



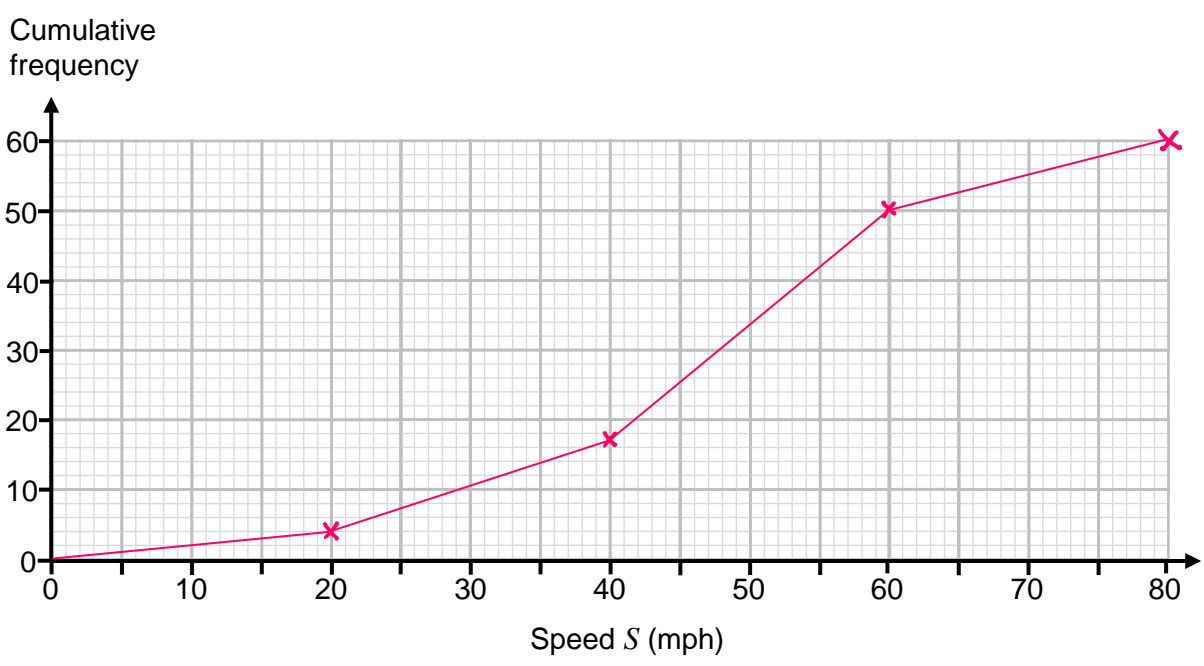
Cumulative Frequency Diagrams

← REVISE THIS TOPIC

1 Here is some information about the speeds of 60 cars in miles per hour.

Speed, S	Frequency	Speed	C. Frequency
$0 < S \leq 20$	4	$S \leq 20$	4
$20 < S \leq 40$	13	$S \leq 40$	17
$40 < S \leq 60$	33	$S \leq 60$	50
$60 < S \leq 80$	10	$S \leq 80$	60

