Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel International GCSE

Thursday 30 October 2025

Morning (Time: 1 hour 30 minutes)

Paper reference **4MB1/01**

Mathematics B

PAPER 1

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. 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.*
- **Calculators may be used**.

Information

- The total mark for this paper is 100.
- 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.
- Check your answers if you have time at the end.
- Without sufficient working, correct answers may be awarded no marks.

Turn over ▶

P79556A

M:1/1/1/1/1/1/

P 7 9 5 5 6 A 0 1 2 8

Pearson

Answer ALL TWENTY SEVEN questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The nth term of a sequence is given by $5n^2 - 2n$

Find the difference between the 3rd term and the 4th term of this sequence.

.....

(Total for Question 1 is 2 marks)

2 Make h the subject of $k = \dfrac{8h + 5j}{2}$

.....

(Total for Question 2 is 2 marks)

3 Without using a calculator and showing all your working, evaluate

$$1\frac{5}{6} \times 2\frac{2}{5}$$

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

.....

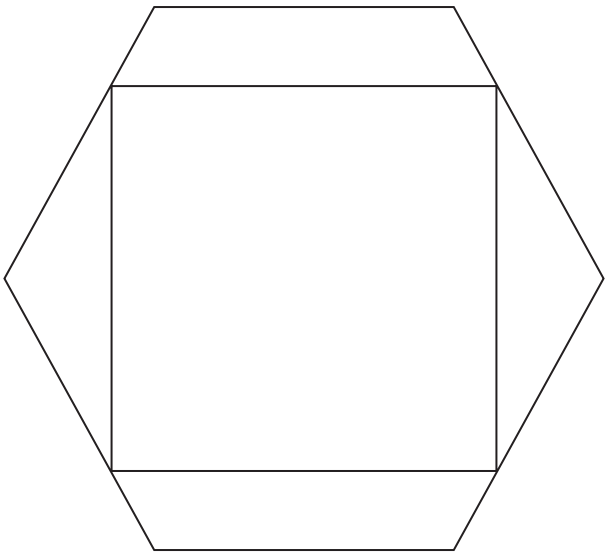
(Total for Question 3 is 2 marks)

4 (a) Write down the order of rotational symmetry of a regular hexagon.

.....

(1)

A shape is made from a regular hexagon and a square.
The vertices of the square lie on the sides of the hexagon.



(b) For this shape, write down the number of lines of symmetry.

.....

(1)

(Total for Question 4 is 2 marks)

5 Using ruler and compasses only and **showing all your construction lines**, construct the perpendicular bisector of AB

(Total for Question 5 is 2 marks)

6 The bearing of point P from point Q is 304°

Calculate the bearing of point Q from point P

.....°

(Total for Question 6 is 2 marks)

7 Find the value of $\frac{pq-3q^2}{2p+1}$ when $p = 2$ and $q = -5$

.....

(Total for Question 7 is 2 marks)

8 Given that $y = x^3 + 2x^2 - 15x + 7$

find $\frac{dy}{dx}$

$\frac{dy}{dx} =$ .....

(Total for Question 8 is 2 marks)

9 Here are eight numbers.

15 30 18 12 23 19 16 23

(a) Write down the mode.

.....

(1)

(b) Find the median.

.....

(2)

(Total for Question 9 is 3 marks)

10 The probability that Charlie arrives late to school is 0.35

(a) Write down the probability that Charlie does **not** arrive late to school.

.....

(1)

Charlie attends school 20 times during January.

(b) Calculate the expected number of times that Charlie arrives late to school during January.

.....

(2)

(Total for Question 10 is 3 marks)

11 $\mathbf{A} = \begin{pmatrix} -1 & 2 \\ 7m & 4 \end{pmatrix}$ $\mathbf{B} = \begin{pmatrix} -3 & 2m \\ 5 & -6 \end{pmatrix}$

Find 3**A** – **B**
Give each element of the matrix in terms of m where appropriate.

$\begin{pmatrix} & \\ & \end{pmatrix}$

(Total for Question 11 is 3 marks)

12 A straight line **L** passes through the points with coordinates (4, 3) and (6, –8)

Find an equation of **L** in the form $y = mx + c$

.....

