Title Page

SAMPLE SCIENCE FAIR NOTEBOOK
(10 words or fewer for your project title)

These students are all looking at a winning project notebook!

A picture that in some way represents your project, placed on the front of your notebook, is always a nice touch, but is not absolutely necessary.

A Word About Choosing a Science Fair Project Topic

Questions to ask yourself:

1. What thing(s) am I most interested in? Food? Baseball? Gardening? Pets? Chemistry? Computers? Skateboarding? Etc. What am I "passionate" about?

2. What part of this topic would really attract you?

For ideas:

Browse through your school library AND your public library
        http://www.sandiego.gov/public-library/
Also see pages 15-16 of this sample notebook.

Look in newspapers (especially the *Quest* section of *The San Diego Union Tribune.*)

Look in magazines such as *Science News, Popular Science, Scientific American*, etc.

Talk to people - - your parents, teachers, friends, neighbors, grandparents…for ideas, and be sure to visit the *Greater San Diego Science & Engineering Fair* website at:

www.gsdsef.org

And try:

http://www.sciencebuddies.org/

Feel free to e-mail any questions to Phil or Wendy Gay at: phlwen@pacbell.net or Paul Pakus at paul@gsdsef.org

Project Proposal and Description Form (GSDSEF-1, 2011)

This form is available on the GSDSEF website:

http://www.gsdsef.org/2011/proposal2011.

The form may be filled in on line, and then printed. Obtain the requested signatures on this printed copy and insert in the front of your notebook before your screening fair.

Print Form

For committee use

GREATER SAN DIEGO SCIENCE AND ENGINEERING FAIR (GSDSEF) — PR
PROJECT PROPOSAL, PROJECT DESCRIPTION AND PRE-SCREENING FORM (GSDSEF-1, 2011) (http://www.gsdsef.org/2011/proposal2011.pdf)

THIS FORM MUST:
  BE COMPLETED AND SIGNED PRIOR TO STARTING THE EXPERIMENTATION
  BE IN THE STUDENT'S NOTEBOOK AT THE SCHOOL FAIR/SCREENING
  SHOULD NOT BE SUBMITTED WITH APPLICATION FOR ENTRANCE IF INVITED TO APPLY TO GSDSEF

1. STUDENT'S NAME (Last, First, Middle)
_____

2. ADDRESS, CITY, ZIP
_____

4. PHONE
_____

5. HOW MANY PREVIOUS PROJECTS HAVE YOU HAD ACCEPTED BY THE GSDSEF?
_____

6. SCHOOL, GRADE, TEACHER
_____

7. PROPOSED PROJECT TITLE
_____

8. PARTNER'S NAME (FOR SENIOR DIVISION 2-PERSON PROJECTS ONLY)
_____

(PARTNER MUST SUBMIT SEPARATE PROPOSAL)
9. THIS PROJECT INVOLVES (CHECK ALL THAT APPLY):

Live Vertebrate Animals _____   Teratogenic Agents _____
Human or Other Vertebrate Tissue _____ Infectious Agents _____
Bacteria, Fungi and/or Molds _____   Potentially Hazardous Substances _____
Chemicals _____   (ANYTHING which could cause injury)
Mutagenic Agents _____   Humans _____
Carcinogenic Agents _____   (as subjects, helpers or interviewees)

10. WHERE REQUIRED, THE FOLLOWING SUPPLEMENTAL FORMS HAVE BEEN COMPLETED AND ARE INCLUDED:
    "Certification of Humane Treatment of Live Vertebrate Animals" (GSDSEF-2, 2011) _____

    "Certification of Compliance of Research Involving Humans" (GSDSEF-3, 2011) _____

    "Certification of Hazards Control" (GSDSEF-4, 2011) _____

    "Certification of Vertebrate Tissue Source & Safety" (GSDSEF-5, 2011) _____

11. IS THIS A CONTINUATION OF A PREVIOUS PROJECT? _____
12. LOCATION WHERE EXPERIMENTAL PROCEDURES WILL TAKE PLACE_____
13. PEOPLE, COMPANIES, ETC. PROVIDING EQUIPMENT, MATERIALS, WORKSPACE_____
14. DESCRIBE PROCEDURES TO USED (200-250 WORDS - INSERT BELOW)

JUST PRIOR TO SCHOOL FAIR, ATTACH 200-250 WORD ABSTRACT OF COMPLETED PROJECT

GSDSEF-1-2011

BOX 5 — Required Signatures

Student
I have read the Rules and Regulations of the *Greater San Diego Science and Engineering Fair* and certify that my project complies with them in every particular. I understand that failure to comply with these rules and regulations will result in the disqualification of my project.

_____/_____
_____
Student Signature Date

Parent/Guardian
I am aware of any potential safety hazards connected with this project, approve the precautions being taken to en-sure my son/daughter/ward's safety and will, when appropriate, provide guidance and/or supervision. I understand that failure to comply with the rules and regulations of the *Greater San Diego Science and Engineering Fair* will result in the disqualification of the project.

_____/_____
_____
Parent Signature Date

Teacher
I approved this project prior to the student beginning work on it and verified that it complies with the rules and regulations of the *Greater San Diego Science and Engineering Fair*. Any concerns about the project's design, appropriateness, safety or legality were submitted to the *GSDSEF Scientific Review Committee* at src@gsdsef.org for adjudication prior to allowing the student to proceed. I understand that failure to comply with the Fair's rules and regulations will result in the disqualification of the project. I will provide all needed supervision (other than that specified on other included forms) and will ensure that this proposal and all required supplemental forms are included in the student's notebook at screening and, if the student is invited to apply for entrance to the *GSDSEF*, that those supplemental forms are submitted with his/her *2011 Application for Entrance*.

_____
/_____
Teacher Date

Additional Advisor (if required)
If forms *GSDSEF-2, 3, 4* and/or *5, 2011* are certified by someone other than the science teacher, her/his signature here ensures that the procedures described in this document will be followed.

_____/_____
_____
Additional Advisor Signature Date

SENIOR DIVISION ALERT: Because GSDSEF forms are unique to California law, all signers agree that, should this student be selected to compete at the 2011 *Intel International Science and Engineering Fair (Intel ISEF)*, they will complete, pre-date to the date on this form and sign all required *Intel ISEF* forms.

GSDSEF USE: SRC APPROVAL Phil Gay, Chair

Timeline

_____1. **Abstract,** a brief, no more than 250 words, summary of the main points of your project, including your hypothesis, procedures, results and conclusion. THIS IS WRITTEN LAST BUT GOES IN THE FRONT OF YOUR NOTEBOOK.

_____2. **Acknowledgements,** a place for you to give credit to those who helped you with advice or supplies.

_____3. **Introduction,** a brief look at the background and goals of your research.

_____4. **Review of the Literature** (background research) this is your written report about the information you discovered when you researched your topic. 5-10 pages.

_____5. **Statement of the Problem or Purpose,** the question you will answer about your project.

_____6. **Hypothesis,** an educated guess about the answer to your problem

_____7. **Materials**, everything you used for your experiment.

_____8. **Procedures**, a step-by-step description of how you did your project.

_____9. **Findings**, also known as the DATA that you collected, the responses, reactions and results you observed.

_____10. **Conclusions**, how did your tests and experiments work out? Did your findings support or not support your hypotheses? Include a statement of what you thought of your results.

_____11. **Recommendations**, your ideas on possible uses for your findings and any additional tests which should be made. Would you do this project again, or could you continue this project another year?

_____12. **Bibliography**, an alphabetical list of at least 10 references used as you researched this project. (See page 12 of this sample notebook.

_____13. **Appendices**, selected photos, graphs and your **Daily Log**.

_____**14. Completed Notebook and Display, ready for school fair.**

Table of Contents

Abstract

This is a summary of your project written AFTER ALL YOUR WORK IS COMPLETED using 200 to 250 words but no more than one page.

You do this LAST but it goes in the FRONT of your notebook.

Type your title then briefly:

State your hypothesis:

Describe your procedures:

Describe your results:

Describe your conclusions:

Your abstract is an important part of your notebook and should appear in the front of your work for all to see. You will also attach (paste) a copy of it to your display board, where screeners and judges will see it first as they begin to assess your project.

When your screening fair is completed and you have been invited to participate in the GSDSEF, you will submit a copy of your abstract with your GSDSEF on-line *Application Form*.

<u>Acknowledgements</u>

This is where you thank all the people who helped you. No more than a single page.

"I'd like to thank my parents, teacher(s), my librarian, for all their wonderful help and support. I would also like to thank Prof. John Smith for allowing me to use a portion of his laboratory at SDSU to run my experiments. And I give a big thank you to *Home Improvement Store* for donating the materials I needed to build my test ramp!"

Introduction

Here you tell why and how your project came to be.

In no more than a single page give a brief overview of the background and goals of your project. Why did you choose this topic, does it have social and or scientific implications in every day life, and is it manageable…will you be able to do testing?

For instance,

If you decide you want to test the properties of snow, do you live near the snow? If not, maybe you need to choose another topic.

Review of Literature

A minimum of 5 typed pages, 10 would be better!

This is where you include a written report on the information you found when you researched your topic. This report should be double-spaced and in a readable 12 pt font. "Times" would be good.

1. An introductory paragraph.

2. The main body of your report should be written in complete paragraphs that describe what information you found in the references you looked at while researching your topic.

3. A concluding paragraph that "pulls" it all together.

REMEMBER, keep track of your sources! The old tried and true way is to use a "note card" for each source. On each "card" you list all the information you will need to for your bibliography (see page 12 of this sample notebook for help with formatting a bibliography.) *Example Note cards:*

Levaren, Maxine. Science Fair Projects for Dummies. New York: Wiley Publishing, Inc. 2003.

This book was a great help

Smith, John. "Skateboard Wheels." Popular Mechanics. April 1, 2004, pp. 78–82.

Not so much!

"Skateboarding Safety Tips"
www.ncs.org/Factsheets/hl/
skateboard_safety.aspx, 1995-2008

Good information/pictures

Statement of Purpose

This is where you state what "intrigued" you about your Topic, or why you feel so "passionately" about it.

Examples:

"Half the teenagers between the ages of 13 and 18 in our country use a skateboard on a daily basis. The purpose of this project is to see if there is a way to make them safer."

Or

"Many societies use sun dried adobe bricks made of clay for building houses because it is a cheap material. The purpose of this project is to see if there is a way to make them stronger and longer lasting."

Hypothesis

NOW, based on the research you have done and the paper you have written, you are ready to state a problem or ask a question about your topic and to make an educated guess as to what the answer will be.

This is called your hypothesis and it goes here!

Examples:

"Based on my research on skateboard wheels I believe that Brand X wheels will allow a skateboard to stop faster than Brands A, B, C, D, E, because they are the fattest".

Or

"Based on my research on adobe building bricks, I believe that adding various binders, such as straw, hay, pine shavings, chicken wire, crushed rock or cement will strengthen them in measurable ways so the best binder can be chosen."

<u>Materials</u>

Every thing you used in your experiment should be listed on this page.

Example:

1. 1 skateboard
2. 6 sets of skateboard wheels
3. 1 stop watch
4. note pad
5. pencils
6. pens
7. tape measure
8. wood ramp
9. …
10. …
11. …
12. …
13. …
14. …
15. …
16. …

Procedures

On this page give a step-by-step description of how you tested your Hypothesis.

Example:
1. I assembled my materials:
    skateboard wheels
    Got out my skateboard
2. I figured out how to control the environment like light, temperature etc. (These are called variables and you need to account for as many as you can think of.)
3. I began testing and recording results
4. I changed wheels after 20 trials each
5. …
6. …
7. …

Findings

A "pretty/polished" version of the data you have collected, like responses, reactions, results you observed and recorded goes here. You may need many pages for all your findings.

