Candidate surname	Other names

Maths Planner

Pearson Edexcel
June 2023 Predicted Paper

Mathematics
PAPER 2 (Calculator)
Higher Tier

Time 1 hour

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

65

Q	Topic(s)	Q	Topic(s)
1	Standard form	10	Sector area (shaded region)
2	Error intervals	11	Probability tables & combined events
3	Speed, Distance, Time	12	Types of graphs
4	Product of prime factors	13	Combined pythagoras & trigonometry
5	Repeated % change	14	Drawing cubic graphs
6	Transformations	15	Trapezium and rectangle area applied
7	Using a calculator / Rounding	16	Histograms
8	nth term / Laws of indices	17	Algebraic fractions w/ solving quads.
9	Combined ratio as fractions	18	Cosine rule / Area non-right triangles

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1 (a) Write the number 0.00006273 in standard form.

.....

(1)

(b) Work out $\dfrac{(1.6\times10^{-5})\times(4.8\times10^{3})}{2.4\times10^{-7}}$

Give your answer in standard form.

.....

(2)

(Total marks for Question 1 is 3 marks)

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2 Sushil truncates the number y to 2 decimal places.
The result is 2.31

Write down the error interval for y.

$\leq y <$

.....

(Total marks for Question 2 is 2 marks)

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3 Jackie decided to cycle to her friend's house. She lives 18 miles away. Jackie estimates that her average cycling speed is 12 miles per hour.

(a) How many minutes **should** it take Jackie to cycle to her friend's house?

.....

(1)

A sudden increase in wind speed reduces her average cycling speed by 20%.

(b) If she needs to be at her friend's house by 12:45 pm and leaves at 11:00 am, will she make it on time, considering the wind speed effect?

.....

(3)

(Total marks for Question 3 is 4 marks)

4 $A = 2^3 \times 5 \times 7^3$
$B = 2 \times 3^2 \times 5 \times 7$

(a) Write **18A** as a product of prime factors.

.....

(2)

(b) Find the **HCF** of **18A** and **B.**

.....

(2)

(Total marks for Question 4 is 4 marks)

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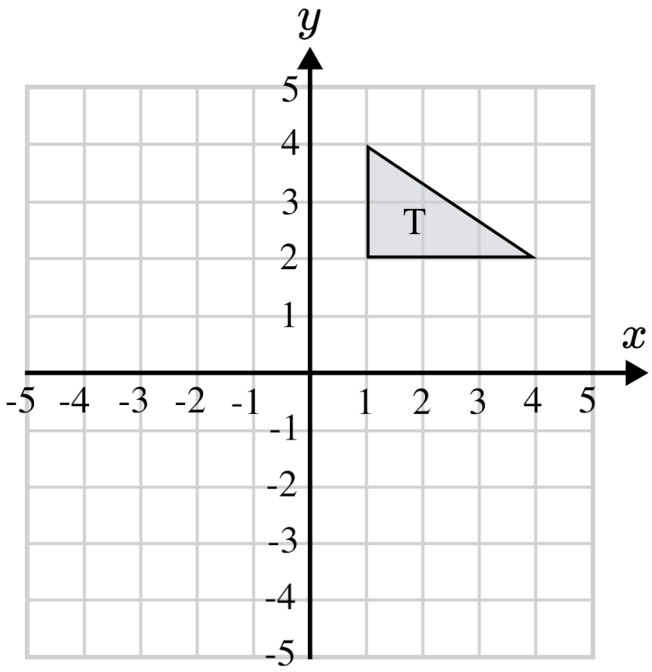
5 During a housing market crash, the prices depreciated by 2% per quarter in the first year and 1.5% per quarter in the second year.

Henry's house was valued at £465,000 at the start of the crash.
How much is Henry's house worth 18 months into the crash?
Give your answer to the nearest pound.

.....

(Total marks for Question 5 is 3 marks)

6



(a) Rotate triangle **T** 270° clockwise about the origin.
Label the new triangle **A**. **(1)**

(b) Translate triangle **A** by the vector $\begin{bmatrix} 3 \\ -5 \end{bmatrix}$
Label the new triangle **B**. **(1)**

(Total marks for Question 6 is 2 marks)

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7 (a) Use your calculator to work out

$$\frac{\sqrt{sin(30)+2.01^4}}{(6.7-3.20)^{\frac{1}{2}}}$$

Write down all the figures shown on your calculator

.....

(1)

(b) Round your answer to part **(a)** to 2 significant figures

.....

(1)

(Total marks for Question 7 is 2 marks)

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8 (a) The first five terms of an arithmetic sequence are

1.4 0.6 -0.2 -1 -1.8

Work out the value of the 79th term.

.....

(2)

(b) Simplify $2y^0 \times x^2$

.....

(1)

(c) $(\sqrt{8})^x \div 64^{2y}$ can be written in the form 2^a

Show that $a = \frac{3}{2}x - 12y$

(2)

(Total marks for Question 8 is 6 marks)

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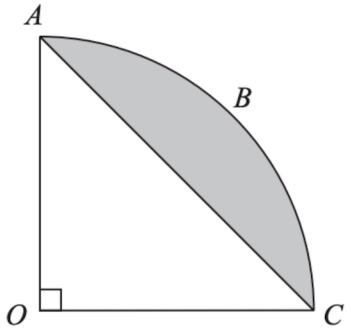
9 Given $\frac{p}{q} = \frac{3}{7}$ and $\frac{q}{r} = \frac{4}{9}$

find $p : q : r$

.....

(Total marks for Question 9 is 3 marks)

10



The arc ABC has a length of 4π cm
AC is a chord of the circle.

Work out the area of the shaded segment as a percentage of the sector OAC.
Give your answer correct to 2 decimal places.

.....

(Total marks for Question 10 is 4 marks)

11 A bag contains only red counters, blue counters, green counters and yellow counters.
A counter is taken at random.

The table shows the probabilities of taking a counter from the bag.

Colour	red	blue	green	yellow
Probability	0.15			0.2

The probability of taking a blue counter is 4 times greater than the probability of taking a green counter.

There are 50 yellow counters.

(a) Work out the number of blue counters in the bag

.....

(3)

Chloe takes a counter from the bag, notes its colour and then replaces it. She then selects a second counter.

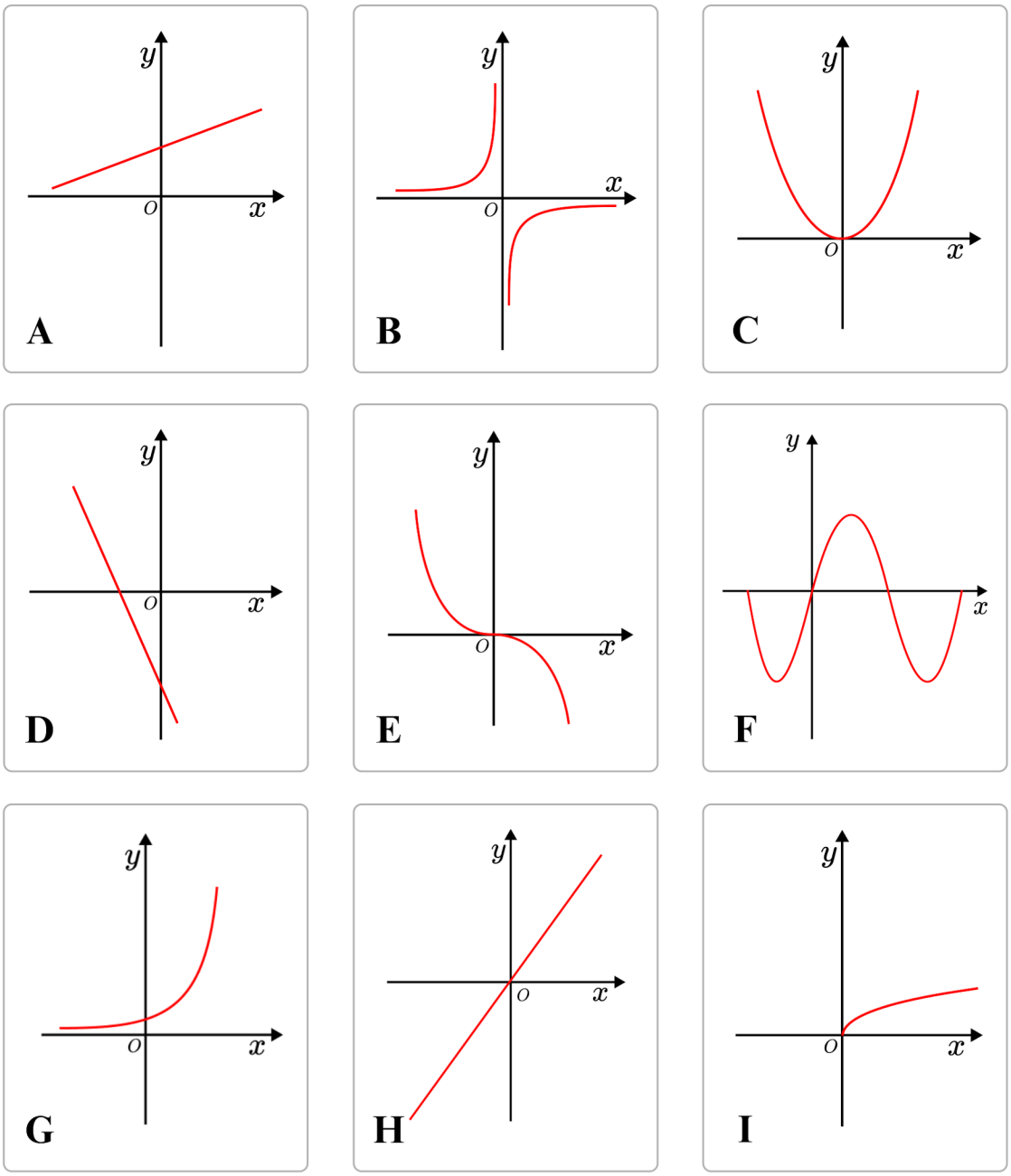
(b) Find the probability that Chloe takes two counters of the same colour.

