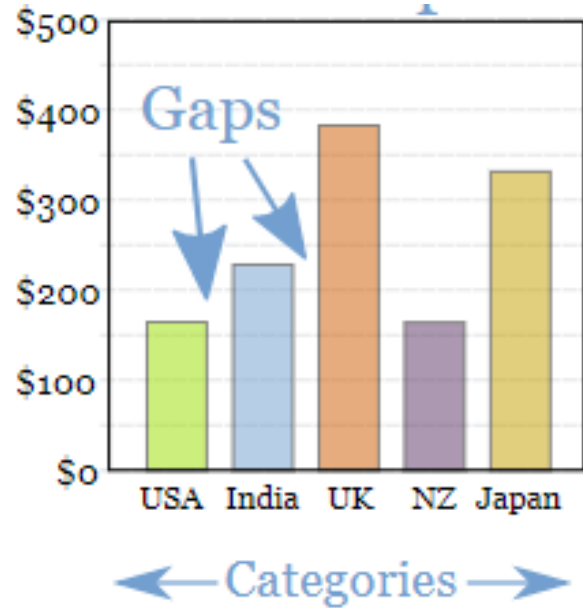


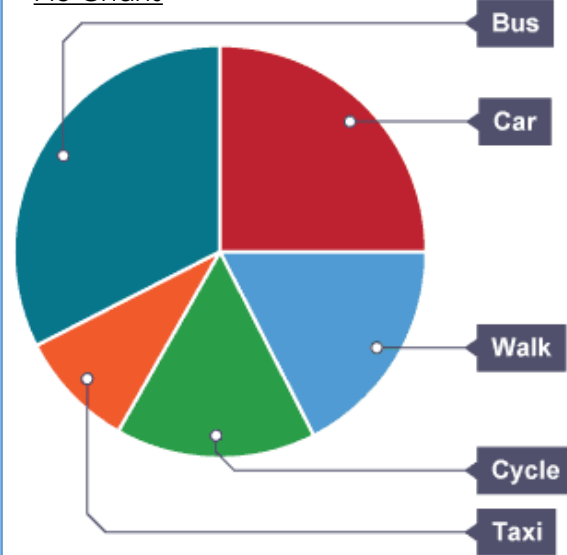
## Year 8 Mastery Unit 9 – Univariate Data

### Bar Charts



- **Discrete data** can be represented using bar charts
- A bar chart is used to compare two or more values with a small set of results.
- Bar charts show the absolute value of each category

### Pie Charts



When you are graphing percentages of a distribution a pie chart would be suitable.

Pie charts clearly show the proportion of each category

- Pie charts use different-sized sectors of a circle to represent data.
- The angle of each sector represents the fraction, out of 360, assigned to that data value.
- Pie charts should always be labelled, either directly on the pie chart or by means of a colour-coded key.

### Tally Charts

- A tally chart is a way to represent data.
- You are able to represent **qualitative and quantitative data**.
- You can have normal tally charts or grouped tally charts. These are also called frequency tables.

Tally chart with discrete data

Response	Tally	Frequency
0		13
1		8
2		4
3		2
4		0
5		0
6 or more		3

Grouped tally chart with continuous data

Response	Tally	Frequency
$x < 125$		2
$125 \leq x < 135$		2
$135 \leq x < 145$		7
$145 \leq x < 155$		11
$155 \leq x < 165$		6
$x \geq 165$		2

Tally chart with quantitative data

Response	Tally	Frequency
White		0
Black		7
Blue		1
Blonde		4
Dark Brown		9
Ginger		3
Light brown		6

Keyword/Skill	Definition/Tips
Discrete	Discrete data can only have a finite or limited number of possible values
Continuous	Continuous data can have an infinite number of possible values within a selected range
Quantitative	Quantitative data that can be counted (discrete), quantitative data that can be measured (continuous)
Qualitative	Information that is written in words i.e. colour of cars
Average	A calculated 'central value' of a set of numbers
Mean	The mean amount is the total amount split evenly
Median	Place the numbers in value order and then find the middle number. When there are two numbers in the middle we average them.
Mode	The number which appears most often in a set of numbers
Range	The difference between the highest and lowest values
Frequency	How often something happens.
Table	Information (such as numbers and descriptions) arranged in rows and columns.
Data	A collection of facts, such as numbers, words, measurements, observations or even just descriptions of things.
Proportion	A part, share, or number considered in comparative relation to a whole.
Univariate Data	Univariate means "one variable" (one type of data).

### Other Topics/Units this could appear in:

- Averages
- Averages from Tables
- Sampling
- Histograms

## Year 8 Mastery Unit 9 – Univariate Data

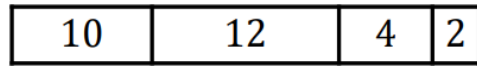
### Calculating the Mean

The mean is the most commonly used measure of average. The mean is the total amount split evenly.

For example take this data set:

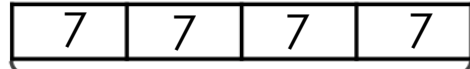
10, 12, 4, 2

I can represent this as a bar model:



28

The total is 28. I then want to split this amount evenly into how many values there are. In this case I need to split 28 into 4 even values.



28

Therefore the mean is 7!

You can also find missing values from data sets when given the mean.

Example:

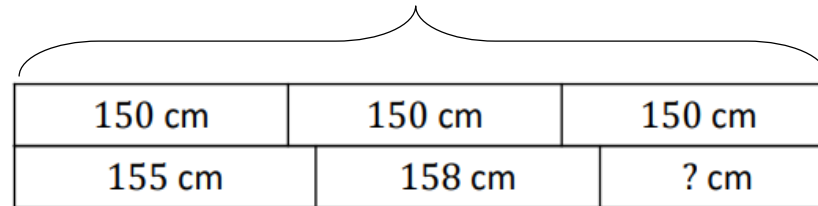
Three children have a mean of 150cm.

Two children have a height of 155cm and 158 cm.

What is the height of the third child?

I can draw a bar model to help me out:

450cm



I can see that the total would be 450cm so I can figure out the missing total:

$$155\text{cm} + 158\text{cm} = 313\text{cm} \quad 450\text{cm} - 313\text{cm} = \mathbf{137\text{cm}}$$

is the height of the third child

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### Calculating the Median

- If you place a set of numbers in order, the median number is the middle one.

**10 12 13 15 16 23 26**

15 is the middle number so it is the median.

- If there are two middle numbers the median is the mean of this

**10 12 13 15 16 17 23 26**

Here you need to find the number in the middle of 15 and 16:

$$\mathbf{15 + 16 = 31} \quad \mathbf{31 \div 2 = 15.5}$$

Therefore, 15.5 is the median.

### Calculating the mode

- The mode is the value that occurs most often

Example:

**1,3,3,4,7,8**

The number 3 occurs the most so the mode is 3.

### Calculating the Range

The range is the difference between the highest and lowest values in a set of numbers

Find the range of:

**23, 27, 40, 18, 25**

The largest value is 40 and the smallest value is 23.

$$\mathbf{40 - 23 = 17}$$

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- Averages from Tables
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