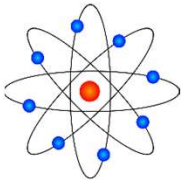
Nan Clayton Science Fair 2023

Thursday, January 19



Science Fair Information Packet – 3rd and 4th Grades

Science Fair Projects are Fun!

Did you know that you can make bouncy snowballs? Create a cloud in a bottle? Make water walk? Science fair projects are an excuse to do strange and fun things with your family. Science is everywhere! Find what you love and be ready to explore!

3rd and 4th Grade GT students are **required** to participate by submitting an Exhibit or Experiment. Participation for other 3rd and 4th Grade students is optional.

Types of Projects: Experiments, Engineering Designs and Exhibits

An **Experiment** follows the steps of the **scientific method** and **clearly asks a question**. An experiment is an operation or set of tests carried out under controlled conditions in order to test a hypothesis. Most significantly, the results of the experiment are unknown to the student prior to conducting the experiment. Example: How does temperature affect the strength of magnets? I tested magnets at different temperatures and these were the results…

An **Engineering Design** is a model that a student designs and creates to fill a need. Example: I tried to build a machine to tie my shoes and here is how I did it and what I learned.

An **Exhibit** can be a demonstration, a model or a display. In an exhibit, the student takes known facts and known results to show how a process, device or procedure works. The informational report may include diagrams, photographs or drawings. An Exhibit is an explanation, not a question. Example: How does a helicopter fly?

Choosing a Project

Start with a topic that interests you! Anything can become a science fair project – including sports, art, cooking, building and music. For ideas, see https://www.sciencebuddies.org. Also see "How to do an Elementary Science Fair Project":
https://sciencefest.org/images/pdfs/ElemHowToDoSciFairProj.pdf

Scientific discoveries are made by people working together. Ask for advice or help from parents, teachers or neighbors.

Project Awards

All 3rd and 4th Grade projects will be judged and are eligible for awards. Students may be interviewed by judges and are expected to be able to explain their project fully and what they learned from it. The top projects will receive Honorable Mention awards. A small number of selected projects will be invited to advance to the Austin Energy Regional Science Fest.

Timeline

EARLY DECEMBER
Email science proposals to your science teacher for review (check with teacher on specific date and time)

DECEMBER – MID JANUARY
Teacher-approved projects worked on by students

WEEK OF JANUARY 16
Projects due and presented in class (check with your teacher on specific date and time)

THURSDAY, JANUARY 19—CLAYTON SCIENCE FAIR DAY

7:45 a.m.— Projects displayed for judges

5:30 p.m.—6:30 p.m.—Families view; award ribbons placed on projects

6:45 p.m.—7:30 p.m.—Science Fair Entertainment—Live Presentation

7:45 p.m.—Take projects home!

FRIDAY, JANUARY 20
Students with advancing projects (grades 3-5) will receive registration information for the Austin Regional Science Fest. Additional information and deadlines will be listed in the paperwork. Completed documents must be submitted online before January 26.

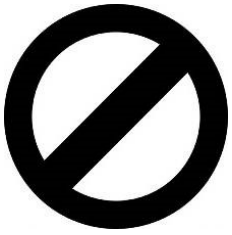
FRIDAY - SATURDAY, FEBRUARY 24-25
Austin Energy Regional Science Festival, Palmer Events Center

Rules

Clayton Science Fair rules are based upon the rules and guidelines used in the Austin Energy Regional Science Festival. Those rules can be found at:
https://sciencefest.org/images/pdfs/ElemDSParentForm.pdf

All project boards must follow these guidelines: no organisms- living, dead or preserved, no human or animal food, (not even in sealed bags or containers), no water, liquids or chemicals, no dirt or sand, no sharp items or glass objects, no fragile items.

Items for demonstration are discouraged. Photographs of the project are best.



ADDITIONAL PROJECTS, ITEMS, SUBJECTS NOT ALLOWED

- Fire arms, explosives, or discharge air pressure canister devices (i.e. potato guns)
- Growing bacteria or mold of any type
- Causing pain, suffering, sickness or death of an animal
- Breaking Local/State/Federal Law
- Production of ANY amount of consumable alcohol
- Any activity or substance that presents a danger to the student, other people or environment, including hazardous or radioactive materials

Questions? Email: claytonsciencefair@gmail.com

Research

Every project –Experiments, Engineering Designs and Exhibits - must involve background research on the project topic. A summary of the research must be provided in the "Introduction" or "Background" section of the project board. **All students need three valid sources** listed in their References section (books, websites, etc.).