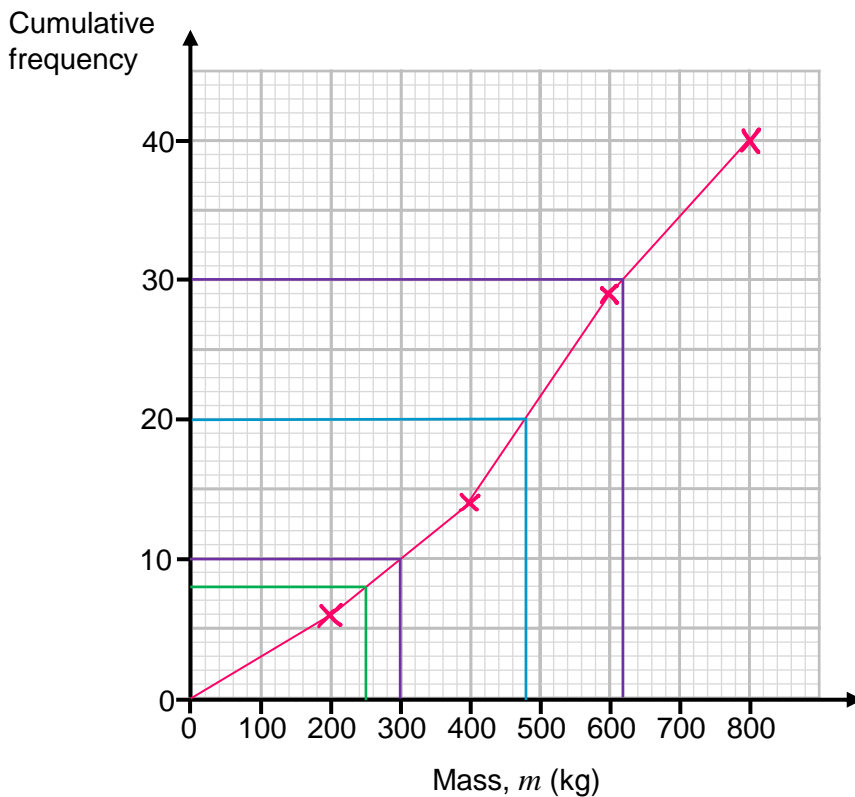
Draw a cumulative frequency graph. [3 marks]



2 Here is some information about the masses, in kilograms, of 40 cows in a field.

Mass, m , (kg)	Frequency	Mass	C. Frequency
$0 < m \leq 200$	6	$m \leq 200$	6
$200 < m \leq 400$	8	$m \leq 400$	14
$400 < m \leq 600$	15	$m \leq 600$	29
$600 < m \leq 800$	11	$m \leq 800$	40

2 (a) Draw a cumulative frequency graph. [3 marks]





2 (b) Use your graph to estimate the median mass of the 40 cows. [1 mark]

Answer 480 kg

2 (c) Use your graph to estimate the interquartile range of masses of the 40 cows. [2 marks]

Answer 620 - 300
320 kg

2 (d) Cows that has a mass of less than 250 kg are considered small cows.

Use your graph to find an estimate for the proportion of the cows in the field that are small cows. [2 marks]

8 small cows $\frac{8}{40} = \frac{1}{5}$

40 total cows

Answer $\frac{1}{5}$

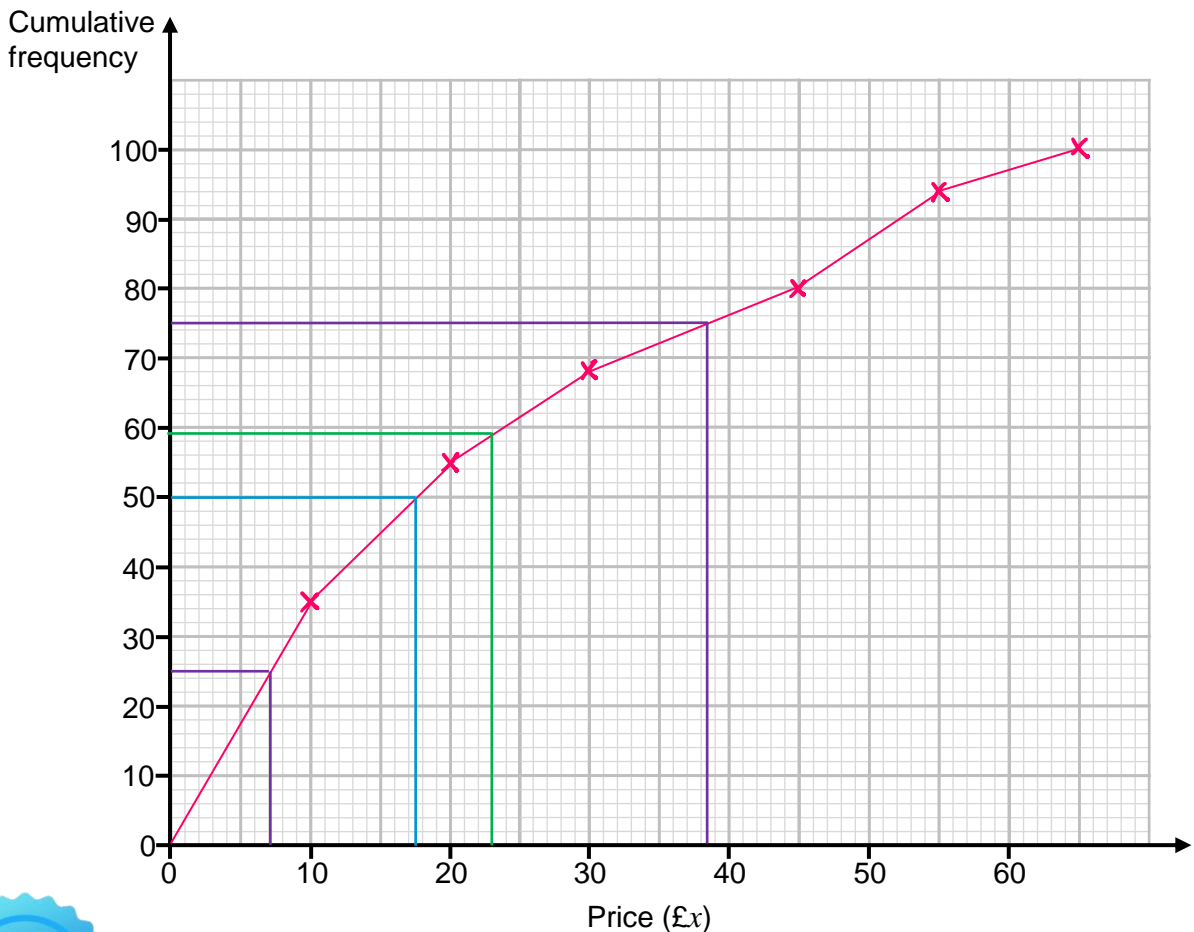


3 Here is some information about the price of 100 items in a shop.

Price (£x)	Frequency	Price	C.Frequency
$0 \leq x < 10$	35	$x \leq 10$	35
$10 \leq x < 20$	20	$x \leq 20$	55
$20 \leq x < 30$	13	$x \leq 30$	68
$30 \leq x < 40$	12	$x \leq 40$	80
$40 \leq x < 50$	14	$x \leq 50$	94
$50 \leq x < 60$	6	$x \leq 60$	100

3 (a) Draw a cumulative frequency graph.

[3 marks]





3 (b) Use your graph to estimate the median price of the 100 items. [1 mark]

Answer £ 17.50

3 (c) Use your graph to estimate the interquartile range of prices of the 100 items. [2 marks]

£38.50 - £7.00

Answer £ 31.50

3 (d) Chris has £23.00
One of the items is selected at random.

Use your graph to estimate the probability that Chris can afford to buy the item. [2 marks]

