

Cumulative Frequency

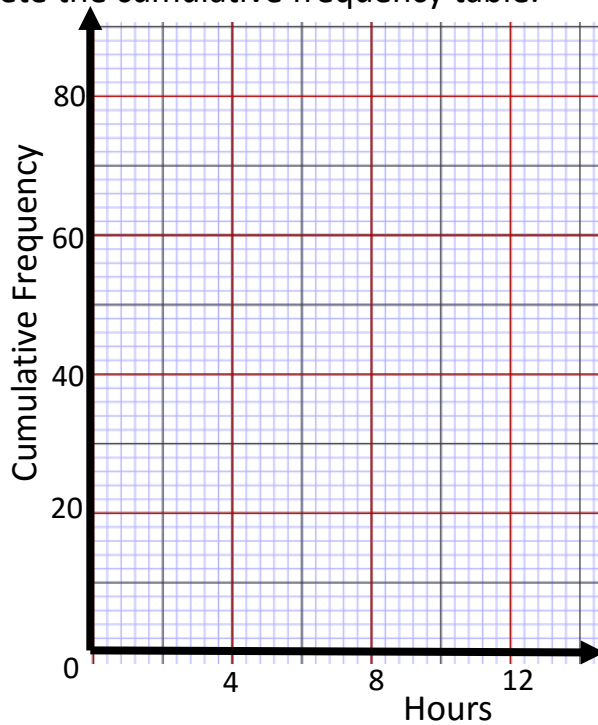
The table shows information about the number of our 80 children watched TV last week.

Hours (h)	Frequency
$0 < h \leq 2$	6
$2 < h \leq 4$	10
$4 < h \leq 6$	22
$6 < h \leq 8$	26
$8 < h \leq 10$	12
$10 < h \leq 12$	4

Hours (h)	Cumulative Frequency
$0 < h \leq 2$	
$0 < h \leq 4$	
$0 < h \leq 6$	
$0 < h \leq 8$	
$0 < h \leq 10$	
$0 < h \leq 12$	

1. Complete the cumulative frequency table.

/1



2. On the grid, draw a cumulative frequency graph for your table.

/2

3. Use your graph to estimate for the number of children who watched TV for less than 7 hours last week.

/2

4. Find an estimate value median amount of time children watch TV.

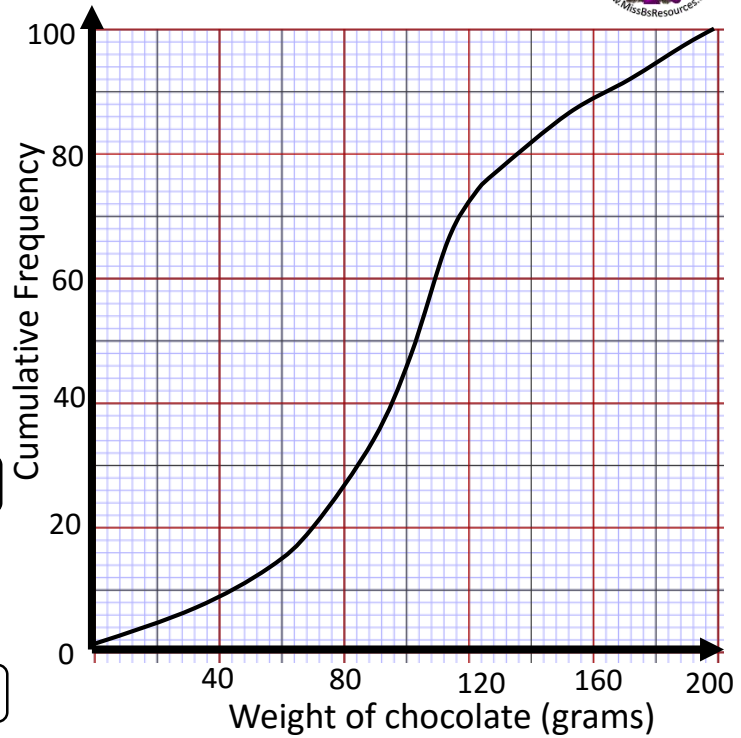
/1

5. Calculate the Inter Quartile range of the times children spend watching TV.

/3



6. Adam took a sample of 100 chocolates from box A of chocolates. He weighed each chocolate and recorded its weight. He used the information to draw the cumulative frequency graph shown on the grid.



Use the cumulative frequency graph to find an estimate for

- a) The median weight of the chocolates.
- b) The number of chocolates with a weight more than 120 grams

/1

/2

Adam also took a sample of 100 chocolates from a different branded box of chocolates. The table shows the distribution of weights of the chocolates from Box B.

Weight (w grams)	Cumulative Frequency
$0 < w \leq 40$	4
$0 < w \leq 80$	32
$0 < w \leq 120$	56
$0 < w \leq 160$	82
$0 < w \leq 200$	100

- c) On the same grid, draw the cumulative frequency graph for the information shown in the table.
- d) Work out the probability that the weight of a chocolate from Box A is more than 120g **and** the weight of a chocolate from Box B is more than 120g.

/2

/4

Skill	Questions	Score	Available Marks
To calculate the cumulative frequency so that you can correctly draw the graph	1, 2, 6c		5
Find a value for the median.	4, 6a		2
Find the upper and lower bounds to calculate the interquartile range.	5		3
Solve problems using a cumulative frequency graph.	3, 6b, 6d		8
	Total Marks		18

Answers



Cumulative Frequency

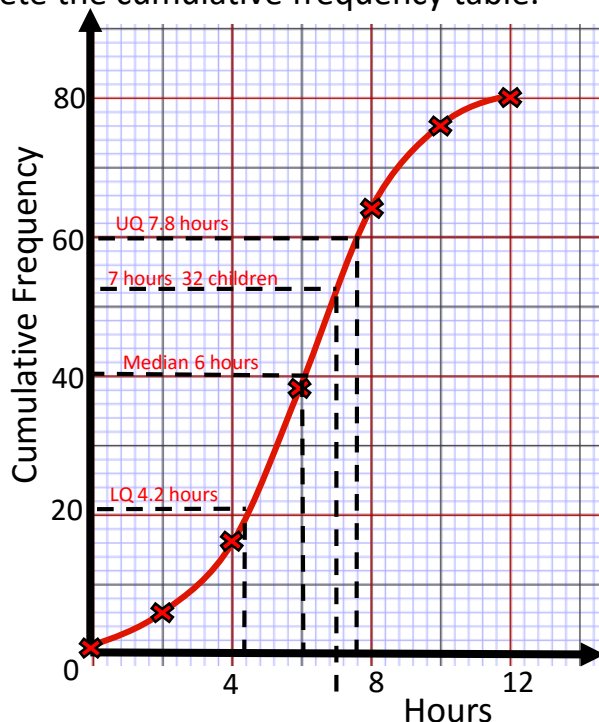
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$8 < h \leq 10$	12
$10 < h \leq 12$	4

Hours (h)	Cumulative Frequency
$0 < h \leq 2$	6
$0 < h \leq 4$	16
$0 < h \leq 6$	38
$0 < h \leq 8$	64
$0 < h \leq 10$	76
$0 < h \leq 12$	80

1. Complete the cumulative frequency table.

/1



2. On the grid, draw a cumulative frequency graph for your table.

/2

3. Use your graph to estimate for the number of children who watched TV for less than 7 hours last week.

Approximately 32 children watch TV for less than 7 hours a week.

/2

4. Find an estimate value median amount of time children watch TV.

The median is 6 hours a week

/1

5. Calculate the Inter Quartile range of the times children spend watching TV.

LQ = 4.2 hours

IQR = $7.8 - 4.2 = 3.6$ hours

UQ = 7.8 hours

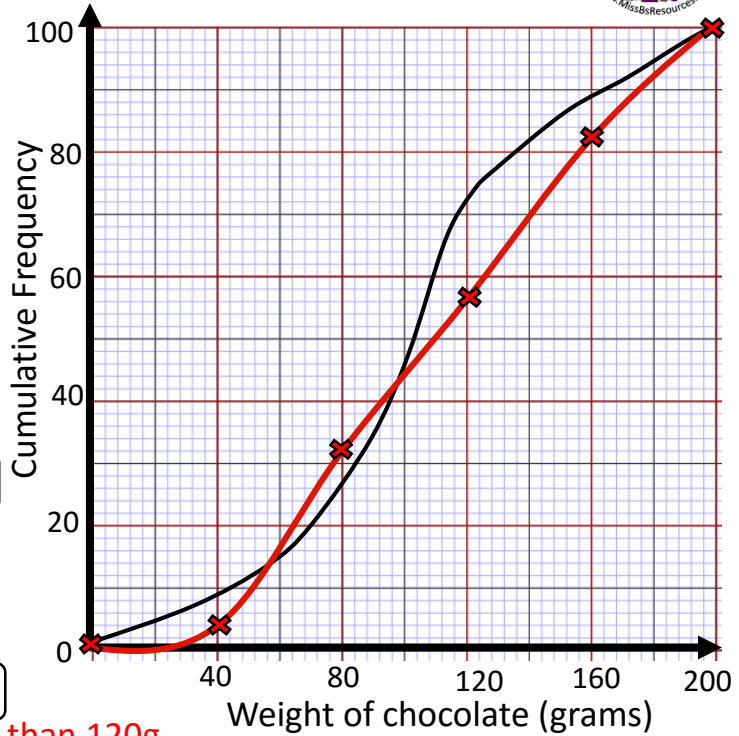
3.6 hours is 3 hours and 36 minutes

/3

Answers



6. Adam took a sample of 100 chocolates from box A of chocolates. He weighed each chocolate and recorded its weight. He used the information to draw the cumulative frequency graph shown on the grid.



Use the cumulative frequency graph to find an estimate for

- The median weight of the chocolates.
84g per chocolate /1
- The number of chocolates with a weight more than 120 grams

72 weigh less than 120g /2

So $100 - 72 = 28$ chocolates weight more than 120g.

Adam also took a sample of 100 chocolates from a different branded box of chocolates. The table shows the distribution of weights of the chocolates from Box B.

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$0 < w \leq 40$	4
$0 < w \leq 80$	32
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$0 < w \leq 160$	82
$0 < w \leq 200$	100

- On the same grid, draw the cumulative frequency graph for the information shown in the table. /2

- Work out the probability that the weight of a chocolate from Box A is more than 120g **and** the weight of a chocolate from Box B is more than 120g. **Box A 28 chocolates weight more than 120g. Box B 44 chocolates weight more than 120g.**

$$P(A > 120g \cap B > 120g) = \frac{28}{100} \times \frac{44}{100} = \frac{1232}{10000} = \frac{77}{625} = 0.1232$$
/4

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Find the upper and lower bounds to calculate the interquartile range.	5		3
Solve problems using a cumulative frequency graph.	3, 6b, 6d		8
	Total Marks		18