

Name _____ Period: _____ Date _____

Science Project Proposal Form
(____ Points)

Your Testable Question (The effect of _____ *independent variable* on _____ *dependent variable*).

Parent Signature _____
Teacher Comments:

Your Hypothesis & Purpose (If *planned changed to independent variable* and then *predicted change to dependent variable* statement)

Parent Signature _____
Teacher Comments:

Independent Variable (What you are purposely changing?)

Dependent Variable (The change that you measure)

Controlled Variables (What stays the same during the experiment?)

Parent Signature _____
Teacher Comments:

Experimental Procedure (How will you test your hypothesis? Include list of materials as well as any sketches of experimental design. Attach another piece of paper if necessary.

Materials:

Parental Signature _____

Teacher Comments (all variables):

Teacher Only:

Approval Status (circle one):

Project Approved!
Begin background
Research paper.

Please revise and resubmit.
No credit yet.
Due Date _____

Please choose another idea
and write another proposal.
No credit yet.

Other Comments:



Choosing a Science Fair Topic

There are several things to consider when choosing a science fair topic.

1. Choose something that would be fun for you to investigate. This might be something that relates to a topic in which you are interested or investigates something you have been wondering about like “Why are those trees turning brown” or “Which golf ball brand is best?” You will have a lot more fun investigating something that interests you.

2. Creativity! Judges get tired of seeing the same old projects every year and even score you on whether or not your project “went beyond the work of others”. But trying to come up with something “creative” can seem daunting. However, it can be accomplished a few ways. You can take another experiment you find but add your own twist to it by changing the variable or using a different organism, or you can test for the same thing as another experiment but create your own testing method.

3. Lots of trials! Try to pick something that would allow you to do lots of trials and something where the data can be quantified rather than only observed.

4. There are a lot of rules on using human subjects or vertebrate animals. To use human subjects or vertebrate animals, you cannot do anything that could possibly harm or even cause stress to the person or animal. This includes sleep deprivation, having them exercise, having them eat or drinking anything, etc. You also have to have your project approved by your teacher before you can start. Additionally, for human projects you have to have the parents of any subject under age 18 sign a consent form allowing their son/daughter participate. If you want to work with animals, try to design an experiment that involves invertebrates such as worms or snails, then you won't have to deal with all the extra paper work.

5. Engineering: Build and test! These can be great projects, but if you want to build something you also have to test it in some way. This can put you in a time crunch when trying to build and test by November. So if you want to do this, get started ASAP.

6. Choose a topic with some applications to the real-world.

7. Don't limit yourself to any possibilities. The school has a lot of resources available for you and there are mentors in the area willing to work with you on your projects.

What is a Log Book?

Whether you are a research scientist or a first time science fair student, a logbook is a crucial part of any research project. It is a detailed account of every phase of your project, from the initial brainstorming to the final research report. The logbook is evidence that certain activities occurred at specific times.

Following the pointers below will help keep you organized. It's a great opportunity to show off all of your hard work and impress the science fair judges!

1. Label your logbook with your name, phone number, email address, and teacher's name in a prominent location. Make logbook entries in pen, not in pencil; this is a permanent record of all of your activities associated with your project.
2. Organize your logbook. Make a table of contents, an index, and create tabs for different sections within your logbook. This helps keep you organized for different activities. For example, have a data collection section, a section with contacts, sources, etc. and a section of schedule deadlines.
3. Always date every entry, just like a journal. Entries should be brief and concise. Full sentences are not required.
4. Don't worry too much about neatness. Your logbook should be organized, but keep in mind that this is a personal record of your work. Think of the logbook as your "Diary" for the science fair. It's not just for recording data during the experimental phase of your project and it's not just for your teacher.
5. The logbook should be used during all phases of your project for jotting down ideas or thoughts for a project, phone numbers, contacts or sources and prices of supplies, book references, diagrams, graphs, figures, charts, sketches, or calculations. Log entries should include your brainstorming, calculations, library/internet searches, phone calls, interviews, meetings with mentors or advisors, notes from tours of laboratories, research facilities and other related activities. Remember that it's documentation of your work and will need to be references in your final research paper. So, cite **ALL** sources in your log book so you will be able to develop a bibliography later.
6. Use the logbook regularly and write down everything, even if it seem insignificant; it could later be extremely useful. For example, you may find yourself frantically searching for the title of a crucial reference the night before the fair. Make sure that you describe things completely, so that when you read your notes weeks or months later you will be able to accurately reconstruct your thoughts and your work.
7. Glue, staple or tape any loose papers into your logbook, such as photocopies of important items. Loose papers look messy and tend to fall out and go missing. If you have several pages to include you may want to download and print off your own version of the logbook and organize all of these pages into a binder along with your own table of contents.
8. Include a reflections section in your logbook. For example, what, if anything would I do differently next time? What part of the experiment could be changed to improve the experimental procedure?
9. Always include any changes made to procedures, as well as mishaps, failures, or mistakes. As human beings, all of us make mistakes! (i. e. "1/4/05 my cat, Sheba scratched the pots of soil, and ate 4 of my 12 plants. I will have to replant everything! I need to protect my plants from the silly cat. Maybe I should try putting a screen around the pots or keep the cat outside!")
10. Include any and all observations made during your experiment. In other words, record **ALL** data directly in your logbook. If this is not possible, then staple photocopies of data in the logbook.

Remember, keeping up a great logbook throughout the entire duration of the science project really pays off later! Not only will a nicely maintained logbook impress your teacher and the judges at the fair, it will also help you stay out of trouble later when you need to look back and provide details of what you did.



Science Fair Project Steps/Due Dates

Complete ALL of these steps in your LOG BOOK (Refer to "What is a Log Book?")

1-State a Question/Choose a Topic: (refer to Choosing a Science Project Topic Handout). Aug 3rd – Aug 12th

- Your topic should be something you are interested in and can investigate yourself.
- The topic must be written as a QUESTION: **What is the effect of _____ on _____?**
(Independent variable) (Dependent variable)
- Your topic should be an investigation where you can run at least three trials and each trial can be measured in the same way.
- Topic categories: Behavior and Social Science, Chemistry, Computer Science, Earth Science, Engineering, Energy and transportation, Environmental Science, Mathematical Science, Microbiology, Physics, Plant Science

DUE Aug 19th – Testable Question (Science Proj. Proposal Form) & Log Book Check

Aug 22nd

2-Research Your Topic:

- Collect background information about topic in preparation of writing your hypothesis, purpose and experimental procedure. Sources may include the internet, science magazines and library books. Do not use Wikipedia as a source.
- Make sure you CITE ALL references. You must have them in the bibliography part of your research paper.

3-Develop a Hypothesis and Purpose:

- The hypothesis is an educated guess or prediction of what you think will happen during the experimentation written as a IF and THEN statement.
If = the cause
Then = the effect
"If a pansy is placed in natural light then it will grow five centimeters higher than a pansy grown in the artificial light".
- Use background information to help you prepare this prediction. The results do not have to support your hypothesis in order for the experiment to be a success.
- The purpose is what you want to find out and why.

Due Aug 29th – Hypothesis & Purpose (Science Proj Proposal Form) & Log Book Check

4-Design an Experiment and Complete Science fair Paperwork:

Aug 31st – Sept 2nd

- Write down the STEP-BY-STEP directions for testing your hypothesis. Make sure the procedures are numbered and clear so another investigator could repeat your experiment.
- Make a complete list of all the materials needed to do the experiment. Remember to be specific with amounts, size, type, etc and use SI Units.
- Identify the variables in your experiment.

- The independent variable (manipulated variable), which will be changed and tested will be: _____
- The dependent variable (responding variable), which will be observed and measured and will change as a result of the experiment, will be: _____
- The control, which will receive NONE of the variables will be: _____
- The constant variables(all of the factors and conditions that will be kept identical for all the trials) will be: _____
- Complete and obtain parental approval of ALL required Science Fair forms. Teacher will provide.

DUE Sept 9th – Variables Information & Experimental Procedure (Science Project Proposal Form), Log Book Check and Science Fair forms

5- Perform your Experiment/Test your Hypothesis: Sept 12th

- Once all signed Science Fair forms have been submitted to teacher, perform your experiment as planned.

6-Collect the Data: Sept 19th – Oct 3rd

- Collect and record all data accurately by observing, measuring and describing.
- Include materials you are using, length of time for tests, controlled, independent and dependent variables.
- Keep detailed notes on everything you observe while conducting your experiment. You may even take pictures or make sketches of your observations.

Oct 5th – Log Book Check

7-Organize and Interpret the Data: Oct 5th – Oct 12th

- Decide what the results mean. Try to find explanations for your observations.
- Make Graphs or tables to represent your data.

8-Draw Conclusions: Oct 17th – Oct 21st

- Read your hypothesis and explain how the results support or do not support it by answering these questions in paragraph form (write conclusions in past tense):
 - What was investigated?
 - Was the hypothesis supported or not supported by the data?
 - What were the major findings?
 - How did your findings compare with other researchers?
 - What possible explanations can you offer for any errors in your findings?
 - What recommendations do you have for further study and improving the experiment?
 - What are some possible applications of this experiment?

Oct 24th – Log Book Check

9-Finish your Research Paper and Develop a Presentation: Oct 25th – Nov 8th

- Using your Log Book and the "How to Write a Research Paper" document, complete your Research Paper
- Create a presentation of your choice that can be delivered to your peers. The presentation is to be a 3-5 minute summary of the steps of your project. It can be a PowerPoint Presentation, a video, a poster board or anything approved by our teacher.

10-Turn in Science Fair Project and Present to Peers on Wed Nov 16th

- Log Book to teacher
- Research paper to teacher

Websites

Georgia Science and Engineering Fair Information and Forms

<http://apps.societyforscience.org/isef/students/wizard/index.asp>

http://www.georgiacenter.uga.edu/oasp/ga_science_fair.phtml

Science Fair Websites

www.sciencebuddies.org

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

<http://www.twingroves.district96.k12.il.us/ScienceInternet/TopicChoices.html>

<http://www.ipl.org/youth/projectguide/>

http://www.ri.net/schools/East_Greenwich/Cole/sciencefair.html

<http://www.isd77.k12.nm.us/resources/cf/ideas.html>

<http://faculty.washington.edu/chudler/fair.html>

General Science Websites

<http://www.newscientist.com/>

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

<http://www.sciencedaily.com/>

<http://www.americanscientist.org//amsci.html>

<http://www.sciencemadesimple.com/news.html>

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

<http://dsc.discovery.com/news/news.html>

<http://pubs.acs.org/journals/tcwoe7/index.html>

<http://www.popsci.com/popsci/>

<http://scitechdaily.com/>

<http://www.studygs.net/>

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

<http://www.spartacus.schoolnet.co.uk/REVscience.htm>

<http://www.svsu.edu/mathsci-center/sciencesites.htm>

Making Graphs

<http://nces.ed.gov/nceskids/Graphing/>

Bibliography

<http://www.easybib.com/>

<http://www.aresearchguide.com/11guide.html>