2012 Beverly Farms Elementary School
Science, Engineering and Technology Expo

The Beverly Farms Science, Engineering and Technology Expo will be held on Thursday, February 16, 2012, from 7:00 to 8:30 PM. This is a great opportunity to have fun with science. Everyone is welcome—including those who submit projects and those who don't. There will be fun activities for all!!

The Science, Engineering and Technology Expo is divided into four primary areas. In one area, student experiments and studies are displayed. A guest scientist will visit each project and discuss it with the student scientist. This is a non-competitive event, so everyone receives a certificate and small prize. In a second area, student bridges are displayed. Each bridge is tested to determine its strength. It's incredibly fun to watch and cheer for this event. Once again, each participant receives a certificate and prize. In a third area, all guests are invited to participate in awesome hands-on group activity. Students are invited to get their hands dirty by making a volcano and watching it explode. Last, but certainly not least, Mad Science of Washington will conduct interactive demonstrations. If your children enjoy Mad Science lunch and classroom demonstrations, they will love this! These interactive presentations are entertaining and educational!

If you would like to participate, several key documents are available on this website.

- **Student Application Form – required for experimenters and bridge builders. DUE THURSDAY, FEBRUARY 3, 2012.**
- Student Science Project Rules
- Student Popsicle Stick Bridge Building Rules
- Hints for Developing a Science Project
- Suggested Books from the Library to Help with Selecting a Project
- Parent Volunteer Form

Any questions? Contact Chris Thomas (cthomas@kradak.com)

PARENT VOLUNTEERS ARE WELCOME AND APPRECIATED!
THANK YOU FOR YOUR SUPPORT!

2012 Beverly Farms Elementary School
Science, Engineering and Technology Expo
Student Application Form

To be **RETURNED BY Thursday, February 3, 2012,** to the lobby drawer marked “Science, Engineering and Technology Expo.”

STUDENT NAME: _____ PHONE: _____

TEACHER: _____ GRADE: _____

Please check the activity you will participate in:

____ SCIENCE or ENGINEERING PROJECT

The scientific question my project seeks to answer is:

_____

_____

_____

_____

_____

_____

____ BRIDGE CONTEST

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STUDENT SCIENCE PROJECT RULES

- Students may work with a friend.
- The use of open flame, heating devices, class 2 or higher lasers or radiological materials is strictly prohibited.
- Electrical outlets will not be available, but battery-operated projects will be allowed.
- Projects involving liquids should be on a tray to prevent spills.
- Project must fit into a space 1 meter wide and 0.5 meter deep on a tabletop.
- Poster must be three sided, free-standing, boards.
- All projects must be labeled with your name and the question your project is answering.
- Students are encouraged to use the library, favorite search engine, or other sources for ideas and research.

Please remember:

All Student Application Forms are due by Thursday, February 3, 2012.

Projects setup will be on Thursday, February 16, between 6:30 and 7:00 pm.

Projects must be picked up at the close of the event..

THANK YOU!

Beverly Farms Elementary School
2012 Science, Engineering and Technology Expo

STUDENT POPSICLE STICK BRIDGE BUILDING RULES

The bridge will be constructed of popsicle sticks (115 mm or 4.5 inches in length) and glue. The bridge must span a distance of 500 mm (19.5 inches) with a maximum of 25 mm (1 inch) at each end ("bearing pad"). Thus the overall length of the assembled bridge will be no more than 550 mm (21.5 inches). The bridge will be built with a maximum of 100 popsicle sticks and regular white all purpose glue such as Elmer's glue. Hot glue and super glue are NOT allowed. Whole popsicle sticks of length 4.5 inches (115 mm) should be used and must be left whole. No cut or partial sticks. No other materials are permitted in constructing the bridge.

The bridge must be designed so that a matchbox car will be able to pass across the bridge. The bridge deck should be flat and level. The minimum allowed width of the bridge is 50 mm (2 inches) and the maximum allowed width is 76 mm (3 inches).

The popsicle sticks may overlap by no more than one inch at the joints. Glue should only be used at the joints. Glue sticks as neatly as possible. The complete lamination of sticks is not allowed (i.e. you may not double sticks or glue them edge to edge).

The bridge should be designed to support the highest load possible. While being tested with weights, the bridge has to remain stable and flat. The bridge will be placed between two trusses that are spaced 500 mm apart. The trusses will accept a bridge up to 3 inches wide, and each will have a one-inch load-bearing pad. A micrometer will be used to measure the deflection.

The maximum capacity of the bridge will be based on the highest of either:

1. The maximum load accepted by the bridge before it fails (breaks) or
2. The load supported by the bridge at a deformation of 6 mm (0.25 inch) at the center of the bridge.

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HINTS FOR DEVELOPING A SCIENCE PROJECT

Here are some easy steps on how your child can participate in the Science, Engineering and Technology Expo.

1. **Pick a topic.** What is your child interested in? Rocks, bugs, robots or weather? Find out what your child would like to learn more about.
2. **Learn about the topic.** There are many resources available to help your child learn about the subject and decide on a project. Go to the school library, public library, websites, and bookstores. There are many books about developing elementary school science projects. (A list of books is provided here to get you started.)
3. **Develop your question.** Phrase the project in terms of a question. For example, "Does music affect plant growth?' or "Are all rocks the same on the inside?' or "On what foods does mold grow best?"
4. **Volunteer to work the fair!** Your child will enjoy the fact that you are participating in a special event at school! A volunteer form is available on the PTA.
5. **Set up the experiment.** Decide how the question will be answered. Develop a plan and collect materials.
6. **Conduct the experiment.** Conduct the experiment and note the results.
7. **Write it down.** Develop a display to explain the experiment. Record all of your information on a three sided, free-standing board. Remember you're your project must fit into a space 1 meter wide and 0.5 meter deep on a tabletop. You can bring other materials that will fit in this space.
8. **Have fun!** Come to the Science Expo and discuss your experiment with a real scientist!

OR

9. **Collect many, many popsicle sticks** and glue.
10. **Review the rules** in the "Student Information" document on the PTA website.
11. **Build a bridge!**

Help your child participate in the 2012 Expo and have fun with science!

Here are some books about science projects you can find at the Montgomery County Public Library.

Call Number: 621.042 ADA
Title: Energy projects for young scientists
Author: Adams, Richard C.

Call Number: 547 GAR 2004
Title: Chemistry science fair projects using french fries, gumdrops, soap, and other organic stuff
Author: Gardner, Robert.

Call Number: 507 VAN 2000
Title: Janice VanCleave's guide to more of the best science fair projects
Author: VanCleave, Janice Pratt.

Call Number: 507 VAN 1997
Title: Janice VanCleave's guide to the best science fair projects
Author: VanCleave, Janice Pratt.

Call Number: J 507.8 GOL 2000
Title: 50 nifty super more science fair projects
Author: Goldstein, Natalie.

Call Number: 510 GAR
Title: Science projects about math
Author: Gardner, Robert.

Call Number: J 507.8 WEE 1998
Title: Science fair projects for elementary schools: step by step
Author: Wee, Patricia Hachten.

Call Number: J 507.8 FIF
Title: 50 nifty super science fair projects
Author: Smolinski, Jill.

Call Number: 537 GAR 2004
Title: Electricity and magnetism science fair projects: using batteries, balloons, and other hair-raising stuff
Author: Gardner, Robert.

Call Number: 530.8 GAR 2000
Title: Science projects about methods of measuring
Author: Gardner, Robert.

Call Number: 530.078 GOO 1999
Title: Sports science projects: the physics of balls in motion
Author: Goodstein, Madeline P.

Call Number: 530.078 GAR 1999
Title: Science projects about physics in the home
Author: Gardner, Robert.

Call Number: 540 BON 2000
Title: Science fair projects : chemistry
Author: Bonnet, Robert L.

Call Number: 600 LAN 2004
Title: The new how things work: everyday technology explained
Author: Langone, John.

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2012 Science, Engineering and Technology Expo

PARENT VOLUNTEER FORM

Thursday, February 16, 2012 at 7:00 – 8:30 PM

An event for parents and children
to have fun and explore a favorite scientific subject
through a child's eyes and with a real scientist's expertise!

Don't miss this exciting learning experience!

Please fill out the part below and return it to the lobby drawer marked
Science, Engineering and Technology Expo

Parents, this event needs you! We welcome your participation. If you wish to volunteer, please put a check next to the activity or activities in which you are interested:

PARENT NAME: _____

Telephone:_____

E-Mail Address_____

Before February 16th:

- ☐ preparing the program
- ☐ preparing certificates

On Thursday, February 16th:

- ☐ room set up, 6:30-7 PM
- ☐ project drop off, 6:30-7 PM
- ☐ help running the events
- ☐ hands-on science booth
- ☐ guest scientist
- ☐ cleaning after pickup