

# Maple Hills Elementary

## Science Fair 2010

April 15<sup>th</sup> and April 16<sup>th</sup>

Dear Parents and Students,

Welcome to Science Fair 2010!!! The purpose of the Science Fair is to help increase the awareness of science through the development of projects, investigations and hands-on displays. Science fairs are meant to encourage the students' ongoing participation in science activities and to develop higher level thinking skills, and curiosity about the world around us. Collecting data, writing, designing and presentation are all used in the process.

**PARENTS, PLEASE NOTE THE FOLLOWING:**

- **Projects should follow the Scientific Method described on page 2 of this packet. For students in grades K through 2 the scientific method can be followed more loosely.**
- **Parents are strongly encouraged to work with their children to develop a suitable project.**
- Students may choose to work alone or in a group of *up to* four. (Note: Only students in the *same class* will have their picture taken together for the certificates).
- Resource materials to help you choose a topic are available in the Maple Hills School library and King County Public Library. There are books, investigation packets and "science-to-go" kits. The investigation packets are simple and were put together primarily for grades K through 2.
- There are many resources available on-line using key words "science fair projects".
- A great website for research information is <http://howthingswork.virginia.edu/>.

**All Students will talk with a Parent Scientist about their project** during the day on Thursday or Friday of Science Fair week. This is a great chance for student scientists to talk to people who are passionate about science, and to show off their project. (Note: For younger students, arrangements can be made to talk with their teacher instead).

The Parent Scientists will encourage students to discuss the following:

- why they chose their project
- what question did they ask
- how their project was designed to answer that question
- what the results were
- what went right or wrong
- how they might change their investigation if they were going to try this investigation again

The philosophy behind having the kids talk with a scientist is to get them to think about what they did in an atmosphere of positive reinforcement. Students are strongly encouraged to use the scientific method as well as their creativity, neatness, and scientific thought.

**The Science Fair open house will be Friday, April 16<sup>th</sup> from 6:30 until 8:30 pm in the school Multi-Purpose Room.** There will be activities for the whole family in the Multipurpose Room and the Gymnasium as well as a display of student projects in the halls and pods.

See you at the Fair!

Laurae Briggs and Nancy Gunderson, Science Fair Co-Chairs - 2010

# The Scientific Method

## (See Attached Display Sheet)

Every good scientist uses the Scientific Method. These are the steps they follow in designing a good investigation and gaining scientific knowledge. An example of what we mean for each step is included. You should use these steps to do your science project and include information from each in your final project!!

- 1. Question:** The scientist asks a question that they don't have an answer for.  
*Ex: Which ball will bounce the highest, the hard super ball or the spongy ball?*
- 2. Research:** The scientist reads information about the subject in books or on the internet, and learns what has been discovered about it by others. (*Note: For our science fair this does not need to be extensive*). If the question being asked has already been answered, then the question is modified or a different question is asked and researched. List source(s) of the research.  
*Ex: Many plastics contain elastic molecules. Elastic molecules that are loosely packed, and move around in the object when it is compressed (hits the floor), lose energy as heat. They do not have much energy left to release (bounce). More densely packed elastic molecules do not move around as much when compressed and don't lose as much heat. They have more energy left to release. Objects bounce higher if there is more energy to release after the elastic molecules are compressed.*  
*Source: [www.howthingswork.virginia.edu](http://www.howthingswork.virginia.edu)*
- 3. Hypothesis:** Based on the research the scientist will form a hypothesis (a guess) about what he/she thinks the answer to the question will be.  
*Ex: I think the hard super ball will bounce higher than the spongy ball because the elastic molecules are more densely packed and have more energy to release when bounced.*
- 4. Procedure:** The scientist thinks of a way to prove their hypothesis either right or wrong. This is the investigation part of the project. They write down all the steps they followed in the order they completed them, and they list all the equipment they used to do their investigation. During this part, they collect the data (information) that they learn as they do the investigation. There are notes and pictures taken at each step of the procedure, as appropriate.  
*Ex: Drop both balls from same height and measure which will bounce the highest. Use tape, measuring stick, hard super ball, and spongy ball. Record data on for each of three tries with each ball. Calculate average height of each ball's bounce. Record data.*
- 5. Results:** This is the data from the investigation presented in a way so everyone can understand it (table, graph, chart, etc.). The scientist includes a discussion and interpretation of the data (i.e.: what the data means), and/or any pictures of what the outcome was.  
*Ex: Show table of data and explain that the super ball bounced the highest each time.*
- 6. Conclusion:** This is where the scientist says if their hypothesis (guess) was right or was wrong. They may also say what they might do differently next time or what they might do to follow-up on this investigation (a new question may come out of it!).  
*Ex: The hypothesis was correct. The super ball bounced higher than the spongy ball. It has more densely packed elastic molecules. Conclude that substances with elastic molecules do bounce and ones with more densely packed elastic molecules bounce higher. Suggest trying this investigation with all different types of balls or ones of different sizes.*

