

2019 Science and Invention Fair Calendar for Grades K-6

- February 4-February 27 Read this packet, investigate project ideas, and complete the proposal form that best matches your project. Ask a parent and your **classroom teacher** to review and sign your proposal form *as soon as you are ready*.
- February 8 Poster boards will be available from Mrs. Minarik starting February 8th. Please visit the lab before school or during recess. You must have a signed proposal form to receive a board.
- February 27 **On or before February 27th**, ask a parent and your classroom teacher to review, sign, and return your proposal form. The purpose of this due date is to ensure that you will have enough time to complete a project and create a display.
- March 15 Please deliver your project to the MUR by 8:00 A.M. on Friday, March 15th. Place the project on the stage according to grade level. Mrs. Minarik will arrange projects on tables once she has all of the projects.
- March 18-22 Classes will visit the Science and Invention Fair. Students will share and view projects.
- March 22 Science and Invention Fair
5:00-6:00 P.M. in the MUR
Please take your project home before leaving.

Steps to Participating in the Science and Invention Fair

- **Choose a science project or an invention idea.** This handbook contains project suggestions and rules.
- **Complete a Science and Invention Fair proposal form.** Forms are at the end of this packet. Select the form that best matches your project. Please submit your proposal form to your classroom teacher by February 27th. Your teacher will sign the form and return it to you. Take your signed proposal form to Mrs. Minarik before school or during recess to get a poster board. Attach the signed proposal form to the back of your display board.
- **Complete the project at home.**
- **Create a three-sided poster at home.** This poster will describe your project, including facts you learned about your subject from books and a discussion of how you carried out your project. If you created an invention, read the invention proposal form to find the list of items to include on the poster board. Remember to attach your proposal form to the back of the poster.
- **Display your poster and other parts of your project at the Science and Invention Fair.** Please drop off the poster/project in the MUR by 8:00 A.M. on Friday, March 15th.
- **Share your project with Mrs. Minarik and your classmates.** During the week of March 18th, classes will visit the Science and Invention Fair. Each student will have an opportunity to share his/her project.

Science and Invention Fair Rules

1. Each student may only enter one project.
2. More than one student may work on a project. Children working in pairs or small groups may be classmates, siblings, or friends in the same or different classrooms or grade levels.
3. Teachers and parents may *advise*. Parents should let the students do the actual work.
4. The three-sided display board should be free standing and not more than approximately 36 inches high and 48 inches wide when fully extended. When displayed, the board and project should not occupy more than 48 inches of the table length and 16 inches of the depth.
5. The following are prohibited: dangerous chemicals, open flames, explosives, illegal drugs, and animal experiments that involve starvation or any other form of cruelty.
6. Electrical switches and cords needed for exhibits must be in good working condition and must be approved by the teacher.
7. Expensive or fragile items should not be displayed. Valuable items essential to the project should be simulated or photographed.
8. The school and teacher assume no liability for loss or damage to the exhibit.

Choosing a Project

Your project may be a controlled experiment, a collection, a model, or an invention. Please read each proposal form at the end of this packet to decide which one best fits your project.

Choose an area of science. Choose an area of life, earth, or physical science that interests you. Do a little research to be sure that this topic really interests you. Then, from that area of science, such as life science, select a general topic such as “plants.” Finally, narrow your general topic to a specific subtopic such as “plant growth.” Below is a list of general topics you can consider for your science project.

Acids and bases	Circulatory Systems	Flowers	Learning	Muscles	Seeds
Airplanes	Colors	Food Chains	Light	Nutrition	Senses
Amphibians	Computer	Fossils	Liquids	Parasites	Shells
Anatomy	Crystals	Geology	Machines	Planets	Sound
Animal Behavior	Digestion	Gravity	Magnetism	Plants	Tides
Astronomy	Dinosaurs	Hearts	Mammals	Pollution	Trees
Atoms	Diseases	Heat	Ocean Life	Reptiles	Vertebrates
Birds	Electricity	Insects	Medicines	Robots	Water
Bones	Energy	Invertebrates	Migration	Rockets	Weather
Cells	Engines	Jet Propulsion	Molds	Rocks	Yeast

Choose a question. Choose a question that will narrow the focus of your investigation. For example, using the subtopic “plant growth,” one question could be, “How does sunlight affect plant growth?” Another question could be, “Which plant food works best?” Below is a small sample of science questions that may be investigated.

Astronomy

Why does the earth have seasons?
How are tides created?

Consumer Science

Which laundry detergent is best?
How does a radio work?

Electricity

What is the best conductor?
How does a switch operate?

Botany

Do large seeds grow large plants?
Can plants grow in the water alone?

Chemistry

How can you tell if a substance is an acid or a base?
What is a chemical reaction?

Earth Science

How do crystals grow?
What is the water cycle?

Physical Science

How does an airplane fly?
How does an electromagnet work?

Anatomy

How does blood get from the heart to the toes?
How do muscles and bones work together in movement?

Choose a proposal form. Decide which type of project will best show your audience the answer to your question. You may do an **experiment**, display a **collection**, make a **model**, or create an **invention**.

Research -You are now ready to begin planning your project by researching your question. You can get information from books, encyclopedia, the Internet, pamphlets, interviews, field trips, or television. Look for information from several different sources. Become an expert on your topic!

Plan ahead! Sometimes science experiments and projects do not work as expected. If you plan and conduct your investigation well in advance of the Science and Invention Fair and problems arise, you will have time to retry or change your project.

What if I had problems with my project? This happens sometimes, but don't worry. You should still present your work. Use your poster to show what you did. In the conclusion section, suggest ways to investigate *why* things didn't go as expected. Sometimes scientists decide to repeat the experiment, redesign the experiment, or ask the question a different way.

Engaging in the Science and Engineering Practices

While completing the project, focus on the Science and Engineering Practices (SEP) that will enable you to achieve your goals. Scientists, engineers, and educators agree that the following eight practices are essential practices used when doing science and engineering. Record your entire process in a science notebook.

Science and Engineering Practices (SEP)

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

A chart including grade level specific descriptions of these eight practices can be accessed via the following link:

[Science and Engineering Practices](#)

Please note that the term, “the scientific method” is considered outdated because it implies that science involves a set of steps that when completed in order will lead to a conclusion. Focusing on a set of practices is more consistent with the fluid nature of science.

A video describing the nature of science can be accessed via the following link:

[Science in Action: How Science Works-California Academy of Science](#)

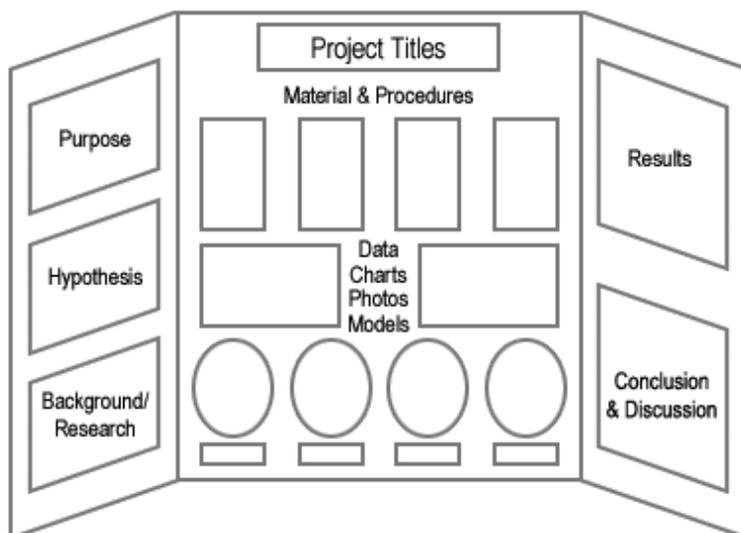
Displaying Your Project

A very important part of your project is your display, since it is a way of teaching others what your project is about and what you have learned.

The display board should be made from sturdy material that can stand by itself. Del Mar Heights will provide a display board free of charge. Please ask Mrs. Minarik for the board after you have had a proposal form signed by a parent and your classroom teacher.

Common display items are listed below. Your display should include all sections that are relevant for your project. For inventions, the invention proposal form lists the items that should be displayed.

- **Project Title:** Your title should include the word that describes your project's category: experiment, collection, model, display, or invention. Also, include your name, grade, teacher's name, and room number below the title. This information should be at the top and center of the panel
- **Scientific Question and Hypothesis**
- **Procedure and Materials:** text and photos, if helpful
- **Results/Data:** text, graphs, tables, photos, and drawings
- **Conclusion/Scientific Explanation**
- **Signed Proposal Form:** taped to the back of the poster board
- **Acknowledgments:** Please thank the people who helped you.
- **Science Notebook, Inventor's Log, Model, Invention, Collection, or Materials Used:** These items may be displayed in front of your poster. If they do not fit in front of the poster board, please let Mrs. Minarik know in advance that you will be bringing an oversized project so that she will be able to arrange for an area in which your project can be displayed.



Science Fair Project Proposal-Experiment

Name: _____

Grade: _____

Teacher: _____

Room: _____

A controlled experiment is a test during which the scientist only changes one variable at a time in order to determine the effects of making that change.

Project/Problem: *What scientific question will you be attempting to answer?*

Hypothesis: *What do you think will happen?*

Procedure: *How will you find out what will happen? Write a brief description of how you plan to test your hypothesis. How will you record and display your experiment and data?*

Materials: *What materials will you need?*

Parent Approval: _____ Teacher Approval: _____

Science Fair Project Proposal-Model

Name: _____

Grade: _____

Teacher: _____

Room: _____

A model is a representation (visual display, mathematical model, computer model, etc.) that is used to explain a phenomenon.

Project: *For which scientific concept will you be developing a model?*

Materials: *What materials will you need?*

Procedure: *Write a description of what you plan to do. How will it be displayed?*

Results: *What do you hope to teach others with your model?*

Parent Approval: _____ Teacher Approval: _____

Science Fair Project Proposal-Collection

Name: _____

Grade: _____

Teacher: _____

Room: _____

A collection is a grouping or gathering of various objects which are scientifically related and demonstrate that you have learned something through the process of collecting and categorizing. Items should be categorized and labeled correctly, using scientific names when available.

Project: *What will you collect? What scientific concept will your collection illustrate?*

Materials: *How will you obtain the items for your collection?*

Procedure: *How will you organize and label your collection? How will your display illustrate your research and your collection?*

Results: *What do you hope to learn and teach others with your collection?*

Parent Approval: _____ Teacher Approval: _____

Science Fair Proposal Form-Invention

Name _____ Grade _____

Teacher _____ Room _____

An invention is a new, useful, process, machine, or improvement.

Project: *Briefly describe how you think your invention will work. You may draw a sketch on the back of this page to help describe it. This plan may be modified as you go along in the invention process.*

Materials: *What materials will you need?*

Keep an inventor's log during the entire invention process. Use a notebook to record what you do, when you do it, and the results. Include labeled drawings. Use tables and/or graphs to organize data.

Items to include on your display board:

1. Invention name/title
2. Inventor's name and grade level
3. Diagram and/or pictures of the model (You may include a 3-D model.)
4. A description of how it works/the scientific principles involved
5. Statement about your inspiration for the invention or how the invention has the potential to improve life
6. Problems encountered during the invention process
7. Acknowledgement for assistance from any adults.

Parent Approval _____ Teacher Approval _____