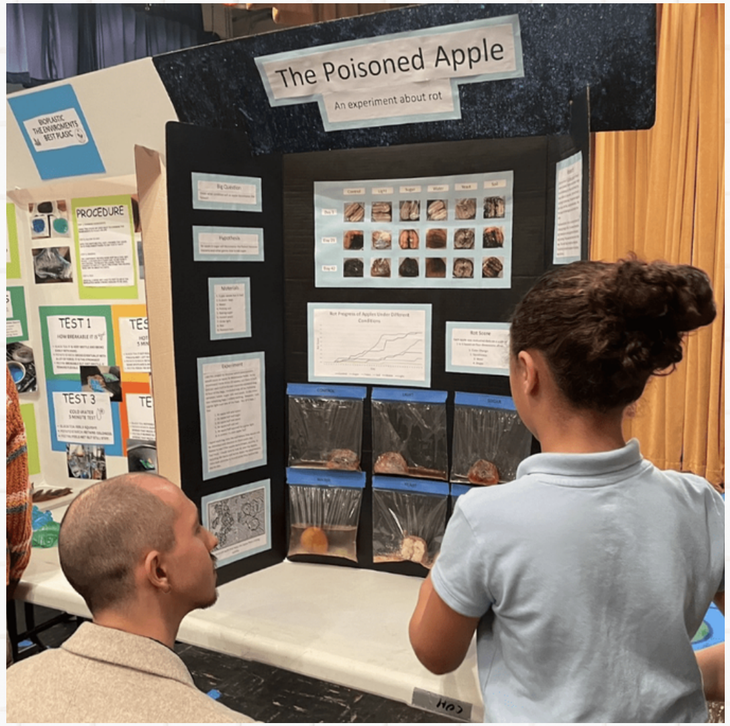
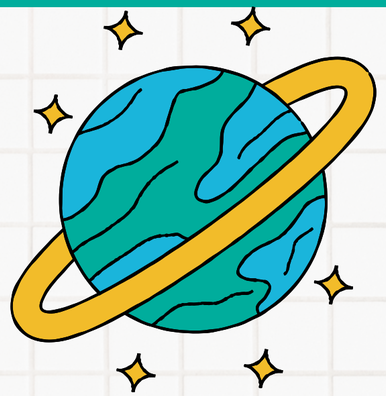
GUADALUPE 1ST ANNUAL SCIENCE FAIR

THE SCIENTIFIC METHOD

WHAT IS A SCIENCE FAIR?

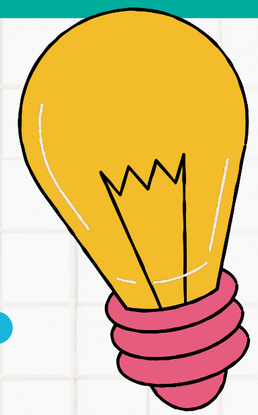
- Event to promote the scientific inquiry
- Students display boards documenting their experiment
- Attendance open to students, parents, teachers and Guadalupe community
- Volunteer run
- Goal: Have fun and promote science

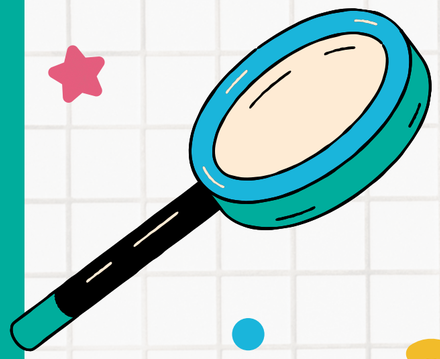


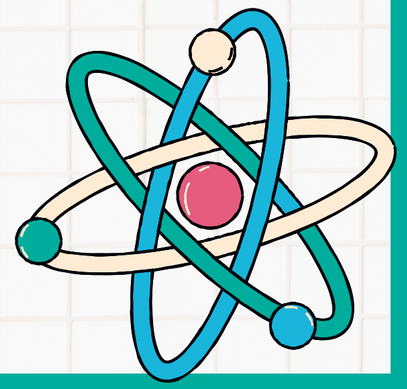


IMPORTANT FACTS

- Open K-5 students
- No entrance fee
- Materials provided by parents
- Students work individually
- Students will have 6 weeks to choose a category/topic
- Students will have 7 weeks to work on their project
- Work done outside of school hours (not part of school curriculum)
- Parent help needed
- Notable projects will receive awards
- Participation not mandatory



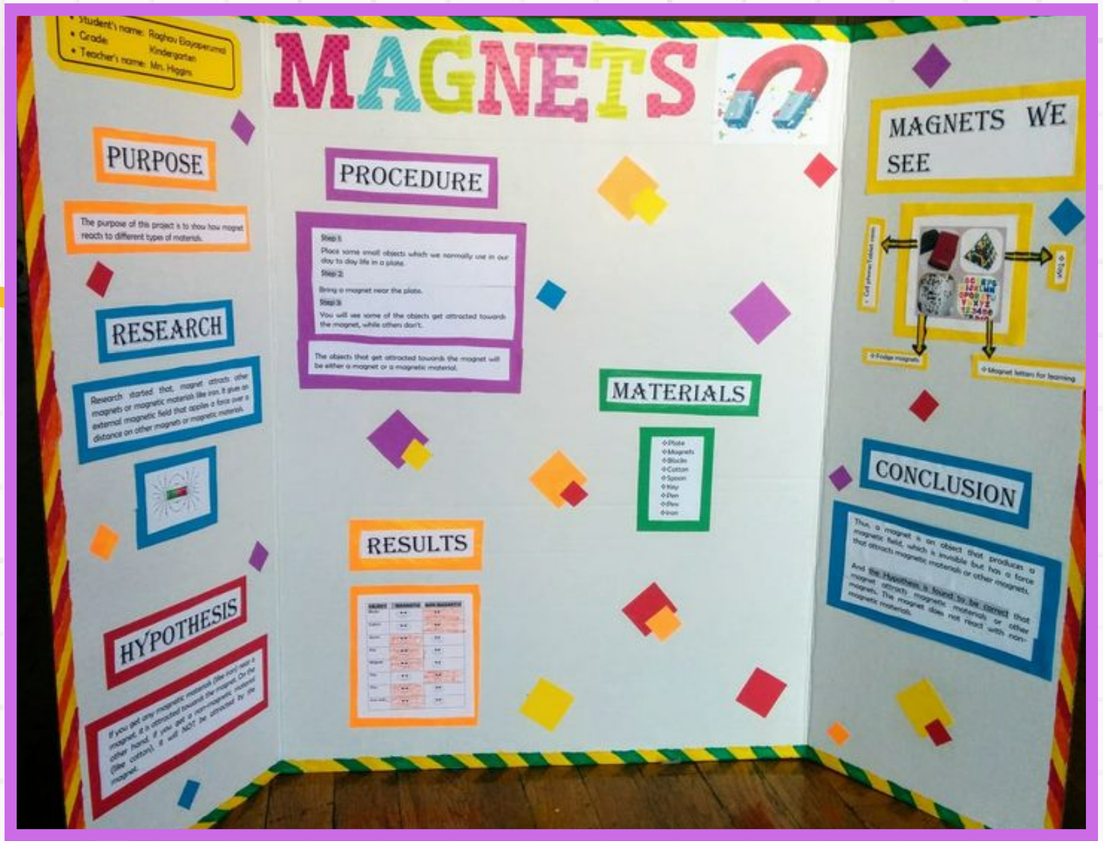




WHAT NEEDS TO BE TURNED IN?