## Steps to Putting Together Your Exhibit

The results of your investigation will be displayed in your exhibit. It is important to take the time to organize the format of your presentation. Your display should show and tell - catch the viewer's attention and explain what you did and what you learned. A well-organized exhibit will be easy for others to read and learn from.

The backboard for the exhibit can be constructed from a variety of sturdy materials such as heavy cardboard, particleboard, foam core board, masonite or plywood. Poster board is sometimes not heavy enough. ***The Maple Hills PTA will again have display boards available for the first 100 applicants for \$5.00 each (See entry form).*** These are ideal for our purpose. Presentation boards are also available at office supply stores and sell for \$5 to \$6. **Your exhibit must stand on its own!**

### Example of A 3-Sided Display

(using the example of the bouncy ball investigation discussed earlier)

<p style="text-align: center;"><b>Question</b></p> <p style="text-align: center;">Which ball will bounce the highest?</p> <p style="text-align: center;"><b>Research</b></p> <p style="text-align: center;">Substances made with densely packed elastic molecules...</p> <p style="text-align: center;">(list source of research!!)</p> <p style="text-align: center;"><b>Hypothesis</b></p> <p style="text-align: center;">The super ball will bounce higher.</p>	<p style="text-align: center;"><b>Title</b></p> <p style="text-align: center;">Which Ball Will Bounce the Highest?</p> <p style="text-align: center;"><b>Materials Used</b></p> <p style="text-align: center;">Super ball, spongy ball, measuring stick, person to bounce ball, person to record data, paper, pencil</p> <p style="text-align: center;"><b>Procedure</b></p> <ol style="list-style-type: none"> <li>1.Drop both balls from same height 3 times</li> <li>2.Measure which ball bounces the highest</li> <li>3.Record data</li> </ol> <p style="text-align: center;"><i>(Could include photos and drawings)</i></p>	<p style="text-align: center;"><b>Observations and Results</b> <i>(Include Table or Graph)</i></p> <p style="text-align: center;">Super ball bounced to 36,29,38" Spongy ball bounced to 14,12,11" Super ball averaged 34" Spongy ball averaged 12"</p> <p style="text-align: center;"><b>Conclusion</b></p> <p style="text-align: center;">Super ball bounced higher because it has densely packed elastic molecules. Next time I might try other types of balls.</p> <p style="text-align: center;"><b>Name, Grade, Teacher</b></p>
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Display of investigation, materials, supplies in front of board

- **Be sure your name and grade are on all parts of your exhibit.** Displays must be no larger than 36 inches wide, 30 inches deep and 36 inches tall. Valuable equipment should be securely anchored to the display. Maple Hills Elem. and the PTA are not responsible for lost, stolen, or damaged projects or equipment.
- **Do not send any hazardous chemicals that could cause injury to school with your project!!!!!!** If your project apparatus could cause injury to a student, do not send the apparatus, send a picture. The Maple Hills Science Fair Committee reserves the right to remove all hazardous or potentially hazardous parts of science projects from the school.

## Now that you know the Scientific Method, where do you find a good science question to investigate????

Often a favorite hobby can provide a suitable science investigation question. There are many kitchen investigations, sports investigations, and gardening investigations that can lead to a great project!

