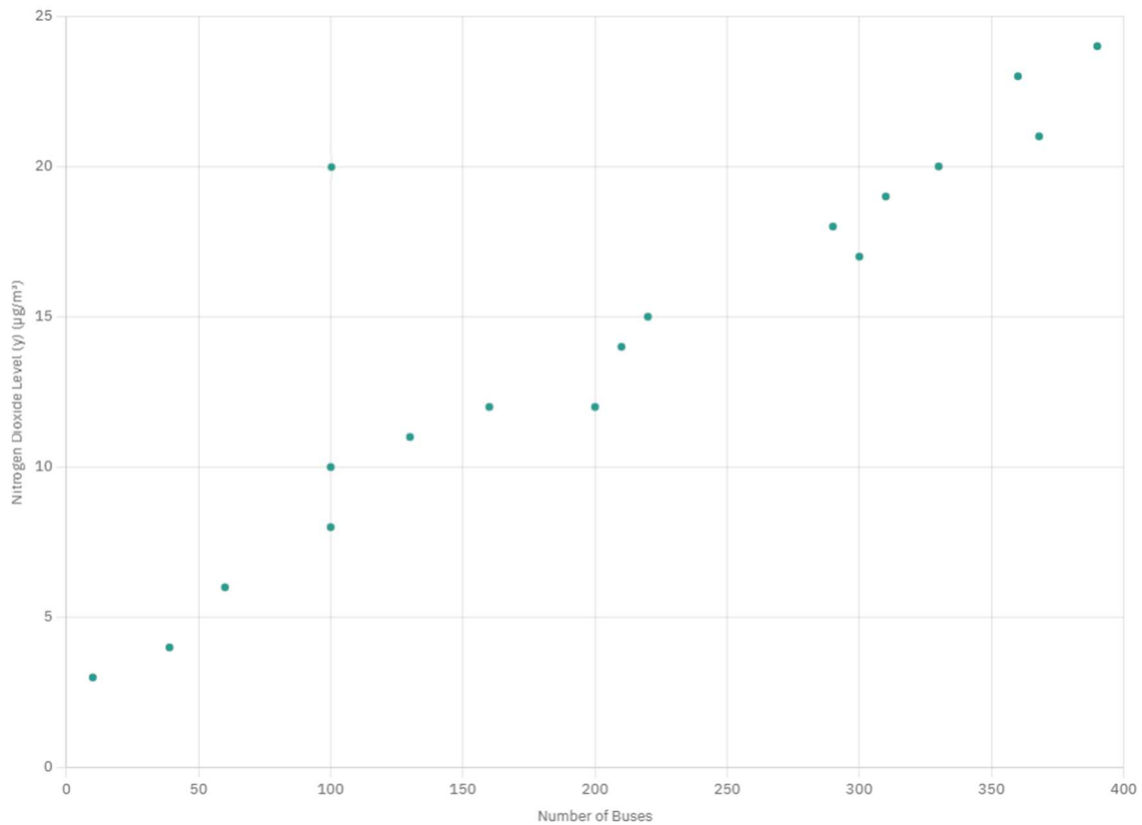
Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1

The scatter graph shows information about the number of buses passing a station and the nitrogen dioxide level at the station each day for 18 days.



One point is an outlier.

(a) Write down the coordinates of this point.

.....

(1)

For another day, 370 buses pass the station.

(b) Estimate the nitrogen dioxide level for this day

.....µg/m³

(2)

(Total for Question 1 is 3 marks)

2

(a) Simplify $p^4 \times p^6$

.....

(1)

(b) Simplify $\frac{x^5y^3}{x^2y}$

.....

(2)

(c) Solve $\frac{4y}{3} < 8$

.....

(2)

(Total for Question 2 is 5 marks)

3

A swimming pool is empty.

Jasmine needs to fill the pool with 3000 litres of water.

Company X supplies water at a rate of 10 litres in 2 minutes 20 seconds.

Company Y supplies water at a rate of 3 gallons per minute.

1 gallon = 4.54 litres

Company X would take more time to fill the pool than Company Y would take to fill the pool.

How much more time?

Give your answer in minutes correct to the nearest minute.