YES

DISPLAY BOARD

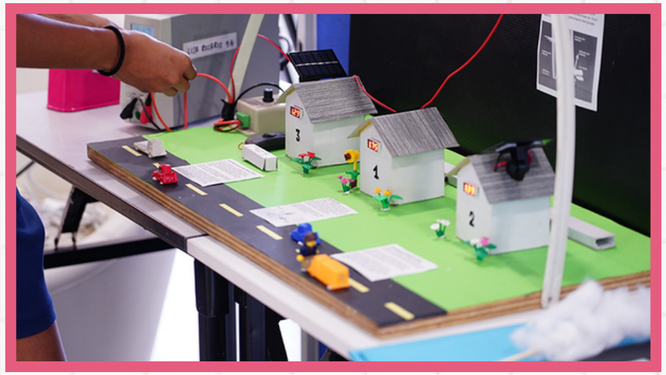


NO

- NO LOG BOOK
- NO WRITTEN REPORT
- NO ORAL PRESENTATION TO JUDGE

OPTIONAL

- INTERACTIVE DEMO OR PROPS



KEY DATES

Nov 29	Submit Science Fair Participation Form
Jan 15	Submit Science Fair Project Form
Jan 22	Project Forms approved (students receive Scientist-in-training badges)
Jan 23-Mar 12	Students work on science projects at home (see Suggested Timeline below)
March 13	Students turn in tri-fold display boards and set-up
March 14	Projects are judged
March 14	Science Fair (community viewing and awards ceremony)

SUGGESTED TIMELINE

Nov 29

Submit Entry Form

Dec 1-Jan 14

Brainstorm Topics

Resources in Planning Guide

Jan. 15

Submit Project Form

Jan 22

Project Approved

Look out for email

Week 1
Jan 22-30

Research

- Need 3 references

Week 2
Feb 1-8

Design Experiment

- Identify Variables
- Review Safety

Week 3
Feb 9-16

Gather Materials

- Order materials
- including Tri-fold display

Week 4 &5
Feb 16-Mar 1

Perform Experiment

- at least 3 times
- collect data

Week 6
Mar 1-8

Analyze Data

- make graphs
- looks at trends

Week 7
Mar 8-13

Display Board

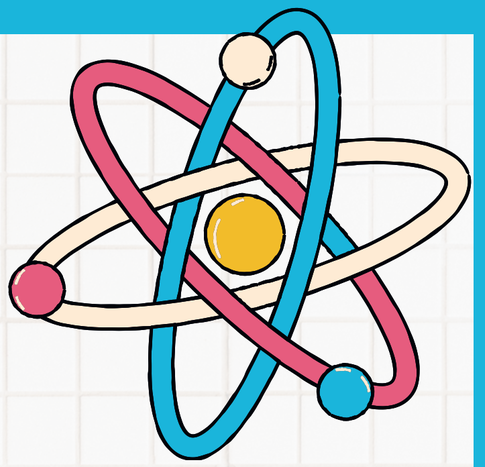
- review judging rubric
- include all steps of Scientific Method

Mar 13

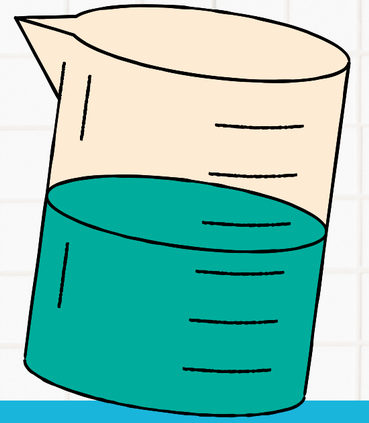
Delivery

Set-up

PARENT RESPONSIBILITIES

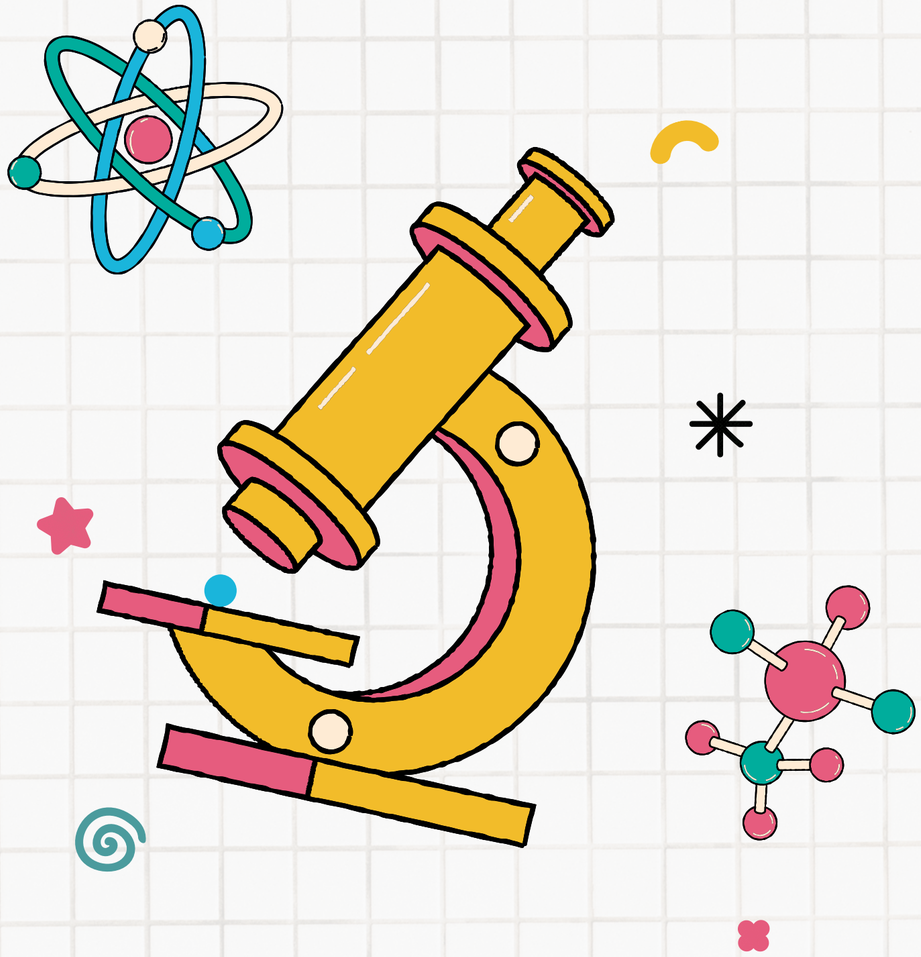


1. SUBMISSION OF ENTRY AND PROJECT GOOGLE FORMS
2. ENSURE SAFETY RULES ARE FOLLOWED
3. GUIDANCE ON PICKING TOPIC
4. HELP WITH RESEARCH
5. HELP WITH CONDUCTING/DOCUMENTING EXPERIMENT(PHOTOS)
6. STAYING ON SCHEDULE
7. HELP WITH DISPLAY BOARD SET-UP AND DISASSEMBLY



