

2019 Brooklands Science & S.T.E.M Fair Handbook and Rules

Congratulations! You have decided to enter the Brooklands Science & S.T.E.M Fair. This is an exciting time to learn more about a scientific topic that interests you. The goal is to create a fun way to learn more about science. You will be asked to explain and demonstrate your project to your class. Remember the goal is to learn and have fun!

Also included in this packet is a description of the categories, a description of the types of projects that can be done, the schedule for the day of the Science and S.T.E.M fair, a list of rules, a cancellation notice and information on some ideas which may help you to complete your project.

Reminders:

1. The entry form **MUST** be attached in the upper left hand corner of the display board if you choose to do Science Fair. Entry forms can be found on the PTA page of the Brooklands website and in the office.
2. As you choose an idea for a project, you will need to decide whether to do an experiment, a demonstration, a research project or an invention. A collection or display is also allowed for K-2 grades only.
3. When choosing a topic, try focusing on a specific area. If your topic is too broad, you may be overloaded with information and your project may become frustrating. For example, if you were interested in animals you would need to choose one specific topic and/or one animal. You might choose to find out which birds eat certain kinds of food. If you tried to learn everything about what all animals eat or all about birds, you might find too much information. Remember to narrow your topic.
4. Get an early start on your project.

This 8½ x 11 form must be attached to the upper left corner of display board!

Brooklands Science Fair Entry Form

Name(s) _____ **First** _____ **Last** _____

Grade(s) _____ **Teacher(s)** _____

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Project Type (must check one): _____
_____ **Display/Collection**
_____ **Demonstration**
_____ **Experiment**
_____ **Invention**
_____ **Research**

Category (must check one): _____
_____ **Botany**
_____ **Earth and Environmental Science**
_____ **Engineering**
_____ **Health, Behavioral and Social Science**
_____ **Mathematics and Computer Science**
_____ **Physical Science**
_____ **Zoology**

Brooklands Science & S.T.E.M. Fair Schedule Thursday, March 7, 2018

The tentative schedule for the day is as follows:

- 8:45 – 9:05 a.m. Children bring projects to their classrooms.
- 9:10am-1:30pm. Children share projects with their class.
- 9:30am-1:30pm. Children set up projects in the gym/cafeteria as they finish presenting to their class.
- 10:15-3:40 p.m. Classes invited to walk through and view Science & S.T.E.M Fair entries. All participants stay with their class to view the displays. A teacher signup sheet will be posted in the mail room to assist teachers in scheduling viewing times.
- 1:00-4:00 p.m. Students will present their projects.
- 11:00am-1:25 p.m. Children will be eating lunch in their classrooms.
- 6:00 – 7:00 p.m. Public viewing for Brooklands families, staff and the general public.
- 6:55 p.m. Entry Drawing for all students who participate in the Science & S.T.E.M Fair to win a Science Kit
- 7:00 p.m. All students ***MUST*** take their project home at 7:00 p.m. If you are unavailable, please make arrangements for pickup. The science fair committee will not be responsible for any projects not removed at 7:30 p.m. Please remove projects as close to 7:00 p.m. as possible.
- 7:30 p.m. Clean up and tear down of tables.

Please note that gym class will be relocated for the day. Hot lunches will be available for purchase, but children will return to their classrooms to eat. Lunch recess will be as usual.

SCIENCE FAIR CATEGORIES

1. **Botany**: Subjects such as plants (mosses, seed plants), agriculture, conservation, and forestry.
2. **Earth and Environmental Science**: Projects illustrating principles of geology, geography, and related fields. Also, projects dealing with global change, issues related to spaceship Earth, world Earth Day topics, environmental concerns, extinctions and related fields.
3. **Engineering**: Technological devices which are useful to mankind. Also engineering-related fields, such as electricity, civil, mechanical, chemical, aeronautical, and geological.
4. **Health, Behavioral and Social Science**: Emphasis on human health and behavior.
5. **Mathematics and Computer Science**: Showing any theory or principal of mathematics or demonstrating new ideas for computer software or computer systems.
6. **Physical Science**: Basic principles of physics, chemistry, astronomy, meteorology, and related fields.
7. **Zoology**: Observing the growth or behavior of animals (invertebrates, vertebrates), genetics, and paleontology. No live mammals – only photos.

