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Candidate surname					Other names				
Centre Number					Candidate Number				
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Pearson Edexcel International GCSE

Wednesday 13 May 2026

Afternoon (Time: 1 hour 30 minutes) **Paper reference** **4MB1/01R**

Mathematics B
PAPER 1R



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 ►

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Answer ALL TWENTY SEVEN questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Noah travels 18 km on his bicycle.
The journey time is 45 minutes.

Work out Noah's average speed, in km/h, for the journey.

..... km/h

(Total for Question 1 is 2 marks)

- 2** Without using a calculator and showing all your working, work out

$$1\frac{2}{3} + 2\frac{1}{4}$$

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

(Total for Question 2 is 2 marks)

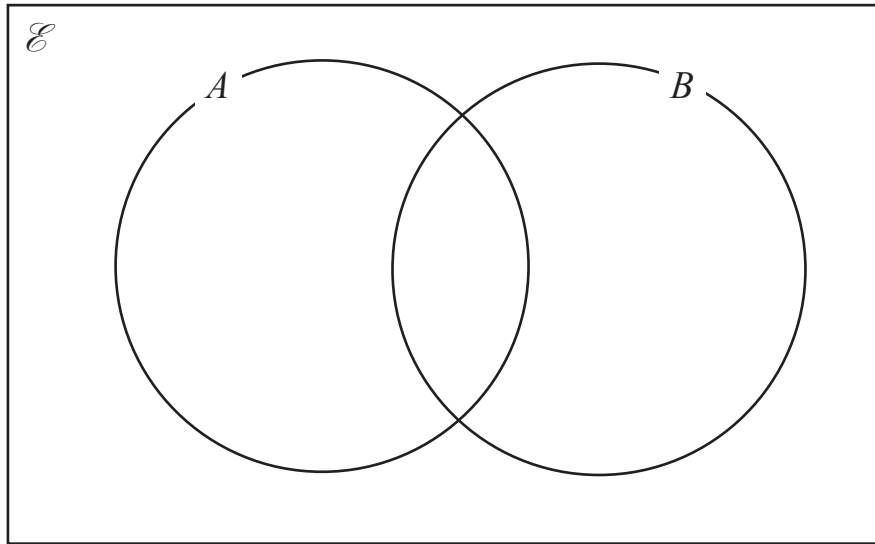


3 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$A = \{1, 3, 5, 7, 9\}$

$B = \{3, 6, 9\}$

Show all this information on the Venn diagram.



(Total for Question 3 is 2 marks)

- 4 A straight line **L** passes through the points with coordinates $(6, 0)$ and $(0, 8)$

Find an equation of **L**

Give your answer in the form $y = mx + c$

(Total for Question 4 is 2 marks)



- 5 Find the value of $\frac{a-b}{a^2+b^2}$ when $a = 3$ and $b = -4$

(Total for Question 5 is 2 marks)

6

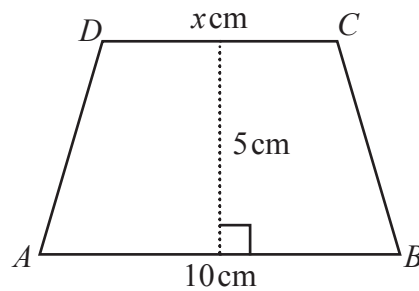


Diagram NOT
accurately drawn

The diagram shows trapezium $ABCD$ where AB is parallel to DC

$$AB = 10\text{cm} \text{ and } DC = x\text{cm}$$

The vertical height of the trapezium is 5 cm

Given that the area of the trapezium is 45 cm^2

find the value of x

$$x = \dots\dots\dots$$

(Total for Question 6 is 3 marks)



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7

$$\mathbf{A} = \begin{pmatrix} 1 & -1 \\ 3 & -4 \end{pmatrix}$$

$$\mathbf{B} = \begin{pmatrix} 3 & 3 \\ -1 & 5 \end{pmatrix}$$

$$\mathbf{C} = \begin{pmatrix} x & 2 \\ -2 & x \end{pmatrix}$$

$$\mathbf{D} = \begin{pmatrix} 4 & 1 \\ 1 & -1 \end{pmatrix}$$

(a) Find $\mathbf{A} + \mathbf{B}$

$$\begin{pmatrix} & \\ & \end{pmatrix} \quad (2)$$

Given that $\mathbf{A} + \mathbf{C} = \mathbf{D}$

(b) find the value of x

$$x = \dots\dots\dots (1)$$

(Total for Question 7 is 3 marks)



- 8 (a) Find the Highest Common Factor (HCF) of 24 and 54
Show all your working.

