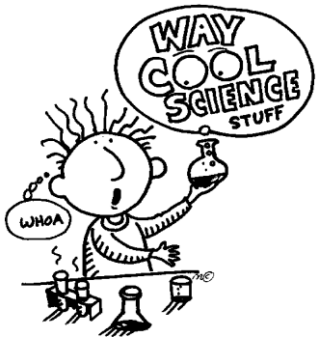
Baltimore County Public Schools Elementary Science, Technology, Engineering, and Math - STEM Fair 2017

Jan. 10, 2017

Dear Stoneleigh Parents:



Baltimore County Public Schools is sponsoring its 13th annual STEM – (Science, Technology, Engineering, and Math) Fair on Saturday, May 13, 2017.

Stoneleigh and other elementary schools are each eligible to send two (4th and 5th grade) representatives to this countywide event. All students (especially 4th and 5th graders) at Stoneleigh are encouraged to submit an individual science fair project and we ask that you support this valuable learning experience. The Stoneleigh STEM Fair will be held on Tuesday, March 28, 2017 from 7:00-8:00. The following information is provided to assist you in helping prepare your child's science fair project.

- One 4th and one 5th grade student producing local school award-winning projects will be eligible to enter the county-wide Elementary STEM Fair on Saturday, May 13th at Parkville High School.

  In order to be green, we are trying to save paper and ask that you visit the Stoneleigh website below for the forms:

http://stoneleighes.ss3.sharpschool.com/ParentsPage/s_t_e_m_fair_information

**If you do not have access to a computer or printer, please contact your child's teacher for assistance.*

Interested students should:

1. Print the **1st STEM Parent Letter 2017** packet. This first packet explains the project rules and guidelines, provides a project outline, provides a copy of the Summary and Approval form, offers project ideas and resources.

2. Complete the Summary and Approval form indicating the student's project idea. This form is the registration for the Stoneleigh/BCPS STEM Fair.

   Return the Summary and Approval form to your homeroom teacher ***no later*** than January 31st, 2017.

   * A student's homeroom teacher **must** approve the project before the student may begin. To guarantee project approval, please make sure to choose an experiment with a *measurable* outcome.

   ** In the event that a child's experiment does **not** meet the BCPS 2016 STEM Fair Rules, *that project will not be accepted in the Stoneleigh STEM Fair.*

3. Once your child's project has been **approved**, the next step is to print the 2nd Stoneleigh STEM Project Information Packet.
   The 4th and 5th grade students will need to print the entire packet (pgs. 1 – 16); grades K-3 will print only pgs. 1 – 11.

This packet will include a sample of a scientific method outline with a suggested timeline that students can use. Also included will be specifications for construction of the project display board and a form to purchase a display backboard at a nominal fee. Prior to submission a Judging Criteria Checklist and sample judges' interview questions will be included in the information packet, so you and your child ensure the project meets all criteria.

Students must **not** begin the project until it has been **approved** by their homeroom teacher.

Parents are asked to allow students to assume as much responsibility for the project as possible. You may provide support, offer advice when necessary, help with expenses for the project, and provide any needed transportation. When your child writes the report to accompany the project, you may offer to proofread the written report or make suggestions for improvement. *The written results, reports, data log are optional for K-3 grades. These are not required for grades K-3. In addition, you should occasionally check on the progress of the report to ensure that it is proceeding on schedule.

Again, if you do not have access to a computer or printer, please contact your child's teacher for assistance.

4. Present the project for the annual Stoneleigh STEM Fair, which will be held on Tuesday, March 28, 2017 in the Gym. At the Stoneleigh Fair, judges will review all 4th and 5th grade projects and select one from 4th and one from 5th to represent Stoneleigh in the BCPS STEM Fair on May 13, 2017 at Parkville High School.

The Stoneleigh STEM Fair event will be open to parents and friends in the Gym on Tuesday, March 28, 2017. **Set up** for the Stoneleigh Fair will be in the Gym on Monday, March 27, 2017 after school until 6:00 pm.

Thank you for contributing to the success of the Stoneleigh STEM Fair. We appreciate your support of our young scientists!!!

If you have any questions, please contact Mrs. Eibl at meibl@bcps.org or call the school at 410-887-3600.

