

Science Investigations – a guide to the key terms.

	Keyword	Explanation.	Notes
Exploration	Research question	This is like your aim. You have to say exactly what you are trying to do. What you are going to change and what you are going to measure . e.g. "I will investigate how independent affects dependent ."	
	Hypothesis	This is your prediction. You state what you think will happen. You should try to explain why this will happen, using a scientific explanation. Sometimes, a hypothesis is not needed, or you do not know what to expect.	
	Independent variable	This is the thing that you change or manipulate in the experiment. There must be only one.	
	Dependent variable	This is the thing you measure in the experiment. There must be only one.	
	Controlled variables	These are ALL the other things that you keep the same in an experiment. There are usually many of them.	
	Method.	A series of dot points/numbered points and/or diagrams and photograph. Someone else should be able to use this information to do the same experiment as you did without any extra advice or instruction.	
Analysis.	Data recording.	Record your data in a table with the type of data and units marked in the top row or header only. The far left column is for the independent variable and the next 3-5 columns are for the dependent variable. Use a column to record averages, if appropriate. You should design and draw your table BEFORE you start to collect data.	
	Reliability	You make sure you have reliable data by carrying out 3 or more repeats. You need to calculate an average result. If one result is odd then you take it out and do the experiment again. If there is not time to repeat the experiment, can you use some data from other group's results? Is there a published answer?	
	Data manipulation	If you have to process data (calculate stuff) e.g. masses, volumes or apply a formula, you should show your working below the data table	
	Data analysis	Graph the information, with the independent variable on the horizontal (x) axis, and the dependent variable on the vertical (y) axis. Use a suitable graph type to represent the data.	
Evaluation.	Conclusion	In this section you explain your results in your table or graph in words. Does it go through the origin? Does the gradient mean anything? You relate this to your aim. You need to say if the evidence supports your aim or not.	
	Evaluation & improvements.	This is where you identify the weaknesses of your experiment: <ul style="list-style-type: none"> - Were your results what you expected? - Were there any limitations or errors? You need to explain if your results were reliable: <ul style="list-style-type: none"> - Did you collect enough repeats to see if your results were accurate? You need to suggest some improvements you would make to the experiment next time, to make sure you get reliable and valid data.	
	Validity	Did you experiment measure the thing you set out to measure? Did you keep all the variables the same? Did you only change the independent variable? Was the equipment you used the best tools you could have used?	