

Science Summer Assignment

Science Fair Topic Research (Time to decide on possible Topics for you)

Grades Eight and Seven Project

- This must be challenging for the student.
- The experiment must have a testable hypothesis. NOT a demonstration.
- Make sure that the question asked is testable.
- Make sure to have a testable dependent and independent variable.
- Students should develop methods to test the hypothesis that are age appropriate.
- Must be able to be replicated from the directions you provide.
- Show that you have a control group to make a comparison to the tested group.

The student must be able to answer the question, “Why is this research important?” (For example, Who should care if a rocket flies well?)

The project should be about solving a problem for a real world issue. For example, what is a problem that can be solved for Dauphin County, Harrisburg, a local business, local community, or a poor country?

The actual experiment should take the student ten hours to complete. It is expected that many experiments will take longer.

The actual experiment should not be something that a sibling in fourth grade could do without any parental help.

The project will be innovative. The student should be designing the experiment. The experiment will not be a copy of other people’s work. Any idea that is gotten from some other source must be changed to fit the student’s question. The student should not duplicate someone else’s procedure. This is to be your original experiment.

Projects that are most successful are ones in which the student is truly interested and not something copied from the internet.

Projects that are not allowed to be considered

- Any project that includes Bacteria, this is allowed only at the senior high level
- Any project that includes animals with a backbone is not allowed. That would include fish, amphibians, reptiles, birds and all mammals. People are mammals and dogs, cats, and horses are also mammals. Testing of these are not allowed at this level.
- Any projects that involve how long it takes water to freeze, popcorn testing, and paper towel absorption are not allowed. These you may do as your own investigation.

Grade Six Project

This project will be guided in class. The student will be given a choice of topics to select.

The student will come up with the proper procedure to test the hypothesis. The emphasis will be placed on following the scientific method.

Students will be allowed to do an individual project at home for extra credit.

Optional Regional Science Fairs

Pennsylvania Junior Academy of Science, PJAS, is held locally each year near the end of February. This regional meeting is available to any student electing to prepare and give a speech about their project in grades 7 to 12. Projects that are judged to be first award will be invited to participate at the state meeting held at Penn State in May. This provides an excellent opportunity to learn and develop communication skills.

CASEF in April. A committee from our local fair selects student projects. The format is similar to our fair, with the student backboards and reports. Many monetary awards are presented for projects well done.

Possible Topic Idea 1

Name _____

Please look for possible ideas that would fit the guidelines listed above. Fill out this form and have it ready for science this coming school year. All students in grades seven and eight are expected to have at least **TWO** topic ideas filled in at the beginning of the year. You may wish to type responses.

1. Explain what the topic is that you would like to do in two sentences. What question do you have to solve?

2. This must be challenging for the student. Explain how this will be a challenge for the student.

3. The experiment must have a testable hypothesis. NOT a demonstration. Describe the possible answer to your topic question.

4. Make sure to have a testable independent and dependent variable. The independent variable is the variable that is changed or controlled in a scientific experiment to test the effects on the dependent variable. What is it that will be changed in the experiment? An example would be if the experiment was to find out if fertilizer helps plant to grow taller, the independent variable would be changing the amount of fertilizer given to the plants. The dependent variable is 'dependent' on the independent variable. In this example it would be how tall do the plants grow? Describe the independent variable.

Describe the dependent variable. What changes because of the independent variable?

5. Students should develop methods to test the hypothesis that are age appropriate.
6. Make sure that the question asked is testable. Must be able to be replicated from the directions you provide. Please describe what the plan would be to test the hypothesis. The procedure should be in general terms now. Detailed procedures will be done in September.

7. Show that you have a control group to make a comparison to the tested group. Explain what will be used as a comparison group in the experiment. An example would be if the experiment was to find out if fertilizer helps plant to grow taller, one group of plants would be fertilized and the control would be a group of plants with no fertilizer. Describe the control group that will be used as a comparison to the experimental group.

Possible Topic Idea 2

Name _____

Please look for possible ideas that would fit the guidelines listed above. Fill out this form and have it ready for science this coming school year. All students in grades seven and eight are expected to have at least **TWO** topic ideas filled in at the beginning of the year. You may wish to type responses.

1. Explain what the topic is that you would like to do in two sentences. What question do you have to solve?

2. This must be challenging for the student. Explain how this will be a challenge for the student.

3. The experiment must have a testable hypothesis. NOT a demonstration. Describe the possible answer to your topic question.

4. Make sure to have a testable independent and dependent variable. The independent variable is the variable that is changed or controlled in a scientific experiment to test the effects on the dependent variable. What is it that will be changed in the experiment? An example would be if the experiment was to find out if fertilizer helps plant to grow taller, the independent variable would be changing the amount of fertilizer given to the plants. The dependent variable is 'dependent' on the independent variable. In this example it would be how tall do the plants grow? Describe the independent variable.

Describe the dependent variable. What changes because of the independent variable?

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Possible Topic Idea 3 (This NOT required) Name _____

Please look for possible ideas that would fit the guidelines listed above. Fill out this form and have it ready for science this coming school year. All students in grades seven and eight are expected to have at least **TWO** topic ideas filled in at the beginning of the year. You may wish to type responses.

1. Explain what the topic is that you would like to do in two sentences. What question do you have to solve?

2. This must be challenging for the student. Explain how this will be a challenge for the student.

3. The experiment must have a testable hypothesis. NOT a demonstration. Describe the possible answer to your topic question.

4. Make sure to have a testable independent and dependent variable. The independent variable is the variable that is changed or controlled in a scientific experiment to test the effects on the dependent variable. What is it that will be changed in the experiment? An example would be if the experiment was to find out if fertilizer helps plant to grow taller, the independent variable would be changing the amount of fertilizer given to the plants. The dependent variable is 'dependent' on the independent variable. In this example it would be how tall do the plants grow? Describe the independent variable.

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