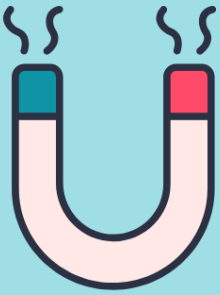
WWW.SCIENCEFAIR.RUFFINRIDLEYPTO.ORG



FRR STEM FAIR

2024

FAIR AND PROJECT INFORMATION

THEME
IMPROVING OUR COMMUNITY

General Information

Who	All students, pre-K thru 8th grade, are encouraged to participate!
When	Saturday, February 10th, 2024 from 9 AM to 12 PM
Where	FRR Cafeteria
Theme	Improving Your Community – projects do not need to follow the theme
How	First, complete the online registration as directed below. Then students complete their projects during non-school time and present them during the STEM fair.
Subjects	(including but not limited to): Biology, computers, environment, chemistry, physics, math, architecture, astronomy, engineering, robotics. All areas are welcome!
Projects	Projects can be experimental (following a scientific process) or invention/design/engineering projects (design process or creation of device to complete a task).
Deadline	Projects must be ready for presentation on the day of the STEM Fair.

Please complete the required registration form as soon as possible at:
https://www.sciencefair.ruffinridleypto.org/register

If a student decides to withdraw after registering, please contact science@ruffinridleypto.org as soon as possible. Additionally, please contact with any questions!

Schedule

8:30	Registration and Set-up
9:00 – 12:00	STEM fair opens to the public
9:00 – 11:30	Judging
12:00 – 12:30	Award ceremony

Projects Overview

A STEM fair is an event for students to present their science, technology, engineering and mathematics projects to expert judges and the wider community. Its main purpose is to get students excited about STEM by experiencing it firsthand.

At the STEM fair, each student will have the opportunity to present a project, both visually and orally, with the question and answer displayed in an engaging manner. Students should be able to explain their projects and answer questions. To ensure a successful experience, students and those supporting

them should focus on having fun with their project. During the fair, judges will also be focused on providing the students with a rewarding and encouraging experience.

In this section, you can find information about what is expected of both the visual and oral presentation of your project. Each project includes:

1. Exhibition (poster)
2. Presentation
3. Logbook (optional)

Each of these three elements are described in the following sections.

1. Exhibition

An exhibition may include (optionally) a physical model, a computer program, demonstration or special apparatus. Posters should follow the general guidelines:

- Fit on a standard size table space, approximately 40 inches by 26 inches.
- Be free-standing (e.g. using three sides of a box or a standard tri-fold poster board)

The poster should include a short report that contains:

- **Introduction** – Background information on your topic and why you chose it
- **Question** – What is the question you set out to answer? Include your hypothesis (for experimental projects) or statement of purpose (for invention/design/engineering projects).
- **Materials and methods (procedure)** – How did you try to answer your question? Explain the materials you used and how you conducted your experiment or how you planned and built your invention/design.
- **Results** – Show and explain your observations and results (include graphs, charts, tables, drawings or photos). Include your original logbook with your exhibition at the fair.
- **Conclusions** – What did you conclude about the question you investigated?
- **Bibliography** – List any references or sources used for your project.

If a project includes a physical model or demonstration, please be sure it fits in the allotted space of approximately 40 inches by 26 inches. If your exhibition has special needs, such as power or additional space, please note this on your registration form or email the organizers. Electronic devices such as laptops are allowed for projects that need to run a computer program.

2. Presentation

Participants may present their project to judges (optional) and answer questions about their work. An average presentation is between five and ten minutes, followed by approximately five minutes for questions. Practice your presentation before the STEM Fair so you'll feel comfortable presenting, including practicing answering questions. Judges will be looking for students to demonstrate an understanding of their project. During your presentation be sure to include:

- **Introduction** – Who you are and your grade

- **Background** – Briefly, describe how you picked your project and a review of any research done in preparation
- **Question** – State your hypothesis (experimental) or purpose (invention/design/engineering)
- **Procedure and Results** – Describe the method used to address your question or purpose and the results
- **Conclusion** – Discuss if your results support your hypothesis (experimental) or satisfy your stated purpose (invention/design/engineering)

Be sure to be brief enough in the introduction and background to cover all elements of your project. Notecards or the exhibition itself can provide helpful queues during the presentation, though be sure to demonstrate your own understanding of the project during the presentation.

3. Logbook

It is important to keep records of what was done during any experiment, including both successes and failures. Each project is expected to have a logbook in which you record your setup, data and observations. Notes should be handwritten by the student in a bound book and can include sketches, hand drawn tables and figures. The more accurately the logbook captures your process, the better the logbook!

