

Scientific Skills Knowledge Organiser

Types of Variable

Independent - the variable that is **changed**

Dependent - the variable that is **measured**

Control - the variable that stays the **same**

Types of Data

Categorical - values that are labels e.g. type of plant

Continuous - values that are numbers e.g. temperature

Tables

Units **only** go in headings

| Time (s) | Vol. gas (cm ³) |
|----------|-----------------------------|
| | |

Types of Error

Systematic - a problem with the method or equipment used. E.g. using a beaker to measure the volume of a liquid instead of a measuring cylinder.

The effect cannot be reduced by taking repeat readings.

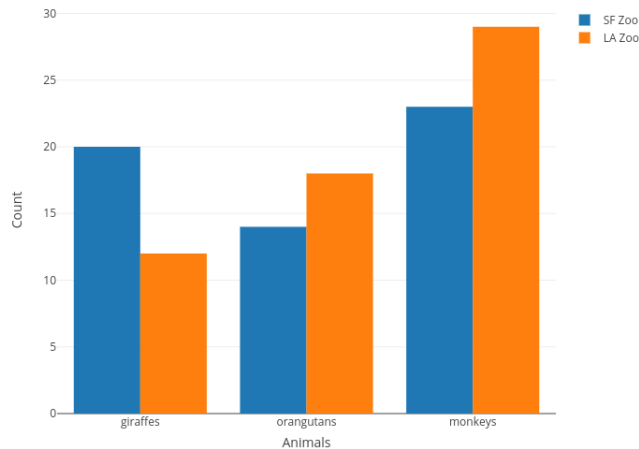
Random - whenever something is measured a random error is made. E.g. measuring with a ruler.

The effect can be reduced by taking repeat readings.

Zero - caused by a piece of equipment not reading zero when it should. E.g. a balance. Either reset the piece of equipment or deduct the false reading from all measurements.

Bar Chart

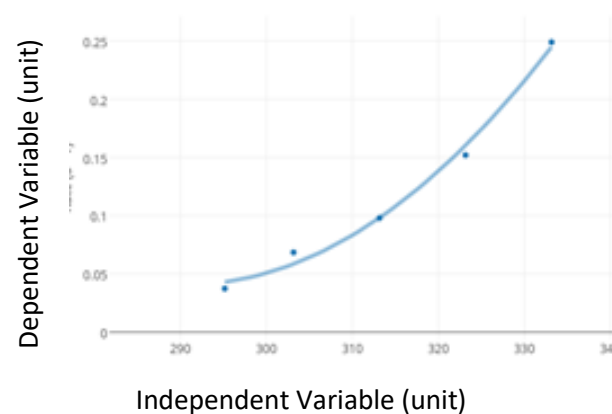
Type of graph plotted for one piece of **categorical** data and one piece of **continuous** data



Line Graph

Type of graph plotted for two pieces of **continuous** data

Has a **line of best fit**. This may be a **straight line** or a **curve** (not join the dots)



Key words

Accurate - close to the true value

Anomalous - a result that doesn't fit the pattern

Precise - small amount of spread around the mean

Resolution - the smallest reading on a piece of measuring equipment

Reproducible - if the same results are obtained by different people for the same investigation

Range - the biggest and smallest values of the independent or dependent variable e.g. 0-10 N

Volume - amount of a liquid