

HMS Beagle's Adult Science and Engineering Fair

This year, for the first time, the Beagle will offer adults an opportunity to participate in an **Adult Science and Engineering Fair**. The Fair itself will be held in conjunction with MAKE: KC's **Mini Makers' Faire** which will be held on the last day of **Parkville Days**, Sunday, August 22nd, 2010, in English Landing Park.

There theme for this first **Adult Science and Engineering Fair** is, "the Science Fair project I always wanted to do as a child." This means that nearly everything will be acceptable except as noted below in the rules. There will be two main categories for this year's Fair:

- I. Science (duh), and
- II. Engineering (duh²).

Read on for further discussion. The criteria and judging points for both categories will be as follows:

1. Scientific, or Engineering, Merit 10 points

"Scientific Merit" means did the project follow (1) well-accepted scientific principles and techniques, or (2) was a new scientific principle demonstrated and tested? For all science projects please see the attached Appendix I "The Scientific Method." Reliance upon woo-woo science (e.g. "crystal energy", "psychic vibrations", "revelations from the Flying Spaghetti Monster", etc.) will be met with derision and fun will be made by all, because we're nothing if not open-minded!

"Engineering Merit" means, did the project follow (1) well-accepted engineering principles, or (2) engineering techniques heretofore never demonstrated? Projects demonstrating perpetual motion will be frowned upon, but projects demonstrating newly discovered, extraterrestrial, alien, energy sources are welcomed.

2. Presentation, 10 points

"Presentation" means the method and appearance of your project's graphical display and explanation. While there are no set physical parameters being enforced in displays participants should endeavor to keep their presentations small enough to fit one regular 6-foot long by 3-foot wide table. Presentations

requiring production numbers utilizing chorus lines and/or large orchestras will not be permitted.

3. Originality, 10 points

“Originality” means that projects demonstrating a volcano (unless, of course, the model produces real volcanic ash and flowing lava), or the effects of Coca-Cola on the growth of tomato plants (unless, of course, the plants are actually grown in 2-liter bottles containing the soft drink) will not likely receive many points. However, we do want to promote, for the Engineering projects, the entry of Rube or Ruby Goldberg projects; the more outlandish, the better. For Science projects the presentation of actual, working, “magical” potions, *a la* Harry Potter, will be looked upon favorably.

Now for the actual rules:

- (1) The use of human subjects is restricted only to those who receive fair and open warnings about the experimental trials (written proof will be required). No humans are to be physically or mentally harmed.
- (2) The use of plant or animal subjects, while allowed, is limited to those that do not cause harm or pain to the subjects. Pain or harm received by the experimenter(s) is acceptable but must be reported in graphic detail.
- (3) No prior approval of a project is required as long as the entry fee(s) is paid.
- (4) Potentially hazardous biological, chemical or radiological agents will not be allowed at the presentation. The uses of such agents, of course, are acceptable in the project’s experimentation.
- (5) Projects involving DEA-controlled substances, firearms or explosives must follow all federal, state and local regulations.
- (6) Demonstration projects, except as noted above (i.e. with known outcomes), and opinion surveys are not accepted.
- (7) All photographs of living humans must be accompanied by properly executed, written consent forms before such photos can be exhibited.
- (8) Participants will be required to be with their project presentation for the period of judging. Afterwards, participants are welcome to stay with their projects to discuss them with the viewing public, or they may mingle with the viewing public and poke fun at the other exhibits.
- (9) Project presentation set-up and tear-down times will be announced at least one week prior to the actual event.
- (10) A project may not be entered in two different categories.

- (11) Any disputes that arise will be handled by the judges and/or the owners of HMS Beagle.
- (12) Fees, if any, are due and payable on or before July 22nd, 2010. There will be no fee refunds, sorry. The fee structure is as follows:
- (a) Each Beagle Society member may enter one project for no fee. Two adult members from the same household may enter a project jointly for no fee. Beagle Society members must be in good standing; that is their membership must be current at the time of the Fair (September 22nd, 2010).
 - (b) There will be a \$25.00 fee for one adult or a \$40.00 fee for two adults from a single household. The fee will be applied to a Beagle Society membership.
 - (c) Non-Beagle Society members may enter a project for a fee of \$25.00 or \$50.00 for two or more non-members. Non-members entering a project jointly with Beagle Society members will be required to pay a \$25.00 fee each for up to two non-member participants.

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Appendix I. The Scientific Method

1. Stating the Question:

What is it that you are trying to find out from your experiment? What is it that you are trying to achieve? What is it you want to know?

2. Research Your Topic:

Investigate what others have already learned about your question. Use the library and other reliable information resources to gather information that will help you perform your experiment. The internet is usually not a very reliable source.

3. State Your Hypothesis:

After having thoroughly researched a topic, you should have some prediction about what you think will happen in your experiment. This educated guess concerning the outcome is called your hypothesis. You must state your hypothesis in a way that you can readily measure.

4. Test Your Hypothesis by Doing Experiments:

Now that you have come up with a hypothesis, you need to develop a procedure for testing whether it is true or false. This involves changing one variable and measuring the impact that this change has on other variables. When you are conducting your experiment, you need to make sure that you are only measuring the impact of a single change.

Scientists run experiments more than once to verify that results are consistent. Each time that you perform your experiment is called a run or a trial or a replicate.

5. Analyze Your Results:

At this stage, you want to be organizing and analyzing the data that you have collected during the course of your experiment in order to summarize what your experiment has shown you.

6. Draw Your Conclusion:

This is your opportunity to explain the meaning of your results. Did your experiment support your hypothesis? Does additional research need to be conducted? How did your experiment address your initial question and purpose?

7. Report Your Results and Conclusion:

Write a report and if your research is for a Science Fair or similar organization prepare a display board so that others can share in your discoveries. Be prepared to defend your research and to answer questions from interested people.

Throughout the process of doing your project, you must keep a journal, in ink, containing all of your important ideas, information and test results. This journal is called a laboratory notebook.