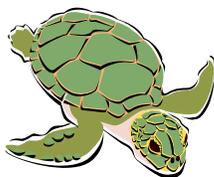
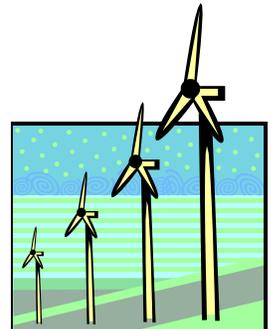
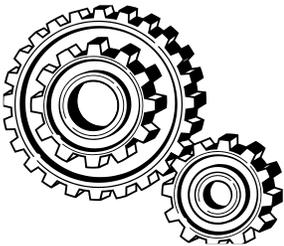
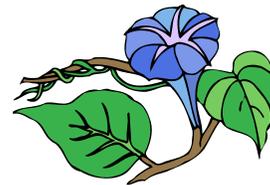
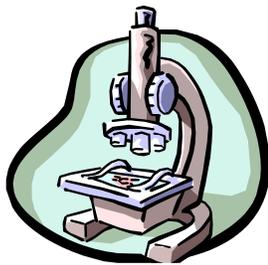


RESEARCH PROJECT

KINDERGARTEN – 5TH GRADE



Student Information Packet





ELEMENTARY

SCIENCE & ENGINEERING FAIR STUDENT INFORMATION PACKET

Revised 2009, 2011, 2015



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RESEARCH PROJECT

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SCIENCE & ENGINEERING FAIR

STUDENT INFORMATION PACKET

INTRODUCTION

You are surrounded by science. Everything uses some form of science to make it work. The chair you sit on was made by some 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 are to cut wood, right? How did they know 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 (best-guessing) 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 your accomplishment will mean for you:

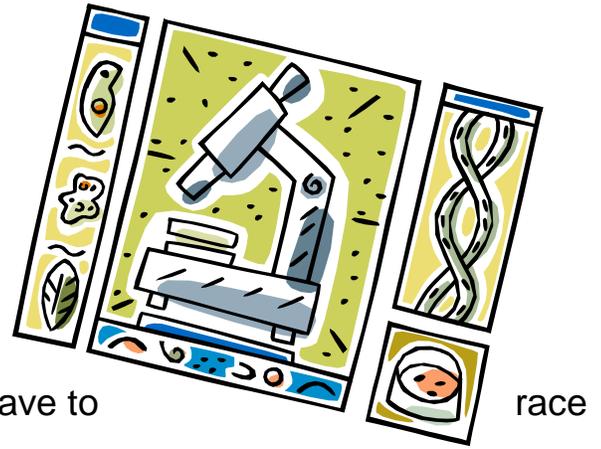
- ★ Gaining self confidence
- ★ Proving you can do it
- ★ Learning new things
- ★ Being recognized by your school and community
- ★ Knowing what the scientific method is and how it can help you.

Everything you need to know about doing a great science project is inside this packet. You'll be discussing the contents with your teacher and also your parents. Approximately every two weeks between now and your school science fair, your teacher will give you a **Student Timeline for Science Fair Project** sheet to check your project's progress. The timeline sheet is designed to keep you, your parents and your teacher on target.

You must keep this packet, timeline sheets, letters home to parents, and all other information in a separate folder. Your science fair folder should be kept at home unless your teacher asks you to bring it to school.

You will find the science fair to be an exciting and rewarding experience. Let's make this year's fair the best ever!

Helpful Hints for Students



- ⌚ Start EARLY; don't wait until the last two weeks 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 to get it done! It might look like this:

Week 1 – Decide on your PROBLEM – what you want to solve.

Week 2 – Collect and read information about your topic.

Week 3 – Work the steps of your project.

Week 4 – Think about the results and make your charts or graphs.

Week 5 – Write your report.

Week 6 – Make your display.

- ⌚ Check with your parent or teacher if you want to use a web site for research. Not all web sites give correct information.
- ⌚ Students in 4th and 5th grades should be doing almost all 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.
- ⌚ This is to be a fun process. "Success" is a completed project where you had fun and learned a lot.
- ⌚ Enjoy the fun!



