

How to Come Up with a Great Science Fair Project in Four (or maybe five) Easy Steps: A Guide for Kids and their Parents

Step 1: Think of something from the world that you are interested in learning about. Suggestions:

Plants	Salt	Dogs	Paper towels	Crystals
Sugar	Plastic bottles	Toilet paper	Glass	Skin
Rubber bands	Clouds	Muscles	Metals	Friction
Seeds	Ice cream	Birds	Shampoo	Teeth
Leaves	Yeast	Mice	Laundry detergent	Smoke
Water	Bread	Goldfish	Toy cars	Soccer balls
Snow	Hair	Paper	Soaps	Soil
Ice	Breakfast cereal	Snails	Kids	Jello
Rocks	Magnets	Germes	Marbles	Toy cars

Others: _____

Step 2: List properties of a thing you are interested in. What is it like? What does it do? What is it used for? How does it behave?

Examples: Paper towels absorb liquids, wipe up spills, are soft, tear easily, cost money at the store ...

Seeds: germinate when wet, swell up when wet, germinate when exposed to wild fires ...

Ice: melts, freezes, is slippery, is white or clear, is cold, forms on some lakes, but not others ...

Properties of something I'm interested in: _____

Step 3: List things that affect a property of something that you are interested in by filling in the blanks in either question:

“How does _____ affect _____ (the thing you are interested in)?”

“What is the effect of _____ on _____ (the thing you are interested in)?”

Examples: Does the cost of a paper towel affect its ability to absorb liquids?

How does heat from wild fires affect the ability of seeds to germinate?

What is the effect of water temperature on how fast ice cubes freeze solid?

Step 4: Pick one of these questions as the question for your science fair project. Think of how you might test this question. Testing the question is your science experiment.

Examples: Purchase several brands of paper towels that cost different amounts and measure how many milliliters of water each can absorb.

Expose a few different kinds of seeds (pinto bean, lupine, pine, grass) to heat in the oven (with an adult's help) and then plant the seeds in wet paper towels on a window sill to see how many germinate.

Put cool, warm, or hot water into identical ice cube trays, put them in the freezer, and measure how quickly the ice cubes freeze solid.

Step 5: Things to keep in mind for an even better science experiment:

- Be careful not to ask a question that can be answered “yes” or “no”. Stick to the “How does ___ affect ___?” question format and your results and conclusions will be much more interesting than “yes” or “no”.

- Keep a science fair notebook. Write down your question ideas. Write down your ideas while planning. Record any sources of information, even people that you talk to, in your science fair notebook. Once you have decided on a question, write down what you think will happen (your hypothesis) and why you think it will happen. For example, I think the Bounty paper towels will absorb the most water because they cost the most, and more expensive things should be better. Record your results. A science fair notebook should be a record of planning and carrying out the experiment, not a duplicate copy of printed material from the display board.
- It might help to read about what you are interested in before deciding exactly what to do. For example, you could read about what kinds of plants grow well after a wild fire before deciding which seeds to use in the third example. Be sure to record in your science fair notebook the title, author, publisher, date, and useful pages of any books that help you, or the web page address, author, and web page title for any internet sites that help you. You will include this information in your bibliography.
- If your experiment involves people or animals, you must get permission from the Internal Review Board (IRB) before doing the experiment. Write out your experiment idea and have your teacher help you get permission from the Incline Elementary IRB. For example, if you wanted to compare how well girls and boys solve math problems, you are using people in your experiment and need to work with the IRB.
- If you are measuring something (distance, temperature, time, speed, weight, height...), the judges will want to see that you repeated the experiment several times to show that it came out the same way each time. Plan to do three (or more if it's easy) trials for each condition measured. For example, test to see how many ml of water a paper towel can absorb three times for each brand. You can average your measured results for each brand and report both the individual measured amounts and the averages. Show your measured results in a graph or chart, as judges like to see these, too.
- Make sure that you are testing only one thing (one variable). For example, use the same kind of ice cube tray and the same freezer on the same day to see how quickly water of different temperatures freezes solid. If you use different ice cube trays, the amount of water and shape of the ice cubes will be different, and these things could affect how quickly the water freezes. You want to make sure that you are testing only the affects of water temperature on how quickly the water freezes.
- After you have answered your question in the conclusion to your experiment, talk about why you think the results came out the way they did. Did the results support your hypothesis, or was your hypothesis wrong? What could you have done differently? What could you do to learn more about this? Judges love to see this kind of thinking about what happened and what else might happen in a conclusion.

The eight parts of a great science fair display: (all are on a display board except the notebook)

- 1) Title: The title should accurately name your experiment, but eye-catching or clever titles are a plus.
- 2) Question: State your question and maybe a sentence or two about how you thought of it.
- 3) Hypothesis: What do you think will happen and why?
- 4) Procedure: List what you did with enough detail so that another student could repeat your experiment.
- 5) Results: Summarize your data in graphs, charts, tables, descriptive text, or pictures.
- 6) Conclusion: State how the question was answered by the experimental results. Did the results support your hypothesis, or not? See step 5 above.
- 7) Bibliography: What sources (books, internet sites, people) do you get information or help from? List these.
- 8) Notebook: Place your working notebook (not a duplicate of text on your display) on the table in front of your display. A notebook is necessary for a project to win at Western Nevada Regional Science Fair.

For more help:

Go to the Western Nevada Regional Science Fair web site at <http://nevadasciencefair.net/StudentInfopage.htm> to find out more about how to do a science fair experiment. Click on the menu links on the left or at the top for more ideas, resources, and specific rules for the displays.