Attention Horace Mann K4 - 5th Graders:

Please participate in the Science Fair!

Event Date: Thursday, May 30, 2013 6:00-7:30 pm

- *Get inspired to think like a scientist!*
- *Choose a topic that interests you and get some hands-on experience!*
- *Participants will receive participation awards*
- *Have fun, working in a group or individually, planning your project and presenting it at the fair!*

This **Science Fair Information Packet** will help guide you through the process from selecting your project to planning your timeline in preparation for the Science Fair on May 30th.
In this packet you will find:

Please review this Information Packet with your family and determine if you would like to participate. Return the Interest Form to your teacher by **Friday, March 22nd .**
You will receive a **Participant Registration Form** to indicate your formal participation in the Science Fair and to share with the Committee what project you will be pursuing.

Dear Horace Mann Families,

Your child has the opportunity to participate in the Horace Mann Science Fair to be held on **Thursday, May 30, 2013 from 6 - 7:30 p.m**. This is the first year that this event is being held at Horace Mann!

The Science Fair is an event that supplements the regular classroom curriculum. The purpose of the Science Fair is to encourage students' interest in science, to develop their inquiry and investigation skills, and to recognize their efforts. Participation also provides an opportunity for students to enhance their writing and presentation skills.

Science offers children experiences in exploring beyond the classroom to understand more about their world. **We want students to get excited about science, to stimulate their curiosity and to help them learn to think like scientists!**

Over a 10-week time frame, your child can design, test, and present a project that uses the scientific method to solve a problem or answer a question. The topic will be their choice and should be an area that is of particular interest to them. Some parental help will be required, but the ideas, work, and research ***should be completed by the students***.

Participation is optional, but highly encouraged. Students may choose to work individually or with a team. Work will be completed outside of the classroom.
We hope your child chooses to participate in the Science Fair. You may contact us with questions throughout the process. Thank you for your support!

Sincerely,
The Science Fair Committee and Mr. Thomson
Mrs. Stein, Mr, Kosek, Mrs. Crawshaw

Please Note:
We would like to thank the 2011-2012 Wilson/WSTEM Science Fair Committee and Washington School PTA (especially Mrs. Crawshaw) for generously sharing their ideas and materials with us.

A HUGE Thank-You to PPG Industries for their support and encouragement.

Guidelines and Safety Rules

- All science fair entries must incorporate a 36” x 48” three panel display board. Boards will be purchased in bulk by the science fair committee and will be made available for science fair participants.
- Additional materials may be displayed on the table in front of the display board. Objects that are too large to display or are otherwise prohibited may be represented with photographs.
- **A journal or log documenting your project is required**. The log should include a written (or typed) copy of the information discussed in the Step-by-Step Method in this packet, as well as any raw data and other important information from your experiments. The journal or log will be placed on the Science Fair table in front of the display board. It is OK to display the journal as it was created. Also include documentation of sources that you used during your research.
- Be sure you understand all the words and terms you use in your project.
- Wall space is **not** available for the exhibit.
- A limited number of electrical outlets are available. You must indicate on your Registration Form if you will require electricity. Battery power may also be used. All wiring, switches, and metal parts carrying current must be properly selected for load requirements and adequately insulated. No exposed wires, contacts, or un-insulated fasteners will be permitted. **You are responsible for electrical safety**. Please contact a representative of the science fair committee if you have specific questions or concerns.
- Humane treatment of animal subjects is expected and required. **No animals may be brought to the science fair**. Any experiment that involves animal subjects must be approved in advance by the committee.
- Anything that could be hazardous to public safety is prohibited. This includes live disease-causing organisms, syringes, open flames, dangerous chemicals, and highly combustible materials.
- **IMPORTANT—ALLERGY CONCERNS:** When planning your display please ensure that bacteria, mold spores, or other things (peanuts, tree nuts) that could cause an allergic reaction are covered and sealed. Food items must be covered. Please refrain from bringing any items that include latex, dry ice, or nuts.

Parent and Student Resources

Books:

Many books are designed to help you with your science fair project. Check the library, your favorite book store, or search an online bookseller like Amazon.