.....
(2)

- (b) Find the Lowest Common Multiple (LCM) of 24 and 54

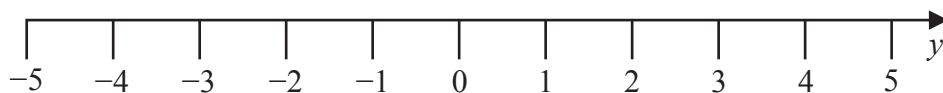
.....
(1)

(Total for Question 8 is 3 marks)

- 9 (a) Solve the inequality $3 + 4x < 13$

.....
(2)

- (b) On the number line below, represent the inequality $y < 2$

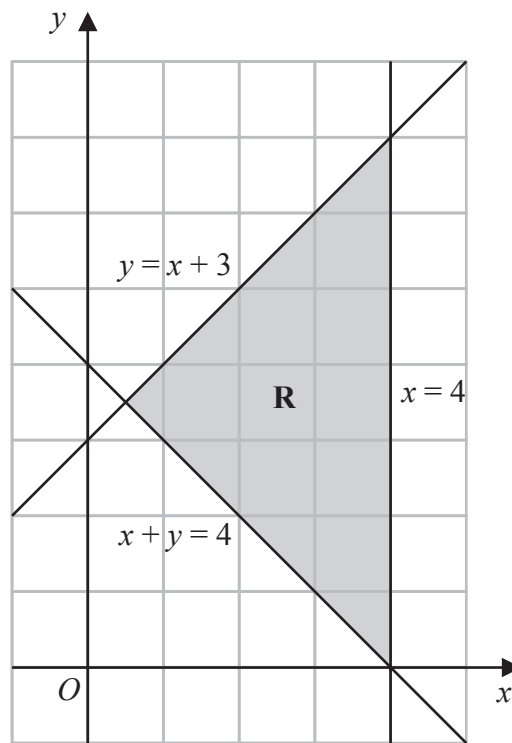


(1)

(Total for Question 9 is 3 marks)



10



Write down three inequalities that define the shaded region **R** in the diagram above.

.....

.....

.....

(Total for Question 10 is 3 marks)



P 7 4 2 8 7 A 0 7 2 4

11

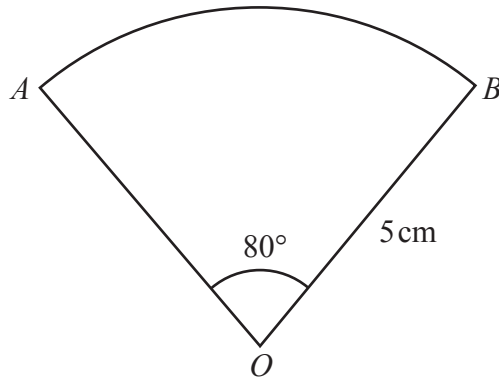


Diagram **NOT**
accurately drawn

OAB is a sector of a circle, centre O and radius 5 cm

$$\angle AOB = 80^\circ$$

Calculate the perimeter, in cm to 2 significant figures, of the sector OAB

..... cm

(Total for Question 11 is 3 marks)