Sincerely,

Marybeth Eibl - STEM Fair Coordinator

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____ **Check here and return if you need a printed copy of these packets.**

Student: ________________________________ Teacher: ______________________

(please print)

Parent Name: ____

STEM Fair Student Project Timeline

Step 1: (January 10- 31) Question: Choose a question/problem that interests you or a project/problem from the classroom list. Complete the Summary and Approval Form and return it to your teacher by the due date he or she has given you.

Steps 2 – 9 should be recorded in a logbook as you complete them.

Step 2: (January 10- 31) Identify the **Manipulated (independent) variable** and the **Responding (dependent) variable**. Use the variables to help you narrow your research topic.

Step 3: (January 31 – February 14) Do **research** on the subject you have chosen.
It should include a list of books and authors or Web sites and URLs you have read to find the information. The research must be done **before** you do your experiment. This will help you to form your **claim** (hypothesis).

Step 4: (February 14 - 28) PURPOSE/QUESTION: What do you want to find out? This should be in the form of a question. The answer to the question will be found by doing the experiment.

Step 5: (February 14 - 28) CLAIM (HYPOTHESIS): What do you think will happen in your experiment? This is a prediction of the outcome based on what you learned in the research report.

Step 6: (February 14 - 28) MATERIALS and PROCEDURE: What do you need to complete the experiment? This should be in the form of a list. What will you do, step-by-step, to complete the experiment? As you develop your list of steps to take, write them down first on a separate piece of paper. Number them in the order you will complete them. Then, write them in final form.

Step 7: (February 14 - 28) Conduct the experiment. Remember to do five or more trials. Record your results in the form of a chart. Keep good records. It is a good idea to record your progress using photographs.

Step 8: (Feb. 28 – Mar. 14) EVIDENCE (RESULTS): What happened?

Display your data in the form of a chart or graph. Write an explanation of your chart or graph interpreting the data. Include inferences made from the data.

Step 9: (March 14 – 21) REASONING (CONCLUSION): What did you learn? The **Reasoning** paragraph should begin by stating whether or not your claim (hypothesis) was supported or not supported. *The Reasoning must be supported by evidence (details and/or data) from the investigation.* The Reasoning paragraph should conclude with an idea for further investigation (i.e. If you could do another experiment to learn more about this subject, what would you like to do?).

Step 10: (March 21 - 28) CONSTRUCT YOUR BACKBOARD. Everything you have done in steps 2 – 9 will appear on the backboard. The backboard should be neat and colorful, with a catchy title. Remember, you ***may not*** bring anything to the STEM fair ***except*** the backboard, your logbook, and your report. **Be sure your name is clearly marked on the back of the backboard and the front of your logbook.**

Parent Night Jan. 10, 2017, 7:00-8:00

Stem Fair Set Up, Monday, March 27, 2076 3:30-6:00

Stem Fair, March 28, 2017 7:00-8:00

Safe Racer Winners, Central Area attend Parkville High School May 12th, 7:00pm

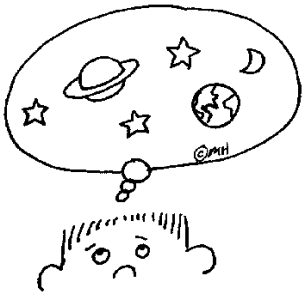
4th & 5th Grade Winners attend BCPS Elementary STEM Fair at Parkville High School on Saturday, May 13th, TBA.

visit: http://www.bcps.org/offices/science/STEM/index.htm BCPS Elementary Stem Fair

*This is a terrific resource to help with ideas and questions:
Science Buddies- Contains project ideas (check to make sure selected projects comply with county guidelines)

Elementary Science, Technology, Engineering, and Mathematics Fair

Summary and Approval Form 2017



Student Name (as it should appear on the certificate):

_____ **Teacher:** _____

School: ____**Stoneleigh Elementary**_____ **Grade:** _____

Title of Project (as it appears on the backboard):

_____

_____

Type of Project: (circle one)

Physical Science	**Life Science**	**Earth/Space Science**	**Environmental Science**
Chemical Science	**Technology/Engineering**	**Mathematics**	

Summary (Abstract)

On a separate sheet of paper, write a paragraph (maximum 150 words) that explains the problem/question you will investigate and describes in detail the method or procedures you will use in your investigation. Attach it to this completed Summary and Approval Form and return **both** to your teacher by _____**January 31, 2017**_____.

Student Approval: I will follow the guidelines as described in the **STEM Fair Rules and Regulations** for my STEM fair project.

_____

Student Signature Date

Parent/Guardian Approval: I have read and understand the guidelines described in the **STEM Fair Rules and Regulations** and will monitor my child's project. I consent to my child participating in this research.

_____

Parent /Guardian Signature Date

Teacher Approval: I have read and approved this student's **Summary (Abstract)** and agree that it meets the guidelines as described in the **STEM Fair Rules and Regulations**.

_____

Teacher Signature Date

BCPS 2017 STEM Fair Rules and Updates:

- BCPS STEM Fair – May 13, 2076 at Parkville High School

  - Students are encouraged to do investigations that use scientific thought processes and the scientific method.

  - Experimental projects are **preferred** over observational ones. The experiment **HAS** to have a measurable outcome.

  - A two to five paragraph research report accompanying the project is highly encouraged.

  - Groups Projects are not eligible.

  - Students must not begin the project until it has been **approved** by their homeroom teacher.

- Projects:
  - No cultures of **any** kind – No microorganisms- germs, bacteria, mold, sponges, etc.

  - No guns or weapons of **any** kind

  - No vertebrates – including humans. This involves the giving or withholding of food, water, exercise, medication, or learning to any vertebrate animal for safety concerns.

  - Memory orvisual projects MUST be measurable (observe, track, measure)
    ie: "I do better studying after I play video games." This is difficult to measure; there HAS to be a **measurable** outcome.
    - If interested in "how many people use their left or right hand to open a door when entering a building?" meets the criteria. This is because the student had to watch (**observe**) and **track** data that can be **measured**.
      There is information on the internet that supports this data.

Project Guidelines and Regulations

Parent/Guardian/Student Information

Display and Safety: All Projects

A. Project display size is limited to the size of a standard backboard: 61 cm deep (24 inches); 95 cm wide (36 inches), side to side; and 274 cm high (108 inches) floor to top. Project backboards are not required at school level fairs. **Project backboards are required for participation at the BCPS STEM Fair, to ensure fairness for all participants.**

B. Evidence that research has been completed may be presented in various formats (i.e. research paper, logbook, or report) and should include a bibliography.

C. No materials or equipment used to conduct the experiment may be displayed with or attached to the project board. You may attach pictures or drawings to show the progress of the experiment.

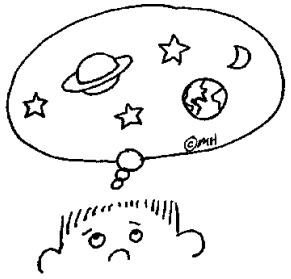
Judging: All Projects

A. Each project will be checked by the Display and Safety Committee to be sure you have followed the rules for display and safety.

B. You may not add to or change the project after approval by the Display and Safety Committee.

C. If you are selected to represent your school at the Elementary Science, Technology, Engineering, and Mathematics Fair **you must be available and present at the fair during the scheduled times for registration and judging.**

D. **Individual projects** may be **submitted for competition** at the **Baltimore County Public Schools Elementary Science, Technology, Engineering, and Mathematics Fair.**



Project Guidelines: All Projects

Your project will be either an Experimental Project or an Observational Project. It will be judged on how well you have followed the guidelines for the type of project you choose to complete. The guidelines and regulations for both types of projects are described on the following page.

Experimental Projects

Experimental Projects are based on a testable question and include a claim (hypothesis); materials; procedure; manipulated (independent), responding (dependent), and controlled variables; evidence (data) displayed in the form of a chart or graph; explanation of the evidence (results); and a paragraph describing the reasoning (conclusion) that answers the question.

Project Approval

Students choosing to complete an **Experimental Project** should follow the guidelines below. Projects will be accepted based on approval of the project abstract by the Elementary Science, Technology, Engineering, and Mathematics Fair Approval Committee.

A. Acceptable examples of **Experimental Projects:** Include any question that is answered by doing an experiment or investigation; and includes a manipulated (independent), a responding (dependent), and controlled variables.

