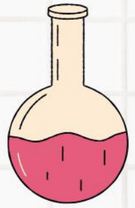
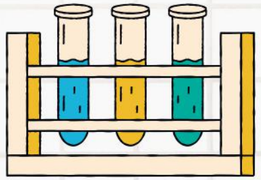
MILLS ELEMENTARY
2023-2024

THE SCIENCE FAIR

HANDBOOK FOR STUDENTS (K-5)

DEAR PARENTS


Mills' Science Fair will held on Thursday January 18, 2024. Please turn in your projects no later than Tuesday January 16, 2024. We will follow the same guidelines that have been designated for the Austin Regional Science Festival.

Enclosed you will also find the criteria used to judge each of the three categories of projects. The same criteria are used to judge the projects we send to the Austin Regional Festival. Please review the guidelines and judging criteria carefully with your child so that all rules are followed and expectations are met.

Please read the enclosed information carefully and if you have any questions, please contact Sarah Leder at sarah.leder@austinisd.org. We will do our best to clarify any questions you may have. We are looking forward to a successful Science Fair this year. Thank you for your support.

GENERAL INFORMATION

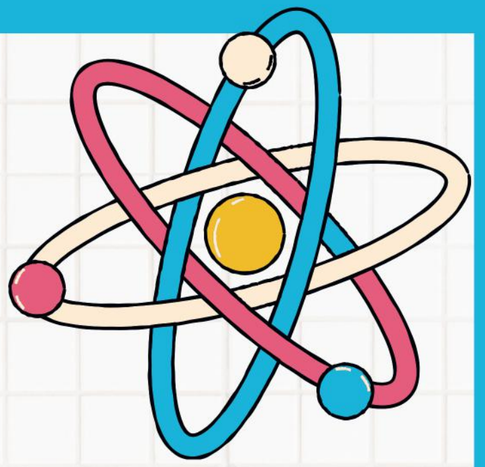
PLEASE READ THIS SECTION CAREFULLY BEFORE PLANNING YOUR INVESTIGATION

PROJECTS THAT ARE NOT ALLOWED

NO STUDENT WILL BE ALLOWED TO DESIGN OR CONDUCT ANY SCIENCE PROJECT THAT INVOLVES:

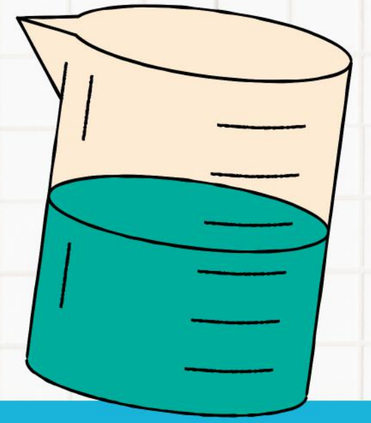
- Firearms, explosives, or discharge air pressure canister devices (i.e. potato guns)
- Growing bacteria or mold of any type
- Causing pain, suffering, sickness, or death of an animal
- Any activity or substance that presents a danger to the student or the environment, including hazardous chemicals or radioactive materials

