

Please check the examination details below before entering your candidate information

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


**Monday 2 June 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 ►

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**Answer ALL TWENTY SIX questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

- 1 Calculate the value of  $\frac{1.2^2 + 5}{7.1 - 3}$

Give your answer as a decimal to 5 significant figures.

.....  
(Total for Question 1 is 2 marks)

- 2 The  $n$ th term of a sequence is given by  $12 - 7n$

Find the first 3 terms of this sequence.

....., ....., .....  
(Total for Question 2 is 2 marks)



- 3 Find the size of an interior angle of a regular polygon with 30 sides.

.....  
(Total for Question 3 is 2 marks)

- 4 Without using a calculator and showing all your working, evaluate

$$5\frac{2}{3} - 2\frac{4}{5}$$

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

.....  
(Total for Question 4 is 3 marks)



5

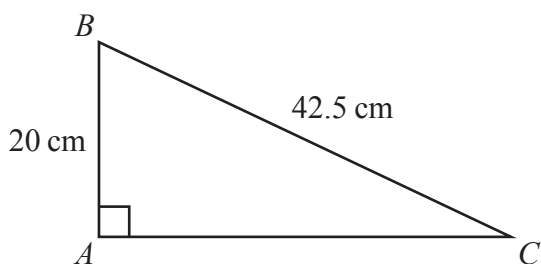


Diagram **NOT**  
accurately drawn

The diagram shows the right-angled triangle  $ABC$

$$AB = 20 \text{ cm}$$

$$BC = 42.5 \text{ cm}$$

$$\angle BAC = 90^\circ$$

Calculate the length of  $AC$

..... cm

(Total for Question 5 is 2 marks)

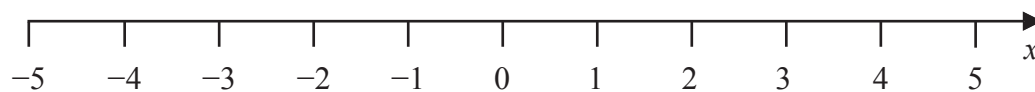
6 Make  $d$  the subject of  $g = 5d - 4e^2$

.....

(Total for Question 6 is 2 marks)



- 7 On the number line below represent the inequality  $-4 \leq x < 2$



(Total for Question 7 is 2 marks)

- 8 (a) Write down the value of  $p^0$  where  $p > 0$

(1)

- (b) Simplify fully  $(32q^{20}r^5)^{\frac{3}{5}}$

(2)

(Total for Question 8 is 3 marks)

9 Students travel to college by bus or by car or by train so that

the number who travel by bus : the number who travel by train = 9 : 2

the number who travel by train : the number who travel by car = 3 : 5

Given that 600 students travel to college by car,

calculate the number of students who travel to college by bus.

.....  
(Total for Question 9 is 3 marks)



10 The numbers  $D$ ,  $E$  and  $F$  are given as products of their prime factors

$$D = 2^9 \times 3^x$$

$$E = 2^2 \times 3^{x+1}$$

$$F = 2^4 \times 3^{2x+1} \times 7^{x+1}$$

where  $x$  is a positive integer.

- (a) Find the Highest Common Factor (HCF) of  $D$  and  $E$   
Give your answer in terms of  $x$  as a product of prime factors.

.....  
(1)

- (b) Find the Lowest Common Multiple (LCM) of  $E$  and  $F$   
Give your answer in terms of  $x$  as a product of prime factors.

.....  
(1)

Given that  $x$  is even,

- (c) find the least number that  $F$  must be multiplied by to give a square number.

.....  
(1)

(Total for Question 10 is 3 marks)

- 11 Without using a calculator and showing all your working, find the value of the integer  $m$  such that

$$\sqrt{675} - \sqrt{108} = \sqrt{m}$$

$$m = \dots\dots\dots$$

(Total for Question 11 is 3 marks)

- 12 Solve  $\frac{2x+3}{4} + \frac{x-1}{3} = 7$

Show clear algebraic working.

