

Guide Book for Science Fair

Lake and Hamlin Science Fair Projects due *Monday, March 8th.*

Open House Monday, March 8th, 6-8 pm, at the Hamlin & Lake schools' Gymnasium for all to review submitted projects. Awards will not be presented at this time.

Please contact Rose Bolha @ 698-6656 or Rose Merritt @ 698-0967 if you have any questions, would like to volunteer or sponsor awards. You may mail a check payable to Hamlin/Lake PTA to 287 Chivers Rd., Lake Ariel, Pa., 18436. We will greatly appreciate your support and will be sure to recognize your business at the event.

Both the Lake and Hamlin schools will be having a Science Project for students to participate in. Each school will be judged separately in the categories of:

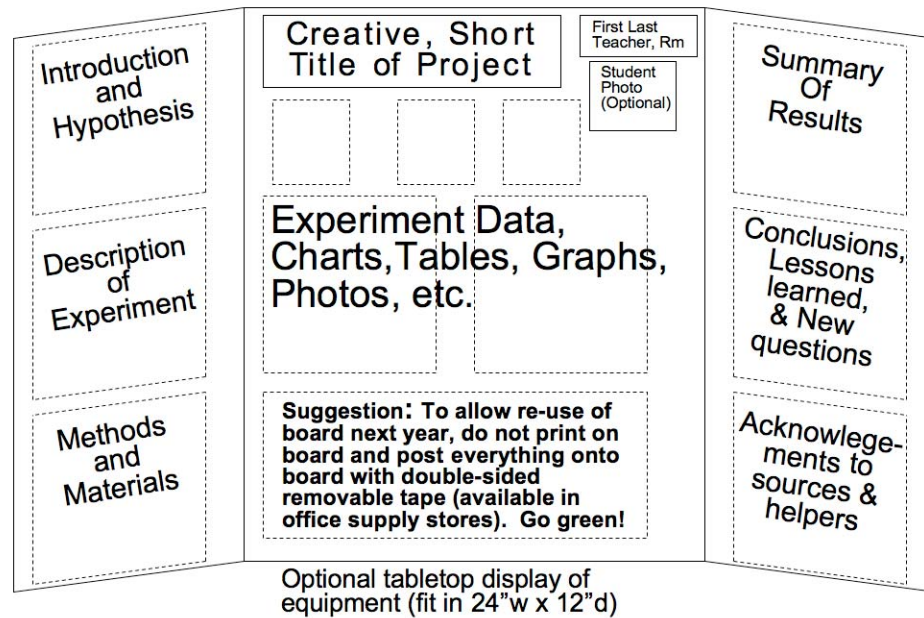
- a. Life Science (general biology, botany, etc.)
- b. Physical Science (physics and chemistry)
- c. Earth and Space Science
- d. Environmental Science

Please have projects submitted to your child's classroom by **Monday, March 8th.**

Rules for Science Fair

- A Participation is voluntary. Children in grades Pre-K – 5 are invited to participate.
- B **ALL** projects should demonstrate a scientific principle or solve a problem. The project should include the following elements:
 - a. Title and Student's Name
 - b. Introduction and Hypothesis
 - c. Materials (What Materials you used)
 - d. Description of Experiment (Procedure)
 - e. Summary of Results (Data, Observations and Results)
 - f. Conclusions (What you learned)
 - g. Acknowledgements (Credits)
- C 1 to 3 students per project. All Phases of the project must be the child's own work.
- D The following are prohibited: dangerous chemicals, open flames, explosives, illegal drugs, vertebrate animals, and references to any websites that deal with any of the above.
- E There are no electrical outlets available. Electrical demonstrations should use only batteries.
- F To display your project use a tri-fold board. This type of board is divided into three sections. Your tri-fold board may consist of foam board, cardboard, or plywood. Be sure however, that the display board you choose is sturdy.

Here's a guide to organizing your display board. It doesn't have to look exactly like this. You can get creative, but you should give the information shown here in some format.



PROJECT PRESENTATION

1) TITLE & STUDENT'S NAME

What is the name of your project? Be creative. Add a line to tell who you are.

2) INTRODUCTION AND HYPOTHESIS

Introduction: Why were you interested in the question? What is your question and what did you guess the results ("answer") would be?

3) MATERIALS (WHAT MATERIALS YOU USED)

Make a list of materials you used to conduct your experiment.

4) DESCRIPTION OF EXPERIMENT (PROCEDURE)

Tell what you did step by step to do your experiment.

5) SUMMARY OF RESULTS (DATA, OBSERVATIONS and RESULTS)

- List your observations (what you saw).
- Show your results (study your notes after you complete your experiment and show how your results support or do not support your guess).
- If you can, add a table, pictures or a graph to help describe what happened. These often make the results clearer.

