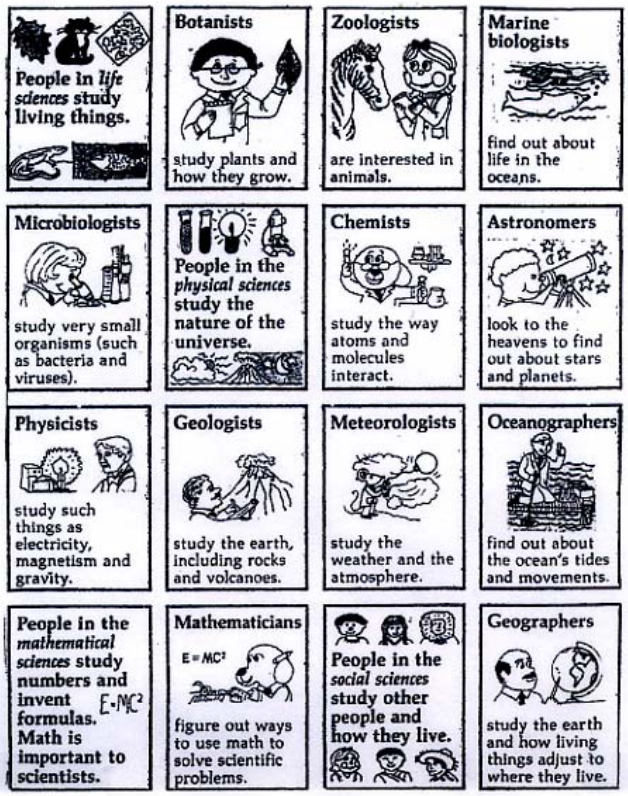
Help Wanted: Scientists



SCIENCE FAIR

AT

FORTS FERRY

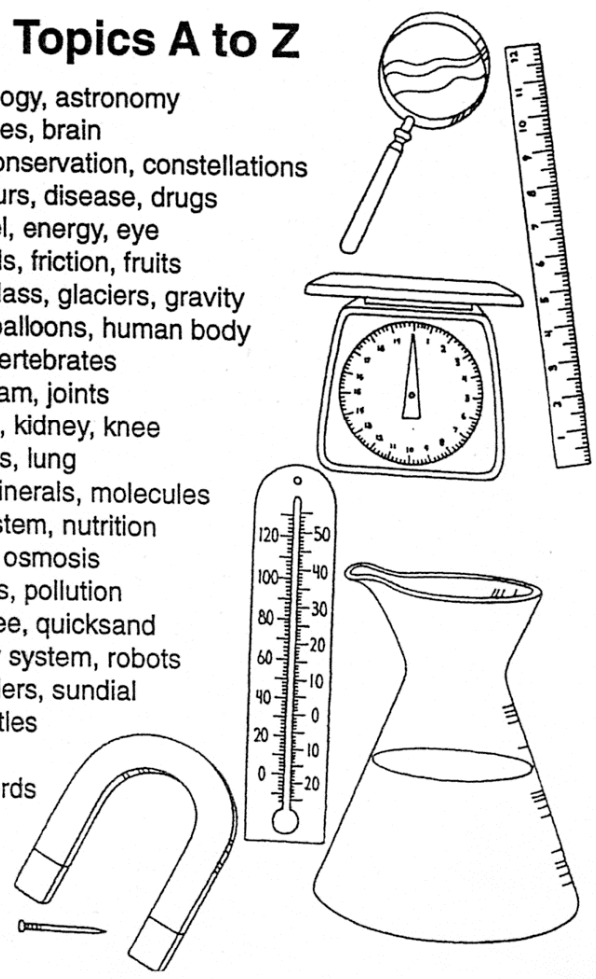
ON

MARCH 11, 2010

.me _____ Research

Science Topics A to Z

A amphibians, animals, archaeology, astronomy
B bats, biology, birds, boats, bones, brain
C chemistry, color, computers, conservation, constellations
D dew, digestive system, dinosaurs, disease, drugs
E ear, ecology, electricity, enamel, energy, eye
F fingerprints, fish, flowers, fossils, friction, fruits
G gardening, geology, giraffes, glass, glaciers, gravity
H habitats, heart, herbs, hot-air balloons, human body
I insects, instinct, insulation, invertebrates
J jellyfish, jet propulsion, jet stream, joints
K kaleidoscope, kangaroos, kelp, kidney, knee
L lava, life cycle, lightning, lizards, lung
M machines, magnets, matter, minerals, molecules
N natural resources, nervous system, nutrition
O oceanography, optical illusion, osmosis
P paleontology, petroleum, plants, pollution
Q quail, quartz, quasar, queen bee, quicksand
R rain forest, reptiles, respiratory system, robots
S soap, solar power, sound, spiders, sundial
T teeth, telescope, terrarium, turtles
U ulcers, unicycles, Uranus
V vertebrates, vitamins, vocal cords
W water, weather, work, worms
X x-rays, xylophone
Y yams, yeast, yogurt
Z zebras, zinnias, zucchini



Science Project Ideas

Plants

1. Will vitamins affect the growth of a plant?
2. Do weed killers affect house plants?
3. How do the moon phases affect plant germination?
4. How fast do roots grow?
5. Does the amount of light on plants affect their growth?
6. Does the amount of water given plants affect their growth?
7. What is the effect of detergent on bean seeds?
8. Under what color light do plants grow best?
9. In what kind of material (sand, clay, etc.) do seeds grow best?
10. What is the effect of chlorinated water on plant growth?
11. How do the number of seeds produced by different plants compare?
12. Will frozen seeds sprout?
13. Will plants grow better in soil or water?
14. What can be done to increase the decomposing rate of plants?
15. Do living plants give off moisture?
16. Do living plants give off oxygen?

Animals

Important! Treat all animals with respect. Do not mistreat animals in your experiments.

1. What kind of life can be found in 1 square meter of backyard soil?
2. How does a bird embryo grow in an egg?
3. Can mice distinguish color?
4. How do meal worms respond to light?
5. How does an earthworm react to light and darkness?
6. Do different kinds of caterpillars eat different amounts of food?
7. Do mint plants repel insects?
8. What color of flowers attract hummingbirds best?
9. What colors attract moths and other insects at night?
10. Does temperature affect the flash rate of fireflies?
11. At what rate do pets drink water?
12. What is the effect of temperature on the activity of (meal worms, crickets, etc.)?

Earth and Space

1. Does the moon rise every night at the same time and in the same location in the sky?
2. How accurate are long-range weather forecasts?
3. Is rainwater absorbed at the same rate in different kinds of soil?
4. From which direction does the wind blow most frequently?
5. How warm is it under the snow?

Human Body

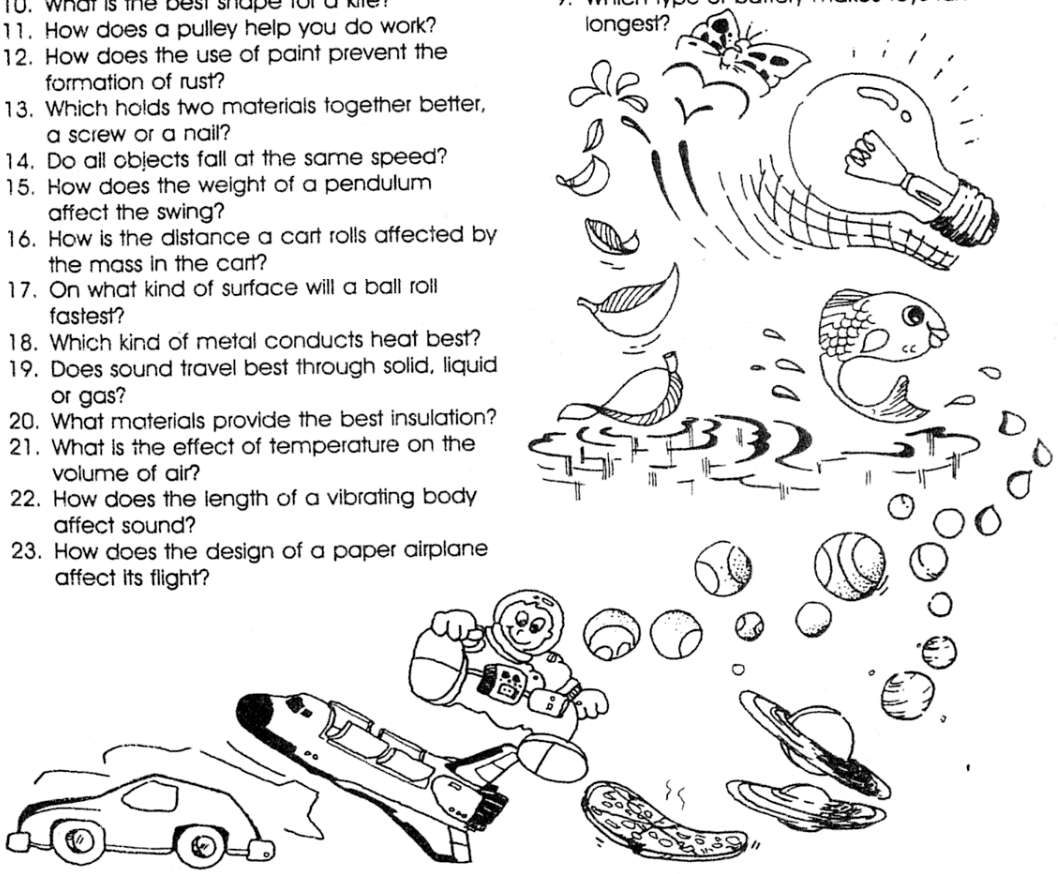
1. Which grows faster, body hair or scalp hair?
2. How do fingerprints differ?
3. Do all people have the same normal body temperature?
4. Are certain dominant traits exhibited in the same family?
5. Who has bigger hands, boys or girls?
6. How accurately can you tell the temperature of an object by touch?
7. Who are generally taller—boys or girls?
8. How fast do muscles get tired?

Physical Science

1. What is the effect of heat when dissolving sugar? salt?
2. Why is salt put on icy sidewalks?
3. What is the acidity of various household products?
4. How fast do fabrics burn?
5. What kind of materials can put out a fire?
6. Do all crystals have the same shape?
7. How much of the air is oxygen?
8. Can sea water be "desalted" by freezing?
9. How is the strength of a magnet affected by glass, cardboard and plastic?
10. What is the best shape for a kite?
11. How does a pulley help you do work?
12. How does the use of paint prevent the formation of rust?
13. Which holds two materials together better, a screw or a nail?
14. Do all objects fall at the same speed?
15. How does the weight of a pendulum affect the swing?
16. How is the distance a cart rolls affected by the mass in the cart?
17. On what kind of surface will a ball roll fastest?
18. Which kind of metal conducts heat best?
19. Does sound travel best through solid, liquid or gas?
20. What materials provide the best insulation?
21. What is the effect of temperature on the volume of air?
22. How does the length of a vibrating body affect sound?
23. How does the design of a paper airplane affect its flight?

Consumer Science

1. Which chewing gum holds its flavor the best?
2. Which detergent breaks up oil the best?
3. How does the absorption rate of various paper towels differ?
4. Which detergent makes the most bubbles?
5. How does the wattage of a light bulb affect energy use?
6. Which brand of popcorn pops the fastest?
7. Which brand of glue holds two boards together best?
8. Which brand of diaper holds more water?
9. Which type of battery makes toys run longest?



SCIENCE FAIR BOOKLET

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What exactly is a science fair anyway? A science fair is simply an event where you and your classmates display your science projects. By participating in a science fair, you are a real scientist. You can solve problems, make discoveries, create new inventions.

BE ORIGINAL! ***BE CREATIVE!***

BE SAFE! ***HAVE FUN!***

γ GETTING STARTED γ

The first step on your science fair adventure is choosing the right project. Ask yourself these questions:

© What kind of science interests me?

© What would I like to learn about?

© What special hobbies or talents do I have that I could use to put together my project? (Examples are stargazing, bird-watching, gardening.)

If you are having trouble choosing an idea, ask a parent or a teacher to help you select the best one.

γ THE PROPOSAL γ

Use the proposal form to submit your Science Fair Idea. Be specific. Students may work individually or in small groups. The due date for handing in proposals is written on the proposal form.

SCIENCE FAIR PROPOSAL

DUE TO SCHOOL OFFICE BY MARCH 1, 2010

STUDENT'S NAME _____

GRADE/TEACHER _____

PHONE _____ E-MAIL _____

TOPIC OF PROJECT _____

DESCRIPTION OF PROJECT _____

_____

_____

_____

_____

_____

I HAVE READ THE SCIENCE FAIR INSTRUCTIONAL BOOKLET AND UNDERSTAND THE REQUIREMENTS AND RESTRICTIONS.

STUDENT'S SIGNATURE _____
DATE _____

PARENT'S SIGNATURE _____
DATE _____

A CONFIRMATION OF ENTRY WILL BE SENT HOME.

Reminder- The following items are not allowed in science fairs: any body parts (except for teeth, hair, nails, or animal bone), hypodermic needles, drugs, dangerous chemicals, materials that explode or catch fire, live animals (including fish), or sharp objects.

γ HANDS OFF!! γ

The following items are not allowed in science fairs:
7any body parts (except for teeth, hair, nails, or animal bone)
7hypodermic needles
7drugs
7dangerous chemicals
7materials that explode or catch on fire
7live animals (including fish)
7sharp objects

γ THE RESEARCH γ

No matter what kind of project you do, you need to gather as much information about your topic as possible. When doing your research, use a wide variety of resources, including:
Bookstores
Libraries (for books, magazines, audio tapes and discs, videotapes and maps)
Museums
Hospitals
Websites

Lists of book sources and internet resources are available separately.

Don't forget to keep a careful list of all of your sources, no matter what they are.

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DOING THE PROJECT

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Once you've decided on your project, it's time to get to work. That includes doing research, completing your experiment and building your display.

Before you begin, consult the timetable on the cover letter. Count how many days you have until the Science Fair, and use the Science Experiment Outline form to help you plan.

γ PERFORMING AN EXPERIMENT γ

An experiment is a test that's designed to find the answer to a problem. Exploring the universe through science is exciting, but there are rules to follow. To gather and present information in an orderly manner, scientists use the scientific method, a step-by-step approach to discovering answers and solving problems. In general, the steps are:

1. Find a problem. Ask a scientific question that you are able to test. This is the **purpose** of your project.
2. Give the experiment a working **title**.
3. Gather as much information as possible on your topic from many resources.
4. Make a **hypothesis** - that is, a guess. Predict what the answer to the question will be. Be confident. Write your hypothesis in the form of a statement. Don't begin your statement with, "I think.".
5. Experiment! Use experimental **procedures** to test your hypothesis.
6. Collect **data** from the experiment. Record the results. .
7. Analyze your results. Figure out what the experimental data tell you by asking the questions below:

- © Do the results of your experiment tell you your hypothesis is on the right track or the wrong track? How?
- © Is it possible to repeat the experiment? Should you change the experiment in any way?
- © Did the experiment make you think of new questions that need answers?
- © How can the information you found be useful? How does it relate to the world in which you live?

8. Draw a **conclusion** and decide whether it proves or disproves your hypothesis.

γ TIPS FOR SUCCESS γ

/ Perform your test more than once to be sure your results are accurate. Repeat the first test exactly. (Each repeat is called a trial.) Record the results of each trial separately.
/ Keep a logbook. For each trial, record the date and time, any measurements, observations, or results, as well as any comments you have.
/ Be precise in taking and recording measurements and results.
/ If possible, take photographs of noticeable changes that take place during the experiment.
/ Be sure you don't gather only those results that say your hypothesis is correct. Finding the real answer is more important than proving your hypothesis is true.
/ ABOVE ALL, MAKE YOUR PROJECT SAFE!

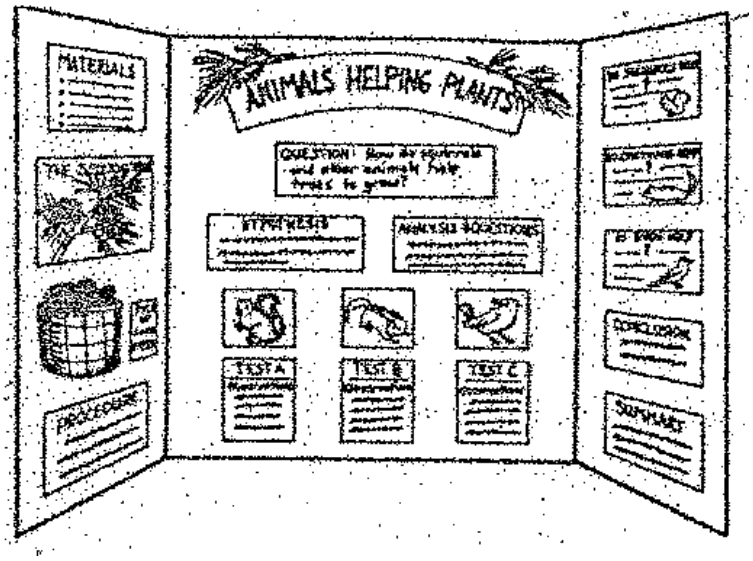
γ THE DISPLAY γ

The purpose of the display is to give a "project summary" at a glance. It is the first part of your science project that people will notice, so make it stand out. The display is made of tall boards, sturdy enough to stand on its own for several days. Your board must be no larger than 4 feet (trifold) wide by 3 feet high. Many stationery supply stores carry lightweight, three-sectioned board, perfect for a science fair display. Forts Ferry will also be selling display boards.
Make your display interesting. You can use snappy visual effects and colors. But be careful not to make your display so busy that people look only at it and not at your work!
Your display must include the following things, each typed or lettered neatly on separate paper to be attached to the display:

1. A descriptive **title** of ten words or less. The lettering should be easy to read and
   your title should be clear from a distance.
2. Your **name** and **class**.
3. The **purpose** of your project. This is a statement of the question. which you were trying to answer. It should be in question form.
4. Your **hypothesis.** This is your educated guess about the answer to the question.

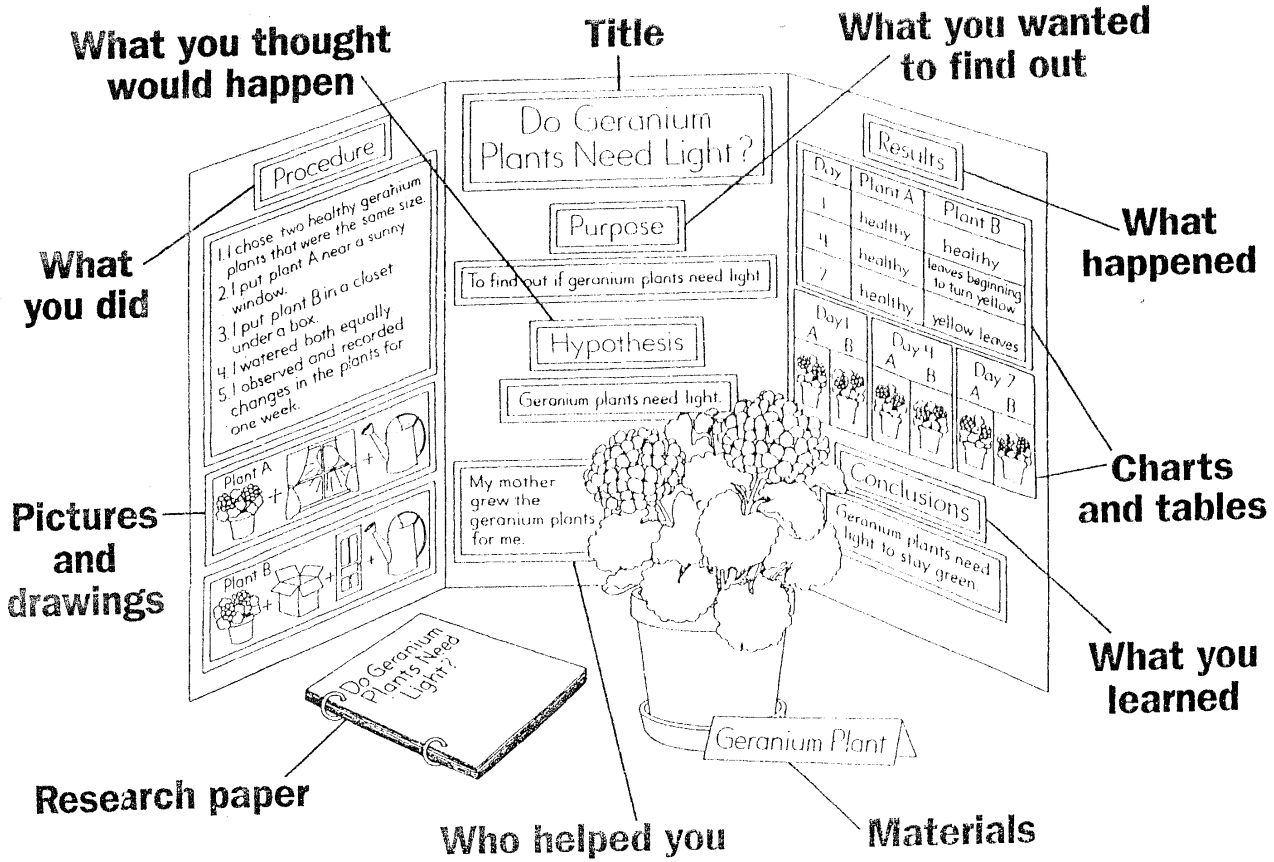
5. A short summary of your **procedures.** This is a step by step account of what you did. It should include the materials and methods used to reach your conclusion.
6. A short summary of your **data.** This is all of your results in the form of tables, charts, graphs, etc.
7. A short summary of your **analysis.** How your data supports, or does not support, your hypothesis. Use the notes in your logbook for this.
8. A short summary of your **conclusions.** A summary of what you learned, including an answer to your original question.
9. A list of your **resources**.

Use your space wisely. Fill the display board, but don't crowd things. Your presentation will be more spectacular if you use graphs, photographs, charts, drawings, diagrams, or samples. Triple-check your spelling and grammar, and remember that neatness counts. Be prepared to discuss your project with others.



NOTE: Photos and drawings are encouraged on the poster board.
Your project will be on display for one complete school day and all evening. Please be sure all items are securely attached to your poster board. Please be aware that other students may handle your exhibit. If you're worried that something may be broken, do not use it in your exhibit but display photos or drawings of it.

