

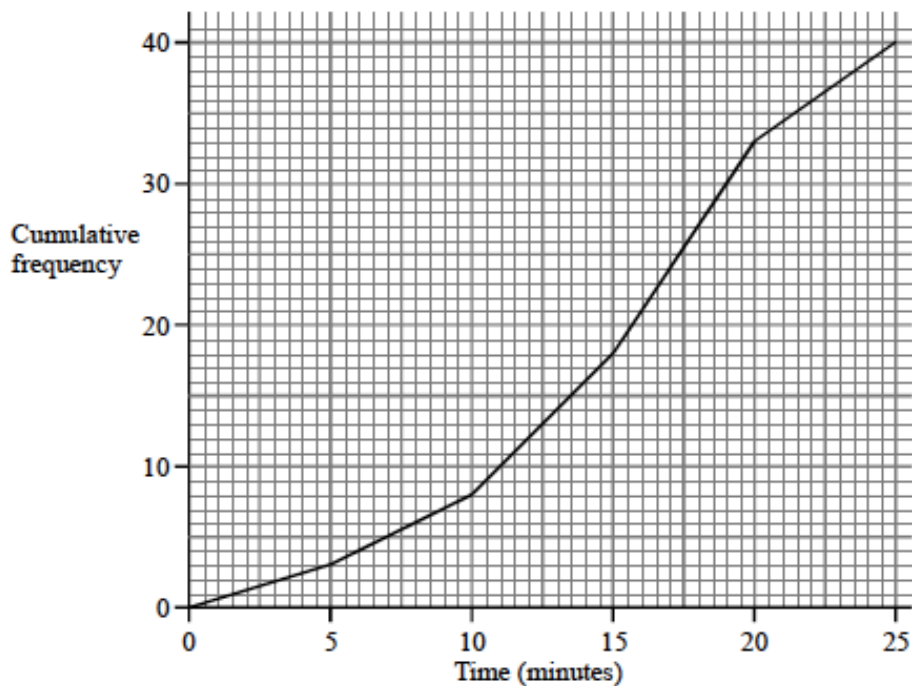
## Revision F4 (Topics 11-15) [39]

1. (a) Show that one solution of the equation  $x^3 + 10x = 24$  lies between 1 and 2. (2)
- (b) Find this solution correct to 2 decimal places. (4)

(Total 6 marks)

2.

The length of time, in minutes, of 40 telephone calls was recorded.  
A cumulative frequency diagram of this data is shown on the grid below.



Use the diagram to find the limits between which the middle 50% of the times lie.

(Total 2 marks)

3. **Non-calculator**

Abi, Ben and Carl each drop a number of identical drawing pins, and count how many land with the pin upwards. The table shows some of their results.

	Number of pins dropped	Number landing 'pin up'
Abi	10	4
Ben	30	9
Carl	100	35

(a) Abi says

As a drawing pin can only land with its pin up or with its pin down,  
the probability of a drawing pin landing 'pin up' is  $\frac{1}{2}$ .

Criticise her statement.

(b) Carl's results give the best estimate of the probability of a drawing pin landing 'pin up'. Explain why.

(c) Two pins are dropped.

Estimate the probability that both pins land 'pin up'.

(Total 4 marks)

4.

(a) Expand and simplify  $4(m + 3) + 3(2m - 5)$

(2)

(b) Solve the simultaneous equations:

$$2x + 3y = 9$$

$$3x + 2y = 1$$

You **must** show all your working.  
Do **not** use trial and improvement.

(4)

(c) (i) Factorise  $x^2 + 6x - 16$

(2)

(ii) Hence solve the equation  $x^2 + 6x - 16 = 0$

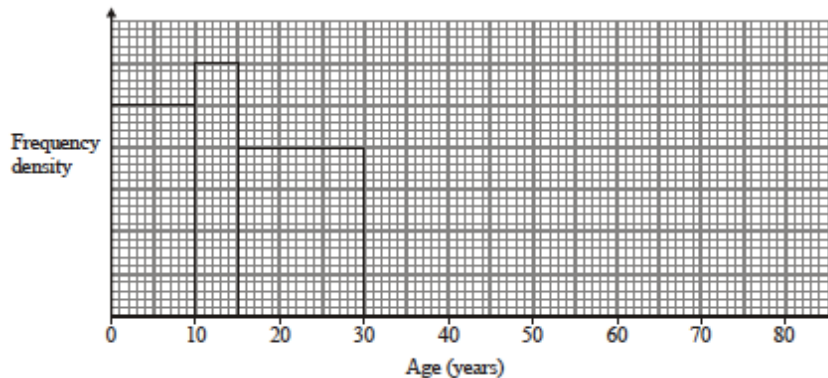
(1)

(Total 9 marks)

5.

The histogram and the frequency table are both incomplete.

They represent the same information about the ages of people living in a small village.



Age (years)	Frequency
$0 \leq x < 10$	50
$10 \leq x < 15$	
$15 \leq x < 30$	
$30 \leq x < 50$	60
$50 \leq x < 75$	25
$75 \leq x < 80$	20

(a) Use the information in the histogram to copy and complete the frequency table.

(2)

(b) Copy and complete the histogram.

(2)

(Total 4 marks)

6.

A bag contains 8 balls.  
5 are black and 3 are white.

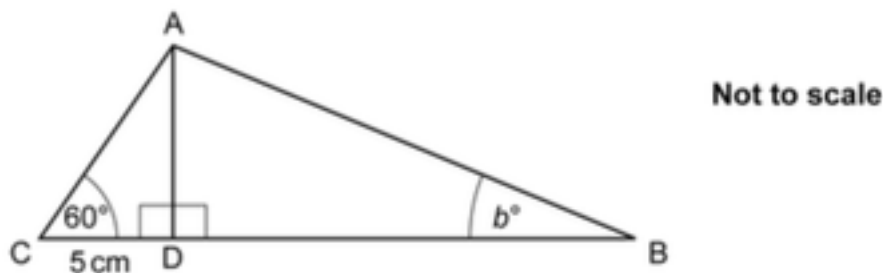


A ball is taken out of the bag at random and **not** replaced.  
Another ball is taken out of the bag at random.  
What is the probability that both of the balls are the same colour?

(Total 3 marks)

7. **Non-calculator**

In the diagram,  $CD = 5$  cm, angle  $ACD = 60^\circ$  and  $\sin b^\circ = 0.5$ .



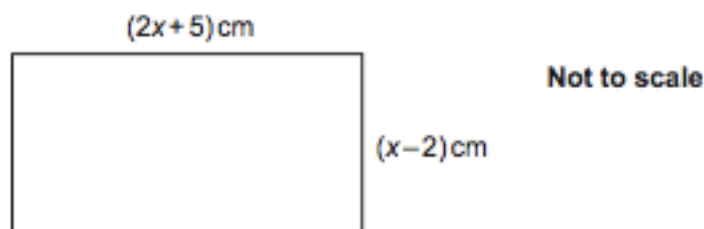
(a) Prove that triangle  $ACD$  is similar to triangle  $BAD$ .

(b) Find the ratio of the area of triangle  $ACD$  to the area of triangle  $BAD$ .

(Total 7 marks)

8.

The rectangle has a length  $(2x + 5)$  cm and width  $(x - 2)$  cm.



The rectangle has an area of  $35 \text{ cm}^2$ .

Use algebra to find the value of  $x$ .

(Total 4 marks)