

GLOSSARY

TITLE: Aside from describing the nature of the experiment, the title may include reference to the dependent and independent variables.

VARIABLES: Independent variable is the thing you change in your experiment. Dependent variable is the thing you measure. Control variable is something you keep the same.

HYPOTHESIS: A scientific hypothesis is a testable educated guess as to what might happen or what might be the result of certain experimentation. The hypothesis should be written as an "If/Then Statement". It should sound something like this, "If the _____ (independent variable) is _____ [increased or decreased (you choose)], then the _____ (dependent variable) should _____ [increase or decrease (you choose)] in a _____ (linear, exponential, logarithmic, unpredictable/scattered) fashion. The best scientific hypotheses are clear cut and easily tested. Avoid saying "I think that..." or "I believe that..."

MATERIALS: List all chemicals, equipment, and supplies needed to complete the activity.

PROCEDURE: These are the STEP-BY-STEP instructions for the lab investigation. Read through this lab manual's procedure and then think carefully about any variations you may have performed. Then write down your overall procedure in your own words. The better your procedure, the easier it will be for others to replicate your steps. Avoid the use "I", "me", "we", or "our" when describing the procedure. Your sentences can be bulleted, numbered, or written in paragraph form, but first person pronouns are to be avoided. Be sure to include the independent variables, dependent variables, and controlled variables. Your procedure should include a labeled drawing of the set up. You must also include SAFETY PRECAUTIONS, which is very important.

DATA TABLE: Any data collected during the lab such as drawings, measurements, data tables, charts, etc. Please note, each Data Table should have a title.

GRAPH: Be sure to label the axes with the units. Pay careful attention to the significant figures you use in your measurements—they should reflect the precision of the instruments you used, no more, no less. You must include a line or curve of best fit. If you do not know what this means, please watch a YouTube video on "line of best fit". Do not simply connect the dots. Again for emphasis: Do NOT simply connect the dots!

CONCLUSION: This is a series of paragraphs written with correct grammar that answers the following questions in complete sentences. Use formal academic language, which means sticking to third person pronouns whenever possible. • What was the independent variable? • What was the dependent variable? • What were the controlled variables? • Did you achieve your purpose? • What was the relationship between variables? • How accurate was your hypothesis? • Why was the hypothesis correct/incorrect? • What events in the experiment were expected? • What events in the experiment were not expected? • What human error occurred (i.e. measurement errors, significant digit errors, mathematics errors, etc)? • What equipment error occurred (i.e. friction, air resistance, improper calibration, broken equipment, etc)? • How could the lab be improved? • How could this lab apply to science in the real world? • What similar experiment could be done next to further study this phenomenon