..... minutes

(Total for Question 3 is 4 marks)

4

A solid cylinder is made of metal

The metal has a density of 7 g/cm^3

The volume of the cylinder is 90 cm^3

Work out the mass of the cylinder

..... g

(Total for Question 4 is 2 marks)

5

Jack is measuring the weights of apples in grams from his orchard.

Weight (g)	Frequency
$100 < w \leq 120$	5
$120 < w \leq 140$	12
$140 < w \leq 160$	18
$160 < w \leq 180$	14
$180 < w \leq 200$	6

(a) Estimate the mean weight.

Give your answer correct to 1 decimal place.

..... g

(3)

(b) Explain why your answer to part (a) is an estimate.

(1)

(Total for Question 5 is 4 marks)

6

In a box, there are only red balls, blue balls, yellow balls, and white balls.

A ball is going to be picked at random from the box.

The table shows the probabilities of picking a red ball or a blue ball.

Colour	red	blue	yellow	white
Probability	0.08	0.22

The probability of picking a yellow ball is 0.15 more than the probability of picking a white ball.

(a) Complete the table.

There are 200 balls in the box.

(2)

There are 200 balls in the box.

(b) Work out the number of blue balls in the box.

.....

(2)

(Total for Question 6 is 4 marks)

7

It takes 18 hours for 6 identical machines to produce a batch of parts.

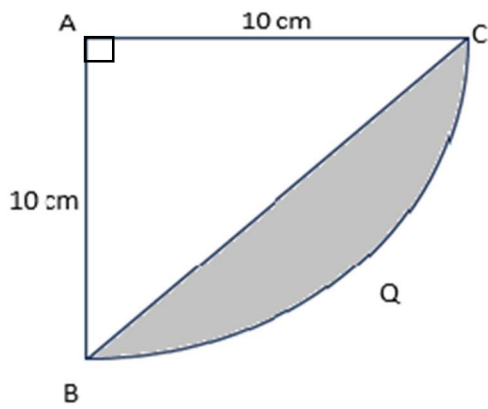
How many hours would it take 4 of these machines to produce the same batch of parts?

..... hours

(Total for Question 7 is 2 marks)

8

The diagram shows a sector ABCQ of a circle, centre A and radius 10 cm



ABC is a triangle.

Work out the area of the shaded segment BCQ.

Give your answer correct to 3 significant figures

.....cm²

(Total for Question 8 is 4 marks)

9

Prove algebraically that $0.5\dot{1}\dot{2}$ can be written as $\frac{169}{330}$

(Total for Question 9 is 3 marks)

10

Using completing the square, solve $x^2 - 10x + 7 = 0$

Give your answers to 2 decimal places.

.....
(Total for Question 10 is 4 marks)

11

(a) Write 8.32×10^{-5} as an ordinary number

.....

(1)

(b) Work out

$$\frac{3.75 \times 10^7 \times 5.28 \times 10^{-4}}{2.5 \times 10^{-3}}$$

Give your answer in standard form.

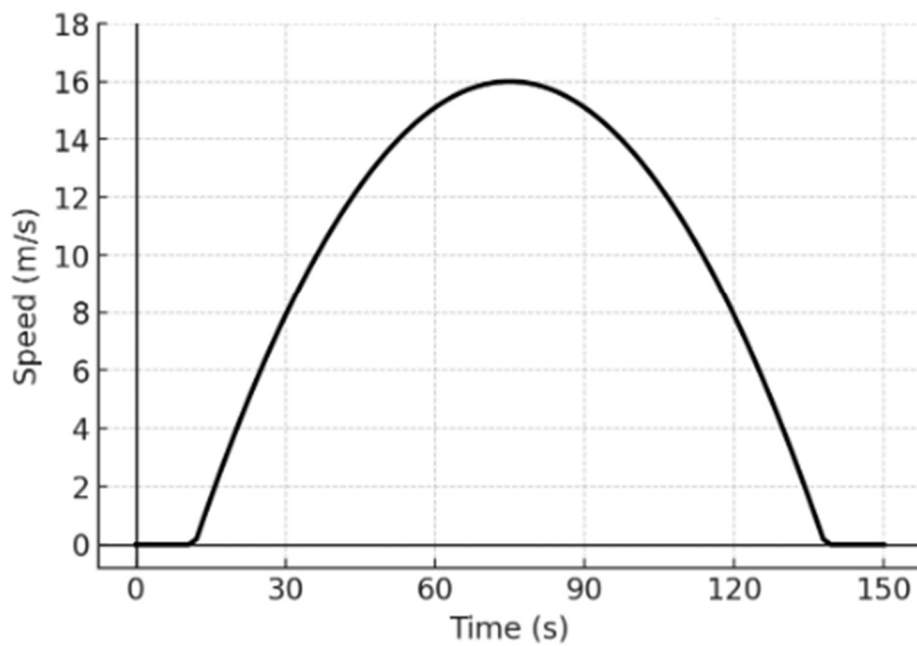
.....

