**Science Fair 2015**

**Thursday, March 26, 2015**

**Important Facts for Students:**
- 5th grade students must fill out the Cascade Ridge 2015 Science Fair Project Registration Form by January 28th. This form is available on the PTSA website. Click the Science Fair link. 5th grade students must follow the 5th grade requirements and due dates with their classes.
- Science boards can be purchased as part of the online project entry form for $9, or you can purchase on your own. Payment will be made online or by check made out to Cascade Ridge PTSA. Boards will be delivered to classrooms in early March. Order early.
- You will be turning in a display, which you will bring to the Café at the designated time.

**Important Dates:**

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Date Due</th>
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<tbody>
<tr>
<td><strong>Topic/Question Proposal</strong> <em>You must wait for teacher approval before moving on to further steps</em></td>
<td>January 23 (or sooner if you’d like to get a head start)</td>
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<tr>
<td><strong>Formal Topic/Question/Hypothesis Form</strong></td>
<td>January 30</td>
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<td><strong>Science Fair Project Entry Form</strong> (online- PTSA website)</td>
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<tr>
<td><strong>Research Notes and Bibliography</strong></td>
<td>February 11</td>
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<tr>
<td><strong>Science Investigation Write-Up</strong> (it’s okay if conclusion and data/results are not complete yet)</td>
<td>March 4</td>
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<td><strong>Photos and Videos Submitted to PTSA Website</strong> (optional- these will be used the night of the Science Fair)</td>
<td>March 20</td>
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<tr>
<td><strong>Project Set Up After School</strong> (12:45-3:00 PM or 5:00-7:00 PM)</td>
<td>March 25</td>
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<tr>
<td><strong>THE SCIENCE FAIR!</strong></td>
<td>March 26</td>
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- Projects explained to judges during the school day.
- Family and friends Science Fair Celebration: 6:00-8:00 PM (displays taken home that night)
The Science Fair Process

You will go through several steps in order to successfully plan, carry out, and reflect on a scientific investigation.

**FIRST**, you will use the **Topic/Question Formation Sheet** to come up with some possible investigative questions about your topic of interest. Your questions MUST be testable. The Science Fair is not a time to build a model or to create a how-to presentation. The Science Fair is about choosing a guiding investigative question that allows you to experience the whole process. *You must wait for teacher approval before moving beyond this step.*

**SECOND**, you will fill out your formal **Topic/Question/Hypothesis Form** with your topic of choice, your approved investigative question, and your hypothesis (a possible answer to your question that can be tested by further investigation).

**THIRD**, you will read, read, read and fill out your **Research Notes/Bibliography** as you do! Great scientists read plenty of material to become more knowledgeable about their topic. You will choose at least three sources relating to your topic, and you'll take notes from each of them.

**FOURTH**, you will write up your plan for your investigation using the **Investigation Write Up**. Your write up must be clear, concise, and easy to follow. For class, you will write up as much as you can by the due date. It’s okay if your data, results, and conclusion aren’t ready until the Science Fair because of the extra time you might need to complete your investigation. Then, you will conduct your experiment, taking careful notes and observations as you go!

**FIFTH**, you’ll put together your Science Fair display in a way that is organized, logical, and easy for viewers to read and enjoy!

**SCIENCE FAIR SET UP**: Wednesday, March 25 (12:45-3:00 PM or 5:00-7:00 PM)

**PROJECT EXPLANATIONS TO JUDGES**: During class, March 26

**FRIENDS AND FAMILY SCIENCE FAIR**: Thursday, March 26 (6:00-8:00 PM)
Step 1: Topic/Question Formation

Name: __________________________________________

Due: January 23, 2015

Your job is to select a topic that lends itself to a scientific investigation. Pick something you’re interested in, since you’ll be spending a lot of time with it!

My topic is ________________________________________

Next, you need to come up with some potential investigative questions. You’ll only use ONE, but we would like you to brainstorm a few (please list them in your order of preference). Your investigative question will guide your entire project, so spend some time really thinking of a quality question. Your teacher will review and approve or ask you to make changes.

To help you get a start on your question, here are some sample question types.

The Effect Question
What is the effect of ________________ on ________________?

- sunlight
- eye color
- brands of soda
- temperature
- oil
- the growth of plants
- pupil dilation
- a piece of meat
- the size of a balloon
- a ramp

The “How Does ___ Affect ___” Question
How does the ________________ affect ________________?

- color of light affects the growth of plants
- humidity affects the growth of fungi
- color of a material affects its absorption of heat

The “Which/What and Verb” Question
Which/what ________________ (verb) ________________?

- paper towel is most absorbent
- foods do meal worms prefer
- detergent makes the most bubbles
- paper towel is strongest

In each of these, you are thinking about what your manipulated variable will be (the ONE thing that you will change) and what your responding variable will be (what you’re actually measuring).

Your turn! Please list three possible questions (in the order of your preference) below.

1. ________________

2. ________________

3. ________________
Step 2: Topic/Question/Hypothesis

Name: ______________________________________________

Due: January 30, 2015

Once your teacher has approved (or helped you to adjust) your investigative question, you can fill out this “formal” informational sheet about your investigation. You’ll write your topic and question, and then form a hypothesis. Your hypothesis is a possible answer to your question that can be tested by further investigation.

My topic is ________________________________________________

My investigative question is:

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

My hypothesis is:

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
Step 3: Research Notes and Bibliography
Name: __________________________________________
Due: February 11, 2015

You will need to find research or background information on the main process or the topic involved in your investigation.

Instructions:
1. Find at least three sources of information. You may use the Internet, books, magazines, encyclopedias, etc. If you use the Internet, make sure that your websites are quality sites. Remember, a search engine (like Google) is not a source. It brings you to a source.
2. Write down at least three facts that are related to your project from each source (a total of at least nine facts).
3. Cite your resources in a bibliography. You can ask your teacher if you need specific help with formatting. Sample website and book citations are below.

Book:

Website:
www.kermitsworld.com/familyhistory

Resource 1: __________________________________________
Citation: ____________________________________________
1.____________________________________________________________________
2.____________________________________________________________________
3.____________________________________________________________________
Resource Notes - Continued

Name______________________________

Resource 2: __________________________________________
Citation: _______________________________________________

1.____________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________

2.____________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________

3.____________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________

Resource 3: __________________________________________
Citation: _______________________________________________

1.____________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________

2.____________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________

3.____________________________________________________________________
   ______________________________________________________________________
   ______________________________________________________________________
Step 4: Investigation Write-Up
Name: ________________________________
Due: March 4, 2015

TITLE: Think of an interesting or catchy title.

PROBLEM/QUESTION: Must be something that can be tested. Pick something that has one manipulated variable that can be tested.

HYPOTHESIS/PREDICTION: What is your guess? Restate the question entirely. Do not change the meaning of the problem/question.

MATERIALS: A numbered or bulleted, detailed list of materials that would be needed to conduct the investigation. Include quantities, amounts, types, etc. Be specific.

DIAGRAM: Detailed diagram of the investigation set-up with labeled variables, amounts, and times. It is a simple (stick figure) diagram that someone could use to set-up the investigation. The important thing to remember is to label your diagram! The more specific and clear your labels are, the easier it will be for someone else to replicate your investigation.

MANIPULATED VARIABLE: The ONE thing that was changed on purpose to find an answer to a question or to make a comparison.

RESPONDING VARIABLE: The change(s) that happen in your experiment as a result of manipulating (or changing) ONE variable.

CONTROLLED VARIABLES: Things that are kept the same to make the test fair. These are the same so that you can see the effects of the manipulated variable. Think thoroughly about this - materials, environment, duration, are some things (but not necessarily all) you might want to consider.

PROCEDURE: List the steps in the investigation in sequential order. These are directions that someone else could follow in order to complete your investigation exactly the same way
that you did (without you being there). These steps are not a summary of the process you went through, nor are they an explanation of what you think will happen.

Sample: Will a plant grow more if fed water, Lemon Juice or Fruit Punch?
1. Measure and record the height of all plants.
2. Feed plants 1/4c of water, fruit punch, or water, daily.
3. Measure and Record the height of plants daily.
4. Do this for 3 weeks.
5. Look at the results (data) to find out which plant grew the most.
Repeat the investigation 2 times and compare results.

DATA/RESULTS: Collect the data. Share the data in a chart or diagram and include photographs or tables. You may represent the data as percentages, averages, graphs, etc.

CONCLUSION: Thoroughly explain what happened using your data. One way to communicate your conclusion is using the acronym RAPPS:

R- Restate the investigative question.
A- Address your hypothesis/prediction.
P- Provide high and low data as evidence to support your findings.
P- Provide explanatory data (trends or comparisons of data, using words like only and but).
S- State your conclusion (Therefore, the....)

DISCUSSION PARAGRAPH: Use what you discovered to answer questions and share what you learned.

Analyze (What was good, bad? What worked, didn’t work?) and reflect on what you learned about your results and data.

How might you change or modify your investigation to make it better for next time or to learn something new?

Make a real world connection from what you learned. For example, how can you apply this to your life or how could you use this information to change something?

REMEMBER: Sometimes in science, things DON’T go as we plan. THAT’S OKAY! That’s science! Write down what happens and talk about it! Just because your hypothesis was inaccurate or your plan went off course, it doesn’t make you “wrong”! It makes you a scientist!
Your final Science Fair product will be a free-standing display of all of your hard work along the way. You may choose how to display your information, but it must be done in a clear, organized, logical way. Think about how people read (left to right, top to bottom) and use that to guide your formatting.

All items included in your display must be typed. The one exception is any observation notes or data you might take by hand—those may be (neatly) hand-written.

Sample Display: