

Surname

Other names

Centre Number

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Candidate Number

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GCSE (9-1) Mathematics

Predicted Practice Paper

PAPER 3 (Calculator)

Higher Tier

Predicted paper for Summer 2027 examinations

Written in the style of the Edexcel 1MA1 specification

Time: 1 hour 30 minutes

Total marks: 80

IMPORTANT — PLEASE READ: This is a predicted practice paper. It is NOT an official Edexcel paper, NOT a past paper, and is NOT endorsed by or affiliated with Pearson Edexcel. All questions are original. Topics were chosen by analysing previous exam papers, but they are NOT guaranteed to appear in any real examination. Revise the full specification.

You must have:

Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Instructions

- Answer every question.
- Write your answers in the spaces provided and show all your working clearly.
- Calculators may be used.
- Diagrams are not drawn accurately unless the question says otherwise.

Information

- The paper is worth 80 marks in total.
- The marks available for each question are shown in brackets — use them to judge how long to spend.

Advice

- Read each question carefully before you begin.
- Attempt every question, even if you are unsure.
- If you finish early, use the time to check your answers.

Turn over

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Work out 15% of £240

(Total for Question 1 is 1 mark)

DO NOT WRITE IN THIS AREA

2 A television is sold for £306 after a 15% discount.
Work out the original price of the television.

(Total for Question 2 is 2 marks)

DO NOT WRITE IN THIS AREA

3 A cyclist travels 45 km in 1 hour 30 minutes.
Work out her average speed in kilometres per hour.

(Total for Question 3 is 2 marks)

DO NOT WRITE IN THIS AREA

4 A block of metal has a mass of 2.4 kg and a volume of 300 cm³.
Work out the density of the metal in g/cm³.

(Total for Question 4 is 2 marks)

DO NOT WRITE IN THIS AREA

5 Solve the inequality $5x - 3 > 2x + 9$

(Total for Question 5 is 2 marks)

DO NOT WRITE IN THIS AREA

6 In a school, the ratio of the number of boys to the number of girls is 5 : 4.
There are 72 more boys than girls.
Work out the total number of students in the school.

(Total for Question 6 is 3 marks)

DO NOT WRITE IN THIS AREA

7 A car worth £12 000 depreciates in value by 20% each year.
Work out the value of the car after 2 years.

(Total for Question 7 is 3 marks)

DO NOT WRITE IN THIS AREA

8 Triangle A and triangle B are mathematically similar.

Triangle A has an area of 20 cm^2 .

The base of triangle A is 4 cm and the corresponding base of triangle B is 10 cm.

Work out the area of triangle B.

(Total for Question 8 is 3 marks)

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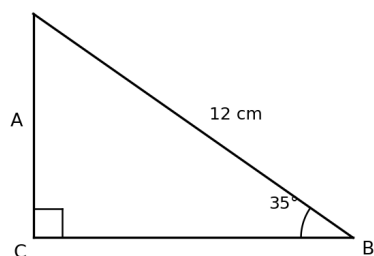
9 $p = 240$ and $q = 36$, each correct to 2 significant figures.

Work out the lower bound of $p - q$.

(Total for Question 9 is 2 marks)

DO NOT WRITE IN THIS AREA

10 Triangle ABC is right-angled at C.
AB = 12 cm and angle ABC = 35° .
Work out the length of AC.
Give your answer correct to 2 decimal places.



DO NOT WRITE IN THIS AREA

(Total for Question 10 is 3 marks)

11 A cylinder has a radius of 4 cm and a height of 10 cm.

Work out the volume of the cylinder.

