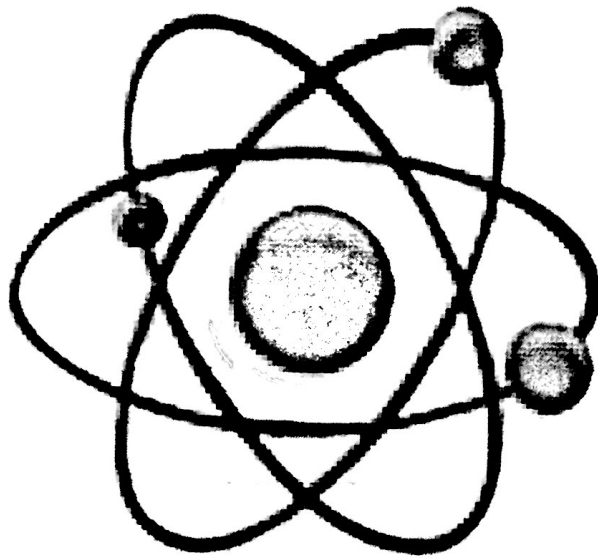


Twin Lakes Academy Elementary School

Science Fair Project

4th Grade



Handbook

Science Project Timeline

<i>Due Date</i>	<i>Activity</i>	<i>Parent's Initials</i>
10/26	Distribute handbook + discuss	
10/29	Choose a Topic and Ask a Question / proposal	
11/5	Write Your Hypothesis	
11/5	Title of Project	
11/10	Begin Making a List of Materials	
11/10	Write Your Variables if needed	
11/12	Write Your "Step-by-Step Directions" for the Experiment	
11/16	Begin Your Experiment	
12/7	Collect Data	
12/7	Begin Analyzing Your Data & Check Your Title	
12/7	Begin Making Graphs	
12/7	Write a Conclusion	
12/9	Write an Abstract	
on-going	Work on Your Display	
12/10	BRING IN PROJECT	

PLEASE NOTE: Science Projects are REQUIRED!

Please follow the time line and submit a draft of each "activity" in the folder on its corresponding due date with parent's initials.

Science Fair Project Proposal Sheet for

Name _____

Problem:

Manipulated Variable (Independent Variable):

Responding Variable (Dependent Variable):

Control:

Quantitative Measurement:

Experiment Plan:

Possible Outcome:

Possible Reason:

IRB Forms Needed: _____ (Determined by Teacher)

Approval: Parent/Guardian: _____

Teacher: _____

SCIENCE FAIR PROJECT INTRODUCTION

Parents and Students:

The purpose of completing a Science Fair project is to give students a deeper understanding of science process skills and the scientific method. This project will also prepare students for Science Fairs that are required in middle school. This project is aligned with district standards and the Science FCAT that is given in the fifth grade.

A research paper will only be required of students who are chosen to participate in the Regional level of competition. Students will be given ample time to complete a research paper if they are going on this level of competition.

Every student needs to have the Science Fair Project proposal sheet completed. The parent or guardian needs to sign on the lines marked for parent signatures. Additional forms may be required as designated by the student's teacher based on the type of project. Project ideas (proposals) must be approved by the student's teacher and parent/guardian before experimentation begins. Remember that after your project idea has been approved by your parents and teacher and your forms have been turned in you may *not* change your project idea.

A helpful tool for finding an idea is www.sciencebuddies.com (other websites are listed on the back of the packet). Not all project ideas found on this website will be approved by the teacher. Teachers will direct students toward project ideas that they will have success with at the elementary school level. Many books on science projects are available at the Jacksonville Public Library system as well. Students need to choose a project that is appropriate for the student's grade level.

Science Fair projects are an opportunity for our students and families to have a fun learning experience that extends what they have learned in the classroom. A Science Fair project can be one of the most fun and satisfying experiences in science. It will take a commitment from you and require work over a long period

of time. You need to keep in mind when the project is due and not put it off until the last minute.

Why do a Science Fair Project?

One of the requirements of a student in middle school is to complete and present a project. Learning the process in elementary school will prepare you for middle school. Specifically, a Science Fair project provides the opportunity to:

- Explore independently, an area of science that interests you.
- Apply the steps of scientific method.
- Accumulate and analyze data.
- Draw conclusions based on observations.

**Note: 4th grade students can do an individual project or work in groups up to 3 students.*

What is a Science Fair Project?

A Science Fair project consists of the work done in investigating a problem in any field of science. A Science project will be completed by finding a problem that interests you and applying the scientific method to solving the problem. The basic steps of the scientific method are:

- Choose a problem you wish to investigate.
- Form a hypothesis (an educated guess as to what the outcome of your investigation will be.)
- Design and carry out an experiment to test your hypothesis.
- Collect, record and analyze your data.
- Draw a conclusion.
- Present your project to the class.

Science Fair Project Components

Hypothesis-an educated guess based on past research or experience. Your hypothesis is your predicted outcome of your experimentation.

Materials list- must be complete and specific. Example: do not write "wire", but instead write "2 meters of copper wire". *All experimental materials are listed.* You do not list such things as display board, computer paper, etc. on a materials list.

Photos-six photos on the board and a photo album of your work should be turned in with your project. Label your photos. Your face may not show in a Science Fair project. Photos may be taken of you from your shoulders down. Appropriate clothes must be worn in Science project photos. No bathing suits or pajamas.

Graphs and/or Data Tables-one graph and or data table should be included with your project. A data table is a list of all the data that you collected during your experimentation.

Procedures-procedures are the steps that you went through to do your experimentation. Your procedures need to be complete, so that if another person wanted to replicate your experiment they would have every step. Just like a recipe for cake, if a step was left out, then the cake would not be made successfully.

Results-results are written out in sentence form. Your results are the final results of each group that you experimented with including the control group.

Conclusion-what you have concluded based on your results. Begin writing your conclusion in the following way: "Based on these results, the researcher concluded that ...". Your conclusion also needs to state whether your hypothesis was supported (proven to be right). Remember that your results do not need to support your hypothesis. If you already knew what the results would be before you began your experiment, then you would not have needed to do the project. A project does not have to result in a supported hypothesis to be successful.

What are the criteria for a Science Fair project problem?

A Science project problem must meet certain criteria in order to be acceptable. Your problem should be:

- something that can have experimentation
- something that can be done within the time constraints
- something that provides useful information
- something you can do; that is, you have the expertise and available materials
- something that you can have an ample sample size; it is suggested the sample size be at least five in each group; more is better
- something that will have results that can be quantitatively measured
- appropriate for grade level
- something you're interested in doing

Your problem should NOT be:

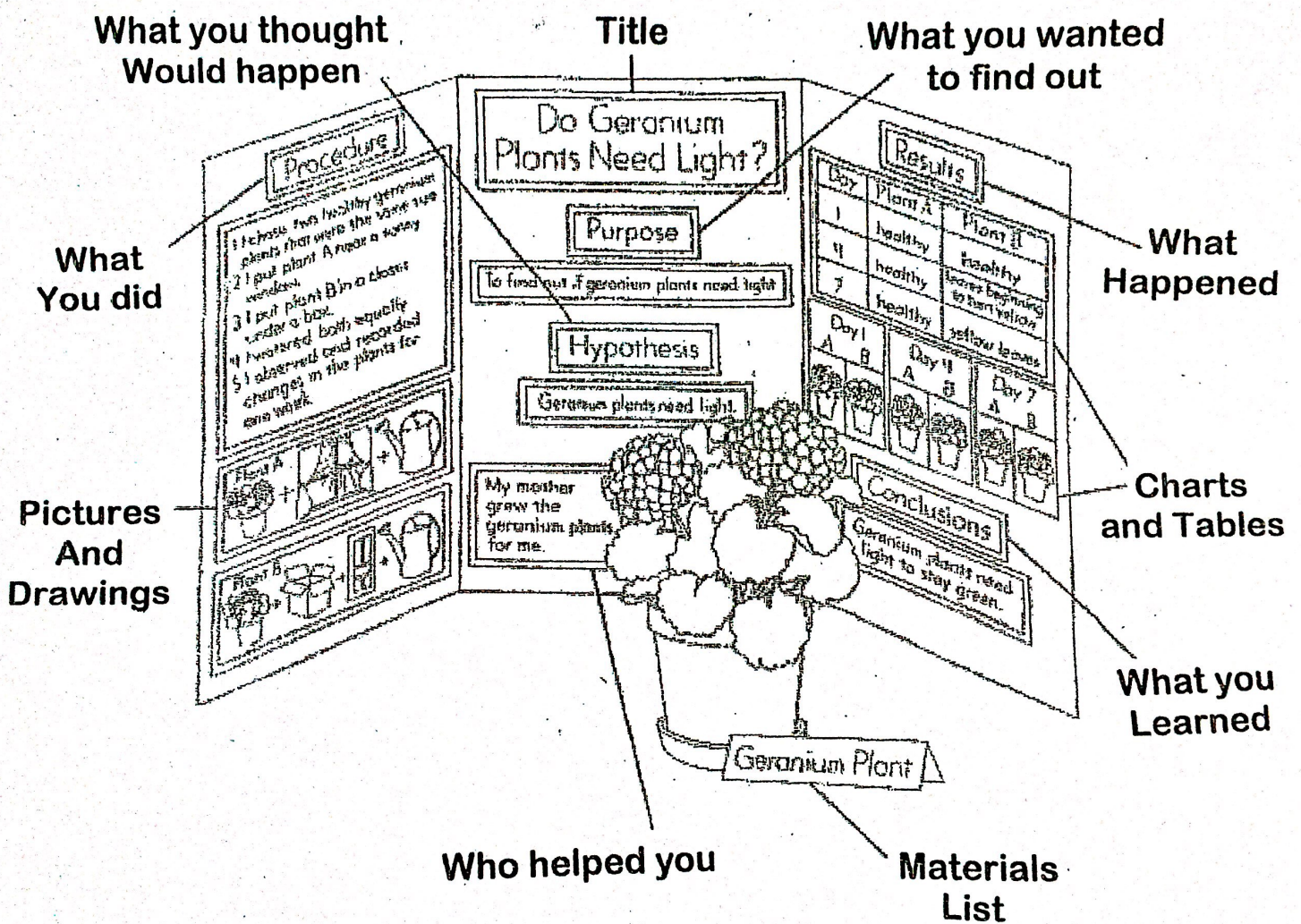
1. harmful to vertebrates;
2. a purchased kit;
3. a model or demonstration;
4. **unsafe:** you may not use poisons, explosives, high voltage, harmful bacteria, human blood, molds, or corrosive chemicals.

What is a Proposal?

After you have written your problem in cause/effect terms, you are ready to write your proposal. A proposal is the action you plan to take to solve your problem. Your proposal should help you to see the overall "picture" of what you're going to try to do to answer your science fair project question. No science project may be started until the proposal has been approved by your teacher and parent. Remove the proposal form from the handbook and fill in the blanks as described.

1. The Problem -state this in cause/effect terms.
2. Independent or Manipulated Variable – this is the factor you will change in your experiment.
3. Dependent or Responding Variables-these are the factors that will change because you have changed something in your experiment.
4. Control-these are the factors that you will make sure are not changed in your experiment.
5. Quantitative Measurement-this is the standard unit of measurement you will use to record your results.
6. Experimentation Plan-briefly describes how you will perform your experiment. It is important to be clear enough so that any safety hazards can be noted.
7. Possible Outcome-make a guess as what you think will be the answer to your problem. In other words, what do you think will happen in your experiment?
8. Possible Reason-tell why you think this will happen in your experiment.
9. Institutional Review Board (IRB) Safety Forms-these are needed if you plan to do a project that requires pre-approval. The teacher will determine the need.
10. Teacher/Parent Approval-you will need a signature from both your teacher and your parent before you start your science project.

Displaying a Science Fair Project



Need a Science Fair Project Idea???
Check out some of these websites!

http://www.sciencebuddies.org/science-fair-projects/project_ideas.shtml

<http://www.all-science-fair-projects.com>

<http://www.rossarts.org/naples/ideas.htm>

<http://www.scienceproject.com>

<http://www.terimore.com>

<http://www.sciencenewsforkids.org/pages/sciencefairzone/topics.asp>

<http://www.sciencemadesimple.com>

<http://www.scienceprojectideas.co.uk>

<http://www.ipl.org/youth/projectguide>