(2)

(Total for Question 11 is 3 marks)

12

Here is a speed-time graph for a cyclist



(a) Work out an estimate for the distance the cyclist travelled in the first 40 seconds

..... m

(2)

(b) Is your answer to part (a) an underestimate or an overestimate of the actual distance the cyclist travelled in the first 40 seconds?

Give a reason for your answer.

(1)

Amir used the graph to answer this question.

Work out an estimate for the acceleration of the cyclist at time 60 seconds.

Here is Amir's working.

$$\begin{aligned}\text{acceleration} &= \frac{\text{speed}}{\text{time}} \\ &= 14 \div 60 \\ &= 0.233 \text{ m/s}^2\end{aligned}$$

Amir's method does not give a good estimate of the acceleration at time 60 seconds.

(c) Explain why.

(1)

(Total for Question 12 is 4 marks)

13

$$q = \sqrt{\frac{3d}{g}}$$

$d = 5.4$ correct to 1 decimal place.

$g = 0.07$ correct to 1 significant figure.

Work out the upper bound for the value of q .

Give your answer correct to 3 significant figures.

You must show all your working.

.....
(Total for Question 13 is 3 marks)

The frequency table shows the weight, in kg, of some dogs

Weight (kg)	Frequency
$0 < w \leq 1$	6
$1 < w \leq 2$	11
$2 < w \leq 3$	20
$3 < w \leq 4$	18
$4 < w \leq 5$	15
$5 < w \leq 6$	10

(a) Complete the cumulative frequency table

(1)

Weight (kg)	Cumulative Frequency
$0 < w \leq 1$	
$0 < w \leq 2$	
$0 < w \leq 3$	
$0 < w \leq 4$	
$0 < w \leq 5$	
$0 < w \leq 6$	

