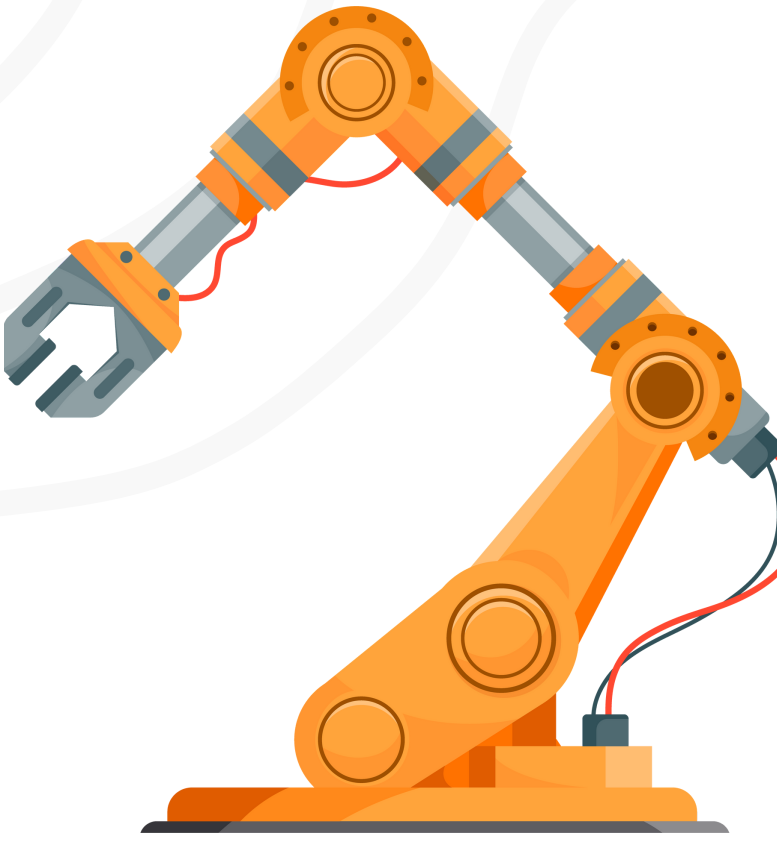
East Ridge Elementary PTA

STEAM FAIR

Unleash your curiosity and showcase your creativity!

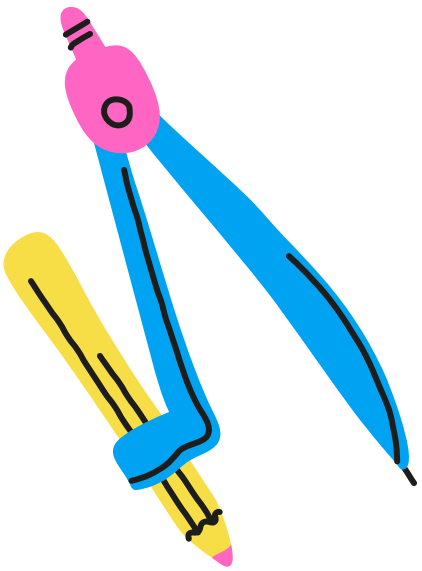
STUDENT GUIDEBOOK



STEAM: Science, Technology, Engineering, Art, and Mathematics

Calling all aspiring scientists, tech wizards, engineering geniuses, artistic innovators, and math whizzes!

Students from every grade level are invited to showcase their STEAM talents! Work solo or team up with friends or family members to create an original project that demonstrates your creativity and passion for STEAM.



Questions?
Email STEAM@erpta.org

OVERVIEW

April 2, 2024 | 6:00-8:00 PM
Set up opens at 3:50 pm. All set up completed by 5:50 pm.

Located in the East Ridge gym
Register online: eastridgepta.org/steam-fair

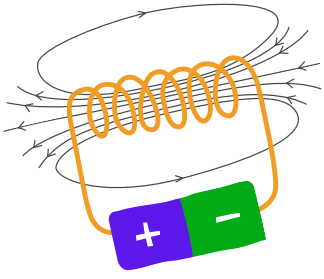
HOW TO GET STARTED

1. Review the event guidelines (page 4) to get a clear understanding of what is allowed.

2. Brainstorm and discuss ideas with a grown-up to get valuable feedback. Think of a project that excites you and bring it to life!

3. Have a grown-up help you register before March 5.

- Provide a brief description of your project or experiment.
- Prepare to display your project on a tri-fold poster board or on the surface of a 6'x3' table. See page 7 for Recommended Steps.
- Make sure a parent/guardian can help you the night of the STEAM Fair. They are expected to remain at the school for the duration of the event.



GUIDELINES

The STEAM Fair (Science, Technology, Engineering, Art, and Mathematics) is an educational event that encourages students to engage in projects and activities related to these five disciplines. The purpose is to foster creativity, critical thinking, and problem-solving skills through interdisciplinary learning. The event is being put on by volunteers for the East Ridge PTA.

- All grade levels are welcome to participate.
- Projects can be worked on by one student, a group of students, or as a family. Adult family members may contribute, but the majority of the project should be completed by the student(s).
- Only one project per student. We want plenty of space for all students who are interested in participating.
- Students may either conduct and present a project or submit original art to be displayed. Art submissions should creatively reflect concepts from science, technology, engineering, or mathematics.
- Both hypothesis-driven (a project framed around an educated guess, question, or prediction) and observational-based projects are encouraged.
- See page 6 for project ideas. You can even use a commercial kit (such as a CrunchLabs Build Box) to ask and answer a question.
- The STEAM Fair is a student showcase of curiosity and experimentation. Submissions will not be judged.

- Register for the STEAM Fair by March 5. Space at the Fair will be limited; depending on demand, we may have to close registration early.

- Show your results on a tri-fold poster board. East Ridge PTA can supply this for you. Display tables will be provided.

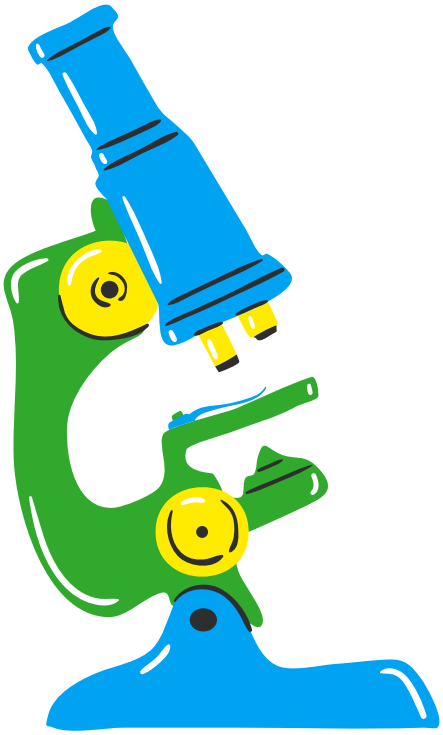
- Use visuals! Take photos of each step or provide models of your experiment. You can even perform a (safe) demonstration.

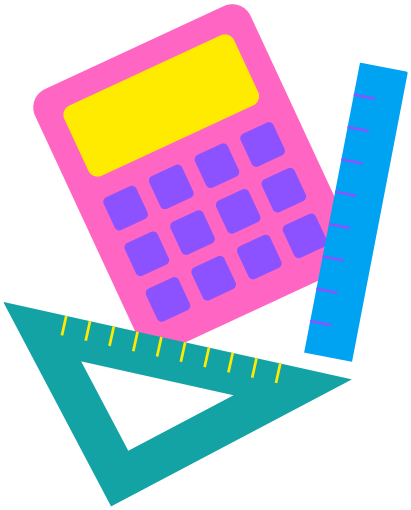
- Access to electricity is limited. If you need an electrical outlet, please request this in your registration form.

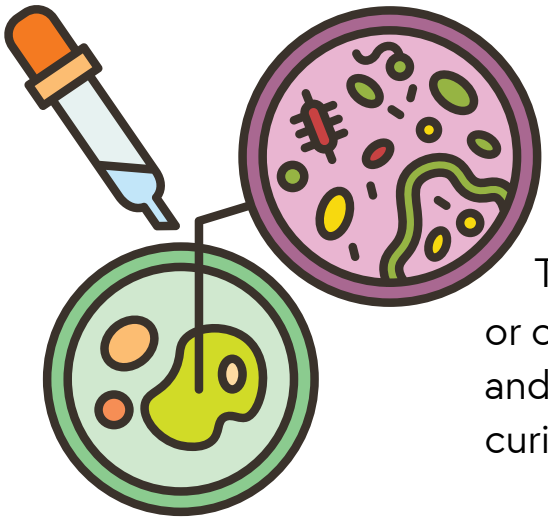
- No weapons or fire are allowed.

- Any foods or liquids must be properly contained.

- On the night of the Fair, you must keep the area around your table clear. Spills or electronics on the floor pose a safety risk.







RESOURCES & EXAMPLES

The following are provided to help generate or clarify project ideas. Let your imagination soar, and remember, every big discovery starts with a curious mind just like yours.

RESOURCES

Science project ideas: education.com/science-fair
Poster layout ideas: tinyurl.com/poster-ideas
Questions: STEAM@erpta.org

EXAMPLES

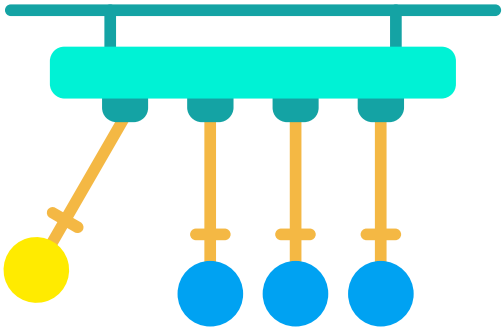
Science: Study chemical reactions by creating a miniature volcano using baking soda, vinegar, dish soap, and a bottle. This project demonstrates an exothermic reaction, showcasing the dynamic interaction between an acid and a base.

Technology: Construct a simple solar cooker using common household materials such as cardboard boxes, aluminum foil, and plastic wrap. This eco-friendly project captures and concentrates sunlight, effectively using renewable solar energy to heat or cook food. It demonstrates the principles of solar energy conversion and sustainability.

Engineering: Build a Newton's Cradle by suspending a series of identical spheres in a straight line using fishing line or thin wire. When one sphere at the end is lifted and released, it collides with the rest, illustrating the principles of conservation of momentum and energy through the kinetic transfer between the spheres.

Art: Create a magnetic art sculpture by using various magnets and metallic objects to explore the effects of magnetic fields. This demonstrates the invisible forces exerted by magnets, creating dynamic, floating patterns that change with each interaction.

Mathematics: Use soap, water, and various wire frame shapes to delve into the world of geometry by creating and studying soap bubbles. Observe how soap bubbles can form perfect spheres, minimal surface structures, and even complex geometric patterns.



RECOMMENDED STEPS

If your project is hypothesis driven, consider applying the Scientific Method as a framework.

1. Ask a testable question
What do you notice or wonder about? Formulate a question that allows you to gather and analyze data to improve your understanding of a 'who, what, where, when, or how' question.

Example

Does the color of light affect plant growth?

2. Do some research
Find out what is already known before you design your study. Ask your parents, research online, check out books from the library, or ask a teacher. Then, either conduct an experiment to confirm what other people say or design a new inquiry.

Gather information about photosynthesis, light, and how plants grow. Learn about different colors in the light spectrum and how they are absorbed by plants.

3. Make a prediction or observation
What do you think will happen? A hypothesis is an educated guess on how things work.

Hypothesis: Plants grown under blue light will grow taller than plants grown under red and green light.

4. Test your prediction or observation with an experiment
Set up a way to test your prediction or to describe your observation. Think about what type of data you need to inform your question and then, consider what tools or instruments will be useful to collect data.

Set up three groups of the same plant species under different colored lights (blue, red, and green). Ensure all other variables (like water, soil type, temperature, and pot size) are kept constant.

5. Record your data

Determine how you will record your data. Consider making (or downloading) a data sheet to make sure you record all of the data in a consistent manner.

Measure the height of plants daily for a specified period (e.g., 30 days), and record any other observations such as leaf color and number of leaves.

It may be informative to take pictures or video each step of the way. In addition to the data log, consider recording your observations in a journal to tell the story of what happens as you go along in greater detail.

6. Analyze the results

What did you find out? Collect measurements from your experiment and analyze this data to generate your results. These may be reported in the form of numbers, words, and drawings; use whatever ways you think will help you to better understand the meaning of the data you collected.

Compare the growth of plants under different colored lights. Use graphs or charts to visualize the data and look for patterns or trends.

7. Conclusion

What does it all mean? Did your experiment show what you thought it would? If it did, that's great! If not, that's okay too, because finding out something different is still a discovery.

If plants under blue light consistently grew taller, it supports the hypothesis. If there is no significant difference, or if plants under a different color grew taller, the hypothesis is not supported.

8. Report your conclusion

Create a poster, make a display, or label parts of your experiment so that you can share what you have learned at the East Ridge STEAM Fair!