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

(Total for Question 12 is 3 marks)





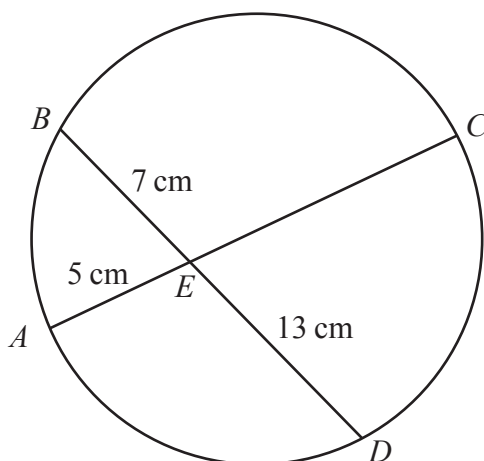
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13

Diagram **NOT**  
accurately drawn



In the diagram  $A$ ,  $B$ ,  $C$  and  $D$  are points on a circle.  
 $AEC$  is a diameter of the circle.  
 $BED$  is a chord of the circle.

$$AE = 5\text{ cm}$$

$$BE = 7\text{ cm}$$

$$ED = 13\text{ cm}$$

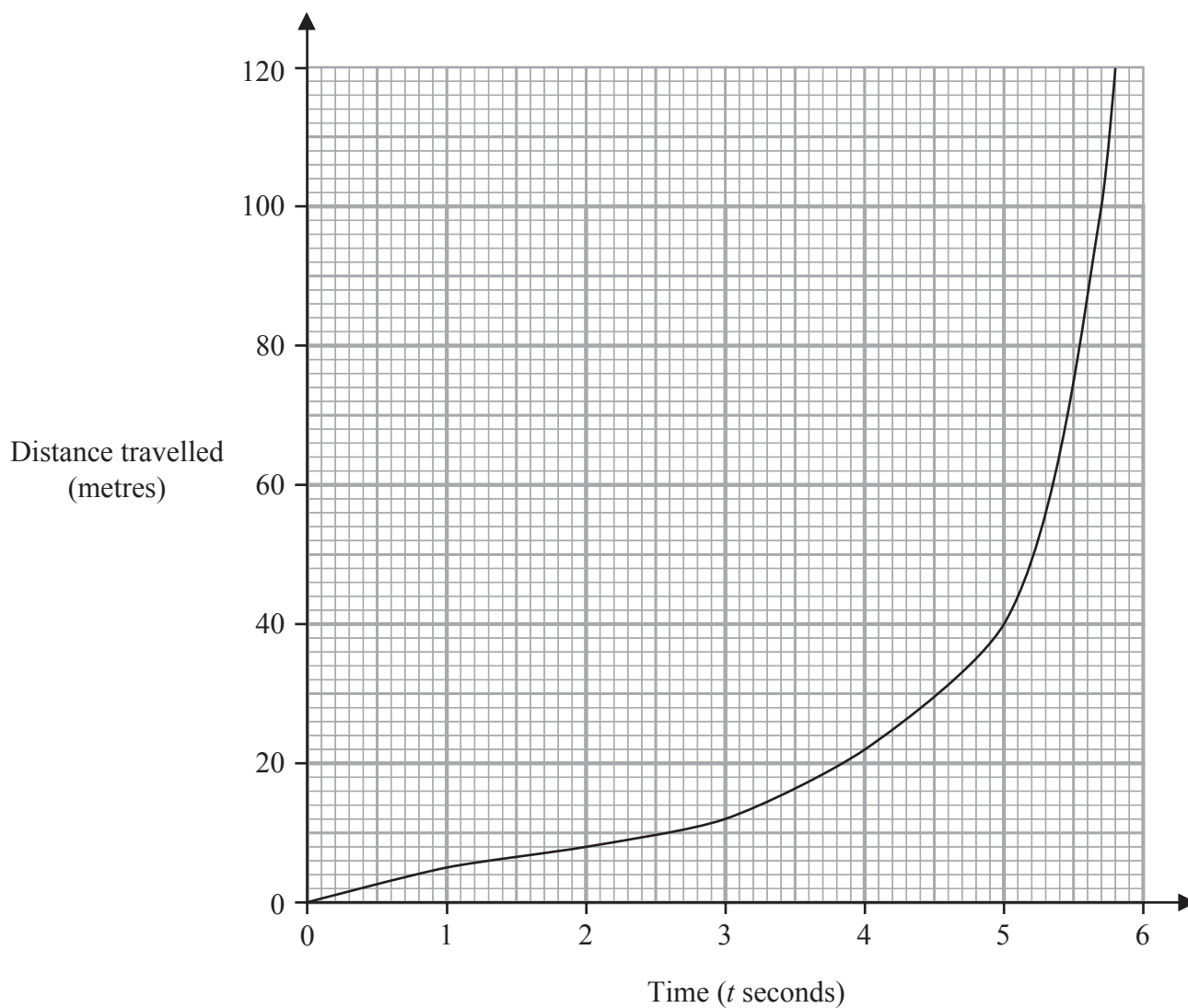
Calculate, in cm, the radius of the circle.

..... cm

(Total for Question 13 is 3 marks)



P 7 8 9 5 2 A 0 9 2 4



The graph shows the distance travelled by a car at time  $t$  seconds.

By drawing a suitable straight line, estimate the speed of the car when  $t = 5$   
Give your answer in m/s to 2 significant figures.

..... m/s

(Total for Question 14 is 3 marks)



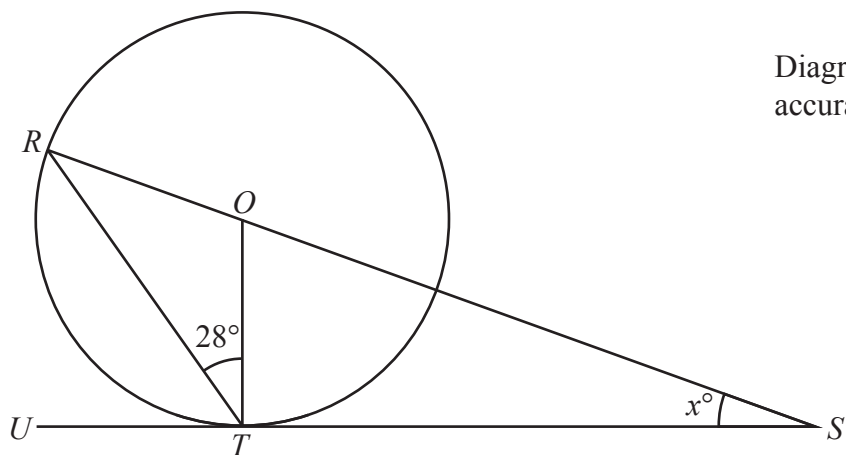


Diagram **NOT**  
accurately drawn

$R$  and  $T$  are two points on a circle, centre  $O$   
 $STU$  is the tangent to the circle at the point  $T$   
 $ROS$  is a straight line.

$$\angle OTR = 28^\circ \quad \angle OST = x^\circ$$

Calculate the value of  $x$   
 Give reasons for each stage of your working.

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

(Total for Question 15 is 4 marks)

16 (a) Factorise fully  $10p^2q^4 - 15p^3q$

.....  
(2)

(b) Factorise  $2x^2 - 9x - 5$

.....  
(2)

(Total for Question 16 is 4 marks)



17

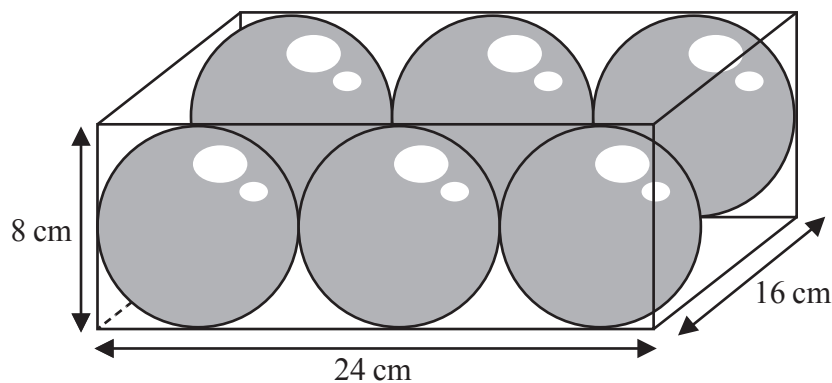


Diagram **NOT**  
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The diagram shows six solid spheres placed inside a hollow cuboid.

The cuboid measures 16 cm by 24 cm by 8 cm

Each sphere has a diameter of 8 cm

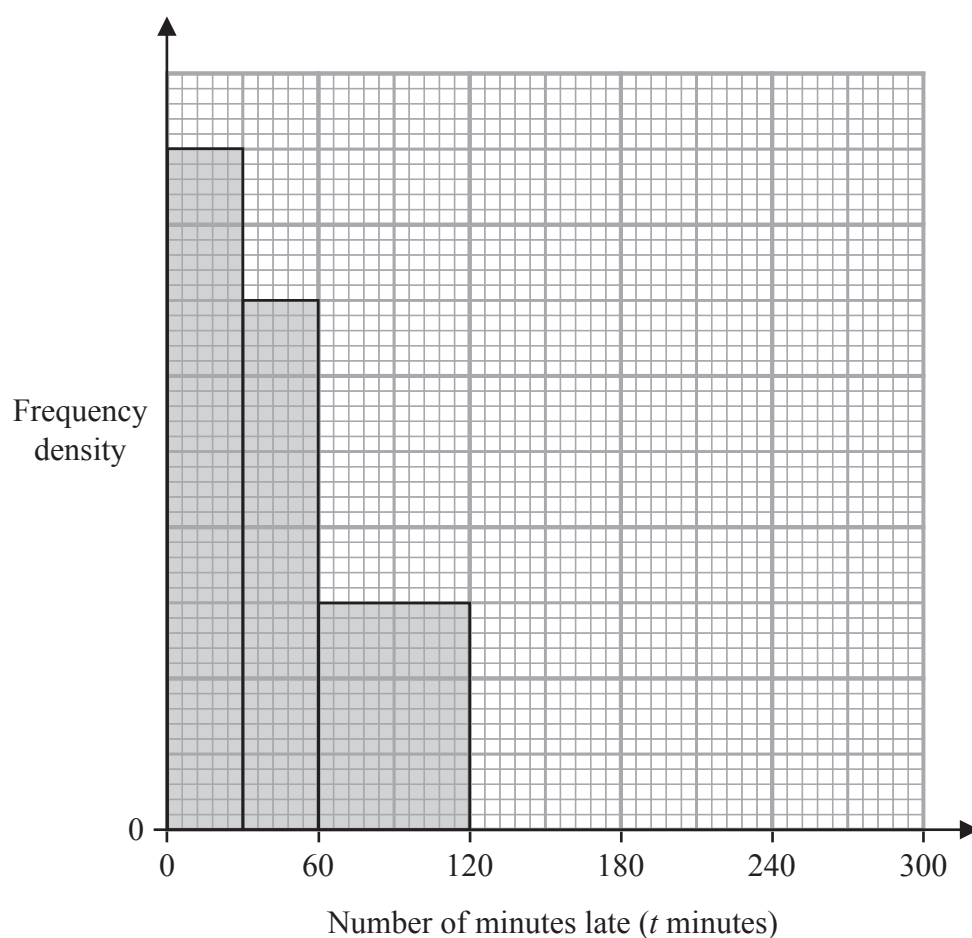
Calculate the volume, in  $\text{cm}^3$  to 3 significant figures, of the space inside the cuboid that is not occupied by the spheres.

.....  $\text{cm}^3$

(Total for Question 17 is 4 marks)

- 18 The incomplete table and the incomplete histogram give information about the number of minutes that 900 flights arrived late at an airport.

Minutes late ( $t$ minutes)	Frequency
$0 < t \leq 30$	
$30 < t \leq 60$	
$60 < t \leq 120$	180
$120 < t \leq 180$	120
$180 < t \leq 300$	120



- (a) Complete the table and the histogram.

(3)



Sam selects at random one of the 900 flights.

- (b) Find the probability that this flight was late by greater than 120 minutes.

.....  
(1)

(Total for Question 18 is 4 marks)

- 19  $f$  is directly proportional to  $g^2$   
 $f = 9$  when  $g = 5$

$g$  is inversely proportional to  $h$   
 $g = 5$  when  $h = 4$

Find a formula for  $f$  in terms of  $h$

.....  
(Total for Question 19 is 4 marks)

**20** A solid right cylinder is made of wood.

The mass of the cylinder is 2140 g, to the nearest 10 g

The radius of the cylinder is 8.5 cm, to the nearest 0.5 cm

The density of the wood is  $0.7 \text{ g/cm}^3$ , to the nearest  $0.1 \text{ g/cm}^3$

Given that  $\text{density} = \frac{\text{mass}}{\text{volume}}$

and taking the value of  $\pi$  as 3.142

calculate the lower bound, in cm to one decimal place, of the height of the cylinder.

Show all your working.

..... cm

**(Total for Question 20 is 4 marks)**





$$21 \quad \mathbf{A} = \begin{pmatrix} 2 & -3 \\ -5 & 10 \end{pmatrix} \quad \mathbf{A} - \mathbf{B} = \begin{pmatrix} 1 & p \\ -2p & 4 \end{pmatrix} \quad \mathbf{C} = \begin{pmatrix} 4 & -5 & 2 \\ -1 & 3 & 8 \end{pmatrix}$$

(a) Find matrix  $\mathbf{B}$ , giving the elements of  $\mathbf{B}$  in terms of  $p$  where appropriate.

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

(b) Find  $\mathbf{A}^{-1}$

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

(c) Find  $\mathbf{AC}$

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

(Total for Question 21 is 6 marks)

22 Solve the simultaneous equations

$$3x^2 - \frac{10}{3}x + 3 = 2y$$

$$2x + 3y = 4$$

Show clear algebraic working.

(Total for Question 22 is 6 marks)



23 The table shows information about the monthly wages of 100 employees at a company.

Wage (£ $w$ )	Frequency
$0 < w \leq 600$	7
$600 < w \leq 1200$	13
$1200 < w \leq 1800$	28
$1800 < w \leq 2400$	42
$2400 < w \leq 3000$	10

(a) Calculate an estimate for the mean wage of the 100 employees.

£.....  
(4)

The mean number of hours worked by the 100 employees last week is 33 hours.  
The total number of hours worked by 91 of these employees last week is 2976 hours.

(b) Find the mean number of hours worked last week by the remaining 9 employees.