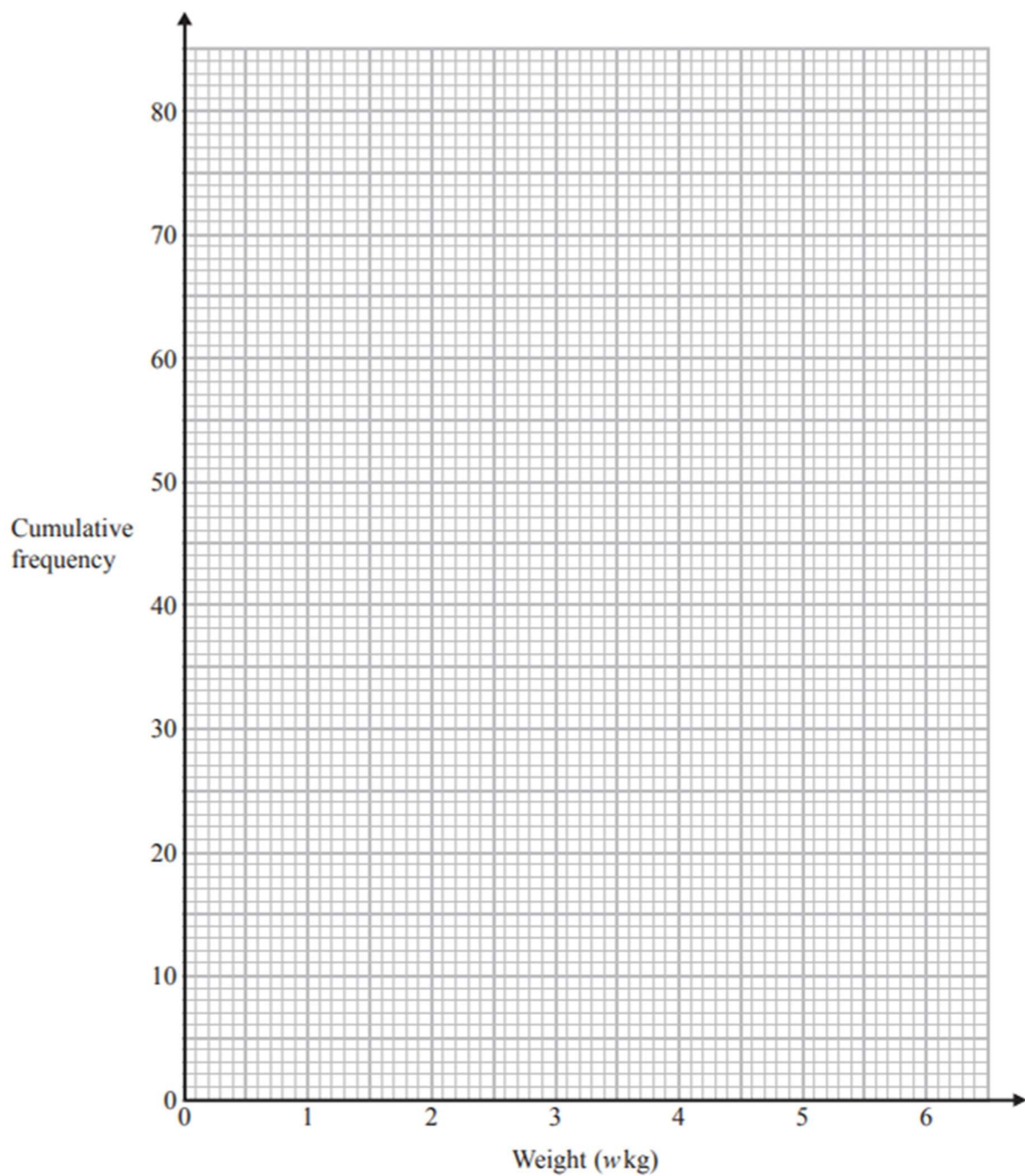
(b) On the grid below, draw a cumulative frequency graph for this information

(2)

(c) Use your cumulative frequency graph to find an estimate for the interquartile range

.....kg

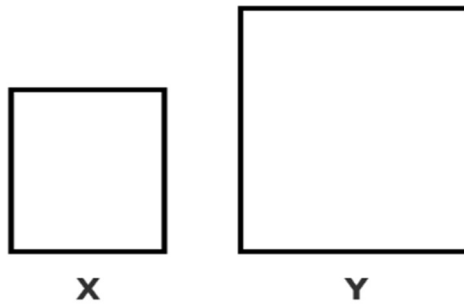
(2)



(Total for Question 14 is 5 marks)

15

Here are two squares, X and Y



The length of each side of square Y is 5 cm greater than the length of each side of square X
The area of square Y is 90 cm^2 greater than the area of square X.

Find the area of square Y.

Give your answer correct to 3 significant figures.

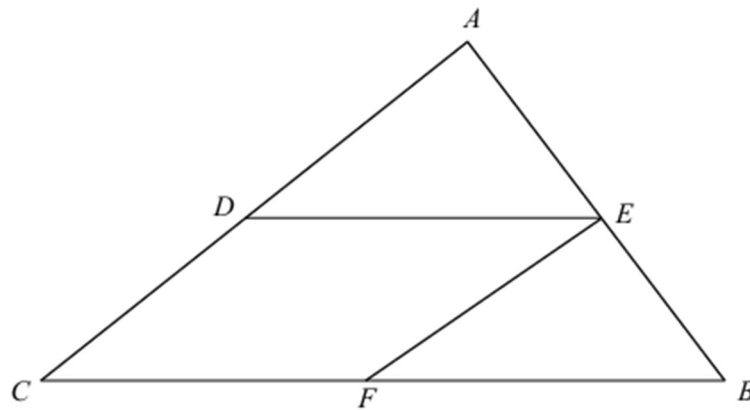
You must show all your working.