DISPLAY & SAFETY GUIDELINES

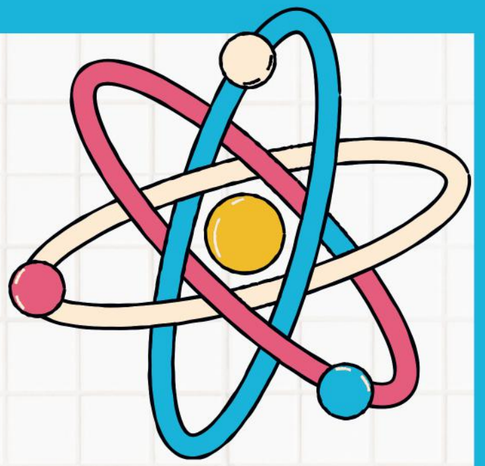


ITEMS NOT ALLOWED

- No organisms; living, dead or preserved (plants or animals)
- No human/animal parts or body fluids (for example, blood, urine)
- No human or animal food
- No bacteria or mold cultures
- No liquids – laboratory/household chemicals including water (Exceptions: water integral to an enclosed apparatus or water supplied by the Display and Safety Committee)
- No poisons, drugs, controlled or hazardous substances
- No sharp items (for example; syringes, needles, pipettes, knives, tacks, nails)
- No glass or glass objects unless encased or an integral and necessary part of a commercial product (for example, a computer screen)
- No pressurized tanks or containers
- No batteries with open top cells (so that battery acid can be seen)
- No dirt, soil, gravel, sand, waste product, etc.
- No project which includes discharging a firearm; discharging an air pressure canister device; contains chemicals deemed hazardous to student health; is radioactive and/or any other activity that presents a danger to the student.
- No photographs or pictures of animals or people in surgical techniques, dissections, or necropsies.



MORE GUIDELINES



EXCEPTIONS

- Students in Pre-K – 2nd grades may have properly sealed specimens (dead or preserved plant or mineral materials) as part of their project display. However, no animal or human food is permitted.

DISCOURAGED ITEMS

- Expensive, breakable, or fragile items.

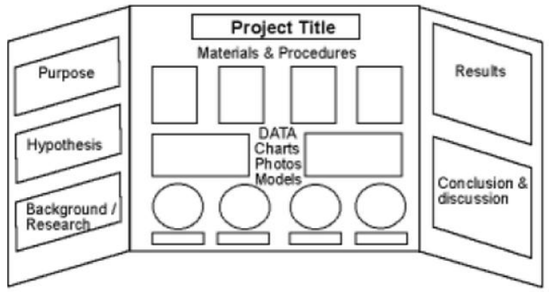
ALLOWED AND ENCOURAGED ITEMS

- Photographs, drawings, or stuffed animals/artificial plants should be used to depict the prohibited or discouraged items.
- Be sure to properly credit/acknowledge all photographers.
- Students should always plan on taking photographs of their project steps as a visual explanation of their effort. However, students must ask permission before photographing any other individuals for display on project.
- Students may use a computer and printer for written parts of the project.
- Electrical projects may use batteries as sources of electricity.
- Use imitation food in the place of real food.

DISPLAY BOARD

DISPLAY BOARD DETAILS

Project display should be on sturdy 36” x 48” tri-fold board available at local craft and office supply stores. Written material, drawings, and pictures should be securely attached to the display board. For ideas on creating project boards, visit www.showboard.com.



DIMENSIONS

Projects will be displayed on tables that are 36 inches high. Size of display boards may not exceed the following measurements: 30” deep, 48” wide, and 72” high.

PROJECT BOARD FORM

Please attach the Project Board Form to the upper right hand back side of the project board. The front of the board may not contain any identifying information: such as student’s name, teacher’s name, or school campus.

ELECTRICITY FOR YOUR DISPLAY

Electrical projects may use batteries as sources of electricity. If a project requires electricity, that need should be indicated when registering the project on Project Display Form.

PROJECT ORGANIZATION

FOR THE MILLS SCIENCE FAIR

GRADE LEVEL

Each project is categorized by grade level or grade level equivalent.

PROJECT CATEGORIES

There are three types of projects that students may enter. These categories are explained in detail later in this guide. They are: (1) Collection with Classification, (2) Exhibit - Demonstration, Model or Display & (3) Experiment.

3RD, 4TH, 5TH GRADE STUDENTS

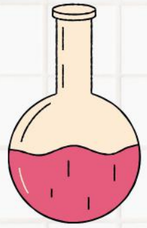
Students in 3rd through 5th grades need to enter an Exhibit or Experiment to be able to attend the regional science fair.

EXPERIMENT VS. EXHIBIT

An Experiment follows the steps of the scientific method. It clearly asks a question to which you do not already know the answer without testing. An Exhibit is an explanation of how or why something works. It reveals details about the topic. An Exhibit is an explanation, not a question.