4. Safety

Please use common sense when considering the safety of your project and exhibition. When in doubt, contact the organizers.

- Do no hurt or scare people or animals, including yourself, as part of your project.
- Do not publish the names of human subjects.
- Do not use dangerous materials in your project and if you have any questions, please contact the organizers before proceeding.

5. Resources

A good project is based on a subject that you are interested in – something you enjoy and would like to spend time working on. For example, you may have a pet bird at home who is a picky eater. What is its favorite food? Does it ever get tired of eating the same food? Once you've chosen a question, you must figure out a way to find the answer to your question. There are many ways to answer questions. You can design an experiment or a survey, build a model or write a computer program that can help you find the answer.

A good project is one you can do mostly by yourself, with little help from others. The reason to do a project is because it's fun and will help you learn something new. Having someone else do significant portions of your project takes away from some of your fun at discovery and you do not learn as much. Your project should not be perfect – if it follows the scientific method and you have fun, then it will be a successful project!

A good project is one completed using everyday materials that are easily accessible. Finding and building needed materials is more satisfying than buying a kit someone else made. Creative projects using basic materials make for the most impressive fair projects.

For help at all stages of your project, the Massachusetts Science + Engineering Fair has great resources: https://scifair.com/science-fair-ready/students/

For help selecting a project, Science Buddies has many ideas that are sortable by grade: https://www.sciencebuddies.org/science-fair-projects/science-projects

Examples of exhibitions can be found here: https://www.sciencebuddies.org/science-fair-projects/science-fair/science-fair-project-display-boards#samples

Science Buddies also has a primer on logbooks: https://www.sciencebuddies.org/science-fair-projects/science-fair/laboratory-notebooks-stem

Judging

Students can choose to receive feedback from the STEM fair judges. Judges will provide feedback using the standards-based rubric below, which emphasizes educational growth and skills development. All students will receive ribbons for participation. Grades 3-8 students who choose to receive feedback from judges may receive additional 'honorable mention' and 'exemplary inquiry' ribbons for meeting or exceeding STEM inquiry standards as defined in the feedback rubric.

Student Name _____ Grade_____

Scorer Instructions: For each item circle 0, 1, or 2. Do not leave any items unanswered.

0 = No 1 = Some Evidence 2 = Yes

1. Is the investigation guided by a question or clearly stated engineering goal?	0	1	2
2. Is a hypothesis or design proposed that gives a possible answer to the guiding question?	0	1	2
3. Are the procedures described in sufficient detail to allow others to repeat the work or are there engineering designs/documentation?	0	1	2
4. Was the project well planned? Examples: were records such as a log kept with observations, designs or was there other evidence of planning shown?	0	1	2

5. Were appropriate tools or methods used to help collect data, test designs or conduct experiments?	0	1	2
6. Was appropriate background information researched and provided? Was the student aware of the scope and potential limitations of the project?	0	1	2
7. Are the data collected or results displayed clearly, such as in a graph, table or figure?	0	1	2
8. Are the data analyzed appropriately to seek an answer to the guiding question or to evaluate the engineering design? (concluding that results are inconclusive is a valid conclusion!)	0	1	2
9. Is the project presented visually in a manner that makes the purpose, procedure, and results clear?	0	1	2
10. [BONUS] Did the project improve a community in a way that was a stated goal of the team?	0	1	2
TOTAL POINTS			

Comments:

Circle the result below:

Points Scored	Achievement
0 to 13	Participation
14 to 17	Honorable Mention
18+	Exemplary Inquiry

Standards-based rubric adapted from Rillero, Peter. "A standards-based science fair." Science and Children 48.8 (2011): 32.

Beyond FRR STEM Fair

Each school within Brookline can send up to 10 projects to the Massachusetts Region V Middle School Science & Engineering Fair, which will be held on March 23 at Regis College (registration deadline is March 1). Details and registration can be found on the Region V Middle School Science & Engineering Fair website:

https://msreg5.zfairs.com/App?f=3f5dce66-54cf-4b43-b46e-065021747091

More information can be found on the Massachusetts Science + Engineering Fair website:

https://scifair.com/fairs/middle-school/

If your project involves human subjects and you would like to represent FRR at the regional fair, you will be required to have informed consent forms from your subjects. The regional fair also has strict safety requirements that exclude the scene the use of infectious agents, recombinant DNA and hazardous compounds.

In past years of FRR STEM Fair, several projects on to the regional fair, of which some reached the statewide fair. The atmosphere is very positive and exciting, and students had a great time both academically and socially. Please reach out to the science@ruffinridleypto.org if you are interested in registering for the Region V Middle School Science & Engineering Fair