

## HOW DO I GET STARTED?

1. For project ideas, visit your library and consult books about science fairs, scientists, inventors, and experiments. The Internet is also a great resource. For the younger grades, keep it simple and keep it fun! Here are some great web sites to consider:

[www.scifair.org](http://www.scifair.org)

[www.ipl.org/div/kidspace/projectguide](http://www.ipl.org/div/kidspace/projectguide)

[school.discovery.com/sciencefaircentral](http://school.discovery.com/sciencefaircentral)

[www.stevespanglerscience.com](http://www.stevespanglerscience.com)

[www.tryscience.org](http://www.tryscience.org)

2. Decide if you want to work alone or with 1 or 2 friends.
3. Observe the science fair project on display in the Wolftrap Library and browse the resource books available for you there.
4. Look out for the Mad Scientist Committee which will be coming to YOUR classroom to give to show you a little bit of science!
5. **Please no animals, toxic chemicals or anything that may be harmful to others!**

### PROJECT STEPS

1. Research what interests you and choose a topic.
2. Understand the "scientific method".
3. Narrow your topic and/or develop your hypothesis (prediction). Keep it simple!
4. Plan your project by writing down detailed steps and dates for completion.
5. Get your materials and write your procedures.
6. Conduct your experiment or demonstration and record your results OR Construct your invention and test it. (Draw pictures or take photos.)
7. Write your conclusion based on your results. Organize data using graphs and charts. Was your hypothesis correct? Did your demonstration work as expected? Did your invention work as expected? If not, why?
8. Using a 3-SIDED DISPLAY BOARD, create your presentation of your project. Use the recommended formats provided on the next 2 pages. Attach the provided PROJECT LABEL with your NAME on the back of the board.
9. Place your project components in a bag or box and attach the provided PROJECT LABELS with your NAME on them.
10. Place the provided label(s) on the back of your project to tell us you either need ELECTRICITY or a MESS CLOTH!

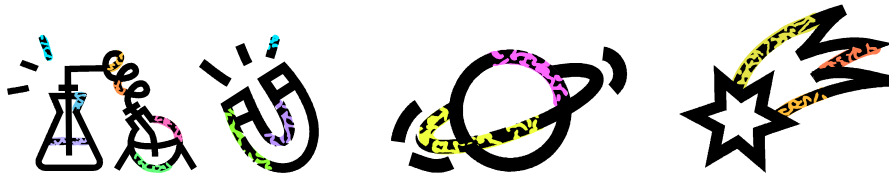
## **What is the Scientific Method?**

**Scientists use the scientific method to answer questions. This method is an organized way of finding answers and solving problems.**

**These are the basic steps:**

- 1. State a Question – What do you want to find out? Your questions should be very specific.**
- 2. Write Your Hypothesis – Your hypothesis is a possible answer to your question. Your hypothesis will be tested using an experiment. It is a guess of the outcome of the experiment.**
- 3. Conduct an Experiment – Design an experiment to test your hypothesis. Begin by writing down your *procedure*. Your procedure details all of the steps that you will take to conduct your experiment. Include the materials you will need to conduct your experiment.**
- 4. Collect and Interpret Your Data – As you conduct your experiment, you will collect data. Data can be recorded measurements or observations, drawings, diagrams, lists, photographs, etc. Organize your data into charts, tables, diagrams, and graphs so that you can think about it and determine the results of your experiment.**
- 5. State Your Conclusion – Using the results from your experiment, decide if your hypothesis was correct or incorrect and discuss why or why not.**

**When you have completed all of these steps, you are ready to take the products and make a science fair display board\*. You are now ready to show your project at the Edison Expo!**



## ***IDEAS TO JUMP START YOUR IMAGINATIONS***

### Inventions:

A shelter made of natural materials

A tool which would help your mom or dad perform a certain task

A new way to stay warm in the snow

### Experiments:

Study how many types of bird calls you hear at certain times of day

Determine how changing climates affect the growth of certain plants

What's in our drinking water?

What color of light causes green beans to grow best?

Do soap bubbles last longer on hot or cold days?

### Demonstrations & Other Projects:

Study how a certain animal adapts to cold or hot weather

Determine how mountains or oceans affect weather

Analyze how high altitude affects the human ear

Demonstrate how the Earth's crust moves to form mountains

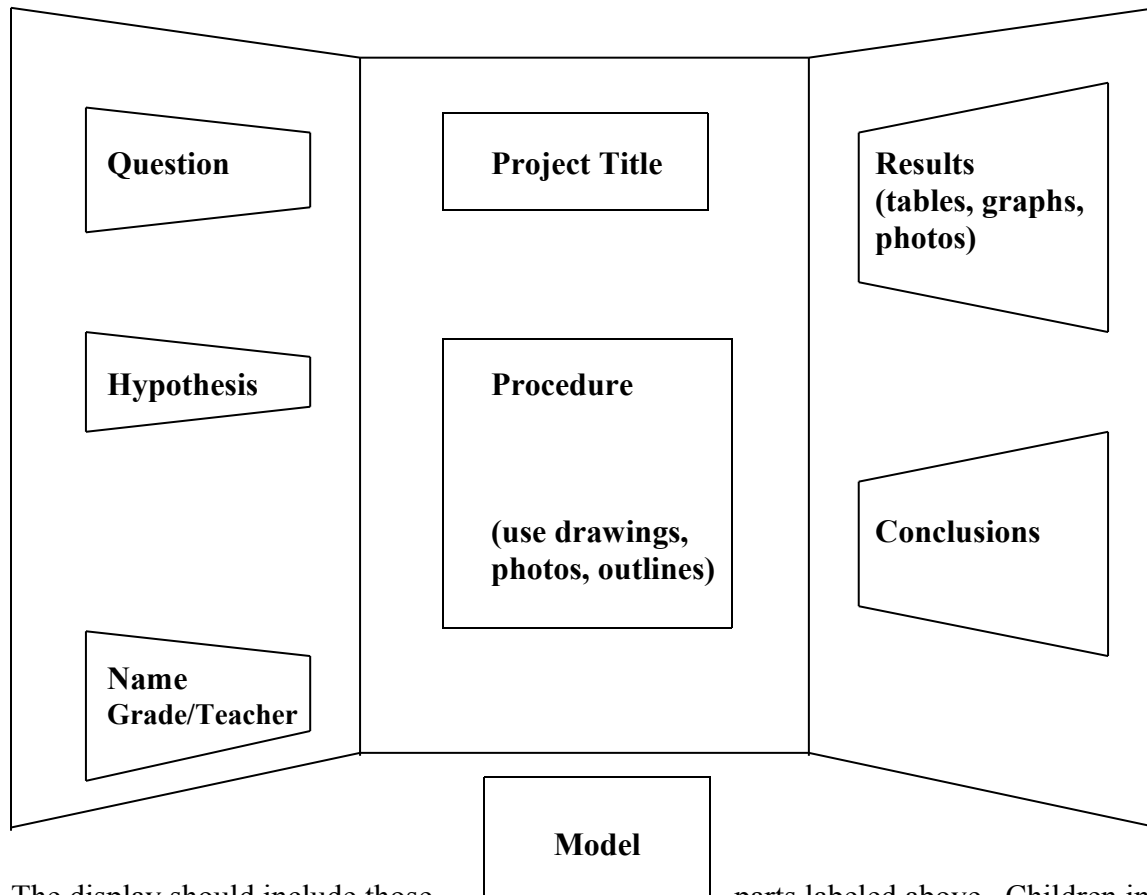
Research how hurricanes form

### Concepts to Consider:

Pollution, Magnetism, Senses, Gravity, Electricity, Energy, Sky watching,

Weather, Chemical Properties, Motion, Simple Machines, Buoyancy

## SUGGESTED FORMAT FOR EXPERIMENTAL DESIGN PROJECT



The display should include those parts labeled above. Children in grades K-1 may dictate to their parents, the text should clearly reflect the child's work.

### Students in grades 4-6 may wish to include the following additional elements:

- Independent variable:** The variable that the investigator controls: the cause.
- Dependent variable:** That which depends on the independent variable for its value: the effect.
- Constants:** All elements which were kept the same during the experiment and cannot affect the results.
- Controls:** The absence of the independent variable: the group that is used as a standard in the experiment. It may also be a group designated by the scientist as a comparison group.
- Repeated trials:** The number of experimental repetitions, objects, or organisms tested. Repeated trials are used to reduce the effects of chance or random errors that may occur in a single trial. Projects should include at least five trials.

## SUGGESTED FORMAT FOR

## INVENTION or DEMONSTRATION DISPLAY

**Purpose**

**Tell what problem was solved**

**Inventor's name  
Grade/Teacher**

**Name of Invention**

**Illustration  
(label all parts)  
Materials**

**Model**

**How it works**

**Explain how it operates**

The display should include all parts labeled above.  
Make your display neat, colorful, and easy to read.  
Children in grades K-1 may dictate to a parent, but the text should clearly reflect the child's work.