..... cm^2

(Total for Question 15 is 4 marks)

16

ABC is a triangle



CDEF is a parallelogram such that:

D is the midpoint of AC

E is the midpoint of AB

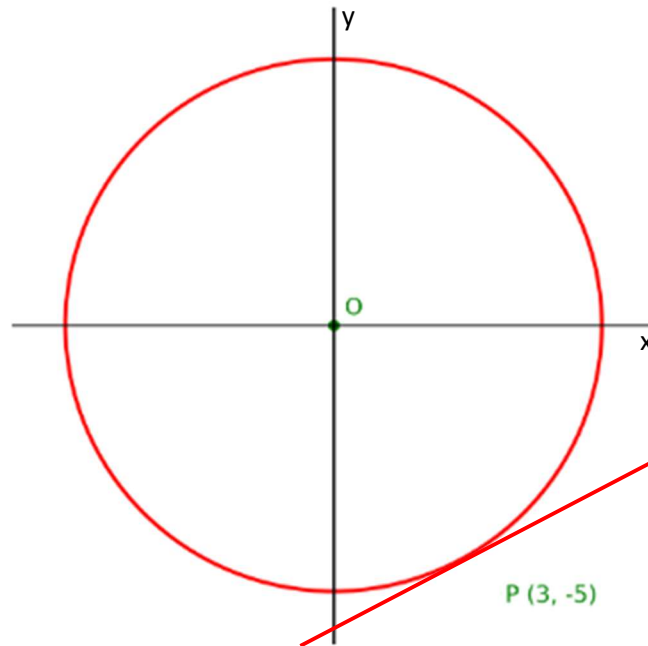
F is the midpoint of BC

Prove that triangle ADE is congruent to triangle BEF

(Total for Question 16 is 4 marks)

17

Here is a circle, centre O , and the tangent to the circle at the point $(3, -5)$



Find the equation of the tangent at the point P

.....
(Total for Question 17 is 3 marks)

18

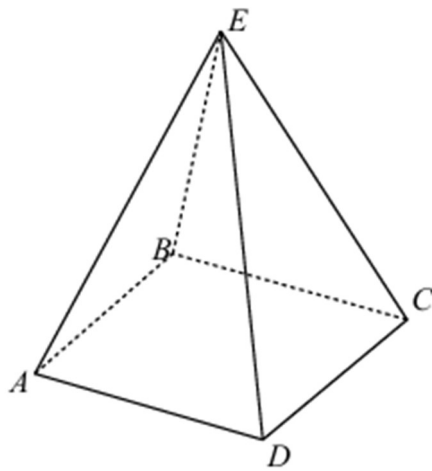
Simplify fully

$$\frac{8x^2 - 2}{6x^2 - 29x + 9} \times \left(\frac{1}{2x + 1} + \frac{1}{x - 2} \right)$$

.....
(Total for Question 18 is 5 marks)

19

The diagram shows a pyramid



The base of the pyramid $ABCD$ is a square.

$$AB = 5 \text{ cm}$$

The point E is 10 cm vertically above the base.

Calculate the size of angle EAC .

.....
(Total for Question 19 is 4 marks)

20

L is the straight line with equation $y = 3x - 4$.

C is a graph with equation $y^2 = 4x^2 - 12x + 9$.

Using algebra, find the coordinates of the points of intersection of L and C . You must show all your working.

(..... ,)

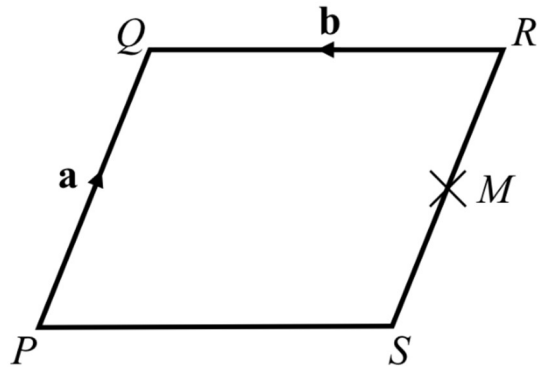
(..... ,)

(Total for Question 20 is 5 marks)

21

$PQRS$ is a parallelogram M is the midpoint of RS

$$\overrightarrow{PQ} = \mathbf{a} \quad \overrightarrow{RQ} = \mathbf{b}$$



(a) Find the vector \overrightarrow{PR} in terms of \mathbf{a} and \mathbf{b}

.....

(1)

(b) T is the point such that QRT is a straight line and $QR : RT = 1 : 2$

Show that \overrightarrow{ST} is parallel to \overrightarrow{PM}

(4)

(Total for Question 21 is 5 marks)

END OF PAPER