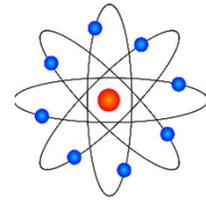


# Nan Clayton Science Fair 2020

Thursday, January 23



Science Fair Information Packet – 3<sup>rd</sup> and 4<sup>th</sup> 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 Grade GT and all 4th Grade students are **required** to participate by submitting a Collection, Exhibit or Experiment. Participation for other 3rd Grade students is optional.

## Three Types of Projects: Collection, Exhibit and Experiment

A **Collection** is a set of objects gathered for study, comparison or presentation. Collections must be organized based on some type of classification scheme using certain observations to group objects or events according to similarities and differences.

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.

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**. There must be some level of originality to the idea being tested.

## 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>

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

## Project Awards

All 3<sup>rd</sup> and 4<sup>th</sup> Grade projects will be judged and are eligible for awards. The top projects will receive awards. A small number of selected projects will be invited to advance to the Austin Regional Science Fest. In addition, outstanding projects in the categories of music, art, PE, reading, SEL and health will be chosen by the Clayton Special Areas teachers, librarian, counselors and nurse to receive special honorable mention awards.

## Timeline

### EARLY DECEMBER

Science proposals due for teacher review (check with teacher on specific date and time)

### DECEMBER – MID JANUARY

Teacher-approved projects worked on by students

### WEEK OF JANUARY 20

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

### THURSDAY, JANUARY 23—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

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

7:30 p.m.—Take projects home!

### FRIDAY, JANUARY 24

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 packet.

Completed documents must be returned to Clayton before January 30.

### SATURDAY, FEBRUARY 22

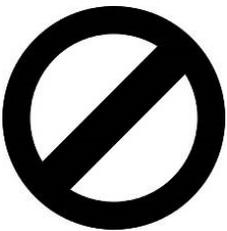
Austin Energy Regional Science Festival, Palmer Events Center

## 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:

<http://www.sciencefest.org/images/pdfs/ElemRulesForParticipation.pdf>

**NO HUMAN OR ANIMAL FOOD IS ALLOWED ON THE PROJECT BOARD OR IN THE PROJECT DISPLAY AREA** (not even in sealed bags or containers) for any grade level.



### 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
- Any activity or substance that presents a danger to the student or environment, including hazardous or radioactive materials
- Fermentation or distillation of consumable alcohol

## Research

Every project – Collections, Exhibits and Experiments - 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. References (books, websites, etc.) must be noted on the project board.

## 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?

### 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

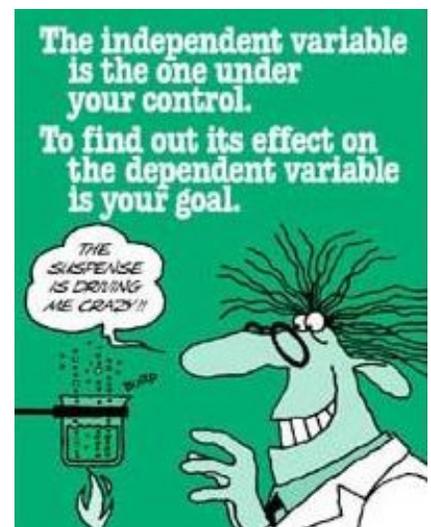
Question: What is the purpose of each ingredient in cupcakes?

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. Purchase early as this is a popular time of year for science projects. 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 front 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 and ACKNOWLEDGEMENTS:** Books, articles (include title and author) or specific websites (include the date the site was accessed); Google, Yahoo and Wikipedia are not scientific sources. Mention help received from any persons.

## Sample Experiment Display Board

<p>QUESTION -----</p>	<p>TITLE Name, Grade, Homeroom Teacher</p>	<p>VARIABLES -----</p>
<p>HYPOTHESIS If...then...because</p>	<p>PROCEDURE ----- -----</p> <p>Photos and/or Diagrams</p>	<p>CONCLUSIONS -----</p>
<p>BACKGROUND ----- -----</p>	<p>RESULTS ----- -----</p> <p>Graphs</p> <p>Photos                      Tables</p>	<p>REFERENCES -----</p>
<p>MATERIALS ----- -----</p>		<p>ACKNOWLEDGMENTS</p>

## Collection and Exhibit Display Boards

The board must have the student name, grade and teacher on the front. 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 ACKNOWLEDGEMENTS/THANKS in the last section.

See the project guidelines and example project boards at <https://www.claytoncardinals.org/sciencefair>

# Nan Clayton Science Fair Project Proposal – Collection or Exhibit

Proposal Due Date:

Name:

Teacher:

If you could learn about anything in the world, what would it be? What do you wonder about?

My project will be (circle one):

Collection

Exhibit

Project Proposal:

My final project is due:

*For teachers only*

Teacher Approval & Comments returned to student:

# Nan Clayton Science Fair Project Proposal - Experiment

Proposal Due Date:
Name:
Teacher:
Question:
Independent variable:
How will I measure the independent variable? (if necessary)
Dependent variable:
How will I measure the dependent variable?
Controlled variables:
Do you have any questions/comments/concerns? Please write them here.
My final project is due:
Teacher Comments: