



PIKES PEAK ELEMENTARY



**SCIENCE
& ENGINEERING FAIR**



**Saturday, April 15, 2023
8:00 AM to 2:00 PM
Mitchell High School**

Sponsored by Colorado Springs School District 11
Generously hosted by Mitchell High School
www.d11.org/Page/5377



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Essential Information

Schedule

- Doors open at 8AM for check-in and project set-up
- Judging begins at 9AM and continues until complete
- Open House and Awards follow as soon as possible after judging is complete

Registration

Info at www.d11.org/Page/5377

Registration is online using ZFairs. See link on event webpage.

Registration deadline 11:59 PM on Sunday, April 9th. No late registration.

Registration is limited to 125 students and is no cost to students.

Participation

Students who place top three in their grade level (4th or 5th grade) category (i.e. life sciences, engineering) at their school's science fair are eligible to participate in the PPESEF.

Exhibits

Exhibits should be free standing and a process journal at a minimum but there are options to include other artifacts. Displays must be free-standing

Maximum display size: 48"H X 36"W X 28"D

No organic material (foods, plants, molds, live specimens, etc. are permitted at the event). Exhibits will be inspected prior to the event and these materials will be discarded. Photo and/or video documentation can be provided for projects involving organic materials.

No identifying information for projects including human subjects should be included on the display board. All human subjects should remain anonymous.

Notebooks

A science notebook (process journal) is used to document research, record data, and take notes. Students should use the notebook during the presentation to support the project's information.

Volunteers

Volunteers are essential to PPESEF. Volunteer judges are needed in addition to support volunteers. More information about registering to volunteer can be found on the event homepage at www.d11.org/Page/5377.

Electricity and Wi-Fi

Requests for electricity and wi-fi must be made at the time of registration. Students must provide their own extension cord to plug into a power strip.

Students must provide their own wi-fi enabled devices.

No IT support is available at the Fair in the event of network and/or connectivity issues.

Event schedule and logistics

Schedule:

Saturday, April 15th, 2023

Your patience and flexibility is greatly appreciated in regards to the schedule. The number of participants and available judges in addition to the number of support volunteers greatly impacts the timing of the event. Consider helping the event by registering as a support volunteer on Sign Up Genius ([CLICK HERE](#)).

8:00	Student check-in and project set-up
9:00	Judging.
12:00	Open House
12:30	Remove projects from gym
1:00	Awards

This schedule is subject to change. If we are able to run ahead of schedule then we will do so. If we are running behind schedule, then your flexibility and grace is greatly appreciated.

Participants

Only 4th and 5th grade students are eligible to compete in the fair.

Location

Mitchell High School, 1205 Potter Dr, Colorado Springs, CO 80909.

Parking

Use large parking lots on the west side of the campus for easy access to the gym, cafeteria and auditorium.

Judging

- Students are not identified during judging.
- Award winners are determined by grade level and by category.
- Students are required to be available to present their projects during the judging time window.
- Each project will be judged a minimum of three times; four if time and the number of available judges allow.

Lunch

- Pizza and a drink are provided for all student participants in addition to volunteers.
- Special dietary requests cannot be accommodated at the event.

Open House

The Fair is open to visitors including parents and community members as soon as judging is complete. Your flexibility and grace are greatly appreciated if the timeline needs to be adjusted. After thirty minutes of Open House, all projects should be removed from the gym prior to the awards ceremony.