RESEARCH PROJECT

INVESTIGATING

A SCIENCE & ENGINEERING FAIR

RESEARCH PROJECT

For Kindergarten through 5th Grade

A Research science project is one where you will learn all about a science topic or concept that you are personally interested in by reading books & magazines, going to libraries or other institutions, talking to an expert in the field, and more. Your display board will support your research with photos, drawings, diagrams, dioramas, etc.

I. PROBLEM

Choose a topic that you are interested in learning more about. State the problem as a one sentence **question**. Be specific.

II. HYPOTHESIS

A **hypothesis** is what you think will be the answer to your question. It is your “best guess” before you actually DO the research. It is written as one sentence. *Examples: You are taller in the morning than at night, or, A Granny Smith apple has more seeds than any other apple.*

III. RESEARCH

Use a minimum of two sources. Use different types of sources. While conducting your research, think about how it connects to your question and your hypothesis. Take good notes that you can organize later as part of your display.

IV. CONCLUSION

Look over your research. Analyze the information and see what it tells you about your topic. The **conclusion** answers the hypothesis. Does your research prove or disprove your hypothesis?

ELEMENTARY RESEARCH PROJECT

WRITTEN REPORT CONTENT

Kindergarten through 5th Grade

This written report should be accompanied by a display board with information shown as diagrams, photographs, charts, graphs, dioramas, etc. that support your research.

∞ **TITLE PAGE**

See *Written Report Format* on next page.

∞ **PURPOSE**

In three sentences or less, tell why you did your science project on the topic you chose.

∞ **ACKNOWLEDGEMENTS**

In one or more sentences, say “Thank You” to those who have helped you with your project. You should include those who gave you guidance, materials and the use of facilities or equipment.

∞ **TABLE OF CONTENTS**

List each of the following sections and the page numbers for each. Type the page number at the bottom of each page after you have finished the final copy of your report.

∞ **PROBLEM**

State the problem in the form of a question. The problem is one sentence long and specific. Your page numbering begins here.

∞ **HYPOTHESIS**

The hypothesis is an educated guess which answers the question. The hypothesis is a statement which is one sentence long.

∞ **RESEARCH**

It is now time to use information from books, magazines, interviews, etc. This section of your paper is your report on the work and research conducted by others that relates to your topic.

∞ **CONCLUSION**

Look over your research and then write what the information shows or indicates. The conclusion is one or two sentences long and should either confirm or reject your hypothesis.

∞ **APPLICATION**

Now that you have finished your project, use this section to share with others your thoughts about this experience. Did you have any problems? What would you do differently next time? Explain how what you learned from your project applies to the real world.

∞ **SOURCES / BIBLIOGRAPHY**

List all books, articles, pamphlets and other communications or sources that you used for researching your topic and writing your paper. Only one may be an encyclopedia. Interviews with experts in your field of study are encouraged.



BOXED topics are part of the rubric criteria for judging. The other parts are used only for grading the written report by the teacher.

ELEMENTARY RESEARCH PROJECT

WRITTEN REPORT FORMAT

- Each line with a box () in front of it begins a new page in the report.
- **Items with a star (★)** must be included in reports for **Kindergarten–2nd grade** projects. Other sections are optional for K-2nd grades.
- **ALL** of the items listed below must be included in reports for **3rd–5th grade** projects.

★ Title page

Title in middle of page

In lower right-hand corner:

Last Name, First Name
Grade ____
Teacher Name
School Name
Date (include year)

- Purpose
- Acknowledgements
- Table of Contents (with page numbers)
- ★ Problem (Question) (page numbering starts here)
- ★ Hypothesis
- ★ Research
- ★ Conclusion
- Application
- ★ Sources / Bibliography (Use format on next page.)

1. The original report goes inside the report pocket on the display board.
2. A COPY should be kept at home or on the computer.



**ELEMENTARY RESEARCH PROJECT
WRITTEN REPORT FORMAT
FOR**



SOURCES / BIBLIOGRAPHY



Entries in a bibliography are alphabetized by the last name of the author or the first word of the title. An entry for which the author is unknown, such as a newspaper article or an unsigned review, is alphabetized by the first word of the title, excluding the articles *A*, *An*, and *The*.

