



Science Fair Handbook

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| March 2-6 | Science Fair Presentation video in class |
| March 16 | Science Fair Board Tickets distributed to classes. Display boards are free and will be distributed once the tickets are turned in. |
| March 16-20 | Optional in-person Science Fair Presentation assembly |
| March 20 | Participation slips due |
| April 2 | Last day to pick up display board from the Science Lab after school |
| April 16 | Science projects are due. Check in your project at your classroom and move the project to the Multi. |
| April 16-17 | Ruskin Science Fair open for viewing by students with their classes. Parents and the community are welcome to view the Science Fair during the Ruskin Open House. |
| April 20 | All science projects are taken home. |

The Handbook and all forms are available on the Ruskin website:
<https://ruskin.berryessa.k12.ca.us/Programs/Science-Lab/index.html>



Steps to Participating in the Science Fair

1. **Choose a science project.**
2. **Carry out a science project at home.**
3. **Create a three-sided display board at home** (see page 6).
 - This display board will describe your project, including facts you learned about your subject from books and a discussion of how you carried out your project.
 - **A free display board is available when you bring the Science Board Ticket to your teacher.**
 - If you did not turn in your board ticket, you may pick up your free display board from the Science Lab after school Thursday, April 2nd. *This is the last day to get a display board while supplies last.*
4. **Bring your display board and other parts of your project to school on Thursday, April 16th.**
 - The projects will be checked in at the **classroom** and then brought into the Ruskin Multipurpose Room.

Science Fair Rules

1. Each student may enter only one project.
2. Respect all life forms.
3. The following are prohibited: dangerous chemicals, open flames, explosives, illegal drugs, or animal experiments that involve starvation or any other form of cruelty.
4. Use safety on the internet! NEVER write to anyone without an adult knowing about it. Be sure to let an adult know about what websites you will be visiting, or have them help you search.
5. Electrical switches and cords needed for exhibits must be in good working condition and must be approved by the teacher.
6. Expensive or fragile items should not be displayed. Valuable items essential to the project should be simulated or photographed.
7. The school and teacher assume no liability for loss or damage to the exhibit.
8. Teachers and parents may advise. Parents should let students do the actual work.

Tips for parents:

- ◆ Give lots of encouragement. Let the students enjoy the process and experience the excitement of experimenting with their own ideas.
- ◆ Help the student find information on their experiment and encourage discussion of their ideas. Help refine their hypothesis – the choosing of a question that can be tested.
- ◆ Reinforce the concept that experiment results which do not match the hypothetical results does not mean “failure”, but is part of doing science.
- ◆ Provide working space and materials.

What is a Science Fair Project?

A science fair project should be selected from one of the following types of projects:

◆ Experiment

In this type of project, use the Scientific Method. A hypothesis (an educated guess) is made to answer a question. Then, experiments are carried out to test this hypothesis.

Example: You might be interested in the question, “What design of paper airplane will fly the farthest?” You would research different designs of paper airplanes by going to the library and looking at books on paper airplanes. You might then develop the following hypothesis for this question, “Paper airplane design #1 will fly farther than design #2 or design #3.” You would then make the paper airplanes, fly them, and take notes on which design of airplane flew the farthest.

◆ Model

A model is a small object usually built to scale that represents some already existing object.

Example: You might decide to construct a model of the planet Saturn from Styrofoam and cardboard. Your poster should include facts about Saturn, a description of how you constructed the model, and a discussion about the features of your model and how these features represent the actual planet.

◆ Demonstration

A demonstration is an illustration or explanation of a scientific principle. This type of experiment shows how and why something works.

Example: You might demonstrate the principle of sound using a rubber band stretched around a box. You could show that the more tightly stretched the rubber band, the more rapidly the rubber band vibrates, and the higher the sound that is produced.

◆ Collection

A collection is a group of objects. This group of objects must be scientifically oriented and show that you have learned something through the process of collecting and categorizing. The items should be categorized and labeled correctly.

Example: You might have a collection of leaves separated into categories based on the type of tree on which they grew.

◆ Invention

An invention is a new device or process used to improve conditions, solve problems, or to fill needs. Inventions can be completely new ideas or improvements on something that already exists today.

The Scientific Method

For Projects which Involve Experiments

Use the following six steps of the scientific method when conducting an experiment.

1. Identify the problem

Think about what area of science interests you. Narrow your focus down to a specific question.

2. Collect information

Research your topic. Take notes on information that you think will be important for your experiment.

3. Develop a hypothesis

A hypothesis is an *educated* guess. It takes into account the research you have done and also your opinion of what you think will happen. **What do you think will happen** when you perform your experiment? The hypothesis answers your question.

Example: Plant food “B” will cause the lawn to grow faster.

4. Design an Experiment

Plan how you will test your idea and do your experiment. List all the materials you will need.

5. Conduct an Experiment

Conduct your experiment and **observe** what happens. Keep a journal to **record** what you did and your observations - changes, growth or other results of your experiment. Photos or illustrations of the progress of your experiment are good ways to display what you did and what your results were. Use a graph or chart to organize your data.

Example: All lawns being tested should be treated the same (conditions remain constant): same type of grass soil, temperature, sunlight water feeding times, etc. The only difference (variable) would be the plant food fed to the lawns. Make a chart of the weekly lawn growth.

6. Draw a conclusion

Analyze the results of your experiment and come to a conclusion based on your results. Was your hypothesis correct? Why or why not? Your conclusion should tell what you learned by conducting the experiment. Remember, an experiment is *not* a failure if the hypothesis is proven wrong! Do you have further questions?

Example: The lawn fed with plant food “A” grew faster than any of the other plant foods tested. My hypothesis was not correct, even though plant food “B” cost more and promised better growth. I learned that not all plant foods are the same and that advertising is not always true.

How to Start your Science Fair Project

Help choosing a topic

Books - Books on science experiments and science projects are available in libraries (including the Ruskin School Library) and bookstores.

Web Sites - Science websites for kids:

www.exploratorium.edu

https://www.lawrencehallofscience.org/do_science_now

www.kidsgardening.org

www.madsci.org/ (Mad Science Network)

<https://kids.nationalgeographic.com/explore/science/science-lab/>

<http://www.ducksters.com/science/>

<https://ca.pbslearningmedia.org/collection/zoom/>

www.howstuffworks.com (background information on a variety of things)

<http://www.billnye.com>

<http://www.sciencekids.co.nz>

<http://www.sciencebob.com>

<https://sciencefaircentral.com/>

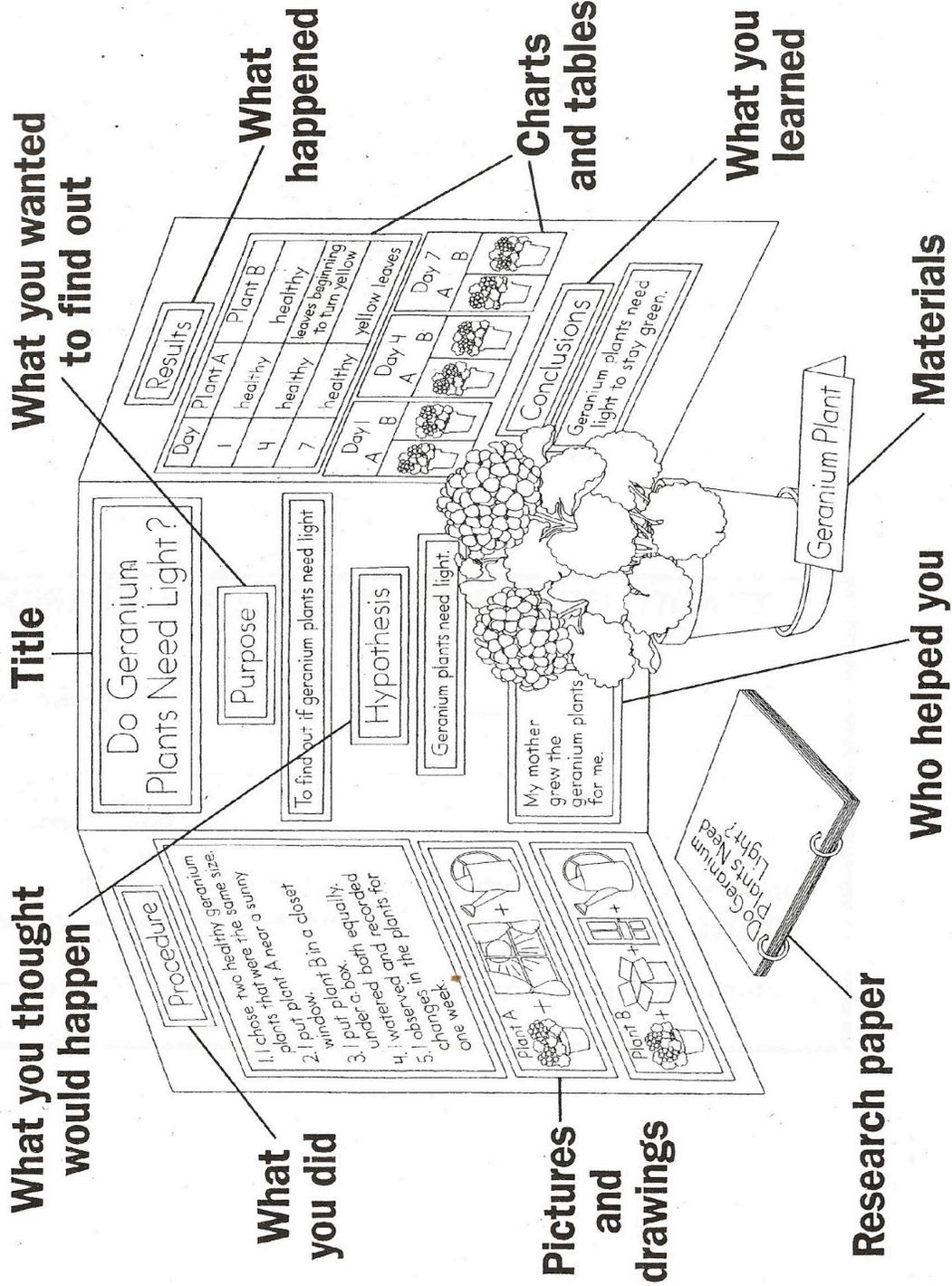
<http://www.sciencebuddies.org/>

<https://www.jpl.nasa.gov/edu/learn/>

<https://www.weareteachers.com/4th-grade-science-experiments/>

<https://www.all-science-fair-projects.com/>

Displaying a Science Fair Project



Teacher: Reproduce this page and the "Science Fair Time Line" page. Send them home with students to inform parents about the science fair and to help students prepare their projects. You may wish to use this chart with Frank Schaffer's *The Scientific Method* bulletin board set (FS-9492) and *Work Like a Scientist* chart (FS-2427).