California Montessori Project,

Elk Grove Campus

SCIENCE FAIR AND PANCAKE BREAKFAST

Saturday, February 11, 2012

Pancake Breakfast 8:30-10:30 a.m.

Science Fair 9:00-12:00 p.m.

Science Fair & Pancake Breakfast

Where The World of Science Comes Alive!

The purpose of the CMP Elk Grove Science Fair is to provide an opportunity for students to display their creativity, work, and scientific process skills acquired in their studies. It is an event to spark the interest of all students about the different areas of study and that they can pursue in the future. We want to provide opportunities for students to apply their science process skills and critical thinking, and to learn about science and how scientists work.

The project that is chosen should reflect the child's interest and ability. We encourage parents to assist their children, but to please remember that it is the CHILDREN'S Science Fair. Of course, for most children, the competition of a Science Fair peeks their interest and yet we want to focus on the aspect of learning and sharing what has been learned.

The Science Fair and Pancake Breakfast will be held on Saturday, February 12th . The Pancake Breakfast is from 8:30 to 10:30 and the Science Fair is from 9:00 to 12:00. The Pancake Breakfast is for families to enjoy and then take the opportunity to tour the classrooms to observe the fabulous science fair projects. Each student will have the opportunity to explain their project to their class members to show their understanding of the process and purpose of the project. Projects will be available for pick-up at 12:00 or the following Monday, February 15th.

Thank you for supporting the students in an event they can remember for the rest of their lives and as they achieve academic success!

Tips for Parents
Assisting Your Child Scientist with an Enjoyable Project

Selecting a project: Keep it simple? The best project is interesting for your child, but not too complicated or difficult. The projects should be done by *child scientist,* with *adult assistants!* If you are using plants, allow at least 5 weeks for them to grow.

Making a display: Most kids enjoy doing a science project at home. For the very little ones (K and 1st grades), choose a project where the child can show what happened by drawing a picture. Use the Scientific Method to organize the project. Even for older kids, a picture is worth 1,000 words. Simple bar graphs are a great way to show information. In addition, a brief sentence or two is often sufficient to state how the child did the experiment, what happened, what they were trying to find out, etc.

It's O.K. for a parent to help with the writing for the very young studnets, but please use the child's own words. Even a kindergartner can copy a sentence in their own printing, or at least print headings, for the display. Likewise, a parent can give their child suggestions on how to make the display look nice, and encourage the child to do neat work. The children are so proud of things they have done *themselves* and learn so much by doing!

Safety Reminders:

1. All **liquids** must be securely contained.
2. **DO NOT** display anything hazardous. (Use diagrams, drawings, and photos instead.) **No flammable, combustible, caustic or dangerous materials** are allowed.
3. **Electrical Devices** must be safe.
4. **Bacterial or fungal cultures** (including bread mold and stinky cheese) must be secured in an airtight container. Photos or drawing are preferred to live displays.

Displays considered unsafe will not be allowed in the Fair!

Last, but not least: This year, the Science Fair is **not** a competition; there is no judging. Every participant is a winner, and everyone gets a ribbon for their participation. Making a Science Fair project can be a really fun way for parents to help their children explore science. So good luck to all, and enjoy the Fair.

Science Fair Project Guidelines

1. Experiment

An experiment can be a test made to demonstrate a known scientific fact. It can also be a test to determine if a hypothesis (your educated guess of what will happen) is accurate.

Project/Problem: What scientific question will you be attempting to answer?
Research: Learn about your question.
Hypothesis: What do you think will happen (answers the above question)?
Procedure: How will you test your problem?
Materials: What materials will you need?
Data: Show your results in a graph or display.
Conclusion: What did you learn?

2. Model or Demonstration

A model is a small object usually built to scale that represents some already existing object. A demonstration is an illustration or explanation of a scientific principle that shows how and why something works.

Project: What scientific question are you trying to demonstrate or model?
Research: Learn about your question.
Materials: What materials will you need?
Procedure: Write a description of what you plan to do. How will it be displayed?
Conclusion: What do you hope to teach others with your demonstration or model?

3. Collection

A collection is a grouping or gathering of various objects which must be scientifically related and demonstrate that you have learned something through the process of collecting and categorizing. Items should be categorized and labeled correctly using scientific names when available.

Project: *What will you collect?* What scientific question will your collection illustrate?
Research: Learn about your question.
Materials: How will you obtain the items for your collection?
Procedure: How will you organize and label your collection? How will your display illustrate your research and collection?
Conclusion: What do you hope to learn and teach others with your collection?

The Scientific Method

For projects which involve experiments

Use the following five steps of the scientific method when conducting an experiment

1. Identify the problem
Think about what area of science interests you. Narrow your focus down to a specific question.

2. Collecting Information
Research your topic. Take notes on information that you think will be important for your experiment.