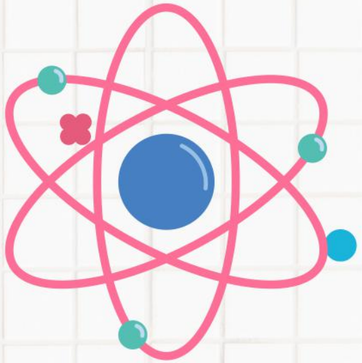
PARENTAL HELP

& OTHER ACKNOWLEDGEMENTS

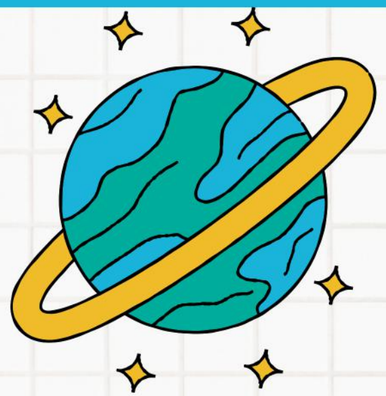


Some students are fortunate to have parents who have time to help them. However, parents who do the thinking or build the project for them do not really help students. Parents are encouraged to help their children in these ways:

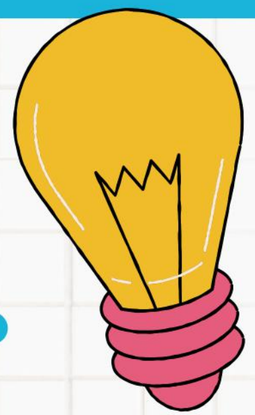
- Read and discuss this handbook
- Select projects which are appropriate for the child's age and grade level
- Plan and manage project work times and clean-up times
- Take your child to the public library or other places for research
- Help draw straight lines for a young child
- Listen to your child's oral explanation of the project
- Ensure the child's safety



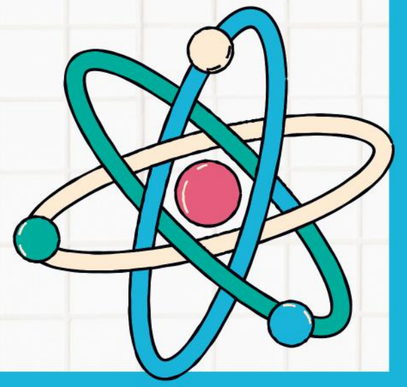
In order to receive credit for this item on the rubric during judging, students must list any parental help in the References and Acknowledgements section of the project. Please credit people who helped with typing, research, assembly, encouragement, etc. Please provide a bibliography of your resources including internet sites.



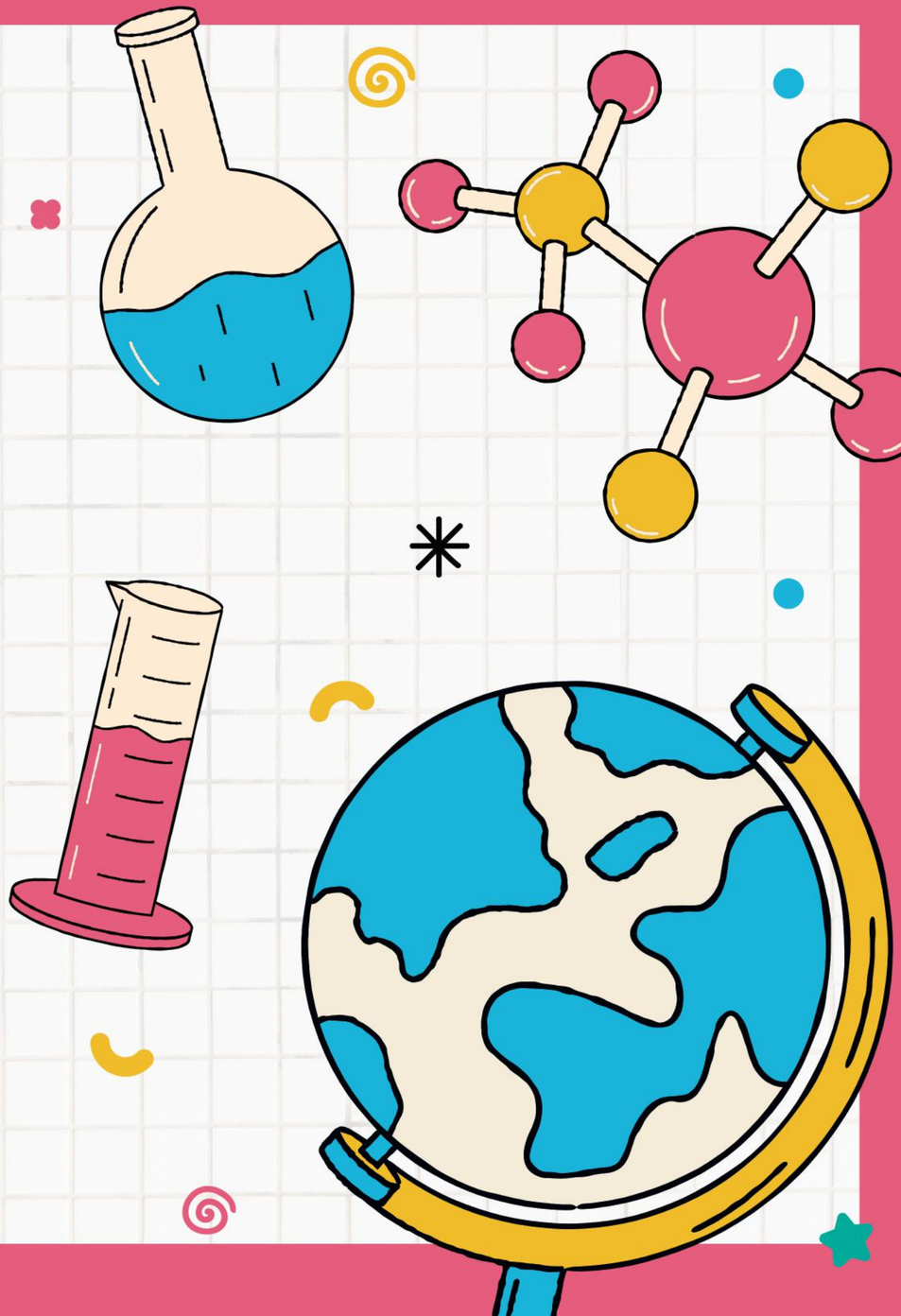
AUSTIN ENERGY REGIONAL SCIENCE FESTIVAL



Only students with winning projects from the Mills' Science Fair in grades 3-5 will be eligible to participate in the Elementary Division of the Austin Energy Regional Science Festival. There will be no projects from grades PK-2 at the Regional Fair.



TYPES OF PROJECTS



COLLECTION WITH CLASSIFICATION

A collection is a set of objects, which have been placed into groups according to similar properties.

DISPLAY BOARD ELEMENTS

TITLE of Collection

RESEARCH REPORT gives information about the type of items collected

CLASSIFICATION SCHEME of collected items

REFERENCES AND ACKNOWLEDGEMENTS

COLLECTION WITH CLASSIFICATION

A collection is a set of objects, which have been placed into groups according to similar properties.

EXAMPLE

Suppose you collected twelve rocks from your neighborhood. You might sort them by color, size, or how much they sparkle. Or you might put the rocks into categories of hard or soft. First, soak them in water and then rub them on a hard surface. By comparing the size and color of the streak, the rocks could be classified as softest rocks, next softest rocks, and so on, until you have those which are hardest in the last category.

Here are some examples of items to classify:

Feathers* Seeds from grapes* Pieces of bark* Eggshells*
Lenses* Empty insect nests* Fossils* Leaves*

** These items cannot be displayed on the project board. Take photos instead and display those.*

COLLECTION WITH CLASSIFICATION

REMINDERS

Remember to check the list of prohibited/discouraged/allowed items on page 3 before building your display board.

EXCEPTIONS

Students in 1st – 3rd grades may have properly sealed* specimens (dead or preserved plant or mineral materials) as part of their project display. However, no animal or human food is permitted.

* “Properly sealed” means items cannot leak odor, liquid or particles out of their container. Items must be double bagged in sturdy (freezer) bags OR they must be placed in clear, plastic containers with the lid sealed using clear book tape. All items (shells, rocks, leaves, soil, eggshells, etc.) must be dried before sealing. We suggest that bags be attached to the project board with clear book tape for safe and neat display.

Students should always plan on taking photographs of their project steps as a visual explanation of their effort.

EXHIBIT: DEMONSTRATION, MODEL, OR DISPLAY

An exhibit can be a demonstration, a model or a display. A demonstration or model describes how or why something works. A display reveals details about the topic.

DISPLAY BOARD ELEMENTS

TITLE of Demonstration, Model or Display

RESEARCH REPORT gives background information about exhibit (may include diagrams and pictures)

EXPLANATION of what the exhibit shows

CONCLUSIONS

REFERENCES and ACKNOWLEDGEMENTS

EXHIBIT: DEMONSTRATION, MODEL, OR DISPLAY

An exhibit can be a demonstration, a model or a display. A demonstration or model describes how or why something works. A display reveals details about the topic.

EXAMPLES

Demonstration

You might want to demonstrate how light reflects off different objects. For instance, you might arrange a set of Lucite mirrors (no glass) or even pieces of foil to show how a beam of light from a flashlight bounces from one reflective surface to another. Your report could explain that light travels in straight lines. Many demonstrations are found in books like “Mr. Wizard,” which are available from the library.

Model

You might like to make a model of a bridge out of wood or sticks. Diagrams could show the parts, and your report could explain how a bridge is constructed.

Display

You might design a display about monkeys, showing pictures of different types of monkeys. Your report could explain where the monkeys live, what they eat, and describe some interesting habits.

EXHIBIT: DEMONSTRATION, MODEL, OR DISPLAY

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EXPERIMENT

An experiment is a test of a question to which you do not already know the answer without testing. To test your question, you must follow the steps of the scientific method. The display board elements below lists these steps.

DISPLAY BOARD ELEMENTS

TITLE of experiment
PROBLEM: What question are you trying to answer?
DEFINITIONS: Explains the meanings of any special words stated in the “Problem.”
HYPOTHESIS: This is what you think will happen before you start to test.
BACKGROUND INFORMATION: What do books, articles, and the Internet say about your topic?
EXPERIMENTAL MATERIALS: What items do you need to perform your experiment?
EXPERIMENTAL PROCEDURE: These are the steps you follow to test your problem.
RESULTS: What happened? (Use tables of data or graphs plus a description.)
CONCLUSION: What is the answer to the question in your “Problem?” How do you explain your results?
REFERENCES and ACKNOWLEDGEMENTS: Books, resource people, articles (include the title and author) or specific websites (not the search engine, i.e., Google, Yahoo, etc.)

EXPERIMENT

An experiment is a test of a question to which you do not already know the answer without testing. To test your question, you must follow the steps of the scientific method. The display board elements below lists these steps.

EXAMPLES

Do ants like diet soda?

Do batteries of the same brand last the same amount of time?

Does warm water freeze faster than cold water?

Remember to check the list of prohibited/discouraged/allowed items on page 3 before building your display board.

EXPERIMENT

REMINDERS

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JUDGING CRITERIA

FOR THE REGIONAL FAIR

Question: Indicates variables tested/changed/observed

Independence: Evidence the student generated and preformed processes of project

Project Organization: Includes all details needed to replicate testing and/or design process

Verbal Presentation: Communicates and presents verbally to a judge

Conclusion/Lessons Learned: Answers testable question or problem supported with relevant evidence

JUDGING CRITERIA

- [ ] I read the packet with my parents.
- [ ] I understand the rules and guidelines that govern my project's eligibility for the Mills Science Fair.
- [ ] I have brainstormed a list of topics that I am interested investigating.
- [ ] I have a "burning question."
- [ ] My question can be answered through an experiment, model or demonstration. If I am in K-2, I can present a Collection.
- [ ] I have reviewed the rubrics for the project type that I have chosen.
- [ ] I know that I must do the work without help from my parents.
- [ ] I have a timeline that will guide my work.
- [ ] My project will be completed and presented to my teacher, at Mills on, Tuesday January16th.

Project Board Form

Complete the following page with all the pertinent information and attach to the top right back side of project board.

This label must not be displayed on the side where the student has displayed research.

Student Name:_____

Grade Level:_____

Teacher:_____

Type of Project: _____

- Collection with Classification (K-2 only)
- Exhibit
- Experiment
- STEM
- Biography

Title of Project: _____

_____