DO NOT DO THE PROJECT FOR YOUR CHILD

SIGN-UP



- Entry Deadline: **Nov. 29 by 5pm**

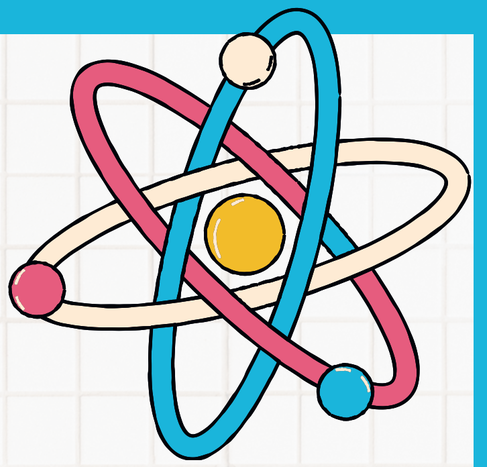
Science Fair Participation Form

- Project Deadline: **Jan. 15 by 5pm**

Science Fair Project Form

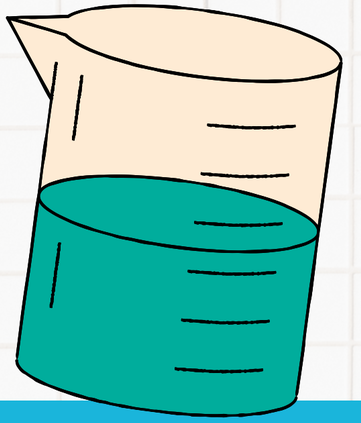
- Display boards due: **Mar. 13**
- Science Fair: **Mar. 14**

WHAT'S IN THE PLANNING GUIDE?



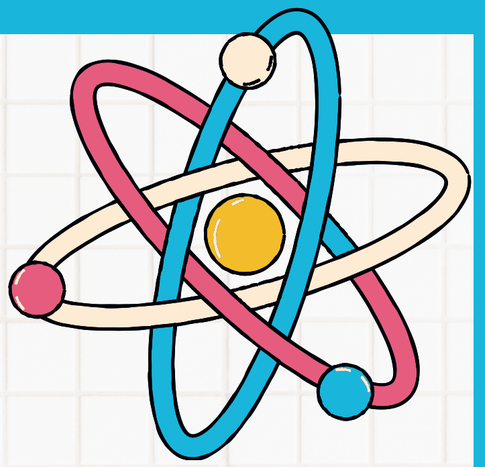
LINK: SCIENCE FAIR PLANNING GUIDE

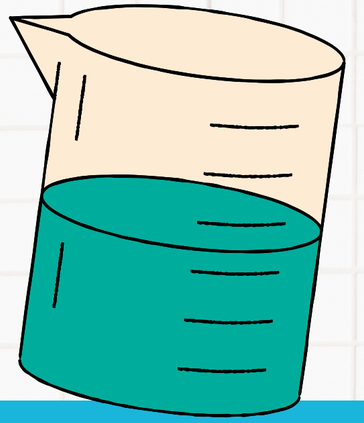
- SCIENCE CATEGORIES: LIFE, PHYSICAL, EARTH
- SAFETY RULES
- HELP CHOOSING A TOPIC/QUESTION
- TYPES OF PROJECTS
- SCIENTIFIC METHOD WORKSHEET
- PROPOSED WORK TIMELINE
- DISPLAY BOARD GUIDELINES
- JUDGING RUBRIC
- LIST OF ONLINE RESOURCES



SAFETY RULES

1. NO EXPERIMENTING ON ANIMALS OR ANIMAL TISSUE
2. ADULTS MUST SUPERVISE EXPERIMENT
3. NO EXPLOSIVES, DRUGS, OR ALCOHOL
4. DO NOT TOUCH/TASTE DANGEROUS CHEMICALS
5. WEAR EYE/EAR PROTECTION
6. NO CULTURING OF DANGEROUS MICRO-ORGANISMS
7. NO EATING/DRINKING DURING EXPERIMENT
8. DISPOSE OF WASTE PROPERLY
9. KNIVES OR OTHER SHARP OBJECTS MAY NOT BE DISPLAYED
10. USE INTERNET SAFELY AND WITH PARENTS' APPROVAL



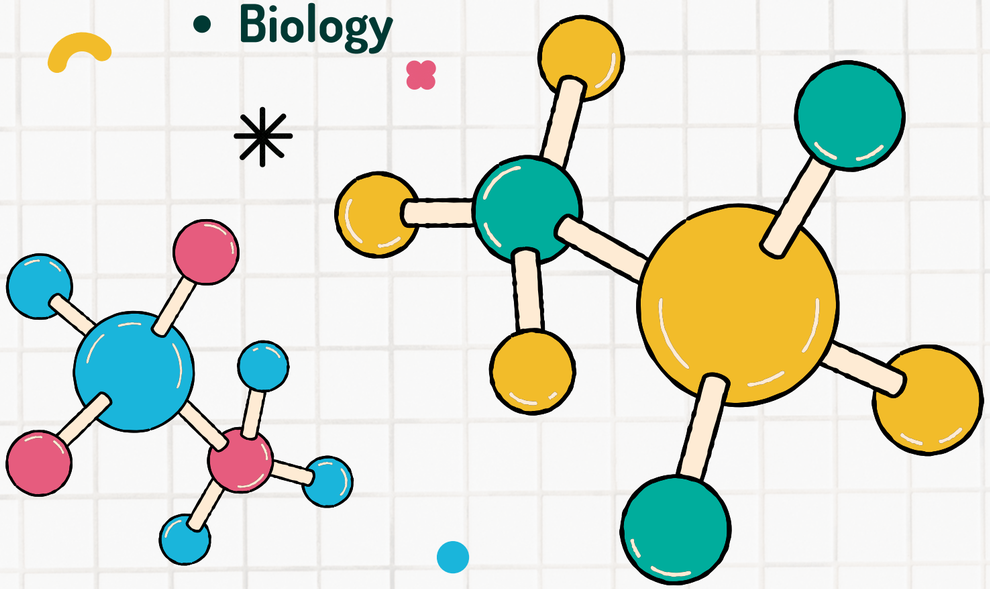


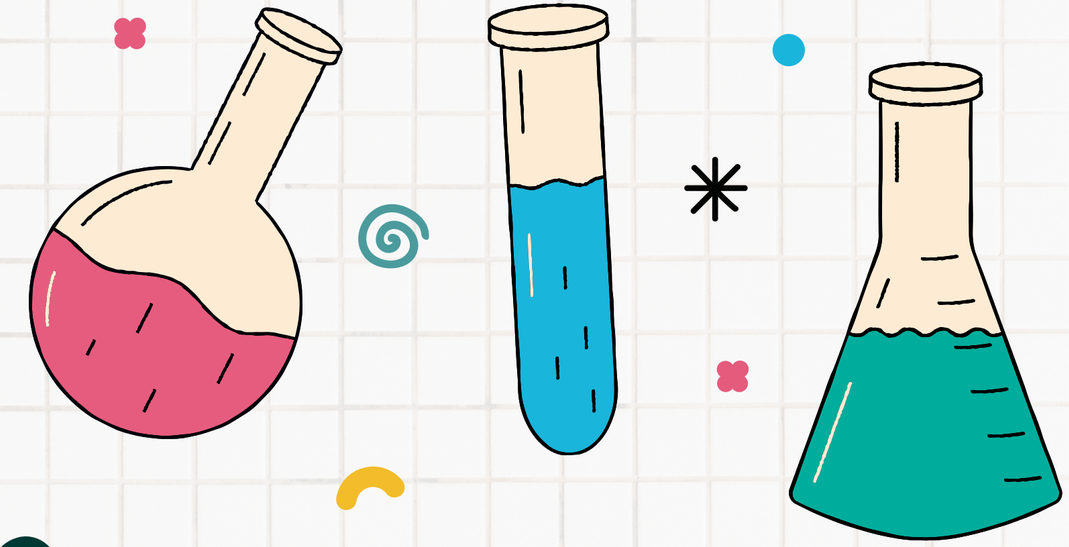
CATEGORIES

01 LIFE SCIENCE

Examples:

- Botany
- Environmental Science
- Nutrition
- Zoology
- Biology





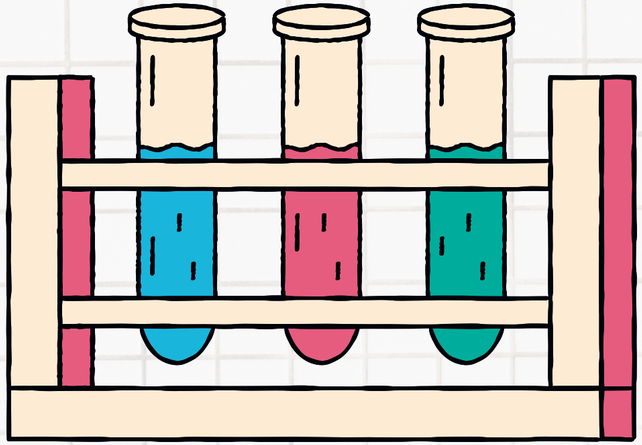
02 EARTH & SPACE SCIENCE

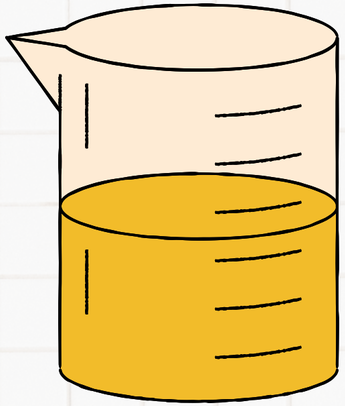
Examples:

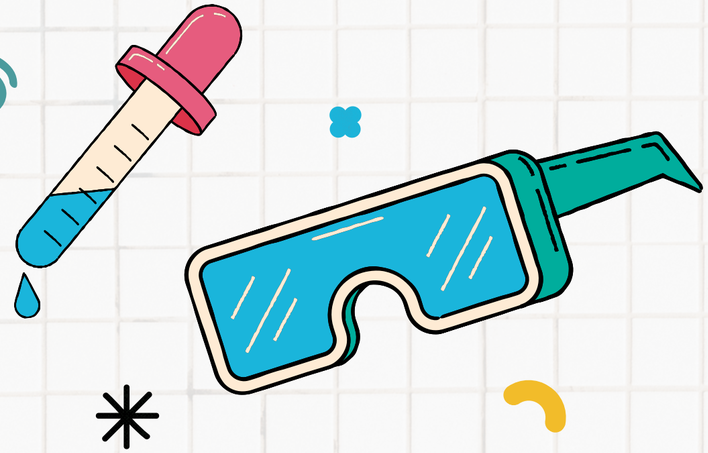
- Geology
- Weather
- Rock Formations
- Layers of the Earth
- The atmosphere
- stars
- planets/moon

03 PHYSICAL SCIENCE

- Chemistry: states of matter, solubility, heat capacity, periodic table, solutions etc.
- Physics: magnetism, electricity, force/motion, properties of matter, sound, light etc.

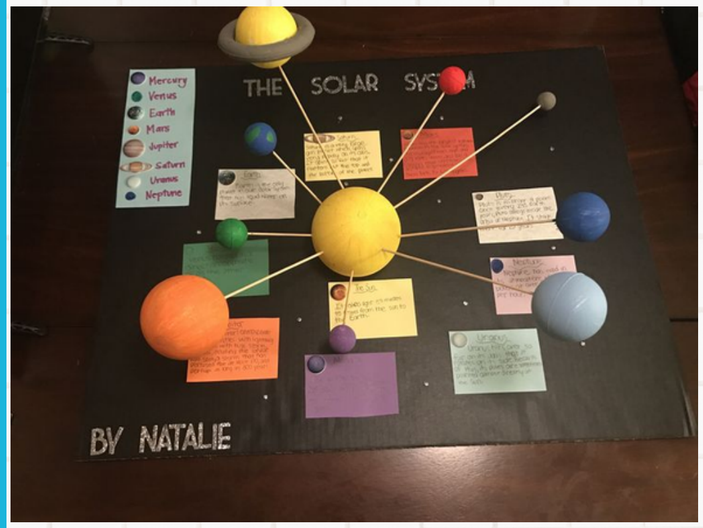






TYPES OF PROJECTS NOT ALLOWED

MODELS



COLLECTIONS

DEMONSTRATIONS

THESE PROJECTS DO NOT TEST ANYTHING

YOUR PROJECT SHOULD BE EXPERIMENT-BASED USING THE SCIENTIFIC METHOD

SCIENTIFIC METHOD

STEP 1

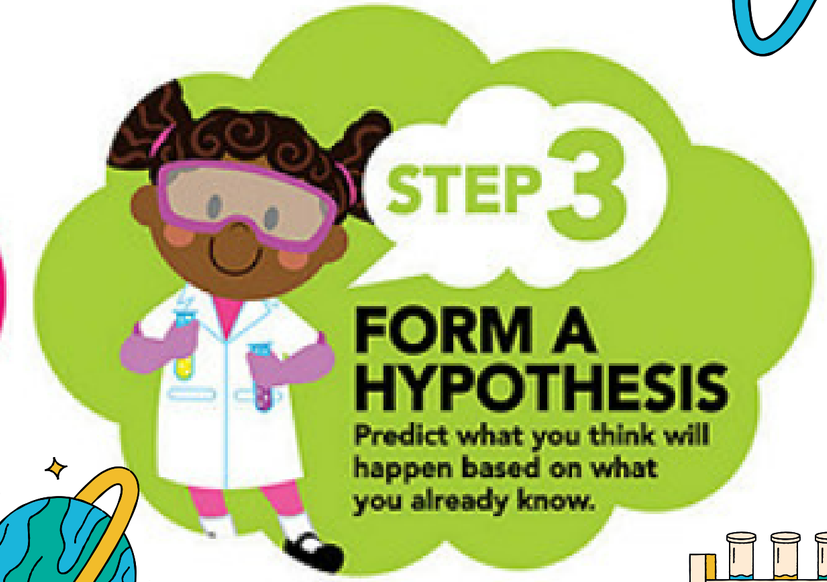
ASK A QUESTION

What do you want to learn about?

STEP 2

RESEARCH

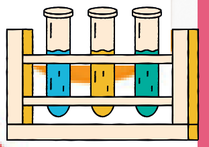
Learn as much as you can about your topic from books, experts and the internet.



STEP 3

FORM A HYPOTHESIS

Predict what you think will happen based on what you already know.