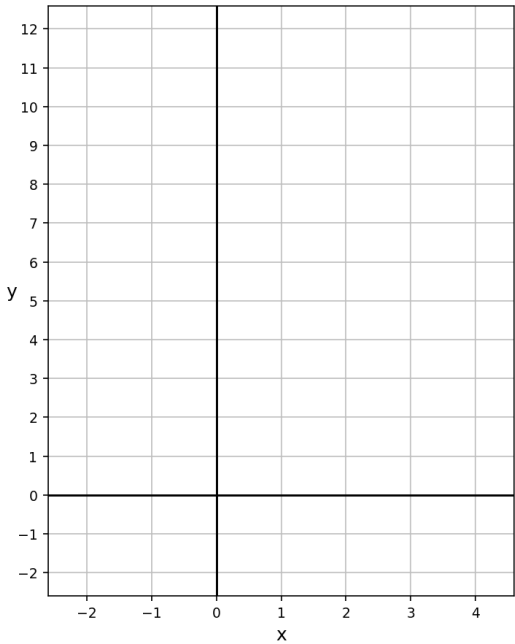
Give your answer correct to 3 significant figures.

(Total for Question 11 is 2 marks)

DO NOT WRITE IN THIS AREA

12 The table shows some values for $y = x^2 - 3x + 1$.

x	-2	-1	0	1	2	3	4
y	11	5	1		-1		5



(a) Complete the table of values.

----- (2)

DO NOT WRITE IN THIS AREA

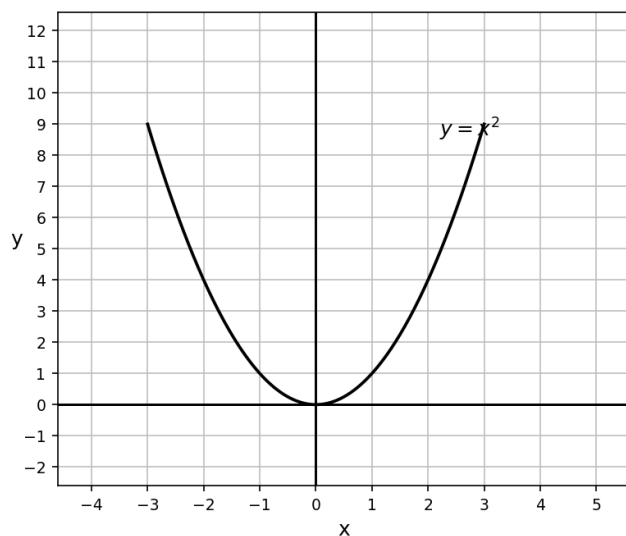
(b) On the grid, draw the graph of $y = x^2 - 3x + 1$ for $-2 \leq x \leq 4$.

----- (2)

(Total for Question 12 is 4 marks)

DO NOT WRITE IN THIS AREA

- 13** The diagram shows the graph of $y = x^2$ drawn on a grid.



On the same grid, sketch the graph of $y = (x - 3)^2$.

DO NOT WRITE IN THIS AREA

(Total for Question 13 is 2 marks)

14 The n th term of a sequence is $4n - 7$.

(a) Find the 20th term of the sequence.

----- (1)

(b) Is 121 a term of this sequence? You must show your working.

----- (2)

(Total for Question 14 is 3 marks)

DO NOT WRITE IN THIS AREA

15 The stem-and-leaf diagram shows the ages of 14 members of a running club.

Stem | Leaf

1 | 8 9

2 | 1 4 4 7 8

3 | 0 2 5 5 9

4 | 1 3

Key: 1 | 8 represents 18 years

(a) Work out the median age.

----- (2)

(b) Work out the range of the ages.

----- (1)

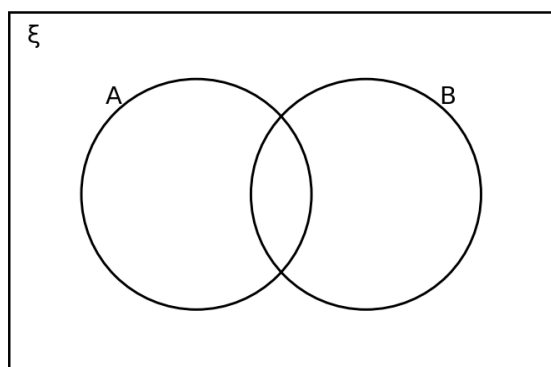
(Total for Question 15 is 3 marks)

DO NOT WRITE IN THIS AREA

16 $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$

$A = \{\text{multiples of 3}\}$

$B = \{\text{even numbers}\}$



(a) Complete the Venn diagram.

