Science Fair Information Packet 2015-2016

The science fair project must be completed individually with a passing grade in order to receive honors credit in science. Please read all of the information below carefully and keep this information as a reference.

*The project must be an investigation of the relationship between an independent and dependent variable. The variables should be* ***measurable****.*

1) Each student will turn in only a science fair paper with the components listed on the rubric. Students will NOT make a display board. Read, read, and re-read the grading rubric and accompanying directions!

2) Students may be allowed to work collaboratively in groups during a few select class periods. However, this is NOT a group project.

3) The teacher will approve science fair topics but will provide minimal assistance during class time. This project is to be completed primarily at home so please allot time for its completion. However, teachers are more than willing to assist students during lunch, before or after school, and/or during designated class time.

4) If a student is selected to attend the regional science fair, he/she will then make a display board for the project.

5) Each student may choose whether to select a topic suited to his/her own personal interests or to select a topic from the list provided by the science department. Please note that some students may be investigating similar topics. However, each individual student must complete his/her own project. Any suspicion of cheating will be investigated and consequences issued if needed.

6) Students are encouraged to think strategically. Science investigations do not end with one final “answer.” Science investigations are intended to gather information. They often have procedural flaws that need to be corrected. Sometimes one investigation leads to another question. Students may build on topics from year to year. Students may NOT re-use a previous project. However, a previous topic may be corrected, modified, or expanded.

7) **Do not wait until the last week to ask for help**. Many projects are not implemented according to plan. Many students make mistakes in carrying out the procedures. Plan ahead so that critical mistakes can be corrected. Sometimes an experiment is implemented perfectly and the results do not come out as expected-THAT’S OK!!! All you have to do is document your procedures and the results as you observed them. It is ok to have procedural errors and mistakes as long as that is documented in the paper and reported in the conclusion. You may still have a few points deducted for procedural mistakes, but you still must turn in the project instead of getting an incomplete. Ask your science teacher to help you!

Steps for completing the science fair project:

1) Pick a topic and fill out the topic form provided by your teacher. Your teacher will make notes on the form and approve it with a signature. After the teacher signs the form, the student and parent must also sign the topic form. All topic forms must be signed and turned in to the teacher.

2) Complete the one to two pages of Review of Research portion of the paper. Cite all sources on a works cited page (MLA format).

3) Conduct the experiment and WRITE down all results. Take pictures to document the process.

4) Make a nice data chart of all raw data. Then, average the raw date. Make **ONE** simple graph to illustrate the **AVERAGED** data.

5) Finish writing the paper. Include Materials/Procedures, Results, Conclusion

6) Check the rubric to ensure that you have all portions of the paper completed properly.

Information about the paper:

**Formatting the paper:**

* Double-spaced (do not quadruple space between section heading and paragraphs, do not quadruple space between paragraphs)
* 12 point font
* Times New Roman font
* ONE inch margins
* Label each section (ex: Abstract, Procedures, Results, Conclusion) at the top center of the page
* Write the paper in third person, no personal pronouns (I, we, they, he, she,…)

Sections of the paper:

**Title-**

* Write the title of your project (How does IV affect DV?)
* Write your name for grading purposes

**Abstract**- a brief overview of your entire project (no more than 1 page)

* No more than 250 words
* Problem, hypothesis, procedures, main results, conclusion
* Third person, past tense

**Introduction/Review of Research**- a review of information related to your independent and dependent variables; a review of other investigations similar to yours

* Properly written, including parenthetical citations of direct quotes
* Information thoroughly addresses background information about the independent and dependent variables

**Procedures**- (1-2 pages)

* List of materials used
* Detailed explanation of the steps taken to implement this investigation
* Paragraph form
* 5-7 Pictures to illustrate what you actually did to conduct the experiment. **Students should not be in pictures. However, the pictures must be authentic not copied from an on-line source. The pictures must illustrate your actual project not be general representations of the project.**

**Results**-

* Include *charts of all raw data*
* Include the *average of the raw data on a chart*
* Other important qualitative observations
* Graph of the averaged data
* Briefly *describe what the data indicates*, facts only, no inferences or conclusions

**Conclusion/Discussion**- (half page)

* Restate the purpose of the investigation
* State the major findings (The data does/does not support the hypothesis. OR Due to an error in the experiment, no conclusion can be made.)
* Interpret the results
* Explain any problems or discrepancies
* Make suggestions for procedural improvements
* Recommendations for further study

Science Fair Topic List

You may select a science fair topic from this approved list. However, you may also use your own topic if it is approved by the teacher. Even if you select a topic from this list, you will still be required to design and conduct the investigation on your own. These topics are general as to allow students flexibility in how the experiment is designed. Remember that conducting repeated trials is an important aspect of experimental design. When conducting an investigation, the student will have to test each variable repeatedly. This will be discussed when students meet with science teachers for project approval.

* **How does the length of a jump rope affect the number of times a person can jump in one minute? (This project will not be allowed at regional competition but will fulfill the science fair honors requirement.)**
* **Does the (string length, bob weight, starting angle) of a pendulum affect the rate at which it swings?**
* **How does the shape of an ice cube affect its melting?**
* **Can you change the speed of a reaction by changing the particle size of the reactants?**
* **How does the length of the effort arm of a lever affect the amount of effort it takes to lift an object? (Science Buddies has directions about how to build an easy tabletop lever.)**
* **How does temperature affect the strength of a magnet?**
* **How does the diameter of a boat affect the number of pennies it can hold before sinking?**
* **How does oil in water affect aquatic plants? (Measure the health of the plants by measuring the amount of air trapped in the test tube.)**
* **How does the type of fertilizer affect the height of a plant? \***
* **How does population density affect plant growth? (How does the number of seeds in a pot affect plant height?) \***
* **Does seed temperature affect plant height? \***
* **How does radiation affect plant growth? (microwave water vs. boiled water) \***

\*Plant projects should not be intimidating but do require time and planning. Students selecting projects that measure plant height are required to grow the plant from a seed. A red bean or lima bean is the suggested seed for such experiments. To grow plants, students will need seeds (beans), Styrofoam cups, and soil.