6) CONCLUSIONS (WHAT YOU LEARNED)

Conclusion: Your conclusion should tell us what your results mean and whether your guess is true or false. If it's proven wrong, tell the possible reasons why!

7) ACKNOWLEDGEMENTS (CREDITS)

Don't forget to thank the people who helped you! If you used a great book or magazine for information, you can list that too! Good Luck! We look forward to seeing your project!

Helpful Tips

- Be sure your work is neat and free from errors such as misspellings.
- Use contrasting colors to make your display more visually appealing.

Make sure all diagrams and charts are neat. Use a computer to generate graphs and charts.

Steps to A Successful Science Fair Project

1. WHAT AREA OF SCIENCE INTERESTS YOU (see additional information below)?

- Think about experiments you've done in school.
- Talk to people who know something about your interest.
- Look at a science kit you already have at home.
- Look at books in your library.
- Look on the Internet.
- Check out the experiments at Noon Science.

2. OBSERVATION OR EXPERIMENT OR BOTH?

- One method of science is about observation and description. Find something you are interested in and really examine it in detail. Describe how it fits into the world around it, what it does. Observe and describe how it is similar to or different to other similar things. Describe its parts and how those parts work together. Be detailed. Use words, drawings and pictures.
- The second important method of science is experimental. Think of a question about your chosen topic that you don't already know the answer to. Write a sentence asking your question. Make a guess at the answer and write that down. Then think of a test (an experiment) that you can do that might tell you if your guess is correct or not.

3. PLANNING AN EXPERIMENT

- Decide what you can do to try to answer your question.
- Choose a way to measure your results. (This is your data!)
- Write out a complete set of instructions for doing your experiment.
- Make a list of the materials you will need to do your experiment. Ask your parents to help get the materials you need or come to Science Fair Workshop to get materials.
- Record in a notebook what you did and what you observed.
- Decide what about your first experiment worked well and what didn't. Change the experiment to make it measure better what you want it to measure. Make sure that you change only one variable at a time. This means that the only difference (variable) between the old and new experiments is the procedure or item that you want to test.
- Repeat your experiment. No scientist believes the results of an experiment that can't be repeated!

4. TELL WHAT HAPPENED!

- Was your guess correct?
- You will learn if your guess works by doing your experiment.

5. WHAT DID YOU LEARN?

- What did you find out from your experiment?
- Did you get the results you expected?
- Was your guess true or false?

Suggested ways for parents to help

Completing a science fair project can be a breeze if parents help their children follow the steps below. Start by choosing a topic for the project. The next step is to research the topic carefully. Then come up with and perform an experiment for the project. Finally, display the project results following the rules of the school's science fair.

- Encourage you child to enjoy the project.
- Help your child find a topic.
- Reinforce the concept that experimental results that do not match the expected results does not mean "failure". Scientist expectations may be wrong, and most experiments do not work the first time. Success is found in learning about the process as much or more than in the actual results.
- Provide working space and materials. Ensure safe experimental procedures.
- Help your child keep their project on schedule.

Elementary Science Fair Projects Resources

Elementary school science fair projects can be very fun and exciting. The following steps provide a simple path to follow in order to complete a science fair project.

Step 1: Choose a Topic

- The first step is to [choose the best science fair project topic](#). To do this, the student needs good [science fair project ideas](#) (see resource suggestions below).

Step 2: Research the Topic

- Once your child has decided on a topic for the school science fair project, the student should [research](#) it carefully by finding out everything he or she can about the topic.

Step 3: Design an Elementary Science Fair Project Experiment

- Next, [design an experiment](#) for the project. To do this we use a series of steps called the scientific method.
- If you need help with assisting in the design of the experiment, use [sample science fair projects](#) to get some ideas.

Step 4: Display Your Science Fair Project

- Here the student will display what he or she has learned about the science fair project.
- Use pictures, charts, and graphs when displaying information.

- Follow rules for the school's science fair to determine the size and shape of the display board.

Science Fair Project Ideas

Where can I find good science fair project ideas? Don't worry; you've come to the right place. The first step in [choosing the best science fair topic](http://www.crystal-clear-science-fair-projects.com/science-fair-project-topic.html) (<http://www.crystal-clear-science-fair-projects.com/science-fair-project-topic.html>) is knowing the right project idea resources to consult.

There are many resources available to assist you in finding excellent science fair project ideas. Science project books are loaded with project ideas and available in the local libraries. Not only do these books list ideas, but the best ones also give instructions and tips for doing the actual science fair experiment. For those of you who need ideas yesterday, some of these books are available for electronic download such as: [Science Fair Projects Made Easy](#) and [101 Easy Science Projects](#). Project ideas can be researched on-line.

More Science Fair Project Ideas

Below are several science project ideas arranged by subject. Use these ideas to help get you started. Once you find an idea that interests you, think of a specific question to answer about this idea, [research](#) your topic carefully, and [design an experiment](#) that will answer your specific question. For more ideas, visit [Behavioral Science Fair Project Ideas](http://www.crystal-clear-science-fair-projects.com/behavioral-science-fair-project-ideas.html) (<http://www.crystal-clear-science-fair-projects.com/behavioral-science-fair-project-ideas.html>).

Biology Science Fair Project Ideas

- What factors affect mold growth?
- What affects do certain chemicals have on marine life?
- How do planaria (turbellarian worms) react to changes in light, pH, or temperature changes?
- Do local ants produce formic acid for protection?
- Which grows faster, hair or fur?
- What factors affect how skin heals?
- Are night insects attracted to lamps because of heat or light?
- Do bacteria affect plant growth?
- How does exercise affect body temperature?
- Which is more effective against bacteria, hand sanitizers or soap?

Botany Science Fair Project Ideas

- How does magnetism affect the growth of blooms?
- Which plants are the best conductors of electricity?
- How do different types of water (distilled, acidic) affect plants?

- How do different colors of light affect plant growth?
- How do phosphates affect aquatic plants?
- How does soil temperature affect seed germination?
- How does soil temperature affect root growth?
- Do vitamins affect plant growth?
- Do plants grow better in water or soil?

Chemistry Science Fair Project Ideas

- How does temperature affect oil viscosity?
- Which substances melt ice better (salt, sugar, chalk)?
- How does acid affect different types of metals?
- How does temperature affect the density of gasses?
- How do different types of water affect crystal growth?
- Does temperature affect the pH of orange juice?
- Does light affect how fast food spoils?
- Does light affect the amount of vitamin C in juice?
- Which pH level is best for the digestion of proteins?
- Which substances are more corrosive to teeth (soda, juice, vinegar)?

Physics Science Fair Project Ideas

- How do different types of lenses bend light?
- How fast do objects with different masses fall? Do they fall at the same speed?
- How does static electricity affect different types of material?
- Which materials are the best sound insulators?
- What factors affect burning?
- How do tension and compression affect the strength of substances?
- How does the Doppler effect relate to police radar?
- How do materials with different indices of refraction affect light?
- How do differences in air pressure cause lift?
- How do different materials affect heat conduction, radiation, or heat transfer?

Science Project Ideas Summary

In summary, make sure that the science fair project ideas you consider are topics that interest you. Use a variety of science fair resources to come up with the best project idea for **you**.

For additional information, visit [Science Projects for Kids](http://www.crystal-clear-science-fair-projects.com/science-projects-for-kids.html) (<http://www.crystal-clear-science-fair-projects.com/science-projects-for-kids.html>), [Biology Science Fair Projects](http://www.crystal-clear-science-fair-projects.com/biology-science-fair-projects.html) (<http://www.crystal-clear-science-fair-projects.com/biology-science-fair-projects.html>), and [Chemistry Science Fair Projects](http://www.crystal-clear-science-fair-projects.com/chemistry-science-fair-projects.html) ([http://www.crystal-clear-science-fair-projects.html](http://www.crystal-clear-science-fair-projects.com/chemistry-science-fair-projects.html)) or [Science Fair Projects](http://www.all-science-fair-projects.com/) (<http://www.all-science-fair-projects.com/>)

Science Fair Project Example for Grades pre-K through 5th

“Popcorn Analysis”

Much of what is required will be difficult for Pre-K, K, 1st, and 2nd grade students. Below is outlined a single project (Popcorn Analysis) and what would be expected of students at each grade level pre-K through 5th or developmentally appropriate ways to do this project.

Problem: Which popcorn pops the best?

A. pre-K/K:

Getting these students to understand control and other variables will be tough. So, it may be OK to allow them to pop a few bags of a couple of different types of popcorn and then to count how many kernels are left over in each kind. Obviously, the method is flawed, but for PK/K it's an excellent start. Parents can help here a lot by asking students why they think one is better than the other and transcribing student responses verbatim. The verbatim transcription is very important here. It needs to be the students' interpretation.

B. Grades 1st and 2nd:

These students will still struggle with variables and the concept of a “fair test”. (Controlled experiment). They can still pop and count kernels or pop and weigh kernels. They can also, at this time begin to display their data graphically. Parents may work to introduce fair test procedures by encouraging students to pop 10 kernels of each corn at a time. This way, it's “fair” between brands of comparison.

C. Grades 3rd through 5th:

You can introduce fair test and variables here and expect a better level of understanding of the concept. Students should be encouraged to control their trials by popping equal numbers of each kind of kernel. The graphic display of data is a must here. Students can make bar graphs and pie charts to display their data. Older students can introduce other variables such as expiration dates, storage temperatures, etc. Older students may also be able to calculate simple statistics such as mean, median, and mode.