Books

Basic Form Bronowski, Jacob. The Ascent of Man. Boston: Little & Brown, 1973.

Two Authors March, James G., and Herbert A. Simon. Organizations. New York: Wiley, 1958.

Magazines

Weekly Tuchman, Barbara W. "The Decline of Quality." New York Times Magazine, 2 Nov. 1980: 38-57.

Monthly Brown, Norman O. "Apocalypse: The Place of Mystery in the Life of the Mind." Harper's. May 1961: 27-35.

Newspapers

Basic Entry Kristof, Nicholas D. "Oil Futures Plunge on OPEC Doubt." New York Times, 3 Jan. 1985: D13.

Reference Works

Encyclopedia Entry, Unsigned

"Huygens, Christiaan." Encyclopedia Britannica. 13th ed.

Dictionary Entry

"Advertisement." Webster's Third International Dictionary. (Because the number of the edition appears in the title, the date is not necessary.)

Atlas Entry

"Hidden Face of the Moon." Times Atlas of the World. 1981 ed.

Nonprint Sources

Video

Redford, Robert, dir. Ordinary People. With Mary Tyler Moore and Donald Sutherland. Paramount, 1980.

Computer Materials

Computer Software

Visispell: Fut.heuristix. Version 1.00. Computer software. San Jose: Visicorp, 1983. Disk.

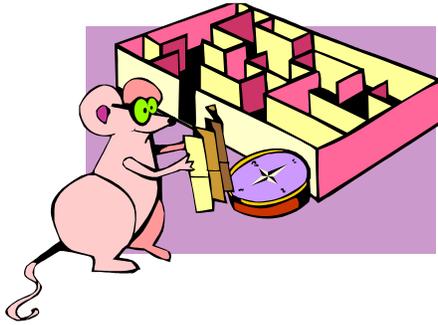
Web Sites

Corte, Corrinne. "Why Are British Sailors Called Limeys?" *Ask A Biologist*. Arizona State University.
<http://ls.la.asu.edu/askabiologist/research/scurvy/index.html> (8 Mar. 2001)

Interview

Persons name (last name first), position or work title, place of interview, date of interview.





ELEMENTARY RESEARCH PROJECT DISPLAY INFORMATION

BACKBOARD MATERIALS

The backboard must be sturdy and stand by itself on a table. Foam core-board and cardboard are the best materials. If you need to cut through the sides of your core-board to make “wings”, do not cut all the way through.

COLORS

If you need to paint your backboard, enamel paint works best. Do not use water-based paint. Contact paper may also be used. Use a minimum of three contrasting colors on your board.

LETTERING

Your title and subtitles may be computer-generated or cut from construction paper. Do not freehand the letters. The title letters should be 3-4 inches high. The subtitle letters should be 1-2 inches high. The subtitles, which are mandatory on the display board, are: Problem, Hypothesis, Research, and Conclusion. All items on the display must be glued to the board. Do not use pins, tacks, staples, or tape.

DRAWINGS, PHOTOS AND GRAPHS

Drawings and photos are most useful on the display. Drawings should be drawn in pencil first and then retraced. Drawings should be in color and outlined in thin black felt tip pen. Graphs and charts may be used in the Research section. They may be computer-generated. All graphs and charts must have explanatory titles. Graph axes must be labeled.

If you have a camera, you should photograph your research in progress. All photos must be titled.

DISPLAY DIMENSIONS

1. When backboard (display portion) is flat, it should be 48 inches wide.
2. Side panels (“wings”) should be 12 to 18 inches.*
3. Height should be no more than 48 inches.

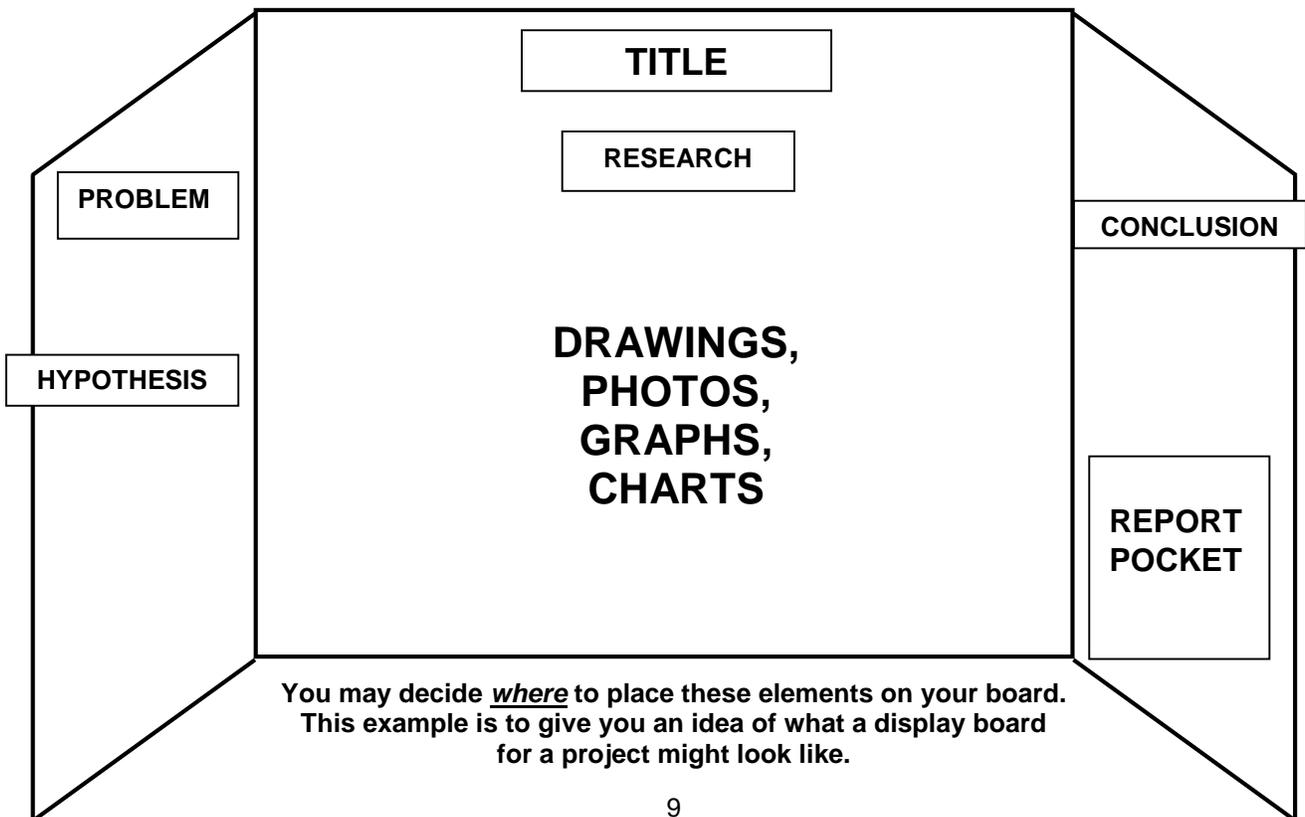
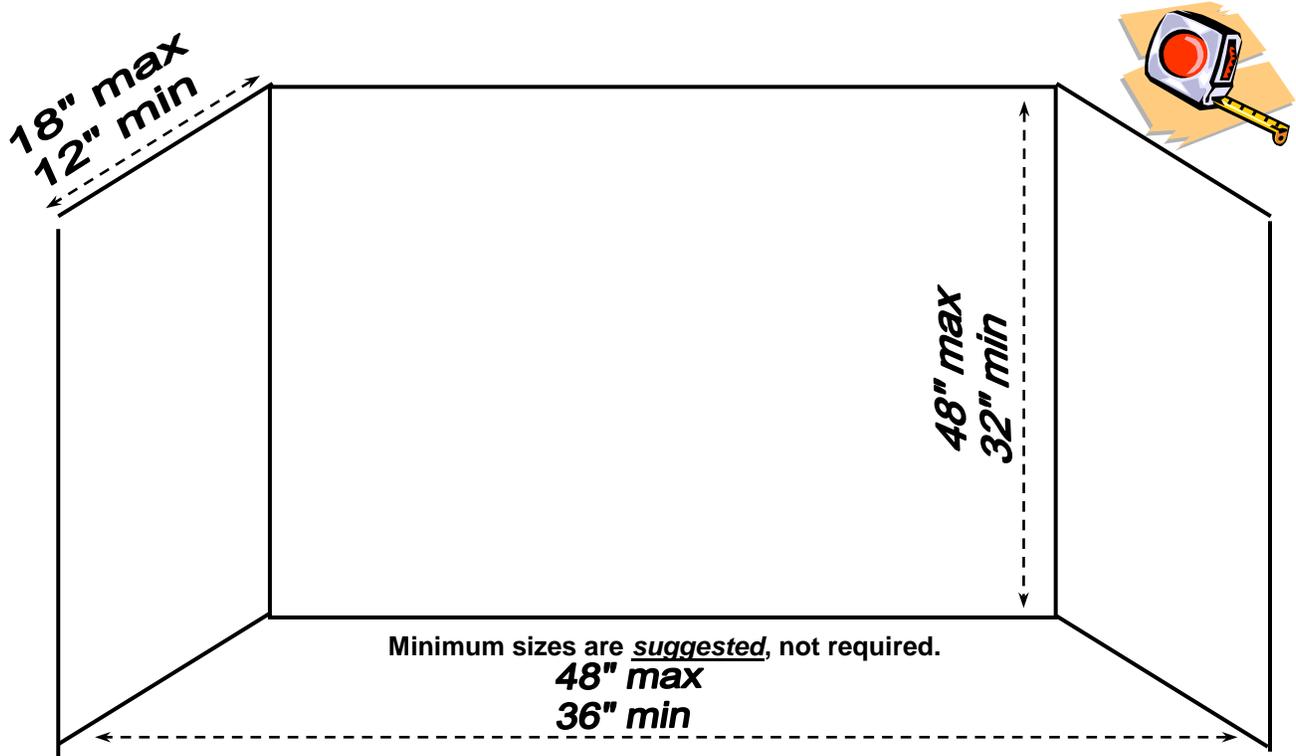
REPORT POCKET

There must be a “pocket” on the display to hold your report.

When you have decided what you are going to put on the backboard (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, you should glue everything into place. Examples of displays will be shown and discussed in class.

DISPLAY SIZE & SET-UP

FOR SCHOOL SITE AND LBUSD SCIENCE & ENGINEERING FAIRS





PROBLEM

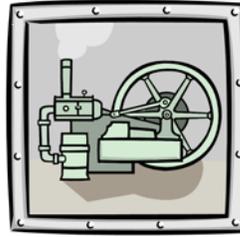
HYPOTHESIS

RESEARCH

CONCLUSION

REPORT

DISPLAY ITEMS



Part of your display should include something that represents the project and should be placed in front of or on the display board. Depending on the type of project you do, the display items may or may not be the focus of the display.

If you cannot decide what to use to represent your project, brainstorm with family, friends, and classmates. Keep in mind that the items you choose will set the tone for your display and must be approved.

No part of your display may pose a safety hazard. Do not include harmful chemicals, bacterial cultures, sharp objects, or any source of heat or flames. No live or preserved animals are allowed at the LBSD district-level science fair, at the Los Angeles County Fair, or at the California State Fair.

Some examples of display items are listed below:

- ◆ **Equipment or materials** you have built or used as part of your project or experiment (i.e., an incubator, variously shaped kites, a solar oven, a microscope with slides, etc.)
- ◆ **Models**
- ◆ **Artistic representations** of your topic (i.e., a large paper maché nose for an odor project, toothpick bridges for a physics project, or a collage of leaves for a plant project)
- ◆ **Samples or specimens**
- ◆ **Simulated items** such as photos, video, and audio taken while working on your project or during your experiment. (Keep in mind that use of extension cords requires special permission.)

There are endless possibilities. Be creative! Put on your thinking cap!



Research Projects (K – 5th Grade)

Rubric for School Site Science & Engineering Fair

	Attempted 1 point	Proficient 3 points	Advanced Proficient 5 points
Purpose and Problem (Double Points) (x2)	The Purpose and Problem are vague, or have no apparent connection to the student's interest or experience, or address an issue to which the student already knows the answer.	States the Purpose and Problem clearly, showing some connection to a valid scientific or mathematical concept. May give evidence of connection to a specific interest or experience of the student, and appears to represent a genuine learning opportunity for the student.	States the Purpose and Problem clearly, addressing a valid scientific or mathematical concept. Provides evidence that they come from the student's personal interests or experiences, and represent a genuine learning opportunity for the student.
Hypothesis (Double Points) (x2)	Hypothesis is either incomplete, not testable, or does not connect to the stated problem.	Hypothesis is complete (in one sentence), testable, and addresses the stated problem without reflecting prior knowledge.	Hypothesis is complete (in one sentence), testable, directly addressing the stated problem, and reflects prior knowledge.
Research (Triple Points) (x3)	Cites only one source. Or, the description of the research is incomplete, or has little or no connection to the problem or hypothesis, or is not written in the student's own words.	Cites two or more sources from one or more types of resources (e.g., text, encyclopedia, businesses, magazines, catalogs, internet, or interviews). The student adequately connects the research to their problem and hypothesis in their own words.	Cites four or more sources. There are at least three different types of resources. The student makes clear, in-depth connections between the research and their problem and hypothesis in their own words.
Conclusions	Conclusion does not answer the problem, or does not refer back to the hypothesis, or contradicts the evidence found in the research.	Conclusion answers the problem, states if the hypothesis was supported or rejected, and attempts to explain why.	Conclusion completely answers all aspects of the problem, states if the hypothesis was supported or rejected, and clearly cites evidence to explain why.
Visual Quality of Display	Project has limited eye appeal or is not easily readable at approximately two feet distance. The project has limited organization, or contains confusing visuals, or contains major language or spelling errors.	Project is appealing and readable at approximately 2 feet distance. It is organized and clear, uses understandable visuals and/or models, and contains few language and spelling errors.	Project is appealing and neat, and is readable at approximately 2 feet distance. It is well organized and clear, makes striking use of inventive or amusing visuals and/or models, and uses language and spelling flawlessly.
Sources (at the end of the written report)	Sources at the end of the written report are listed by title only, or represent an incomplete list.	All sources are listed with most of the information given, i.e., name, title, web address, date (as shown on pp. 19 and 20 in the Elementary Sci. Fair Handbook). However, some useful information may be missing.	All sources are listed with complete information given, i.e., name, title, web address, date (as shown on pp. 19 and 20 in the Elementary Sci. Fair Handbook). One could easily find any of the sources as listed.

(Projects will receive between 10 and 50 points when all rubric criteria have been addressed.)



Science & Engineering Fair *Research Projects* (K – 5th Grade)

Targets for an Excellent Science & Engineering Fair Project

Advanced Proficient 5	“TRANSLATED”
Purpose and Problem <i>(Double Points)</i> (x2) States the Purpose and Problem clearly, addressing a valid scientific or mathematical concept. Provides evidence that they come from the student’s personal interests or experiences, and represent a genuine learning opportunity for the student.	Describe what interests you about this topic. Ask a question where you do not know that answer.
Hypothesis <i>(Double Points)</i> (x2) Hypothesis is complete (in one sentence), testable, directly addressing the stated problem, and reflects prior knowledge.	Try to answer your question. Give reasons for your reason.
Research <i>(Triple Points)</i> (x3) Cites four or more sources. There are at least three different types of resources. The student makes clear, in-depth connections between the research and their problem and hypothesis in their own words.	Research thoroughly from many sources. Connect the research to your question.
Conclusions Conclusion completely answers all aspects of the problem, states if the hypothesis was supported or rejected, and clearly cites evidence to explain why.	Use your research to answer your original question. Explain how you know if your hypothesis was right or wrong.
Visual Quality of Display Project is appealing and neat, and is readable at approximately 2 feet distance. It is well organized and clear, makes striking use of inventive or amusing visuals and/or models, and uses language and spelling flawlessly.	Make your project fun to look at with pictures and colors. Use large, clear lettering. Check grammar and spelling.
Sources <i>(at the end of the written report)</i> All sources are listed with complete information given, i.e., name, title, web address, date (as shown on pp. 19 and 20 in the Elementary Sci. Fair Handbook). One could easily find any of the sources as listed.	Carefully record where you found your information so others could find those sources, too.