59 items less than £23.00
100 items total

Answer $\frac{59}{100}$



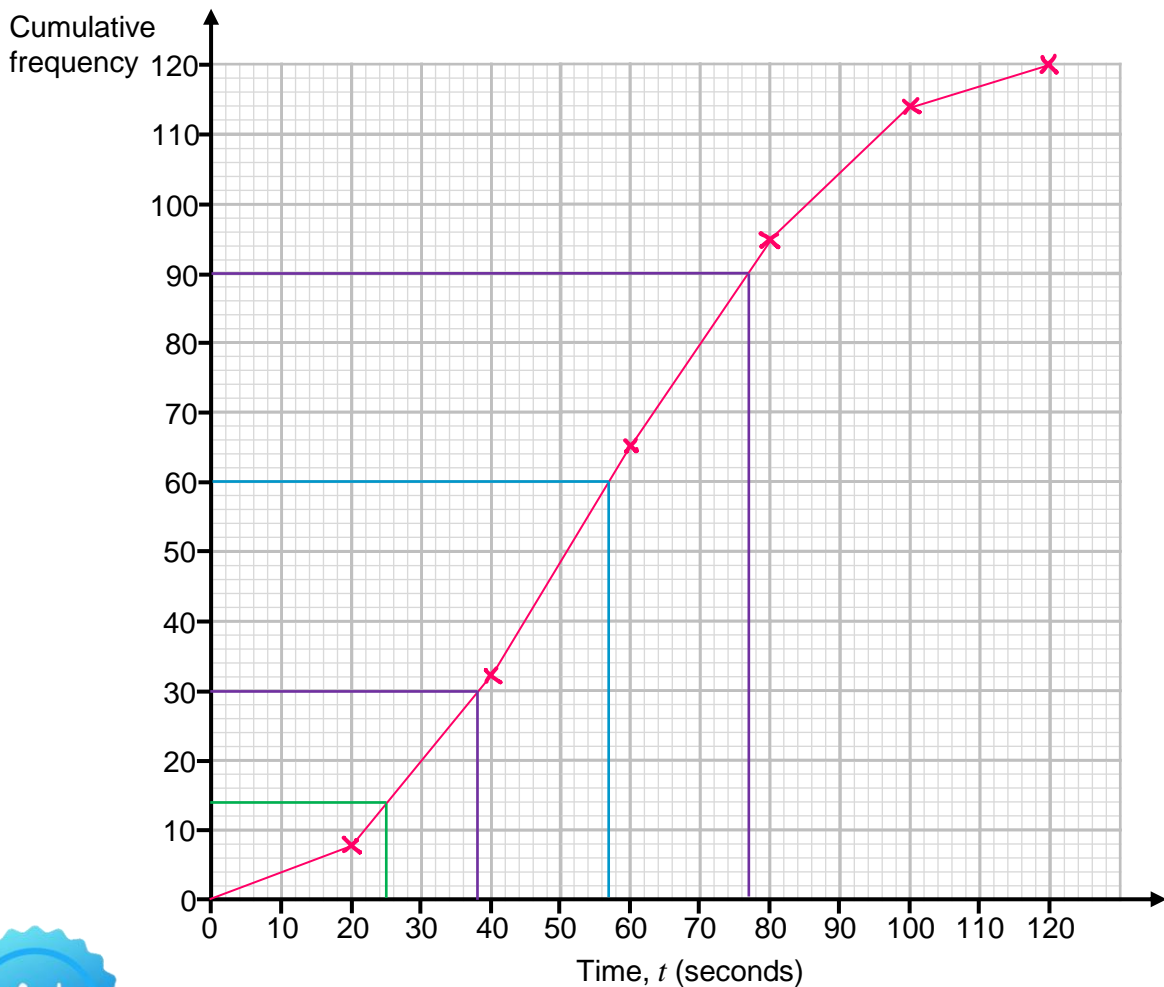
- 4 Here is some information about the times taken for 120 people to solve a maths problem.

Time, t , (seconds)	Frequency
$0 < t \leq 20$	8
$20 < t \leq 40$	24
$40 < t \leq 60$	33
$60 < t \leq 80$	30
$80 < t \leq 100$	19
$100 < t \leq 120$	6

Time	C.Frequency
$t \leq 20$	8
$t \leq 40$	32
$t \leq 60$	65
$t \leq 80$	95
$t \leq 100$	114
$t \leq 120$	120

- 4 (a) Draw a cumulative frequency graph.

[3 marks]





4 (b) Use your graph to estimate the median time taken by the 120 people. [1 mark]

Answer 57 seconds

4 (c) Use your graph to estimate the interquartile range of times taken to solve the maths problem. [2 marks]

Answer 77 - 38
39 seconds

4 (d) Everyone who solved the problem in less than 25 seconds wins a prize.
Use your graph to find an estimate for the percentage of people that won a prize. [2 marks]