3. Develop a hypothesis
A hypothesis is an *educated* guess. It takes into account the research you have done and also your opinion of what you think will happen. What do you think will happen when you perform your experiment? The hypothesis answers your question.

Example: Plant food "B" will cause the lawn to grow faster.

4. Plan and conduct an experiment
First, make a plan for how you will do your experiment and a list of all the materials you will need. Conduct your experiment and observe what happens. In your experiment, make sure that you are only changing one variable at a time. This means that everything should be the same among the tested items (conditions remain constant). The only difference (variable) would be the procedure or item being tested in that part of the experiment. Keep a journal to record what you did and your observations – changes, growth or other results of your experiment. Photos or illustrations of the progress of your experiment are good ways to display what you did and what your results were.

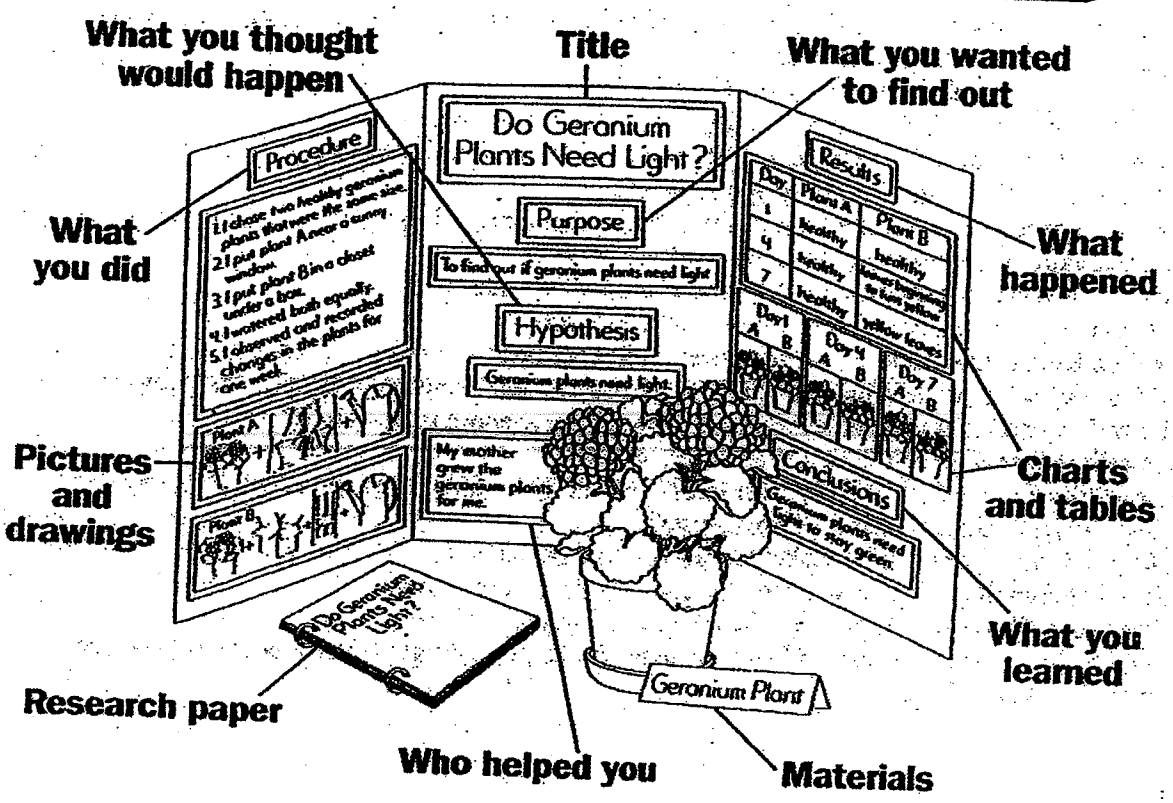
Example: All lawns being tested should be treated the same (conditions remain constant): the same type of grass soil, temperature, sunlight, water feeding times, etc. The only difference (variable) would be the plant food fed to the lawns. Make a chart of the weekly lawn growth.

5. Display results.
This could be a picture or a graph or a table showing your results.

6. Draw a conclusion
Analyze the results of your experiment. Draw a conclusion based on your results. Was your hypothesis correct? Why or why not? Your conclusion should tell what you learned by conducting the experiment. Remember, an experiment is *not* a failure if the hypothesis is proven wrong!

Example: The lawn fed with plant food "A" grew faster than any of the other plant foods tested. My hypothesis was not correct, even though plant food "B" cost more and promised better growth. Plant food "A" contained more nitrogen than "B." I learned that not all plant foods are the same and that advertising is not always true.

Displaying a Science Fair Project



PROJECT IDEAS

Please note there are many other possibilities – These are just a few ideas to help you get started!

1. How many of each color is there in a bag of M&M's? Make a simple bar graph by pasting a colored paper square for each M&M counted.
2. What kind of juice cleans pennies best? Why?
3. What foods are acids? Test with homemade red cabbage juice.
4. What materials dissolve in water? With some, (like sugar) will more dissolve in hot water than in cold water? Try others—salt, baking soda, etc.
5. Why do people sprinkle salt on ice when making homemade ice-cream? (Try comparing the temperature of the ice water before and after)
6. Do sugar crystals grow faster in tap water or distilled water? Why?
7. Do plants grow better with tap water or distilled water?
8. Which banana has the most sugar - green, yellow or brown? (a more difficult project)
9. Does adding sugar, aspirin or lemon-lime soda to the water make cut flowers last longer?
10. How does the color of light affect plant growth? How about temperature?
11. Does it matter in which direction seeds are planted?
12. How does exercise affect your heart rate? Why do you think your heart reacts that way?
13. Does a blindfolded person walk in a circle?
14. Why will more air inside a basketball make it bounce higher?
15. Does a baseball go farther when hit by a wood or metal bat? Why?
16. Does sound travel best through solids, liquids or gases? Why?
17. Which boat shape is fastest? Which shape holds the most weight? Make boats of paper, clay or wood. Test in a bathtub.

1. How do people make anti-freeze for cars? Hint: Does salt water boil sooner than plain water?
2. How much of a piece of fruit is water?
3. Does colored (or muddy) water heat up faster in the sun than clear water?
4. What other crystals can you grow? Suggestion: Borax crystals (from grocery store's borax laundry booster) grow overnight. Bonus: Can you make an even bigger crystal by using one of your homemade crystals as a "seed" crystal?
5. Are all potting soils alike? Does the difference affect how well a plant grows?
6. Does leaf surface area affect plant growth? (this is a more difficult project)
7. Do living plants give off moisture? How do you know? If they do, why?
8. How do you know a green plant adds oxygen to its environment?
9. What are the effects of chlorine/bleach/fertilizer on plant growth?
10. Do roots of a plant always grow downward? Can you make a plant grow sideways?
11. Does the human tongue have definite areas for certain tastes? ("Map" your tongue.)
12. Is there a relationship between age and response time?
13. Do we read or remember with different colored paper? If so, which works the best?
14. Does a baseball go farther when hit by a wood or metal bat? Why?
15. How can one student use a lever to lift another student who is bigger?
16. What materials conduct electricity? (Try plastic, metal, glass, paper, rubber, etc.)
17. Can you make electricity out of magnets? How about out of a lemon?
18. Which bridge design is strongest? Compare an arch to a flat bridge.

Science Fair Project Resources

Books: Books on science experiments and science projects are available in libraries, including Cumberland's and in bookstores. Here are a few titles.

101 Great Science Experiments: A Step-by-Step Guide, by Ardley, N.

Science Fun: Simple Experiments and Projects, by Nevins, D.

365 Simple Science Experiments With Everyday Materials, by Churchill, E.R., Loeschnig, L.V., and Mandell, M.

Science Fairs Made Easy!, published by the Chicago Academy of Sciences

Web Sites: Science web sites for kids are available.

www.scifair.org
www.lhs.berkeley.edu/kids/kidshome.html (Lawrence Hall of Science at Berkeley)
www.nwf.org/kids/ (National Wildlife Foundation)
www.EnchantedLearning.com
www.seaworld.org/ (Sea World/Busch Gardens Animal Resource)
www.nationalgeographic.com (National Geographic)
www.mobot.org/MBGnet/sets/ (Biomes, site for Missouri Botanical Gardens)
www.ran.org/ran/kids_action/ (Rain Forest information)
www.hhmi.org/coolscience/ (Hughes Medical Center site of science for kids)
www.brainpop.com
www.madsci.org
www.geocities.com/Athens/1850/listscience.html (experiments included)
www.nyelabs.com or www.billnye.com (Bill Nye, the Science Guy)
www.cotf.edu/ete/modules/msese/earthsysflr/rock.html (resource about rocks)
www.exploratorium.edu
www.terimore.com/ (site costs money for project blueprints, but has lists of great ideas)
http://school.discovery.com/sciencefaircentral (Science Fair Central)
www.all-science-fair-projects.com/ (science fair ideas and how to do them)
www.scienceproject.com
www.ipl.org/div/kidspace/projectguide/ (science Fair Project Research Guide)
http://sciserv.org (International Science Fair)
http://othello.mech.northwestern.edu/~peshkin/scifair/chias_ideas.html (list of ideas)
www.energyquest.ca.gov/projects/ (projects to try)
www.sciencebuddies.com/ (how to do science fair projects)
www.juliantrubin.com/fairprojects/physics/optics.html (ideas and sample projects)