Creekside 10th Annual Science Fair

The 2021-22 Science Fair will be hosted by the Creekside PTA and is open to all Creekside students.

READ THIS ENTIRE PACKET CAREFULLY FOR INFORMATION. If you still have questions after reading these instructions, please contact lianewilson1@gmail.com. Have fun!

Step 1: Send in your REGISTRATION FORM using this link https://forms.gle/XUNCNWmzrX6qijhX6 **Registration deadline is March 31st.**

Step 2: Choose and complete a science project using the guidelines in this packet.

Step 3: Create a display board and have it ready by April 26th.

Step 4: Important dates:

April 26th - Set up your display board in the MPR
April 27th - Displays will be available for viewing (classes during school, families in evening)
April 28th - Collect your project from the MPR

Science Fair Presentation Rules

- The Science Fair will be held in-person this year. Students will make a display board that will be viewed by students and families in the MPR. The display board must stand on its own.
- Be sure to include the following on your display board: Project Title, Your Name, Your Teacher, and Your Grade.
- Include titles and headings on your display. You may want to use words such as: "Purpose", "Hypothesis", "Background Research", "Materials", "Procedures", "Results", "Charts", "Conclusion and Discussion", or something similar. Remember to take pictures and include them on your display.!
- Projects should be completed by the student. Parent support and engagement is welcome as long as the learning and work that takes place in the project is that of the student. For the youngest students, children can dictate to parents about the project while a parent types the child's words. (Please see the Guidelines for Parent Involvement section.)

What is the Scientific Method?

→ Scientists use the Scientific Method to uncover new information.
→ It's like a recipe for making a good experiment from start to finish.

The Scientific Method has 4 steps:

Problem
Hypothesis
Experimental Observations
Results

1. **State the problem**. What is it that you want to find out? This is usually a question. *Here are some examples of problems- questions that you might do an experiment to answer.*

Do plants need sunlight?	*Can I make biodegradable plastic?*

2. **State your hypothesis**. A hypothesis is a statement that can be tested. You will perform your experiment to test out your hypothesis. How will you find out whether light is important to plants? *Here are some sample hypothesis statements.*

Light is important to plants; without light, they will not be able to grow.	*I can make biodegradable plastic out of glycerin soap.*

3. **Conduct your experiment and observe**. Decide how to conduct your experiment. Write down and/or take pictures of what happens during your experiment.

One was kept in the window; the other was kept inside a toy box. Each plant was watered every other day. Each plant was measured weekly. After four weeks, the plant in the window grew an inch and made three flowers. The other plant shriveled and almost died.	*I mixed milk, gelatin, vinegar, and instead of glycerol, I used a melted bar of glycerin soap. I combined the ingredients on the stovetop on low heat. I poured the mixture into a plastic mold. It was goopy and didn't harden like it was supposed to.*

4. **State your results**. Was your hypothesis correct or incorrect? What did you learn? Your results tell us what you learned from your experiment and observations. **Sometimes scientists learn just as much from an experiment that did NOT go according to plan! For example, Thomas Edison's light bulb making experiment failed ONE THOUSAND TIMES before he perfected the light bulb!** If your hypothesis was right, you have a "valid hypothesis". If your hypothesis was wrong, you have an "invalid hypothesis".

My hypothesis was RIGHT! I have a VALID hypothesis!	*My hypothesis was WRONG! I have an INVALID hypothesis. What did I learn?*
Light is very important for the health of a plant.	*Glycerin soap won't work to make bioplastic, or maybe something else went wrong like I didn't use the right quantities of ingredients. My results were inconclusive. I'll need to do another experiment in a different way in order to make bioplastic.*

Conclusion:

What is the Scientific Method?

→ **Steps that scientists use to discover new information.**
→ **It's like a recipe for making a good experiment from start to finish.**

If my hypothesis turns out to be invalid, is that bad?

