Science Project Guidelines 2013-2014

Objective: Students will be able to develop scientific questions and design experiments to investigate their questions.

You will have some time in class to work on some parts of the project, but most of the work will be done by you at home.

***Type of project**:* Design your project to answer a question, or hypothesis. You cannot make a model for your science project. For example, finding out if a colored light bulb affects plant growth could be an acceptable science project. Building a model of the solar system would not be an acceptable project.

***Details of Project**:* Include all of these sections:

-Question/Problem Statement	-Hypothesis
-Materials	-Procedures
-data table and graph	-Research section
-Conclusion	-Citations/bibliography

May you work with a partner? No!

Presentation of Project: Your preliminary project will be presented in a folder similar to your portfolio folders. After your project has been reviewed, you will create a presentation of your project on a display board. The smaller project boards are preferable. Include materials used for your research.

Will the project be judged? Your project will receive a grade for science class. Students can enter their projects into the school district's *Science Odyssey Fair*. Only projects that were entered into the Science Odyssey may move on to the *Alameda County Science Fair.*

Timeline:

- Problem statement scientific question	Due September 20
- Research	October 11
- Problem Statement w/Hypothesis 2nd draft	October 20
- Procedures rough draft/w question and hypothesis	November 20
- **Rough draft project documents include Data**	**December 20**
- **Final project presentation board**	**January 17**
- **Presentations and Science Odyssey Registration**	**Jan 21 - 24**
- Science Odyssey	Feb 19-20
- Alameda County Science Fair	March 21 -23

Science Project Ideas and General Questions

The following questions are general and must be made more specific for your investigation. Topics you choose are not limited to this list. Avoid doing the same experiment as someone else in the class. You may also want to use the internet to see other examples of science projects.

How well do sunscreens block UV light?
Do ants spread disease in plants?
Can snails be attracted with food?
Does temperature affect the rate at which crickets chirp?
How can cut flowers stay fresh longer?
What kinds of microorganisms live in a local stream or pond?
How does light affect earthworms?
Can a mouse be trained to follow cues?
Does regular exercise improve heart efficiency?
Does regular exercise improve lung capacity?
Does regular exercise improve endurance?
Does drinking water with electrolytes improve endurance?
How can you grow mushrooms?
Does coffee cause a person's heart rate to increase?
What conditions do algae prefer?
Does classical music improve plant health?
What kind of materials glow under a black light?
Does chilling an onion before cutting it reduce tears?
What substances can repel snails?
What kind of light bulb attracts more insects during the night?
How do different factors affect seed germination?
How can you make fruit ripen faster/slower?
Does black absorb more heat than white?
Does light behave more like waves or particles?
How does pH level affect plant growth?
Can you make a natural herbicide from tree leaves?
What kind of tree makes the best herbicide? Could it be black walnut?
How does salt melt ice?
How can you make a sound amplifier?
Do birds prefer one type of seed to another?
Does age affect human reaction time?
How can DNA be extracted from strawberry cells? (www.sciencebuddies.com/)
What kinds or fruit can prevent gelatin from solidifying?
How can DNA be extracted from an onion? (www.sciencebuddies.com/)
Does one bad apple spoil the lot?
Does a germinating seed know up from down?
Does growing a plant in a greenhouse increase the rate of root growth?
Does the plant hormone "Rootone" increase the rate of root growth in plant cuttings?
Are tasting abilities inherited?
Can music enhance math ability?
What is the effect of color on memory?
Does the mass of a seed effect its germination process?
Does the space between planted seeds effect the rate of growth?
Which kind of juice contains more vitamin C?
Which kind of nut contains more food energy?

How does temperature affect the respiration of yeast organisms?
How can you make a solar cooker using mirrors?
Does a greenhouse filled with CO2 reach a higher temperature than one with air?
Does temperature affect crystal growth?
How can water be purified?
Does the number of turns of wire on an electromagnet affect its strength?
Which size of battery produces the strongest electromagnet?
What factors affect the speed of a steel marble in a linear magnetic accelerator?
How can you build a simple electric generator?
How can you build an electric motor?
What factors affect the speed at which an electric motor spins?
How can you make a miniature lighting bolt in an aluminum pan? (www.yesmag.ca/)
How does the length of a lever arm affect its mechanical advantage?
How do the densities of different soft drinks compare?
What is the most efficient shape of windmill blades?
Does changing the mass of the parachute cargo affect the rate at with it falls?
How accurate do fishing line manufacturers rate the strength of their lines?
Which brand of fishing line is the most elastic?
Do different kinds of gases expand differently when they are heated?
How can you build a heat engine with candles and a magnet?) www.scitoys.com
How can you make a steam powered rocket boat? www.energyquest.ca
How can you make a working geothermal power plant model? www.energyquest.ca
Which materials are better heat insulators?
What color can be seen most clearly through fog?
Can different shampoos affect the tensile strength of hair?
Does one color of hair have a greater tensile strength than the other colors?
What types of soil is most susceptible to landslides?
What factors affect land slides?
What factors affect the formation of a cloud in a bottle?
What affects evaporation the most, air temperature, water temperature, or wind speed?
Which material is the most effective sound barrier?
Which fast food restaurant produces the most trash?
Can exercise improve a person's memory?
What factors affect the rate at which germs spread? (glow-germ kits)
Which Great America ride causes you and your friends heart rates to increase the most?
Does closing your nose inhibit your ability to discern tastes?
Are dogs colorblind?
Does the temperature of the water affect the breathing rate of cold blooded fishes?

Science Project Grading Rubric Project Title _____

Last Name _____, First _____ per___

Save these documents in your Google drive login: firstname.las@lvjusd.org, password "middle" or "student"

Scientific Methodology as shown on display

	Possible Points	Your Points
1. Problem		
a. A testable question or Problem statement is clearly written.	**10**	____
2. Hypothesis		
a. Hypothesis is clearly written		
b. A manipulated variable is included in the hypothesis		
c. An expected result of the responding variable is Included in the hypothesis	**10**	____
3. **Materials**		
a. Complete list of materials used is included	**10**	____
4. Procedures		
a. Steps taken for experiment are clearly described. The experiment could be repeated by following these procedures.		
b. Adequate number of samples or trials used.		
c. Metric units used for measurement.		
d. Grade appropriate, challenging experiment used.		
e. Operational definitions included	**10**	____
5. Data		
a. Data table included. Table includes title, labels	**10**	____
b. Photos, illustrations, and/or samples are included		
6. Analysis		
a. Graph of results included. Graph includes title, labels, units of measurement.	**10**	____
b. Correct interpretation of results	**10**	____
7. Conclusion		
a. Hypothesis is correctly accepted or rejected.		
b. Student uses results from experiment to explain why hypothesis is accepted or rejected.	**10**	____
8. Research		
a. Appropriate research completed.		
b. Research is summarized in 2-3 paragraphs.		
c. At least four references are used.		
d. Footnotes and citations are included as needed		
e. References are listed using a bibliography format	**10**	____

Display

1. Display board is used.		
2. Work is typed or neatly written. Correct grammar and spelling.	**20**	____
3. Display is neat and clean. Photos, illustrations, and/or samples are included		
	Total Points	_____