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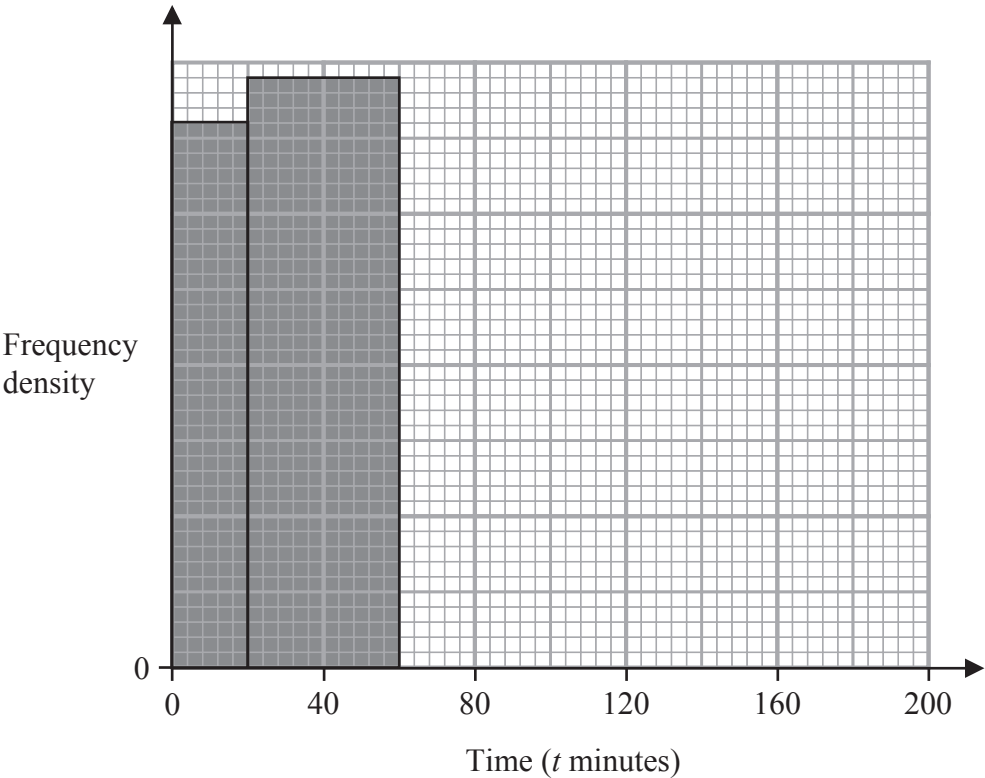
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12 The incomplete table and the incomplete histogram give information about the length of time, in minutes, that each of 100 students worked in a library.

Complete the table and the histogram.

Time (t minutes)	Number of students
$0 \leq t < 20$	18
$20 \leq t < 60$	
$60 \leq t < 100$	33
$100 \leq t < 200$	



(Total for Question 12 is 3 marks)

13 The diagram shows a triangle.

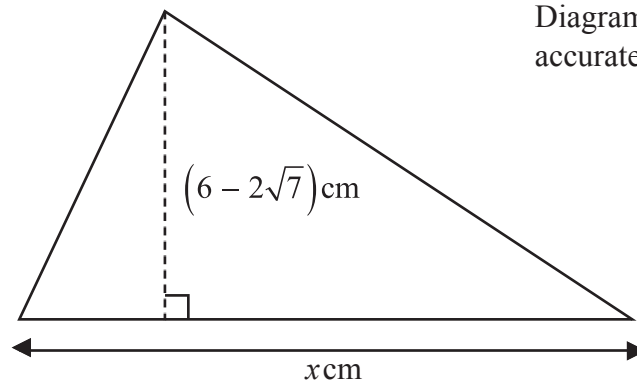


Diagram **NOT**
accurately drawn

The vertical height of the triangle is $(6 - 2\sqrt{7})\text{cm}$

The length of the base of the triangle is $x\text{cm}$

The area of the triangle is $(1 + \sqrt{7})\text{cm}^2$

Without using a calculator find the value of x

Give your answer in the form $a + b\sqrt{c}$ where a , b and c are prime numbers.

Show all your working.

$x =$

(Total for Question 13 is 3 marks)

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14 The value of an investment increases by 20% to \$1926

(a) Find the value of the investment before the increase.

\$.....
(2)

Using an exchange rate of 1 euro = \$1.07

(b) change \$1926 into euros.

..... euros
(2)

(Total for Question 14 is 4 marks)



- 15 (a)** Calculate $(9 \times 10^{100}) \times (1.2 \times 10^{101})$
Give your answer in standard form.

.....
(2)

- (b)** Calculate $(9 \times 10^{100}) + (1.2 \times 10^{101})$
Give your answer in standard form.

