



Science Fair Information Packet

Everything you need to know about doing a great science project is inside this packet. You'll be able to discuss the contents with your parent(s) or guardian(s). There is a timeline designed to keep you on target. We hope you will find the science fair to be an exciting and rewarding experience!

- Students in 4th, 5th, and 6th grades should be doing most of this by themselves.
- Students in 2nd and 3rd grades should be able to do many parts.
- Students in Kindergarten and 1st grade will need help for most of the project.

Introduction	2
Helpful Hints for Students	2
Types of Science Projects	3
The Scientific Method	4
Preparing for the Science Fair	5
Judging and Scoring	6
Science Fair Rules	7
Website Resources	8

INTRODUCTION



You are surrounded by science. Everything uses some form of science to make it work. For instance, the chair you sit on was made or designed by a person. All the tools used to build it are because of knowledge from science and technology. Someone had to know what shape to make the saw and how sharp the teeth need to be to cut wood, right? How did they know how to make one saw for wood and a different one for metal? Why does the wood saw have big teeth and the metal saw have small teeth?

Science is asking questions and finding answers. A science project, simply put, is the process of asking a question you have about something you are interested in, hypothesizing what the answer might be, researching for information on that topic, experimenting, inventing, collecting or doing in-depth research, analyzing your results, and coming to a conclusion.

What will your accomplishment mean for you?

- Gaining self confidence
- Proving you can do it
- Learning new things
- Knowing what the scientific method is and how it can help you

Helpful Hints for Students

- Start EARLY, don't wait until the week before it is due.
- Plan it out. It will be much more fun if you spread the time out over several days per week or several weekends, and you won't have to race to get it done!
- Check with your parent if you want to use a website for research. Not all websites give correct information.
- This is supposed to be a fun process. "Success" is a completed project where you had fun and learned a lot.

You might want to follow these steps:

Week 1 - Decide on your Problem or Question - what you want to solve or learn. Think about and plan the steps you'll take to do this. Collect and read information (research) about your topic and start a journal.

Week 2 - Work the steps of your project. Collect materials and follow your procedure. Run your experiment, build your invention, model, collection or display, and/or continue your research.

Week 3 - Think about the results of any experiments, draw conclusions, and make your charts or graphs.

Week 4 - Write your summary and make your display.

Remember to keep adding to a journal along the way to help record your research and results... just like a scientist!

Types of Science Projects

A Research Project with a Collection, Display, or Model:



A **research project** starts with a question: *How was penicillin discovered? How do windmills work? Why does spicy food make your nose run? Why do people have birthmarks?*

It is likely that someone has already found the answer to your question/problem, and you will learn about their answer/solution by gathering information from books or articles, by talking to experts, and/or making observations. Once you have finished your research, you will present your findings through a display that includes your presentation board and may also include a collection, display, or model:

Examples of **display or collection projects** can be:

- Types of Rocks
- Types of Leaves

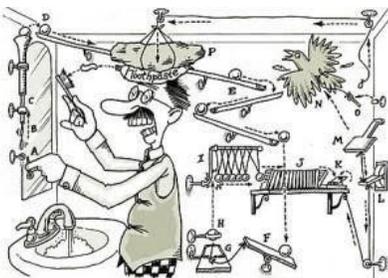
Examples of **models** could be:

- A Bee Hive
- A Solar System
- How a Lava Lamp Works



An Experiment:

An experiment also starts with a question.

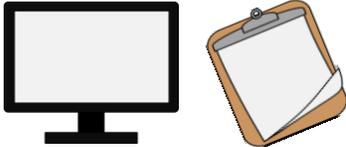
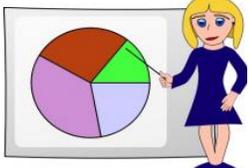


Experimental questions will require you to test different variables and measure your results : *Which leading brand of paper towel is the strongest? Does smelling one kind of food while eating another kind of food impact a person's ability to detect what food they are eating?*

Experiments require you to follow **the Scientific Method** (see next page). This includes research, creating a hypothesis, designing and conducting a test, analyzing results, and drawing conclusions.