B. Unacceptable examples of **Experimental Projects** include any question that involves:

- The growth of microorganisms from our environment such as washed/ unwashed hands, cutting boards, kitchen sponges, etc. or any microorganisms obtained from a commercial, research, or medical source. Growth of mold on food is not acceptable. **(safety concerns).**
- The use of vertebrate animals (including humans) as test subjects **(safety concerns).**
- The use of controlled substances such as drugs, alcohol, or dangerous chemicals **(safety concerns).**
- The use of firearms or dangerous projectiles.
- Models or demonstrations such as volcanoes or solar systems.
- Questions that can be answered with a simple Internet search.

Observational Projects

Observational Projects are based on a question formed from prior observations and include a claim (hypothesis); known manipulated (independent) and observed responding (dependent) variables; evidence (data) collected by scientists; observation, or surveys of people, animals, or the environment displayed in the form of a chart or graph; an explanation of the data identifying patterns and trends; and a paragraph that describes reasoning (conclusion) that answers the question.

Project Approval

Students choosing to complete an **Observational Project** should follow the guidelines below. Projects will be accepted based on approval of the project abstract by the Elementary Science, Technology, Engineering, and Mathematics Fair Approval Committee.

A. Acceptable examples of **Observational Projects include the following:**

- Questions concerning weather patterns and cycles.
- Questions concerning Astronomy patterns and cycles.
- Physical Science questions using math concepts.
- Environmental questions about vertebrate animal movements or behaviors (including humans).
- Pencil and Paper surveys or Opinion surveys.
- Perception questions, such as color determination, presented without treatment.

B. Unacceptable examples of **Observational Projects:**

- Any project that involves the giving or withholding of food, water, exercise, medication, or learning to any vertebrate animal (including humans) **(safety concerns).**
- Narrative reports based on a collection of facts not centered on a question.
- Questions that can be answered with a simple Internet search.

STEM Fair Project Ideas

To develop your project idea, think about things that interest you or that you like to do. Maybe you have an unanswered question about a science unit in your class. Perhaps you have seen something in the news or weather that you would like to know more about. Think about how you would complete the investigation and the materials you would need. Try to choose a question that you can investigate with a minimum of assistance from adults.

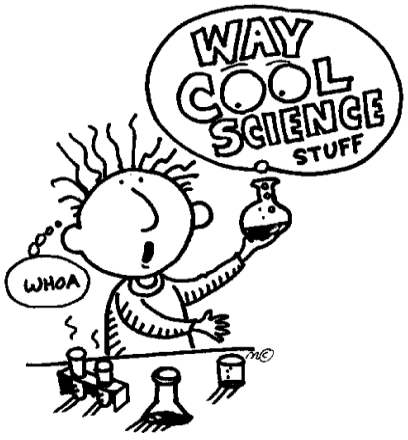
After brainstorming possible ideas, take some time to:

- Think about the project ideas;
- Research possible ideas using available resources (such as the library, Internet sites, etc.) ;
- Discuss it with any adults who may be assisting you; and
- Decide on a project.

If another student chooses to investigate a similar question, remember that your approach will vary enough to make each project individual.

Be sure to discuss your proposed project idea with your teacher to make sure that it adheres to the STEM Fair Rules and Regulations. If your project idea does not adhere to the STEM Fair Rules and Regulations, your teacher will ask you to modify your idea, or choose a different idea. Projects that do not adhere to the STEM Fair Rules and Regulations will not be allowed to participate in the County-wide BCPS STEM Fair.

This is your chance to become a scientist. Who knows, you might make an important discovery, like a love of science!!



Resources

Books

Fredericks, Anthony and Asimov, Isaac. The Complete Science Fair Handbook (Grades 4 – 8). A Good Year Book, Department of GYB, 1900 East Lake Avenue, Glenview IL 60025.

Hayson, John. Science Fair Warm-Up, Grades 5 – 8: Learning the Practice of Scientists. National Science Teachers Association, NSTA Press.

Ostlund, Karen. Science Process Skills, Assessing Hands-on Student Performance. Addison-Wesley Publishing Company, California, 1992. (Available from the NSTA Publications Catalog (800) 830-3232 or www.NSTA.org)

Ramig, Joyce, M.Ed., Bailer, Jill, M.Ed., Ramsey, John, Ph.D. Teaching Science Process Skills. Good Apple Science Resource Book (Grades 6 – 8), 1995. (Available from the NSTA Publications Catalog (800) 830-3232 or www.NSTA.org)

Rezba, Richard. Learning and Assessing Science Process Skills. Constance Sprague, Ronald Fiel, and James Funk, Kendall Hunt Publishers.

Vriesenga, Daryl. Science Fair projects – A Practical Guide for Developing Science Projects. (Grades 4 – 6). Instructional Fair Inc., USA, 1990.

Collection of Articles about Science Fairs – Science Fairs and Projects Available from the NSTA Publications Catalog (800) 830-3232 or www.NSTA.org)

Collection of Articles about Science Fairs Reprinted from *Science and Children, Science Scope,* and *Science Teacher* – Science Fairs Plus: Reinventing and Old Favorite, K – 8. Available from the NSTA Publications Catalog (800) 830-3232 or www.NSTA.org)

Internet

Many school systems and organizations now have Web sites that disseminate information about science fairs. Search for **science fair** or **science fair projects**. A few you may find helpful are:

Gateway to Educational Materials: Science Fair projects
http://members.ozemail.com.au/~macinnis/scifun/projects.htm
The Gateway to Educational Materials is an extensive and detailed step-by-step guide to doing a science fair project.

Science Fair Primer
http://users.rcn.com/tedrowan/primer.html
A site to help students get started and run a science fair project.

Science Fair Project on the Web:Step by step instructions
http://sciencefairproject.virtualave.net/observation.htm
A detailed science fair help site. Step-by-step instructions on the science fair project. Categories include observation, question, hypothesis, method, result, conclusion, presentation.

Science Fair Guide Resources for Teachers
http://go.hrw.com/resources/go_sc/hst/HSTGP111.PDF
PDF Resource published by Holt, Rinehart and Winston.

Science Buddies
http://www.sciencebuddies.org/science-fair-projects/teacher_resources.shtml
This Web site provides some very good background information about the Scientific Method, and provides some Science Fair Resources.

What Makes A Good Science Fair Project
http://www.usc.edu/CSSF/Resources/Good_Project.html
A Web site from USC that gives a lot of good tips and ideas to think about regarding what makes a good science fair project. Advice for students as well as teachers and parents is included.

Neuroscience for Kids: Successful Science Fair projects
http://faculty.washington.edu/chudler/fair.html
Site made by Lynne Bleeker, a former science teacher, science fair organizer, and judge. Gives a thorough and detailed description of the steps to a successful science fair project.

This resource originally created by Marie Wolffe. Updated and modified by Deborah Dunk.

2017 Science Fair Board and Accessories

Don't Delay! Order your Science Fair Materials Today!

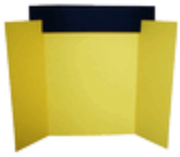
Display Board

Color:
Price: $2.50, $3.00
Size: 32"
Color Choice:
- ✓ White ($2.50)
- ✓ Black ($3.00)
- ✓ Red ($3.00)
- ✓ Blue ($3.00)
- ✓ Green ($3.00)
- ✓ Yellow ($3.00)

Subtitles

Self-Adhesive Subtitles
Black Lettering
Price: $1.60
***Includes 14 Subtitles: Problem, Hypoth. Procedures, etc.**
***Heavy Card Stock**
***Sticks Easily to the Board**

Title Boards



Top off your board!
Price: $1.25

Color Choice:
- * White
- * Black
- * Red
- * Blue
- * Green
- * Yellow

***Get the whole board for only $5.85. Just the board alone is at least $7.00 at an office supply store.**

----------detach and return----------

Student Name_____ (Please print)
Homeroom Teacher_____

Science Fair Materials Order:

Item	Quantity	Color	Subtotal
Display Board	_____	_____	$_____
Subtitles	_____	N/A	$_____
Title Board	_____	_____	$_____

Grand Total $_____

Please send payment in a labeled envelope along with this order form to your child's teacher no later than **March 7, 2017**! ***No later*** as order will be placed over break.

Make checks to: Stoneleigh Elementary

Don't miss out on this great deal!