SCIENCE FAIR PROJECT DIRECTIONS

3rd Grade, 4th Grade, 5th Grade

Project Begins: February 4th, 2011

Projects Due: March 24th, 2011

Science Fair: March 24th, 2011

February 4th, 2011

Dear Parents,

Your child will be taking part in a science fair homework project, an exciting event that encourages students to think like young scientists. During the next few weeks your child will be designing a science project that uses the scientific method to solve a problem. Doing a science fair project will stimulate imagination and independent thinking, increase knowledge in many areas, enable the use of the processes of Science, train students in the organization and completion of major tasks, and provide children with an opportunity to enjoy science.

We are going to have a science fair on Thursday, March 24th. This project will be completed at home. The project will be due on March 24th. There will be a reminder sent home about when and where to bring students projects to school. Arrangements should be made to transport the project to school and home from school the evening of the science fair.

We ask that you encourage your child and monitor his or her progress along the way. Your support is key to a successful project, but please do not allow your involvement to extend any further in order to assure equity and promote student learning! It is important that your child wrestle with problems and try to solve them. Guide your child wherever and whenever you can, but let the final project reflect your child's individual effort and design.

We have attached a step-by-step method to help your child complete their science fair experiment and also a scoring sheet so the students can see what we are looking for in each category and what will be displayed at the fair (Display board and Experiment Planning Form).

NOTES:
*The students may do any project that does **NOT** involve dangerous substances or cruel or inhumane treatment of animals or humans.*

No project may be done using poisonous animals, blood, live disease carrying organisms, dangerous chemicals, explosives, unsafe electrical work, illegal or poisonous substances, or any other condition judged to be unsafe, if used it will result in an elimination of the project.
SCIENCE SAFETY RULES MUST BE FOLLOWED!!!

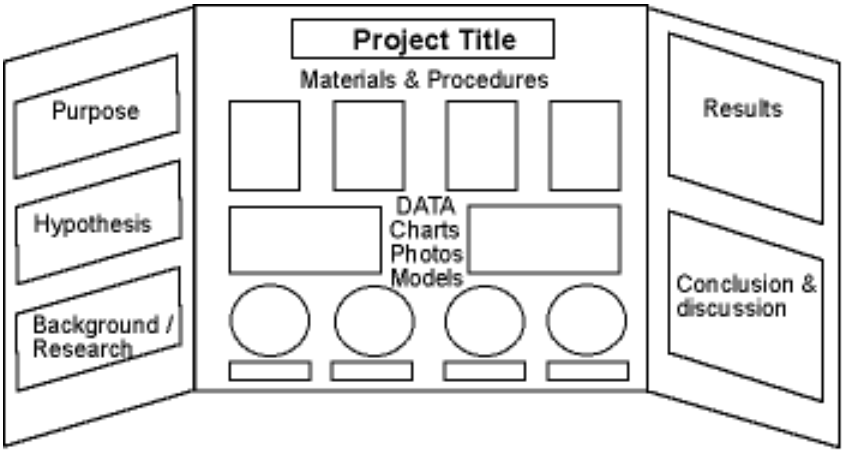
Students should write or type all information in their own words. Please do not include text that has been photocopied, printed, or copied by hand. Only include your own original work in your own words.

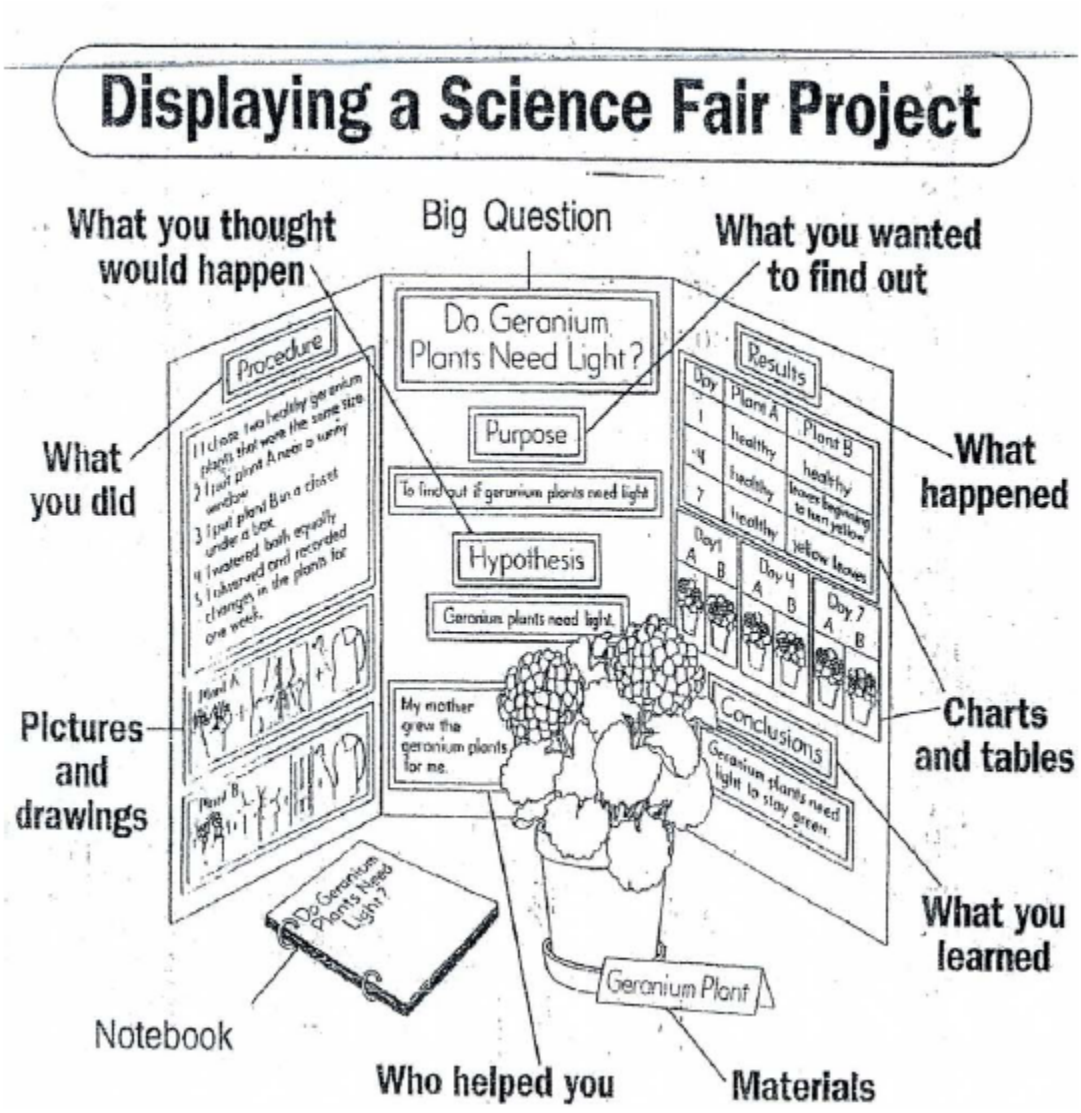
If you have any questions, please feel free to contact your child's teacher or Lisa Newton at Lisa_Newton@gwinnett.k12.ga.us
Sincerely,
The Science Committee

Science Experiment Safety Rules

1. Be alert and work carefully. Don't fool around. It could be dangerous to yourself and others. Have an adult present.
2. Follow directions carefully. If you have questions, ask a responsible adult.
3. Report any accidents to an adult.
4. Wear protective clothing when working. Wear an old shirt or an apron to protect your clothes.
5. Wear goggles or safety glasses over your eyes when using chemicals or materials that may be harmful to your eyes.
6. Wash your hands after handling chemicals.
7. Have safety equipment available. Know the location of fire extinguishers, fire alarms, and first aid kits.
8. Keep your work area clean.
9. Never taste chemicals or solutions. DON'T EAT food while doing your experiment.
10. Keep flammable materials away from heat sources. YOU MAY NOT USE GASOLINE or other flammables!
11. Use household batteries only. Do not use electricity unless you are supervised by an adult.

Grades Third, Fourth, and Fifth:
All projects/displays must be free standing. The use of a tri-fold board is highly recommended and the dimensions be no bigger than: 48"W x 36"H open, 24"W x 36"H folded. See examples below.





