Highsted Knowledge Organiser, Science, Term 1, Year 7: Working scientifically

What I need to know

Bunsen burner safety
Scientific diagrams
Variables, validity, and testing
Planning an experiment
Collecting evidence
Analysing data
Conclusions
Evaluations

Challenge question:
How is the scientific method useful in understanding how the world works?

Suggested reading:
www.kerboodle.com
https://www.bbc.co.uk/bitesize/topics/zsg6m39

Key words and definitions

Bar chart/column graph- A graph or chart that displays the values of categories.
Categoric- A variable that has values that are words.
Conclusion- What you write down to say what you have found out during an investigation.
Confidence- How sure you are of your conclusion based on the data.
Continuous (variable)- Has values that can be any number.
Control group- Those that are not exposed to the factor being tested.
Control measure- An action taken to remove the hazard or to reduce the exposure to it.
Control variable- One that remains unchanged or is held constant to stop it affecting the dependent variable.
Correlation- A relationship between variables where one increases or decreases as the other increases.
Data- Words or numbers that you obtain when you make observations or measurements.
Dependent variable- What you measure or observe in an investigation when you change the independent variable.
Discontinuous (variable)- Has values that are words or discrete numbers.
Discrete- A variable that can only have whole-number values.
Evaluate- To discuss the quality of data collected during an investigation and suggest improvements to the method.
Evidence- Information (measurements, observations, facts, or conclusions) that scientists use to develop or check theories, or evaluate claims.
Experimental error- Variations in measurements, owing to the method, measurement techniques, or the instrument.
Fair test (enquiry)- An experiment to find out how one variable affects another, while all other variables are kept constant.
Hazard- A situation that presents a threat to people.
Hypothesis- An explanation you can test that includes a reason and a 'science idea'.
Independent variable- What you change in an investigation to see how it affects the dependent variable.
Interval- The gap between the values of the independent variable.
Investigation- An experiment or set of experiments designed to produce data to answer a scientific question or test a theory.
Line graph- A graph that shows the relationship between two continuous variables.

	Line of best- fit A straight or curved line drawn to show the pattern of data points that travels through or very close to as many of the points plotted as possible. **Linear relationship**- When two variables are graphed and show a straight line that goes through the origin, and they can be called directly proportional. **Mean**- An average of a set of data, calculated by adding all the values and dividing by the number of values. **Observation**- Information gathered by your senses. **Observation enquiry**- An experiment to find out about things that change over time. **Outlier/anomaly-** A piece of data that does not fit the pattern. **Pattern seeking enquiry**- An experiment to find out if there is a correlation between variables. **Pie chart-** A chart that shows the proportions or percentages that make up a whole. **Plan-** A description of how you will use equipment to collect valid data to answer a scientific question. **Precise**- This describes a set of repeat measurements that are close together. **Prediction**- A statement that says what you think will happen in an experiment. **Random error-** Occurs when the same quantity is measured and inconsistent values obtained. **Range**- The maximum and minimum values of a variable **Real difference**- There is a real difference between two means if their ranges do not overlap much. **Repeatable**- When repeat readings are close together. **Risk**- How likely something is to be harmful. **Risk assessment**- A description of how you will make it less likely that people will be injured, or equipment damaged, and what to do if this happens. **Sampling**- The collection of a small amount of data about a population that is used to make estimates about the whole population. **Scatter graph**- Shows the independent variable vs dependent variable. **Scientific enquiries**- Different ways to investigate including observation over time, fair test and pattern seeking. **Spread**- The difference between the highest and lowest measurements of a set of repeat measurements. **Systematic error**- Arises from an inaccuracy in the system and gives rise to errors of the same value. **Variable**- A factor that can be changed, measured and controlled.