

Grouped Frequency Tables

Table categories contain **grouped** values instead of individual values. The frequency data includes all students whose height falls into that specific category.

Table showing the height of students in a class

Height (cm)	141-145	146-150	151-155	156-160	161-165	≥ 166
Frequency	2	3	4	5	6	2

← Grouped values

Example

A student who is 153cm tall will be recorded as being in the category 151-155cm.

When using grouped frequency tables you will need to be able to identify the class boundaries and mid-interval values.

		Example
Grouped frequency table	frequency table that using grouped values	141-145cm
Class boundaries	<p>the exact values where one group becomes the next</p> <p>this is the mid-point between the two figures (the figure at the end of the first group and the figure at the beginning of the second group)</p>	<p>145.5cm is the point between 145cm (at the end of the first group) and 146cm (at the beginning of the second group)</p>
Mid-interval values	<p>the mid-point of the group values (that's the scale not the data)</p> <p>this is calculated by adding both group values together and dividing by 2</p> <p>e.g. for the group 141-145cm $141 + 145 = 286$ $286 / 2 = 143$ mid-interval for this group = 143cm</p>	143cm is the mid-point of the group 141-145cm


Averaging group frequencies

Estimating the mean

Grouped frequency tables do not contain the original values. They tell you “how many” fell into that category. To calculate the mean you would require actual values so when using grouped data you will need to **estimate** the **mean using the mid-interval (average) values** for each group.

Table showing the height of students in a class

	Height (cm)	141-145	146-150	151-155	156-160	161-165	Totals
a	Frequency	2	3	4	5	6	20
b	Mid-interval value	143	148	153	158	163	--
	Frequency value (a x b)	286	444	612	790	978	3110

	Definition	Definition when using frequencies	Average height
Mean	Sum of the items divided by the number of items	total frequency values divided by total frequency $3110 / 20 = 155.5\text{cm}$	155.5cm
Mode (modal group)	The value that occurs most commonly in the list	frequency with the highest value (most occurrences) the group with the highest frequency is called the modal group . the group 161-165cm has the greatest number of students (6)	161-165cm
Median	Total number of items (n + 1) divided by 2 	total frequency + 1 divided by 2 $(20 + 1) / 2$ $21 / 2 = 10.5$ Now find the 10.5th value! $2 + 3 = 5$ $2 + 3 + 4 = 9$ $2 + 3 + 4 + 5 = 14$, so the 10.5 th value falls in the 4 th group: 156-160cm.	156-160cm