Here are a few examples:

Guide to the Best Science Fair Projects by Janice Vancleave

The Complete Handbook of Science Fair Projects by Julianne Blair Bochinski

Scholastic Science Fair Success Guide by Patricia Janes

Websites:

This website has tons of science fair information and ideas and also has links to many other useful websites:

http://www.makeitsolar.com/science-fair-information/01-the-scientific-method.htm

Here are some other sites you may find useful:

http://school.discoveryeducation.com/sciencefaircentral/

http://www.sciencenewsforkids.org/

http://www.homeworkspot.com/sciencefair/

http://www.sciencebuddies.org

If you find other helpful sites, please pass them on to the committee so we can share them and add them to the list.

The Scientific Method - Step-by-Step

(courtesy of makeitsolar.com science fair website)

The Scientific Method

1. Choose your Topic
2. Identify a Problem
3. Research the Problem
4. Form a Hypothesis
5. Design the Experiments
6. Test the Hypothesis
7. Analyze the Results
8. Formulate and Report Conclusions

Step 1. Chose a Topic and Category

Ask yourself "What am I interested in?" or "What subject do I want to learn about?"

Keep in mind that a good project does not have to be complicated or expensive.

Don't be afraid to explore simple concepts, particularly for the younger students.

Examples: Plants, solar electricity, and Mars.

Step 2. Identify a Problem or Question

What questions do you have about your topic? What do you want to know? State the problem as a question.

In some cases you may want to research your topic before you identify an exact problem.

Examples:

- How does amount of water effect plant growth?
- Can solar panels supply electricity to anything?
- How fast does Mars orbit the Sun?

Step 3. Research the Problem and your Topic

What do you need to learn about so that you can solve your problem or answer your question? Where can you search for information?

Learn as much as you can about your topic and problem. Research can be from many different sources including people, books, magazines, the internet, or your own experience.

After you do your research you may want to restate your question in a better way.

Examples:

- Does the amount of food given to a certain plant effect the growth of that plant?
- Can one size solar panel do the work of any batteries?

Step 4. Develop a Hypothesis

Now that you have done your research, develop a hypothesis. A hypothesis is a prediction. What is your prediction of the answer to your question? What do you think will happen?

Guess at what the answer to your question will be. This is not a mystery. You have educated yourself on the topic and by now you should be able to make a guess at the answer based on your learning. This is also called an "Educated Guess".

Examples of hypothesis statements:

- I predict that a plant that does not get enough water will die.
- I predict that the same one solar panel can be used to replace AA and C cell batteries but not D cell batteries.

Step 5. Design the Experiments

How will you test your hypothesis? What tests will answer your question? You must test enough samples to prove your point.

Define the variables that will change from one experiment to the next. Amount of water? Amount of plant food?

Plan the tests you want to perform so that you have a good idea how much time you will need to complete them in the time allotted for your project. How long will you have to grow your plants to get good data?

Example experiments:

9 plants total:

- 3 tested with low amount of water
- 3 tested with the recommended amount of water (control group)
- 3 tested with too much water
-

9 battery operated items total tested with a solar panel

- 3 that use 2 AA cell batteries
- 3 that use 2 C cell batteries
- 3 that use 2 D cell batteries

Step 6. Test your hypothesis

Test your hypothesis by executing your experiments. Be sure to keep good records of your experiments so that you can analyze your results and present your data to others. Ask your teacher about the format for a journal or data collection.

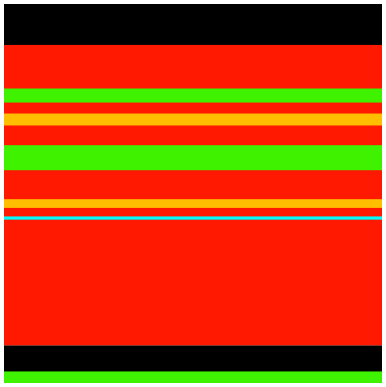
Step 7. Analyze the data and results

What do your results tell you?

Look at your experimental data. Organize it.

Do you see any trends or information that proves or disproves your hypothesis?

Graphs are a big help. Graphs not only help you understand your data but they will also help others to quickly understand what you did.



Step 8. Formulate and Report your Conclusions and Make Recommendations.

Was your hypothesis right or wrong?

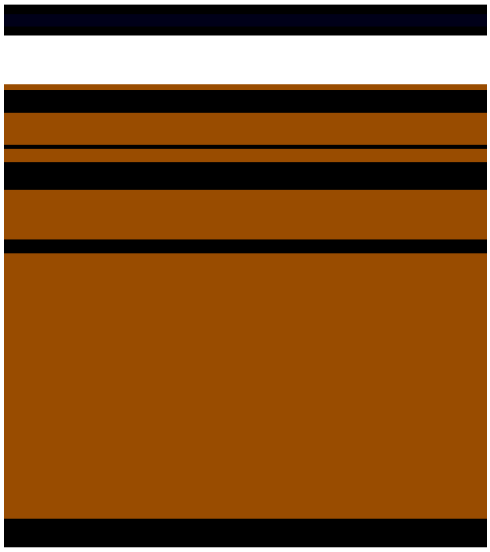
It is OK to be wrong.

<u>The objective of the scientific method is to investigate a problem and work toward a solution.</u>

Sometimes you will end an experiment and have new questions. If so, those new questions are part of your conclusions.

Sometimes a conclusion proposes a new hypothesis and new experiments with recommendations for further study.

Even if you have disproved your hypothesis you have still done a good job if you correctly applied the scientific method.



Project Display Guidelines

(courtesy of makeitsolar.com)

- The display poster board is an important tool for the presentation of your research.

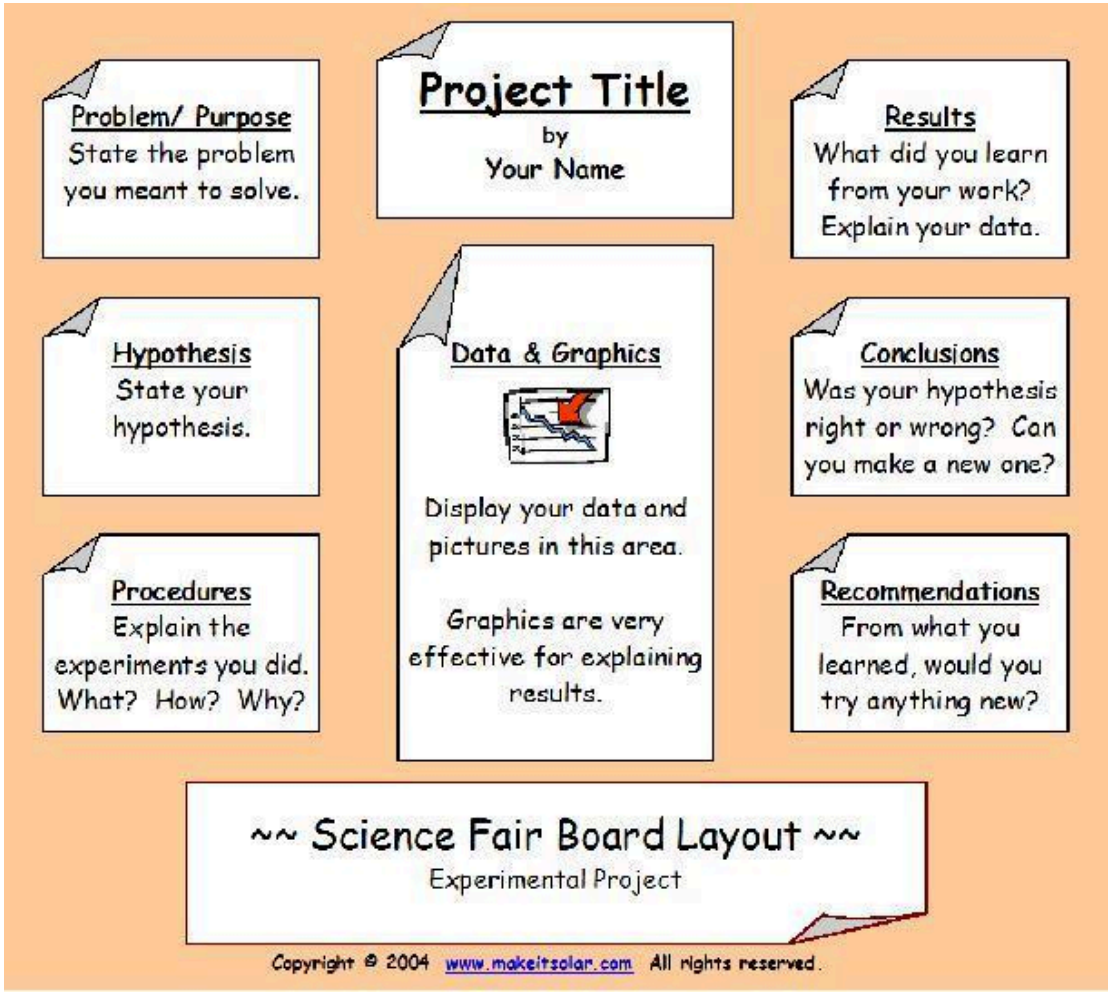
- The objective of a display board is to present the main areas and conclusions of your project so that others can easily understand what you accomplished. This is not the same as your written report. The actual project will have a lot more detail that will be shown in your written report.

- Think of the display board as a commercial for your project. The commercial will state the main points and key features of your research so that others will understand what you did and how you did it.

- Like books, people will read your board from left to right and top to bottom. It is a good idea to arrange your project information so that observers can read your display in logical order.

- Part of your challenge is to make it easy for others to understand your work. The only section not following this convention is the title which should be located at the top center of your display.

- The main areas of a poster board could be the ones shown in the chart on the next page. The areas are explained below. Each section presented on the display board should be only one paragraph if possible. The actual areas you use will depend on the rules of your fair and the choice of exact information you want to present.



Eight Board Display Sections

1. **Title--**The title of your project. Your name.
2. **Data and Graphics--**Present any significant data, graphs, and pictures in this section. Visual representations of your results, if done effectively, are worth thousands of words.
3. **Problem/ Purpose--**State the problem that you were originally concerned with and explain why you selected the topic you did?
4. **Hypothesis--**State your hypothesis, your prediction of what you think the results will be.
5. **Procedures--**State the procedures you followed. What experiments did you perform and why?
6. **Results--**What did you find out from your data? Explain the results here.
7. **Conclusions--**Was your hypothesis right or wrong? Can you make a new statement that you know to be true based on your research?
8. **Recommendations--**From everything you learned, would you make any recommendations for further research? Write your ideas for research in this section.

Tips to make your display easy to understand and interesting

to look at!

1. Include all 8 sections on your display board in an organized fashion.

(Title, Data and Graphics, Problem/Purpose, Hypothesis, Procedures, Results, Conclusions, Recommendations)

2. Make the text font large enough so it can be read easily.

3. Use pictures and diagrams to effectively convey information about your project.

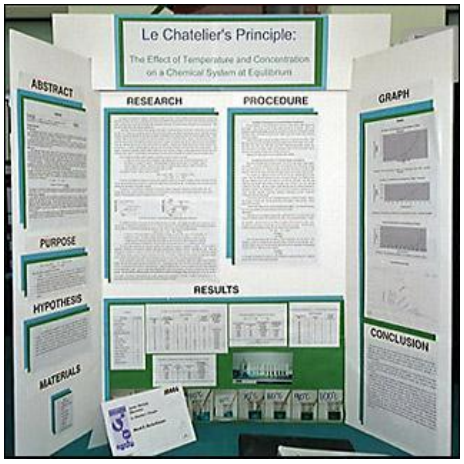
4. Proofread your display board and fix any errors.

5. Practice your 1-2 minute presentation explaining your research and findings, using the information on the display board.

(Courtesy of http://www.sciencebuddies.org/science-fair-projects/project_display_board.shtml)

At the Science Fair, student display boards will be placed on tables.

- You will stand next to your display and describe your research and findings to students, parents, and teachers who walk by to visit your display.
- Your journal and resource list (Bibliography) will also be displayed.
- You will have a chance to check out other student projects.



Horace Mann Elementary School Science Fair – 10 Week Timeline

Please Note: This timeline is simply a tool to break the project down into manageable pieces for completion and to assist in staying on track. Some projects may require more time for experimentation and observation.

WEEK	TASKS TO COMPLETE	Due DATE	CHECK OFF
Week 1 March 17-23	• Review the **Science Fair Packet**. • Review the steps to put together a science project. • Decide if you want to participate and if you prefer to work alone or in a group. • Choose a topic or problem to investigate-think about which areas of science interest you. • Draft the question and hypothesis for the project. • *Turn in the **Participant Registration Form** to your teacher*.		Participant Registration Form **due on** **Friday,** **March 22nd**
Week 2 March 24-30	• Begin research-refer to the **Resource List** in your information packet for useful websites and books. • Start a notebook for record keeping and journaling about your scientific process. *This journal will be displayed at the Science Fair.*		Students will be informed of approval by **Tuesday March 26th**
Week 3 March 25 -30	• Modify your research question, if needed, based on the research you are conducting. • Start a Bibliography for all the		3 week check in with teacher

	books and websites you are using for your project and add to it as needed each week. • Develop a hypothesis-your prediction of the answer to your question.		
Week 4 April 7 -13	• Continue the research, plan the tests to perform, and gather necessary materials. • Make any necessary changes as prescribed by the Science Fair Committee.		
Week 5 April 14 - 20	• Continue to plan your tests and gather material • Test your hypothesis by conducting your experiments • As you collect data, keep carefully written notes of your results in your journal. • If possible, take pictures of the experiments, which you can later add to your display board.		
Week 6 April 21 - 27	• Continue experiments and continue recording all the observations and results in your journal. • Are the experiments going as you predicted?		6 week check in with teacher

Week 7 April 28- May 4	• Analyze the data and results. • What do the results tell you? • Do you observe any trends? • Organize your results in a table or graph.		
Week 8 May 5-11	• Determine whether your hypothesis is supported or rejected. Remember, it is fine if your hypothesis is rejected. • Work on writing the first draft of your findings from your project. Finalize your Bibliography. • Begin to create your display poster board. Refer to the document **Project Display Guidelines** for the eight key areas to include on your poster board.		
Week 9 May 12-18	• Review and edit the first draft of your project findings. • Ask a friend or parent to review your second draft of your project findings. • Continue working on your display poster board. • Assemble any display items you will need in addition to your display board.		9 week check in with teacher

	• Invite your friends and family to the Science Fair**, Thursday, May 30th, 6 – 7:30 p.m.**		
Week 10 May 19 - 25	• Make a final draft of your project findings. • Add any finishing touches to your display poster board. • Organize your journal and Bibliography for your project. This will be displayed at the Science Fair. • Practice presenting your findings, in a 1-2 minute report, to a sibling, friend or parent. • Think of answers to the following questions: -What was the most interesting part of the project for you? -What surprised you in doing this experiment? -What was difficult about doing this project? -What further research should be conducted in order to explore your research question further? -What would you do differently next time if you were to do the project over?		By the end of this week, you should be ready for the Science Fair!
	Science Fair—Thursday May 30th		

Attention Horace Mann K4 - 5th Graders:

Please participate in the Science Fair!

Event Date: Thursday, May 30, 2013 6:00-7:30 pm

Problem

State the problem you meant to solve.

Hypothesis

State your hypothesis.

Procedures

Explain the experiments

you conducted.

What experiments did you conduct?

How were they conducted?

Why did you choose these experiments?

Project Title

By: Student Name(s)

Data & Graphics

Display your

data and pictures

in this area.

Graphics are very effective for explaining results.

Results

What did you learn from your work?

Explain your data.

Conclusions

Was your hypothesis right or wrong?

Can you make a new hypothesis?

Recommendations

From what you learned, would you try anything new?