Getting Started with your Science Fair Project

Start a Journal

- ALL projects require a journal. The journal is where you will keep all of your information and data to write the report and make your PowerPoint presentation.

- Things to write in your journal (IN THIS ORDER)

1. **TITLE:** Every project needs a title. It lets people know what you have worked on. The title should be in the form of a statement, unless you use the problem statement as your title. Then it should be in the form of a question.

   Example: *Which soap powder is the best cleaner of catsup stains?*

   Example: *Cleaning power of soap powders.*

2. **PROBLEM STATEMENT:** The problem statement is always written in the form of a question, even if it is also used as the title. The question tells people what you are trying to find out.

   Example: *Which type of water will help a bean plant germinate the fastest?*

3. **BACKGROUND INFORMATION/RESEARCH:** You must complete research related to your project. It must be in your own words and you must use a minimum of five different resources. Ideally, you should go to the library or internet and learn everything you can on your topic. Observe related events. Gather existing information on your topic. Look for unexplained or unexpected results. Also, talk to professionals in the field, write or email the companies for specific information, and obtain or construct needed equipment.

   You MUST document your sources correctly in your journal. Please be sure to write in the bibliography information with each of your sources (see below for more details on how to do this). Each source needs to be written on its own page in your journal with the bibliography information written with it. The summery of all of the sources is what you will put into your report. In your journal, each source should be written out separately. Be sure to put it in your own words by summarizing each source. Anything directly quoted should have quotation marks around it.

4. **HYPOTHESIS:** After gathering information about your topic, you should make a guess about what you think the answer to your question may be. State your hypothesis in the If/then format, using the independent and dependent variables to predict the outcome.

   Examples: *If I fingerprint 50 different people, then the loop fingerprint will be the most common.*

   *If I give bean plants either Pepsi, milk, or lemonade, then the one with the milk will grow the tallest.*

   Once you have stated your hypothesis, you can carry out an experiment and collect data.
5. **MATERIALS:** What did you use? List all of the items you used. Tell how many and how much.

Examples: 20mL of spring water  20mL of tap water  20mL of pond water  12 bean plants  12 cups for plants  30mL of soil for each plant

6. **PROCEDURES:** List all of the steps of your experiment in the order you will perform them. Be specific, but try not to make it complicated. The experiment should be repeated **at least** 3 times. The more the tests are repeated, the more accurate your results will be. During experimentation, keep detailed notes of each and every experiment, measurement, and observation. **Do not rely on your memory.** They need to be written into your project journal. This is your most treasured piece of work. Accurate and detailed notes make a logical and winning project. Good notes show consistency and thoroughness and will help you when writing your research paper.

7. **CONTROL:** In every experiment, there is a control group. The control group has no variables added. You use this information to compare your results with.

8. **VARIABLES:** Any item or factor in your experiment that is changed in order to solve your problem statement is a variable.

   **Independent Variable** – Manipulated variable (the one you decided to change) – There should only be one!

   **Dependent Variable** – Responding variable (the one that responded to the change you made.)

9. **DATA:** This is what you are measuring. You will record your data into a data table, and represent your data with charts, graphs, etc… Observations are an important part of your data. Don’t forget to write down what you observe using your senses. Data must be in the form of numerical (quantitative) data. This means you must have numbers that you can put into a data table and make a graph(s) with.

   When creating graphs, please remember the words DRY MIX. This stands for:

   D – dependent variable
   R – responding variable
   Y – Y-axis

   M – manipulated variable
   I – independent variable
   X – X-axis

   This means that the dependent (responding) variable always goes on the Y-axis and the independent (manipulated) variable always goes on the X-axis

10. **RESULTS:** State the findings of the experiment based upon the data you observed and analyzed. Record the results. This is a written explanation of what happened with your data. Be detailed.

11. **CONCLUSION:** Your conclusion should begin with a statement on whether or not the results supported your hypothesis. Include a description of problems that might have affected the results and why. Also include any new discoveries that you have made in addition to the results of the experiment.
12. **APPLICATIONS:** State how you could use this information in real life.

13. **ABSTRACT:**

   COMPLETE PROJECT TITLE (all in capital letters, as it appears on the project)
   Student’s name (Last name, First name, Middle initial if used)
   A. Purpose
   B. Hypothesis
   C. Procedure (summary only)
   D. Results (summary only)
   E. Conclusions

   THE ABSTRACT SHOULD BE 250 WORDS MAXIMUM.

14. **BIBLIOGRAPHY:** List (Cite) the sources that you used. Follow the example for the working bibliography below. Use APA format.

   **Books**

   **Encyclopedia**

   **CD ROM Encyclopedia**

   **Internet**
   To cite files from the internet, give the author’s name, last name first (if known) followed by first initial only; the date of the document or last revision (if available) or the retrieved date; the full title of the work (in quotation marks) or the title of the web page if no title is available; the title of the complete work (if applicable), in italics; any version or file numbers (if available); and the protocol (i.e. “http”) and the **full URL**.


   If author is unknown:


   If published date is unknown:

** The Journal does not have to be perfect. Do not worry about whiting out things. Please just draw a line through what you want to change and write on a new page.

Write Your Report

- Your report should be written in the format shown below. Be sure to follow all directions and answer all questions related to each section.
- Your report should be written AFTER your experiment is completed, and AFTER you have all information required in your Journal. Your journal is your guide to writing your report.

REPORT INSTRUCTIONS:

Your report should be typed using standard style (i.e. “Times New Roman”), size 12 font and printed in black ink. You should have 1 inch margins all the way around. It should be put together neatly in the order written below. Each section should be clearly labeled. Make sure each section in on a separate sheet of paper. The rough draft of the report and the data/graphs will be turned in no later than September 17th. Your final draft of your report should be AT LEAST 11 pages long, since you have 10 sections for your report, and the background information needs to be at least 2 pages. The final draft should be placed in a folder with the printout of your PowerPoint presentation and your journal.

I. **Title Page** – Center the project title, then put your name, address, school, and grade at the bottom right.

II. **Table of Contents** – Include a page number for the beginning of each section.

III. **Introduction** – The introduction sets the scene for your report. The introduction includes your hypothesis, an explanation of what prompted your research, and what you hoped to achieve.

IV. **Background information** – This is where you write up the research you completed on your project, in your own words!!! If your research is not in your own words, you will automatically be given an “F” on this section of your project. Be sure to cite your sources for anything you paraphrase from someone else’s documents or for what you quote directly! To cite your source in your writing, use the following format:

   (Author last name, date, page # or shortened website)

   Example: (Smith, 2010, pg 10) or (Smith, 2010, www.abc.com)

   Be sure to put into “quotes” anything that is word for word from the source, however this should be limited to statistics like: “One in every 5 girls will get pregnant before they reach 18 years old” (Smith, 2010, www.abc.com).

** The full citing goes in the bibliography section of your report.
V. **Experiment** – Describe in detail the procedures used to collect your data or make your observations. Your procedures should be detailed enough so that someone would be able to repeat the experiment from the information you gave. This can be written in step format instead of paragraph form. Include detailed photographs or drawings of self-designed equipment.

VI. **Discussion** – The discussion is the essence of your paper. The results and conclusions should flow smoothly and logically from your data. Be thorough. Allow your readers to see your train of thought, letting them know exactly what you did. What observations did you make? Compare your results. Include a discussion of possible errors. How did the data vary between repeated observations of similar events? How were your results affected by uncontrolled events? What would you do differently if you repeated this project? What other experiments should be conducted? (Be sure to both describe your results and answer the questions above for this section)

VII. **Conclusion** – Briefly summarize your results. Be specific, do not generalize. Never introduce anything in the conclusion that has not already been discussed. Your conclusion should begin with a statement on whether or not the results supported your hypothesis. Include a description of problems that might have affected the results and why. Also include any new discoveries that you have made in addition to the results of the experiment.

VIII. **Acknowledgements** – You should always credit those who assisted you, including individuals, businesses, and educational or research institutions. Identify any financial support or material donations received, but do not put on display board.

IX. **Bibliography**

X. **Abstract** – Typed on the Abstract Form
**Sample Abstract**

| COMPLETE PROJECT TITLE (all in capital letters, as it appears on the project) |
| Student’s name (Last name, First name, Middle initial if used) |

The following parts should be included in an abstract:

1. **PURPOSE:** Why is the research being done?
2. **HYPOTHESIS:** What is the expected outcome of the research?
3. **PROCEDURE:** Briefly, in paragraph form, describe the materials used and how the experiment was done. This section should not be a list, but a summary of your methods.
4. **RESULTS:** Briefly summarize the data from charts and graphs in narrative form. Be sure to include measures of central tendency and variation. Include only information collected during the study. (Do **NOT** include previous years’ results).
5. **CONCLUSIONS:** Briefly, in narrative form, cite interpretation of the results. Briefly, compare findings with other research. Include suggestions for procedural improvements and recommendations for future study, as well as applications for the research.

**THE ABSTRACT SHOULD BE APPROXIMATELY 250 WORDS AND FIT IN THIS SPACE. THE BOX IS NOT SUPPOSED TO BE PART OF THE ABSTRACT, IT SERVES ONLY AS A GUIDE.**