

# Science Project Assignment

Due: December 10<sup>th</sup>, 2014

Dear Parents,

Your child will be responsible for completing an individual science project. The primary purpose of the science projects is to encourage students to think critically and to investigate. Science projects give students the opportunity to observe, infer, measure, identify, classify, hypothesize, experiment, manipulate variables, and interpret data.

Science projects will be **due Wednesday, December 10th**. This is several weeks away; however, we need to start thinking about it now because students will need ample time to come up with an intriguing question, complete the experiment, and put the projects together.

The science projects will be presented on a science board. Science boards are available at a low cost at most office supply stores. If you are unable to get one, please let me know and I will pick one up for you.

Science projects need to follow the **Scientific Method**, which involves several steps.

1. Ask a **Question**. Come up with a question about **something you are curious about**. You should be able to answer the question by **performing an experiment**. A model, such as a volcano, is not acceptable. An example would be 'What brand diaper holds the most water?' To answer this question, around 4 brands of diapers should be purchased. Water needs to be measured and poured onto the diapers to see which one holds the most water before the water begins to leak. Each diaper should be tested about 3 times.
2. Do some **Research**. You may use books, magazines, encyclopedias, the internet or other things to research your question so that you have some information before you make your hypothesis. Record where you are researching your question-you will need to use that in your **Bibliography**.
3. **Hypothesis**. Before the experiment is done, the question needs to be answered. A hypothesis is an educated guess as to what the answer might be. While there is often a logical reason for making your predictions, this step may be largely intuitive and may reflect your past experience with a similar question. This is a very important part of the scientific method and should reveal that you put thought into predicting the outcome of your experiment; however, it is not necessary that your hypothesis end up being correct. For example, you may observe that Huggies has a thicker padding than the other brands. If this were the case, the hypothesis could be that Huggies brand diaper will hold the most amount of water because it has a thicker padding than the other brands of diapers, and a thicker padding can usually hold more water. If Huggies does not end up holding the most water, that is okay. The correct answer will be discussed in your conclusion.
4. **Materials**. A list needs to be made of the materials that will be used in the science experiment. Example – Diapers (Huggies, Pampers, Loves, etc.), measuring cup, water, and whatever else is needed for the experiment.

5. **Procedures.** The procedures explain the steps that need to be taken to perform the experiment. Example – 1. Set a Huggies diaper onto a tray with the inside facing upward. 2. Pour 1 cup of water onto the inside of the diaper. 3. Wait 30 seconds. 4. Repeat steps 2. and 3. until water leaks from the diaper. 5. Pour the water, which leaked onto the tray, back into the measuring cup. 6. Calculate and record how much water the diaper held. – etc.
6. **Experiment.** Conduct the experiment. You may have to repeat the experiment several times if necessary as I mentioned before. The experiment is conducted changing only one variable from the control. If you change more than one variable, you will get mixed results because you will not know which variable is causing your observation. The variable being changed in the example experiment is the brand of diaper. The control would be using the same size diaper (age 0 to 3 for example) and using the same amount of water in each diaper.
7. Record the Data and **explain** what you got for your results. Use the results to make a table or graph. **Your project must contain a table or graph!!!**
8. Write a **conclusion**. Examine your results. Double-check any calculations, looking for patterns or surprises in your results. Examine your tables or graphs to see how different variables caused your observations. Keep an open mind for the purpose of science is to learn what really is, not to prove that your hypothesis was right. Using the data in your experiment and observations, try to answer your original question. If your hypothesis was correct, explain the major factors that prove the hypothesis. If the hypothesis was in error, try to explain your results. You will need to conduct research to obtain more information about your science project. With the example, you may research the absorbent crystals used in diapers as well as how much of these crystals each diaper uses. This will most likely help to confirm your experimental observations. Summarize your findings and your thoughts about it.
9. You will need to include a **bibliography** showing the sources you used in your research. There is no specific format for the bibliography; just make sure the main information is included.

