

CENTERVILLE SCHOOL



Dear Centerville Families,

On February 9th, Centerville School is hosting its Annual Science Fair! The Science Fair is open to all Centerville students; grades 3-5 entries will be judged and grade 5 participation is mandatory. Our goal is to provide students with a forum to explore an area of science that particularly interests them and to give them the opportunity to share their discoveries with others. We want to generate excitement among students for science and to encourage participation. It is a fun event and a worthwhile endeavor!

For all grades, other than 5th, participation in the Science Fair is voluntary and therefore, all work will be done outside of the classroom. However, to help support students with this initiative, we have planned some mentoring sessions in December and January. More details below.

Time spent doing a Science Fair project can be an exciting period in which students make new discoveries about the world around them, and about themselves. They will be amazed at what you can do as a young scientist!

The following information is designed to help students prepare for the Fair. It includes guidelines on how to pick a topic, create and display a project. This package also includes very important safety rules, including limitations for animal projects. All participants will be required to follow these important rules.

Important Dates

Morning mentoring sessions to help students choose a title for their project:

Monday December 14th 7:35-7:55

Wednesday December 16th 7:35-7:55

Morning and after school mentoring in January

dates TBD

December 18, 2015 All project proposal forms are due

January 4-8, 2016 Science Fair display boards will be distributed

February 9, 2016 SCIENCE FAIR

- Judging 11:30 - 1:45 PM
- Public Exhibit 6:00 - 8:00 PM

If you have any questions, please email the Centerville Science Committee at centervillefmsn@gmail.com.

THREE EASY STEPS TO DOING A SCIENCE FAIR PROJECT

Step 1: Find a Problem to Explore

A science fair project is a careful investigation of a small problem of scientific interest. It begins with an idea or question that needs to be tested. Choose a scientific area that you really enjoy learning about and then narrow it down to avoid doing something scientifically silly or too big to tackle. For example:

Life Science

Plants - What amounts of light promote algae growth in a fish tank?

Animals - What type of food and feeder will attract the most cardinals?

Health/Human Body - How do different style pencils or grips affect writing fatigue?

Environmental Science

Air & Water Pollution - Is snow cleaner in the city or in the country?

Earth Science

Water - Does the sun heat saltwater and freshwater at the same rate?

Geology - What conditions are best for making the tallest sandcastle?

Weather - What is the difference between the temperature in direct sun and in the shade? Is the difference always the same?

Physical Science

Chemistry - How does temperature affect the brewing of tea?

Energy/Force - What is the best shock absorber for dropping an egg?

Matter - What type of microwave popcorn pops the best?

To pick the perfect topic for you, check out science books from the library, talk to adults you know who work in the science field or who just love science. If you have a computer and internet access, search the web for ideas. (Always get a guardian's permission to use the internet.)

*Can't decide on a topic? Use an online survey that will guide you in finding a project that is just right for you! Click on **Topic Selection Wizard** at www.sciencebuddies.org.*

Step 2: Create Your Project

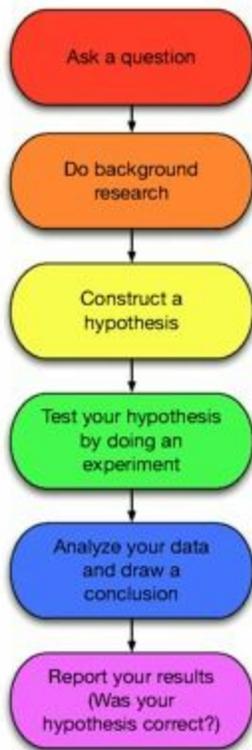
Once you've selected your topic, the real fun begins.

Your project can be an **experimental project** or a **research based project**.

Using the Scientific Method for Experimental Projects

The scientific method is a way to ask and answer scientific questions by making observations and doing experiments.

The Scientific Method



Sample Experimental Project

Alexander is really curious about how batteries work. After doing some initial research, he decides to do an Experimental Science Fair Project, one that requires an experiment and one that expects him to follow all six steps of the Scientific Method.

