

FOURTH GRADE INQUIRY SCIENCE FAIR PROJECT DIRECTIONS



April 5 Mon.

May 18 Tues.

May 19 Wed.

May 20 Thurs.

Project Begins

Projects Due at School

Science Fair – Parents Invited

Projects Go Home

April 12, 2010

Dear Fourth Grade 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. We hope you agree that the educational benefits are numerous, as students develop skills in writing, oral presentation, creative thinking, and problem solving.

We are going to have a Fourth Grade Science Fair on Wednesday, May 19th. Parents are invited to come and see our science fair and other classroom projects on display at this time.

This project will be completed at home and will be worth 50% of your child's Science grade. The project is due at school on Tuesday, May 18th. Students will be giving classroom oral presentations to the class on their projects on May 18th. Please do not bring projects to school prior to this date. Arrangements should be made to transport the projects home no later than Thursday, May 20th.

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 whenever and wherever you can, but let the final project reflect your child's individual effort and design.

We have attached a scoring sheet so students can see what we are looking for in each category.

NOTE: *Students should write or use the computer to type all information in their own words. Please do not include text that has been photocopied, printed, or copied by hand. Students should only include their own original work in their own fourth grade words.*

Please let me know if you'd like more information on creating a successful science fair project. If you have any questions, do not hesitate to contact me. I look forward to watching your child enjoy this unique opportunity for scientific discovery!

Sincerely,

Chris Morton, Heather Renz and Michelle Zistel
Fourth Grade Teachers, Tom McCall School



Inquiry Science Project - Directions

Step 1: Choose a Topic

- Choose a question that interests you OR come up with your own question. Make sure your question is able to be tested.

Step 2: Research the Topic

- Once you have decided on a topic, you should research it carefully by finding out everything you can about the topic.

Step 3: Design and Conduct your Experiment

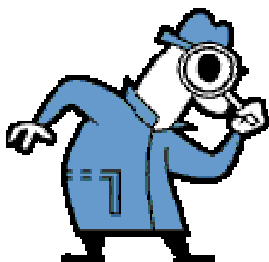
- Next, design an experiment for the project. To do this use a series of steps called the scientific method. (This is the same format we use for all of our school science experiments.)

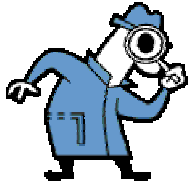
Step 4: Display Your Project Results

- You will display what you have learned about your topic.
- Use pictures, charts, and graphs when displaying information. Make sure all diagrams and charts are neat. Use a computer to generate graphs and charts
- Use a tri-fold display board (available at most stores in town)
- Be sure your work is neat and free from errors such as misspellings.
- Use contrasting colors to make your display more visually appealing.

Include:

1. **Question** (the title of your experiment)
2. **Hypothesis** (what you think will happen and why)
3. **Materials**
4. **Procedure**
5. **Data** (make charts or tables, use graphs, pictures and photos)
6. **Conclusion** (be sure to look at your hypothesis and answer your question. Be sure to refer to data you collected from your experiment)





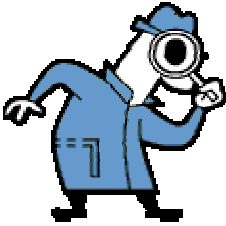
Possible Inquiry Science Fair Questions

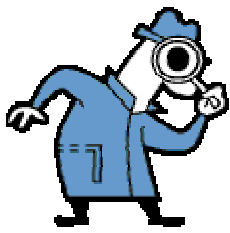
Choose a project that you can do over a fairly short time span, such as over a weekend. Try to answer a question or solve a problem. You may get help from adults, but the work must be yours, so you must do the thinking and the work. Note – When growing plants be sure to begin your project right away in order to complete the task in time!

Here are some possible questions you could use:

1. Will chilling an onion before cutting it keep you from crying?
2. What type of plastic wrap best prevents evaporation?
3. Do all brands of paper towels pick up the same amount of liquid?
4. Which paper towel is the strongest?
5. Does the shape of an ice cube affect how quickly it melts?
6. Does an ice cube melt faster in air or water?
7. Does hot water freeze faster than cold water?
8. Which frozen liquid melts the fastest: water, milk, or soda pop?
9. Do different brands of popcorn leave different amounts of un-popped kernels?
10. 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)?
11. Do all brands of diapers absorb the same amount of liquid?
12. Do all brands of bubble gum make the same size bubble?
13. Does chewed gum lose mass?
14. 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 certain chemicals, or 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 to test.
15. Does the presence of detergent in water affect plant growth? (pollution)
16. How does the type of water you feed a plant affect its growth? (tap water, distilled water, etc.)
17. Can plants grow without soil?
18. Does air temperature affect the growth of plants?
19. Do plants that are kept in the light 24 hours per day grow taller than those that are kept in the light 8 hours a day?
20. Do the roots of a plant always grow downward?
21. How are different soils affected by erosion?
22. How does exercise affect body temperature?
23. How long does it take the heart to return to normal after exercise?
24. Does viewing television affect pulse rate?
25. What brand of microwave popcorn pops better?
26. Will bananas brown faster on the counter or in the refrigerator?
27. How much salt does it take to float an egg?
28. Which dissolves better in water – salt, sugar or baking soda?
29. What kind of juice cleans pennies best?
30. What brand of raisin cereal has the most raisins?
31. Can the design of a paper airplane make it fly farther?
32. Can you tell what something is just by touching it?
33. What kinds of things do magnets attract?
34. What foods do mealworms prefer?
35. Can you tell where sound comes from when you are blindfolded?
36. Does warm water freeze faster than cool water?
37. Do different varieties of apples have the same number of seeds?
38. What materials dissolve in water?
39. On which surface can a snail move faster - dirt or cement?
40. How do worms sense their environment? Are worms sensitive to light?
41. Do mint leaves repel ants?
42. Do ants like cheese or sugar better?
43. Do all objects fall to the ground at the same speed?
44. How fast do objects with different masses fall? Do they fall at the same speed?
45. Does the size of the wheels on a toy car affect the distance it travels?
46. Does a ball roll farther on grass or dirt?
47. Which brand of battery lasts longer?
48. Do batteries stored in the freezer power a toy car longer than those stored at room temperature?

Use one of these questions or come up with your own idea!

Week of:	Timeline of Events & Things to Do	Student: Check when completed
April 5-15 (two weeks) 	<p>Project directions sent home. Choose your topic. Begin learning about your topic. Visit the library and do some research. <u>Tell your teacher your science fair experiment question by Thursday, April 15.</u></p> <p>My experiment topic or question is: _____ _____ _____ _____ _____ _____</p>	Teacher Initials when approved: _____ (teacher comments) <input type="checkbox"/> completed
April 19-25 (one week)	<p>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.</p>	<input type="checkbox"/> completed
Apr. 26-May 9 (two weeks)	<p>Conduct the experiment and record data. <i>(Note: If you are doing an experiment that takes lots of observation over a period of time, you may need to begin the project last week).</i> Analyze your data. Include charts, graphs, tables, averages, 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.</p>	<input type="checkbox"/> completed
May 10-16 (one week)	<p>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. Consider a hands-on display (3-D model) if appropriate.</p>	<input type="checkbox"/> completed
May 18-20 (one week)	<p>Bring your project to school on Tues. May 18th. Wed. May 19th is the Science Fair. Parents are invited to view the exhibits at this time. Projects will be on display in the Desert Wing all day so drop in anytime! Thurs. May 20th – projects go home (make arrangements ahead of time).</p>	<input type="checkbox"/> completed



Fourth Grade Science Fair Scoring Guide 2010

Criteria	Score 1-6
Question - The title of your experiment. Write a question that you can answer by conducting an experiment.	
Hypothesis – This is a prediction or educated guess on what you expect will happen (the predicted answer your question). You must state your hypothesis in a way that it can be tested. Give any background knowledge you have about the topic.	
Materials – Give a complete list of materials needed to perform the experiment.	
Procedure – Step by step directions to conduct the experiment are listed. State very clearly and in great detail how you plan to conduct your experiment. Write everything down in step-by-step fashion. Be sure to test no more than one variable.	
Data - Include data charts, tables, diagrams, graphs, drawings and/or photos to document your experiment or results.	
Conclusion - Look at your hypothesis and answer your question. Refer to data collected from your experiment. Tell what you learned from this experiment. Did your experiment answer your question? Is your hypothesis correct? If not, give a reason why your experiment turned out the way it did. Tell what new questions could be answered as related to your science experiment.	
Overall Neatness & Aesthetics of the Display	
Project Was Turned in On Time (May 18)	

Note: A score of "4" is a passing grade.