**5th Grade Science Fair**

**Project Packet**

![MCj03519610000[1]]()

![MCj03519560000[1]]()![MCj03519700000[1]]()

**The Scientific Method**

![MCj03340700000[1]]() **9** Make Applications

 **8** Draw Conclusions from the

 data

 **7** Repeat the experiment

 **6** Observe, record and analyze data

 **5** Perform the experiment

 **4** Design an experiment

 **3** Form a hypothesis

 **2** Collect background information

 **1** Identify the problem (Problem Statement)

**Student Name: Teacher:**

**SCIENCE FAIR TIMELINE**

You will be participating in the Gallego Science Fair. To ensure that your project will be completed in time you are encouraged to follow the timeline below. Each date below indicates a portion of the Science Fair Project Packet that you should have completed. Almost everything that you do in this packet will be used to create your **project board** and the **project notebook** that must accompany your board. The Science Fair judges will be grading you on both your **project board** and your **project notebook** so be sure to do your very best work.

**Follow this Timeline:**

**EVERYTHING**

**on your board should be in your project notebook!!**

**Nov. 19, 2012** Science Fair project packet discussed in class

* possible ideas generated
* discussion of project notebook
* discussion of project board

**Nov. 27, 2012**  Developing a Science Project Problem Statement (page 1)

Project Approval Form (page 2)

**Nov. 30, 2012** Researching your Problem Statement (pages 3 – 4)

* project notebook with information from pages 1 & 2 entered

**Dec. 5, 2012**  Developing A Science Project Hypothesis (page 5)

 Designing Your Experiment (page 6)

* project notebook with information from pages 3 & 4 entered

**Dec. 11, 2012**  Recording Your Data – planning sheet (page 7)

* project notebook with information from pages 5 & 6 entered

**Dec. 12 – Jan. 9, 2013 YOU ARE NOW READY TO PERFORM YOUR EXPERIMENT. REMEMBER TO**

**RECORD THE DATA FROM YOUR PROJECT IN THE PROJECT NOTEBOOK. REPEAT YOUR EXPERIMENT IF NEEDED.**

**Jan. 11, 2013**  Using Your Data to Analyze Your Results (page 8)

**Jan. 15, 2013**  Writing Your Conclusion and Your Application (page 9)

* project notebook with information from page 8 entered

**Jan. 18, 2013**  Writing Your Abstract – planning form (page 10)

* project notebook with information from page 9 entered

**Jan. 23, 2013**  Writing Your Abstract (page 11)

**January 30, 2013** **Your Completed Project Notebook** **due at school**

* don’t forget to add My Abstract – page 11 – to your notebook)

![MC900439851[1]]()**January 30, 2013**  **Science Fair Display Board due at school**

 **Pick something unique…try**

**to pick an experiment**

 **no one else will think of**

 **doing. Shhh…keep your great**

**idea a secret!!**

Dear Parents,

Fifth grade will be participating in the Gallego Science Fair. **THIS IS A MANDATORY PROJECT FOR ALL 5TH GRADERS**. There will be a timeline for each student to follow to ensure that all projects and notebooks are completed on time. A Science Fair Project Packet will go home soon with the timeline and checklist included. **DO NOT LOSE, MISPLACE, DESTROY, THROW AWAY**, etc. the packet as it contains everything your child will need to plan and prepare their project. The Science Fair Project will be completed mostly at home. If you or your child has questions/concerns please contact your child’s teacher for help. **All** students are responsible for turning in a Project Notebook and a Project Display Board. The school has purchased display boards for each student to use. The **Science Fair** will be held on **February 6, 2013**. **Project boards and notebooks are due on: January 30, 2013. Your child will be given a grade in the grade book for both the project board and project notebook.**

**NO volcanoes projects will be allowed in fifth grade!**

**CATAGORIES FOR FIFTH GRADE:**

**Earth Science** – projects in this category are weather, astronomy, rocks/minerals, and water

**Environmental Science** – projects in this category are studies of organisms in their habitat, relationships between various organisms, and studies on how people’s actions affect the environment

**Physical Science** – projects in this category are aerodynamics, probability, crystal growth, evaporation, solar power, electrical circuits

**Life Science** – projects in this category are studies of plant growth, cell structure, molds, preservatives, growth and development

This would be a good time for you and your child to start to plan their science fair project. Below are websites to view. You may also want to do a Google search for ‘fun science fair projects for 5th graders’. The students should use their laptops for their research and typing. Again, if you have any questions, please contact your child’s teacher immediately.

![MC900088510[1]]()

 Mrs. Jester: MaryannJ@susd12.org

\*Having trouble trying to catch us by phone?

\*Tired of playing phone tag?

\*Try sending an email…

Mr. Sauberan: ClarkS@susd12.org

Ms. Wilson: LisaWi@susd12.org

 Mrs. Valdez: KimV@susd12.org

Good Luck!

Sincerely,

Your 5th Grade Teachers

**In English:**

[**www.sciencemadesimple.com**](http://www.sciencemadesimple.com)[**www.homeworkspot.com**](http://www.homeworkspot.com)

[**www.all-science-fair-projects.com**](http://www.all-science-fair-projects.com)

[**www.sciencebuddies.org/mentoring/Arotation3\_science-fairs.shtml**](http://www.sciencebuddies.org/mentoring/Arotation3_science-fairs.shtml)

**In Spanish:**

[**http://ciencianet.com/experimentos.html**](http://ciencianet.com/experimentos.html)

[**http://www.funsci.com/texts/index\_it.htm**](http://www.funsci.com/texts/index_it.htm)

[**http://www.tryscience.org/es/experiments/experiments\_home.html**](http://www.tryscience.org/es/experiments/experiments_home.html)

**OR**

**Google:**

**science fair**

**projects**

**Name:**

**DEVELOPING A SCIENCE PROJECT PROBLEM STATEMENT**

 *Think of science topics that you are interested in, or things you enjoy learning about. List them here. Examples are magnetism, light, biology, flight, etc.*

1. 4.

2. 5.

3. 6.

**![MPj03905190000[1]]()**

 *Think of one question for each topic above that lends itself to becoming an experiment.*

*Experimental questions ask* **which is longer***, or* **faster***, or* **stronger***, or some other*

*question where you compare one thing to another.*

1.

2.

3.

4.

5.

6.

*![MCj04344110000[1]]() Consider the following when choosing your science project question:*

* Which of those questions is most interesting?
* Can I perform an experiment on that question at my home?
* Does that question compare two different things or methods to determine which is better?
* **Do I already know the answer to my question? If so, I need a different experiment.**

 *List here the question number from above that you have chosen:*

 *Now rewrite the Problem Statement in the form of a question so that it is clear, understandable, and makes a comparison between two or more things.* Example: Will a more expensive brand of microwave popcorn have less un-popped kernels than a cheaper brand of microwave popcorn?

**Page 1**

**PROJECT APPROVAL FORM Name:**

The Science Fair Project will have to be completed at home. Your notebook needs to be complete and concise. All information that is placed on the display board must be in the notebook. Extra information may go in your notebook that is not on your display board. **You will be given a grade in the grade book for both your project board and your project notebook.**

**There will be NO volcano projects allowed in fifth grade.**

**CATAGORIES FOR FIFTH GRADE:**

**Earth Science** – projects in this category are weather, astronomy, rocks/minerals, and water

**Environmental Science** – projects in this category are studies of organisms in their habitat, relationships between various organisms, and studies on how people’s actions affect the environment

**Physical Science** – projects in this category are aerodynamics, probability, crystal growth, evaporation, solar power, electrical circuits

**Life Science** – projects in this category are studies of plant growth, cell structure, molds, preservatives, growth and development

My project is in the category.

My project is going to test or prove:

 *Example:* *My project is going to prove whether the angle of the Sun’s rays at noon affects seasonal temperatures.*

Briefly describe the experiment that you are going to do and what you want to find out from doing this experiment.



\_\_\_\_\_\_ This project is approved

 Teacher Signature

\_\_\_\_\_\_ This project is not approved for these reasons:

**ALL PROJECTS MUST BE APPROVED BY THE CLASSROOM TEACHER Page 2**

**![MCj04404240000[1]]()Name:**

**RESEARCHING YOUR PROBLEM STATEMENT**

**PROBLEM STATEMENT:** (from bottom of page 1)

 *Think of as many different topics as you can that are related to your question. For example, if your question is about* temperature*, you can look under the related subjects of* thermodynamics, heat, thermometer, *etc. Ask your teacher, parents and librarian for help.*

**RELATED TOPICS:** (to look up in books)

**BIBLIOGRAPHY:** Use at least three different sources for your research.

**SOURCE #1:**

**BOOK TITLE:**

**AUTHOR, ENCYCLOPEDIA ARTICLE or WEBSITE:**

**PUBLISHER:**

**CITY:**  **YEAR:**

**PAGES:**

**![MCj04379900000[1]]()INFORMATION FOUND:**

**BIBLIOGRAPHY:** Use at least three different sources for your research.

**SOURCE #2:**

**BOOK TITLE:**

**AUTHOR, ENCYCLOPEDIA ARTICLE or WEBSITE:**

**PUBLISHER:**

**CITY:**  **YEAR:**

**PAGES:**

**INFORMATION FOUND:**

**Page 3**

**BIBLIOGRAPHY:** Use at least three different sources for your research.

**SOURCE #3:**

**BOOK TITLE:**

**AUTHOR, ENCYCLOPEDIA ARTICLE or WEBSITE:**

**PUBLISHER:**

**CITY:**  **YEAR:**

**PAGES:**

**INFORMATION FOUND:**

**Yahoo and Google are not “websites” they are search engines.**

**You must put down the website address where**

**you were able to access information.**

**![MCj04404540000[1]]()**

**When doing your research make sure you use:**

**Encyclopedias – books – newspapers – magazines**

**Don’t just rely on the internet – use more than one source.**

**SUMMARY OF WHAT YOU HAVE LEARNED FROM YOUR RESEARCH:**

**Page 4**

**Name:**

**DEVELOPING A SCIENCE PROJECT HYPOTHESIS**

**PROBLEM STATEMENT:** (from bottom of page 1)

 *Now that you understand your project a little better, you have to guess what your experiment’s results will be. This is your hypothesis. A hypothesis is no ordinary guess. It is an “educated” guess, because you will use your background research to help you predict the results of your experiment before you actually begin the experiment process.*

**PREDICTION:** (what do you think will happen in your experiment)

 *What evidence do you have for this prediction? List your evidence (from your research) below.*

1.

2.

3.

4.

 *You are now ready to write your hypothesis. Reword your prediction as an* ***“If/then”*** *statement. Be sure to include your evidence.*

Example: **If** I soak a name brand cereal and a generic brand cereal in milk **then** I predict that the generic cereal will get soggier faster.

**HYPOTHESIS:**

**DEVELOPING A PROJECT TITLE**

 *Ideally the title of your project should be catchy, an “interest-grabber,” but it should also describe the project well enough that people reading your report can quickly figure out what you were studying. Your title should* ***not*** *be the same as your Problem Statement. Think of some titles you can use for your project and write your ideas below.*

1.

2.

3.

4.

 *It is time to decide which title you are going to use.*

**PROJECT TITLE:**

**Page 5**

**Name:**

**DESIGNING YOUR EXPERIMENT**

![MCj03383780000[1]]()

 *Before you can continue, you have to write your experiment down on paper. List the materials, procedure, controls and variables you will use in your experiment.*

**MATERIALS:** *List all the materials you plan to use in your experiment. It is best to list them in column form. If you can, use the metric system.*

1. 5.

2. 6.

3. 7.

4. 8.

![MCj04349290000[1]]()**PROCEDURE:** *Write a step-by-step procedure of how to do your experiment. It needs to be very specific and simple enough that anyone can follow it, like a recipe in a cookbook. Some experiments need to be performed several times to ensure correct results; does yours?*

1.

2.

3.

4.

5.

6.

7.

8.

**CONTROLS:** *In every experiment, there is a control group. Items in the control group will have* ***NO*** *change.. You use the control group’s data to compare your results. List the parts of your experiment that will* ***NOT*** *change.*

*![MCj03343660000[1]]()*

**VARIABLE:** *The variable is the one thing you will change in your experiment to answer the question you have* (time, temperature, quantity, etc.)*.*

![MC900384318[1]]()

**Example:** **Which battery lasts longest?**  The only variable I want to change is the brand of battery.  To test I will need to have at least 3 changes in the variable I will test (eg. I will need to test at least 3 different brands of batteries).  Everything else will be a constant.  I will use the same item to test the batteries (eg. the same flashlight, the same toy, or whatever item will use the battery) and I will use the same timer or turn all the items on at the same time.

*My variable is:*

**Page 6**

**Name:**

**RECORDING YOUR DATA – PLANNING SHEET**

It is time to plan the methods you will use to record and display your data. You will need to keep a record or log of all the data you will gather in your experiment. The data log should be placed in your project notebook at the end of your experiment.

***How will you record your results?***

Will you use: bar graph double/triple bar graph pie chart

****** line graph double/triple line graph table photos

***What information will you be showing?***

***Draw a sketch of the table, chart, photos or graph you will use to record your results below. Show how you will label it. Make sure you have a title for your table, chart or graph.***

![MC900439851[1]]()

* **CONGRATULATIONS!! YOU ARE NOW READY TO PERFORM YOUR EXPERIMENT AND START TO RECORD YOUR DATA.**

**Page 7**

**Name:**

**USING YOUR DATA TO ANALYZE YOUR RESULTS**

 *Now that you have completed your experiment, look carefully at the data you collected (your results). What are some things that you learned from your results.*

1.

2.

3.

4.

5.

6.

![MC900441732[1]]() *Now write an analysis* (what did you see, what happened) *of your data (your results). Be sure to make comparisons. Which one turned out to be the longest, or strongest, or whatever it is that you are measuring?*

![MC900088888[1]]()![MP900403691[1]]()

![MC900290466[1]]()

**Page 8**

**Name:**

**WRITING YOUR CONCLUSION AND YOUR APPLICATION**

**CONCLUSION:**

***What is the answer to your science project Problem Statement?***

**ANSWER:**

![MC900434403[1]]()

 ***Was your hypothesis correct?* YES NO**

 ***How does your data support your answer?***

![MM900288870[1]]() *Write your conclusion paragraph. You should begin your conclusion by saying if your results agreed or disagreed with your hypothesis.* ***You must* answer your Problem Statement *and give* supporting evidence (data) *for your answer****. You may tell about any mistakes you may have made, what you would change if you could start over, and any new ideas your experiment has given you.*

![MM900336396[1]]()

![MM900178313[1]]()

**APPLICATION:**

 *Write a short paragraph that tells how your project can contribute to real life situations?*

![MC900431560[1]]()

**Page 9**

**Name:**

![MC900338150[1]]()**WRITING YOUR ABSTRACT – PLANNING FORM**

 ***The abstract is a brief overview of your project. It should include the project title, purpose (what you were trying to discover), your hypothesis, a brief description of the procedure and results. The abstract should be about 150 words long.***

**TITLE OF MY PROJECT:**

**PURPOSE:**

**HYPOTHESIS:**

**PROCEDURE:**

![MC900053279[1]]()

![MC900440450[1]]()

**OBSERVATIONS:** (What you saw)

**RESULTS and CONCLUSIONS:**

**BIBLIOGRAPHY:** (your 3 sources from pages 3 & 4) This does not need to be placed on your board, but **must** be listed in your project notebook.

1.

2.

3.

**Page 10**

**SAMPLE ABSTRACTS**

**Sample 1:**

DOES INSECTICIDE PROTECT LIMA BEAN PLANTS FROM INSECTS?