Variables and Conducting an Experiment

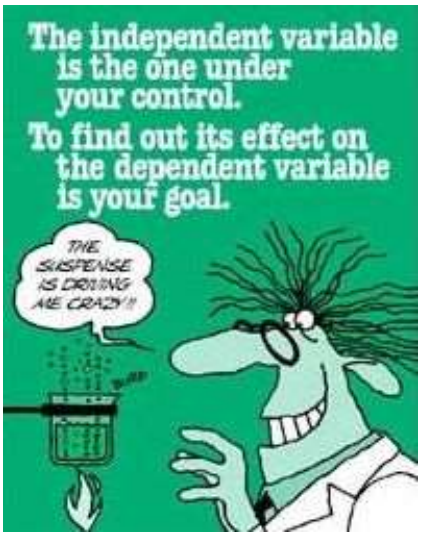
If you choose to do an Experiment, you will follow the scientific method. You will start with a question, write a hypothesis, design an experiment, make measurements, collect data, and write conclusions. In order to know what to measure, you need to identify the variables involved. Variables are the things that are changing in an experiment. A variable is any factor, trait or condition that can exist in differing amounts or types.

Scientific Method

1. **ASK A QUESTION:** Ask a question about something you observe.
2. **DO BACKGROUND RESEARCH:** Learn what is known about your topic.
3. **FORM A HYPOTHESIS:** Your "best guess" answer to the question before conducting the experiment; often stated as **If…then…because…**.
4. **CONDUCT AN EXPERIMENT:** Perform tests to determine whether the hypothesis is correct.
5. **ANALYZE DATA:** Review measurements taken during experiments.
6. **COMMUNICATE RESULTS:** Clearly labeled charts, tables, graphs, time lines, pictures and/or other written explanations that show what happened.
7. **DRAW A CONCLUSION:** Was the hypothesis correct? Return to your research to support your conclusions.

Variables in an Experiment

1. **Independent variable** – the factor that is changed to test the effects on the dependent variable, the "cause" which leads to an "effect".
2. **Dependent variable** – the factor being tested, observed, and measured in the experiment. It DEPENDS on the independent variable; it may change as a result of the independent variable. The dependent variable is the effect.
3. **Controlled variables** – the factors that are held constant in an experiment. Although these factors can change, the experimenter keeps them the same in order to minimize the their effects.



Example Experiment

Question: What is the purpose of each ingredient in cupcakes?

Hypothesis: If I take out one ingredient from each cupcake batch, then the cupcakes will look different from each other because each ingredient affects cupcake appearance in a different way.

Independent variables – cupcake ingredients (flour, sugar, eggs, baking powder)
Dependent variables – cupcake appearance
Controlled variables – amount of batter in each cupcake, baking pan, baking time and oven temperature

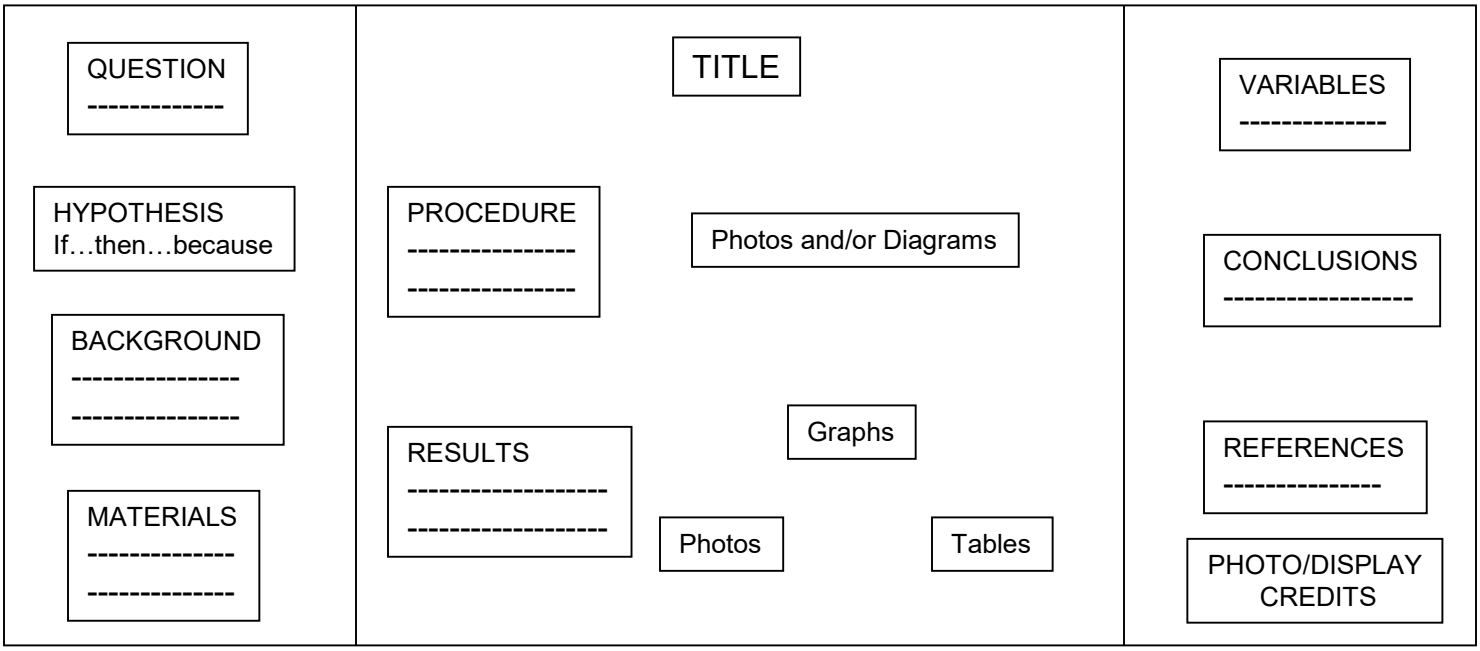
Project Display Board

Project display should be on a STURDY tri-fold board no larger than 36” x 48”. Written materials, drawings, and pictures should be securely attached to the display board. Do not use staples. Purchase the board early as this is a popular time of year for science projects. **If you need help acquiring the project board or other items for your project, please ask your teacher.** For text, use a font that can be read from 2 ½ feet away. Use diagrams and pictures wherever possible. Electrical projects may use batteries as sources of electricity.

Project Display Requirements for Experiments

TITLE of the project
NAME, GRADE, HOMEROOM TEACHER on the BACK of the display board
QUESTION: What question are you trying to answer or what problem are you trying to solve?
HYPOTHESIS: What do you think will happen?
BACKGROUND and DEFINITIONS: Briefly report research about your topic
MATERIALS: The items needed to do the project. Pictures can be displayed in addition to text.
PROCEDURE: The steps followed in the experiments. Pictures or diagrams can be used here.
RESULTS: Description of experimental results and graphs, tables and pictures to display data
CONCLUSIONS: The answer to the question; how are the results explained?
REFERENCES: At least 3 valid sources are required, including books, articles (include title and author) or specific websites (include the date the site was accessed); Google, Yahoo and Wikipedia are not scientific sources.
PHOTO/DISPLAY CREDITS: Be sure to credit/list all sources of graphics and photographers.

Sample Experiment Display Board



Experimental Design and Exhibit Display Boards

The board must have the student name, grade and teacher on the BACK. The format is flexible but must include an INTRODUCTION or BACKGROUND in the first section, TITLE and the collection/exhibit in the center and CONCLUSIONS (or WHAT I LEARNED), REFERENCES and PHOTO/DISPLAY CREDITS in the last section.

View a project board template at:
https://docs.google.com/presentation/d/1fnoQhN155UBcnUbPwrt1vKCLrqo5Y6a506lOdZD5he4/edit#slide=id.g143471cf2ba_0_155. This template can be used for your project board. From the “File” menu choose “Make a copy” or “Download”. Fill in the template, then print the various parts for your project board.