.....

(3)

(Total marks for Question 11 is 6 marks)

12 Here are some graphs.

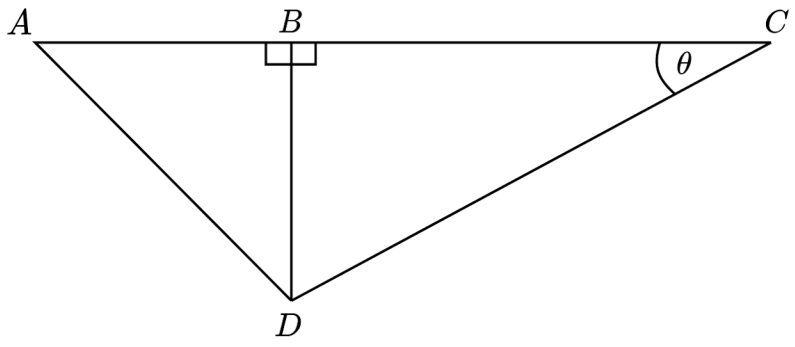


In the table below, match each equation with the letter of its graph.

Equation	Graph
$y = \sqrt{x}$	
$y = -3x^3$	
$y = \frac{1}{2}x + 2$	
$y = sin(x)$	

(Total marks for Question 12 is 3 marks)

13



AB = 10.4 cm and $\theta = 34°$
The ratio of AB to AD is 4:5

Calculate length of *CD*, give your answer correct to 2 decimal places.

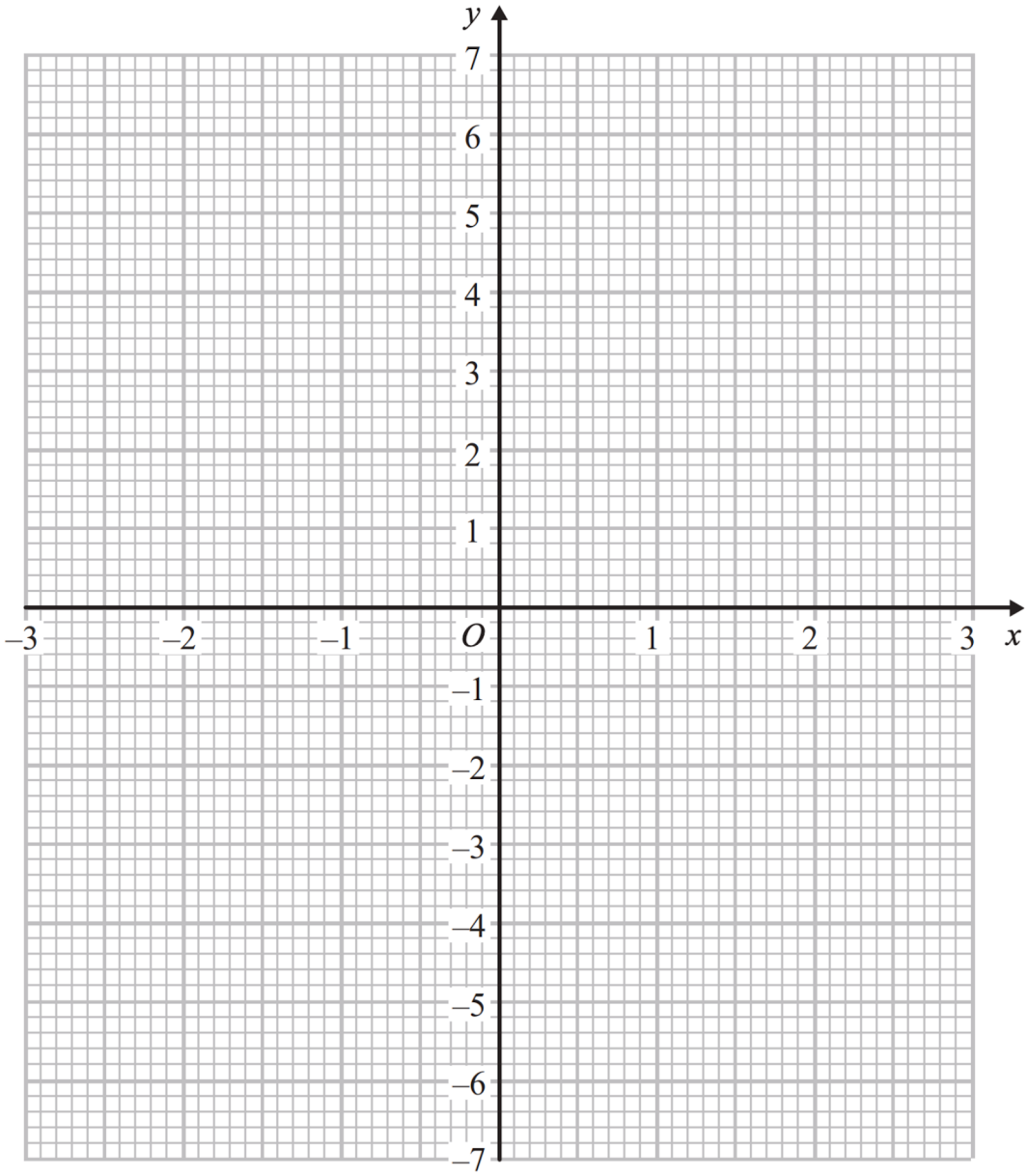
.....

(Total marks for Question 13 is 3 marks)

14 (a) Complete the table of the values for $y = 3 - 3x^2 - x^3$ (2)

x	-3	-2	-1	0	1
y					

(b) On the grid, draw the graph $y = 3 - 3x^2 - x^3$ for the values of x from -3 to 1. (1)



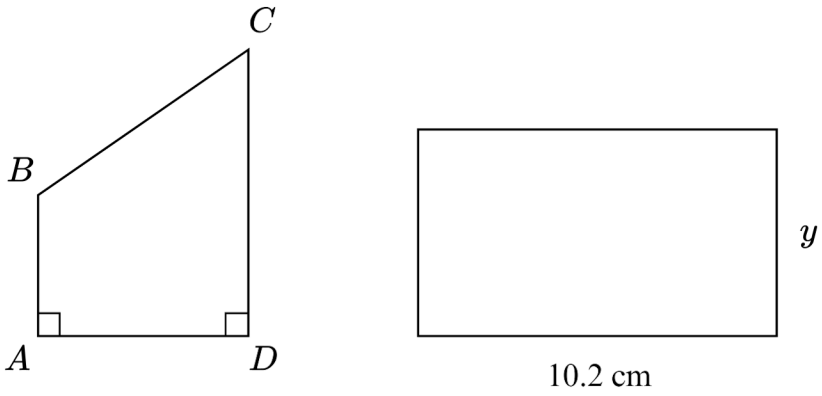
(c) Use your graph to estimate solutions for $3 - 3x^2 - x^3 = 1$

.....

(1)

(Total marks for Question 14 is 4 marks)

15 $ABCD$ is a trapezium.



$AB = 4.7$ cm
$BC = 8$ cm
$CD = 7.7$ cm

The area of the rectangle is $\mathbf{1}\frac{1}{2}$ the area of $ABCD$.

Work out the length of side y, correct to 2 significant figures.

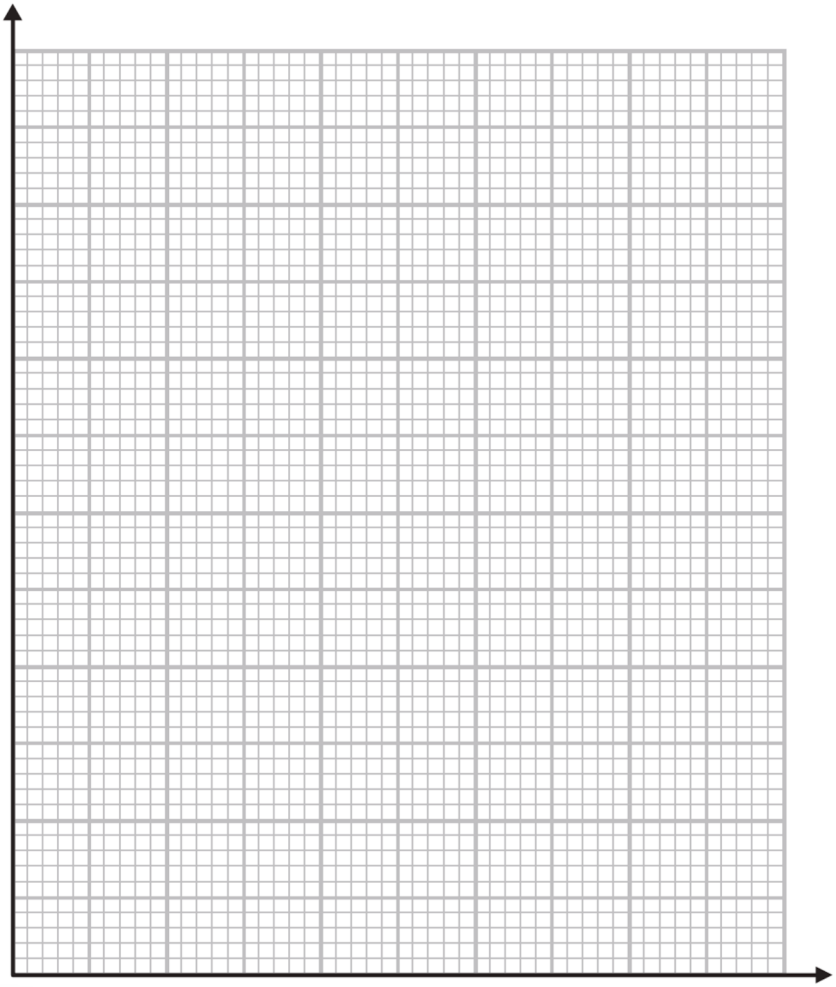
.....

(Total marks for Question 15 is 4 marks)

16 The table shows Mr Andrews year 10 GCSE Paper 1 mock results.

Score (m marks)	Frequency
$0 < m \leq 10$	12
$10 < m < 30$	18
$30 < m < 40$	11
$40 < m \leq 50$	8
$50 < m < 60$	5
$60 < m < 80$	3

(a) On the grid, draw a histogram for this information. **(3)**



(b) Work out an estimate for the fraction of students who scored between 10 and 45 marks.

.....

(2)

(Total marks for Question 16 is 5 marks)

17 Solve $\frac{4x-3}{x^2-3x+2} + \frac{2x+1}{x-1} = 1$

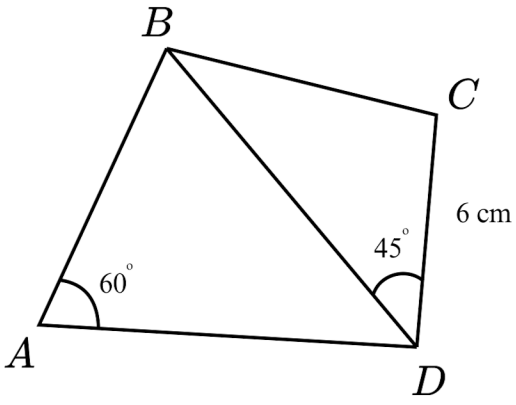
Give your solutions in surd form.

$x =$ .....

$x =$ .....

(Total marks for Question 17 is 4 marks)

18



Triangle ABC, side AB has a length of 8cm.
Side AD has a length of x cm, where $x > 0$.
Given triangle BCD is a non-right triangle.

Show that the area of BCD can be written in the form $\frac{3\sqrt{2}}{2}\sqrt{x^2 - 8x + 64}$

(Total marks for Question 18 is 4 marks)