Experiment Planning Form

1. Question- What do you want to find out?

_____

_____

_____

_____

2. Research- What did you learn about your topic? List what resources you used (books, internet sites, etc.)

_____

_____

_____

_____

3. Hypothesis- What do you think will happen in your experiment?

_____

_____

_____

_____

4. Procedure- What steps will you follow?

5. Observations/Data- What happened during this experiment? You must have one (1) chart, graph, or diagram for your display.

6. Results/Conclusions- What did you learn from this experiment? Was your hypothesis correct? Why or Why Not?

*** If more paper needed to record information, please attach.

The Scientific Method

1. Choose a problem.
   (What do you want to explore? Ask a question about it).
   - Choose something that interests you.
   - Choose something that you don't know the answer to.
   - Choose something you can work with.

2. Research you problem.
   (How can you find the answer to your question?)
   - Look in books.
   - Get advice
   - Make observations.

3. Develop a hypothesis, or a statement that tries to explain a relationship between variables.
   A hypothesis is an idea that is based on known facts and can be tested.
   (What do you think the answer to you question will be?)
   - Use the words ***if*** and ***then***.
   - Form your hypothesis from a simple question.
   - Your hypothesis must be very clear so you can test it.

4. Write your procedures.
   (Tell what you will do to test your hypothesis.)
   - List the materials you will need.
   - List each thing you will do. Number each step in order. Write down *everything* you will do. Others should be able to repeat your experiment by reading your procedures.
   - Be sure that you are testing your hypothesis. (Is there anything you haven't considered that could affect your experiment?)
   - Control your variables. (A variable is anything that can change or vary during an experiment. In an experiment, *everything* should be the same each time you test, except the one variable you are testing.)

5. Test your hypothesis.
   - Get your materials.
   - Follow your procedure.
   - Make observations.
   - Collect data and record it in a journal (notebook).
   - Be honest.

7. Organize your data.

   - Make table, charts, or graphs.
   - Write a summary.
   - Draw pictures or take photographs to show your results and/or procedures.

7. State your conclusions.
   (What happened? Was it what you expected? Did you find our what you wanted to know?)
   - Look at your data.
   - Decide what your data tells you about your hypothesis.
   - Decide how you might change your hypothesis based on your results.
   - Think about what you might do to experiment further.
   - Communicate your results with others.

Science Fair Project Ideas Grades Third, Fourth, and Fifth

*** In considering a potential topic for a science fair project, students should also think about how the project might be best presented. Science fair projects should be setup as an experiment. Such things as volcanoes and solar system models, are **NOT** science experiments!

Experiments- These presentations allow students to pose a problem, design an experiment to investigate that problem, and record and report their results.

Choose a topic that you can complete over a fairly short time span, such as over a weekend. Try to answer a question or solve a problem. You may get help from adults, but the work must be yours, so you must do the thinking and the work.

These are only **SUGGESTED** age/grade level appropriate ideas, please feel free to be creative and to develop your own unique experiment!

1. Will chilling an onion before cutting it keep you from crying?
2. What type of plastic wrap best prevents evaporation?
3. Does the presence of detergent in water affect plant growth?
4. Does the shape of an ice cube affect how quickly it melts?
5. Do different brands of popcorn leave different amounts of un-popped kernels?
6. Are all potato chips equally greasy? (You can crush them to get uniform samples and look at the diameter of a grease spot on brown paper) or Is greasiness different if different oils are used (e.g., peanut versus soybean)?
7. Do all brands of diapers absorb the same amount of liquid?
8. Do all brands of bubble gum make the same size bubble?
9. Does chewed gum lose mass?
10. How do different factors affect seed germination? Factors that you could test include the intensity, duration, or type of light, the temperature, the amount of water, the presence/absence of soil. You can look at the percentage of seeds that germinate or the rate at which seeds germinate. Choose one variable.
11. How does the type of water you feed a plant affect its growth?
12. How are different soils affected by erosion?
13. Do all brands of paper towels pick up the same amount of liquid?
14. How does exercise affect body temperature?
15. Does viewing television affect pulse rate?
16. Does playing video games affect pulse rate?
17. How fast do objects with different masses fall? Do they fall at the same speed?
18. Which brand of battery lasts longer?
19. What brand of popcorn pops better?
20. How much salt does it take to float an egg?
21. What kind of juice cleans pennies best?
22. What brand of raisin cereal has the most raisins?
23. Do ants like cheese or sugar better?