Remember, making a science model from a kit or a model of something that has already been done before is not an investigation, e.g. the solar system, a clay volcano, or growing rock crystals. *But, you can use a model or a kit to help you answer your own questions, e.g. which rock crystal solution will grow more crystals in a month's time, the salt one, or the sugar one, or, which type of acid will make my volcano produce more "lava" when I mix it with the baking soda, vinegar or lemon juice?*

The important thing to remember is that a good science question is one that you can investigate yourself. If you can find the answer to your question by just reading about it in a book, or by asking someone else, that's not your investigation!

Below are some suggestions to get you thinking like a scientist. Be creative, but remember to follow the scientific method.

**A science project is an investigation you do to find the answer to a question through experimentation.**

Questions can be about things you have seen or heard.

- Does a lever really make it easier to lift something?
- Does changing the shape of a paper airplane's wing make it fly farther?

Questions can be about things you have read.

- Can anyone in my class run as fast as a cheetah?

Questions can be about things you've thought about all by yourself.

- Which uses more water, a shower or a bath?
- Which kind of sugar makes bread rise higher?

**There are many ways you can ask a question.**

You can ask a question so it can be answered yes or no.

- Does sunlight help plants grow?
- Does adding more baking powder to cake batter make it raise more?
- Does my cat (or dog) eat more if I feed him in the morning than if I feed him at night?
- Will ants dig deeper tunnels if they have more room to dig?

You can ask a question so it can be answered by making a choice.

- Which brand of popcorn pops more?
- Which brand of carpet cleaner gets out the stain better?
- Do birds eat more birdseed before OR after noon?

You can ask a question that can't be answered yes or no or by making a choice.

- How fast can a mealworm go?
- Over what type of surface does a ball roll farther?
- Which ball bounces the highest?

## Science Project Checklist

- Ask a **question** that you can investigate *yourself*.
- Fill out your science project entry form and sign it. Then, have your parent sign it too.
- Begin a journal to write down everything you do, observe, and think during your investigation.
- Do **research** on the topic of your question.
- Form a **hypothesis** about what you *think* the answer to your question will be.
- Plan a **procedure** to test your hypothesis. This is the **investigation or experiment** part of the project. Decide what materials you will need and write step-by-step directions for what you will do and how you will do it.
- Construct a chart to help you collect and organize your data.
- Follow the step-by-step directions of your procedure and record your data onto your chart.
- Summarize the **results** of your testing in a written summary.
- Make a graph, chart, or drawing of the results, so others can see at a glance what you've learned.
- Write a **conclusion**. A statement, which either restates your hypothesis (if it is supported) or revises it (if it is not supported).
- Construct your science project display.

## Science Fair 2010 Schedule

### Important dates to remember:

**Friday, March 12<sup>th</sup>**: Deadline for all Science Fair Entries. Fill out the entry form at the back of this packet and turn it in to your teacher on or before this date. Send in \$5.00 with entry form if purchasing a display board (not required, but high quality, inexpensive and easy way to get one if you need it!)

**Friday, March 12<sup>th</sup>**: Entries due for design-a-button (entry form last page of this packet).

**Week of March 22<sup>nd</sup>**: Science fair display boards go home with students who have paid for them in advance. Contact Laurae Briggs if you have paid for a board but not received it by April 5th.

**Thursday, April 15<sup>th</sup>**: Set up your project at school; just before school is the best time. Photos will be taken and you will talk with a scientist either today or Friday. Wear your best smile and be ready to talk about all your hard work!!

**Friday, April 16<sup>th</sup>**: Classes will view science projects. Open House viewing time will be from 6:30pm to 8:30pm. **Projects must be picked up at the end of the Open House.**

# MAPLE HILLS ELEMENTARY SCIENCE FAIR 2010 ENTRY FORM

This Form is Due: Friday, March 12, 2010

Grade \_\_\_\_\_ Teacher \_\_\_\_\_

Name \_\_\_\_\_ Phone \_\_\_\_\_

\*Description of Project (Question or Problem you plan to investigate):

\*A description of your project is not necessary, but is *highly recommended*. Please turn in your form with or without a description: \_\_\_\_\_

\_\_\_\_\_ Individual Project OR \_\_\_\_\_ Team Project If this is a team project, other team members include: \_\_\_\_\_

I have included **\$5.00** to purchase a display board. Checks should be payable to Maple Hills PTA. If this is a team project, board should be delivered to: \_\_\_\_\_

### Special Requirements:

Check if electrical is needed \_\_\_\_\_ What will you be needing it for? \_\_\_\_\_

Student must furnish own extension cord and tape.

Any other special needs or requirements? \_\_\_\_\_

**School personnel and the PTA are not responsible for damage or loss of personal items.**

\_\_\_\_\_  
Student Signature

\_\_\_\_\_  
Parent Signature

**Parents, we need many volunteers to run a successful fair. Please help. No experience needed for most jobs. See attached description of jobs.**

Help behind the scenes with buttons \_\_\_\_\_

Help behind the scenes with certificates \_\_\_\_\_

Help with table set up Wednesday, April 14<sup>th</sup>: 1:30-3:30 \_\_\_\_\_

Take pictures of students with their projects on Thursday, April 15<sup>th</sup>:

9:30 -12:00 \_\_\_\_\_ 12:00-3:30 \_\_\_\_\_

Be a Parent Scientist Thursday, April 15<sup>th</sup>: 9:30 - 12:00 \_\_\_\_\_ 12:00-3:30 \_\_\_\_\_

Help at Open House Fri. April 16<sup>th</sup> in the evening:

Set-up 5:30-6:30 pm \_\_\_\_\_

Work at an activity station: 6:30-7 \_\_\_\_\_ 7-7:30 \_\_\_\_\_ 7:30-8 \_\_\_\_\_ 8-8:30 \_\_\_\_\_

Clean-up and take down tables - 8:30 - 9:30 PM \_\_\_\_\_

Our family will sponsor a hands-on display table during open house: \_\_\_\_\_

Name \_\_\_\_\_ Phone \_\_\_\_\_

Ready to volunteer? Call Laurae 425-391-7772 email [lauraebriggs@hotmail.com](mailto:lauraebriggs@hotmail.com) or Nancy Gunderson 425-391-3834 or via email [nlq3@uw.edu](mailto:nlq3@uw.edu) Thanks!!!

# Science Fair Volunteer Job Descriptions

Thank you for considering volunteering at the Maple Hills Science Fair - We need many, many hands and minds to make this work. The following is a brief description of the jobs that we need help with. If you are not sure if you can do the task, please call me and I will be happy to discuss it, or other options, with you. Thanks again for your time and commitment to our kids!!!

Laurae Briggs 425-391-7772 or  
[lauraebriggs@hotmail.com](mailto:lauraebriggs@hotmail.com) or Nancy Gunderson  
425-391-3834 or [nlg3@uw.edu](mailto:nlg3@uw.edu)

## Help behind the scenes with buttons or certificates:

- Buttons: 2+ Assistants needed to help with buttons before the Science Fair. Entries for the button contest need to be sorted by grade level, sorted through for valid entries (those that follow the "rules" on the entry sheet), and set out in the staff conference room to be "judged" by teachers, staff, and parent volunteers (easy and informal process). The top entry in each grade is picked, the entries are copied, and the buttons are made on our button machine. This is time consuming and labor intensive, but not hard.
- Certificates: 2 Assistants needed after the fair, to create computer-generated certificates with the student's name and picture on them.

## Help with table set up: Wed., April 14<sup>th</sup>, 1:30

- Help setting up the display tables in the hallways. These tables are bulky and heavy and require a healthy back and **bring a pair of work gloves** to move. Many hands make lighter work and less time! You can bring your kids if they can entertain themselves while we set-up.

## Parent Scientist: Thurs., April 15<sup>th</sup>, 9:30 - 12:00, 12:00-3:30

- This job is fun!!!! Each student gets one-on-one time (approx 5 min) to talk to an interested parent (grandparent, friend of parent, anyone who has an interest in science will do), who will ask them all about their project. The parent will ask interesting questions of the student scientist like, "what do you think would have happened if you had done (\_\_\_) instead?" or, "What would you do differently next time?" or, "What did you learn from your investigation?" When you are through you give the young scientist a button and ribbon. The parents who did this in years past have *loved* it and so did the kids!!! We need to fill 15-20 3 hour time slots!

## Help at Open House: Fri., April 16<sup>th</sup> in the evening

- Help set-up 5:30-6:30 - Setting up multipurpose room for displays
- Work at an activity station: 6:30-8:30 in Half-hour shifts at a display helping kids with activities or damage control! No science background needed.
- Help clean-up 8:30 - 9:30 - Clean-up gym and multipurpose room -trash pick-up and moving tables.

Our family will sponsor a hands-on display table during open house: This can be a nice display of something science related you have collected (bugs, minerals, pressed plants, etc.) or an interactive display where kids can do or touch something (acid/base exploration, levers and pulleys, electricity, etc.) - call or email to discuss options with Laurae Briggs at 425-391-7772 or [lauraebriggs@hotmail.com](mailto:lauraebriggs@hotmail.com)

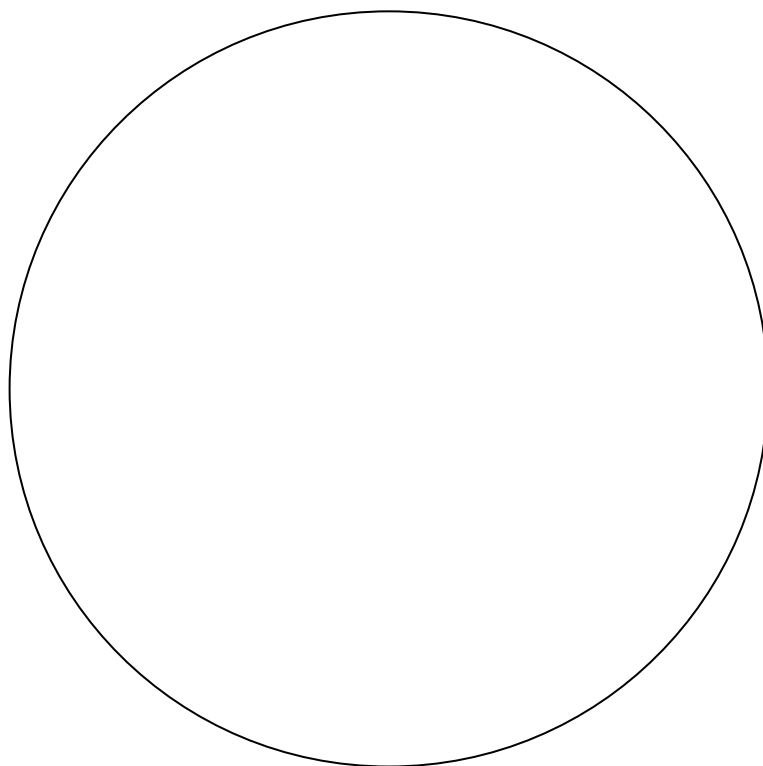
## Science Fair 2010 Design-A-Button Contest

There will be six winners, one to represent each grade.

Contest Rules:

- 1) Design must be original work and **science related**.
- 2) Design must be done in **black marker only - No color** - a thin black "sharpie" or similar marker works best. You can practice in pencil but please **erase all pencil lines** after you have drawn your final design in black marker.
- 3) Please include the year "**2010**" in your design.
- 4) Designs must be turned in to the office by **Friday, March 12<sup>th</sup>**.

\*\*\*Kids – Please note: Any entry not following the rules above can not be considered.\*\*\*



Grade Level (circle one) K    1st    2nd    3rd    4th    5th

Name \_\_\_\_\_

Teacher \_\_\_\_\_

Questions? Call Laurae Briggs at (425) 391-7772 or email [lauraebriggs@hotmail.com](mailto:lauraebriggs@hotmail.com) or Nancy Gunderson 425-391-3834 or email [nlq3@uw.edu](mailto:nlq3@uw.edu)