→ **No! What did you learn? Thomas Edison failed 1,000 times before he successfully invented the light bulb. That means he had 1,000 invalid hypotheses but kept trying!**

Remember the 4 steps of the Scientific Method:

Problem
Hypothesis
Experimental Observations
Results

Guidelines for Parent Involvement

The Science Fair is designed to help your child develop the ability to explore and investigate a scientific topic in depth and use the scientific method. The process will allow each student to integrate writing, math, science and other curriculum areas. We hope the Science Fair will be a fun and unique way for your child to engage in learning and to explore science in more depth. All science fair projects should be grade appropriate and should be authentic work of the student. While the Science Fair is designed for your child's benefit we wanted to share with you how much and what type of parental involvement and input is permitted.

- Parents may assist their child in creating a visually appealing poster. For example, parents may help with measuring, cutting, pasting, gluing, and placement of work on the display board. For children who are in the youngest grades, parents may ask questions about the project and children may dictate to parents who may type the student's own responses. **The content of the project should be that of your child.**

- The research, design, and investigation should be completed primarily by the student. The parent's role is to provide the resources and direction necessary while also being a constant source of encouragement, questioning and support. While you are welcome to be involved we ask that you think about how much of the work is your child versus your work. Obviously, younger students need more support and help, and this is to be expected. Again, the goal is to get your child interested and engaged in science and experiments so use your judgment on the appropriate level of support.

- Topic selection should be that of your child, but parents are welcome to offer suggestions and encourage exploration of topics they might not consider. Again, please make sure the topic is grade appropriate.

- Parents are welcome to proofread a student's work, but corrections should be made by the child.

In short, a good rule of thumb is to think about how your child is engaged in learning. Sometimes the best learning comes from making a mistake or designing a project that may not end up the way that is expected. While everyone gets a certificate for participating, the true winning comes with the learning that will take place with your child. Enjoy!

THE SEVEN SCIENCE PROJECT CATEGORIES

Choose a category for your project.

1. **Earth Science** is concerned with how our planet works and changes. It includes geology (the study of the earth's crust, rocks, fossils, etc.) and meteorology (the study of weather).
2. **Life Science** includes the study of living things on the earth and their life processes. Biology fits into this category, as does Botany (the study of plants) and Zoology (the science that deals with animals).
3. **Physical Science** includes Chemistry, Physics and Astronomy. These sciences function closely with mathematics. Physics includes the study of matter, motion, electricity, and magnetism. Astronomy is the study of planets and outer space. Chemistry is the study of properties and reactions of matter, particularly at the level of atoms and molecules.
4. **Inventions**- Combine scientific principles with your creativity to develop a new material, structure, device, or system to solve a problem or improve an existing solution. This also includes the development and evaluation of innovative devices, models, techniques or approaches in technology, engineering, or computers (hardware or software). An invention can be anything that solves a real problem. It is your original idea; it cannot be purchased in a store or found in a book. It can be something that no one has thought of before, or it can be an improvement to an existing invention. An invention must serve a purpose.
5. **Rube Goldberg**-is a contraption, invention, device or apparatus that is deliberately over-engineered to perform a simple task in a complicated fashion, usually including a chain reaction.
6. **Sequential Progression**

This type of entry requires a sequential progression of cause-and-effect steps.

- Starts with a single, simple initialization action
- Continues through multiple steps which may branch and then merge again
- Finally performs a clearly defined and (usually) simple task

7. **Simple Machines and Forces**

Entries in this category will make use of several types of simple machines and physical forces during the sequence of operation.

- Simple machines include lever, wheel and axle, pulley, incline plane, screw, and wedge.
- Physical forces include inertia, gravity, friction, stored energy, combustion, etc. (note that extreme care must be taken if using, but sure you have adult supervision).

Display (Diagram), Documentation, And Construction

- The entry should have a diagram (illustration) of the sequence from initial step to conclusion.
- The entry should include documentation of the building process.
- The sequence of operation, including direction of force should be clearly outlined.
- If the entire sequence is built, it is recommended that a video of a complete, successful run be shown in your presentation.