STEP 4

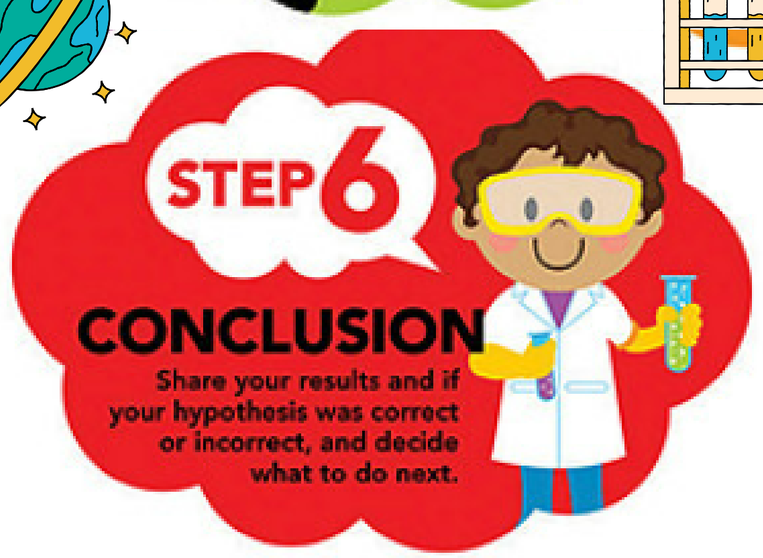
EXPERIMENT

Gather materials and follow your plan to test your hypothesis.

STEP 5

ANALYZE THE RESULTS

Write down what happened and record what you learned.

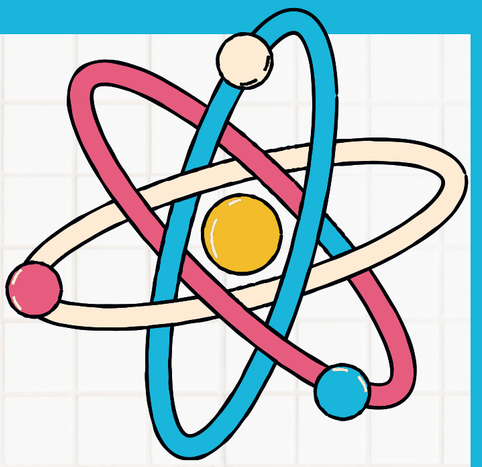


STEP 6

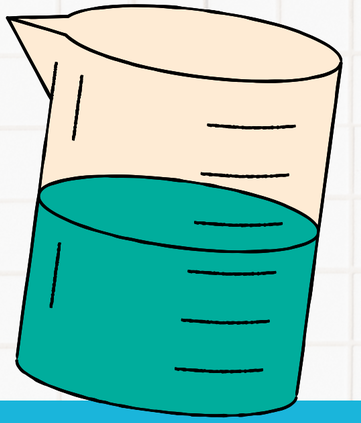
CONCLUSION

Share your results and if your hypothesis was correct or incorrect, and decide what to do next.

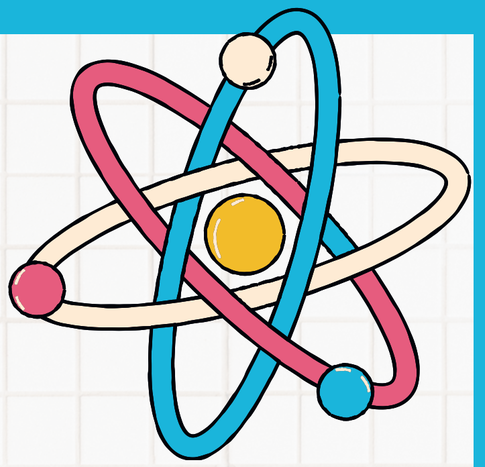
TIPS ON CHOOSING A PROJECT



- ENCOURAGE CHILD TO PICK BASED ON THEIR INTEREST
- CHOOSE A PROJECT WITH A CLEARLY DEFINED, TESTABLE QUESTION THAT CAN BE ANSWERED BY AN EXPERIMENT
- CHOOSE A PROJECT THAT CAN BE RESEARCHED THOROUGHLY IN THE TIME AVAILABLE.
- CONSIDER WHAT MATERIALS ARE AVAILABLE WHEN CHOOSING A PROJECT.
- CHOOSE A PROJECT WITH AN APPROPRIATE DIFFICULTY LEVEL.



TESTABLE VS UNTESTABLE QUESTIONS?

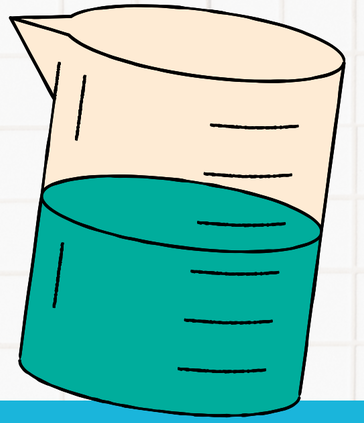


TESTABLE

- How well do different materials sink or float in water?
- How does changing the shaped of a rocket's fins change its flight?
- Does temperature have any effect on a magnet's strength?

UNTESTABLE

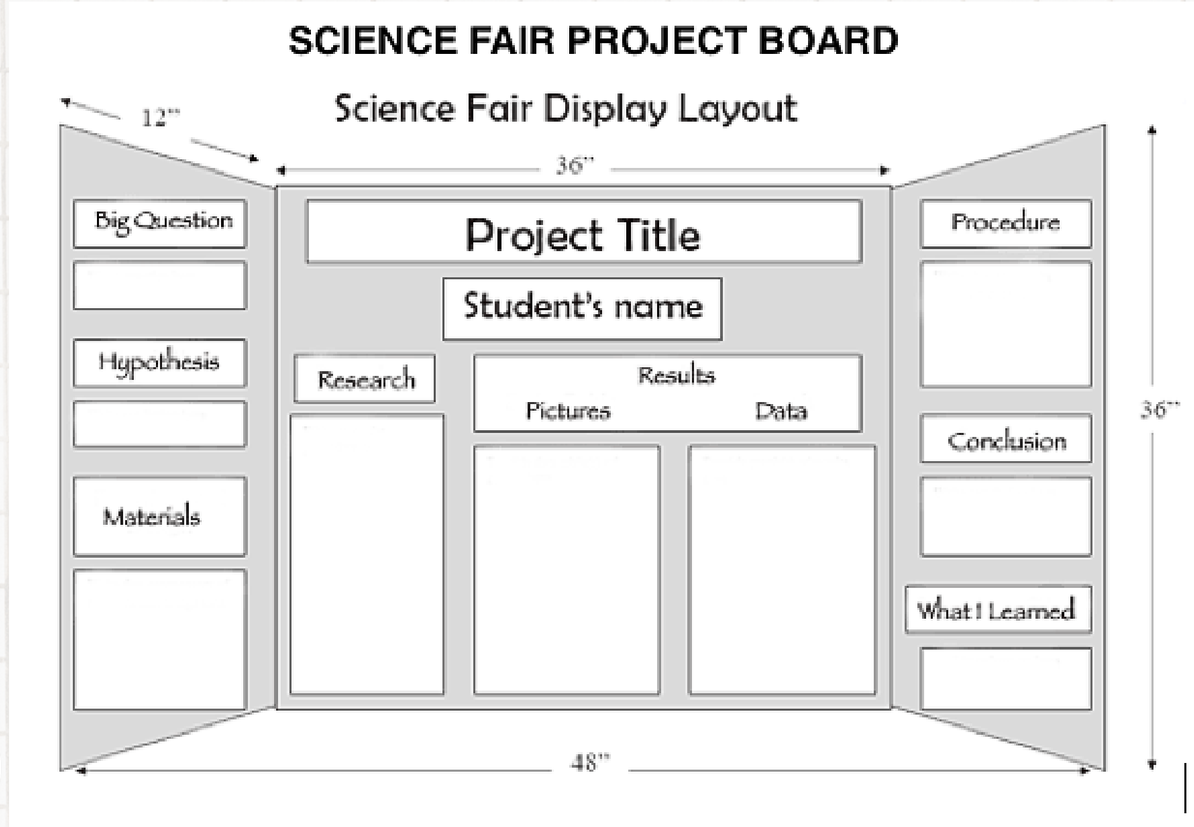
- What makes something sink or float?
- How do rockets work?
- What makes a magnet attract things?



RESOURCES

- Steve Spangler Science
- Science Bob
- Science Buddies
- Mark Rober: Tips for great elementary science fair projects
- Education.com
- Example project display boards:
- Blossom Hill Elementary (K-5 example projects)
- Somers Intermediate School (5th grade example projects)

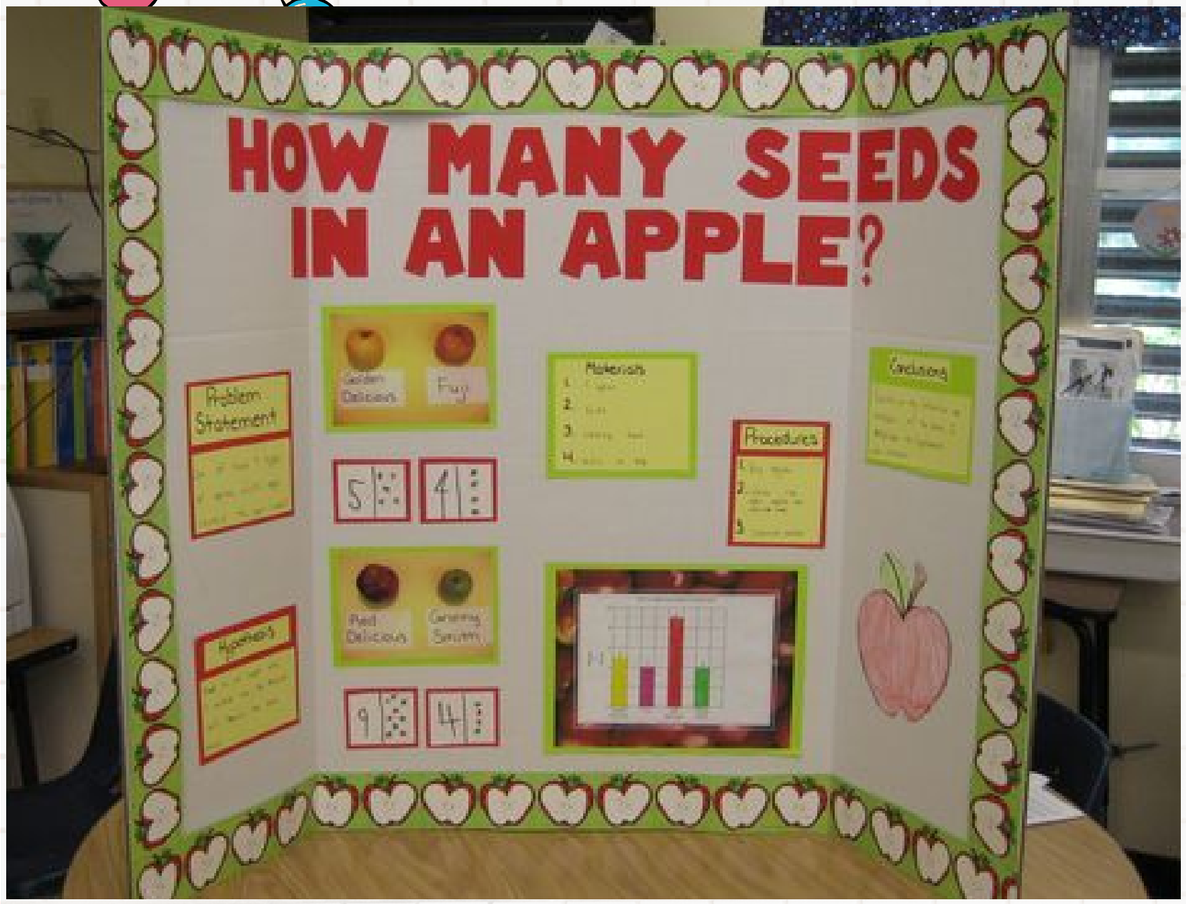
DISPLAY BOARD

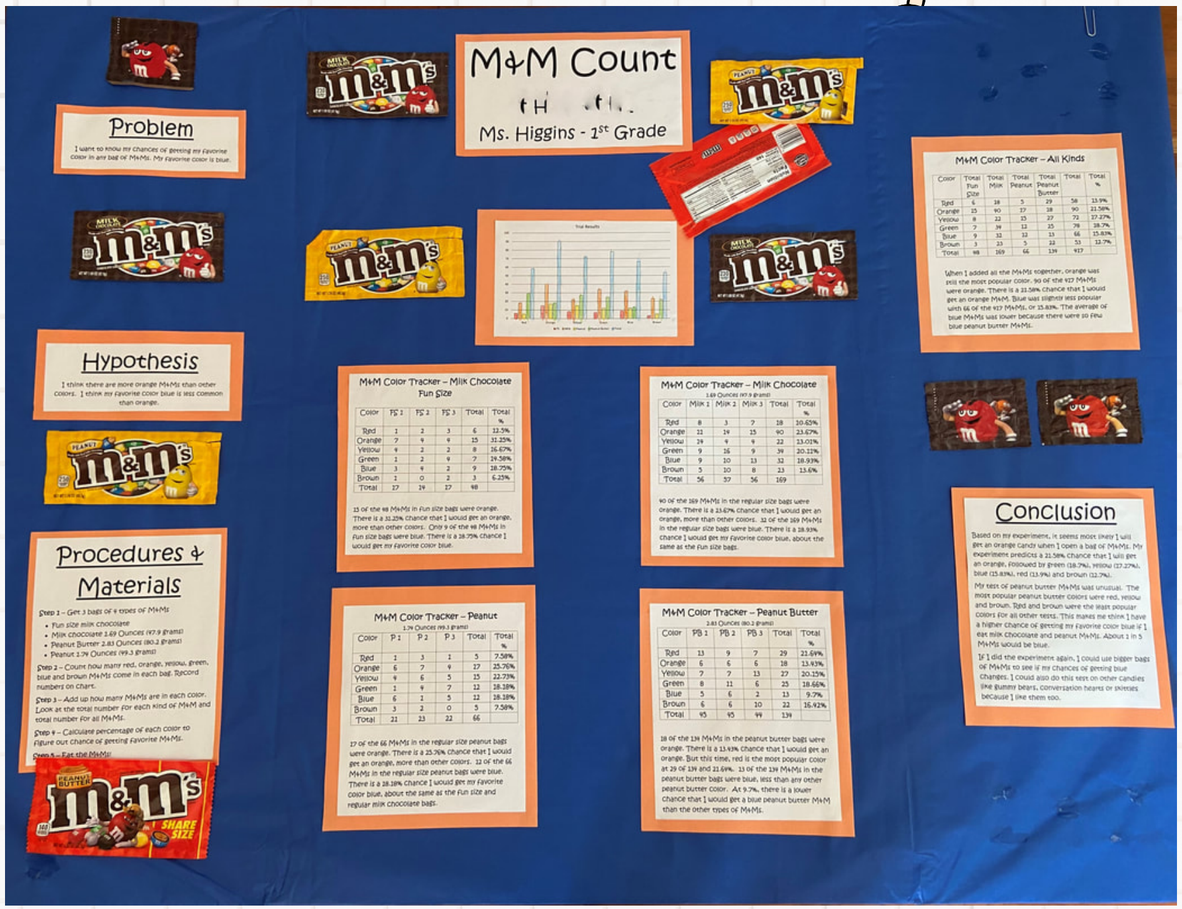


- Summarize Experiment
- Should be neat
- Legible from 3-ft away
- Eye-catching

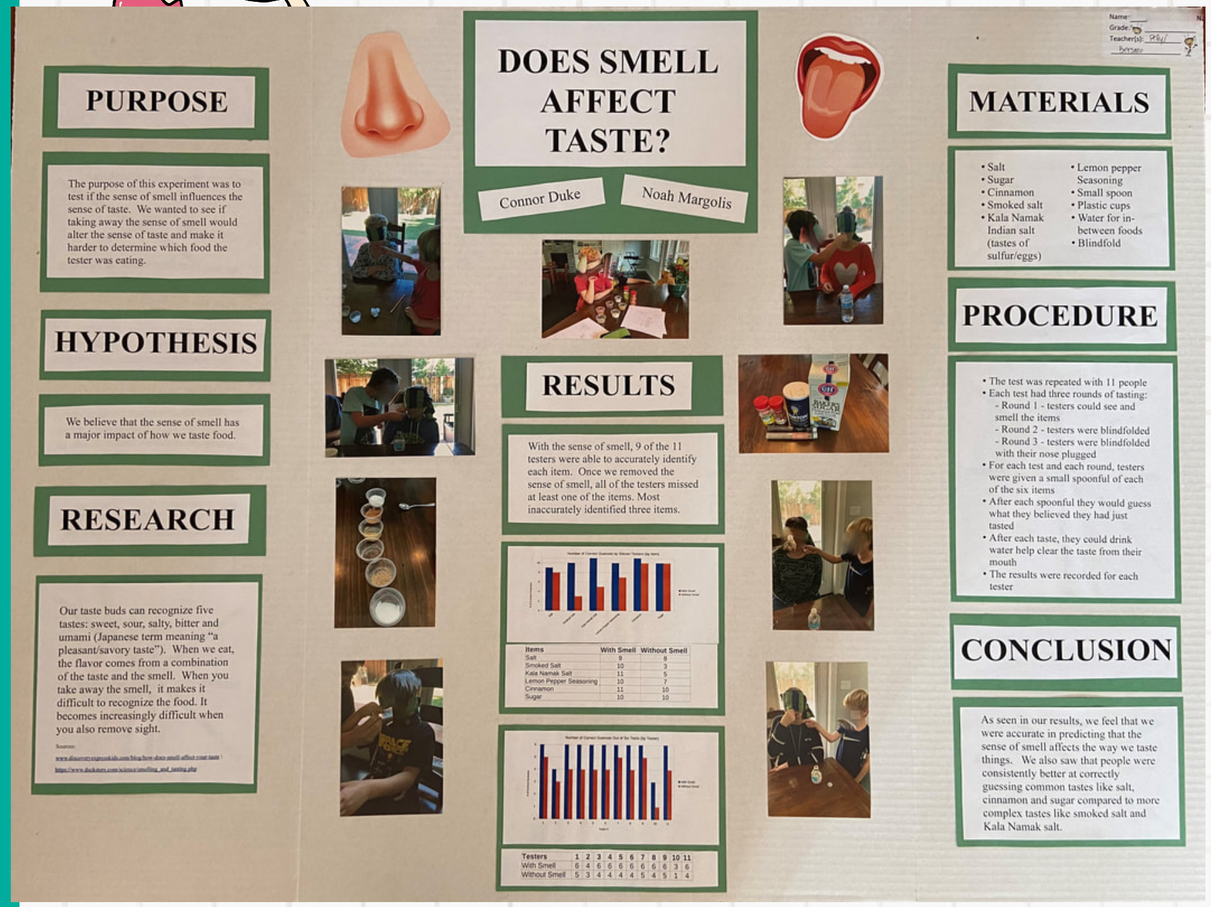
- Dimensions (unfolded) 36" H x 48" W
- Display guidelines in Planning Guide

K-2 EXAMPLE PROJECTS





GR. 3-5 EXAMPLE PROJECTS



DOES SMELL AFFECT TASTE?

Connor Duke | Noah Margolis

PURPOSE

The purpose of this experiment was to test if the sense of smell influences the sense of taste. We wanted to see if taking away the sense of smell would alter the sense of taste and make it harder to determine which food the tester was eating.

HYPOTHESIS

We believe that the sense of smell has a major impact of how we taste food.

RESEARCH

Our taste buds can recognize five tastes: sweet, sour, salty, bitter and umami (Japanese term meaning "a pleasant/savory taste"). When we eat, the flavor comes from a combination of the taste and the smell. When you take away the smell, it makes it difficult to recognize the food. It becomes increasingly difficult when you also remove sight.

Sources:

www.discoveryeducation.com/blog/how-does-smell-affect-your-taste/

https://www.duksters.com/science/smelling_and_tasting.php

RESULTS

With the sense of smell, 9 of the 11 testers were able to accurately identify each item. Once we removed the sense of smell, all of the testers missed at least one of the items. Most inaccurately identified three items.

Items	With Smell	Without Smell
Salt	9	8
Smoked Salt	10	3
Kala Namak Salt	11	5
Lemon Pepper Seasoning	10	7
Cinnamon	11	10
Sugar	10	10

Testers	1	2	3	4	5	6	7	8	9	10	11
With Smell	6	4	6	6	6	6	6	6	6	3	6
Without Smell	5	3	4	4	4	4	5	4	5	1	4

