



Middle School Science
Fair Packet

Dear Families,

Date: _____

Your child is about to begin his/her science fair project! It should be a fun learning opportunity for your child. This guide may be helpful during the next several weeks. Please remember:

- As a parent, your job is only to assist. This is an opportunity for your child to think and act like a scientist, and to create and discover his or her very own scientific project!
- Please allow your child plenty of time to make mistakes. He/she might even need to start the project again. Remember, real scientists constantly refine their studies and start over again.
- For safety reasons, it is advisable to assist your child with research and any portions of an experiment that may pose a safety risk.
- Please make time to visit a library and use the internet to assist your child with project research.
- It is recommended that you purchase the display board as soon as possible.
- Remember, this is a multipart project. Your child must complete the survey journal, research paper, display board, and presentation in order to receive full credit.

Thank you for your continued support!

-----CUT AND RETURN-----

My child and I have read the Science Fair Student Guide in its entirety. We know when each section is due and that the project display board, science journal, and research paper must be completed and brought to school by _____.

My child understands that he/she is responsible for presenting his/her project to the class on _____.

Student Signature

Parent/Guardian Signature

Parent/Guardian phone number: _____

Parent/Guardian email address: _____

Types of Science Projects

Experiment, Model, Observation, Invention



Experiment

This is a project where testing and data gathering is necessary. All experiments need several different trials with a control and a variable.

For example:

What is the effect of detergent on the growth of plants?

Which paper towel is more absorbent?

What structure can withstand the most amount of weight?

Model

A model is a copy of something you build to show how it works. You could make a model to answer the question: How do hot air balloons fly? You can make a model into an experiment by creating two conditions that are alike except for one important part and then comparing how they work.

Observation

When you ask a question that can be answered by watching something in the world around you, you are doing an observation project. You could do an observation project by asking a question, "What happens when beans do not get any sun?" Then you design a scheme for collecting data to support or reject your hypothesis.

Invention

An invention is a new thing you have created. An invention project creates something to solve a problem or need.

Project Timeline

The following is a list of due dates for each section of the project. Careful – falling behind makes everything more difficult! It is better to work ahead of the due dates in case problems arise. Remember, sometimes scientists need to redo a part of their experiment or even the whole thing!

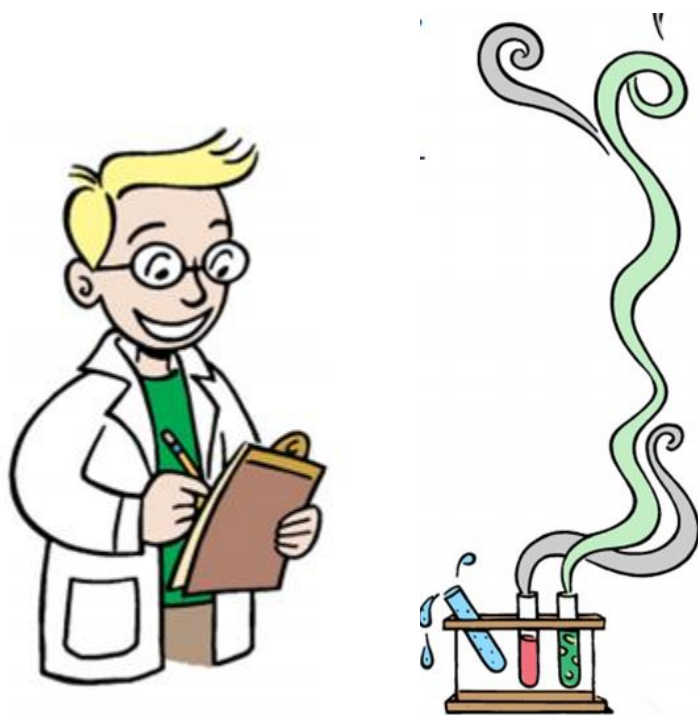
ASSIGNMENT	DUE DATE (to be assigned by teacher)
Select a Research Question and Purpose	11 March
Conduct a Background Research and write the Bibliography . Change the Research Question and Purpose if necessary.	18 March
Write a Hypothesis	18 March
Write the Materials List .**	18 March
Write the Procedures .**	18 March
Conduct the Experiment .**	8 April
Complete the Results section, including any graphs or tables.**	15 April
Write the Conclusion , which may include Reflection and Application.	22 April
Display Board, Research Paper, Science Journal.	25 April
Oral Presentation	26 April

**This part may not be necessary if your project is not an experiment. Check with your teacher what you need to do.

Part One: The Science Journal

The Science Journal is one of the four parts of a successful science fair project. This is where ALL ideas, thoughts, notes, drawings or sketches, research, information, results, and data are written. Everything that happens during your science fair project should be recorded here – the more detail, the better! Remember to write a date and time on every page. The science journal will be placed in front of your display board during the science fair.

The Science Journal may be a spiral or composition notebook. Once started, please do not remove any pages from your Science Journal or use it for other things. This notebook should be completely dedicated to your project. It is okay for there to be some mistakes – just be as neat and thorough as possible.



Part Two: The Research Paper

Using the Scientific Method of Investigation

The research paper may be typed or neatly handwritten. Each step must be explained thoroughly and clearly. Some of the steps require a rough draft that will be turned in to your teacher; others you will need to complete on your own. Rough draft worksheets are included at the end of this guide. Attach more pages if necessary.

Bring each of the rough draft pages to school for your teacher to review with you on the due date. After your teacher has reviewed and returned each page of your rough draft, you may write the final copy of your research paper, to be turned in with your project.

Step 1: State the Research Question

What question are you trying to answer? Ask a question that you can answer through the type of project you will do.

Step 2: State the Purpose

What is your reason for asking this question? What are you trying to discover?

Step 3: Background Research

Following your teacher's directions, write a background research section. This section should be used to help you make a hypothesis.

Step 4: Write a Bibliography

Make a list of the sources you used to collect your background research. Your teacher can help guide you in using the proper format.

Step 5: Make a Hypothesis **

A hypothesis is a statement that predicts the outcome of an experiment, based on what you already know, and proposes an explanation that can be tested. What do you think that the answer to your research question will be? Remember, hypotheses don't need to be correct – they just need to be informed guesses! Never go back and change your hypothesis once your experiment is complete. You will learn something important whether your hypothesis is proven or disproven! If you have researched the topic of your project, then your research should help you make a good hypothesis. Hypotheses are often written using an "If..., then..., because..." format.

Step 6: List the Materials **

Every item that you will use to do the experiment should be listed in the materials section. A common format is to list items in the order in which you will use them.

Step 7: Describe the Procedure **

The procedure describes the experiment in a step-by-step sequence. Include all the things that you did. Another person should be able to follow the procedure of your experiment.

Step 8: Perform the Experiment **

If you realize that new steps or materials are needed, you may go back and revise those sections. But remember not to revise your original hypothesis.

Step 9: Record the Results **

Record detailed records of the results of your tests and observations. Present your results in a suitable format, such as in a table (and a graph, if appropriate).

Step 10: Make a Conclusion **

After getting the results, make a conclusion. According to your results, was your hypothesis proven or disproven? (Remember, it is okay for your hypothesis to be disproven!) Was there anything in the experiment that you would change if the hypothesis were retested? How could you change or expand this experiment if you were going to do it again? What did you learn from the experiment? How could this information be used to help people?

**This part may not be necessary if your project is not an experiment. Check with your teacher what you need to do.

Step 11: Write an Abstract

An abstract is a one-page summary of your project. It should state your research question, purpose, and hypothesis. It should include your procedures, but you do not need to be as precise as you were in the procedures section; describe your steps more generally. Your results and conclusion should also be included. The abstract is meant to give a quick explanation of your project to someone before they start to read your paper and examine your display.

Step 12: Acknowledgments (optional)

Thank the people who helped you with your project.

Step 13: Create a Title Page and Table of Contents (optional)

The title page should include a title for the project. (It is okay to restate the research question if you can't think of a good title.) Also include your full name, your grade, your teacher's name, your school's name, and the school year. After placing each section of your paper in order, number your pages, and then write a table of contents.

Step 14: Proofread Everything Carefully!

Science Project Presentation

Be proud of your work. Present it with a nice display for everyone to see!

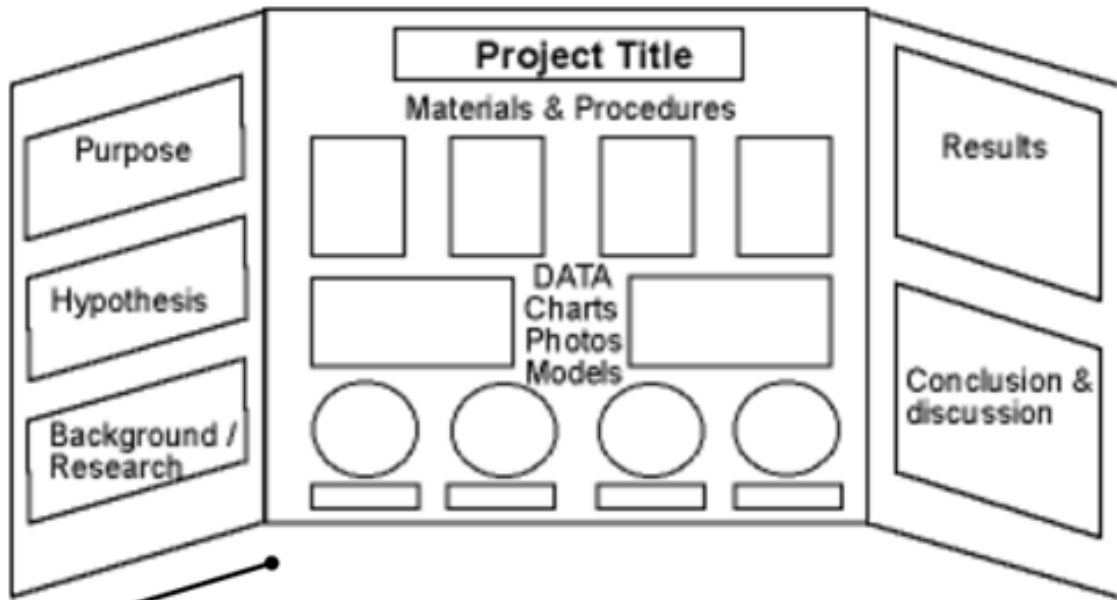
This is a sample of a typical science fair display board – observe how it goes from left to right, following the order of the scientific method. Depending on your information and the amount of pictures, tables, and graphs, you may have a different layout. You should have all of the following parts on your board:

Title
Purpose/Question
Hypothesis **

Background/Research
Materials **
Procedures**

Data
Results**
Conclusion and Discussion

**This part may not be necessary if your project is not an experiment. Check with your teacher what you need to do.



What I need in order to have a complete Science Fair Project and Presentation.

(Hint: This is your checklist!)

1.	Display board – Can the title be read from afar?	
2.	Well-organized display	
3.	Title, purpose, and hypothesis** are stated	
4.	All of my resources are cited – the minimum is three	
5.	Measurable data that includes 3 or more trials**	
6.	Data analysis, with stated results (graphs, charts, and/or tables)**	
7.	Presentation – Did I practice?	
8.	In depth-knowledge of topic with use of related vocabulary at grade level	
9.	Stated real life connections	
10.	Effective closure of presentation	

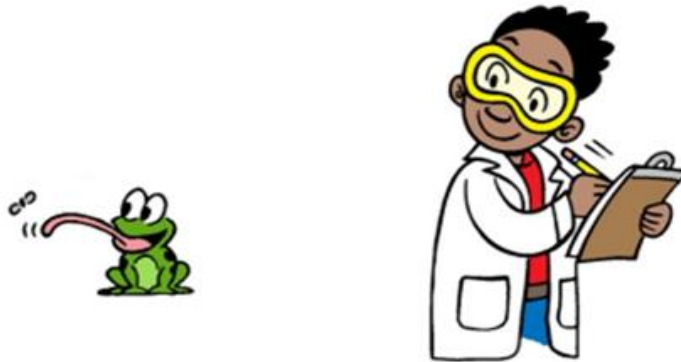
**This part may not be necessary if your project is not an experiment. Check with your teacher what you need to do.

