Wakefield Science Fair Project

Schedule of Assignments

Science fair projects will be shared through Google documents

Thursday, September 6, 2018	*Science Fair packets go home with students. *Parents review with students and choose a topic.
Monday, September 10, 2018	3 Science Fair Project Ideas presented to Teacher.
Wednesday, September 12, 2018	Assignment #1 is due: **Problem Statement**
Monday, September 17, 2018	Assignment #2 is due: **Hypothesis**
Monday, October 1, 2018	Assignment #3 is due: **Materials** Assignment #4 is due: **Procedures and Variables**
Monday, October 29, 2018	Assignment #5 is due: **Background Information and Bibliography (1st draft)**
Monday, November 26, 2018	Assignment #5 is due: **Background Information and Bibliography (2nd draft)**
Monday, January 7, 2019	Assignment #6 is due: **Data**
Wednesday, January 9, 2019	Assignment #7 is due: **Results and Conclusion**
Monday, January 14, 2019	Assignment #8 is due: **Title**, **Abstract**, **Application**
Tuesday, January 15, 2019	**All Science Projects must be turned in by this date**
Tuesday, January 15-Friday, January 18	Oral Presentations in Class!
TBA (Usually March)	Science Fair Night

Middle school students must select their top three Science fair project ideas and present them to the teacher. (Teacher will assign due date)

Helpful Websites

www.sciencebuddies.org
http://www.all-science-fair-projects.com

Assignment 1

Problem Statement

Select a topic that can be answered only by experimenting. Write your topic as a question to be investigated.

Example: "Which brand of paper towels is the most absorbent?"

Good Topics:

1. Do different colored mints dissolve at the same rate?

   This is a good topic because it required experimentation that you can do yourself. You must use the scientific method in completing this project.

2. What surface do mealworms prefer?

   This topic suggests the use of an experimental method. Asking a question is a good approach toward developing your topic.

3. Do all brands of paper towels absorb water at the same rate?

   This is an investigation where only one variable is being manipulated.

Poor Topics:

1. How volcanoes erupt.

   This topic will not allow experimentation without visiting real volcanoes. Making a model that erupts is a demonstration not an experiment.

2. Microscopes.

   This topic is too general. Telling how one works is not experimentation.

3. Do different brands of paper towels soak up different temperatures of water at the same rate?

   This topic needs to be narrowed down to one investigation. Only one variable should be manipulated in an investigation.

Assignment 2

Hypothesis

A hypothesis states what you think is going to happen when you investigate a question.

Example: "If Brawny, Viva, and Bounty paper towels are tested for their absorbency, then Bounty paper towels will be the most absorbent."

Assignment 3

Materials

List all the materials used in your investigation. Include specific details such as size and quantity. Remember to use only metric units.

***Write our bibliography using the following format:**

Good Example

1. **3-15 x 15 cm. sheets of each paper (Towel-Brawny, Viva, and Bounty)**
2. **1 20 x 20 cm. square cake pan**
3. **750 mL water, 20^0 Celsius**
4. **Celsius Thermometer**
5. **Clock with a second hand**

Bad Example

1. **Paper Towels**
2. **Measuring cups**
3. **Water**
4. **Container**
5. **Thermometer**
6. **Clock**

Assignment 4

Procedures

List your step-by-step directions like a recipe. Anyone who reads them should be able to duplicate your investigation. Do not write what YOU did (avoid words such as "I" and "me")

Example:

1. Cut 3 – 15x15 cm. Sq. from each brand of paper towels.
2. Label each cut piece with brand name.
3. Pour 50 ml. of 20° Celsius water into 20x20 cm. sq. pan
4. Place 1 square of generic brand paper towel into the water and pan
5. Leave for 30 seconds
6. Remove paper towel
7. Measure water remaining in pan and record
8. Dry the cake pan
9. Repeat steps 4 through 8 for each brand of paper towel
10. Repeat entire process twice more for each brand of paper towel

Variables

Variables are all the factors that affect your investigation. There are three types of variables.

Manipulated Variable: What you can change on purpose in an investigation

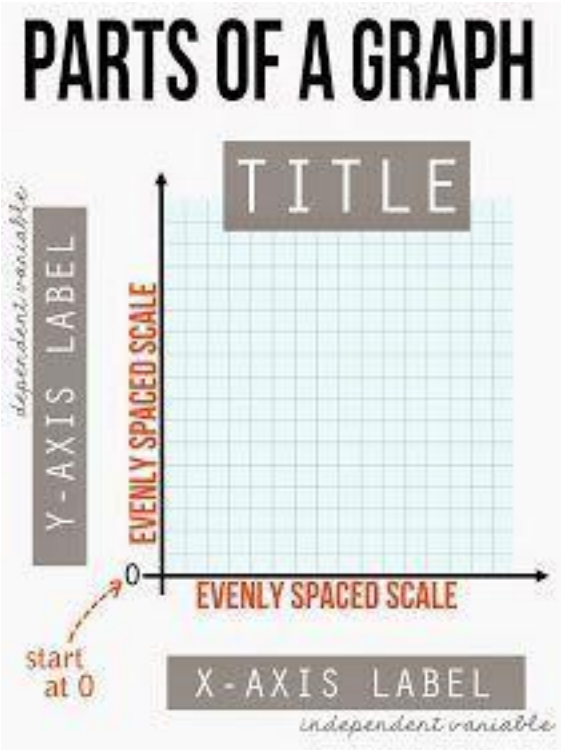
Example: Brand of paper towels

Responding Variable: What changes by itself because you manipulated (changed) something in your investigation.

Example: Amount of water that is absorbed by each paper towel.

Variables Held Constant: Everything else in your investigation must be kept the same (the controlled variable)

Example: Size of paper towel
Amount of water poured on each towel
Temperature of the water used
Container towels are placed in



Assignment 5
Background Information

Once you have chosen your topic, it is important to research the written materials on your subject. By finding out as much information about the subject, you will gain a better understanding of your problem.

***Follow these guidelines for conducting your research:**

1. Read books and articles on your subject. Make sure this information is up to date (not older than 5-10 years).

2. Interview and talk with people who are knowledgeable about your subject.

*__This section is not included on your Display Board.__

Assignment 6
Data

Data refers to information gathered during your investigation. Writing in a spiral notebook is the most convenient way to keep a log.

***Your log should include:**

1. A list of all materials you use.
2. Notes on the preparations you made prior to starting your investigation.
3. Information about the resources you use (books, people, library, museum, universities, etc.)
4. Detailed day-by-day notes on the progress of your project.
    a. What you are actually doing
    b. Problems you have with your investigation
    c. Things you would change if you were doing this investigation again.
5. Any drawings or pictures that you feel might help explain your work.
6. Data that you gather from your investigation (notes, table, charts, graphs)

Be sure that you date each entry in your log.

***The data collected during the course of your investigation needs to be quantifiable (measurable).**

***All measurements in your investigation must be made in metric units.**

Volume: milliliter (ml) 1000 mL = 1L
Liter (L)

Length: millimeter (mm) 10mm=1cm
Centimeter (cm)
Meter (m) 1000m =1km
Kilometer (km)

Mass: milligram (mg) 10mg=1cg
Centigram (cg) 100cg=1g
Gram (g) 1000g= 1kg
Kilogram (kg)

Assignment 7

Results

Write the results of the experiment based on the information you have observed.

Example: A sheet of Viva paper towel absorbed an average of 50ml of water. A sheet of Suave paper towel absorbed an average of 36ml of water.

Conclusion

Before you write your conclusion, carefully examine all your data (graphs, charts, tables).

As yourself these questions:

1. Did you get the results you expected to get? If not-how were the results different?
2. Were there any unexpected problems or occurrences that may have affected the results of your investigation?
3. Do you think you collected sufficient data? (Were there enough trials? Samples?)
4. Do I need to revise my original hypothesis? (If your write a revised hypothesis, DO NOT use it to replace your original hypothesis for this project!)

Your conclusion should include:

1. Statement of support or non-support of the original hypothesis.
2. Description of any problems or unusual events that occurred during your investigation.
3. What you would do differently next time.
4. Revised hypothesis (if data did not support original hypothesis)

Assignment 8

Title

Choose a title for your project that tells what your project is about. It should be "catchy" and get a viewers attention.

Example: *"A Mixing Mystery"*
"Density Dilemma"
"Let's Play Ball!"

***THE TITLE SHOULD NOT BE THE SAME AS THE PROBLEM STATEMENT!**

Abstract

The abstract is a summary of the entire project. It is written in three paragraphs.

Paragraph #1 Purpose of the experiment and the Hypothesis
Paragraph #2 Procedures
Paragraph #3 Results and the Conclusion

Example:

The purpose of this project is to determine which type of chocolate chip cookie third grade students like best. It is hypothesized that third graders will like home-made chocolate chip cookies best.

Two different types of cookies were bought from Publix. Also, my mother and I baked some. The three types of cookies were put in bags marked A, B, and C. All third grade students were given one cookie from each bag and asked to fill out a slip selecting the best cookie and indicating themselves as a boy or a girl.

The results showed that third grade boys like homemade cookies best, and girls like *Keebler Cookies* best. The hypothesis was not correct. To improve this study, I would collect data at different times of the day.

Application

An application is how the project relates to real life.

Having tested three brands of paper towels, Brawny, Viva, and Bounty for the best absorbency, it is now known from this experiment that the from these three branded paper towels Bounty paper towel has the most absorbency. With this information consumers may now be able to make a more scientific decision when choosing the brand of paper towel. If the consumer wishes to purchase a paper towel product with more absorbency then Bounty is the paper towel to purchase. However, not always does a consumer want the most absorbent paper towel and therefore knowing this information the consumer will not purchase the Bounty paper towel but rather another brand, perhaps Viva which absorbed the least from the three tested.

Oral Presentation

1. Introduce yourself.
2. Give the title of your project and its purpose.
3. Briefly explain why you became interested in this project.
4. Explain your procedures, relate the number of trials, and show your results using tables, charts, or graphs.
5. Explain your conclusions (what you've proven). If there were any errors or problems, explain how this may have affected the experiment's outcome.
6. Tell what you might do differently next time.
7. Explain how your project can help others.

Suggestions
Smile and be polite
Stand straight and still
Keep eye contact with your audience
Project your voice so that everyone can hear you
Stand to the side of the