Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number	Candidate Number

Predicted Paper 1

Time: (1 hour 35 minutes)

Mathematics

Paper 1 (Non-Calculator)
Higher Tier

15th May 2025

Total Marks

Instructions

- Use black ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- Fill in the boxes at the top of this page with your name, center 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.
- There are 85 marks, you have 1 hour and 35 minutes!
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- Calculators may not be used.

FOR MORE MATHSWITHDAN RESOURCES, SCAN THE QR CODES:

Scan here:

Hello there! I hope your revision is going splendidly.
Welcome to my Predicted Paper 1 for GCSE Maths Higher Summer 2025!
My name is Dan, I am a full time GCSE and A Level Maths tutor with a First-Class degree In BSc Mathematics.

In addition to my tutoring sessions, I run a YouTube channel where I offer detailed walkthroughs of past GCSE and A-Level Maths papers. I am also on TikTok and Instagram, where I go through quick-fire questions to help students stay sharp, whether they're scrolling late at night or on their way to school!

This paper includes a variety of questions gathered from past exam papers (all publicly available) and questions created by me! I've uploaded a full video walkthrough for this paper on my YouTube channel – it's a great way to check your answers and understand the methods. You can access it by scanning the QR code below or in the top right corner of each page! Do the paper FIRST before watching the video!

DISCLAIMER:

There is no guarantee the topics in this paper will come up. Use this paper as extra practice alongside comprehensive revision. Good luck!!!

SCAN THE QR CODE FOR THE ENTIRE WALKTHROUGH

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 (a) Work out $3\frac{2}{5} + 1\frac{3}{8}$

.....

(2)

(b) Work out $2\frac{1}{3} \div \frac{5}{6}$

Give your answer as a mixed number in its simplest form.

.....

(2)

(Total for Question 1 is 4 marks)

2 Find the highest common factor (HCF) of 124 and 186

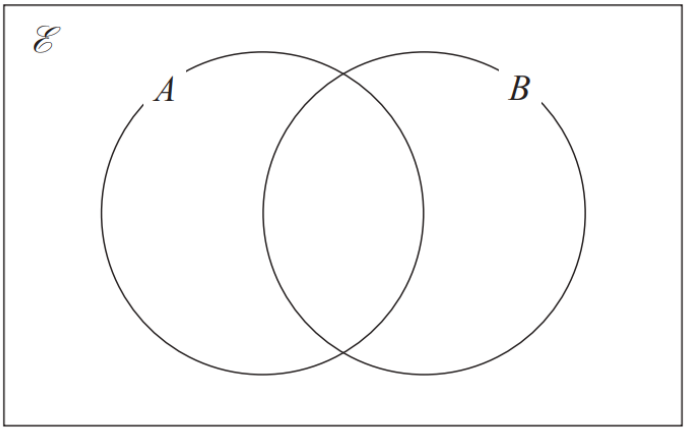
(Total for Question 2 is 2 marks)

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

A = {multiples of 3}

B = {prime numbers}

(a) Complete the Venn diagram for this information.



(3)

A number is chosen at random from the universal set, $\mathscr{E}$

(b) Find the probability that this number is in the set A ∪ B

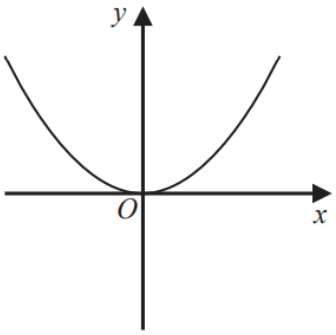
.....

(2)

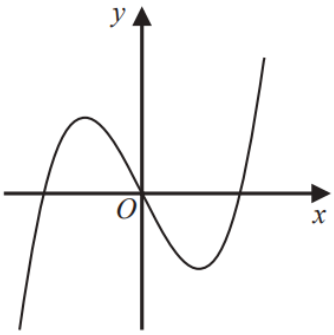
(Total for Question 3 is 5 marks)

4 Here are six graphs.

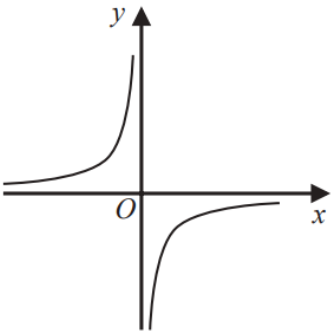
A



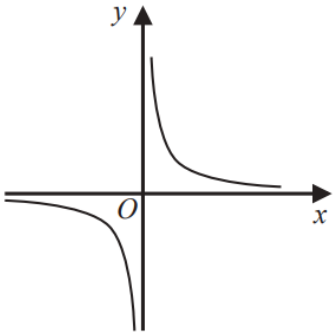
B



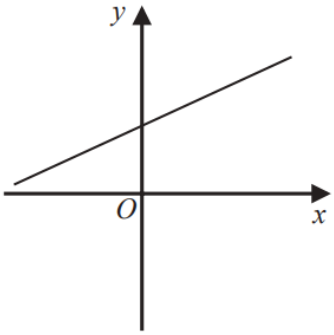
C



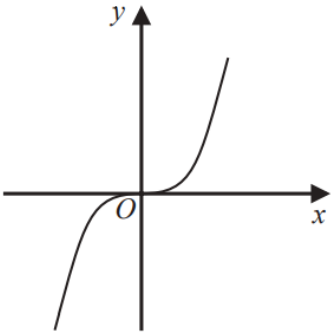
D



E



F



Write down the letter of the graph that could have the equation

(a) $y = -\frac{1}{x}$

.....

(1)

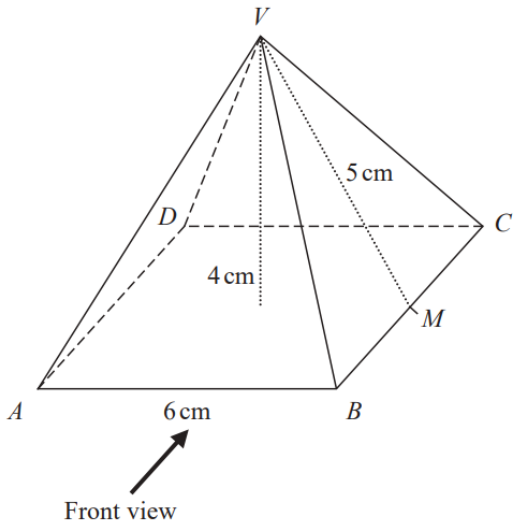
(b) $y = 2x^3 - 3x$

.....

(1)

(Total for Question 4 is 2 marks)

5 Here is a solid square-based pyramid, *VABCD*.



The base of the pyramid is a square of side 6 cm.
The height of the pyramid is 4 cm.
M is the midpoint of *BC* and *VM* = 5 cm.

(a) Draw an accurate front elevation of the pyramid from the direction of the arrow.

(2)

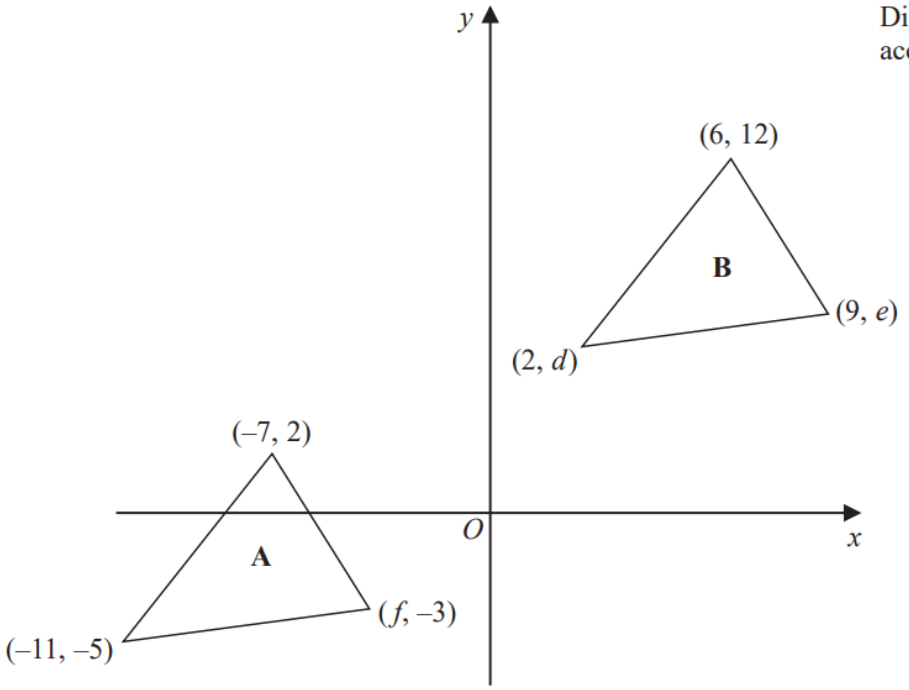
(b) Work out the total surface area of the pyramid.

.....

(4)

(Total for Question 5 is 6 marks)

6 The diagram shows a sketch of triangle A and triangle B on a coordinate grid.



(a) Given that triangle **A** has been translated to give triangle **B**, work out the value of d, the value of e and the value of f

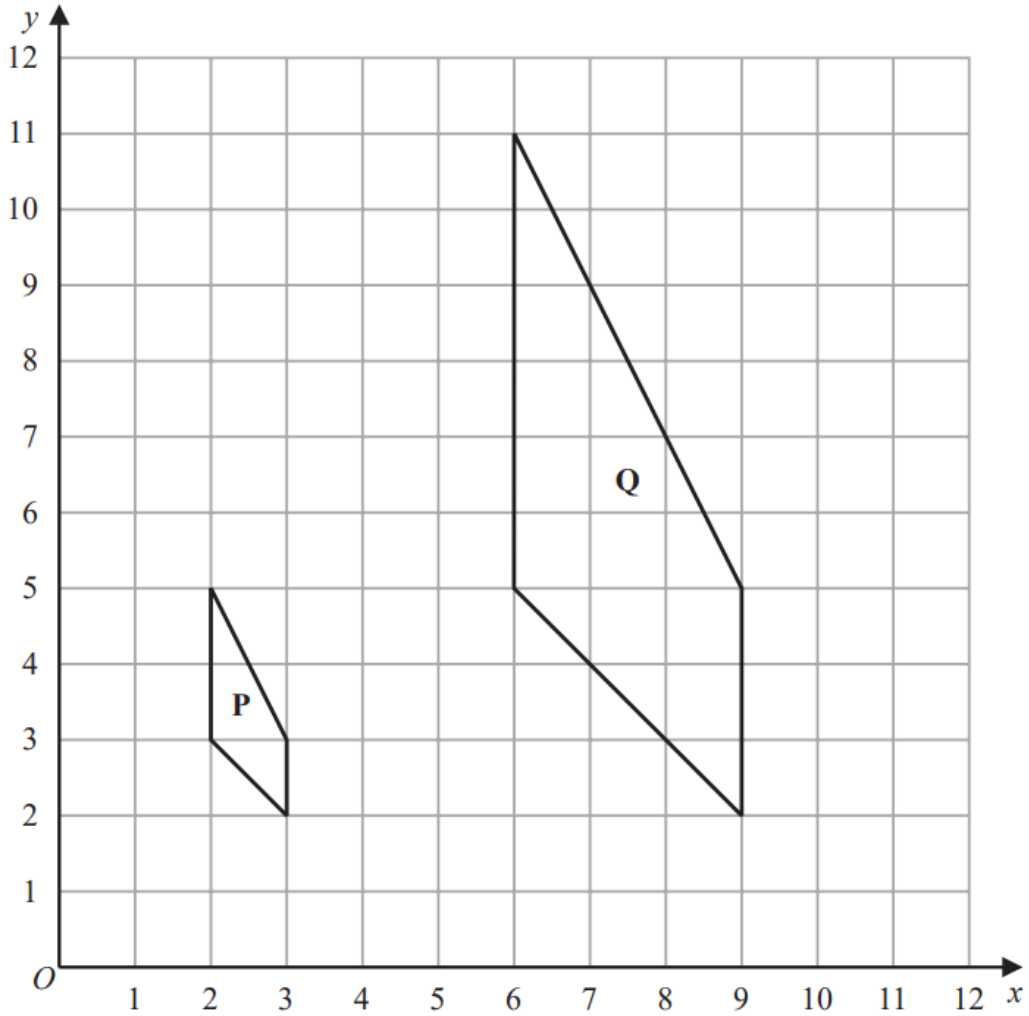
$d =$ .....

$e =$ .....

$f =$ .....

(3)

The diagram shows shape P and shape Q drawn on a grid



(b) Describe fully the single transformation that maps shape **P** onto shape **Q**

.....

.....

(3)

(Total for Question 6 is 5 marks)

Scan here:

7 The perimeter of a right-angled triangle is 60 cm.
The lengths of its sides are in the ratio 4 : 5 : 6

Work out the area of the triangle.

..... cm^2

(Total for Question 7 is 4 marks)

8

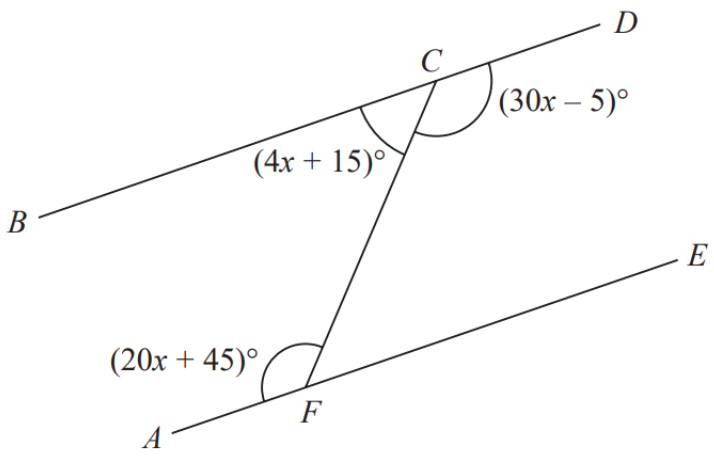


Diagram **NOT** accurately drawn

BCD and *AFE* are straight lines.

Show that *BCD* is parallel to *AFE*.
Give reasons for your working.

(Total for Question 8 is 5 marks)

9 Express $\frac{5}{3} - \frac{x+2}{2x}$ as a single fraction in its simplest terms.

(Total for Question 9 is 3 marks)

10 A school recorded the times, in minutes, it took for students in **Class X** and **Class Y** to complete a coding challenge.

Here are the times for the **23 students** in **Class X**:

31	32	33	35	38	40	41	41	42	43	44	45
46	48	49	51	52	54	55	58	60	62	63	

(a) Complete the table below to show information about the completion times of the students in Class X.

Median	
Lower quartile	
Upper quartile	
Least time	31
Greatest time	63

(2)

Here is some information about the completion times for Class Y.

Median	51
Lower quartile	43
Upper quartile	58
Least time	30
Greatest time	65

Ebony says that the students in Class X completed the coding challenge faster than the students in Class Y.

(b) Is Ebony correct?
You must give a reason for your answer

.....

.....

.....

(1)

Ebony says that the students in Class X vary more in how long they took to complete the challenge than the students in Class Y.

(c) Is Ebony correct?
You must give a reason for your answer.

.....

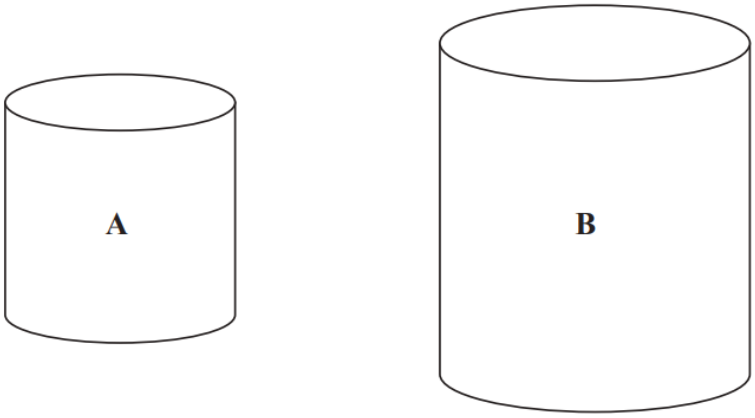
.....

