

# Sycamore Canyon School

## 8th Annual



Science Fair  
February 8, 2012  
4th and 5th grade



## Introduction

Welcome to the Sycamore Canyon School 7th Annual Science Fair. Deciding to participate in this year's Science fair is your first step to a world of discovery and exploration. The Science fair will not only give you an opportunity to use the skills and talents you have learned here at Sycamore Canyon but also to impress your family and friends with the discoveries you will be making. The Science Fair is an opportunity to learn, to explore, to grow, and most important, to have fun.

In this handbook you'll find how the Science Fair works, learn about the Scientific Method, and understand the steps a participant takes from coming up with an idea to proudly presenting the Display Board to faculty and parents the night of the Science Fair.

Much of this information came from a website that features an Online Science Fair Handbook. That website offers many more definitions, websites and helpful hints than we could put into this booklet. It has a place for parents as well as students. Please feel free to visit it at:

[http://mset.rst2.edu/portfolios/l/lautz\\_s/Science%20Fair%20Handbook/index.htm#A%20Science%20Fair%20Handbook](http://mset.rst2.edu/portfolios/l/lautz_s/Science%20Fair%20Handbook/index.htm#A%20Science%20Fair%20Handbook)

- Any questions about the fair can be directed to Mrs. Smith 498-1573 ext: 273 or your child's teacher.
- Email [gailsmith@conejo.k12.ca.us](mailto:gailsmith@conejo.k12.ca.us)

So let's get started. There is a lot to do between now and the Science Fair!  
**Good Luck and Let's Go!**

## Information to Know Before You Begin



### Your Project Notebook



Before you get started on the Scientific Method here is a word about the Project Notebook. Your Project Notebook is going to be your most important tool as you conduct your project. It is where you will write down all your thoughts, your questions, come up with your hypothesis, write notes from your research, and just keep track of everything you do in your project. Your Project Notebook can be a spiral notebook or a three-ring binder with blank paper. It is with your Project Notebook that you will start to apply the Scientific Method. Start it first, put in your rubric, your approval questions, and your first notes.

### Your Project Timeline

It is important to plan how long it will take to complete each step of the Scientific Process so that you leave enough time for each step and finish when it is due.

Your goal should be to finish your project one week before the Science Fair and make sure your Mom and Dad know your deadlines; they can help make sure you stay on track. Write all of these dates on your calendar.

- |   |  |                                     |
|---|--|-------------------------------------|
| ➤ | Science Fair Informational Meeting                                       | Nov 17, 2011                        |
| ➤ | Science Fair Booklets passed out   | Dec 1, 2011                         |
| ➤ | Topic Proposal due to your teacher                                       | Dec 7, 2011                         |
| ➤ | Statement of Hypothesis due  | Jan 9 or earlier                    |
| ➤ | Progress Report and Conference   | Jan 26, 2012                        |
| ➤ | Submission of your project and the<br>Oral Presentation to the classroom | Feb 7, 2012                         |
| ➤ | Sycamore Canyon School Science Fair                                      | <b>Feb 8, 2012</b> , 6:30-7:30 p.m. |



What do I need to do in order to complete my  
Science Fair Project?

**Just follow these 12 Steps!!**

## The Scientific Method

The scientific method is the "blueprint" of the science experiment you will do for your science fair project.



These are the steps that you need to follow:

### 1. SELECT A TOPIC:



- Pick a topic that interests you. Look through lists on the Internet and think about what you like to do or something you want to know more about.
- Determine your purpose for wanting to know more about this topic.
- What are the goals and objectives of your project?
- What relationship does your experiment have to reaching the goals and objective you set?
- Put your topic into a question that will be answered by your research.
- You need a pick question that is "testable." You need a controlled experiment.
- Testable question (*experiment*): Which type of soda (regular, caffeine free, diet, diet/caffeine free) is the most dense?
- Non-Testable question (*experiment*): What are the different types of rocks?

There are many web sites that have lots of ideas.



## **2. GET APPROVAL FROM YOUR TEACHER.**

Submit your Science Fair Project - Topic Proposal (page 21) to your teacher by December 7, 2010. There is a copy at the back of this packet. This will include a topic and question. Put your topic into a question that will be answered by your research.

