ARDMORE SCIENCE FAIR INSTRUCTIONS:

1. Please bring your tri-fold displays to school between 2:30-4:00 p.m. on the day of Science Fair/STEM Night (Friday, May 5). Questions? Email sciencefair@ardmoreelementary.org

2. Include your name, grade, and teacher in the upper right corner of your display.

3. Students must attend the evening of Science Fair/STEM Night and be prepared to explain/discuss their experiments to attendees.

4. All science projects must be taken home at the end of the evening of Science Fair or they will have to be put in the trash!

LET'S GET STARTED! HOW TO THINK LIKE A SCIENTIST:

What is The Scientific Method? Question-Hypothesis-Experiment-Record-Conclude

1. **Begin with a question - the title for your experiment.** Think of something you want to learn about. Choose a topic that interests you, then ask a question about it!

2. **State your "hypothesis" (CLAIM).** A hypothesis is your "smart guess" at the question. Read about your subject, talk to an adult, do research. Think of what you expect the answer to your question might be. Take a guess!

3. **Create an experiment.** To test your hypothesis, think up an experiment that will show if you are right. Gather all the supplies/materials you will need, list them on paper, then do the experiment!

4. **Record your findings (EVIDENCE)**. Describe your procedure (what you did in the order you did it) and tell what happened with your experiment. Write down everything you observe (see, smell, hear, etc.) happening during your experiment. Use of graphs or tables are encouraged. Keep notes in a log or journal!

5. **State your conclusions (REASONING).** Tell if your evidence supports or does not support your claim. Based on the evidence you collected, can you explain why the experiment went the way it did? Include a short, written description of what happened. Did your experiment prove your claim was right? If your claim was wrong, no worries! Historically, some of the most important experiments have been those which disprove the original hypothesis. Either way, your results are contributing to the world's scientific knowledge! Would you change anything about the experiment, or are you curious about something else now that you have completed the experiment? What did you learn?

6. **Display -** Use the tri-fold poster board provided by the PTSA to display all your information. See attached example with more explanation.

HOW TO THINK LIKE AN ENGINEER:

A Few Science/STEM Fair Safety Rules:

- Plan your experiment carefully with an adult. If you plan to use anything sharp, hot or electrical, an adult must be present.

- You may not hurt animals or humans. Please do not bring live animals to school. Instead, take pictures of your experiment in progress.

- All projects with liquids or other messy substances must be displayed on a tray. A towel or a roll of paper towel must be brought to the Science Fair, to be used for rapid clean up in case of a spill. These should be kept under the table under the science fair project.

EXAMPLE OF ONE SIMPLE PROJECT

Question: How long does it take an ice cube to melt?
Hypothesis/Claim: I think it will take 20 minutes.
Experiment (Variables and Procedure): I will use an ice cube from the freezer, place it in a bowl, and leave it on the counter. When I can't see any more ice, it will be melted.
Evidence: Complete several trials of melting an ice cube. Record the time it took for the ice to melt.
Conclusion/Reasoning: "I thought it would take 20 minutes for an ice cube to melt. I was not very close, it took 35 minutes. I thought that it would melt faster."

It would be fine to stop your experiment at this point. A question has been asked and answered in the above example. However, this could also be your starting point. Different constants and independent variables can make the experiment more interesting. What if you use the same size ice cube and the same container (controlled variable) and change where the ice melts in the fridge, outside, and in a glass of water (independent variable)? Or what if you change the size of your ice cube, but keep the place and container the same? Or what if you keep the size and place the same but change the container. Will the time of day change your results? Maybe, but probably not. It's not easy or necessary to control all the variables. Concentrate on the ones that will directly affect your experiment. *(Credit: Madison School)*

Science Fair Board Sample

Tell the reasons you are conducting this experiment. What do you want to learn?

Purpose

I would like to learn more about whether a teacher is necessary to keep the noise level in a classroom down.

What is your scientific question? (Ex. Why does, How does, Will this…)

Question

Will the classroom noise level rise if there is no teacher?

What do you think will happen when you run the experiment? What do you predict?

Hypothesis

I predict the classroom will be louder without a teacher.

Be sure to list everything you have used to help you complete the experiment.

The list should include everything another person would need to conduct your experiment if they wanted to do it on their own.

Materials

1. Classroom full of students
2. Teacher willing to leave
3. Paper
4. Pencil
5. Decibel meter

"Show" your experiment here. Use color.

How did you run your experiment? Tell it step by step. (First, Next, Then, After That, Finally)

Your title should capture interest in about 5 words or less, if possible.

Title of Project

Procedure

1. _____
2. _____
3. _____
4. _____
5. _____

Photos

Graphs

Charts

Tables

Independent Variable **(What I Change)**

Controlled Variable **(What I Keep the Same)**

Dependent Variable **(What I Observe)**

Results

Tell/Describe the exact outcome. Use data to support statements.

Summarize your results, tell if the results support or challenge your hypothesis, what was the relationship between the dependent and independent variables, judge your procedure, and suggest changes you' would make next time.

Conclusion

Something that is changed by the scientist. *(If you are measuring whether a class is noisier with or without a teacher, the teacher leaving the room is the variable that is being changed.)* Independent variables are either/or, with/without, closed/opened, light/dark, etc.

This part of the experiment or "test" is not changed at all. *(Same class, same students, same time of the day)*

This is something that you notice after you make your change. *(Measuring the noise in a room in decibels)*

Report Log/Journal Photographs