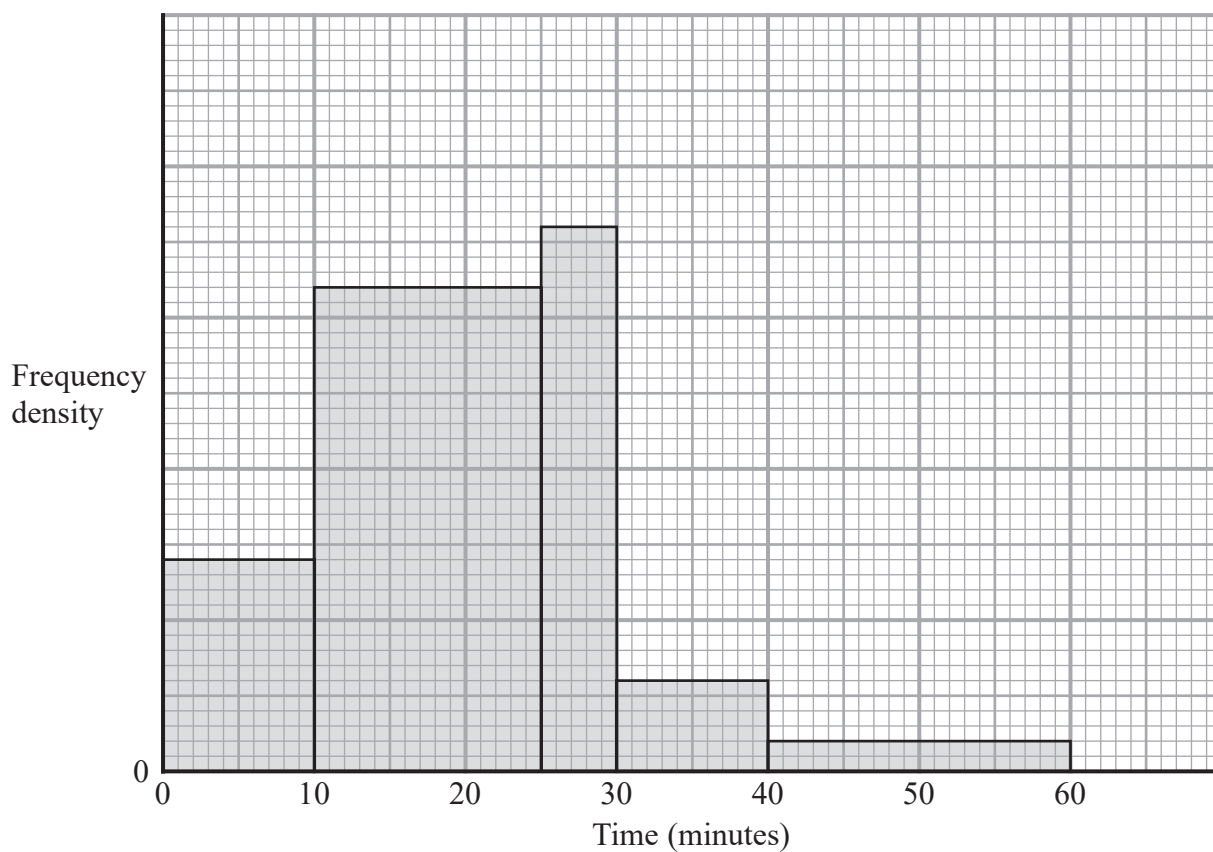


- 21 The histogram gives information about the times, in minutes, some customers had to wait to be served in a restaurant.



14 customers had to wait less than 10 minutes to be served.

Work out the number of customers who had to wait less than 60 minutes to be served.

(Total for Question 21 is 3 marks)



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- 22 The curve with equation $x^2 - x + y^2 = 10$ and the straight line with equation $x - y = -4$ intersect at the points A and B .

Work out the exact length of AB .

Show your working clearly and give your answer in the form $\frac{\sqrt{a}}{2}$ where a is an integer.

.....
(Total for Question 22 is 6 marks)



P 6 4 6 9 3 A 0 2 1 2 8

23 P and Q are two points.

The coordinates of P are $(-1, 6)$

The coordinates of Q are $(5, -4)$

Find an equation of the perpendicular bisector of PQ .

Give your answer in the form $ax + by + c = 0$ where a , b and c are integers.

.....
(Total for Question 23 is 6 marks)



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24 (a) Write $7 + 12x - 3x^2$ in the form $a + b(x + c)^2$ where a , b and c are integers.

.....
(4)

The curve C has equation $y = 7 + 12x - 3x^2$
The point A is the turning point on C .

(b) Using your answer to part (a), write down the coordinates of A .

(..... ,)
(1)

(Total for Question 24 is 5 marks)



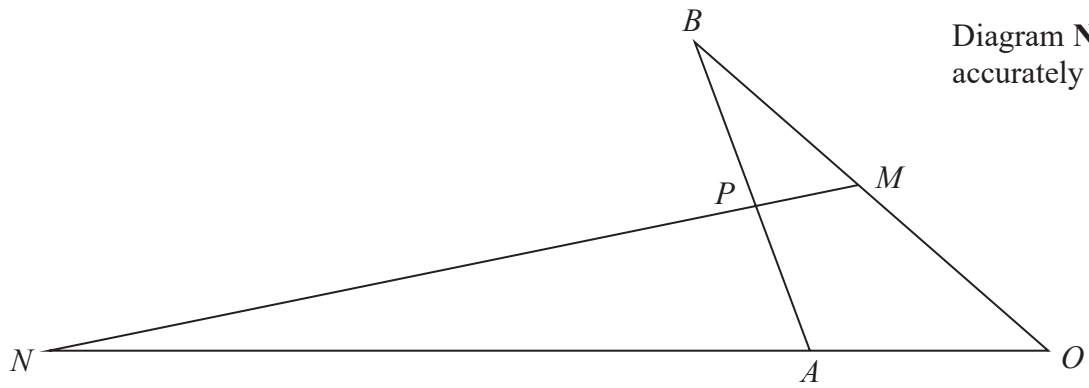


Diagram **NOT**
accurately drawn

OAN , OMB , APB and MPN are straight lines.

$$OA:AN = 1:4$$

$$OM:MB = 1:1$$

$$\vec{OA} = 2\mathbf{a} \quad \vec{OB} = 2\mathbf{b}$$

By using a vector method, find the ratio $AP:PB$
Give your answer in its simplest form.



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.....
(Total for Question 25 is 5 marks)

Turn over for Question 26



P 6 4 6 9 3 A 0 2 5 2 8

- 26 A, B, D and E are points on a circle.
 ABC and EDC are straight lines.

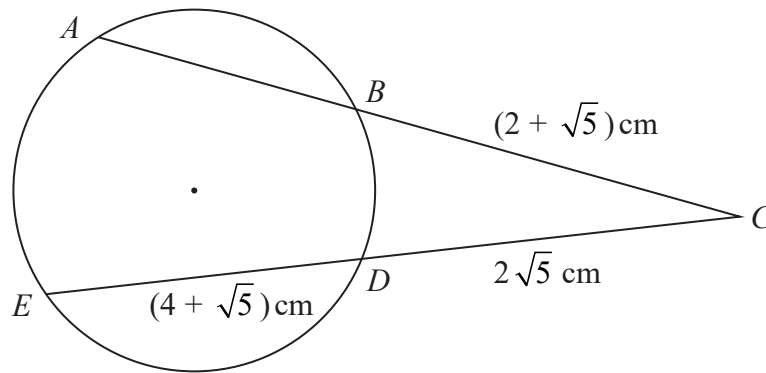


Diagram **NOT**
 accurately drawn

$$BC = (2 + \sqrt{5}) \text{ cm}$$

$$ED = (4 + \sqrt{5}) \text{ cm}$$

$$DC = 2\sqrt{5} \text{ cm}$$

Show that the length of AB is $(p\sqrt{5} + q)$ cm, where p and q are integers whose values are to be found.

Show your working clearly.

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(Total for Question 26 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS



P 6 4 6 9 3 A 0 2 7 2 8