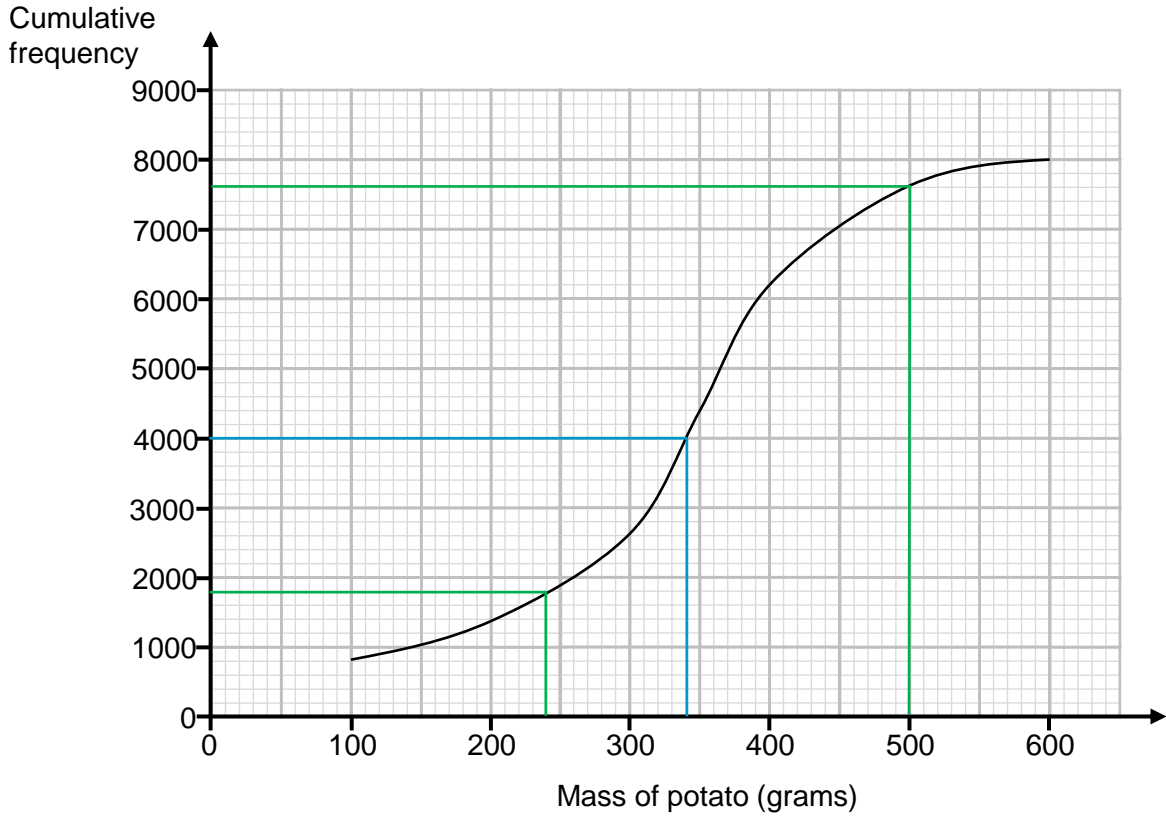
14 people win a prize
120 people total $\frac{14}{120} \times 100$
 $= 11.6\%$

Answer 11.6 %





5 The cumulative frequency diagram shows information about the masses, in grams, of the potatoes that a farmer harvests.



5 (a) Use your graph to estimate the median mass of the potatoes. [1 mark]

Answer 340 grams

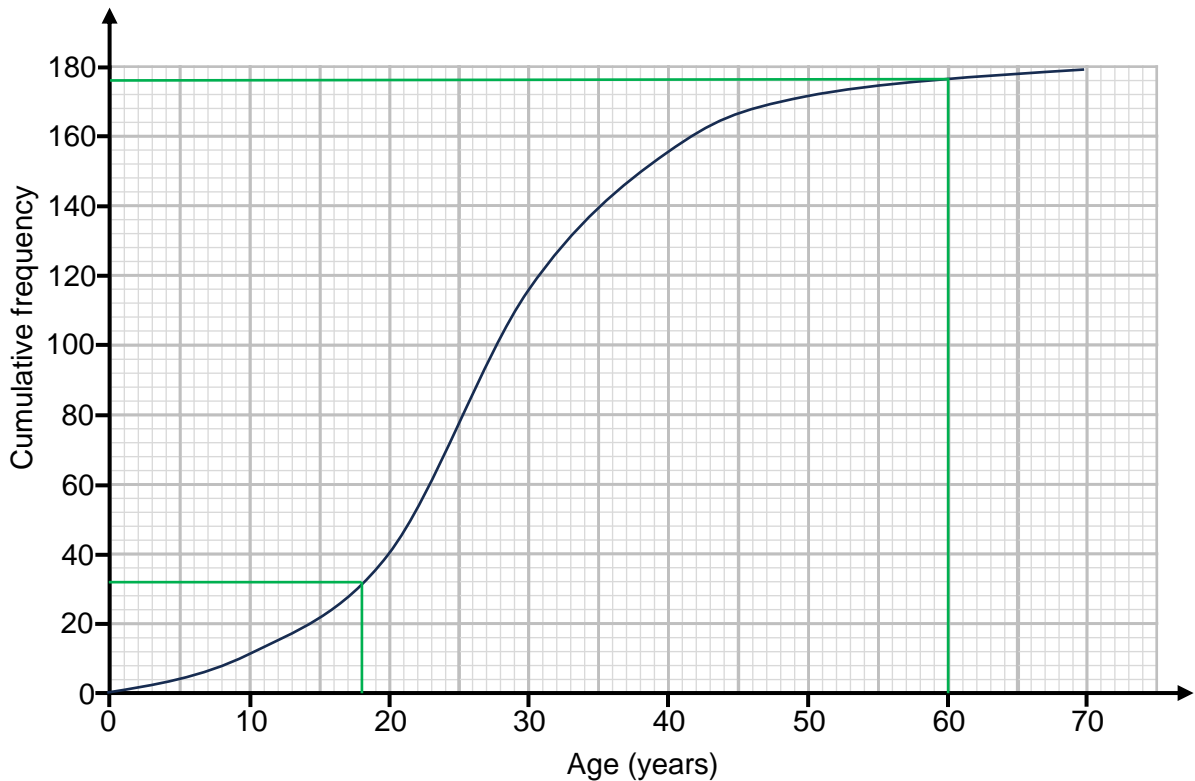
5 (b) The farmer can only sell potatoes that have a mass between 240g and 500g. Use your graph to work out an estimate for the number of potatoes from that harvest that the farmer can sell. [2 marks]

7600 - 1800

Answer 5800 potatoes



- 6 The cumulative frequency diagram shows information about the ages, in years, of 180 people attending a cinema to watch a film.



The prices of different tickets are shown in the table below.

Child (18 years and under)	General Ticket	Senior (60 years and over)
£6.50	£9.50	£7.50

Use the graph to work out an estimate for the total amount of money the cinema receives in ticket sales for the showing of this film.

[4 marks]

32 children

4 seniors

$180 - 32 - 4 = 144$ general

$32 \times 6.50 + 4 \times 7.50 + 144 \times 9.50$

Answer £

1606

$\frac{7}{7}$

Turn over ►



7 Peter throws the javelin 48 times and records the distances.
Here is some information about the distances d , in metres of his 48 throws.

Distance, d, (m)	$0 < d \leq 15$	$15 < d \leq 30$	$30 < d \leq 45$	$45 < d \leq 60$
Frequency	a	b	c	d

7 (a) $a : b : c : d = 1 : 2 : 5 : 4$

$1 : 2 : 5 : 4 \mid 12 \begin{matrix} \downarrow \\ \times 4 \end{matrix}$
 $4 \quad 8 \quad 20 \quad 16 \mid 48$

Complete the cumulative frequency table. [3 marks]

Distance, d, (m)	$d \leq 15$	$d \leq 30$	$d \leq 45$	$d \leq 60$
Cumulative Frequency	4	12	32	48

7 (b) Draw a cumulative frequency graph for this information. [2 marks]

