

Initials of person responsible	2012/2013 8 th Grade Science Project Sections, Components & Timeline	Due by...
	What do you enjoy doing; List three of your favorite things to do and then see if you can find a connection between your three favorite things to do and your partner's most favorite things. Start with the things you really like to do on the weekends. Talk with your parents about the science project you will be doing later in the year and let them know you will need to meet with your partner after school and on weekends later on. For web assistance please visit; http://www.sciencebuddies.org/	Done
	Community issues —What are the issues facing the Loma Prieta community and/or our local region or even society? Really think about the challenges that we are facing today and how your project relates to them. Interviewing parents and community members is key here to discovering issues.	Done
	Idea for Science Project —Here your team will be forming a connection between what you both enjoy doing, issues facing our community, and a science project idea. Remember the movies we saw on cutting edge technology and inventions. This is your chance to dream big! You may end up changing this initial idea over the next two weeks, but this is the one thing you and your partner are really interested in doing. Main question; is it feasible? Talk to your parents about this!! Ask their permission, regardless of the complexity or amount of materials you will need. Remind them you will need to meet with your partner.	Done
	Science content link; What area of science does your project involve? Does it involve Engineering, Environmental science, Biology, Physics, Earth science, Astronomy, or Chemistry? Make this connection early on. <u>For example;</u> in the V.W. experiment the science content link is velocity, speed, and momentum.	Done
	Manipulated variable; This is one of the most important points to consider in designing your experiment. If you are able to clearly identify the one thing you want to change in your experiment, you are well on your way to a great science project. <u>For example;</u> the size of the engine in the VW scenario. One sentence.	Done
	Responding variable; This is the thing you think will change because you, the researcher, change the manipulated variable. In many ways this is an inference; a prediction based on prior experience. In reality you cannot be sure this thing will respond until you actually do your experiment. <u>For example;</u> the speed of the car in the VW. One sentence.	Done
	Controlled variables; These are all the many and varied things you will keep the same between one trial and the next of your science fair experiment. Make a long and detailed list here. Be sure to come back here to add to it when you begin your experiment and come up with new items. In our example, weight of car, same tires, same road, same driver... You will easily have many things here. <u>For example;</u> the weight of the V.W., type of tires, same driver, tires, gas, etc.	Done

	Control or Control Group; (8 th grade only) The control is the standard against which you compare your manipulated variable trials and should not be confused with controlled variables. The control group is the test which does not have a manipulated variable. It is the untreated plant, the normal situation, the “placebo” group that doesn’t receive the change. <u>For example</u> ; the control in our V.W. experiment is the original V.W. bug.	Done
	Research question; This is always one sentence and is a conditional statement in the format of “I wonder if...then...” and connects the m.v. and r.v. by showing what you think is the relationship between the manipulated and responding variables. You need to know the m.v. and r.v. before you can write your research question. One sentence only. If you have the type of experiment that has several manipulated variables, you will only choose <u>one</u> as an example of your research question. <u>For example</u> “I wonder if I increase the size of my VW engine then will the car then go faster?” One simple sentence	Done
	Hypothesis; Once you have a research question you can write a hypothesis. Again, a hypothesis is a conditional if/then statement and always begins “I predict that...if...then” and connects the m.v. and r.v. together in a way that makes a prediction about what you think will happen. Basically it is a research question in statement format. The research question and hypothesis should always “go together.” If you have the type of experiment that has several manipulated variables, you will only choose <u>one</u> as an example of your research question. <u>For example</u> “I predict that if I increase the size of my VW engine, then my car will go faster”. One simple sentence	Done
	Begin Background Research This is where you do some research to see what has been studied about your topic. We will spend time in the library and computer lab but you should plan on doing the rest of your work on this part outside of class. You need two internet and two written references in addition to a fifth reference as background research into some aspect of your topic. Wikipedia does not count as an internet source. Oral references must have interview notes with them to count. All references listed later in the “Annotated Bibliography” section must be presented in MLA style. <u>For example</u> ; for our V.W. we could research speed, velocity, momentum, etc in our book, library and internet. We could relate it to improving race time in NASCAR. 1-page;12-point font; double space; Times.	Done
	Materials; This is where you list all the “stuff” you will need to carry out your experiment. You will add and subtract to this list as your research unfolds. Be very specific about all the parts and think about what you have at home and what you don’t have and whether or not you can borrow materials or will you have to buy supplies. Talk to your parents about this and gather materials early on, don’t wait!!	Done
	Procedure; Your procedure will be another component of your work that will unfold as you do your experiment. Whenever you change your initial procedure while doing your experiment write down what you did! That way if you discover something spectacular the experiment can be repeated accurately. This should be detailed, in	Done

	Procedure; Your procedure will be another component of your work that will unfold as you do your experiment. Whenever you change your initial procedure while doing your experiment write down what you did! That way if you discover something spectacular the experiment can be repeated accurately. This should be detailed, in PBJ format, numbered sequence, making sure to list number of trials (3-minimum).	Done
	Data table(s); This is where you physically write down your data. It is created ahead of time and is empty to begin with but when you begin your experiment you will fill it in (and probably modify it as you move forward). Along with your “Observations”, your “Data Table(s)” should be with you while your doing the experiment. You should have your data table(s) on a clipboard and use pen. The data (numbers and/or words) will be typed later in Word or Excel on your computer. Be sure to leave room for observations outside the data table where you note changes in procedure, expectations, bias, controlled variables, or design. You should be actively engaged in your science project at home by this time. 1 to several pages of data tables are not uncommon.	Done
	Performing Your Experiment	Dec 10 th through February 15 th
	Background Research Due;	Due by December 21 st
	Project Title; Your title is written later once you have a good idea of what you are doing and in a very specific way; Catchy phrase first; then “The Effect of... (M.V.)... on (R.V.)...” format. For example; “Will I get there in time? The Effect of Increasing Engine Size on VW Bug Speed”. 1-Sentence.	Done
	Annotated Bibliography; (8 th Grade only) An annotated bibliography is a list of citations to books, articles, websites, interviews, and other documents. In 8 th grade you must have a minimum of two books/articles and two internet sites. In your written report each citation is followed by a brief (usually about 150 words)	Due December 21 st

	Begin Typing Reports	
✓ when done	8th Grade Report & Presentation Board Typing	Due by...
	Here is the timeline for putting together your project display board. Now that you have a typed report you can create the display board from that. <u>Student teams have been gathering data since November 5th at this point.</u> Remember, more data is better; repeated trials, 3 minimum. Your team should have detailed, complete, hand-written notes, materials, procedures, and well-organized data tables and observations in your lab notebooks.	
	Typed List of Physical Materials; These are all the “things” you	Due by...

	<p>Typed List of Physical Materials; These are all the “things” you used, built, grew, raised, or produced during your experiment and must not take up more room than in front of your display board without express express consent of your teacher. The most important item here is your science notebook and may also include a laptop, photos, video, etc. Space is limited, so if you think you will need more <u>ask</u>.</p>	Due by...
	<p>Typed Observations; This is the typed list of all the stuff you noted outside your data table. This can be lengthy in a well-done experiment. All these observations form your “Cycle Of Inquiry” in which your experiment becomes not a linear end goal but an open-ended cycle of experimenting, modifying, and experimenting over and again. Remember the 4 types of observations are qualitative, quantitative, direct, indirect. Observations for the V.W. bug experiment might include a wet road or strong winds on one of the test days, etc.</p>	Due by...
	<p>Typed Cycle of Inquiry; This is where you will explain the cycle of inquiry you went through. Every experiment has this component, regardless how simple and well-planned, and regardless whether you are a seasoned scientist or a student. This is where you will describe <u>how your experimental design changed from the beginning of the year to the end</u>, with all the reasons why you made those changes. Your experiment may be very different from the idea you had when you began and here is where you describe the changes you went through. Remember to keep <u>detailed notes of every change!</u> ½ page</p>	Due by...
	<p>Typed Results; This is where you present the results of your experiment. It is a summary, not a repeat of <u>all</u> your observations and data. Remember our work with observations and inferences here. Be sure not to make inferences when you should be making observations. <u>Be sure also to give just the facts; don’t explain or interpret your data here</u>; that comes later in the analysis section. The Results section should match your Materials and Procedures sections. That is, if you present temperature data in the Results section, then back in the Materials and Procedures sections it should say when and how you measured temperature. If you explain in the Materials and Procedures sections that you were looking for certain species of birds, then in the Results section should present that data. Charts (in Word or Excel), drawings, photos, videos, and physical artifacts are all ways to summarize results in addition to the 1-page typed discussion</p>	Due by...
	<p>Typed Analysis; What did the “Results” show? What does it all mean? How does what you discovered <u>relate to the literature</u> you reported on in “Background Research?” The “Analysis” section is where you explain your Results. Here is where you will do the majority of your writing. The Analysis section explains the relationships seen in the data and any connections between your variables. For instance you <u>should state whether your experiment found there to be a cause-effect relationship</u> between the manipulated variable and responding variable. Any patterns that you discovered showing up in the Results section are described in the Analysis section; including <u>various types of graphs</u>. Here is where you discuss <u>how your background research relates to your results</u> and how your</p>	Due by...

	<p>Typed Conclusion; What does it all mean? The Conclusion section restates the research question, variables, hypothesis, and what you wanted to discover or investigate. It answers the research question and states if your Hypothesis was correct or incorrect (you don't lose points for an incorrect hypothesis!). <u>For example:</u> did you discover what you thought you would find? Were the results different from what you expected? What have you learned from your analysis? What further questions would you like to answer based on your study? The conclusion also answers the question of what experiment(s) would/might you do next. 1-page.</p>	Due by...
	<p>Typed Summary Introduction; This comes right after the title, is only one or two paragraphs long. The summary statement includes an introductory sentence that will catch the reader's attention, the problem in the community or society that you are addressing, and a brief description of your manipulated and responding variables, research question, and hypothesis. It does <u>not</u> give results of your experiment but rather what you hope to discover. It should be exciting and upbeat. 1-2-paragraphs.</p>	Due by...
	<p>First half of presentation board completed (cut and pasted):</p> <ol style="list-style-type: none"> 1. Title Page (Report only) 2. Table of Contents (Report only) 3. Science content link 4. Introduction/Summary statement 5. Community issue addressed 6. 3 variables & Control group 7. Research question 8. Hypothesis 9. Materials & Procedure in PBJ format 10. Draft data table(s) 11. Integrate extra credit from list (report only) 12. Think about alternate presentation modes (optional, see list) 	Due by...
	<p>Second half of presentation board and report completed</p> <ol style="list-style-type: none"> 1. Complete data tables 2. Observations (bulleted, outline, brief) 3. Summary of results 4. Analysis, graphs, charts, etc. 5. Background research 6. Cycle of Inquiry & Conclusion 7. Bibliography 8. Gather and choose <u>physical materials</u> you want to display by board 	Due by...
	<p>Finishing touches</p> <ol style="list-style-type: none"> 1. Complete last minute details (homework) 2. Incorporate all your extra credit stuff (homework) 3. Rehearse your judging presentations (in class) 4. Rehearse your alternate presentations (in class) 5. Evening of the 3rd; gather materials in one spot by the front door at home. 6. Morning of the 4th; load all your stuff in the car to bring to school. Drop off in designated area. During science class you will set up your boards and materials in the gym and practice your judging 	Due by...

	<p>presentations; each partner has a role.</p> <ol style="list-style-type: none"> 7. At school in science on the 5th; Your big day; Present your results to the judges as a team. Remember our work on leadership, public speaking, teamwork, and community. 8. Afternoon of the 6th; Present your projects to the community at the Loma Prieta Science Festival. Afterwards, gather material for home. 	
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