Dear Parent(s)/Guardian(s),

At [your school], students in grades 3rd – 5th will participate in an Elementary Science Fair. This is an exciting event that encourages students to think like young scientists, engineers, mathematicians, and/or technologists. During the next few weeks, your child will be designing a project that uses the scientific method to solve a problem. We hope you agree that the educational benefits are numerous, as students develop skills in writing, oral presentation, creative thinking, and problem solving. **All students in grades 3rd – 5th will be required to complete an individual science fair project. The science fair project will count towards [grade] of their science grade for the [grading period].**

In order to complete a science project, each student will:

- Choose a testable question in one of the following categories:
  - Physical Science
  - Life Science
  - Earth & Environmental Science
  - Engineering
  - Behavioral & Social Science

- Design and conduct their experiment once the question has been approved

- Design and complete a display board

Attached, you will find the components that must be included on the final display board. In order to ensure success, students will record their information on the **Experimental Design Approval Forms** provided and submit to their teacher for approval. If a section is not approved, the student will need to make the necessary adjustments and re-submit. Please note that the **Experimental Design Approval Forms** are for planning purposes and will not be part of the final project. **The pages of your child’s Experimental Design Approval Forms are not to be used on the final display board. The Experimental Design Approval Forms are a way for your child’s teacher to keep track of progress and is a pacing resource for you and your child to use during the scientific investigation.**

Science Fair display boards will be available for purchase after [date] at a cost of [$]. Attached, you will find a sample of what a completed project should look like.

If you have any questions, please contact [name], our Science Coordinator, at the school or at [e-mail or phone number]. Thank you in advance for your time and support.
Important Dates

- **Science Fair Projects Due**
  - October 16, 2017

- **[Campus] Science Fair**
  - October 26, 2017

- **SISD District Science Fair**
  - November 4, 2017
  (Students awarded 1st place at their campus will advance to the SISD District Science Fair)

Project Timeline

- Choose your topic and develop your question/ purpose ......DUE to teacher
  - September 25, 2017

- Work on abstract.................................................................Due September 29, 2017

- Etc.
Parts of the Project

The following section gives a brief description of each part that needs to be completed when conducting your science investigation. Please refer to your Experimental Design Approval forms for more detailed instructions.

**Introduction:** Something that motivated you to explore a hypothesis or invent a better way of doing something. Was it an observation you made, a question that occurred to you, a frustration you experienced with some aspect of daily life?

**Question:** The question should run an experiment in which something is modified and the result can be recorded.

   **Example:** Can the amount of sunlight affect the growth of a plant?

**Hypothesis** (prediction): A hypothesis is a tentative answer to a question that is investigated. It forms a reasonable calculation about the result of the experiment and proposes a possible reason for your results. The hypothesis must be based on previous knowledge, observations or investigations and is checked to see if it proves to be true or false during the investigation. Scientists use the word “Hypothesis” to refer to a prediction.

   **Example:** If a plant is given sunlight and another plant is not given sunlight, **THEN** the plant that doesn’t receive sunlight will not grow as tall **BECAUSE** it will not have the sufficient energy to do so.

**Materials:** List the materials used to conduct the investigation.

**Variables:** There are three types of variables that must be considered to determine the procedure. These are the independent, dependent and controlled variables:

- **Independent Variable:** The factor that is modified intentionally during the experiment to see the effect that it has on the other element.

   **Example:** The amount of sunlight.

- **Dependent Variable:** The factor that is observed and measures the result affected by the change that was realized in the independent variable.

   **Example:** Up to what height has the plant grown.
• **Controlled Variables:** The factors of the experiment that must remain exactly the same without any changes to be sure that they have no affect on the dependent variable.

**Example:** One plant that is left in natural light, you will not alter the amount of light the plant gets.

**Procedure:** The procedure includes all the steps that were followed to organize and collect data. The procedure is written in a clear and sequential form, so that others can follow these steps of the experiment. Number each step and clearly state how you went about conducting your experiment.

**Data:** Graphs, tables, and registry of notes, pictures and or drawings must be used to explain the results to the reader. Every science fair project must display data in the form of a graph or table.

**Conclusion:** The results of the experiment include the means taken, and the observations realized. This must include a written explanation of the results, the data that was observed and the media that was used for the experiment. Use the following phrases to write your conclusion:

**Example:** In this investigation I wanted to find (copy your question). I predicted that (copy your hypothesis). The results were the (same as/different than) my prediction because the data showed (write the data you collected). From the data I can conclude that (from the data tell what you learned.)

**Abstract:**

• An abstract is a brief, written discussion of your project.
• Each abstract consists of a brief statement of the essential, or most important thoughts about the project. Abstracts summarize the main points of an experiment in a clear and simple manner.
• The abstract must be completed by all 4th and 5th grade students and submitted during registration. **PROJECTS WILL NOT BE REGISTERED AT THE DISTRICT LEVEL WITHOUT AN ABSTRACT PRESENT.**
• The abstract must be 250 words or less.
• Taped on the table in front of project
• An example has been included in this packet.
What Are Science Fair Project Abstracts?

► An abstract is a brief, written discussion of your project.

► Each abstract consists of a brief statement of the essential, or most important thoughts about your project. Abstracts summarize the main points of your experiment in a clear and simple manner.

Write a very brief explanation of each section below:

► Introduction - Purpose of your project /experiment
Share something that motivated you to explore a hypothesis or invent a better way of doing something. Was it an observation you made, a question that occurred to you, a frustration you experienced with some aspect of daily life?

► A Statement of the problem or hypothesis being studied
A single clear statement of what problem you want to solve.

► Procedures used
Overview /summary of the key points of your investigation. Include the variables you selected.

Do not give details about the materials used unless it greatly influenced the procedure or had to be developed to do the investigation.

► Observation/Data/Results
State the key results that lead directly to the conclusions you have drawn.

► Conclusions
Describe briefly conclusions that you derived from your investigation.

You do not need tables and graphs

Abstract Example:

Title of Project

The purpose of this experiment is to find which household material has the best electrical conductivity. The research for this experiment focuses on safety, conductivity, and circuits. The probing question is: What household material has the most electrical conductivity? The hypothesis for this project is that salt solution has the most conductivity among the selected materials. The experiment calls for a selected number of materials, a circuit assembled with two AA batteries, a switch, a meter, and a material. A control test is taken every day. The data prove that salt (dissolved in water) has the most electrical conductivity. None of the other selected materials comes close. The hypothesis is proven correct for this experiment. The salt solution has the best electrical conductivity because of the ions in it. The effect this experiment might have on the world is that it might influence greater safety precautions when working with conductive food materials.
Science Fair Board Set Up

- Your Science board must be organized like the following diagram below.

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>Question</td>
</tr>
<tr>
<td>Procedures</td>
<td>Hypothesis</td>
</tr>
</tbody>
</table>

- **Data:** Drawings, Photos, Graphs, Charts
- Results
- Conclusions

**Helpful Websites:**

- [http://www.sciencebuddies.org](http://www.sciencebuddies.org) - Answer a short questionnaire about your interests and hobbies for recommended project ideas. Click on **PROJECT TOOLS** to use the **TOPIC SELECTION WIZARD**.
Science Fair Rules

1. The use of live animals is discouraged but may be approved by the classroom teacher. An experiment may not cause harm or result in the death of an animal.

2. Your display board must be free standing and fit on the table.

3. Please include the following **ON THE BACK OF YOUR BOARD:** Student name, teacher’s name, school, grade level and category.

4. Only the student conducting the experiment may be shown in any photographs. All others must have signed a photo release form.

5. All **photos or graphics must be cited** or give credit to the photographer. **EXAMPLE:** Photo was taken by... or graphic/picture was found on [www.iconicdisplays.com](http://www.iconicdisplays.com)

6. All **graphs or charts must be cited.** **EXAMPLE:** Graph was created by...using [program] Excel

7. Students **WILL NOT BE ALLOWED** to bring any models or items used during their experiment to display in front of their boards.

**THE FOLLOWING ARE NOT ALLOWED TO BE DISPLAYED ON THE BOARDS:**

- Living organisms, including plants
- Soil, sand, rock, cement and/or waste samples
- Taxidermy specimens or parts
- Preserved vertebrate or invertebrate animals
- Human or animal food as part of the exhibitor demonstration of the project.
- Human/animal parts or body fluids (for example, blood, urine, hair)
- All chemicals including water (Projects may not use water in any form in a demonstration)
- All hazardous substances or devices (Example: poisons, drugs, firearms, weapons, ammunition, reloading devices, and lasers)
- Dry ice or other sublimating solids
- Sharp items (for example, syringes, needles, pipettes, knives)
- Flames or highly flammable materials
- Batteries
- Glass or glass objects
What Are Science Fair Judges Looking For?

How do you know what makes a great science fair project? Here are some pointers for making sure you have a good project, based on what science fair judges are looking for in your project.

• **Be Original** - Try to come up with an original idea for your science fair project. Find a new way to test something or a fresh application for a product or a novel way to process data. Look at something old in a new way. For example, rather than compare different types of coffee filters, you could compare different household materials (paper towels, napkins, toilet paper) for use as coffee filters if you ever ran out.

• **Be Clear** Have a well-defined, easy-to-understand goal or objective. Make sure the title of your project is related to your purpose. Make it crystal clear what you are doing and why.

• **Understand Your Science Fair Project** It’s not enough to have an easy-to-understand poster or presentation. Judges will ask you questions about your project, in part to see whether or not you understand what you have done. This weeds out people who basically had their parents, friends, or teacher do their project for them. You need to understand what you did, why you did it, and what conclusions you could make based on your results.

• **Time & Effort** Science fair judges reward effort. Spending time on your project demonstrates your interest in it, plus taking the time to think about it usually means you come out of the project with a better understanding of how science works.

• **Answer Questions** You can impress science fair judges by answering their questions politely and completely. Try to radiate confidence. If you don't know the answer to a question, admit it and try to offer a way you could come up with the answer. Here are some common questions asked by science fair judges:

  - How did you come up with the idea for this science fair project?
  - How long did you spend on the project?
  - What background research did you conduct? What did you learn from it?
  - Did anyone help you with the project?
  - How could this project apply to real life?
  - Did you try anything that did not work or did not give you expected results? If so, what did you learn from this?
  - What would be the next step in this experiment or study if you wanted to continue your work?