

## Science Fair Project

### Step 1: Designing a Controlled Experiment

Name: \_\_\_\_\_

Partner: \_\_\_\_\_

**Science Log:** Using a spiral notebook or composition notebook, keep a record of everything that you do. ...how you got your initial idea, the list of your resources, the progress of your project, your mistakes, your data tables, how you handle your results, your rough drafts of your graphs, how you would do things differently, ideas for new projects, etc.

Make observations, take notes and make drawings that help to show how your experiment progressed.

Date each entry. Record your data here so it is all in one place and ready for the final report.

It does not need to be really neat but should be readable. You can use pencil, pen, etc.

One logbook per project to be turned in with the project.

**Question:** What do I wonder about? What is it that I want to find out? What is my objective?

**Background information:** What are key words from my question and topic on which I can base my research? Using "Who, What, Where, When, Why, & How," ask additional questions to find more information from internet, library, and knowledgeable adults. Are there any formulas or equations I need to use? Keep a list in your Science Log of all the information and the sources.

After some research, now you can really focus on what it is that you want to test.

**Independent (manipulated) variable:** The factor that you change on purpose in order to test what happens.

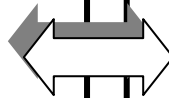
**Dependent (responding) variable:** The factor that you think will be changed by the independent variable.

**Hypothesis:** Now, construct a hypothesis. A hypothesis is a scientific prediction that can be tested. Be specific! This is usually an "If...., then...." statement where the independent variable goes first and the dependent variable is second.

**Constants:** These are all the other factors that are kept the same.

**Experimental Group(s):** The group(s) that is followed when you make changes on the independent variable.

**Control Group:** This group has no changes made on it.



**Safety Concerns:** In setting up this experiment, what safety issues do I need to think about? Always ask for help from an adult!

**Materials:** This is a list of the items that you need and how much you used. Write this in your Science Logbook then make it nice and neat for the final copy of your report.

**Procedure:** This is a step-by-step set of instructions on what you did. Someone else should be able to follow your "recipe" and come up with the same results. Be sure to have enough samples or repeat the experiment enough to make sure that the results are valid. Write this in your Science Logbook then make it nice and neat for the final copy of your report.

**Finishing up:** Start to analyze the data and think about what conclusions you can draw. Look at your Science Log observations. Sketch out some graphs of your data. Remember that the independent variable goes on the X axis and the dependent variable goes on the Y axis.

**Report.** Now begin "Step 2: Writing the report."