**SCIENCE FAIR PROJECT -  
TOPIC PROPOSAL  
Due Wednesday, December 7, 2011**

## **3. CREATE A TIMETABLE and CALENDAR.**

Create a timetable. Check the timeline on page 4 for completing your project and then put your schedule on a calendar. You may use a regular calendar, a blank calendar, or create one in a software program such as Print Shop or AppleWorks, or go to Time and Date.com. You will fill in more after you do your preliminary research and plan your experiment.



## **4. DO YOUR PRELIMINARY RESEARCH.**

Find out background information about your topic so that you can predict an answer to your question. Write a short paragraph summarizing the background information that you found. This can be an article from an encyclopedia or something you downloaded from the Internet.

**5. CREATE A HYPOTHESIS.** After you've done your research, make a prediction to what you think the answer is to your question. Make an **educated guess** based on the research. This is your hypothesis.



***Important:***

***A hypothesis doesn't have to be right for the experiment to be correct.***

Fill out the Science Fair Project - Statement of Hypothesis (page 19) found in the back of this packet and hand it to your teacher by January 9, 2012 or earlier.

**Science Fair Project  
Statement of Hypothesis  
Due Monday, January 9, 2012 or earlier**

**6. PLAN YOUR EXPERIMENT.**

When you conduct your experiment, you need to do it enough times to collect data. Take into account that it might not work the first time or one of your testing materials might be defective. For example, if you are doing an experiment on plant growth, don't plant one seed in a pot, plant two or three.

- a. **Materials used:** (Make a list.)
- b. **Procedure:** (Write the steps you followed.)
- c. Include what were the **constants** (the things that did not change)
- d. Include the **variable** (the thing(s) that did change).

This is the actual experiment that you will conduct for your science fair

FOR EXAMPLE: You want to test how light affects plant growth. You would plant the same kind of seed (use two or three) and plant them in three different pots, with the same soil, the same amount of soil, the same amount of plant food, and the same amount of water at the same time each day. These are your constants. Place one pot in a dark closet, one in the middle of the room, and one in the window. This is your variable.

REMEMBER: If you have more than one variable you have to repeat the experiment again, changing only one variable at a time. If you want to test how different amount of light affects different types of plants, you are now testing two variables. You would have to plant three different types of seeds (2-3 seeds per pot in case one is defective) and put them in the three different locations described above. You are now testing two variables. Everything else remains constant or the same.

## 7. START YOUR MORE EXTENSIVE RESEARCH.



## 8. CONDUCT YOUR EXPERIMENT AND RECORD THE RESULTS IN YOUR NOTEBOOK. ANALYZE YOUR DATA/RESULTS.



**Analysis:** This is the data you have collected. You may display it in a table, graph, pictures, photographs, or a combination of all of these.



## 9. WRITE YOUR CONCLUSION.



**Conclusion:** Look at your data.

- *Was your hypothesis correct?*
- *If not, why do you think it was not?*
- *What would you do differently next time?*

*Do not worry about "negative results," or results that came out differently than you expected. Why do you think you got them?*

