Speak like a SCIENTIST

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Planning an experiment

Variable A factor that can change in an experiment.

Independent variable A variable that is being changed during the experiment.

Dependent variable A variable that is being tested or measured during the experiment.

Control variable A variable that must be kept the same so the experiment is not affected.

Prediction Stating what you think will happen during an experiment, using scientific theory.

Hypothesis An idea about how something works that can be tested using experiments. Usually developed from a question based on an observation.

Observation Something that can be seen to be happening.

Scientific method Investigating by collecting and analysing data to demonstrate that an idea is right or wrong.

Method A description of how an experiment should be done - can be written as a list of instructions.

Primary data Data that has been collected from the original source for a specific purpose.

Secondary data Data that has already been collected through primary sources and made available for others to use.

Apparatus The equipment used to conduct an experiment.

Accurate Results are accurate if they're close to the true value.

Precise Results are precise if they've been repeated and are similar.

Repeatable data Getting similar results when repeating the experiment.

Reproducible Getting similar results when someone else does the experiment.

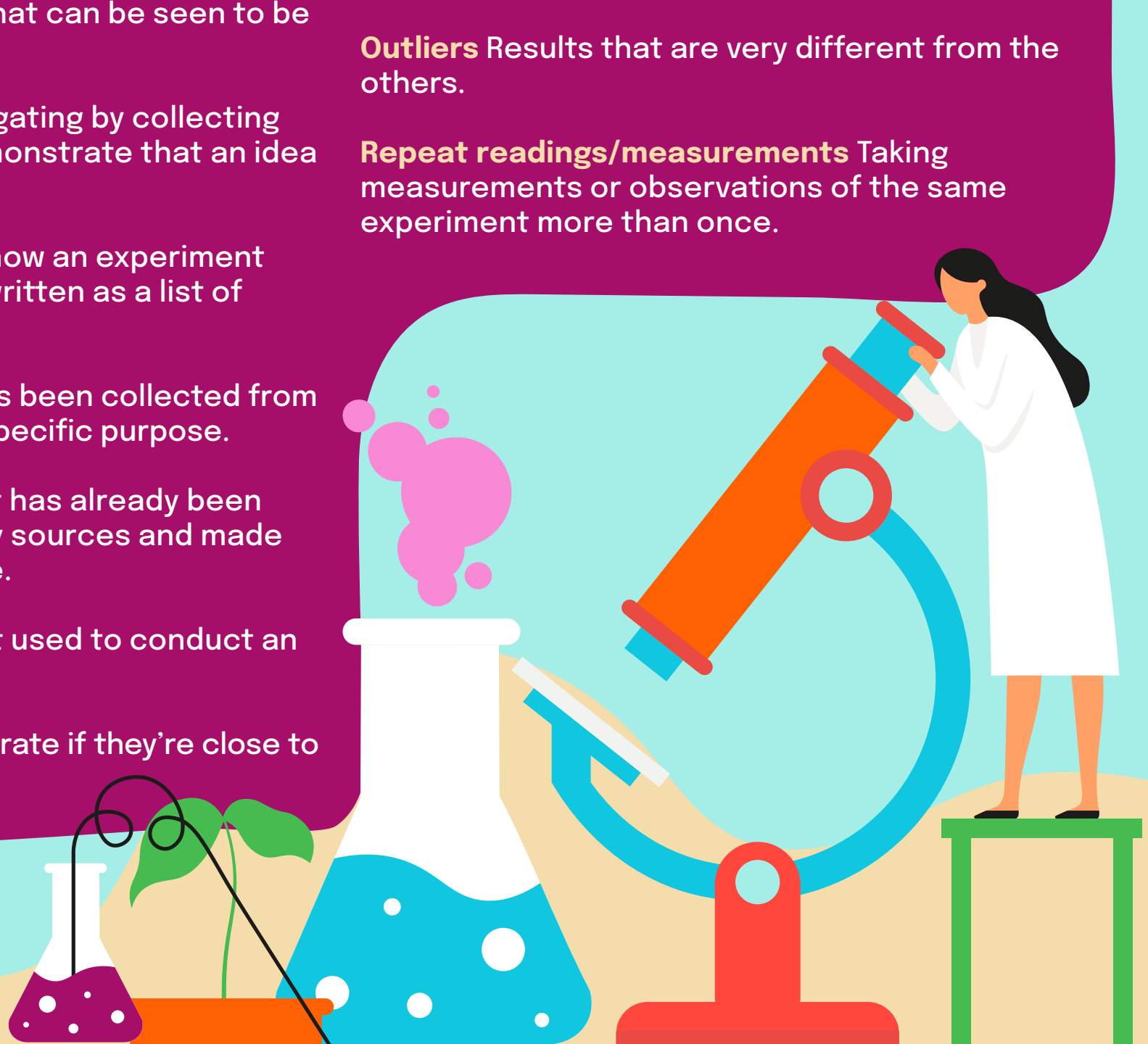
Random error Something that causes an unexpected difference between a measurement and the true value. May happen when equipment is used incorrectly, or readings are taken incorrectly.

Systematic error Something that causes the results to differ by the same amount each time. May happen when equipment is used incorrectly.

True value The result that you would get in an ideal measurement or experiment that is totally unaffected by errors.

Outliers Results that are very different from the others.

Repeat readings/measurements Taking measurements or observations of the same experiment more than once.



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Observation and measurement

Average A number that shows a typical value in a set of data - can be mean, median or mode.

Mean An average calculated by adding together all the values in a data set and dividing them by the number of values in the set.

Median An average calculated by selecting the middle value in a data set.

Mode An average calculated by selecting the number that appears most often in the data set.

Range The difference between the biggest and smallest numbers.

Quantitative data Data that is described in numbers.

Qualitative data Data that is described in words.

Continuous variable A variable that has values that can be any number.

Discrete variable A variable that can only have whole number values.

Categoric variable A variable that has values that are words rather than numbers.

Line graph A way of presenting results when there are two variables that are numbers - at least one variable should be continuous.

Line of best fit A smooth line on a graph that goes through the middle of as many points as possible. Around half of any points that aren't on the line are above it and the other half below it.

Bar chart A way of presenting data where the lengths of the bars represent the values of the variables. Used when one of the variables fits into discrete categories.

Pie chart A way of presenting data in which a circle is split into sectors to show the proportions of a total made up of different parts. Used when one variable is discrete or categoric data.

Concluding and evaluating

Conclusion An explanation of how or why something happens.

Evaluate Consider the quality of the data and suggest improvements to the method.

Valid An experiment is valid when it measures what it is expected to measure.

Bias A preference for or against an idea or data being affected by errors in method or equipment.