



# Cumulative Frequency

## Constructing Cumulative Frequency Graphs

Cumulative frequency means frequency so far. You add the frequency as you go along. Below is an example of a frequency table.

Height of Student (cm)	Frequency
$120 < x \leq 130$	2
$130 < x \leq 140$	6
$140 < x \leq 150$	8
$150 < x \leq 160$	3
$160 < x \leq 170$	1

Create a new column on the right side of the frequency column, and label it 'cumulative frequency'.

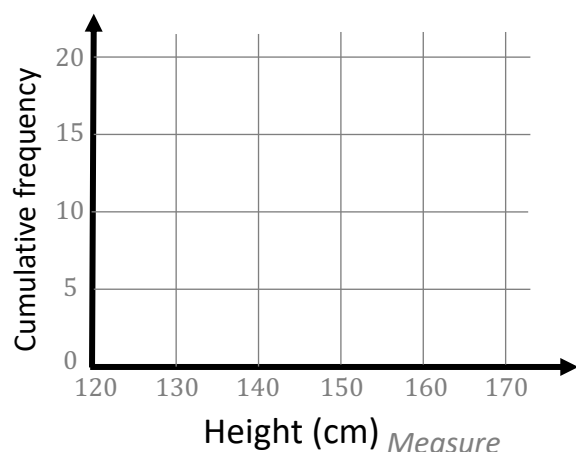
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Fill in the cumulative frequency column. The first (top) box will be the same as the frequency. After that, each cumulative frequency box will be the sum of the previous cumulative frequency (above), and the frequency (on the left).

Frequency	Cumulative frequency
2	2
6	8
8	16
3	19
1	20

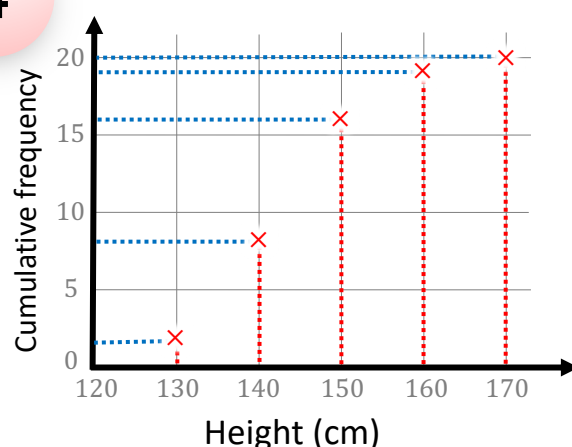
3

Draw a graph with the measure on the x-axis, and the cumulative frequency on the y-axis.



Plot the values of the upper bound of the measure, and the corresponding cumulative frequency on the graph.

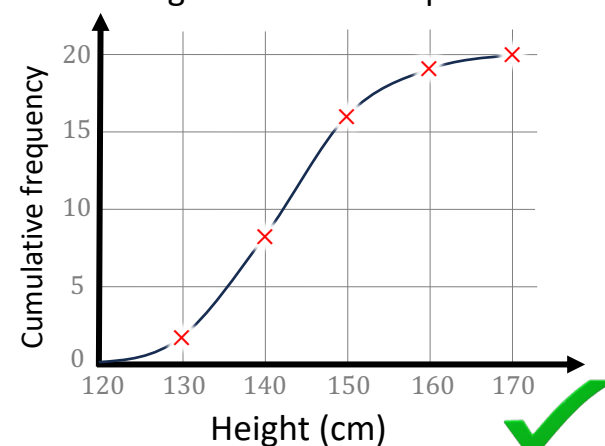
4



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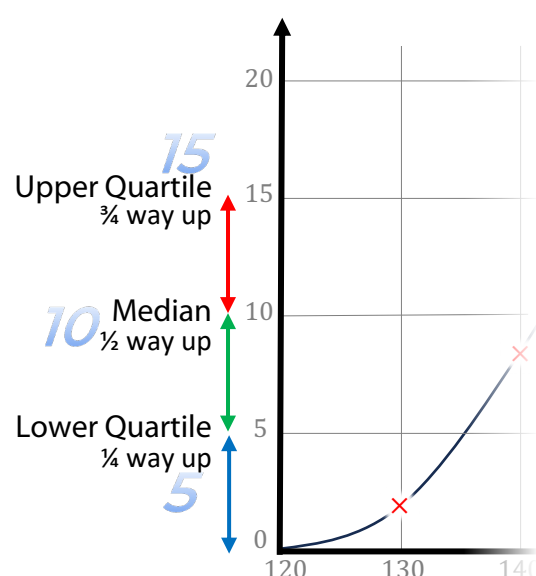
5

Connect all the plots starting at the 0 point of the y-axis. Draw a smooth curved line in a single stroke with a pencil.



## Interpreting Cumulative Frequency Graphs

Here is how to find the quartiles and median:



Upper quartile:

Draw a line across from the UQ and find the corresponding height.

148cm

Lower quartile:

Draw a line across from the LQ and find the corresponding height.

136cm

Median:

Draw a line across from the median and find the corresponding height.

142cm

Interquartile range:

Subtract the lower quartile from the upper quartile.

12cm

$$148 - 136 = 12$$



A hint that you have drawn an accurate cumulative frequency graph is the 's' curved shape which is the steepest in the middle.