Example chart and a graph:

Time trials are shown in seconds

Wheels:	TRIAL 1	TRIAL 2	TRIAL 3	TRIAL 4	TRIAL 5	TRIAL 6
BRAND A	3	4	7	2	5	6
BRAND B	1	2	3	4	5	6
BRAND C	8	7	4	5	3	2
BRAND D	5	4	6	7	8	9
BRAND E	10	6	7	8	5	4
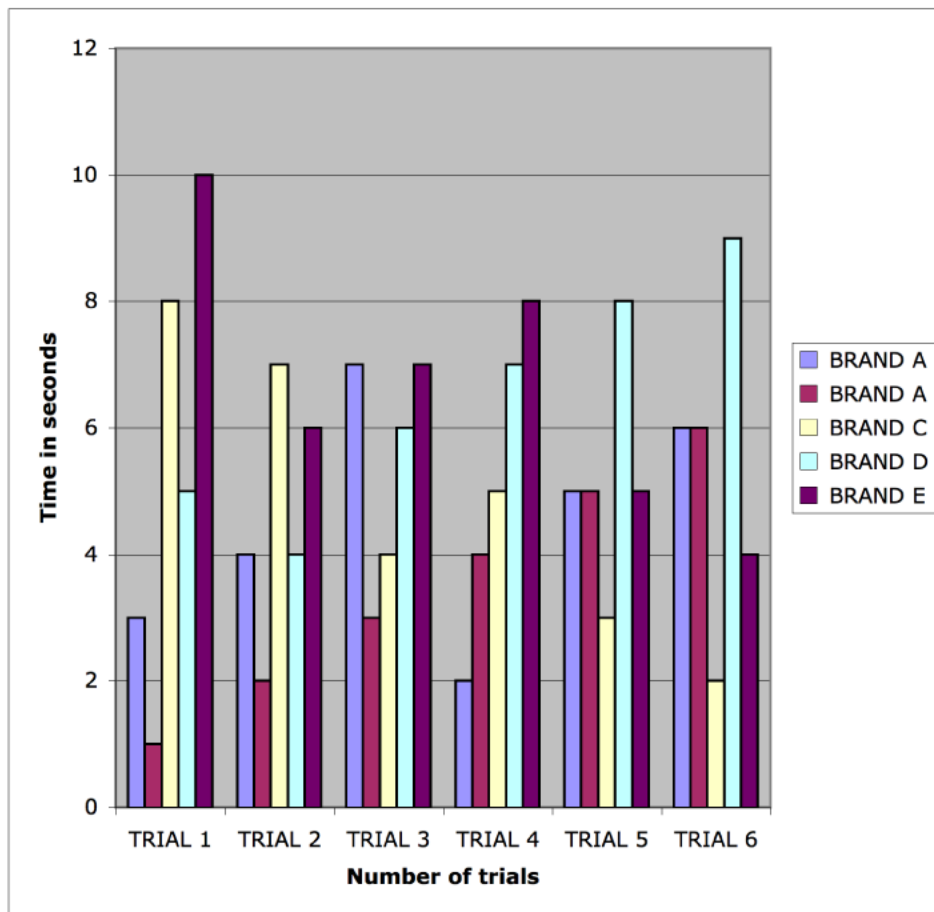
__Conclusions__

How did all your tests and experiments work out? This is where you put the answer to your hypothesis (problem, question)

Restate your Hypothesis, and then follow it with your findings:

Example:

"My hypothesis was correct/incorrect. I was surprised by…I had not anticipated…I am pleased…I am not pleased. This worked better than I expected or not. "

Recommendations

If you were to do this project over again, how would you improve it? How would you do your testing differently? Would you do more research?

1. How could you improve this project?
2. Could you extend it into a project for next year?
3. Why would you <u>not</u> do it again?

__Bibliography__

This is an alpha list of (at least 10) references including books, encyclopedias, Internet items, magazines, interviews, etc used for your project.
Samples:

A BOOK:

Author's last name, first name. <u>Title of book</u>. Place of publication: Publisher, copyright year.
example:
Fader, Mark. <u>Amazing Skateboards</u>. New York: DK Publishing, 2002, pp. 40-55.

AN ENCYCLOPEDIA ARTICLE THAT IS SIGNED:

Article author's last name, first name. "Title of article." <u>Name of encyclopedia</u>. Copyright year. Volume number, page(s).
example:
Clark, William W. "Gothic Art." <u>World Book Encyclopedia</u>. 2004. Volume 8, pp. 277-278.

AN ENCYCLOPEDIA ARTICLE THAT IS <u>NOT</u> SIGNED:

"Title of article." <u>Name of encyclopedia.</u> Copyright year. Volume number, page(s).
example:
"Golden Retriever." <u>World Book Encyclopedia</u>. 2003. Volume 8, p.255.

A MAGAZINE OR NEWSPAPER ARTICLE:

Article author's last name, first name. "Title or headline of article." <u>Name of magazine or newspaper</u>. Date of magazine or newspaper, page(s).
example:
Moore, John. "Skateboard Wheels." <u>Popular Mechanics</u>. April 1, 2003, pp. 27-30.

AN INTERNET ADDRESS:

Author(s)."Article Title." Name of web site. Date of posting. Name of institution/organization affiliated with site. Date of access <electronic address>.
example:
Poland, Dave. "The Hot Button." <u>Roughcut</u>. October 26. 1998. Turner Network Television. October 30, 1998 <http://www.roughcut.com>.

OTHER MEDIA:
Title of material. Type of material. Place of publication: Publisher, copyright date
examples:
"Baldwin's Music." Videotape. New York: Sony Wonder, 1999.
"World War II." Encarta. CD-ROM. Seattle: Microsoft, 1999.

AN INTERVIEW:
Name of person interviewed (last name first). Type of interview. Date.
example:
Yancey, Cindy. Personal interview. June 19, 2003.

Your finished bibliography should be alphabetized by the <u>first word</u> of each entry, and will look something like this:

"Baldwin's Music." Videotape. New York: Sony Wonder, 1999.

Crawford, Mary B. "Mexican Art." World Book Encyclopedia. 2004. Volume 8, pp. 284-286.

Fader, Mark. Amazing Skateboards. New York: DK Publishing, 2002, pp. 50-55.

"Golden Retriever." World Book Encyclopedia. 2004. Volume 8, p.255.

Moore, John. "Skateboard Wheels." Popular Mechanics. April 1, 2003, pp. 27-30.

Poland, Dave. "The Hot Button." Roughcut. October 26. 1998. Turner Network Television. October 30, 1998 <http://www.roughcut.com>.

"World War II." Encarta. CD-ROM. Seattle: Microsoft, 1999.

Yancey, Cindy. Personal interview. June 19, 2003.

More bibliography help:

Are you looking for an automatic bibliography maker? Try:
    easy bib.com

For more information on writing bibliographies see:
    http://www.bialik.netaxis.qc.ca/homework/stylesheet2.htm

For more than you ever thought you would need to know about writing a bibliography and a research paper see:
    http://owl.english.purdue.edu/handouts/research/rmla.html

<u>Appendices</u>

This is where you put all of your notes, logs, graphs, pictures, etc.

Place things in an organized manner and use as many pages as you need.

Be SURE to KEEP your ORIGINAL RAW DATA SHEETS (do not re-copy them!) and include them as part of your Appendices, or in a separate lab book with your display. They are VERY IMPORTANT because they show your original findings.

BACKGROUND RESEARCH AT THE PUBLIC LIBRARY

From Science & Industry, Government Publications, San Diego Public Library.