# Science Fair Project Rubric

Student Name: \_\_\_\_\_

Science Fair Topic/Title: \_\_\_\_\_

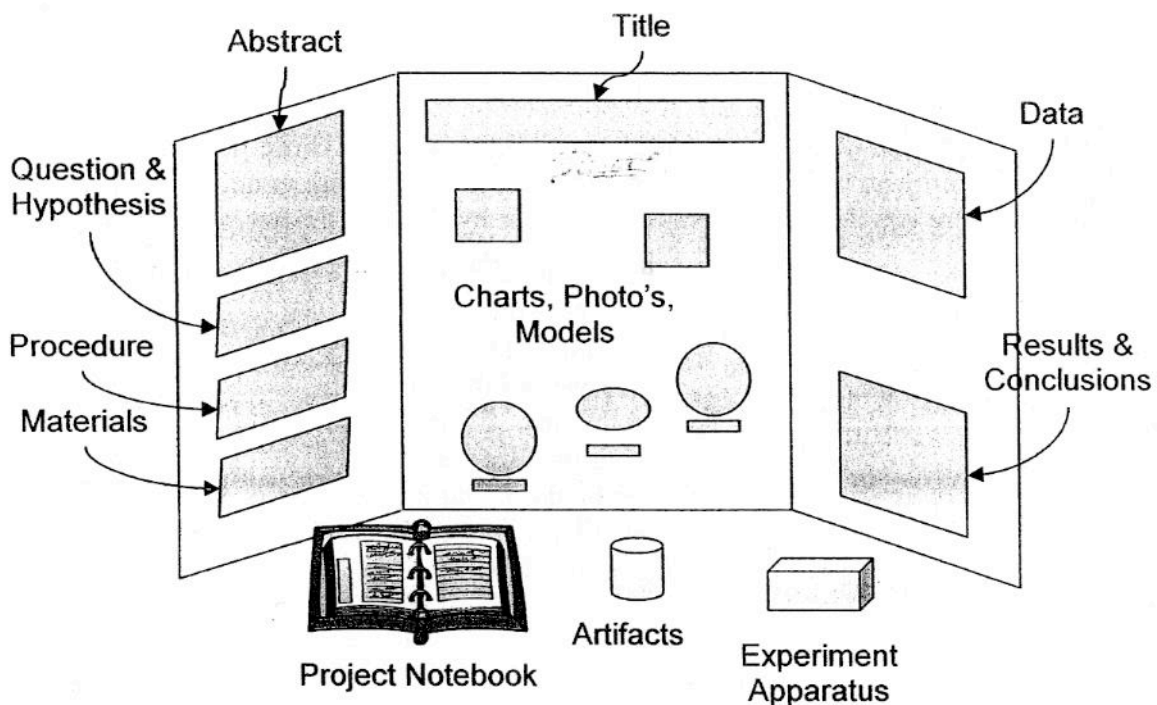
1	3	5
<p>Missing many of the following components:</p> <ul style="list-style-type: none"> <li>• Question/Problem</li> <li>• Hypothesis</li> <li>• Experiment:               <ul style="list-style-type: none"> <li>○ Materials</li> <li>○ Procedure</li> <li>○ Constants and variable</li> </ul> </li> <li>• Analysis of results in form of table, graph, journal sheet, pictures</li> <li>• Conclusion</li> <li>• Abstract</li> </ul>	<p>Missing some of the following components:</p> <ul style="list-style-type: none"> <li>• Question/Problem</li> <li>• Hypothesis</li> <li>• Experiment:               <ul style="list-style-type: none"> <li>○ Materials</li> <li>○ Procedures</li> <li>○ Constants and variable</li> </ul> </li> <li>• Analysis of results in form of table, graph, journal sheet, pictures</li> <li>• Conclusion</li> <li>• Abstract</li> </ul>	<p>Contains all required parts:</p> <ul style="list-style-type: none"> <li>• Question/Problem</li> <li>• Hypothesis</li> <li>• Experiment:               <ul style="list-style-type: none"> <li>○ Materials</li> <li>○ Procedures</li> <li>○ Constants and variable</li> </ul> </li> <li>• Analysis of results in form of table, graph, journal sheet, pictures</li> <li>• Conclusion</li> <li>• Abstract</li> </ul>
<p>Data is neither clear <b>nor</b> neatly displayed in visuals Visuals don't relate to topic, aren't large enough, lacking captions</p>	<p>Data is unclear and/or messy Visuals don't relate to topic or aren't large enough or lacking captions</p>	<p>Data is clearly and neatly displayed in visuals Visuals relate to topic, are large enough to see, and have captions</p>
<p>Project is done in messy and careless manner: no attention is paid to detail; too much white-out cross-outs, crooked writing, done in pencil</p>	<p>Project is somewhat neatly done : some attention is paid to detail; some white-out cross-outs, crooked writing, may be done in pencil</p>	<p>Project is neatly done; creative and organized, attention to detail is given; writing or word processing is neatly done; pen, markers and rulers are used</p>
<p>Project is poorly written and difficult to understand:</p> <ul style="list-style-type: none"> <li>• Writing is unfocused and off-topic</li> <li>• Grammar is poor; many punctuation, grammar and spelling errors</li> <li>• No evidence of proofreading and editing</li> </ul>	<p>Parts of project are difficult to understand:</p> <ul style="list-style-type: none"> <li>• Writing is not completely focused on-topic</li> <li>• Difficult to follow because of sentence and paragraph structure</li> <li>• Some evidence of proofreading and editing</li> </ul>	<p>Project is well-written:</p> <ul style="list-style-type: none"> <li>• Focused and on-topic</li> <li>• Good grammar, spelling and punctuation</li> <li>• Good sentence structure</li> <li>• Evidence of proofreading and editing</li> </ul>
<p>Oral presentation demonstrates poor knowledge of topic</p>	<p>Oral presentation demonstrates fair knowledge of topic</p>	<p>Oral presentation demonstrates good knowledge of topic</p>

## 10. PUT YOUR DISPLAY BOARD TOGETHER.

### Presenting Your Results

You have completed the Scientific Method and now it is time to present your results. For the Sycamore Canyon Science Fair you will do this in **two ways**: The Display Board and your Oral Presentation. Having followed the Scientific Method will make creating your Display Board and your Oral Presentation very simple because you will have all the tools you need.

### The Display Board



When you plan your science fair board, remember this is a case in which one **CAN** judge a book by its cover. If you do a really good job at completely your display, everyone will stop to look at your project. However, if you do a messy job, no one will take the time to discover all the fascinating research you have done or look at the results of your wonderful experiment.

## Components of the Display Board

- **Size of Display Board** – The project board can be no more than 48 inches wide, 48 inches high and 30 inches deep.

### On the Left Wing it needs to have:

**ABSTRACT** - It is a short summary of your project. The abstract is just four short paragraphs that describe very briefly what your project was about and it can't be more than 250 words long.

- **Purpose:** What was the purpose of your experiment? Why did you do the experiment? What was your question and hypothesis?
- **Procedures:** Tell a little bit about your experiment, what procedures and materials did you use?
- **Observation & Results:** What were your observations as you did your experiment? What did you learn? What did you see?
- **Conclusions:** What were your results and conclusions? Did you prove your hypothesis? Did you come up with new questions?

The abstract doesn't take the place of everything else on your Display Board; it just gives a brief summary of your project. The abstract goes in the top of the left wing of your Display Board. You will read the abstract for your oral presentation in class the day before the Science Fair.

**QUESTION AND HYPOTHESIS** - Your original question and your educated guess based on your preliminary research go here.

**EXPERIMENT** - This is the procedure you followed to do your experiment. It should follow the scientific method and include:

- Materials
- Procedure
- Constants and variables

## In the Center

TITLE and QUESTION - The title needs to be placed across the top center. The title can be the question in a "catchy" form. If your title is different than your question, then make sure you also include your question.

*Ex. Your question might be, "Which bath soap cleans the best?" but your title might be "Splish Splash I Was Taking A Bath."*

RESEARCH - You might want to include a short paragraph that gives the background information on which you based your hypothesis.

CREATIVITY - The rest of the space is yours to be imaginative and colorful. You can add photographs and graphs that show how you did your experiment and how you analyzed your results.

### On the Right Wing it needs to have:

DATA - These are your results displayed in a way that your audience can understand. It is usually displayed in a table, graph, or photographs. It is an "analysis" of what you have done.

CONCLUSION - This is a statement of whether your hypothesis was right or not; if it wasn't right, why you think it turned out the way it did, and what you would do differently next time.

**EXTRAS:** You should have at least one of the following:

ILLUSTRATIONS - These can be photographs that you took or off the web that enhance your project. They can also be containers or labels of products you used in your project.

## On the Table

### PROJECT NOTEBOOK

ACTUAL MODEL OR EXPERIMENT (optional) - This is the actual equipment you used at home or a model of your topic.

*Ex. If your question was "Does age affect lung capacity?" you might make a model of the human lung or have the actual equipment you used to test this experiment.*



## COLORS AND TEXT:

1. You can use the labels that come with your board or create your own. Labels created on the computer can be very effective. Try using a different font or color for each of the labels.
2. Use colors that are appealing. They should contrast with your board color. If you have a white board, make your text a bright color(s). Try backing your text with colored paper to make your words come alive.
3. Type your text or print it neatly. Use stencils or premade letters if you prefer. Make your lettering large enough for everyone to see. If you print it, use pencil first and draw guidelines to make sure your writing is neat. Go over your writing with permanent marker and make sure you erase your guidelines.



## DISPLAY YOUR DATA:

You may display your data in a table or graph. Make sure your graph reflects the kind of data you have collected.

- ❖ A line graph demonstrates change over time.
- ❖ A bar/picture graph demonstrates a comparison between two or more things.
- ❖ A circle/pie graph compares parts to the whole.

Graphs and tables should be neatly done. Use computer generated graphs and tables or make them yourself. Use a ruler and colored pencils or markers to make them really eye appealing.



## ILLUSTRATIONS:

Sometimes your results can be shown by photographs or pictures. Photographs and pictures also enhance a display, especially if you don't have the actual experiment because you used something that can't be displayed (i.e. pets, family members). You may also use computer generated graphics or photographs off the Internet. [Free Stock Photos.com](http://Free Stock Photos.com) and [Net Vet](http://Net Vet) are good sites for pictures of animals and other scientific topics. Check to see if you have permission to use them.

## FINISHING TOUCHES:



- Make sure you proofread all your written work.
- Use rulers.
- Don't use pencils. It looks unfinished.
- Erase all pencil guidelines.

## **11. Give Your Oral Presentation to Your Class.**

**Science Fair Project & Rubric (PAGE 17)**

**Due Tuesday, February 7, 2012**

### Oral Presentation

On the day before the fair, Tuesday, February 7, 2012, you will bring your Display Board to school and present your results to your class and your teacher. A very important part of the Scientific Process is presenting your project, talking about what you did and why you chose your project, how you did your experiment and what your results were. Your oral presentation involves reading your abstract. You don't have to memorize your presentation; use note cards to help organize your thoughts and make sure you cover all the information. Relax during your presentation; you are presenting to your friends and your teacher. Tell them what it's about in a natural voice just like you would talk to them everyday. Answer all their questions as best as you can. Questions are a good indication that they are interested and want to know more about what you did. The day or weekend before your presentation, try practicing in front of a mirror. Be confident in yourself; you worked hard on your project and you're an expert on what you did. Smile as you explain how much fun it was to do your project. The more enthusiastic you are about your project, the more excited everyone will get about it. Have fun with your presentation!

## **12. Attend the Science Fair With Your Family.**

### The Night of the Science Fair!

It's here, February 8, 2012. You have completed your project, followed the Scientific Method, brought your Display Board to school and made your oral presentation to your class. You have taken it to the multipurpose room and there it stands with all the rest of the terrific science projects. The only thing left is also the most important part; HAVE FUN! Plan on bringing your family and friends to the Science Fair and show them all the work you did and how proud you are of your accomplishment. Then you can go and look at all the other projects and see what other wonders of Science were discovered.

**Congratulations on all your hard work! You deserve it!**

## Some Rules for the Science Fair – Please Read!

- Abstract - The abstract is displayed on the left wing of the Project Board and must be a maximum of 250 words.
- **Size of Display Board – The project board can be no more than 48 inches wide, 48 inches high and 30 inches deep.**
- Organisms – No living creature including animals, plants and microbes (bacteria, algae, fungi, etc) can be displayed. No organisms, fungi, any time of cultured growth, spoiled food or molds can be displayed.
- Parts – No human or animal parts may be displayed. (Teeth, hair, nails, dried animal bones, historical sections or wet mount slides are okay).
- Specimens – No taxidermy or parts and no preserved animals, vertebrates or invertebrates, including embryos can be displayed.
- Sensitive photographs – No visual presentations of surgical techniques, dissections, necropsies and/or other lab techniques depicting vertebrate animals or humans other than normal conditions can be displayed.
- Chemicals – No Chemicals of any kind including water may be displayed.
- Food – No human or animal food may be displayed.
- Sharp Items – No syringes, needles, pipettes, or anything sharp may be displayed.
- Controlled Substances – No poisons, drugs, controlled substances, hazardous substances or devices may be displayed (i.e. fire arms weapons, ammunition, reloading devices).
- Dry Ice – No dry ice or sublimating liquid may be displayed (i.e. solids which vaporize into the gaseous state without passing into a liquid phase.
- Fire – No flames or highly flammable materials may be displayed.
- Tanks – No tanks that have contained combustible liquids or gases including propane and butane can be displayed.
- Machinery – No unshielded belts, pulleys, chains, or moving parts that pose hazards may be displayed.
- Lasers – No lasers which do not meet ISEF Standards (class II, student operated with warning sign: LASER RADIATION: Do not stare into beam, protective housing and power disconnect may be operated) No Class III or Class IV laser may be operated.
- Heat – No temperature above 100 degrees F unless adequately insulated may be used.
- Electricity – All ISEF Standards must be observed. No unshielded high voltage equipment, large vacuum tubes, or X ray generating devices; no bare wires or exposed knife switches used in circuits of 12 volts or more may be displayed.
- Embellishments – No awards, medals, business cards, flags, etc. No personal information may be displayed (i.e. personal photographs, accomplishments, acknowledgements, addresses, phone or fax numbers).
- Batteries – No batteries with open top cells may be displayed
- Electrical Allocation – Electricity is allocated only to those projects which rely on electricity for essential operation. Display lighting must be sullied by battery power. Electricity for 110 V AC must have a 25 foot (minimum) cord with sufficient load carrying capacity and be approved by Underwriter Laboratories.



# Science Fair Project Rubric

Student Name: \_\_\_\_\_

Science Fair Topic/Title: \_\_\_\_\_

1	3	5
<p>Missing many of the following components:</p> <ul style="list-style-type: none"> <li>• Question/Problem</li> <li>• Hypothesis</li> <li>• Experiment:               <ul style="list-style-type: none"> <li>○ Materials</li> <li>○ Procedure</li> <li>○ Constants and variable</li> </ul> </li> <li>• Analysis of results in form of table, graph, journal sheet, pictures</li> <li>• Conclusion</li> <li>• Abstract</li> </ul>	<p>Missing some of the following components:</p> <ul style="list-style-type: none"> <li>• Question/Problem</li> <li>• Hypothesis</li> <li>• Experiment:               <ul style="list-style-type: none"> <li>○ Materials</li> <li>○ Procedures</li> <li>○ Constants and variable</li> </ul> </li> <li>• Analysis of results in form of table, graph, journal sheet, pictures</li> <li>• Conclusion</li> <li>• Abstract</li> </ul>	<p>Contains all required parts:</p> <ul style="list-style-type: none"> <li>• Question/Problem</li> <li>• Hypothesis</li> <li>• Experiment:               <ul style="list-style-type: none"> <li>○ Materials</li> <li>○ Procedures</li> <li>○ Constants and variable</li> </ul> </li> <li>• Analysis of results in form of table, graph, journal sheet, pictures</li> <li>• Conclusion</li> <li>• Abstract</li> </ul>
<p>Data is neither clear <b>nor</b> neatly displayed in visuals Visuals don't relate to topic, aren't large enough, lacking captions</p>	<p>Data is unclear and/or messy Visuals don't relate to topic or aren't large enough or lacking captions</p>	<p>Data is clearly and neatly displayed in visuals Visuals relate to topic, are large enough to see, and have captions</p>
<p>Project is done in messy and careless manner: no attention is paid to detail; too much white-out cross-outs, crooked writing, done in pencil</p>	<p>Project is somewhat neatly done : some attention is paid to detail; some white-out cross-outs, crooked writing, may be done in pencil</p>	<p>Project is neatly done; creative and organized, attention to detail is given; writing or word processing is neatly done; pen, markers and rulers are used</p>
<p>Project is poorly written and difficult to understand:</p> <ul style="list-style-type: none"> <li>• Writing is unfocused and off-topic</li> <li>• Grammar is poor; many punctuation, grammar and spelling errors</li> <li>• No evidence of proofreading and editing</li> </ul>	<p>Parts of project are difficult to understand:</p> <ul style="list-style-type: none"> <li>• Writing is not completely focused on-topic</li> <li>• Difficult to follow because of sentence and paragraph structure</li> <li>• Some evidence of proofreading and editing</li> </ul>	<p>Project is well-written:</p> <ul style="list-style-type: none"> <li>• Focused and on-topic</li> <li>• Good grammar, spelling and punctuation</li> <li>• Good sentence structure</li> <li>• Evidence of proofreading and editing</li> </ul>
<p>Oral presentation demonstrates poor knowledge of topic</p>	<p>Oral presentation demonstrates fair knowledge of topic</p>	<p>Oral presentation demonstrates good knowledge of topic</p>

Points earned: \_\_\_\_\_



**Science Fair Project -  
Statement of Hypothesis  
Due Monday, January 9, 2012 or earlier**

Student

name \_\_\_\_\_

Project title (in form of question)

\_\_\_\_\_

Research: In a brief paragraph, summarize the research you used to help you form your hypothesis. Cite the resource(s) you used. Make sure you have it available to show your teacher.

Hypothesis: Based on the above research, my hypothesis is:

I believe this because:



