<u>The Scientific Method</u>

Student/Parent Guide for Science Fair Projects

1. **Question** – Think of a question you have about the world around you that you could find the answer to through an experiment. Keep it simple! There is no reason the project should be expensive. Your question should be something you couldn't just look up, and it isn't just building something like a model volcano.
   Example: What type of laundry detergent is best at getting out mustard stains from white t-shirts?

2. **Hypothesis** – Here is where you make an educated guess about how your experiment will turn out. What do you think will happen, and why? It doesn't matter if you hypothesis ends up being correct or not.
   Example: I think that Tide will be the best at getting mustard stains out of white t-shirts because it is advertised to have more cleaning chemicals than other brands.

3. **Materials** – What will you need to conduct your experiment? Try and think of even small things you need to stay organized. Be specific! List all of your materials before you begin your experiment.
   Example: French's yellow mustard, water, thermometer, three brands of detergent (Tide, Gain, Arm & Hammer), white cotton t-shirt fabrics, scissors for cutting shirts, trays for washing shirts in water, measuring spoons, measuring cups, scrub brush, camera

4. **Procedure** – After you know what question you want to answer through your project, it's time to make a plan. List the steps you will follow when you conduct your experiment, and be specific! Remember that you will need to conduct your experiment three times. Some experiments have many steps, and some have less, but you should probably have at least 8 steps in your procedure.
   Example: List and number the steps you will follow when you use detergents to get out mustard stains.

5. **Data from Experiment** – This is the fun part, and also the most important! You will follow your procedure and conduct tests to answer your question. You will find out if your hypothesis is correct or incorrect. You will need to conduct each test 3 times to make your results more valid. Take pictures of your experiment if possible to use on your display board. Results should be recorded in your handwritten journal using a graphic organizer of some sort (t-chart, table, etc.)
   *Example: If you have three brands of detergent, you will need to test **each** brand three times on getting out stains. You could test Tide three times, Gain three times, and Arm & Hammer three times. This would mean that you actually conduct <u>9 tests</u> total, three for each detergent.*

6. **Analysis** – Now it's time to think about what your results mean. You will want to make at least one graph, maybe a chart as well, showing the results of your experiments. Record the outcome of each test and compare your results to your hypothesis.

7. **Conclusion** – This is the last part of the scientific method. Describe what you found out and what you learned in a paragraph. You will need to answer your scientific question you had at the beginning. Here are some questions for you to answer:
    - What happened in your experiment?
    - Was your hypothesis correct of incorrect?
    - Why do you think the experiment turned out the way it did?

    Example: I found out that Gain was the best detergent for getting mustard stains out of white cotton t-shirts. My hypothesis was incorrect. I think Gain worked the best on mustard stains because it had different ingredients than the other two detergents (list the ingredients that were different). I predict that Gain would also work well at getting out other types of stains beside mustard. My family will definitely be using Gain detergent from now on!