MATERIALS

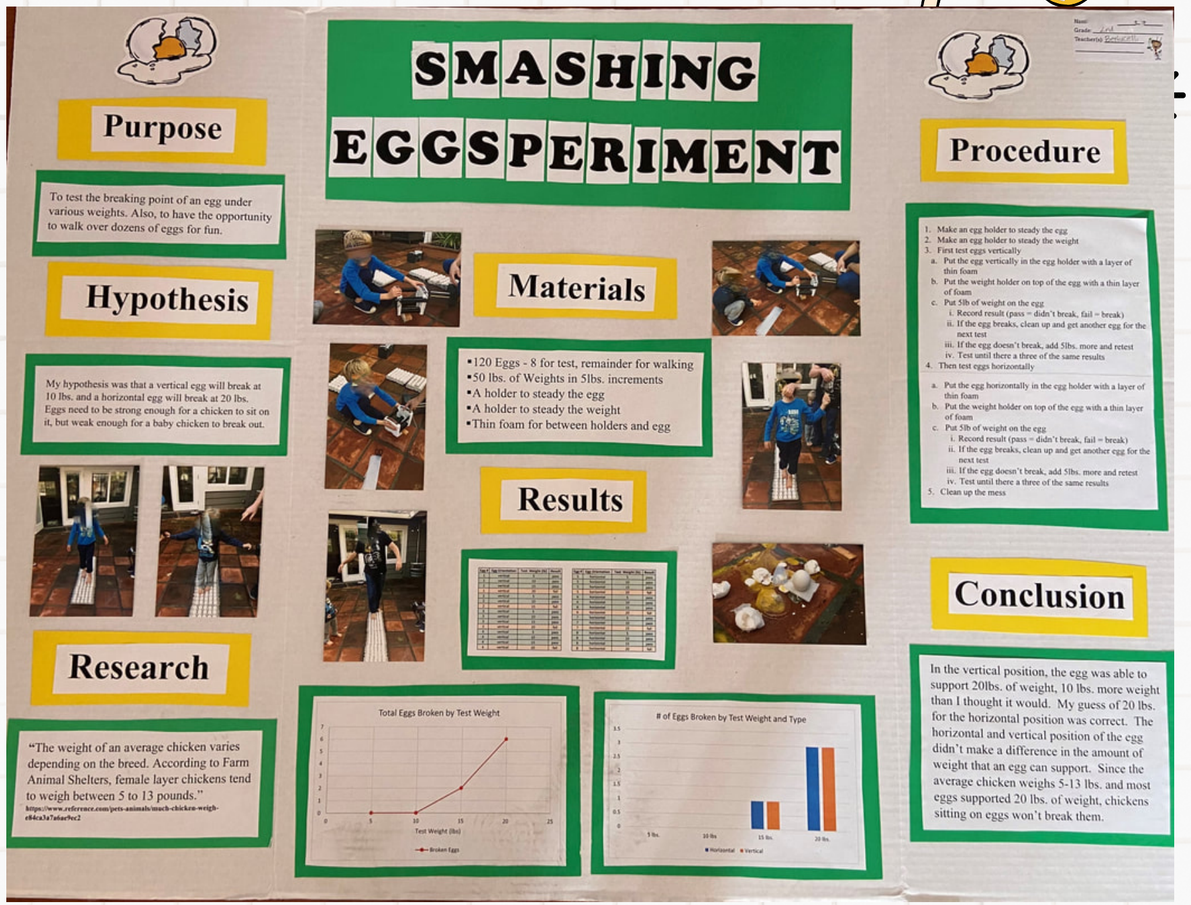
- Salt
- Sugar
- Cinnamon
- Smoked salt
- Kala Namak Indian salt (tastes of sulfur/eggs)
- Lemon pepper Seasoning
- Small spoon
- Plastic cups
- Water for in-between foods
- Blindfold

PROCEDURE

- The test was repeated with 11 people
- Each test had three rounds of tasting:
  - Round 1 - testers could see and smell the items
  - Round 2 - testers were blindfolded
  - Round 3 - testers were blindfolded with their nose plugged
- For each test and each round, testers were given a small spoonful of each of the six items
- After each spoonful they would guess what they believed they had just tasted
- After each taste, they could drink water help clear the taste from their mouth
- The results were recorded for each tester

CONCLUSION

As seen in our results, we feel that we were accurate in predicting that the sense of smell affects the way we taste things. We also saw that people were consistently better at correctly guessing common tastes like salt, cinnamon and sugar compared to more complex tastes like smoked salt and Kala Namak salt.



SMASHING EGGSPERIMENT

Purpose

To test the breaking point of an egg under various weights. Also, to have the opportunity to walk over dozens of eggs for fun.

Hypothesis

My hypothesis was that a vertical egg will break at 10 lbs. and a horizontal egg will break at 20 lbs. Eggs need to be strong enough for a chicken to sit on it, but weak enough for a baby chicken to break out.

Research

"The weight of an average chicken varies depending on the breed. According to Farm Animal Shelters, female layer chickens tend to weigh between 5 to 13 pounds."

https://www.reference.com/pets-animals/much-chicken-weigh-e84ca3a7a6ae9ec2

Materials

- 120 Eggs - 8 for test, remainder for walking
- 50 lbs. of Weights in 5lbs. increments
- A holder to steady the egg
- A holder to steady the weight
- Thin foam for between holders and egg

Results

Procedure

1. Make an egg holder to steady the egg
2. Make an egg holder to steady the weight
3. First test eggs vertically
   a. Put the egg vertically in the egg holder with a layer of thin foam
   b. Put the weight holder on top of the egg with a thin layer of foam
   c. Put 5lb of weight on the egg
      i. Record result (pass = didn't break, fail = break)
      ii. If the egg breaks, clean up and get another egg for the next test
      iii. If the egg doesn't break, add 5lbs. more and retest
      iv. Test until there a three of the same results
4. Then test eggs horizontally
   a. Put the egg horizontally in the egg holder with a layer of thin foam
   b. Put the weight holder on top of the egg with a thin layer of foam
   c. Put 5lb of weight on the egg
      i. Record result (pass = didn't break, fail = break)
      ii. If the egg breaks, clean up and get another egg for the next test
      iii. If the egg doesn't break, add 5lbs. more and retest
      iv. Test until there a three of the same results
5. Clean up the mess

Conclusion

In the vertical position, the egg was able to support 20lbs. of weight, 10 lbs. more weight than I thought it would. My guess of 20 lbs. for the horizontal position was correct. The horizontal and vertical position of the egg didn't make a difference in the amount of weight that an egg can support. Since the average chicken weighs 5-13 lbs. and most eggs supported 20 lbs. of weight, chickens sitting on eggs won't break them.

SET-UP, JUDGING & VIEWING

Set-up: March 13, morning

- Drop off and set up your displays in the cafeteria.
- Your project will have a designated space marked by your project form.

Judging: March 14, morning

- The judging process is closed to spectators and is done before community viewing
- Some awards and ribbons will be attached to notable project displays.

All judging decisions are final. Judging Rubric Google form found in Planning Guide

Community Viewing & Awards Ceremony: March 14, evening

- Members of Guadalupe community are invited to view the projects

Clean up and Take-Down: March 14 after Science Fair

- Any projects that are not taken home the night of the fair will be discarded.

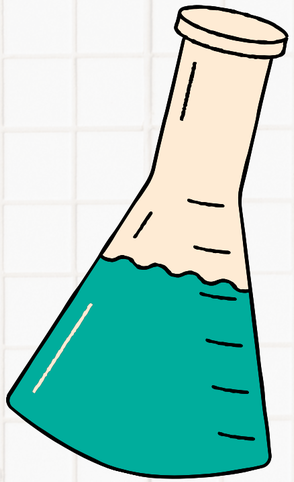
AWARDS

- All students will receive a certificate of participation
- Awards will be given for each grade level.
- The projects with the top three highest scores in each grade will be announced during the Science Fair on March 14.
- Awards and prizes will consist of gold, silver, and bronze medallions and award certificates.

WHY PARTICIPATE?

Students learn :

- practical application of science
- time/resource management skills
- communication skills
- early appreciation for STEM careers
- how to build community and have fun with science



THANK YOU!

Any questions? Don't hesitate to
ask for our help

ScienceFair.GHSC@gmail.com
GHSC.net/ScienceFair