(Total for Question 12 is 3 marks)

13

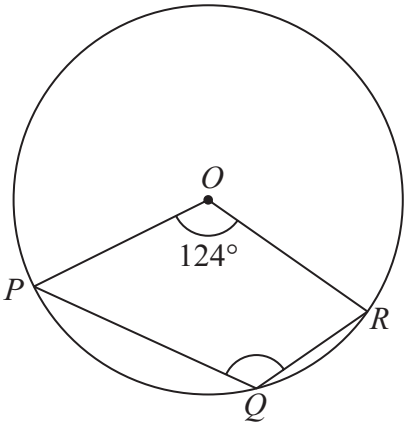


Diagram **NOT** accurately drawn

P, Q and R are three points on a circle, centre O

$\angle POR = 124°$

Calculate the size, in degrees, of $\angle PQR$
Give reasons for each stage of your working.

$\angle PQR =$ ..... °

(Total for Question 13 is 3 marks)

14

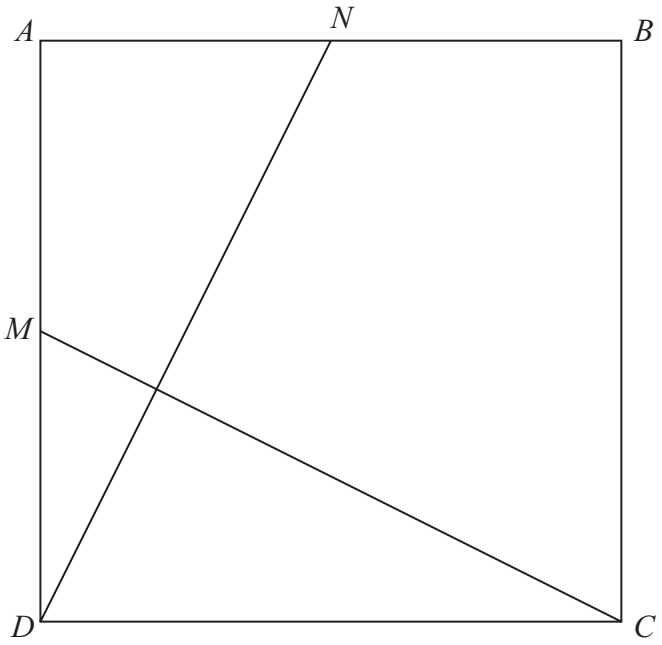


Diagram **NOT** accurately drawn

The diagram shows a square $ABCD$

M is the midpoint of AD
N is the midpoint of AB

Prove that $\triangle DAN$ is congruent to $\triangle CDM$

(Total for Question 14 is 3 marks)

15 Without using a calculator and showing all your working, express

$$\frac{11+\sqrt{2}}{3\sqrt{2}-1}$$

in the form $a+b\sqrt{2}$ where a and b are integers.

.....

(Total for Question 15 is 3 marks)

16 Write $3x^2 + 24x + 1$ in the form $a(x + b)^2 + c$ where a, b and c are integers.

.....

(Total for Question 16 is 3 marks)

17 (a) Expand and simplify $3c(2 - 5c) - 2c(5c + 1)$

.....

(2)

(b) Factorise fully $2de^5 - 9de^2$

.....

(2)

(Total for Question 17 is 4 marks)