TYPES OF SCIENCE FAIR PROJECTS

1. *Display or Collection (for K-2 only)*

- ~ Scientifically correct research
- ~ Demonstrates a scientific topic
- ~ Neatly and imaginatively presented
- ~ Shows an understanding of categories, order, etc.
- ~ Must be able to communicate understanding of the collection/display
- ~ To receive points in the scientific method category, project must contain a title and answer the questions *what*, *where*, *when* and *why*. Will not need to state hypothesis or draw conclusion

Example: *Display* – Kinds of soil, match the animal to the habitat, etc.
Collection – Seashells, rocks, feathers, leaves, etc.

Example: What – seashells; Where – collected from the beach in Florida; When – Spring Break 2005; Why – I love taking walks on the beach with my grandmother.

2. *Demonstration (K-5)*

- ~ Scientifically correct research (keep a journal or file containing your efforts)
- ~ Demonstrates the scientific topic
- ~ Neatly presented, and communicated through imaginative explanations
- ~ Illustrates understanding and ability to present the science principles involved.
(Be creative, don't just copy someone else's idea)
- ~ Must be able to communicate understanding of the demonstration

Example: You want to learn how something scientific that interests you “works” and then make a model to teach others. You could show how blood circulates through the heart, how the water cycle works, or how to build an electrical circuit.

To get started:

- Choose your specific interest
- Do some research, a few suggestions to consider: read about the topic, talk to an expert, or use technology to get information. Scientific research needs to be shown, so keep a journal or a file with all your efforts.
- Experiment with materials and designs for your demonstrations. Be creative; don't just copy an idea from a book.
- Build your model. Include written information on a showboard. Revise it if necessary. Scientists are always revising. Include part or your entire journal.
- Practice what you will say and how you will demonstrate your project.

3. *Invention (K-5)*

- ~ An invention that solves a problem
- ~ The model or invention should be well-designed and assembled
- ~ Neatly and imaginatively presented and explained
- ~ Inclusion of an "inventor's log" is recommended
- ~ Must be able to communicate understanding of the invention

Example: If you have a real problem, design an original solution, and make a model to demonstrate how the invention should work. The theory is more important than the invention actually working.

To get started:

- Define a problem
- Design a solution
- Explain the design
- Document your process
- Practice what you will say and how you will demonstrate your invention

4. *Experiment (K-5)*

- ~ Pose a *question*, to examine or explain by an experiment;
- ~ Make a *hypothesis* (an educated answer to the question)
- ~ Give a *list of materials* (needed to conduct the experiment)
- ~ Follow a *procedure* (step-by-step methodical account)
- ~ Present your *data* (the results that lead to)
- ~ The *conclusion*.
- ~ The *scientific process* should be part of the display and/or made explicit,

through a journal that will be part of the display.

~ Must be able to communicate understanding of the experiment

Example: You have an idea about how something scientific that interests you “works.” Make a statement about what you think is true such as “seeds planted upside down will not germinate.” Then devise a way to prove or disprove your statement. When you do this you are using the “scientific method.”

To get started:

- Choose a topic that you are curious about
- Make your statement. This statement is called a “hypothesis”.
- Gather and record data to prove/disprove the hypothesis. It’s OK if you prove it is not true. Starting out with one idea and then finding out something else have made some of the greatest scientific discoveries
- Practice what you will say and how you will explain your experiment.

5. Research (K-5)

~ Find a topic

~ Perform extensive research

~ Present the findings

~ Must be able to communicate understanding of the research

Example: Lake level cycles in a lake

To get started:

- Choose a topic
- Do extensive research perhaps including reading about your topic, talking to an expert on the topic, or doing some site research
- Accurate scientific research must be documented in a journal with a source bibliography. Don’t just copy someone else’s ideas from a book.
- Present the information in detail to convey the expertise you have gained in this area
- Practice what you will say and how you will explain your research

The Scientific Method is...

PROBLEM/PURPOSE

- What is the goal of your experiment?

HYPOTHESIS

- Make a prediction about the outcome of your experiment.