The purpose of this experiment was to determine if insecticides could protect lima bean plants from insects. The hypothesis was that if insecticide is sprayed on lima bean plants, then the plants would be protected from insects.

![MC900037215[1]]()Sixteen lima bean seeds were planted in 10” plant pots. All received the same amount of water and sunlight. Group A, plants 1-8, was the control group and received no insecticide. Group B, plants 9-16, were sprayed with insecticide twice a week beginning in the experiment’s second week. As the plants grew, they were checked daily for signs of harm by insects. In week three, plants in Group A began to be affected by caterpillars. The insects continued to eat the plants. By the end of the experiment all the leaves of the plants in Groups A were eaten, and all but one of the plants had died. The plants in Group B were alive and free of harm from insects.

It is concluded that insecticide does protect lima bean plants from insects. Therefore, the hypothesis was correct.

**Sample 2:**

UP AND DOWN: SEASONAL TEMPERATURE VERSUS SUN RAY ANGLE

The purpose of this project was to find out whether the angle of the Sun’s rays at noon affects seasonal temperatures. The experiments involved measuring the air temperatures. The experiments involved measuring the air temperature and the angle of the Sun’s rays at noon during different seasons. This was done by recording air temperature and measuring the angle of shadows at noon on the first day of the month from October through April.

![MC900440405[1]]()The measurements confirmed my hypothesis that as the angle of the Sun’s rays decreases during the year, the outdoor temperature increases. These findings led me to believe that seasonal temperatures are the result of the difference in the angle of the Sun’s rays. As the ray angle decreases, sunlight is more concentrated on an area, resulting in a higher temperature.

I discovered that during seasons with high temperatures, the angle of the Sun’s rays is lower than during seasons with low temperatures.

**Name:**

**WRITING YOUR ABSTRACT**

*Refer to page 10 to write your 150 word abstract essay. You* ***do not*** *need to include the bibliography with the essay.*

**MY ABSTRACT**

 **Almost…you still need**

![MC900088510[1]]()**Am I finished to complete your project**

**yet? notebook and your display**

![MC900434379[1]]() **board by the January 30th**

 **due date.**

**Page 11**

![MC900110770[1]]()***Congratulations!! Now you can begin copying the information from this packet to make a display board which will communicate what you have learned to others.***

***The display board is an important part of your science fair project. The purpose of the display is to present your project in an educational and attractive way. Your display should be created so that judges and other people can easily follow your experiment.* YOUR NAME MAY NOT APPEAR ANYWHERE ON THE FRONT!**

**HELPFUL HINTS FOR DISPLAY BOARD**

**TITLE** – Make your display title stand out. A good title can make someone want to know more about your project.

**PICTURES** – Pictures of your experiment should be used in your display. They can show some of your results or other important parts of your project. You may use actual photographs or drawings, BUT…if you chose to use photographs you **may not use any photos that would show your face.**

**COLORFUL PRESENTATION** – Help your display stand out. Use colorful headings, graphs, charts, and pictures. Label everything; a person should be able to understand each item without having to ask a question.

**SPELLING** – **EVERYTHING ON YOUR BOARD SHOULD BE SPELLED CORRECTLY!!!**

***Be sure that your board has: This board is***

* ***A title – in the Middle section at the top under construction.***
* ***Labels in the correct placement for the Use extreme caution***
	+ ***Problem statement – top Left side when approaching!!!***
	+ ***Hypothesis – middle Left side***
	+ ***Abstract – bottom Left side***
	+ ***![MC900357469[1]]()Data – surveys, charts, photos, drawings, graphs, etc. – Middle/bottom***
	+ ***Results – top Right side***
	+ ***Conclusions – middle Right side***
	+ ***Applications – bottom Right side***

**Left side Middle Right side**

**Results**

**Problem Statement**

**Title**

**Applications**

**Conclusion**

**Abstract**

**Hypothesis**

 **Surveys Charts**

 **Graphs Photos**

**DATA**

**Project Boards and Notebooks due: January 30, 2013**