BOOKS

In addition to books specifically on the subject of your project, like *soap, heat, air pressure* or *enzymes,* encyclopedias and other reference books provide general background information for your experiment or project. Textbooks are also a good source of background information, so are encyclopedias. Here are a few recent reference titles:

Biology. Macmillan Reference USA, 2002. R570/BIOLOGY
Chemistry : foundations and applications. Macmillan Reference USA, 2004. R540.3/CHEMISTRY
Encyclopedia of microbiology. Academic Press, 2000-   R579.03/ENCYCLOPEDIA
Kirk-Othmer encyclopedia of chemical technology. Wiley-Interscience, 2004- R660.03/KIRK
McGraw-Hill encyclopedia of science & technology. McGraw-Hill, 2002. R503/MCGRAW
Macmillan encyclopedia of weather. Macmillan Reference USA, 2001. R551.503/STEIN
The new book of popular science. Grolier, 2004. R500/NEW
Plant sciences. Macmillan Reference USA, 2001. R580/PLANT
World of microbiology and immunology. Gale, 2003. R579.03/WORLD
World of physics. Gale Group, 2001. R530.03/WORLD

MAGAZINE ARTICLES

Science Fulltext Select, a database of full-text articles from over 300 science journals, is available for searching at the Central Library. Additional databases with full text articles in many fields which are available for searching at branch libraries and from home for SDPL cardholders include **MasterFILE Premier** and **Academic Search Elite.**
You may search these databases by subject or keyword.

CHOOSING AND DOING A SCIENCE FAIR PROJECT/EXPERIMENT

Here is a sample of books on science fair projects:
The complete idiot's guide to science fair projects.   Alpha Books, 2003.
       507.8/O'LEARY
Design and analysis of experiments. Wiley, 2001. 001.434/MONTGOMERY
How to make your science project scientific. Wiley, 2002. 507.8/MOORMAN

Janice VanCleave's A+ science fair projects. Wiley, 2003   507.8/VANCLEAVE

Janice VanCleave's A+ science fair workbook and project journal. Wiley, 2003.
        507.8/VANCLEAVE

**Janice VanCleave's help! my science project is due tomorrow! : easy experiments
you can do overnight**. Wiley, 2002.   507.8/VANCLEAVE

More award-winning science fair projects. Wiley c2004. 507.8/BOCHINSKI

100 award-winning science fair projects. Sterling, 2001.   507.8/VECCHIONE

**Science experiments on file: experiments, demonstrations, and projects for school
        and home.**   Facts on File, 2000.   507.8/SCIENCE

Science experiments index for young people. Libraries Unlimited, 2002.
        507.8016/PILGER   (**2005 edition on order**)

Science fair projects for dummies. Wiley, 2003.   507.8/LEVAREN

Science project ideas in the house. Enslow, 2002.   507.8/GARDNER

Strategies for winning science fair projects. Wiley, 2002. 507.8/HENDERSON

Using statistics in science projects, Internet enhanced. Enslow c2002.
        507.8/KRIEGER

WEB SITES

Internet Public Library: Science Fair Project Resource Guide
A variety of web site resources, leading you through the necessary steps to successfully choose and
complete a science experiment. Has links to resources and several "ask an expert" web sites.
http://www.ipl.org/div/projectguide/

California State Science Fair
Lots of resources about and for science fair projects, general and by subject, links to other science fairs
sites, history of previous science fairs, and more. The final science fair of the academic year for students
throughout the State of California in grades 7 - 12. Includes the results for previous California State
Science Fairs.
http://www.usc.edu/CSSF/

Science Fair Central
DiscoverySchool.com has ideas and projects for kids, and tips and help for teachers and parents.
http://school.discovery.com/sciencefaircentral/

Science News for Kids
From the makers of the weekly magazine, Science News, comes a kid-friendly site devoted to a variety of
science topics, puzzles, games, and science fair suggestions.
http://www.sciencenewsforkids.org/

HOMEWORK HELP

These databases available on the San Diego Public Library website provide students with
homework help:

Live Homework Help:

http://www.sandiego.gov/public-library/

http://www.tutor.com/serra/

RAW DATA

Include raw data here at the end of your notebook or if you have lots of data put it in separate notebooks and have it available with your display and official notebook.