PROCEDURE

- Give a detailed explanation of how you will conduct the experiment

MATERIALS

- List all materials and equipment that will be used.

OBSERVATIONS/DATA/RESULTS

- Keep a detailed journal of observations, data, and results. Your journal should contain data measurements and written notes about what you are sensing (hearing, seeing, or touching) about your experiment.
- If appropriate, photograph your project results or phases of the project to help your analysis and possibly to demonstrate your experiment on your exhibit board.

ANALYSIS

- Explain your observations, data, and results. This is a summary of what your data has shown you.
- List the main points that you have learned.
- Why did the results occur? What did your experiment prove?
- Was your hypothesis correct? Did your experiment prove or disprove your hypothesis?

CONCLUSION

- Answer your problem/purpose statement.
- What does it all add up to? What is the value of your project?
- What further study do you recommend given the results of your experiment? What would be the next question to ask? If you repeated this project, what would you change?

Submitting the Science Fair Application

If you decide to enter the Science Fair, complete and return the attached application to your teacher or to the PTA Science Fair Committee by Feb. 9th. Families with multiple participants need a separate application for each participant. Additional forms are available in the office or on the PTA page of the Brooklands website. Late applications will not be accepted. The Science Fair Committee needs a head count for ordering tables, ribbons, and securing volunteers. It is not required to select category or project type at this point. When preparing your Science Fair entry, follow the criteria provided in the Handbook and Rules packet. Purchase your display board as soon as possible.

Partners

Partners are allowed in all grade levels. Mixed grade levels are allowed. Only one application is required when working with a partner.

Parent Help

Adult advice and supervision is allowed. The child should acknowledge any help by others. The child should do the majority of the work.

Resources

The Brooklands Media Center, public library and internet are good sources for information. The attached list of science fair websites is a good starting point.

Project Display Area

Table space is very limited. Projects **MUST** be on a standard 36x48 three-sided display board and kept within an area of 3 ft. wide x 1½ ft. deep. **Display boards are required.** White display boards can be purchased from a number of local retail stores for approximately \$4.00 (or less). The board should be free standing and made of corrugated cardboard. Elmer's brand display boards are available at Target, JoAnns, Staples, Michaels and Office Max. The display boards come in a variety of colors including white, blue, red and yellow. Choose the color best suited for your project. You don't need a display board to get started on your project, but purchase one while they are still in supply. Any project too large will be disqualified.

Project Info

Non-fur based animals will be allowed: small, cold blooded/invertebrates (such as snails, worms, isopods, mealworms, etc.) will be allowed at the exhibit as long as the animal/organism is not harmed in any way. Due to health and safety factors, animals with fur/mammals will **NOT** be allowed at the exhibit. Projects on mammals are welcomed, but for the exhibit at the fair, only pictures and/or data can be displayed. Please contact

Heather Deller at hmgamangroup@gmail.com or Mrs. Simonetti if you are considering any type of live animal in your display.

No peanut or food products should be used. Projects that use food or peanut products will **NOT** be allowed. Projects on food or peanuts are welcomed, but for the exhibit at the fair, only pictures and/or data can be displayed.

Electric outlets are available upon request. Contact Heather Deller at: hmgamangroup@gmail.com if you need electricity.

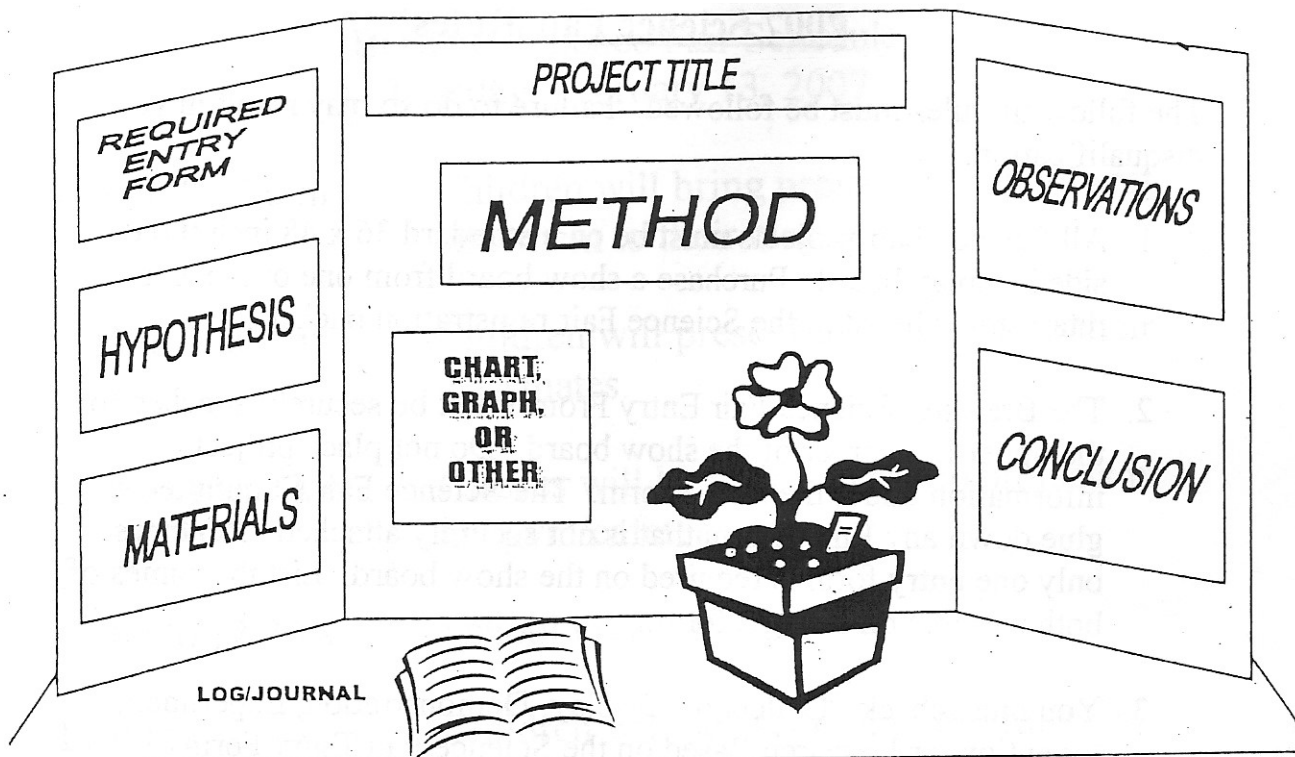
2019 Science Fair Rules

The following rules must be followed. Failure to do so may result in your disqualification.

1. All Science Fair projects must be on a standard 36 x 48 inch three sided display board. Purchase a display board from one of the local retail stores.
2. The Brooklands Science Fair Entry Form **MUST** be securely attached to the upper left corner of the show board. Do not place project information underneath the Entry Form. The Science Fair Committee will glue down any Entry Form that is not securely attached. **Partners:** only one entry form is required on the display board. List the names of both partners on a single form.
3. You must check project type: Collection/Display, Demonstration, Experiment, Invention, or Research on the Science Fair Entry Form. You must also select project category: Botany, Earth and Environmental Science, Engineering, Health, Behavioral and Social Science, Mathematics and Computer Science, Physical Science or Zoology.
4. Collection/Display is for Kindergarten, 1st and 2nd grade only.
5. All parts of the Science Fair Project must fit on the display board and/or on the table space in front of the display board. No parts of the project may be placed on the seat of the lunch table or the floor.
6. Partners are allowed in all grade levels. Mixed grade levels are permitted.
7. Only non-fur based animals are allowed. Projects that display live mammals will **NOT** be allowed. Small, cold blooded/invertebrates (such as snails, worms, isopods, mealworms, etc.) will be allowed at the exhibit as long as the animal/organism is not harmed in any way. Please contact Heather Deller or Mrs. Simonetti if you considering any type of live animal in your display. Health and safety factors prevent any animal with fur/mammals. Projects on mammals are welcomed, but for the exhibit at the fair only pictures and or data can be displayed.
8. No peanut or food products should be used. Projects that display food or peanut products will **NOT** be allowed. Projects on food or peanuts are welcomed, but for the exhibit at the fair, only play (imitation) food, pictures and/or data can be displayed.
9. No hazardous chemicals, insecticides or flammable substances.
10. No glass containers. All liquids must be in sealed containers.
11. No sharp items (glass, scissors, needles, knives, tacks, nails, syringes, blades).
12. If your project requires an electrical outlet, please notify Heather Deller at: hmrangamangroup@gmail.com

Tips for Displaying Your Project

Your display is a way of sharing what you have learned. A neat, attractive, colorful display with a “catchy” title will grab people’s attention. You have spent a lot of time and energy on your science project. Take time to do a good job on your display.



~A standard three-sided display board is required. Sample experiment arrangement is shown above.~

What Should Be Displayed?

YOUR ENTRY FORM MUST BE MOUNTED IN THE UPPER LEFT HAND CORNER OF THE DISPLAY BOARD. The center of your display is usually reserved for the title. The other space on the display should include the remaining parts of your project such as: hypothesis, materials, method, observations, conclusions, explanations, photographs, graphs/charts, pictures/diagrams, and logs/records. The items you include will depend on your type of project. It is recommended that you use short headlines to identify your information and be sure that all graphs/charts and pictures/diagrams are properly labeled.

Color and Lettering

If your display board needs painting, use attractive colors with contrasting letters. The lettering for the title should be neat, large, and bold. Using stencils is one way to make your display neat and attractive. You may wish to stencil letters on construction paper, cut them out, and attach them to the display board. The information pieces on your display board may be handwritten or typed. Whatever method you choose, you should do your best to make the display easy to read.

The "Big Picture"

Avoid overcrowding the display. Before you complete your display, make sure that you have a beginning and an end to your project and that the viewer can see both parts. Try to create a display that the viewer can understand even if you are not present to explain it.

Most Important

Be sure that your display board represents your work and indicates an understanding of what you have learned. Do not use the work of others, but rather your original work should be displayed. Take your time on your project and HAVE FUN!

Keep the exhibit neat, uncluttered and to the point. All posters, charts, etc. must be attached to the exhibit. No part of an exhibit may be attached to walls or tables. Build your exhibit compactly. It must be self-supporting (FREE STANDING). Be sure to make everything sturdy so it can be safely transported. Fasten everything well.

Parent and adult advice and supervision is allowed. The child should acknowledge any help by others. The child should do the majority of the work.

The Brooklands Media Center and the public library are good sources for information as well as the internet.

2019 S.T.E.M Fair Rules

Mission: You have been asked to design a new roller coaster for an amusement park! Construct a roller coaster that will carry a marble from the top to the bottom.

Materials You Are Allowed to Design & Build With:

- Paper plates (with “lips” around the edges work best)
- Medium-sized plastic cups
- Empty paper towel or toilet paper holders
- Scotch tape
- Marble

Display Board:

Please have the following information listed on your board

1. All S.T.E.M Fair Projects must be on a standard 36 x 48-inch three sided display board. Purchase a display board from one of the local retail stores.
2. The Brooklands S.T.E.M. Fair Entry Form **MUST** be securely attached to the upper left corner of the show board. Do not place project information underneath the Entry Form. The S.T.E.M. Fair Committee will glue down any Entry Form that is not securely attached. **Partners:** Only one entry form is required on the display board. List the names of both partners on a single form
3. Plan: Draw a picture of your blueprint to display on your board
4. Answer the question: Did the marble travel from the top to the bottom of your roller coaster?
5. Writing Activity: After you build your roller coaster, tell us what worked and what didn't work in your design and construction process
6. Design Dimensions: What was the overall size of your roller coaster
7. Please display pictures of your final design.

Science & S.T.E.M. Fair Cancellation Notice

**IT IS VERY IMPORTANT TO LET US KNOW AHEAD OF TIME
IF YOU NEED TO DROP OUT OF THE SCIENCE & S.T.E.M.
FAIR!**

We need to plan for the correct number of tables, awards and judges.
Please return this form to the Science & S.T.E.M. Fair Committee if you
need to drop out of the science fair or contact Heather Deller at
hmrangamgroup@gmail.com.

Name(s) _____

Grade(s) _____ Teacher(s) _____