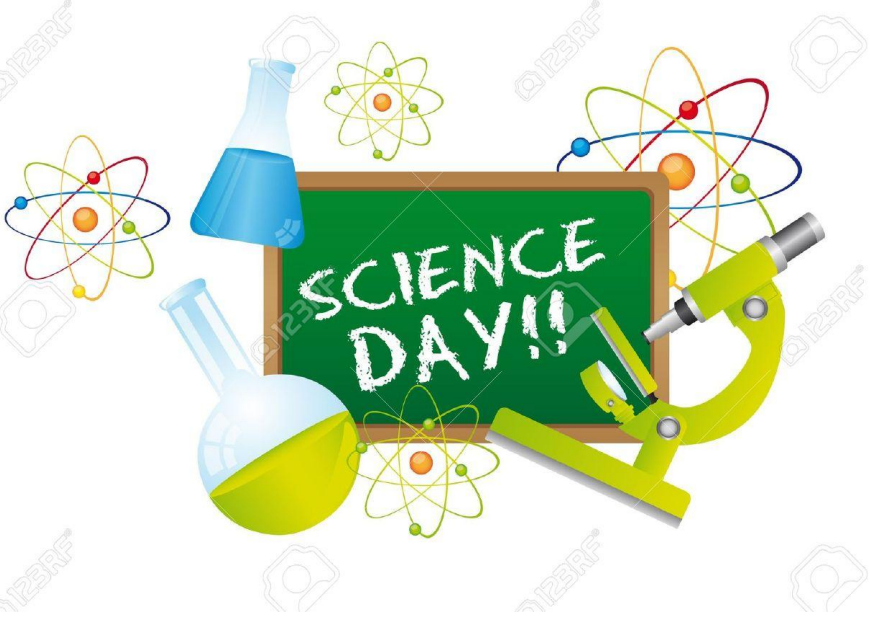
St. Mary's Catholic School
Temple, Texas



(4th & 5th Grade)

APRIL 06, 2017

RULES AND GUIDELINES

Dear Students,

Welcome to the fascinating world of science! Working on a Science project will teach you how to think scientifically through: logical reasoning, observations, information gathering, research, methodology (use of the Scientific Method) organization of information, drawing conclusions and learning about the world around you through your own eyes.

Every student can successfully complete an experiment by following the guidelines and timetables in this packet. Remember, successful projects take time and planning! Trying to put a project together just a few days before the Science Day will not give you adequate practice using the Scientific Method nor will you receive adequate results.

Dear Families,

You can help your student with their project in the following ways:

1. Help your student find an interesting topic which s/he can do most of the work independently. The initiative and responsibility for the project rests on the student; parents and teachers should be available to advise & encourage.
2. Provide technical assistance. For example, ideas about materials or how to correctly wire something that involves electricity.
3. Assist in acquiring needed materials economically (w/o spending a lot of money).
4. When you are tempted to intervene in your child's project, *remember that the process is more important than the product.* It is more important that your child wrestles with and tries to solve problems themselves because the learning is in the doing. The final project should reflect your student's individual effort and design.

SCIENCE DAY GUIDELINES

1. The science project should consist of a report binder, display board, and an abstract.

2. The report binder contains the complete written documentation of the project. It consists of 8 sections which are explained in the next part of this document.

3. An abstract should accompany your project. It may be displayed on the project board or be placed on the table in front of the board. An abstract is a summary of your project. Details over how to write you're abstract and a sample of an abstract are given later in this handbook.

4. Student names should not appear on the project. This includes the cover of the report binder, abstract or anywhere on the front of the display board. Photos of anyone other than the participant(s) cannot be included in the project.

5. It is suggested that the display board be a tri-fold of a standard size (36" tall x 48" wide (including 12"-deep wings).

6. There shall be no glass, organic materials (plants, animals, or microorganisms), liquids (including water) or hazardous materials displayed with the project.

7. All objects must be securely fastened to the display board, and the board must be self-supporting with a back.

8. The student is expected to put up his or her own project display. Assistance by parents is allowed for transportation and for erecting and securing bulky display objects. All materials needed for this will be the responsibility of the student.

9. Electrical devices are allowed, but battery-operated devices are preferred. If electricity is needed for the project, the student must prior inform his or her teacher.

REPORT BINDER

A report binder must be placed beside your display. A good project binder helps organize data as well as thoughts and includes at least eight sections. Most sections should be fairly short, except for the Analysis & Discussion. (**Note:** Tables and figures, referred to in the report text, may be consolidated in their own separate section or can be distributed throughout the report. However, every table should have a table number and title while every figure should have a figure number and caption).

1. Title Page. Center the project title on this page.

2. Table of Contents. Number each section when finished.

3. Introduction. The introduction sets the scene for your report. It should include your hypothesis, and explain what prompted your research and what you hoped to achieve.

4. The Experiment. Describe in detail the methods, processes, and techniques you used to design and run your experiment. Let readers see your investigative train of thought as you describe in detail your methodology for obtaining your data and observations. Your report should be detailed enough so that someone would be able to repeat the experiment just by reading your paper.

5. Results. This is where you report what happened in your experiment—but NOT why it may have happened.

6. Analysis & Discussion. This is where you try to make sense of your results as you compare them to your expectations. THIS SECTION IS THE HEART OF YOUR ENTIRE PROJECT. Examine your results, think about them, and try to figure out why your data is as it is. What is causing any trends, similarities, or differences between trials? Highlight where any results do not match what you expected and offer the most likely reason(s) why.

7. Conclusion. Briefly summarize your project and state your conclusion. Did you accept or reject your hypothesis? Why? Be specific with your statements.

8. Acknowledgements. You should always give credit in your paper to those people who assisted you. This includes people who helped with transportation, advice, use of equipment or materials, use of labs, and anyone who may have given assistance in the construction of your experimental apparatus or display.

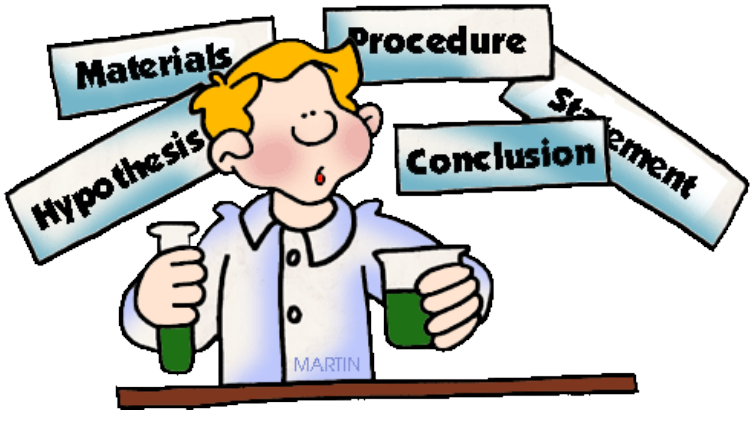
SAFETY GUIDELINES:

1. Exhibit items should present no hazards to observers who may view the display.
2. If electricity is used, safeguards must be observed to prevent electrical shocks or hazards (battery-powered equipment is preferable). ** Batteries with open-top cells are NOT permitted.
3. Liquids, chemicals, fertilizers or paints should be sealed and in shatterproof containers.
4. Sharp objects should be firmly anchored down or out-of-reach.

SUCCESSFUL SCIENCE DAY PROJECTS SHOULD:

1. Represent the student's own workmanship
2. Be carefully planned out for timing
3. Demonstrate creativity and resourcefulness
4. Indicate a thorough understanding of the chosen topic
5. Include a notebook of recorded observation and results
6. Include a number of visual aids
7. Be neatly and accurately shown
8. Meet listed safety requirements
9. Present a complete story throughout the Scientific Method process.

The Scientific Method



1. **Identify a problem. Ask an appropriate question.** (ex., "What effect does the color of a room have on work productivity?")
2. **Research the question using authoritative resources.** (Ask experts, research on the internet, look for books at the public library.) A RESEARCH PAPER ACCOMPANIES YOUR EXPERIMENT.
3. **Develop a hypothesis.** (This is a statement, an educated guess, of what you think the results of your experiment will be. For example, "I think color effects work productivity because I can't do my homework in my sibling's bright blue room.")
4. **Conduct your experiment**.

   Remember rule for experimenting:

   i. Experiments which can be completed in 4 days or fewer must be conducted twice more to ensure accuracy.
5. **Keep track of all data sought.**
6. **Report on your experiment**.

a. Tell what you have found in your data keeping.

7. **Analyze the results**.
    a. Did you prove or disprove your hypothesis? Why or why not?
8. **Develop a conclusion**.
    a. What do your statistics show? What might you do differently next time in order to prove your hypothesis or to improve your experimental process?

DISPLAY BOARD IDEA:

Statement of Purpose: **Hypothesis:** **Materials:** **Procedures:**	**PROJECT TITLE** **(2 line max.)** **PHOTOS (w/ captions)** ***Show steps / procedures during your experimental process.***	**Observations & Results:** **Conclusions:** **Acknowledgements:**

Good ideas	**vs.**	**Bad ideas**
Do create a colorful background (≤ 3 colors)		Don't write straight onto the board
Do use computer for graphs/charts		Don't do sloppy work
Do type information for your board		Don't write out work
Do attach info securely & neatly to boards		Don't hang anything that falls open
Do include visual aids w/ your display		Don't leave large empty spaces or leave out visual displays

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PREPARING AN ABSTRACT

An abstract is a concise, one page summary of the entire research project. It should briefly state—in the past tense—the following: the question which prompted your investigation, hypothesis, procedures, results, and your conclusions. It should be double spaced and in paragraph form. The maximum number of words is 250. The title of your project should be centered at the top of the page. Following is an example of an abstract.

A Solution to Pollution: Energy from Waste Materials

Sewage sludge and solid wastes are an unavoidable by-product of modem society. High disposal costs for these waste materials, coupled with a projected increase in waste production over the next decade, forms a serious problem. This experiment was aimed at contributing to a partial solution of the waste disposal and energy shortage. For this experiment, sewage sludge, wood, and sludge/wood mixture were paralyzed in a batch reactor to produce oil. The production rates of oil were compared for the three materials. The average production rates of oil from all materials were excellent. The boiling range of the wood-derived oil proved to be slightly better than that of the sludge-derived oil, with the sludge/wood-derived oil being intermediate.

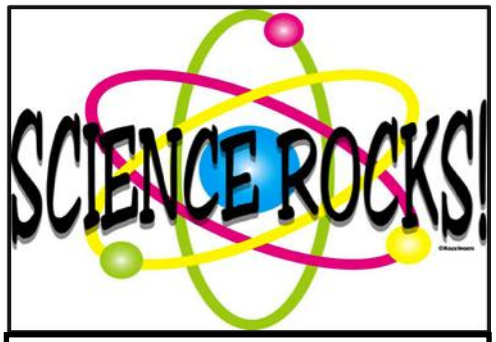
Sludge, waste wood and sludge/solid waste pyrolysis should be economically attractive since the feed stocks are both renewable and inexpensive. Plant attractiveness is increased when the costs of alternate methods of waste disposal are taken into account.

CATEGORY DESCRIPTIONS

The projects are to be classified into one of the following three categories:

1. **Physical Science** - This is the area of science that focuses on the study of fundamental behavior of matter, energy, electricity, magnetism, chemistry, light, sound and other elements related to the physical world.
2. **Earth Science** - Area of science that focuses on the study of astronomy, weather, oceanography, water, natural resources, rocks and minerals, the Earth, its land mass and its atmosphere.
3. **Life Science** - Area of science that focuses on the phenomenon of life and the preservation of health in all organisms. Emphasis is placed on interactions between plants and animals, the function of cells and the generic mechanism, and the interrelationships of the human body systems and how injury, disease, and drugs influence these systems.
4. **Team Projects** - Team projects may have up to 3 students. There is only one team category which means that all topics within Life, Earth or Physical are included.

Science Day (2017)
Acknowledgement Form



March 01, 2017

Student: _____

Grade: _____

Students may work individually or in teams of up to three students.

☐ I will be working by myself.

☐ I will be working with a team. The members of my team:

1. _____ Parent initials: _____
2. _____ Parent initials: _____

If students decide to work as a team, they must have parent approval. Since this project is to be conducted at home, parents will be responsible for coordinating meeting times for the students to work on their project outside of the school day. Please initial above giving your approval.

I have reviewed the Science Day information with my child, and we understand the requirements for a successful project.

Parent Signature _____

Student Signature _____