- A. Alexander asks the question, "Can I create my own battery?"
- B. He researches the components of a battery.
- C. He creates a hypothesis. In this case, he hypothesizes that he can create a battery using lemons, zinc, copper, and wires: "I believe I can make a battery using lemon, zinc, copper and wires."
- D. To test his hypothesis, he sets up an experiment using the materials listed in his hypothesis. In this case, copper metal, zinc metal, wires, alligator clips, lemons and a small LED.
- E. Alexander's initial experiment fails. He analyzes his experiment and his research and decides that he used insufficient zinc and copper. After adding more, he lights the LED.
- F. Alexander concludes that his hypothesis was correct and demonstrates how to create your own battery.

Conducting a Research Based Project

For a **research project**, your goal is to learn facts about your topic, and share those facts in an interesting and comprehensive display. Your research display can include: information from the internet and the library, graphics, comparisons, displays of charts and graphs, statistics from conducting a survey, a demonstration, a model, samples or collections.

Sample Research Based Project

Megan loves collecting crystals! She is fascinated about them and has quite a collection. She wants to display her collection while demonstrating that she has learned something new about them. She decides to ask the question, "What are some common crystals?" Megan will then walk through the following steps to complete her project:

- Read books about crystals, investigating what is common and not so common.
- Research using the internet and find some interesting photographs of really neat crystals. Then she draws some formations herself.
- Try growing common crystals.
- Complete her collection so that she has both a polished and rough specimen of each crystal. This will let her ask the judges to try and pair up the matching crystals.
- Provide general information about each crystal.
- Find an interesting way to proudly display her collection and project.

Keep in mind not all research based projects have collections.

Step 3: Display Your Project

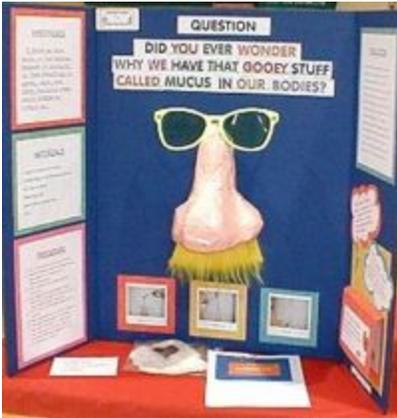
Once your project is complete, it's time to show your work to the judges and your classmates. At the Science Fair, participants will be given a three-foot wide, two-foot deep space on a table for project display. There needs to be enough room for all the displays, so please don't make yours any wider than the allotted space. Also, remember that participants cannot be guaranteed the availability of an electrical outlet. Avoid using AC power for your display!

The most popular display is the three-paneled poster board, which will stand up on its own. *Participants in the Science Fair will be provided with a three paneled poster board at no charge.*

The purpose of the display is to present your project to an audience. It should attract the attention of a viewer and make them want to come over and read about your project. The title and other headings should be neat and large enough to read at a distance. A short title is often eye-catching. You can write out your headings or use self-sticking letters. Students may also use a computer to print their information. The area directly in front of your display board may be used to display other aspects of your project: books containing data, items used in your experiment such as plants, rocks, etc. Don't forget to put your name, grade and a title on the front of your display board!



Here are a few sample displays made by children just like you!



THE DAY OF THE FAIR – SET UP AND JUDGING

The day of the Science Fair participants will check their boards in in the gym between 7:35 and 8:00 AM. They will then return to their displays in the gym at 11:30 AM. The judging will begin promptly at 12:00 PM.

Participants must stay to meet with the judges. Each participant will meet with a minimum of two judges, discuss their project with the judges, and be prepared to answer questions on their project. Participants may leave as soon as his or her project has been judged. Judging will be complete by 1:45 PM. All participants return to the Science Fair at 6:00 PM for the Public Exhibit. During the Public Exhibit students are asked to stay at their exhibits to explain their work to family, friends and teachers. Following the exhibit, there is an awards ceremony where all participants will be recognized for their tremendous efforts!