Part Four: The Oral Presentation

Tips for a great oral presentation:

- Make sure that your science journal, research paper, and display board are complete, neat, and proofread.
- Be prepared. Practice your presentation as many times as possible. Use index cards to write down your main points. Your index cards should not be read aloud; by practicing your presentation enough times, you should know what to say without even looking at your cards. They are to be used only if you need a reminder as you are presenting.
- Point to your board when explaining graphs or pictures, but do not read off your board.
- Practice in front of friends and relatives. Give them an opportunity to ask questions or provide feedback, and remember that it's okay to say, "I don't know." Remember, it is always better to say that you don't know the answer than to make one up!
- In case you are asked, make sure that you can clearly explain how your results were measured. For example, if you used a scale to measure weight, know what type of scale you used.
- Be enthusiastic, and smile during your presentation. Stand straight and speak clearly and loudly enough to be heard by everyone in your audience. Make sure that your audience knows how proud you are of your project.
- Dress well. Wearing nice clothes shows that you are proud of your project and want to represent it in the best way possible.
- Stay within the length of time your teacher has provided for your presentation.

You may be expected to present your entire study, including all its parts. Make sure that you share any special challenges or unexpected outcomes. Be prepared to answer questions at the end of your presentation.



Research Paper Rough Draft:
Research Question/Purpose

Name _____ Due Date _____

Parent/Guardian Signature _____ On Time? Yes/No

State the Research Question

What question are you trying to answer? Ask a question that you can answer through observation or experimentation.

State the Purpose

What is your reason for asking this question? What are you trying to discover?

Teacher Comments/Suggestions:

Research Paper Rough Draft:
Background Research/Bibliography

Name _____ Due Date _____
Parent/Guardian Signature _____ On Time? Yes/No

Background Research

Write a background research section. This section will be used to help you make a hypothesis. To start, collect facts that are related to your research question. You might use index cards, and write one fact on each card, or list them out on paper. Remember to put the facts in your own words! On the back of each fact card or under each fact in the list, write down all of the information about where you got the fact. This information will be used to write your bibliography. Once you have gathered your facts, organize them in an order that makes sense and write a background research section about your topic. Remember to break your writing into paragraphs, and include topic and closing sentences for each group of new ideas.

Bibliography

Teacher Comments/Suggestions:

Science Fair Websites

1. **California State Science Fair:** Read about this science fair which has been going on since 1952! You can learn how to enter, get help with your own project, or see a directory of past projects.
<http://www.usc.edu/CSSF/>
2. **Cyber Fair:** See sample fair projects, look through other students' examples, and see the steps involved in judging projects.
<http://www.isd77.k12.mn.us/resources/cf/welcome.html>
3. **Experimental Science Projects:** Outlines steps in preparing a project (complete with an ideas list), and suggests the best ways to prepare one at different grade levels.
<http://www.isd77.k12.mn.us/resources/cf/SciProjIntro.html>
4. **Science Buddies:** Use the topic selection wizard to help you figure out what science projects interest you most. Once you have a topic, get help doing research, setting up the experiments, and completing them.
<http://www.sciencebuddies.org/>
5. **Science Fair Central:** Includes cool project ideas, a science fair handbook, reviews of students' experiments, and more from Discovery Channel School.
<http://school.discovery.com/sciencefaircentral/>
6. **Science Fair Project Resource Guide:** Samples, ideas, magazines, resources, and more. Includes a list of sites that explain the Scientific Method.
<http://www.ipl.org/div/kidspace/projectguide/>
7. **Scientific Method:** Describes the five steps of the Scientific Method that are helpful when creating a science fair project. Includes examples of wording and sample projects to explain certain steps.
<http://school.discoveryeducation.com/sciencefaircentral/Getting-Started/Investigation.html>
8. **Super Science Fair Projects:** Guide to projects, topics, experiments, and tips for successfully completing a science project, including the six steps of the Scientific Method.
<http://www.super-science-fair-projects.com/>
9. **What Makes a Good Science Fair Project?:** Short guide written by a group of experienced judges for the California State Science Fair.
http://www.usc.edu/CSSF/Resources/Good_Project.html