Example bibliography:

**My name stands for the author. . The year is the date published. The *italics* is the Title. Reno, NV stands for the city and state where it was published. SWE Press stands for the name of the publishing company.**

Book:

Williams, T. (2009). *Instructions for completing science board*. Reno, NV: SWE Press.

Periodical:

Williams, T. (2009). Instructions for completing science board. *SWE review of science*, 14, 253-263. (= volume and page numbers)

Electronic:

Williams, T. (2009). *Instructions for completing science board*. Retrieved January, 5 2009, from <http://www.restofthelettersofwebsite.com> (=website)

10. The science display board should look **neat and attractive**. You may take pictures of your experiment to place on the display board. Under each picture include recognition of who took the picture. Write or type all information on separate paper and then attach it (glue it) to the display board. Make sure the letters are **large enough to read** and are legible. Bibliographical references must be included on your display board. **Put your name and homeroom teacher on the back of the display board.**

10. A notebook should be completed with the science board. This notebook should be written like a journal reflecting your progress through the entire experiment.

Your Question and Hypothesis are due Wednesday,  
November 12<sup>th</sup> to me for approval.

**The questions for the science project need to be approved by me so that I can make sure the questions are appropriate for the project.**

**Scoring Criteria:**

1. Content (Scientific Method followed):

- \*Question
- \*Hypothesis
- \*Materials list
- \*Procedures
- \*Results (written)
- \*Results (graph or chart)
- \*Conclusion
- \*Bibliography
- \*Journal (notebook)

All components: 150 points

2. Display Board:

- \*Organization (easy to read and follow with all parts included) 10 points
- \*Aesthetic appearance of board (neat and attractive) 40 points

**Total points: 200pts.**

**\*Extra credit will be given for the display if the project is typed.**

Sincerely,  
Mrs. Williams  
tlwilliams@washoeschools.net

**Possible Project Questions (Do not use animals, or other people, without getting their permission first, in your projects!)**

- Which paper plate will carry the most weight without buckling?
- Does temperature affect the rate at which water evaporates?
- Do additives affect the rate at which water evaporates?
- Does the size of its container affect the rate at which water evaporates?
- Does the type of liquid affect the rate of evaporation of the liquid?
- Does the size of a sponge affect the amount of water it can absorb?
- Is the amount of liquid absorbed by a sponge affected by the type of fluid being absorbed?
- What type of fabric absorbs the most liquid (water)?
- Which soft drink has the most carbonation (fizz)?
- How do additives affect the time it takes water to freeze or to melt?
- What type of liquid expands the most?
- What kind or brand of soap bubbles last the longest?
- How does the drop-height of a ball affect the height of its bounce?
- How does the drop-height of a ball affect the number of times it will bounce?
- How is the bound of a ball affected by the surface on which it bounces?
- How does the material from which it is made affect the bounce of a ball?
- How does the distance from a light affect the length of an object's shadow?
- Does the speed of an object rolling down a ramp change with the angle of a ramp?
- Does the speed of a ball rolling down a ramp change with the kind of material from which the ball is made?
- Does the size of a fruit affect the number of seeds it contains?
- Does the size of a fruit affect the amount of juice it contains?
- Are thicker rubber bands stronger?
- Does the sprouting time for a seed change with planting depth?
- Does sprouting time vary with soil temperature?
- Will the sprouting time differ between different types of liquids?
- Is the sprouting time for a seed affected by the amount of water given?
- Which plant food will produce the tallest plant?
- Does the amount of a particular ingredient in cookies affect the thickness of the cookie?
- What brand battery lasts the longest?
- What brand marker dries out the fastest?
- What substance will help flowers in a vase last the longest?

Please do not feel that you need to use one of these questions. Get creative and try to come up with one on your own. If you do use one of these questions try putting a twist on it.

**WEBSITE**

**\*The Nevada Regional Science Fair Website is:  
<http://www.nevada sciencefair.net>**