Fammatre Science Fair!

Science Fair Checklist

Things To Do:

- Select a topic that really interests you.
- Have your project approved by your parents/teacher and submit the entry form before starting (watch your dates).
- Get help from your parents, the library, newspapers, the internet, etc.
- Plan a procedure for your experiment.
- Keep progress notes. Include ideas, notes on reading, and plans for your experiment.
- Find ways to measure, observe and record what happens to each thing that is involved in your project.
- Check all your results.
- Test any working parts well ahead of time.
- Keep your presentation simple.
- Describe clearly your results and conclusion.
- Plan a way of showing your project so that a person your own age can understand it.
- Use colorful, accurate graphs where appropriate.
- Understand your project and be able to answer questions concerning it.
- Think for yourself! See if you can look at a question in a new and creative way.

Things NOT To Do:

- Don't use commercial or store bought kits
- Don't choose a topic just because it sounds easy. Choose something you will enjoy finding out about.
- Don't choose a problem that is too big or complicated for you to handle.
- Don't wait until the last minute! Be organized and give yourself plenty of time to work on your project.

What if my Experiment Fails?

There is no failure in scientific experimentation. You may not get the results you expected. This happens sometimes but ***don't worry***, you should still present your work. Present what you did on your science board. In the conclusion section of your presentation, suggest ways to investigate why your experiment did not turn out the way you expected. Reworking a hypothesis is common for scientists. They usually repeat the experiment, and if the experiment still does not give the result they expect, they ask their question in a different way or redesign the way the experiment was conducted.

Six Types of Science Fair Projects

Type 1 - Do An Experiment – Ask your question and then design an experiment to try to answer it. Record your results carefully so that you can report them accurately. Then, explain your answer. If it's not what you expected, think of reasons why it may have turned out the way it did. Here are the 6 steps of the scientific method to guide you in your quest:

1. **Question**: Choose a question that interests you. Make it a question that you will be able to answer by doing an experiment
   - "Does a daisy grow taller in soil or sand?"

2. **Purpose**: What do you want to learn? Ask your question.
   - "I want to find out whether I should buy sand or soil to grow the tallest daisies."

3. **Research**: Find out as much about your topic as you can. Use your library, the Internet or ask an expert to find out all the information you can about your topic.
   - "I need to know which type of daisies will grow the fastest so I can use them in my experiment."

3. **Hypothesis**: Based on your research, predict the answer to the problem.
   - "My hypothesis is that a daisy will grow taller in soil than in sand."

4. **Experiment**: Design an experiment that has only one variable so you will know the reason you got your results.
   - "I will grow one daisy in sand and one daisy in soil. Everything else will be the same."
   -

5. **Results**: Record what happened during the experiment.
   - "I will keep a journal of each daisy's growth."

6. **Conclusion**: Was your hypothesis correct? Write down what you found out and explain your results.
   - "My conclusion is that a daisy grows taller in soil than in sand."

Type 2 - DEMONSTRATION. Demonstrate how something works, a science phenomenon, or how something is created naturally or in the lab. Your project should include your background material and research.

Type 3 - RESEARCH. Explore a scientific area in depth and detail and report your findings in an interesting way. You may gather your information from books, on-location visits, interviewing experts, or writing away for information, to name a few ideas.

Type 4 - COLLECTION. Do you have the greatest fossil collection in California? Then Show us! Display and discuss in detail your set of specimens. Examples of scientific collections include rocks, shells, fossils, insects, abandoned birds' nests, etc. The project should include research and detailed scientific information about your collection.

Type 5 - APPARATUS. Display some kind of scientific apparatus or instrument and describe its use or function in detail. The project should make clear the importance of its use for science and the general public.

When completed, all projects should contain these components (neatly handwritten or

typed and posted on your display board):

Type 6 – INVENTION Use the engineering method to invent something.

Define the Problem: Find a problem that needs a solution.

Research: Find out as much about your topic as you can. Use your library, the Internet or ask an expert to find out all the information you can about your topic.

Specify Requirements: Based on your research, define how your invention should work and what items are required to build it.

Build prototype: Design and build a working model of your invention. Test it out to see how it solves your original problem

Test: Record what happened during the trial. Redesign if necessary.

Conclusion: Communicate your results. Was your problem able to be solved with your invention? Write down what you found out and explain your results.

What Should Your Project Include?

When completed, all projects should contain these components (neatly handwritten or typed and posted on your display board):

1. **Title -** Give your project a title that includes eye-appeal and relates to your experiment
2. **Background and Purpose** – include information that you already know about your subject and/or tell your project readers why you chose the project you did.
3. **The Question** – select your subject
4. **Hypothesis** – a prediction or explanation of how you think things will work out
5. **Methods and Materials** – the way you conducted your experiment, obtained your collection, or made your observations
6. **Results** – your record of what actually happened; this may include graphs, charts, photos or specimens
7. **Summary** – state your conclusions; explain why you think things turned out the way they did
8. **References** – list the people or sources you used to gather information.

Science Fair Display

A good display will attract attention to your work and help others to learn from what you have done. The purpose of the display is to summarize your project.

The Synopsys Outreach Foundation will provide all participants with a three-sectioned display board. Your display must include summaries of the problem, hypothesis, procedures, results and conclusions. You may use written materials and/or you may include graphs and photos.

You will be limited to 42" of space on the table top. Be sure to attach any small items to your display so they do not wander off.

Fammatre students are the main audience for the science fair. Keep things simple so the kindergartners, as well as the 5th graders, can understand your project.

Fammatre Science Fair Safety Rules

1. Have Fun!

2. Each student may enter only one project. Clearly mark your name and grade level on your display board.

3. Entry forms must be submitted before beginning your project.

4. All experiments using vertebrate animals or humans as the subject must cause no harm or undue stress to the subject. These projects must have the written approval of the committee before beginning the project. Supervision by an adult or veterinarian will be required

5. No live vertebrate animals may be exhibited at the Science Fair. Models, stuffed animals or photographs may be used instead.

6. No human body parts should be displayed. Exceptions are teeth, hair and nails.

7. Students may not display experiments using live mold/bacteria cultures.

8. No dangerous or combustible chemicals may be displayed at the Science Fair. Rockets and engines must not contain fuel. All chemicals displayed should have the contents clearly marked on the container. No volcanoes will be allowed.

9. No open flames will be permitted.

10. No electrical outlets will be provided.

11. Student experimenters should wear safety goggles (eye protection) and follow standard safety practices. Parent supervision may be required.

12. Expensive or fragile items should not be displayed. Valuable items essential to the project should be simulated or photographed.

13. Collections such as minerals, shells, and feathers should be protected with a covering of plastic wrap.

14. Items to be displayed in front of a backboard should be adequately secured to a piece of plywood.

15. Carefully pack all materials when transporting to and from the Science Fair.

16. No pre packaged kits should be used for projects.

While supervision will be provided, the Science Fair Committee and Fammatre School and staff cannot be responsible for theft or breakage.

Science Fair Project Ideas

Here are some suggestions that you could turn into projects:

PLANTS

- Will vitamins affect the growth of a plant?
- Do weed killers affect house plants?
- How do the moon phases affect plant germination?
- How fast do roots grow?
- Does the amount of light on plants affect their growth?
- Does the amount of water given plants affect their growth?
- What is the effect of detergent on bean seeds?
- Under what color light do plants grow best?
- In what kind of material (sand, clay, etc.) do seeds grow best?
- What is the effect of chlorinated water on plant growth?
- How does the number of seeds produced by different plants compare?
- Will frozen seed sprout?
- Will plants grow better in soil or water/
- What can be done to increase the decomposing rate of plants?
- Do loving plants give off moisture?
- Do living plants give off oxygen?
- What is the effect of fats and cholesterol on plants?

ANIMALS

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

EARTH SCIENCE

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

HUMAN BODY

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

PHYSICAL SCIENCE

- What is the effect of heat when dissolving sugar? Salt?
- Why is salt put on icy sidewalks?
- What is the acidity of various household products?
- How fast do fabrics burn?
- What kind of materials can put out a fire?
- Do crystals have the same shape?

- How much of the air is oxygen?
- Can seawater be "desalted" by freezing?
- How is the strength of a magnet affected by glass, cardboard and plastic?
- What is the best shape for a kite?
- How does a pulley help you work?
- How does the use of paint prevent the formation of rust?
- Which holds two materials together better, a screw or a nail?
- Do all objects fall at the same speed?
- How does the weight of a pendulum affect the swing?
- How is the distance a cart rolls affected by the mass in the cart?
- On what kind of surface will a ball roll fastest?
- Which kind of metal conducts heat best?
- Does sound travel best through solid, liquid or gas?
- What materials provide the best insulation?
- What is the effect of temperature on the volume of air?
- How does the length of a vibrating body affect sound?
- How does the design of a paper airplane affect its flight?

CONSUMER SCIENCE

- Which chewing gum holds its flavor the best?
- Which detergent breaks up oil best?
- How does the absorption rate of various paper towels differ?
- Which detergent makes the most bubbles?
- How does the wattage of a light bulb affect energy use?
- Which brand of glue holds two boards together best?
- Which brand of popcorn pops fastest?
- Which type of battery makes toys run longest?
- Which type of diaper holds the most water?

Other General Topics

acids and bases	airplanes	amphibians	anatomy	animal behavior
astronomy	atoms	birds	bones	cells
circulatory systems	colors	computers	crystals	digestion
dinosaurs	diseases	electricity	energy	engines
flowers	food chains	fossils	geology	gravity
heart	heat	insects	invertebrates	jet propulsion
learning	light	liquids	machines	magnetism
mammals	muscles	medicine(s)	migration	molds
nutrition	ocean life	parasites	planets	plants
pollution	reptiles	robots	rockets	rocks
seeds	senses	shells	sound	tides
trees	vertebrates	water	weather	yeast

Help Choosing a Topic

Books. Books on science experiments and science projects are available in libraries (including the Fammatre Elementary School Library) and bookstores.

Web Sites. Science web sites for kids are available (see below).

Science and Science Fair-related Web Sites

"The Ultimate Science Fair Resource"
www.scifair.org

Lawrence Hall of Science at Berkeley
www.lhs.berkeley.edu/kids/kidshome.html

National Wildlife Foundation
www.nwf.org/kids/

Sea World/Busch Gardens Animal Resource
www.seaworld.org/

National Geographic
www.nationalgeographic.com

Zoom ZoomSci Activities:
http://pbskids.org/zoom/sci/experiments.html

The Exploratorium:
http://www.exploratorium.edu/

ScienzFair™
http://members.aol.com/ScienzFair/ideas.htm

Youth Science Foundation, grades 1-4:
http://www.stemnet.nf.ca/sciencefairs/primary.html

Youth Science Foundation, grades 4-6:
http://www.stemnet.nf.ca/sciencefairs/elem.html

Science Fair Idea Exchange:
http://www.halcyon.com/sciclub/cgi-pvt/scifair/guestbook.html

The Science Club Kids' Science Projects:
http://www.halcyon.com/sciclub/kidproj1.html

Discovery Channel School Science Fair Central:
http://school.discovery.com/sciencefaircentral/scifairstudio/ideas.html

Ultimate Science Fair Resource, ideas list:
http://www.scifair.org/ideas/index.shtml

Ultimate Science Fair Resource, ideas board:
http://www.scifair.org/board/index.shtml

Biomes, site for Missouri Botanical Gardens
www.mobot.org/MBGnet/sets/

Rain Forest information
www.ran.org/ran/kids_action/

Hughes Medical Center site of science for kids
www.hhmi.org/coolscience/

Sites with experiments included
www.brainpop.com
www.madsci.org/
www.geocities.com/Athens/1850/listscience.html

Resource about rocks
www.cotf.edu/ete/modules/msese/earthsysflr/rock.html