Dear Parents,

During the next few months your child is required to complete a science project which uses the scientific method to solve a real world problem. Science projects are primarily independent study assignments involving experimentation on a topic of individual interest. The educational benefits to the student who completes a project are numerous including developing skills in writing about scientific research, oral presentation, creative thinking, problem solving, experimental design and asking questions to form a hypothesis.

In addition to this book, each student will be given instructions during class for the various steps of his/her project. Most assignments for this project will be completed with the student’s Science teacher. Most of the work will be completed with a combination of work at home and at school. Students will receive a timeline noting due dates for each part of the project. Be sure to visit the science fair help site at www.oljhsciencefair.weebly.com for specific tips, links, handouts, etc.

Your child may need you to monitor his/her progress and provide encouragement. Your support is key to a successful project, but please do not allow your involvement to extend any further in order to ensure equity and promote student learning! Also, be aware that a prize-winning project can be completed for under $10.00.

If you have any questions, do not hesitate to contact us.

Sincerely,

OLJH Science Teacher

Please sign the space below in acknowledgement of the above information:

Parent signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Student academic integrity pledge:

I, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ understand that it is my responsibility to complete a Science Fair project and research paper in the time frame provided by my teachers. I understand that this project is to be completed and should express my own original thoughts and ideas. If an idea is used for this project or research paper that is not my own, I will cite the source of that information to avoid plagiarism and give credit where it belongs.

Student signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Timeline with Due Dates**

**Individual teachers will give students exact due dates for each section of the phase they are responsible for. The student must fill in and abide by those dates.**

**Phase 1: Project Selection – by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

Project selection with application………………………………………… Due: \_\_\_\_\_\_\_\_

Independent, dependent, and control variable identification……………... Due: \_\_\_\_\_\_\_\_

Research Planning………………………………………………………… Due: \_\_\_\_\_\_\_\_

**Phase 2: Research – by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

Research Notes 1 ………………………………………………………… Due: \_\_\_\_\_\_\_\_

Research Notes 2 ………………………………………………………… Due: \_\_\_\_\_\_\_\_

Research Notes 3 ………………………………………………………… Due: \_\_\_\_\_\_\_\_

Research Notes 4 ………………….…………………………………....... Due: \_\_\_\_\_\_\_\_

Research Notes 5 ………………….……………………………………... Due: \_\_\_\_\_\_\_\_

**Phase 3: Research Paper – by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

Research paper outline …………………………………………………... Due: \_\_\_\_\_\_\_\_

Research paper rough draft ……………………………………………… Due: \_\_\_\_\_\_\_\_

Research paper final draft ……………………………………………….. Due: \_\_\_\_\_\_\_\_

**Phase 4: Experimental Design – by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

Hypothesis ………………………………………………………………. Due: \_\_\_\_\_\_\_\_

Materials and procedures ……………………………………………….. Due: \_\_\_\_\_\_\_\_

Observations and data collection (does not need to be filled in) ……….. Due: \_\_\_\_\_\_\_\_

**Phase 5: Experiment – by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

Perform experiment and collect/enter data into tables and graphs ……... Due: \_\_\_\_\_\_\_\_

Journal (complete while performing project) …………………………… Due: \_\_\_\_\_\_\_\_

**Phase 6: Graphing Results – by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

Graphing your results …………………………………………………… Due: \_\_\_\_\_\_\_\_

**Phase 7: Conclusion – by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

Conclusion ………………………………………………………………. Due: \_\_\_\_\_\_\_\_

Abstract ………………………………………………………………….. Due: \_\_\_\_\_\_\_\_

Display Board ………………… ………………………………………… Due: \_\_\_\_\_\_\_\_

Notebook ………………… ………………………………………………Due: \_\_\_\_\_\_\_\_

**Research Paper Planning**

**Use the space below to determine what areas you should be researching to write each section of your paper. Think about what books, magazines, or websites you want to use to find information.**

**What is the history behind your project** (famous inventors, dates of discovery, controversial issues, past disasters, etc.)?

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**What is the science behind your project** (laws, theories, equations, other experiments, etc.)?

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**What is the importance of your project** (solving any issues, saving lives/ecosystems, bringing awareness to an important issue)?

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4.3 - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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4.4 - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Research Notes #5**

What important facts can I learn from this document? (Used to write research paper.)

**Please fill out as much of the following information as possible; some resources will not have information for all fields. This information will be used for your works cited page.**

**These notes are from, Circle One: A Book A Magazine A Website A Newspaper**

**Title of Book/Magazine/Website: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Article Title (for Website or Magazine): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**Author(s) Full Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Copyright Date OR if Website, date you used Website: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Publisher of Book OR Sponsor of web site: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Place of Publication OR full Website address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

5.1 - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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5.2 -\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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5.3 - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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5.4 - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Research Guidelines**

**Introduction:**

* This should be a paragraph that introduces the reader to your topic.
* An interesting fact can be used to start this introduction.
  + Make sure your facts are still relevant to your paper.
* Don’t state too much information in the introduction, leave facts for the body paragraphs.
* The introduction can be vague as long as you develop your ideas in the body paragraphs.
* It must include your hypothesis/thesis statement.

**Body: You must have AT LEAST 3 body paragraphs.**

* Introduce the main point or idea of your body paragraph.
* Support that main idea with evidence or facts that you have found in your research.
* Everything that you did not already know from personal experience before writing this paper should be cited with the source number from your research.
* Use transition sentences to tie each of your facts/evidence together. DO NOT JUST STATE FACT AFTER FACT!!!

**Conclusion and Application:**

* Your conclusion should briefly (as in one sentence each) summarize the main point of your paper and each of your body paragraphs.
* End with a statement that will make your reader either continue to think about your topic or make them feel accomplished.

**Works Cited:**

* Please use EasyBib to generate your works cited page (<http://www.easybib.com/>).
* You must have at least 3 citations LISTED IN ALPHABETICAL ORDER

**All final papers will be typed:**

* The length of the paper should include:
  + 2 pages for research
  + 1 works cited page
* **NEVER** use the words **I or me** in your paper
* **Only** use the metric system when writing about anything that includes measurement.

**Research Organizer**

Use this space to help organize your writing. For each body paragraph, you must have at least 3 research based facts to support your thesis/hypothesis. Do not forget to write the research citation number in the parentheses.

Conclusion Paragraph: (Tie together the 3 paragraphs and restate hypothesis)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Body 3: Real World Application of Project

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )

Body 2: Major Concepts that will be tested. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )

Body Paragraph 1: Background behind concept: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( )

Introduction Paragraph: (Must include Thesis/**Hypothesis** statement)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Experimental Design**

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

**Problem/Question:**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Independent Variable (What are you testing/changing in the experiment?):**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Dependent Variable (What are you measuring in the experiment?)**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Controlled Variables (What are you controlling in the experiment? More than one):**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Hypothesis: If \_\_\_\_\_(Independent: what you are testing)\_\_\_\_\_, then \_\_\_\_(Dependent: this will occur) \_\_ because \_\_\_(Research: give a reason behind your thinking)\_\_\_\_.**

* Write your hypothesis in If…., then….. because….. format.
* NO 1st PERSON

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Experimental Design Outline**

**Materials:** Be very specific about **metric** measurements, numbers of units, types of materials, etc.

**Amount Material Description**

**\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**Procedures:** Make sure your procedures are VERY DETAILED. Another person should be able to follow your procedures without asking any questions.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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**Data Collection Chart: Create the chart you will use to collect the data when you conduct the experiment.**

**Quantitative Data** is data that is represented using numbers. This numerical data such as specific measurements, times, etc., should be recorded using a **data table**. Complete **three** trials for your experiment. Complete a data table in the space below.

1. What are you measuring?(should be metric units) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Qualitative Data**

**Data Log**

**Qualitative Data** is data (information) that is recorded using words and descriptions. Examples include color, texture, smells, and tastes. Keeping a journal during an experiment allows a scientist to record important information about their experiment that cannot be represented with numbers. This information can help scientists draw conclusions. Use the following page as a journal for your experiment. Be sure to note the **time** and **date** of each entry to keep your data organized.

**Note:** You are not required to fill out all the lines, but your log should include several observations for each trial/experiment.

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| Date\_\_\_\_\_\_\_\_\_\_\_\_\_  Time\_\_\_\_\_\_\_\_\_\_\_\_\_  Illustration: | Observations: | |
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**Graphing Your Results**

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| * Bar Graph: My data compares and contrasts two or more items | * Line Graph: My data shows changes over time/distance/mass/etc. | * Pie Graph: My data shows percentages of a whole |

Descriptive title of graph: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\*Use your X axis and Y axis labels to title your graph

**Key if needed:**

Y-axis Label: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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X – axis Label: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Analysis and Reflection**

**Results**

After you have conducted your experiment, you will know what happened in the experiment. These are your results and you can communicate them to other people through the data you show in a graph. You can also summarize your results in writing. The log you kept of your **qualitative data** will be very useful when writing your results. Be sure to use a simple, factual summary of what happened in the experiment. You can elaborate on what happened later in the conclusion section.

1. When you tested your independent variable in your experiment, what effect did it have on your dependent variable that you measured?

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1. Write a brief summary of the results. Include both the quantitative **averages** and qualitative observations you made during your experiment.

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\* Combine 1 and 2 to place on your board

**Conclusion**

What happened? What went right? What went wrong? What would you do differently, and what did you learn? This is not the same as the results or the data. It’s your opinion and some observations about your experiment. The conclusion is stated at the end of your report.

Use the following worksheet to figure out how to write your conclusion.

1. Did you get the results you expected? Why?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What have you learned from doing your experiment?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**You will combine the two conclusion points into one paragraph. This will be included on your board and in your notebook**.

**Application**

1. How might your experiment have real-world implications? How can others use your results in the real world?

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**Abstract**

This paper **(10-15 sentences long)** that will grab the judges and public’s attention. **This is NOT a full report about EVERYTHING that happened in your project, just a summary of the whole thing. Your abstract should summarize each of the topics listed below**

1. State the purpose of your project (experiment) and your hypothesis:

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1. Summarize procedures you performed, emphasizing the key points or steps:

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1. Briefly describe your observations/data (qualitative and quantitative)/results

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1. State your conclusions/applications:

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**Notebook Grading Rubric**

|  |  |  |  |
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| **Earned** | **Points** | **Contents** | **Comments** |
|  | 5 | Title Page |  |
|  | 5 | Abstract |  |
|  | 5 | Table of Contents |  |
|  |  | **Divider 1: Experimental Design** |  |
|  | 10 | Problem, Variables, Hypothesis |  |
|  | 10 | Materials and Equipment |  |
|  | 10 | Design and Procedures |  |
|  |  | **Divider 2: Results** |  |
|  | 10 | Observations and Data/Pictures |  |
|  | 10 | Results and Graphs |  |
|  | 10 | Conclusion Statement |  |
|  |  | **Divider 3: Background** |  |
|  | 10 | Research Paper (clean copy)  with attached Works Cited |  |
|  |  | **Divider 4: Appendix** |  |
|  | 5 | Project Approval Form |  |
|  |  | MSDS Sheets – *only if needed* |  |
|  |  | Informed Consent Forms –  *only if needed* |  |
|  |  | Any extra paperwork |  |
|  |  |  |  |
|  | 10 | Separate but with Notebook: Science Fair Packet with completed Journal |  |
|  |  |  |  |
|  | **100** | **TOTAL NOTEBOOK GRADE** |  |

**Presentation Grading Rubrics**

Board will be graded on both content and neatness of display.

**Comments:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Board Total:** **\_\_\_\_\_ / 100 pts**

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| **Problem**  **………….**  **\_\_\_\_\_ / 5 pts**  **Hypothesis**  **……………**  **\_\_\_\_\_ / 10 pts**  **Abstract**  **...............**  **…………**  **…………**  **…………**  **\_\_\_\_\_ / 20 pts** | **Title of Your Project**  **\_\_\_\_\_ / 5 pts**  **Procedures Materials**  **1…2...3… 1…2…3…**  **\_\_\_\_\_ / 5 pts \_\_\_\_\_ / 5 pts**  **Variables Controlled**  (Independent and **Variables**  Dependent)  …………….. ………………  ……………. . ....……………  **\_\_\_\_\_ / 5 pts \_\_\_\_\_ / 5 pts**  **Data**  **Pictures Table Graphs(s)**  Color: **\_\_\_\_\_** Color: **\_\_\_\_**  Comp. Generated: **\_\_\_\_**  **\_\_\_\_\_ / 3 pts \_\_\_/2pts \_\_\_\_\_ / 5 pts** | **Results**  …………….  …………….  **\_\_\_\_\_ / 10 pts**  **Conclusion**  **…………….**  **…………….**  **…………….**  **\_\_\_\_\_ / 10 pts**  **Application**  **…………….**  **…………….**    **\_\_\_\_\_ / 10 pts** |

Student Name(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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School: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

Grade Level: \_\_\_\_\_\_\_\_\_\_\_\_\_ Project Category: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Place**

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| |  | | --- | | **Science Fair Oral Presentation Rubric**  **Student Name:     \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | | | |
| CATEGORY | | **10** | **7** | **4** | **1** |
| **Content** | | Student shows a full understanding of the scientific method and describes their experiment with details. | Student shows a good understanding of the scientific method and/or describes their experiment well. | Student shows a good understanding of parts of the scientific experiment and/or describes their experiment some. | Student does not seem to understand the scientific method very well and/or gives little information about their project. |
| **Time-Limit** | | Presentation is 4 minutes long. | Presentation is 3 minutes long. | Presentation is 2 minutes long. | Presentation is less than 2 minutes OR more than 4 minutes. |
| **Posture and Eye Contact** | | Student stands up straight, looks relaxed and confident. Establishes eye contact with everyone in the room during the presentation. | Student stands up straight and establishes eye contact with everyone in the room during the presentation. | Student sometimes stands up straight and does not always establish eye contact with everyone in the room during the presentation. | Student slouches and/or does not look at people during the presentation. |
| **Speaks Clearly** | | Student speaks clearly all of the time, and has good volume. | Student speaks clearly all of the time and/or is hard to hear at times. | Student speaks clearly most of the time and/or is hard to hear. | Student often mumbles or can not be understood. |
| **Presentation Order and Relevance** | | Entire presentation relates to the scientific method/experiment and their presentation follows the proper sequential order. | Most of the presentation relates to the scientific method/experiment and/or order of presentation is not in proper sequence. | Little of the presentation relates to the scientific method/experiment and/or the order of the presentation is jumbled. | Very little of the presentation relates to the scientific method/experiment and/or no order is evident. |
| comments | | | | | Total points earned out of 50:  Doubled total: |

**Graph Rubric**

This is for the completed graph in your Science Fair Packet. Each section has its own max points that can be earned for a total of 100 points.

1. Correct Display – 30 points

The student chose the correct graph based on the purpose and results of the data.

1. Number of Intervals Spaced Appropriately – 20 points

The numbers are spaced correctly and there are no weird gaps or skips in the numbering.

1. Labeled Correctly – 15 points

All the parts of the graph are labeled correctly and it has an appropriate title.

1. Key – 15 points

The key is displayed, easy to read and understand, and all parts are explained

1. Neat and Easy to Read – 10 points

The entire graph is neat, easy to read and understand.

1. Appealing/Attention Grabbing – 10 points

The graph is interesting, attractive, and attention grabbing.

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Total Points

**Resources**

\***International Science and Engineering Fair Website – ISEF – REQUIRED SOURCE\***

Document Library with Required Forms

[**https://student.societyforscience.org/forms**](https://student.societyforscience.org/forms)

**Science Buddies**

[**www.sciencebuddies.com**](http://www.sciencebuddies.com)

**Create a Graph**

[**http://nces.ed.gov/nceskids/createagraph/default.aspx**](http://nces.ed.gov/nceskids/createagraph/default.aspx)

**Science Fair Advisor**

[**http://www.cpet.ufl.edu/sciproj/**](http://www.cpet.ufl.edu/sciproj/)

**Science Fair Central**

[**http://school.discoveryeducation.com/sciencefaircentral/index.html**](http://school.discoveryeducation.com/sciencefaircentral/index.html)

**Science Stuff.com**

[**http://sciencefairproject.virtualave.net/**](http://sciencefairproject.virtualave.net/)

**IPL Science Fair Resource Center**

[**http://www.ipl.org/div/projectguide/**](http://www.ipl.org/div/projectguide/)

**Math Ideas for Science Fair**

[**http://mathforum.org/teachers/mathproject.html**](http://mathforum.org/teachers/mathproject.html)

**Science Fair Projects World**

[**http://www.sciencefair-projects.org**](http://www.sciencefair-projects.org)

**National Student Research Center**

[**http://youth.net/nsrc/webs.html**](http://youth.net/nsrc/webs.html)

**FOSSWeb**

[**http://www.fossweb.com/**](http://www.fossweb.com/)

**Showboard Supplies**

[**http://www.showboard.com/**](http://www.showboard.com/)

**Easy bib**

**http:www.easybib.com**

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