Science Fair 2019

Thursday, March 28, 2019

Important Facts for Students:

- 5th grade students must fill out the Cascade Ridge 2019 Science Fair Project Registration Form by January 25th. 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 Fair display boards. The PTSA will have a small number of display boards for sale this year. If you do not purchase your board with PTSA, boards are available for purchase at Office Depot, Michaels, Fred Meyer.
- You will be turning in a display, which you will bring to the Cafe at the designated time.

Important Dates:

Assignment	Date Due
Topic/Question Proposal *You must wait for teacher approval before moving on to further steps.*	January 18
Formal Topic/Question/Hypothesis Form **Science Fair Project Entry Form** (online– PTSA website)	January 25
Research Notes and Bibliography	February 8
Science Investigation Write-Up (It is okay if conclusion and data/results are not complete yet)	March 1
Project Set Up After School (1:30-3:30 PM or 5:00-7:00 PM)	March 27
THE SCIENCE FAIR! · Projects explained to judges during the school day. · Family and friends Science Fair Celebration: 6:00-8:00 PM (displays taken home that night)	**March 28**

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, 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 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 is okay if your data, results, and conclusion aren't ready until the Science Fair because of the time you may 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 27 (1:30-3:30 PM or 5:00-7:00 PM)

PROJECT EXPLANATIONS TO JUDGES: During class, March 28

FRIENDS AND FAMILY SCIENCE FAIR: Thursday, March 28 (6:00-8:00 PM)

Step 1: Topic/Question Formation
Name: _____ Due: January 18

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 teacher will review and approve, or ask you to make changes.

To help you get a start on your question, here are some samples:

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

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

The "How Does __ Affect __" Question
How does the _____ affect _____ ?

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

The "Which/What and Verb" Question
Which/what_____ (verb) _____ ?
Which laundry detergent cleans mustard stains the best?

In each of these, you are thinking about 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 25

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 answer your question with a hypothesis. Your hypothesis should respond directly to your question.

My topic is _____.

My investigative question is: _____
_____

_____

_____

_____

A hypothesis is a guess, a prediction of what you think will happen. It is only a guess. It should be written like this: I think that plants given Gatorade will grow taller than plants given Pepsi, water, or lemonade.

My hypothesis is: _____
_____

_____

_____

_____

Step 3: Research Notes and Bibliography
Name: _____
Due: February 8

You will need to find research background information on the main process or the topic involved in your investigation. A great resource person would be Ms. Moore for books, or you can use the Internet.

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 for formatting. Sample website and book citations are below.

Book:

Calamaras, M. Amazing Stomp Rockets. New York: Herseth, Foster, Schaffer, and Bird Publishing, 2005.

Website:

Page, K. "Kermit's Family History." *The World of Frogs*. 25 Oct. 2014. Web. 30 Jan. 2015. www.kermitsworld.com/familyhistory

Resource 1: _____

Citation: _____

1._____
_____
_____

2._____
_____
_____

3._____
_____
_____

Research Notes- Continued

Resource 2: _____

Citation: _____

1._____

_____

_____

2._____

_____

_____

3._____

_____

_____

Resource 3: _____

Citation: _____

1._____

_____

_____

2._____

_____

_____

3._____

_____

_____

Step 4: Investigation Write-Up
Name: _____ Due: March 1

Each of the following things are expected to be on your final display board.

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. "I think that…"

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 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, lemonade, Pepsi, or Gatorade?
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, diagram, include photographs, or tables. You may represent the data as percentages, averages, graphs, etc.

CONCLUSION: This is your opportunity to tell people how your investigation turned out. You will revisit your hypothesis and share your data. Here's how to start:

"My hypothesis was supported/not supported by the results of my investigation."

Then, share your data. In other words, tell us what you found using your data as evidence.

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?

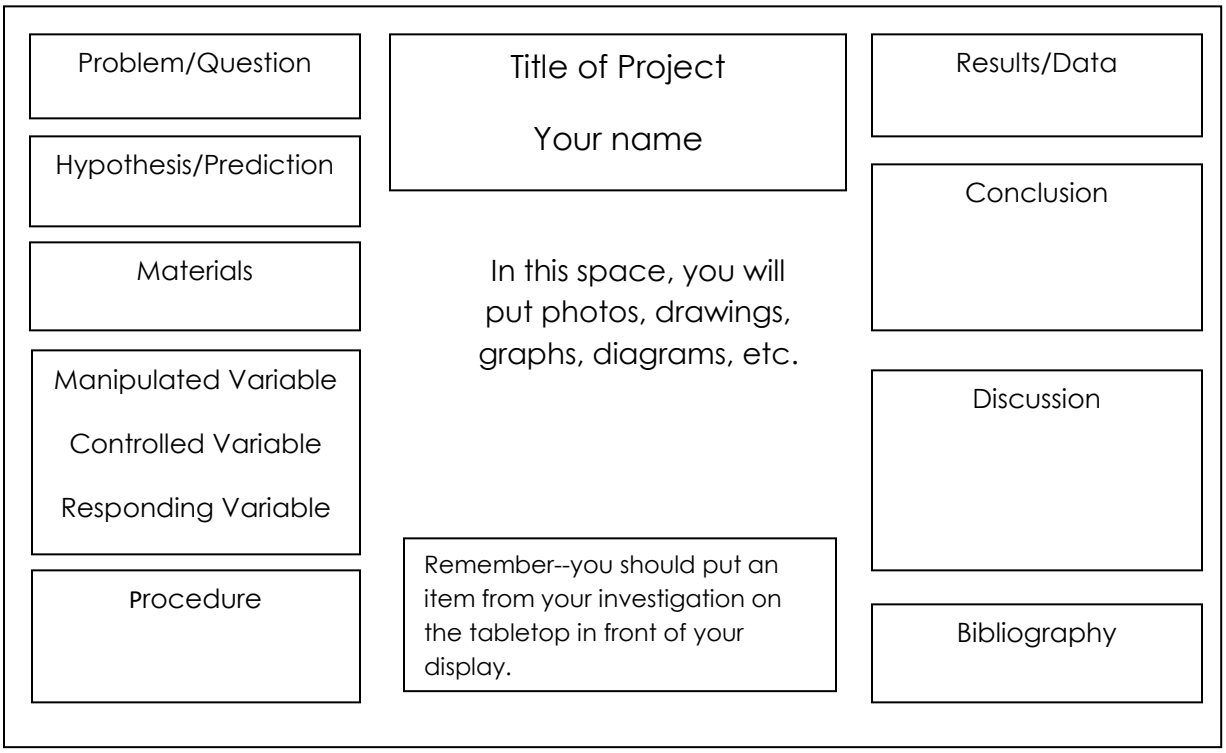
Make a real world connection from what you learned. For example, how can you apply this to your life or how could you use this information to change something?

REMEMBER: Sometimes in science, things DON'T go as we plan. THAT'S OKAY! That's <u>science</u>! 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!

Step 5: Display
Name: _____
Due: March 27

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. Make sure you have all the required elements on your board or on the table top.

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.



Make sure you have the following items on your display board:

- □ Title
- □ Your name
- □ Problem/Question
- □ Hypothesis/Prediction
- □ Materials
- □ Diagrams/Photos/Graphs/Charts
- □ Variables-Manipulated, Controlled, Responding
- □ Procedure
- □ Data/Results
- □ Conclusion
- □ Discussion
- □ Bibliography
- □ Something for the table