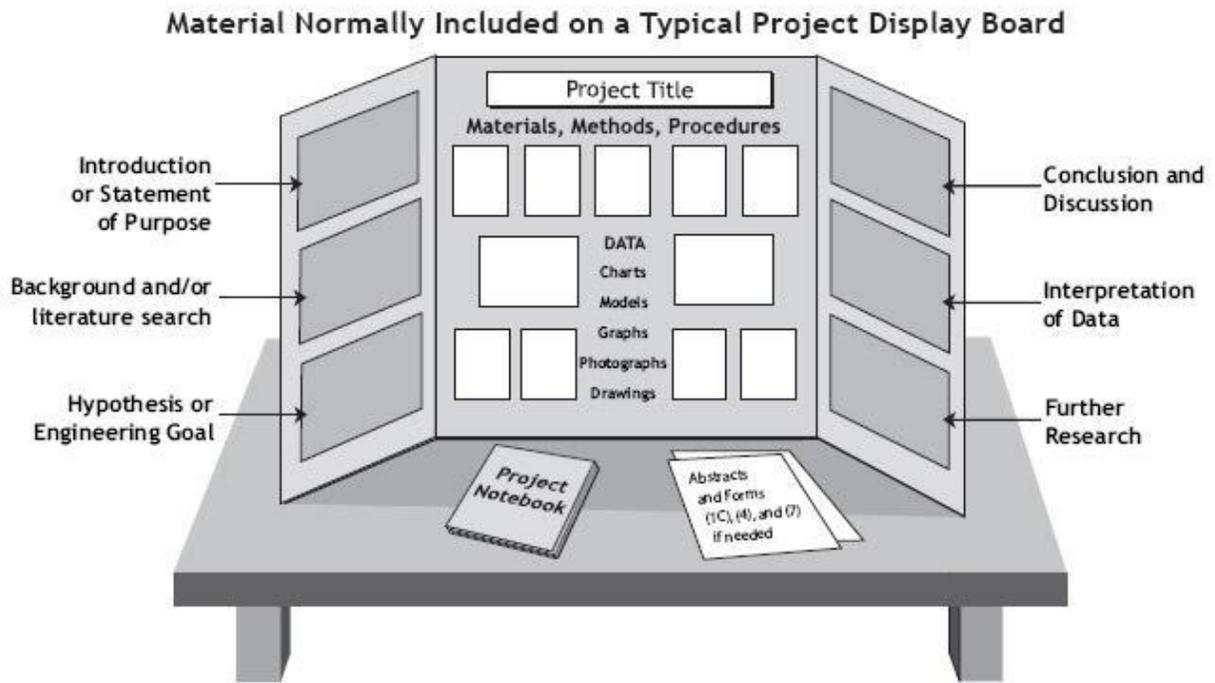
The Scientific Method

<p>Ask a question.</p> 	<p>Think of a question or problem you want to investigate.</p>
<p>Do research.</p> 	<p>Think about what you already know and/or research to find out new information.</p>
<p>Make a hypothesis.</p> 	<p>Make a prediction for one possible answer to the problem or question.</p>
<p>Do an experiment.</p> 	<p>Write down the steps you followed (procedure) to test your hypothesis.</p>
<p>Analyze your data.</p> 	<p>Record your data (a picture, table, or chart) and think about it.</p>
<p>Make a conclusion.</p> 	<p>Was your hypothesis correct? What did you learn? Share your conclusion with others.</p>

Preparing for the Science Fair

Once you have gathered your information and resources for a research project, or conducted your experiment and recorded the results, you'll want to leave yourself a good amount of time to put everything together and plan your display board.

This is an example of a neat looking Science Fair display board. It is just an example. Depending on your information and the type of project you selected (research or experiment) and the amount of pictures, tables and graphs, you may have a different layout. Just make sure it is neat.



Hint: When you have decided what you are going to put on your display, lay the unglued display on the floor and look at it carefully. Have family and friends look at it and ask their opinions. Then glue everything into place.

Judging and Scoring

On the day of the Science Fair, all participants will be visited by at least two judges. The judges will give each project a numeric score (see rubrics below) and write some comments.

Students who earn 16-20 points will earn a blue ribbon; students who earn 11-15 points will earn a red ribbon, and students who earn 10 points or lower will earn a white ribbon.

To prepare for the day of the event, plan on speaking about your project for 2-3 minutes (you should practice ahead of time!), and be ready to answer any questions the judges might ask about your project. It's normal to feel a little nervous about speaking to the judges, but smile, take a deep breath, and think of them as fellow scientists with whom you're sharing your great project!

Please use these rubrics to guide you as you plan your presentation and display board.

Research Project Criteria / Rubric	
Question <ul style="list-style-type: none"> Did the student explain the scientific inquiry which guided the project? 	4
Research <ul style="list-style-type: none"> Did the student consult 3 or more reliable sources regarding their question? Did the student cite their sources? 	4
Draw Conclusions <ul style="list-style-type: none"> Did the student accurately synthesize information gathered during their research? Did the student present evidence to support their conclusions? 	4
Report and Display <ul style="list-style-type: none"> Were the results of the project organized and clearly represented on the display board? Did the student accurately present data in the form of graphs, charts, notes, pictures, models, etc.? 	4
Presentation <ul style="list-style-type: none"> Is the student's work and verbal presentation suitable for their grade level? Did the student have outside adult support that was appropriate for their grade level? 	4
TOTAL POINTS	20

Experiment Criteria / Rubric	
Question/Hypothesis <ul style="list-style-type: none"> Did the student formulate a scientific question or problem? Did the student create or prepare a hypothesis which guided the experiment or invention project? 	4
Experiment <ul style="list-style-type: none"> Did the student follow the scientific method? Did the student design an experiment useful in resolving a question or problem? 	4
Analyze Data and Draw Conclusions <ul style="list-style-type: none"> Did the student accurately analyze data generated by their project? Did the student explain how their conclusions connected to the data? 	4
Report and Display <ul style="list-style-type: none"> Were the results of the project organized and clearly represented on the display board? Did the student accurately present data in the form of graphs, charts, notes, pictures, models, etc.? 	4
Presentation <ul style="list-style-type: none"> Is the student's work and verbal presentation suitable for their grade level? Did the student have outside adult support that was appropriate for their grade level? 	4
TOTAL POINTS	20

Science Fair Rules

Aw!, you mean there are rules? Of course there are. We have to be safe!

Safety Rules First

1. Number one rule . . . think safety first before you start. Make sure you have recruited your adult to help you.
2. Never eat or drink during an experiment and always keep your work area clean.
3. Wear protective goggles when doing any experiment that could lead to eye injury.
4. Do not touch, taste or inhale chemicals or chemical solutions.
5. Respect all life forms. Do not perform an experiment that will harm an animal.
6. All experiments should be supervised by an adult!
7. Always wash your hands after doing the experiment, especially if you have been handling chemicals or animals.
8. Dispose of waste properly.
9. Any projects that involve drugs, firearms, or explosives are not permitted.
10. Any project that breaks district policy, and/or local, state or federal laws are not permitted.
11. 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.
12. If there are dangerous aspects of your experiment, like using sharp tools or experimenting with electricity, please have an adult help you or have them do the dangerous parts. That's what adults are for, so use them correctly. (Besides, it makes them feel important!)

Science Fair Rules

1. Students can work individually or as a member of a team of two.
2. Adults can help; in fact, we want them to get involved. They can help gather materials, supervise your experiment and even help build the display. They just can't be with you during the judging.
3. You cannot perform the experiment live. You will only be judged on your presentation and board. You can mount things on your board in a type of 3D display, but remember that your board has to be able to stand by itself, so don't get carried away. If you do mount things on the board, try not to mount something expensive that you bought and make sure you have things mounted securely so they don't fall off. **YOU MAY NOT MOUNT ANY FOOD OR ORGANIC MATERIALS!**
4. Displays must be on display boards or can be made with cardboard. They can be no longer than 100cm in height, 180 cm in length and 75cm deep. They must stand alone. See the display making page if you need a diagram.
5. Limit your presentation to 2-3 minutes for speaking and the rest for the judges to ask questions.
6. Respect all adults involved in the fair . . . especially the judges! Show the guests in our school that Harrison students are polite and responsible!
7. All decisions of the judges and science fair committee are final.

Resources

If you need ideas or other assistance for your project, here is a list of websites that you can check out:

Science Buddies

www.sciencebuddies.org

Click on the “Parents” or “Students” tabs for lots of great ideas and information

Discoveryeducation.com: Science Fair Central

<http://school.discoveryeducation.com/sciencefaircentral/index.html>

This site provides complete guides for parents and students, with lots of examples and great ideas for projects.

Education.com elementary school science project ideas

<http://www.education.com/science-fair/elementary-school/>

Click on the projects to get step by step instructions.

All science fair projects

www.all-science-fair-projects.com

Informational ideas and instructions on hundreds of science fair projects.

Try Science

<http://www.teacherstryscience.org/kids-experiments>

Science resource for home that gives you labs to try and helpful links all related to science.

Science Kids

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

This site gives you lots of ideas for experiments.