.....
(2)

(Total for Question 15 is 4 marks)



16 A large solid cylinder has a diameter of 12 cm and a height of 12 cm

(a) Show that the volume of the cylinder is $432\pi \text{ cm}^3$

(1)

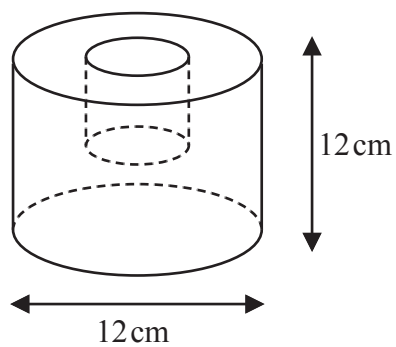


Diagram **NOT**
accurately drawn

The diagram shows a large solid cylinder from which a small cylinder is removed.

The volume of the solid formed is $416\pi \text{ cm}^3$

Given that the small cylinder is similar to the large cylinder,

(b) calculate the diameter of the small cylinder.

..... cm

(3)

(Total for Question 16 is 4 marks)



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17 (a) Simplify fully $(2x^2y^3)^3$

(2)

(b) Write $\left(\frac{125p^{11}q}{375p^{15}q^3}\right)^{-2}$ in the form ap^mq^n where a , m and n are integers.

(2)

(Total for Question 17 is 4 marks)



18

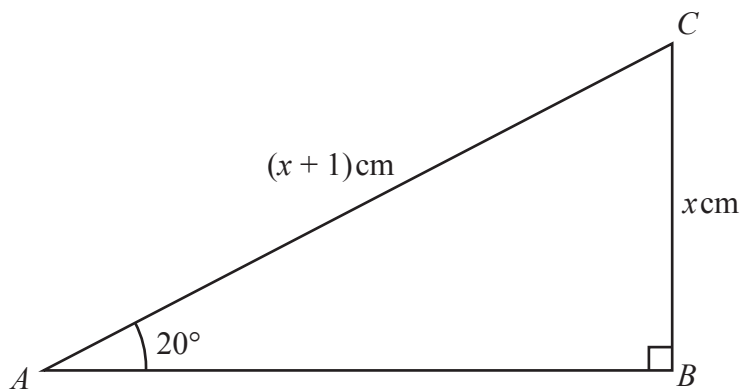


Diagram **NOT**
accurately drawn

The diagram shows triangle ABC

$$AC = (x + 1) \text{ cm}$$

$$BC = x \text{ cm}$$

$$\angle ABC = 90^\circ$$

$$\angle BAC = 20^\circ$$

Calculate the length, in cm to 2 significant figures, of BC

..... cm

(Total for Question 18 is 4 marks)



P 7 4 2 8 7 A 0 1 5 2 4

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

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(Total for Question 19 is 4 marks)



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20 $f(x) = x^3 + 7x^2 + 17x + 14$

(a) Use the factor theorem to show that $(x + 2)$ is a factor of $f(x)$

(2)

Given that $f(x) = (x + 2)Q(x)$ where $Q(x)$ is a quadratic expression in x

(b) find $Q(x)$

$$Q(x) = \dots\dots\dots$$

(2)

(Total for Question 20 is 4 marks)



21 Shape A is transformed to shape B under the transformation with matrix $\mathbf{M}$ where

$$\mathbf{M} = \begin{pmatrix} 1 & 1 \\ -3 & -4 \end{pmatrix}$$

Shape B is transformed to shape C under the transformation with matrix $\mathbf{N}$ where

$$\mathbf{N} = \begin{pmatrix} 3 & -4 \\ 4 & -5 \end{pmatrix}$$

Shape C is transformed to shape A under the transformation with matrix $\mathbf{P}$

Find the matrix $\mathbf{P}$

$$\mathbf{P} = \begin{pmatrix} & \\ & \end{pmatrix}$$

(Total for Question 21 is 4 marks)

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22 A bag contains only red buttons, green buttons, blue buttons and yellow buttons.

The table shows information about the probability that when a button is taken at random from the bag it is red or green or blue or yellow.

Colour	red	green	blue	yellow
Probability	0.3	0.1	$2x$	x

(a) Find the value of x

$x =$

(2)

There are 340 buttons in the bag.

(b) Find the number of red buttons in the bag.

.....

(2)

Roya takes at random two buttons from the bag without replacement.

Given that the first button Roya takes is not green,

(c) calculate the probability that both buttons Roya takes are red.
Show all your working.

.....

(3)

(Total for Question 22 is 7 marks)



23 The curve with equation $y = x^3 - 15x + 5$ has two stationary points.

Find the exact coordinates of each of these stationary points.

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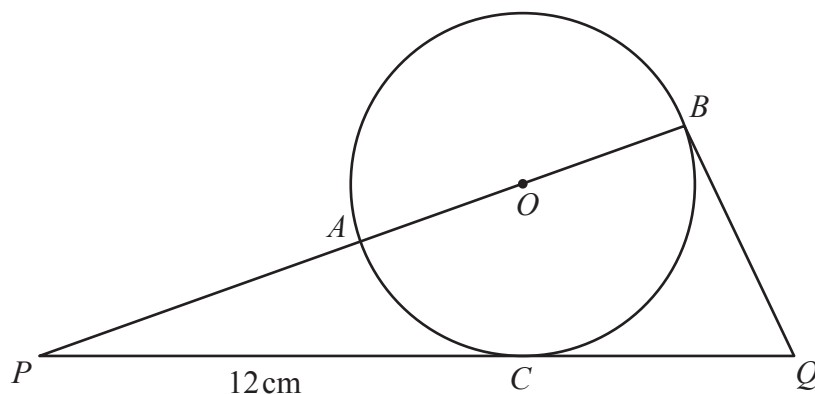
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(Total for Question 23 is 5 marks)



24

Diagram **NOT**
accurately drawn

In the diagram, A , B and C are points on a circle, centre O

PCQ is the tangent to the circle at C

QB is the tangent to the circle at B

$PAOB$ is a straight line.

$$PB = 18 \text{ cm}$$

$$PC = 12 \text{ cm}$$

(a) Calculate the radius, in cm, of the circle.

..... cm
(3)

(b) Calculate the length, in cm, of QB

..... cm
(2)

(Total for Question 24 is 5 marks)



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25 The points O, A, B and C are such that

$$\vec{OA} = \begin{pmatrix} -8 \\ 7 \end{pmatrix} \qquad |\vec{OB}| = 13 \qquad \vec{OC} = \begin{pmatrix} -5 \\ 3 \end{pmatrix}$$

AB is parallel to OC

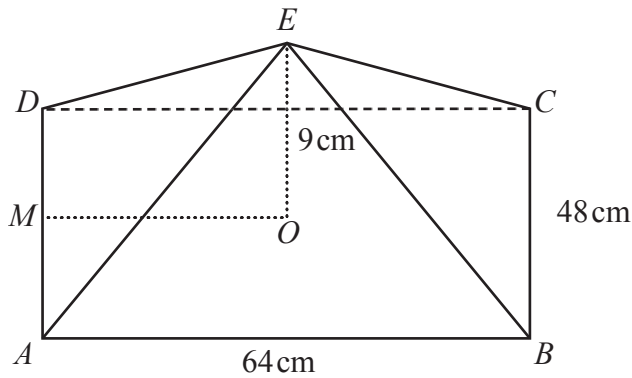
Given that the x coordinate of B is negative,
find the exact coordinates of the point B

(.....,.....)

(Total for Question 25 is 5 marks)



26

Diagram **NOT**
accurately drawn

The diagram shows a right pyramid $ABCDE$ with horizontal rectangular base $ABCD$

O is the centre of the base.

Vertex E is vertically above O such that $AE = BE = CE = DE$

$$AB = 64 \text{ cm}$$

$$BC = 48 \text{ cm}$$

$$EO = 9 \text{ cm}$$

M is the midpoint of AD

Calculate the size, to the nearest degree, of angle CEM

(Total for Question 26 is 6 marks)



P 7 4 2 8 7 A 0 2 3 2 4

27 A regular polygon P has $(x + 2)$ sides.

- (a) Write down, in terms of x , an expression for the size, in degrees, of each exterior angle of P

(1)

A regular polygon Q has x sides.

The size of each exterior angle of polygon Q is 9° greater than the size of each exterior angle of polygon P

- (b) Show that $x^2 + 2x - 80 = 0$

(3)

- (c) Calculate the value of x
Show clear algebraic working.

(2)

(Total for Question 27 is 6 marks)

TOTAL FOR PAPER IS 100 MARKS