18

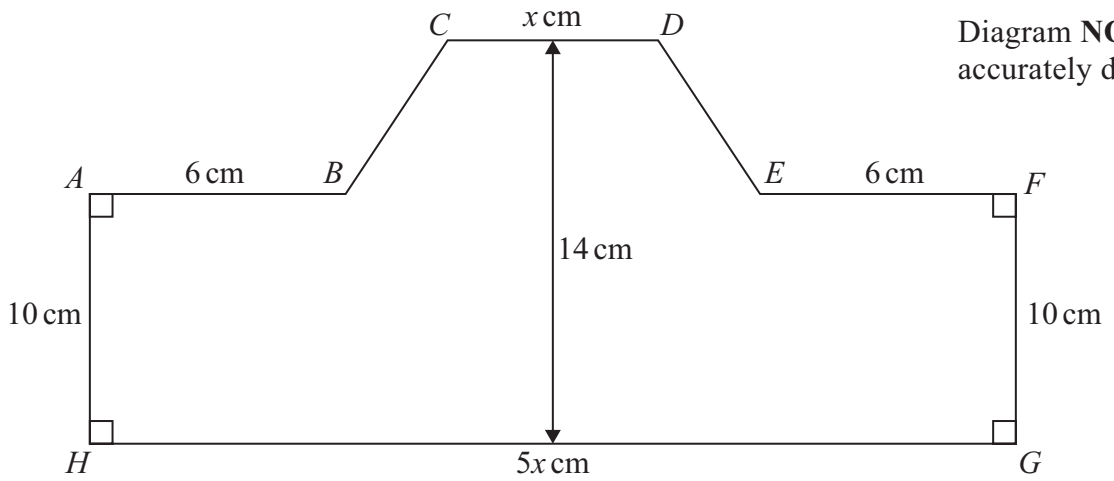


Diagram **NOT** accurately drawn

The diagram shows a shape *ABCDEFGH*

$HG = 5x$ cm $CD = x$ cm $AH = FG = 10$ cm $AB = EF = 6$ cm

$\angle BAH = \angle AHG = \angle HGF = \angle GFE = 90°$

CD is parallel to *HG*

The perpendicular height of the shape is 14 cm

The area of the shape *ABCDEFGH* is 534 cm^2

Find the value of x

$x =$ .....

(Total for Question 18 is 4 marks)

19 Find the two values of x such that

$$\frac{2\times 81^{x}\times 2^{x^2}}{6^{4x}}=\frac{1}{\sqrt{8^{x}}}$$

Show clear algebraic working.

$x =$ .....

(Total for Question 19 is 4 marks)

20 Emma asks 420 students to choose one type of movie from Horror, Adventure and Comedy.

5% of the students choose Horror.

$\frac{3}{5}$ of the students choose Adventure.

The remaining students choose Comedy.

The students who choose Comedy are put into either group A or group B

For the students who choose Comedy

number in group A : number in group B = 1 : 6

Calculate the number of students who choose Comedy and are in group B
Show all your working.

.....

(Total for Question 20 is 5 marks)

21 The table shows information about the number of points scored by people in a game.

Number of points	Frequency
12	27
14	59
16	x
18	40
20	15

Given that the mean number of points scored is 15.6 seconds

(a) calculate the value of x
Show all your working.

$x =$ .....

(4)

One of the people is chosen at random.

(b) Calculate the probability that this person scored more than 16 points.

.....

(1)

(Total for Question 21 is 5 marks)

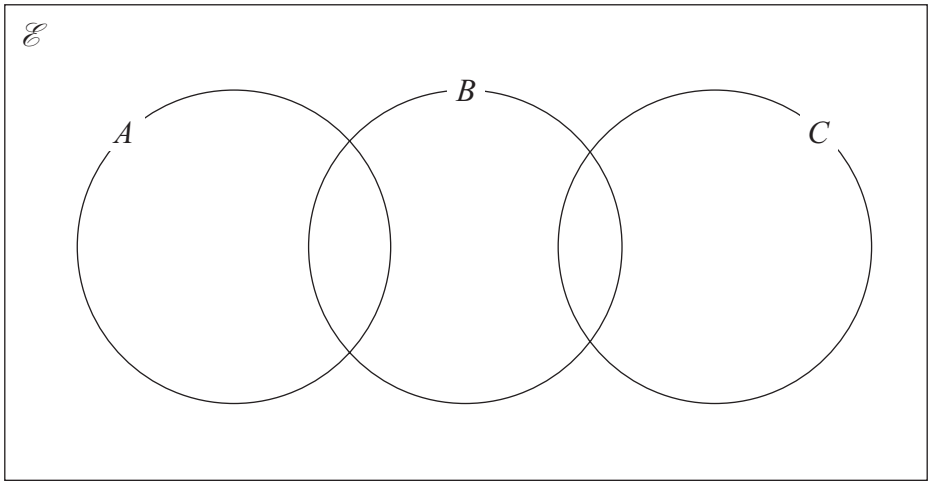
22 $\mathscr{E} = \{3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$

$A = \{\text{multiples of } 4\}$

$B = \{\text{factors of } 12\}$

$C = \{\text{prime numbers}\}$

(a) Complete the Venn diagram for this information showing the position of each of the numbers in the universal set.



(3)

(b) Find $n(A' \cap B' \cap C')$

.....

(1)

(c) Find $n(A \cup B')$

.....

(1)

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

(d) Find the probability that this number is in the set $A \cup C$

.....

(2)

(Total for Question 22 is 7 marks)

23

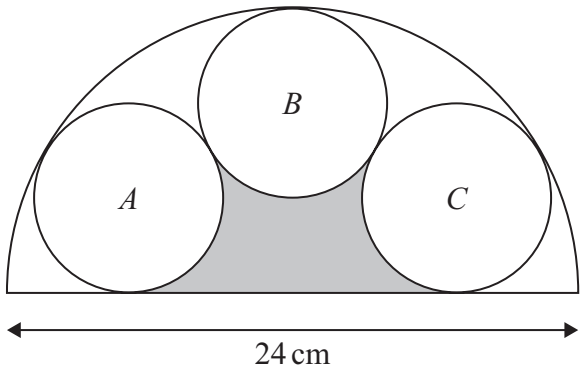


Diagram **NOT** accurately drawn

The diagram shows a semicircle with diameter 24 cm

The diagram also shows three congruent circles A, B and C inside the semicircle.

All three circles touch the circumference of the semicircle and circle B touches both circle A and circle C

The diameter of the semicircle is a tangent to circle A and circle C

The radius of each of the circles is r cm

(a) Show that $r = 4$

(1)

(b) Calculate the total area, in cm^2 to 3 significant figures, of the shaded region.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

..... cm^2

(4)

(Total for Question 23 is 5 marks)

24 Express $\dfrac{4-x^2}{x^2-3x+2} \div \left(\dfrac{1}{x-1} - \dfrac{x+2}{2x^2-x-1} \right)$ as a single fraction in its simplest form.

Show clear algebraic working.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

.....

(Total for Question 24 is 5 marks)

25

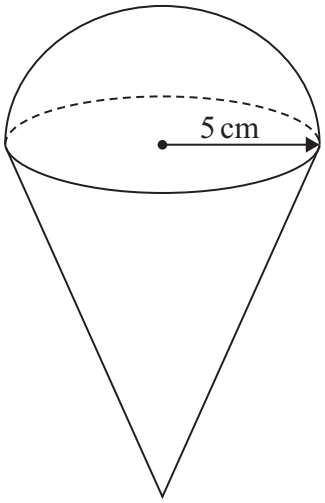


Diagram **NOT** accurately drawn

The diagram shows a solid shape made by fixing the flat circular face of a solid hemisphere, with radius 5 cm, to a solid right circular cone with base radius 5 cm

The centre of the circular face of the hemisphere coincides with the centre of the base of the cone.

The total volume of the solid is $\frac{550}{3}\pi$ cm^3

Find the total surface area, in cm^2 to 3 significant figures, of the solid.
Show all your working.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

..... cm^2

(Total for Question 25 is 6 marks)

26

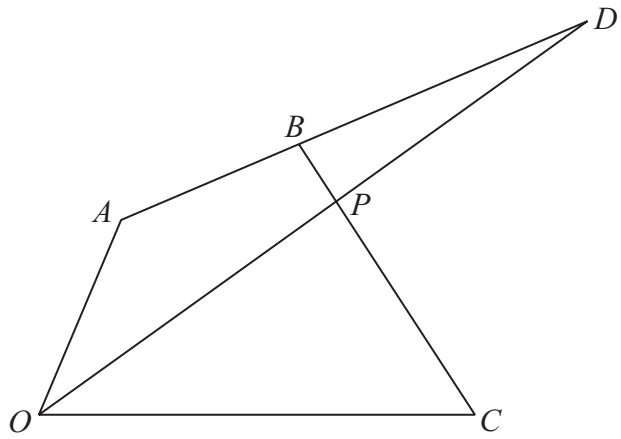


Diagram **NOT** accurately drawn

The diagram shows a quadrilateral $OABC$

$\overrightarrow{OA} = 2\mathbf{a}$ $\overrightarrow{OC} = 3\mathbf{b}$ $\overrightarrow{AB} = \mathbf{a} + 2\mathbf{b}$

The point P is on the line CB such that $CP : PB = 4 : 1$

The point D is such that ABD and OPD are straight lines.

(a) Find $\overrightarrow{AC}$ in terms of **a** and **b**

$\overrightarrow{AC} =$ .....

(1)

(b) Find $\overrightarrow{OP}$ in terms of **a** and **b**
Give your answer in its simplest form.

$\overrightarrow{OP} =$ .....

(2)

(c) Using a vector method find the ratio $OP : PD$
Show all your working.

.....

(5)

(Total for Question 26 is 8 marks)

27 $(2x - 1)$ is a factor of $6x^3 + 17x^2 + ax - 8$ where a is a constant.

(a) Use the factor theorem to show that $a = 6$

(2)

(b) Hence, factorise fully $6x^3 + 17x^2 + 6x - 8$
Show all your working.

(3)

(c) Hence, solve $6(3y + 1)^3 + 17(3y + 1)^2 + 6(3y + 1) - 8 = 0$
Show all your working.

$y =$ .....

(2)

(Total for Question 27 is 7 marks)

TOTAL FOR PAPER IS 100 MARKS

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

BLANK PAGE