Exhibits remain in place three days after the Science Fair for an in-school exhibit. All projects must be removed by Friday, February 12th.

JUDGING GUIDELINES

All projects are reviewed by a panel of judges from the community. Students will each meet individually with at least two judges. All students will receive written comments from the judges, however final point scores will not be divulged. Based upon the judging results, the number of ribbon awards will be determined on the overall comparative quality of the science projects. Please remember that these are the students' projects and parents should limit their contributions to necessary guidance/input. Participation medals will be given to all students who complete a science fair project.

The judges will fill out a sheet focused on the following:

<u>Category</u>	<u>Total Possible Points (30)</u>
Concept and Understanding – Does the project explain what was learned about the topic? Does the project represent real study and effort? Does the student show a familiarity with the topic?	8
Scientific Process – Is the problem clearly stated? Are the procedures appropriate and organized? Is the information collected accurate and complete? Does the project show careful observations? Have the problems been thought through and data organized well? Was there adequate data to support the conclusions? *For research based projects, did the student conduct thorough research to explain the topic in detail? Did the student utilize any primary research?	8
Creative Ability – Has the student shown imagination in choosing the topic? Has the student shown creativity in testing or exploring the problem? Does the exhibit show different and better ways of telling people about an idea?	4
Presentation/Physical Display – Is the display visually appealing? Is the proper emphasis given to important ideas? Are the labels large and the descriptions neatly presented? Do the charts on the display clearly show concepts that they are meant to portray?	4
Communication – Do the written components on the display support the development of the problem and the process to research the problem? Is the student able to verbally communicate the details of the project? Is the student comfortable answering questions about their work?	6

SAFETY RULES

The following safety rules must be followed:

- No combustible materials, such as gasoline or alcohol.
- No flames.
- No temperatures above 212 degrees Fahrenheit (100 degrees Celsius) in display.
- No dangerous chemicals such as toxic materials or medicines.
- No poisonous or disease-causing organisms.
- Avoid the need for an electrical outlet. Please avoid using electrical power for your display. There are very few display locations that have access to an electrical outlet. No participant can be guaranteed a display location that is near an electrical outlet. Batteries are allowed.
- Animal study projects would maintain a respect for all living things. For this Science Fair, the following rules apply:
 - No vertebrate animal studies are allowed except for observations of animals in their natural environment (for example, wild animals in the wild, zoo animals in the zoo, pets around the house). Vertebrate animals include people, dogs, cats, hamsters, guinea pigs, mice, rats, birds, fish, amphibians, reptiles, and similar animals.
 - No projects are allowed that might inflict pain or injury to the animal under observation.
 - No vertebrate animals will be allowed on display. Pictures, drawings and models must be used in place of animals. All vertebrate animal observations and data collection must be done at home.

FREQUENTLY ASKED QUESTIONS

Can I work with a partner?

All student participants are encouraged to do individual projects. However, teams of two are allowed. If you choose to work with a partner, please note the following:

1. You must sign up as a team. We need to know who is working with a partner, so we can plan on the amount of space needed for displays.
2. Your teammate must be in the same grade as you.
3. You and your teammate will be judged together. The judges will expect that you have shared the work equally, and will expect that both of you know the topic equally well. Judges will have higher expectations for projects completed by teams!
4. Please do not work on a team of more than two participants. It is very difficult for the judges to evaluate projects completed by larger teams.

Do I have to do an experiment, or can I research and explain an interesting topic?

Both research projects and experimental projects are acceptable. However, judges tend to prefer projects that are experimental or include data-gathering/collection beyond what you would find in the library or on the Internet. If you choose to do a research project, consider doing something to supplement your research, such as building a model or conducting a survey. For example, if you want to study how highway accidents are related to driving habits, you could survey drivers about the speed they drive, whether they wear seatbelts, and whether they eat or talk on the phone while driving. Share your survey results as part of your display.

Can an adult help me with my project?

Yes. In fact, an adult should help you with any part of your project that requires supervision. However, you should do as much of your project on your own as you can, especially your display board.

What should my display look like?

Your information packet includes ideas about what your display should include. Most importantly, your display should be neat and organized, and should focus on the important aspects of your project. Be creative - use artwork or pictures to make it interesting to review. *Don't forget to put your name and grade on the front of your display!*

What will happen when the judges review my project?

You will meet with a minimum of two judges on the afternoon of the fair. If you are working with a partner, you will meet with the judges together. The judges will ask you to explain your project and what you learned. The judges are interested in learning about your project, including the research you completed and the experiments you conducted. Important judging elements include the quality of your display and how well you can explain your project.

How long does judging take?

Judging takes place from 12:00 to 1:30 PM the day of the fair. Each participant (or team) will meet with a minimum of two judges. Once you have met with the judges, you can leave. It is very difficult to predict what time any individual participant will be through with judging. It depends on how many judges there are, and the order the judges decide to review the projects.

What do I do while I'm waiting to be judged?

Everyone is required to stay in the gym while waiting to be judged. There will be chairs set up where you can sit. No one should be walking around looking at the projects during judging. Please bring homework or a book to read, or another quiet activity.

Notice of Non-Discrimination:

All educational and non-academic programs, activities and employment opportunities at Beverly Public Schools are offered without regard to race, color, sex, religion, ancestry, national origin, sexual orientation, gender identity, disability, homelessness, age, and any other class or characteristic protected by law.

Centerville Science Fair Project Proposal Form

Science Fair Date: February 9, 2016

Science Fair Project Proposal Form Due: December 18, 2015

Name: _____ Grade: _____ Teacher: _____

*****The question I plan to investigate in my experiment is:

-OR-

The question I plan to research for the Science Fair is:

Science Fair Project Question Checklist

Is the topic interesting enough to read about and then work on for the next couple months?	Yes / No
Can you find at least 3 sources of written information on the subject?	Yes / No
Can you measure changes to the important factors (variables) using a number that represents a quantity such as a count, percentage, length, width, weight, voltage, velocity, energy or time? Or, just as good, are you measuring a factor (variable) that is simply present or not present? Example: Lights ON in one trial and then OFF in another trial USE fertilizer in one trial, then DON'T USE fertilizer in another trial	Yes / No
Is your experiment safe to perform?	Yes / No
Do you have all the materials you need or will you be able to obtain them quickly at a low cost?	Yes / No
Do you have enough time to complete your experiment before the science fair on February 9, 2016?	Yes / No
Does your project meet all the rules and requirements for the science fair?	Yes / No

I have discussed the project idea and checklist with my parent(s) and I am willing to commit to following through on this project.

Student Signature

I have discussed the project idea and checklist with my child and I believe he/she can follow through on this project.

Parent Signature

*** Please return form to the Centerville School office, attn.: Centerville Science Committee**

VOLUNTEER FORM

We are looking for parents with or without a science background to assist students with their science fair projects. Our goal is to guide student scientists through the process of developing a science fair project. The students are responsible for doing their project and taking ownership of the task. They are also responsible for picking a topic that they will have fun with. We would like to conduct four afternoon mentoring sessions to help students in areas such as:

- Fine tuning their project
- Creating a timeline to complete the project
- Brainstorming on how to design and plan their experiment and/or data collection
- Tips on presentation of findings and display

You don't have to be a scientist, just someone who is good with kids, has patience, can direct students and serve as a sounding board for them – essentially all the things you are as a parent!

We also need parents to help on the day of the Science Fair --- Tuesday, February 9th.

If you are available and want to make our Science Fair a rocketing success, please fill out the form below and return it to the Centerville School main office.

How can you help?

..... I would like to be a judge.

..... I would like to assist prior to the fair with making copies and ordering materials.

..... I would like to help during the science fair.

..... I would like to help during the evening ceremony.

Parent Name:

Student Name/Teacher:

Phone: _____

Email:

Thank you!

Please return form to the Centerville School office, attn.: Reya Al-Khalili, Centerville Science Committee