.....

(1)

(Total for Question 10 is 4 marks)

11 **A** and **B** are two similar cylindrical containers.



the surface area of container **A** : the surface area of container **B** = 9 : 16

Kyla fills container A with water.
She then pours all the water into container B.
Kyla repeats this and stops when container B is full of water.

Work out the number of times that Kyla fills container A with water.
You must show all your working.

(Total for Question 11 is 4 marks)

12 Find the exact value of $\dfrac{1}{\sin 30^\circ \times \tan 60^\circ}$

Give your answer in the form $\dfrac{a\sqrt{b}}{b}$, where a and b are integers.

.....

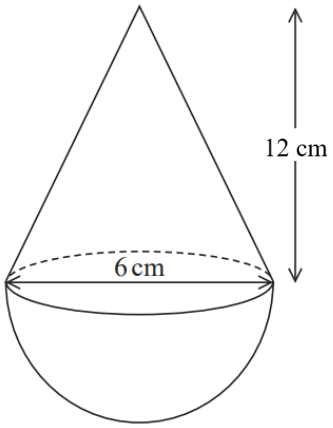
(Total for Question 12 is 3 marks)

13 $32^{\frac{5}{3}} \times 2^x = 16^{\frac{29}{12}}$

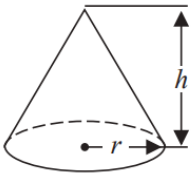
Work out the exact value of x.

(Total for Question 13 is 3 marks)

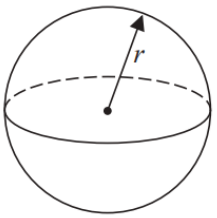
14 The diagram shows a solid shape.
The shape is a cone on top of a hemisphere.



Volume of a cone = $\frac{1}{3}\pi r^2 h$



Volume of a sphere = $\frac{4}{3}\pi r^3$



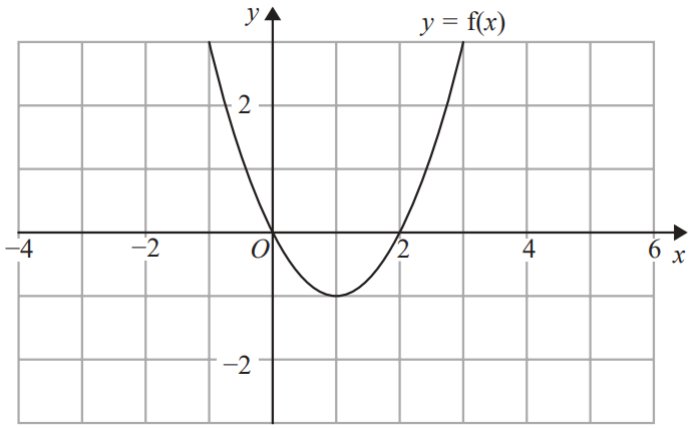
The height of the cone is 12 cm.
The base of the cone has a diameter of 6 cm.
The hemisphere has a diameter of 6 cm.

The total volume of the shape is $k\pi \text{cm}^3$, where k is an integer.

Work out the value of k.

(Total for Question 14 is 4 marks)

15 The graph of y = f(x) is shown on the grid below



(a) On the grid above, sketch the graph of $y = -f(x)$

(1)

The equation of the Circle **C** is $x^2 + y^2 = 25$

The circle **C** is translated by the vector $\begin{pmatrix} 0 \\ 5 \end{pmatrix}$ to give circle **B.**

(b) Draw a sketch of circle **B**.

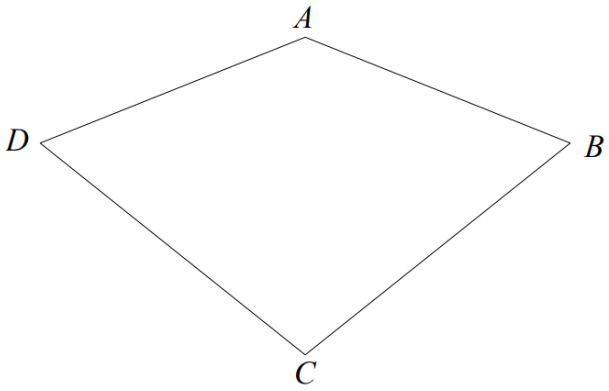
Label with coordinates
the centre of circle B
and any points of intersection with the coordinate axes.

.....

(3)

(Total for Question 15 is 4 marks)

16 *ABCD* is a quadrilateral.



$AB = AD$
$BC = CD$

Prove that line *AC* **bisects** angle *BAD*.

(Total for Question 16 is 4 marks)

17 Given that $(10 - \sqrt{x})(5 + \sqrt{x}) = y\sqrt{x} + 39$ where x is a prime number and y is an integer,

Find the value of x and the value of y.
Show each stage of your working clearly

$x =$.....

$y =$.....

(Total for Question 17 is 3 marks)

18 f, g and h are functions such that

$$f(x) = x^2 - 4x + 7, \quad g(x) = x - 5, \quad h(x) = \frac{\sqrt{x+3}}{2}$$

(a) Find fg(1)

.....

(1)

(b) Find $h^{-1}(x)$

.....

(2)

(c) Solve gf(x) = 6

Give your answer in the form $a \pm b\sqrt{2}$ where a and b are integers.

.....

(5)

(Total for Question 18 is 8 marks)

19 A bowl contains n pieces of fruit.
Of these, 4 are oranges and the rest are apples.

Two pieces of fruit are going to be taken at random from the bowl.

The probability that the bowl will then contain $(n - 6)$ apples is $\frac{1}{3}$

Work out the value of n
Show your working clearly.

(Total for Question 19 is 6 marks)

Scan here:

20 *OAB* is a triangle.

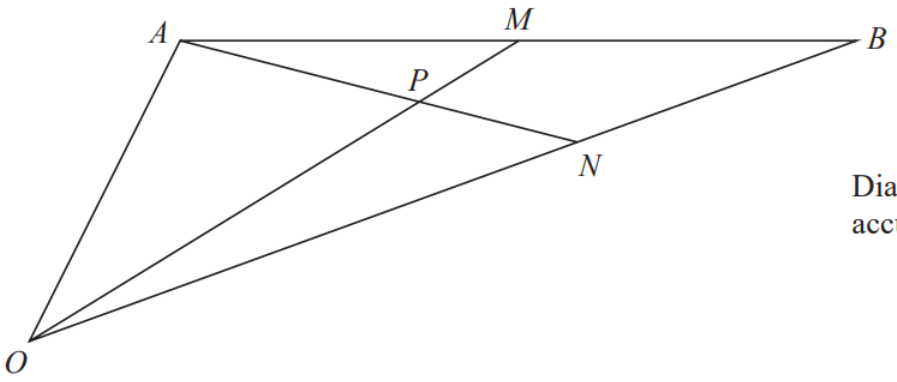


Diagram **NOT** accurately drawn

$\overrightarrow{OA} = 2\mathbf{a}$ and $\overrightarrow{OB} = 2\mathbf{b}$

M is the midpoint of *AB*.
N is the point on *OB* such that *ON*:*NB* = 2 :1

P is the point on *AN* such that *OPM* is a straight line.

Use a vector method to find *OP*:*PM*
Show your working clearly.

.....

(Total for Question 20 is 6 marks)

TOTAL FOR PAPER IS 85 MARKS

Scan here:

Congratulations on completing the paper! I hope it has helped you with your revision.

Social Media Links:

- TikTok
- YouTube
- Instagram
- Facebook

Why not buy me a coffee? 😊

Buy Me a Coffee

Take care!