..... hours  
(3)

(Total for Question 23 is 7 marks)



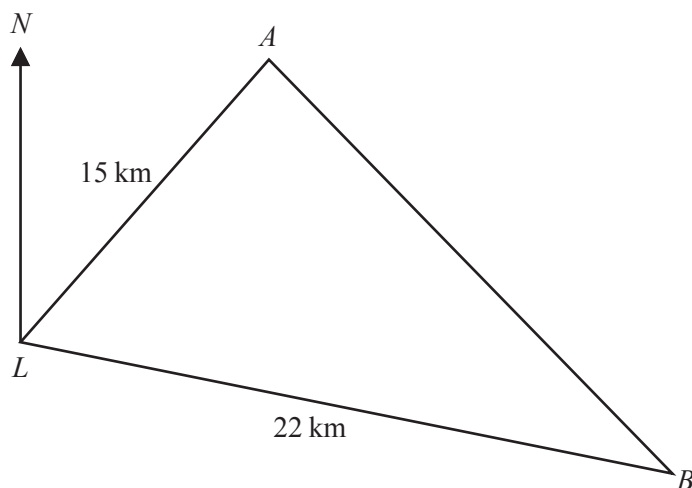


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The diagram shows the position of two boats,  $A$  and  $B$ , and the position of a lighthouse  $L$ , which are all in the same horizontal plane.

The bearing of  $A$  from  $L$  is  $050^\circ$

The bearing of  $B$  from  $L$  is  $125^\circ$

The distance of  $A$  from  $L$  is 15 km

The distance of  $B$  from  $L$  is 22 km

Calculate the bearing, to the nearest degree, of  $A$  from  $B$   
Show your working clearly.



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(Total for Question 24 is 6 marks)



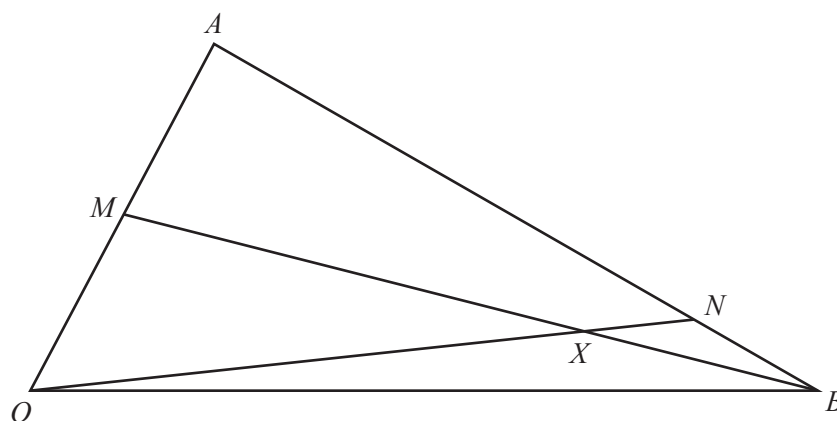


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The diagram shows triangle  $OAB$  such that  $\vec{OA} = \mathbf{a}$  and  $\vec{OB} = 3\mathbf{b}$

$M$  is the midpoint of  $OA$

$N$  is the point on  $AB$  such that  $AN : NB = 4 : 1$

(a) Express  $\vec{MB}$  in terms of  $\mathbf{a}$  and  $\mathbf{b}$

(1)

(b) Express  $\vec{ON}$  in terms of  $\mathbf{a}$  and  $\mathbf{b}$   
Give your answer in its simplest form.

(2)



Given that the point  $X$  is such that  $OXN$  and  $MXB$  are straight lines,

- (c) find a simplified expression for  $\overrightarrow{AX}$  in terms of  $\mathbf{a}$  and  $\mathbf{b}$

.....  
(5)

(Total for Question 25 is 8 marks)

Turn over for Question 26



26 (a) Solve the inequality  $3x - 5 < 15 - 2x$

.....  
(2)

(b) Solve the inequality  $x(x - 1) > 6$   
Show clear algebraic working.

.....  
(3)

(c) Hence find the range of values of  $x$  for which **both**

$$3x - 5 < 15 - 2x \quad \text{and} \quad x(x - 1) > 6$$

.....  
(2)

(Total for Question 26 is 7 marks)

**TOTAL FOR PAPER IS 100 MARKS**