----- (2)

(b) Find $P(A \cap B)$.

----- (1)

(Total for Question 16 is 3 marks)

DO NOT WRITE IN THIS AREA

17 $f(x) = 2x + 5$ and $g(x) = x^2 - 1$

(a) Find $fg(2)$.

----- (2)

(b) Find $gf(x)$. Give your answer in its simplest form.

----- (2)

(Total for Question 17 is 4 marks)

DO NOT WRITE IN THIS AREA

18 (a) Expand and simplify $(4 + \sqrt{2})(4 - \sqrt{2})$.

----- (2)

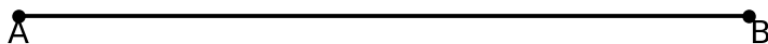
(b) Rationalise the denominator of $6/(2 + \sqrt{3})$. Give your answer in the form $a - b\sqrt{3}$, where a and b are integers.

----- (2)

(Total for Question 18 is 4 marks)

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19 AB is a straight line.



Use a ruler and a pair of compasses to construct the perpendicular bisector of AB. You must show all your construction lines.

(Total for Question 19 is 3 marks)

DO NOT WRITE IN THIS AREA

20 Cone A and cone B are mathematically similar.
Cone A has a height of 6 cm and a volume of 54 cm^3 .
Cone B has a height of 9 cm.
Work out the volume of cone B.

(Total for Question 20 is 3 marks)

DO NOT WRITE IN THIS AREA

21 A ladder of length 5 m leans against a vertical wall.

The ladder makes an angle of 68° with the horizontal ground.

(a) Work out how far up the wall the ladder reaches. Give your answer correct to 2 decimal places.

----- (2)

(b) Work out the distance of the foot of the ladder from the wall. Give your answer correct to 2 decimal places.

----- (1)

(Total for Question 21 is 3 marks)

DO NOT WRITE IN THIS AREA

22 A marine biologist wants to estimate the number of fish in a lake. She catches 60 fish, tags them and releases them back into the lake. A week later she catches 80 fish and finds that 12 of them are tagged.
(a) Estimate the number of fish in the lake.

----- (3)

(b) Write down one assumption she has made to obtain this estimate.

----- (1)

(Total for Question 22 is 4 marks)

DO NOT WRITE IN THIS AREA

23 $x^3 - 4x = 20$

(a) Show that the equation has a solution between $x = 3$ and $x = 4$.

----- (2)

(b) Use trial and improvement to find this solution, correct to 1 decimal place.
You must show all your trials.

----- (2)

(Total for Question 23 is 4 marks)

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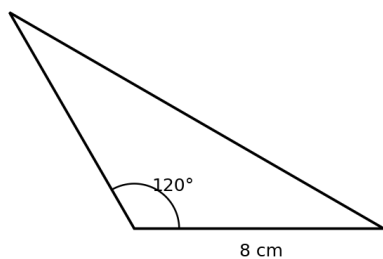
24 n is a positive integer.

Prove that the product of two consecutive even numbers is always a multiple of 8.

(Total for Question 24 is 3 marks)

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- 25** The diagram shows a sector of a circle with radius 8 cm and angle 120° .



- (a) Work out the area of the sector. Give your answer correct to 1 decimal place.

----- (2)

- (b) Work out the perimeter of the sector. Give your answer correct to 1 decimal place.

----- (2)

(Total for Question 25 is 4 marks)

DO NOT WRITE IN THIS AREA

26 The table shows the heights of 30 plants.

Height, h (cm)	$0 < h \leq 10$	$10 < h \leq 20$	$20 < h \leq 30$	$30 < h \leq 40$
Frequency	4	9	12	5

(a) Work out an estimate of the mean height.

..... (3)

(b) Write down the modal class.

..... (1)

(Total for Question 26 is 4 marks)

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27 Solve $3x^2 - 7x - 2 = 0$.

Give your answers correct to 2 decimal places.

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(Total for Question 27 is 4 marks)

END OF PAPER