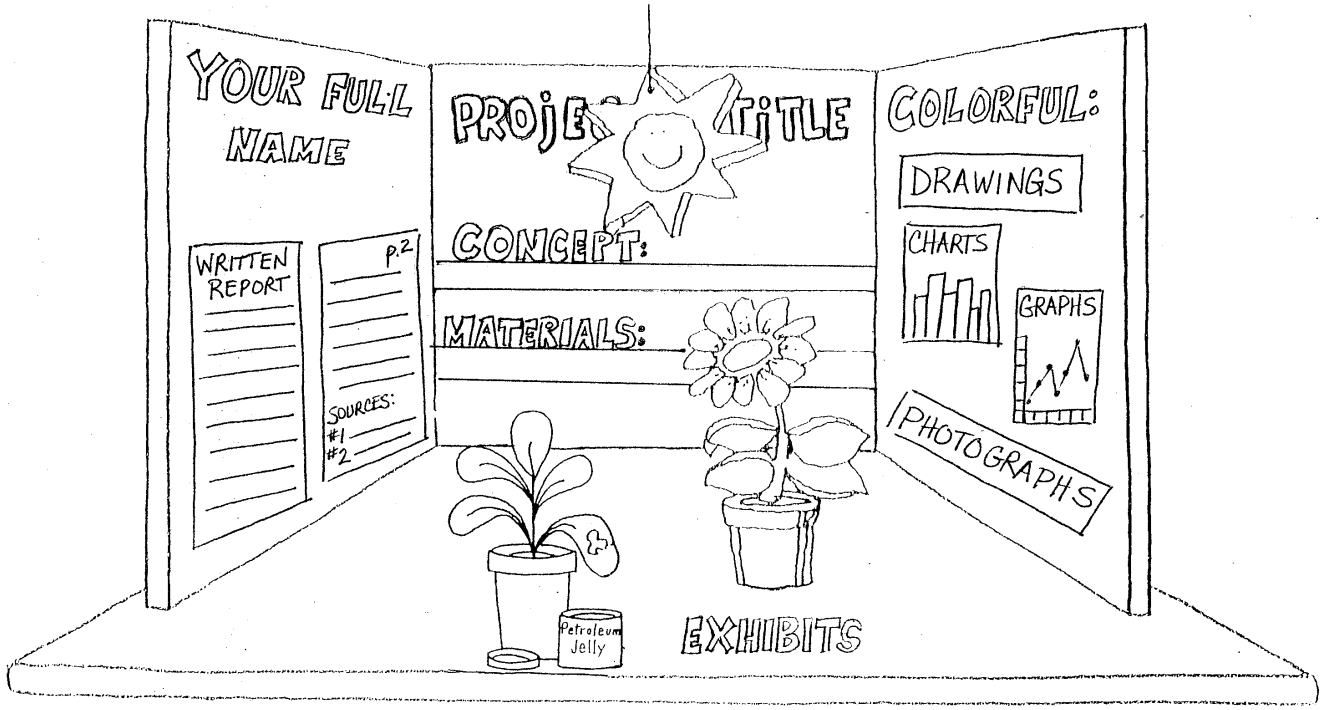
Displaying a Science Fair Project



Displaying Your Project

Name _____

Your display is a way of sharing what you have learned. A neat, attractive, colorful display with a "catchy" title will grab people's attention. You've spent a lot of time and energy on your research project. Take the time to do a good job on your display.



One of the most popular ways of displaying science projects is with a three-sided display.

SCIENCE EXPERIMENT OUTLINE (EXAMPLE)

THIS FORM IS NOT A REQUIREMENT, BUT YOU MAY FIND IT TO BE USEFUL FOR ORGANIZING INFORMATION

Name:_____

Materials:_____
_____
_____
_____

Procedure:_____
_____
_____
_____
_____
_____

Data:

Date	What I Did	What I Observed

Findings:_____
_____
_____
_____
_____

Conclusions:_____
_____
_____
_____
_____
_____

Evaluation (including what I could have done differently and how it would have affected the experiment):_____
_____
_____
_____
_____
_____