24. Can the design of a paper airplane make it fly farther?
25. Do the roots of plants always grown downward?
26. Can you tell what something is just by touching it?
27. What kinds of things do magnets attract?
28. How long will it take a teaspoon of food coloring to color a glass of still water?
29. Can you tell where sound comes from when you are blindfolded?
30. Can plants grow without soil?
31. Does warm water freeze faster than cool water?
32. Do different varieties of apples have the same number of seeds?
33. What materials will dissolve in water?
34. Will bananas brown faster on the counter or in the refrigerator?
35. Does temperature affect the growth of plants?
36. Do mint leaves repel ants?
37. Does a ball roll farther on grass or dirt?
38. Do all objects fall to the ground at the same speed?
39. Which paper towel is the strongest?
40. Which dissolves better in water- salt or baking soda?
41. Does an ice cube melt faster in air or water?
42. Which starts to turn brown faster- an apple or a potato?

Week of	Timeline of Events & Things to do	Check when Completed
February 4th- February 12th	Project directions sent home. Choose your topic. Begin learning about your topic. Visit the library and do some research. My experiment topic or question is _____ _____ _____	
February 13th- February 26th	Decide how to set up your experiment. Write your research question and hypothesis. Write the materials and procedure for your experiment. Read it to your family and make sure you have listed every step.	
February 27st- March 5th	Conduct the experiment and record data. (Note: If you are doing an experiment that takes lots of observation over a period of time, you may need to begin the project earlier!) Analyze your data. Include charts, graphs, tables, pictures, photographs, etc. Write your conclusion. Was your hypothesis correct? Tell what factors may have influenced the outcome and what you would change next time. Remember to take photos or draw pictures to document your experiment if appropriate.	
March 6th- March 20st	Make the display board. Use your computer skills to make it look nice if you can! Include color drawings or photos of your graphs, data, and project. Mount them nicely for an attractive looking display.	
March 21nd- March 24th	Bring your project to school March 21nd- March 24th in the morning. March 24th is the school-wide science fair. Parents are invited to view the exhibits! Projects go home the night after the PTA event or on Friday March 25th. Any projects not picked up will be disposed of!	

Science Project Grading Rubric 3-5

Experiment Planning Form/Log Book

	Description	Points Possible	Points Received
Question	Question being investigated is present as well as how you came to choose it	4	
Research	Notes taken on the topic are present and relevant.	4	
Hypothesis	Hypothesis is clearly stated and is based upon appropriate student reasoning.	4	
Observations/Data	Data is presented in an organized way	5	
Procedure	Concise, step by step directions, includes independent, dependent, controlled variables. If control is needed, it is clearly identified. All entries are dated.	4	
Conclusion	Reasonable conclusion that compares to the hypothesis	4	
	Total	25	

Display Board

Question	Clearly identifies the problem statement/question/purpose of the experiment, gives background information. The project is appropriate for this grade level.	10	
Hypothesis	Is testable, includes reasoning	5	
Materials	Complete List	5	
Procedure	Concise, step by step directions, includes independent, dependent, controlled variables. If control is needed, it is clearly identified.	10	
Results/ Data	Includes a sufficient number of trials. Data is directly related to hypothesis. Photographs of the experiment in progress are optional although enhance the project. Graphs and charts are directly related to the experiment. Graphs and charts are correctly shown, appropriate for the data and make sense.	15	
Conclusion/ Next Time	Restates purpose or hypothesis. States if Hypothesis is supported or not and uses data to explain whether or not the hypothesis is supported. Discusses other factors or errors that might have affected the results.	10	
Creativity	Research area or topic is novel to student or audience. Approach to the testing show creativity. Interpretation of data is reasonable and thorough. Display arrangement is eye catching and interesting.	10	
Neatness	Display board is neat, organized and easy to follow, few or no spelling, grammar or punctuation errors.	10	
	Total	75	

Experiment Planning Form/Log Book Total _____

Display/Presentation Total _____

Score _____