



Steps of the Scientific Method	Detailed Help for Each Step
<p>Ask a Question: The scientific method starts when you ask a question about something that you observe: How, What, When, Who, Which, Why, or Where?</p> <p>And, in order for the scientific method to answer the question it must be about something that you can measure, preferably with a number.</p>	<p>Your Question</p>
<p>Do Background Research: Rather than starting from scratch in putting together a plan for answering your question, you want to be a savvy scientist using library and Internet research to help you find the best way to do things and insure that you don't repeat mistakes from the past.</p>	<p>Background Research Plan Finding Information Bibliography Research Paper</p>
<p>Construct a Hypothesis: A hypothesis is an educated guess about how things work: "If _____ [I do this] _____, then _____ [this] _____ will happen."</p> <p>You must state your hypothesis in a way that you can easily measure, and of course, your hypothesis should be constructed in a way to help you answer your original question.</p>	<p>Variables Variables for Beginners Hypothesis</p>
<p>Test Your Hypothesis by Doing an Experiment: Your experiment tests whether your hypothesis is true or false. It is important for your experiment to be a fair test. You conduct a fair test by making sure that you change only one factor at a time while keeping all other conditions the same.</p> <p>You should also repeat your experiments several times to make sure that the first results weren't just an accident.</p>	<p>Experimental Procedure Materials List Conducting an Experiment</p>
<p>Analyze Your Data and Draw a Conclusion: Once your experiment is complete, you collect your measurements and analyze them to see if your hypothesis is true or false.</p> <p>Scientists often find that their hypothesis was false, and in such cases they will construct a new hypothesis starting the entire process of the scientific method over again. Even if they find that their hypothesis was true, they may want to test it again in a new way.</p>	<p>Data Analysis & Graphs Conclusions</p>
<p>Communicate Your Results: To complete your science fair project you will communicate your results to others in a final report and/or a display board. Professional scientists do almost exactly the same thing by publishing their final report in a scientific journal or by presenting their results on a poster at a scientific meeting.</p>	<p>Final Report Abstract Display Board Science Fair Judging</p>

CHOOSE A TOPIC

Get an idea of what you want to study. Ideas might come from hobbies or problems you see that need solutions. Places to look for ideas include texts, magazines, newspapers, television, or conversations with professionals in your area of interest. Remember that a scientific project is not a model or a demonstration. You are going to have to work with this topic for a semester. Pick something you can work with and will not get 'tired' of easily.

BRAINSTORMING: make a quick list of topics or areas in science that interest you in the space below.

www.sciencebuddies.org Look at this website under Project Ideas for help.

Looking over your list, circle your top 5 topics or areas. Take some time and really think about your top 5 topics. If you are working in a group, compare your top five with the group. The group needs to agree on a topic or area.

What is your final topic/area: _____

How many sources did you find on your topic? _____

NARROW TOPIC SCOPE

Once you have a specific area chosen for your topic, form a hypothesis in an IF/THEN format. Remember that you are trying to test your idea. *IF you do this THEN this will happen*

IF _____

THEN _____

Having trouble? Talk to a science sponsor or teacher.

Once you have your IF/THEN think about how you are going to test this.

How much time do you think it will take you to test your idea?

Do you have the equipment necessary to do this project?

Will this project cost too much for you to do?

Think about the above answers. If you don't have the time or the money to do what you have come up with, go back and rethink your topic.

SCIENCE FAIR PROJECT PROPOSAL FORM

****Return to Ms. Eardley or Ms. de Vries by October 1st** (October 15th for new members)**

Student Name or Names: (You may have a group of up to 3 people)

Grade

1. _____

2. _____

3. _____

Purpose of your Project :

Project Category:

- Behavioral/Social/Health Science
- Earth Sciences
- Engineering Technology
- Mathematics
- Biology
- Ecology/Environmental Science
- Physical Science

Does your project involve any living organisms or human subjects? If yes, explain.

Description of Experiment:
