

Edgar Middle School
Science Fair March 4, 2020
sponsored by:
The Metuchen Education Foundation

Informational Packet -Grades 6-8

Included in this packet:

- ◆ Guidelines
- ◆ Internet Sites
- ◆ Timeline
- ◆ Safety Tips for Experiments
- ◆ Project Proposal Form
- ◆ Project Experimental Plan Form

Guidelines

General Rules

1. Participation in the science fair is strictly voluntary.
2. You may work alone or with one partner.
3. Should you choose to work with a partner, both students are expected to share equal responsibility for completing the project and will receive the same project extra credit. (Partnership is at the discretion of the teachers.)
4. Your science fair project should fit into one of the following disciplines: Biological Science, Environmental Science, Physical Science, or Earth Science.
5. Your project does **NOT** have to reflect the material you are currently studying in your science class.
6. All experimental plans should be reviewed by your teacher **BEFORE** you begin experimenting.
7. **Safety is very important. Experiments should be approved and supervised by parents.**
8. **Surveys and experiments on people and animals will NOT be allowed.**
9. **Experiments involving culturing bacteria, mold or other biological material will NOT be allowed.**
10. **Experiments using non-household acids or caustics such as sodium hydroxide or lye will NOT be allowed. Use of any hazardous chemicals is disallowed. Use of vinegar or lemon juice is allowed. If in doubt, ask your teacher.**
11. All work must be done by the student(s). Appropriate assistance may be provided by your parents or others.

Judging

1. Projects of students in grades 5-8 will be judged.
2. Judges will be looking at the following characteristics:
 - ◆ Originality
 - ◆ Good Scientific Procedure
 - Does the experiment provide the quantitative information needed to answer the student's question?
 - Has the student carefully recorded and analyzed the data?
 - Have the variables been identified and controlled?
 - Are the conclusions valid?
 - ◆ Personal Value
 - Is the project and research of value and relevance to the students?
 - ◆ Simplicity
 - Does the project look too expensive or complicated? Hint - Keep it simple.
3. All students (grades 5-8) participating in the fair will receive an award.
4. Prizes will be awarded in grades 5-8. Projects that do not comply with the rules cannot be awarded a prize.

Display Board

1. You should purchase a tri-fold blank project display board from Office Max or Staples. These boards come in many colors, material types and prices. No special color or material is required for this project and it is suggested that you obtain the least expensive board.
2. Please leave a six inch by six inch blank space in the upper left-hand corner of your display board for index-card, numbering purposes.
3. The measurements of your board **may NOT exceed: 30" deep, 48" wide and 36" high.**
4. **All submitted project boards must lie FLAT. Do not attach any objects that protrude to the display board. Did not bring any materials besides a flat tri-fold display board for submittal.**
5. Your display board will be surrounded by many others so remember the four C's: Color appeal, Contrast, Clear concise statements and Completeness.
6. Do **NOT put your name or picture** on your display board. An anonymous number will be assigned to your project when you turn it in.
7. Please use photographs, drawings, tables, charts and graphs on your display board.
8. Your display board should **tell the story of your project.**
9. The following should be included on your display board:
 - Problem - This is the question which your experiment was designed to answer.
 - Hypothesis - This is your predicted answer to the problem.
 - Materials - List materials you used...photographs can be used.
 - Procedures - These are the measurements, trials, and actions you took during the experiment.
 - Results - Brief discussion of your observations and the results of your experiment.
 - Conclusion - A summary of your experiment and validity of your hypothesis.

Written Report

1. Your written report must be done on a computer, word processor, or typewriter. Please pay careful attention to spelling, grammar and punctuation - writing counts!
2. When using the word processor please select a font that is easy to read - preferable Times New Roman or Arial, 12 point size.
3. Use single space within a section. Use a double space between sections.
4. Use the following format: Include each of the following sections in order. The sections should follow one another with 1-2 blank lines between.

Name:

Title:

Abstract: An abstract accompanies articles in scientific publications. It is a brief summary of the entire paper. Write this section after you have written the rest of the paper. The abstract should include what the project was, a brief summary of your procedure, a short paragraph on your results, and conclusions. The abstract should be about $\frac{1}{2}$ page.

Problem: Write a hypothesis statement or question. (What is your experiment's goal? What are you evaluating or what question are you answering?).

Background: Explain why the information gathered in this project is important or applicable. Write a summary of research that you did to prepare for this investigation.

Method: Describe your procedure step by step. Drawings, pictures and sketches may help add clarity, so you may include them. If you constructed any materials or equipment, explain here. Identify your control and variables. Include any safety precautions you took.

Materials: List the materials used in the experiment in column format.

Data: Present your observations in a neat, clearly labeled form. Consider using a data table if appropriate.

Analysis & Results: Present your results neatly in tables and graphs if appropriate. Graphs should be done on graph paper or computer. Include a detailed explanation of how you interpreted your data, so that the reader will be able to follow your conclusions. Describe any unexpected results as well.

Conclusion: Write this section after you have finished preparing your results. Briefly summarize your results in the past tense. Restate your hypothesis in the present tense and tell how your data supported or did not support your hypothesis, or how it answered your question. Give your interpretation of your results and discuss their significance. Don't hesitate to mention difficulties you had or mistakes you made. Include other information that relates to your project that you obtained through research. Give one or two suggestions for what the next experiment might be related to your experiment) based on your results.

Acknowledgements: Thank the people who helped you with your project and describe what they did for you. For example, you may thank Dr. Johnson for giving you data on the growth rate of plants.

References: List any books, articles, CD-ROMs, websites, etc that you used for information. Use standard bibliography format.

5. You will submit your written report to your teacher. See the timeline for the due date.

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Ideas for Projects

Internet Sites:

<http://www.freesciencefairproject.com/index.html>
<http://www.coolsciencelab.com/sciencefairlinks.htm>
<http://www.juliantrubin.com/fairprojects.html>
<http://www.all-science-fair-projects.com/>
<http://faculty.washington.edu/chudler/fair.html>
<http://members.ozemail.com.au/~macinnis/scifun/projects.htm>
<http://www.homeworkspot.com/sciencefair/>
<http://www.sciencepage.org/scifair.htm>
<http://www.sciencebuddies.org/science-fair-projects/science-fairs.shtml?gclid=CLqqz4zJxqUCFcNM4AodqTxmYq>
<https://www.thoughtco.com/middle-school-science-fair-projects-609077>
<https://www.pinterest.com/explore/fair-projects/?lp=true>
<https://www.simplycircle.com/science-fair-projects-7th-grade/>
<https://learning-center.homesciencetools.com/article/junior-high-projects/>

Other places to search:

- [WWW Virtual Library Science Fairs Page](#)
- EMS Library and Metuchen Public Library

Please note that some projects listed at the above sites do not comply with the Edgar Middle School Science Fair rules. The sites are suggested to generate ideas, but actual project selection and design should be based on the guidelines provided in this packet.

There will be after school workshops starting in December. A science teacher will be available to help with any part of your Science Fair project, including getting started! Listen for announcements.

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Suggested Timeline

The dates above the starred line are flexible. They are suggested to guide students in their planning for a successful Science Fair experience. Dates below the starred line are firm deadlines. Projects will not be accepted if submitted past these deadlines.

Mon. Dec. 10	Issue the Science Fair Letter and Letter of Interest to Parents.
Tue. Dec. 11	Information packets available online or from teacher.
Dec.- Jan 17	Submit Project Proposal and Permission Form. The Proposal is a brief summary of the title and purpose of the project.
Dec.- Jan 31	Submit Project Experimental Plan. This is a brief summary of the controlled experiment. Your teacher will review it and return it to you. The last day to submit a Project Experimental Plan for return before Winter Recess is Dec. 15. Plans submitted after this will be returned in January. <u>All Experimental Plans should be reviewed by your teacher before you begin any experiments.</u>
Dec./Feb.	Continue working on projects and collect data. Take and print photos for display board. Continue writing the written report and begin working on the display board.
Fri. Feb. 14	Finish working on the experiment.
Fri. Feb. 21	Finish the display board.

Mon. Mar 2	Hand in the written report to your teacher.
Tue. Mar 3	Bring display boards for the fair to school in the morning between 7:30 AM and 8:00 AM. No names should be on display boards. Students will be issued a project number. Private judging is done after school.
Wed Mar 4	Students attend the science fair during the school day. Parents and community attend the fair during the evening. Winners will be announced at the evening session. Projects should be taken home at the end of the fair, unless your teacher has instructed you not to do so.

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Project Proposal (All Grades)

1. Name(s) _____

2. Project Title _____

3. Discipline (✓) _____ Biological _____ Physical
 _____ Earth _____ Environmental

4. State your Problem
(This should be in the form of a **question** which your experiment is designed to answer.)

5. State your Hypothesis
(This is your educated guess to answer the problem above.)

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Project Experimental Plan (6th, 7th, & 8th Grades)

Due Date: _____

1. Name(s) _____

2. Project Title _____

3. Discipline (✓) _____ Biological _____ Physical
 _____ Earth _____ Environmental

4. State your Problem:

5. State your Hypothesis:

6. Materials you plan to use:

7. Method or Procedure:

(Provide a short summary of steps. Include safety precautions needed, if any.)

8. Identify the control in the experiment:

9. Identify the variable(s) in the experiment:

10. Type of **qualitative** data or information you plan on collecting or observing:

11. Type of **quantitative** data or information you plan on collecting or observing:

Safety Tips for Home Experiments

This list is meant as a guide to help parents, supervising adults and students make safe choices about home experiments. We can't anticipate every situation, but thought it would be useful to give some safety tips. Parents and supervising adults are, of course, responsible for making decisions about what children can or cannot do at home.

1. Plan your experiment in advance.
 2. **Before you experiment:** Have parents review your experiment plans for safety, and to determine what safety measures need to be taken.
 3. **Never** conduct experiments without adult supervision.
 4. Don't experiment on people or animals.
 5. Don't combine water and electricity in the same apparatus or area.
 6. If you are using batteries the combined voltage listed on the batteries should not exceed 6 volts.
 7. Do not heat liquids that are flammable or are not water based. This includes oils, waxes, alcohols, etc... (Never use water to douse an oil or wax fire! Smother it instead.)
 8. Do not mix household chemicals. Some mixtures may produce **very toxic** gasses.
 9. Wear eye protection whenever
 - Handling hot liquids or any chemicals.
 - Dealing with moving objects that are smaller than 2 inches across.
 - Objects in your experiment are airborne (flying through the air).
 - Watching a parent work with a power tool.
 - Eye injury is possible (Better safe than sorry!)
- Inexpensive safety glasses are available at hardware or home improvement stores.
10. Use extra caution when using sharp objects, the stove, or electricity.
 11. Do not culture biological material such as molds or bacteria. Culturing can raise the levels of relatively safe organisms to unsafe levels. **Experiments that culture biological materials will not be accepted.**
 12. Avoid the use of caustic chemicals such as non-household acids, lye, sodium hydroxide, etc... Vinegar (acetic acid) and lemon juice (citric acid) are acceptable at their normal household concentrations, as these are very weak acids.
 13. Please be aware that some experiments shown on the Internet are unsafe. If you have any doubts, stay on the side of safety. If you have questions, please contact Mrs. Henn at khenn@metboe.k12.nj.us.

Be Safe,

The Edgar Science Staff