Awards

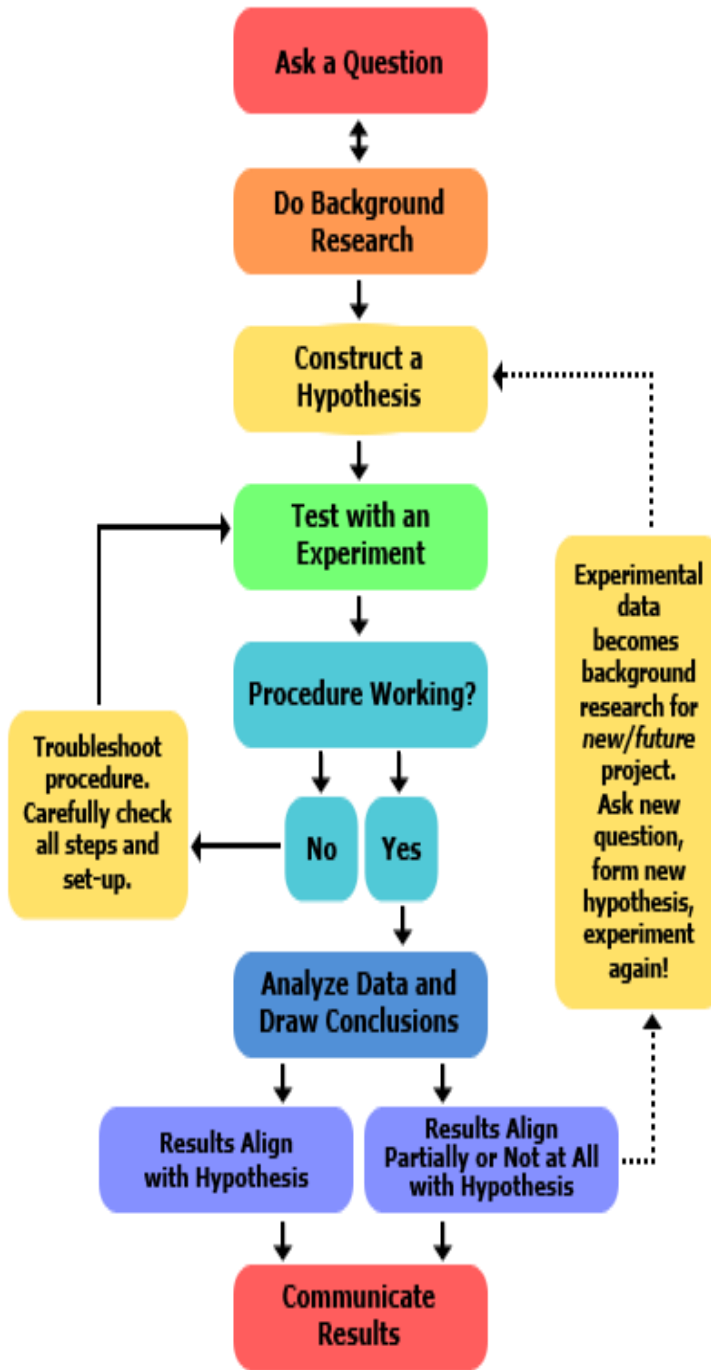
The Awards Ceremony will be held at approximately 1:00 PM in the Mitchell Auditorium (located north of the gym by following the covered awning and signs to the main building).

Registration

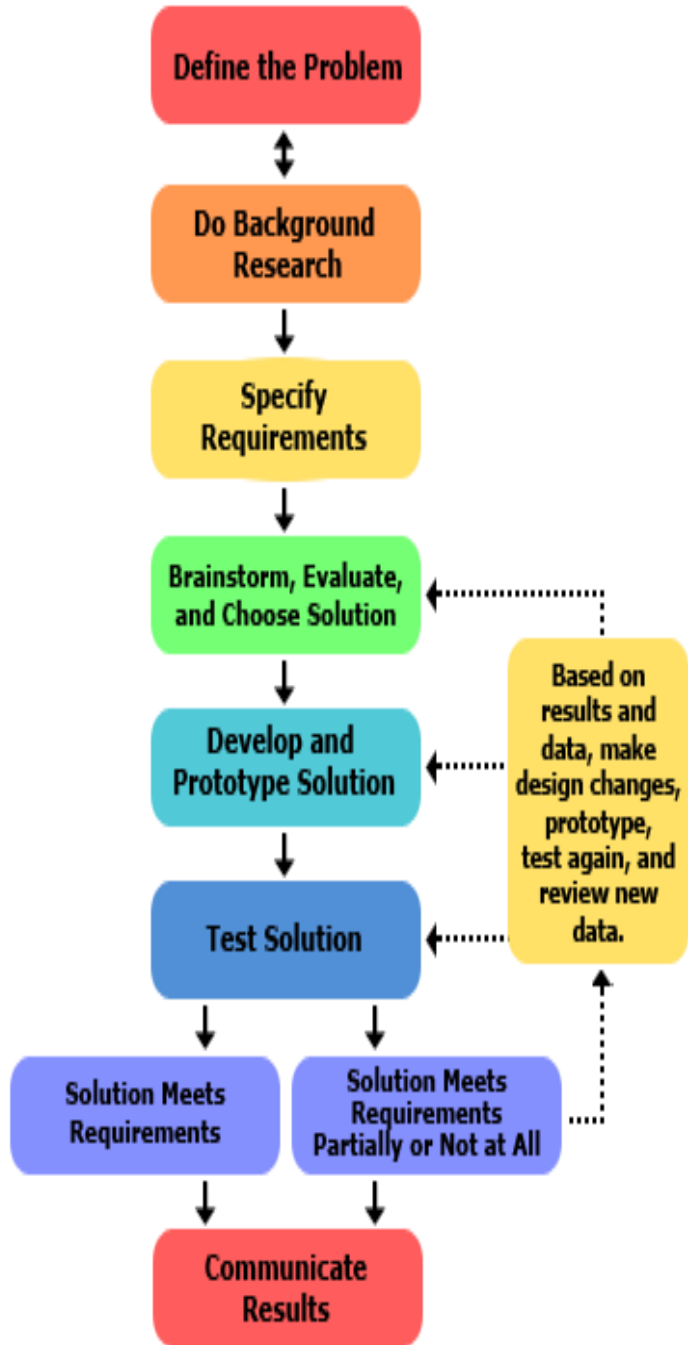
- Registration closes Sunday, April 9th at 11:59 PM.
- See page 18 for detailed information regarding registration.
- Visit www.d11.org/Page/5377 for student and volunteer registration.
- No late registrations are accepted as the event has to plan accordingly for printing, SWAG, lunches, gym set-up, etc.

Scientific Process OR Engineering Design?

Scientific Process



Engineering Design Process



Category Descriptions

- Speak to your project supervisor and/or teacher for guidance on proper category selection.
- No organic material is permitted at the Fair. This includes live, dead, and/or preserved organisms in addition to food, plants, and fungi including mold.

Biological Science

Projects with plants, animals, fungi, bacteria, or protozoan as subjects. Topics include ecological relationships and environmental problems related to organisms.

Consumer Science

Projects with consumer products as subjects. Topics include comparison testing, consumer psychology, environmental impact, and waste management.

Health and Behavioral Science

Projects involving the health or behavior of humans or the behavior of other organisms. Topics include, but are not limited to, hygiene, mental health, learning, social interactions, environmental health problems, and the behavior of organisms.

Physical Science

Projects dealing largely with non-living materials. Topics include, but are not limited to, physical and chemical changes of matter, geology, astronomy, energy, electricity, magnetism, heat, light, and sound.

Engineering Design

Engineering Design includes projects that create a solution to a problem or a need. Topics include designing, building, analyzing, modeling, or improving a device. Testing and creating materials is also engineering design.

Electrical and Wi-Fi Access

Electrical Access

Requests for electrical access must be noted on the online student registration form. A power strip will be provided to each table of projects that requested electrical access.

Wi-fi Access

Requests for access to wi-fi must be noted on the online student registration form. Students are responsible for bringing and connecting devices. The PPESEF is not responsible for network reliability and there will be no IT staff present at the event to troubleshoot technology-related issues.

General Plan

The following operations plan for the Pikes Peak Elementary Science and Engineering Fair is established for the guidance and information of concerned personnel.

Judging procedures

- Judges will use the Scientific Process Rubric or the Engineering Design Process Rubric.
- Judges will identify participants by project number on the rubric.
- Judging will take place in the ZFairs platform.
- Each project will be judged a minimum of three times. Projects will be judged four times if time allows.
- The median of the scores will be used as the project's overall score.

Participant procedures

- a. Pick-up registration packet in the Mitchell auxillary gym between 8:00 and 9:00 AM
- b. Verify that all information in your registration packet is correct.
- c. Ensure no personal identifiable information for the student participant and human subjects (if applicable) is visible on the project display, process journal, and other items.
- d. Set up project at designated location in the Main Gym by locating the project number on the tables.
- f. Students should wear their name badge sticker during the event.
- g. Project inspection will be conducted prior to judging.
- h. Only students, judges and event personnel may be present in the gym during judging.
- i. Participants should have projects on display, science notebooks available for review and be prepared to converse with judges.
- j. Participants should remain at their projects for the duration of the judging time period and the Open House.
- k. Projects should be removed from the gym at the conclusion of the open house and prior to the start of the awards ceremony.
- l. As a courtesy to the students and audience, please wait until the conclusion of the awards ceremony before leaving for the day.

PPSEEF Rules

Sponsors and students are responsible for adhering to the rules. Violations may result in disqualification.

Section One: Basic Rules and Regulations

- 1.1 The students must construct all exhibits. The sponsor may give general and limited advice, but must not assist in construction.
- 1.2 No abstract is required.
- 1.3 All equipment and component assemblies which are borrowed or purchased, or which have been constructed by a person other than the exhibitor, must be identified.
- 1.4 An exhibit that has won an award in a previous year's science fair may not be entered again. However, components or equipment from one year's project may be used in a subsequent year to develop a new principle or to extend the scope of the project.
- 1.5 Each student is eligible to submit one "individual" exhibit, of which he/she is the sole creator. Group exhibits will not be judged at this fair. No demonstrations are allowed.
- 1.6 Materials and construction should be durable. All moving parts must be firmly attached. Push buttons and levers must be securely mounted on the exhibit.
- 1.7 No equipment or materials, other than those specified in this pamphlet, will be made available to exhibitors.
- 1.8 Emphasis should be placed on communicating the details of the student's work; the fair is not for demonstrating. Encourage the use of graphing and summaries, not the inclusion of props.
- 1.9 Water connections WILL NOT be furnished. Students needing water must provide their own gravity feed equipment or a circulating pump. Any spills must be cleaned up immediately. Bring paper towels or cloth towels to clean up spills.
- 1.10 No windows are available in the exhibit areas. Therefore, exhibits needing sunlight should be planned so that artificial light can be used. Photographs are preferred.
- 1.11 Experiments involving sound shall not raise the noise level above the normal level of the room, except that a piece of equipment may be operated at a higher level only as long as necessary to demonstrate for the judges.
- 1.12 Human subjects should remain anonymous.

Section Two: Size and Space Regulations

- 2.1 Maximum table space for any one entry shall be limited to the height of four feet above the top of the table. Space limit is three feet across the front and 28 inches front to back.

- 2.2 All posters and charts must be contained within the allotted space. No part of an exhibit may be attached to tables or walls. Exhibitors must furnish their own supports since no posters may be hung on, or leaned against, the walls.
- 2.3 No project parts may be placed on the floor, other than necessary electrical equipment. Please provide your own electrical cords and duct tape if needed.

Section Three: Live Organisms and Organic Material

- 3.1 Experiments involving starvation or cruelty of any kind to animals WILL NOT be permitted.
- 3.2 Live animals, bacteria, or fungi WILL NOT be permitted with any display. This includes mold, spoiled food, etc. Encourage the use of photography and graphing.
- 3.3 No live plants or organic material may be displayed. Encourage the use of pictures and/or construct graphs that summarize the data.

Section Four: Electricity

- 4.1 110-VOLTS, 60 cycle, single-phase electric power will be available. No other electricity will be provided. The maximum amount of current allowed for each exhibit is five amperes. Motors larger than $\frac{1}{4}$ HP will be prohibited. Provide your own extension cord that can be plugged into a power strip or wall outlet.

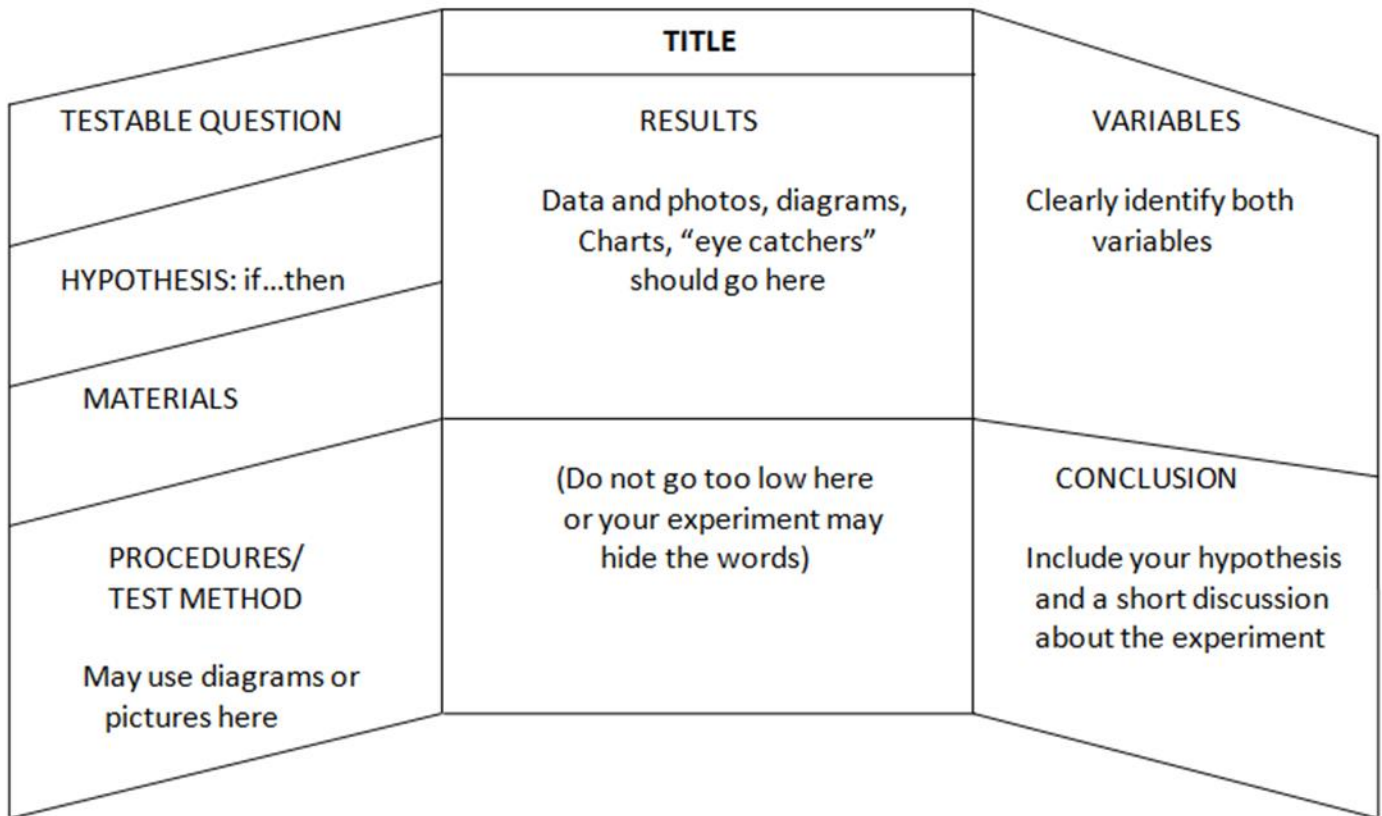
Section Five: Safety

- 5.1 Dangerous chemicals and explosives will not be permitted.
- 5.2 All electrical apparatuses must be provided with a suitable extension cord, at least eight feet long, a switch, and a durable two-prong plug. Please provide your own electrical cords and duct tape if needed.
- 5.3 All electrical apparatuses must comply with standard electrical safety codes. If in doubt, consult a competent electrician or your local electrical inspector.
- 5.4 Ordinary doorbell push buttons shall not be used to control 110-volt apparatus. Use a 110-volt toggle or push-button switch mounted on suitable panels or switch boxes. Open knife switches are not permitted on apparatus with more than 12 volts.
- 5.5 All wiring, switches, and metal parts that carry potentials of 100 volts or higher, such as in radio and electronic apparatus must be located out of reach of observers and properly insulated. This rule is most essential to prevent serious electric shock.
- 5.6 Nails, tacks, and uninsulated staples shall not be used for fastening wires. Use suitable types of insulators.

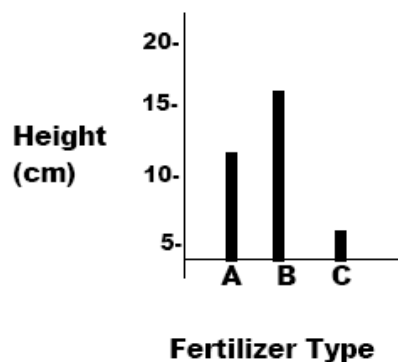
- 5.7 All wire used in exhibits must be of proper size and properly insulated for the current and voltage being used.
- 5.8 Batteries should be sufficient to maintain operation throughout the time of the fair (approximately four hours). Storage batteries shall be encased so that they will not cause damage.
- 5.9 No open fires will be allowed.
- 5.10 Projects concerning ballistics and items which could be construed as weapons will adhere to [CSSD11 BOE Policy JICI](https://www.d11.org/Page/1792) (see <https://www.d11.org/Page/1792>). Photographs are encouraged to display information. No demonstrations permitted.

Scientific Process Display Board

Displays must be free-standing
Maximum display size: 48" H X 36" W X 28" D

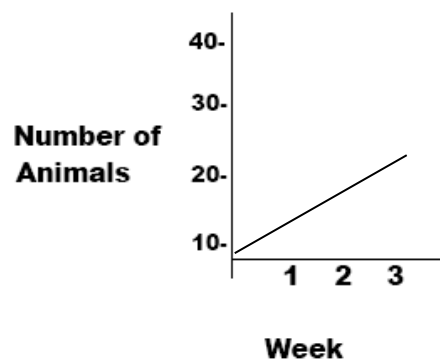


Fertilizer vs. Height



**Average height of plants grown
in different fertilizers**

Animal Growth Rate

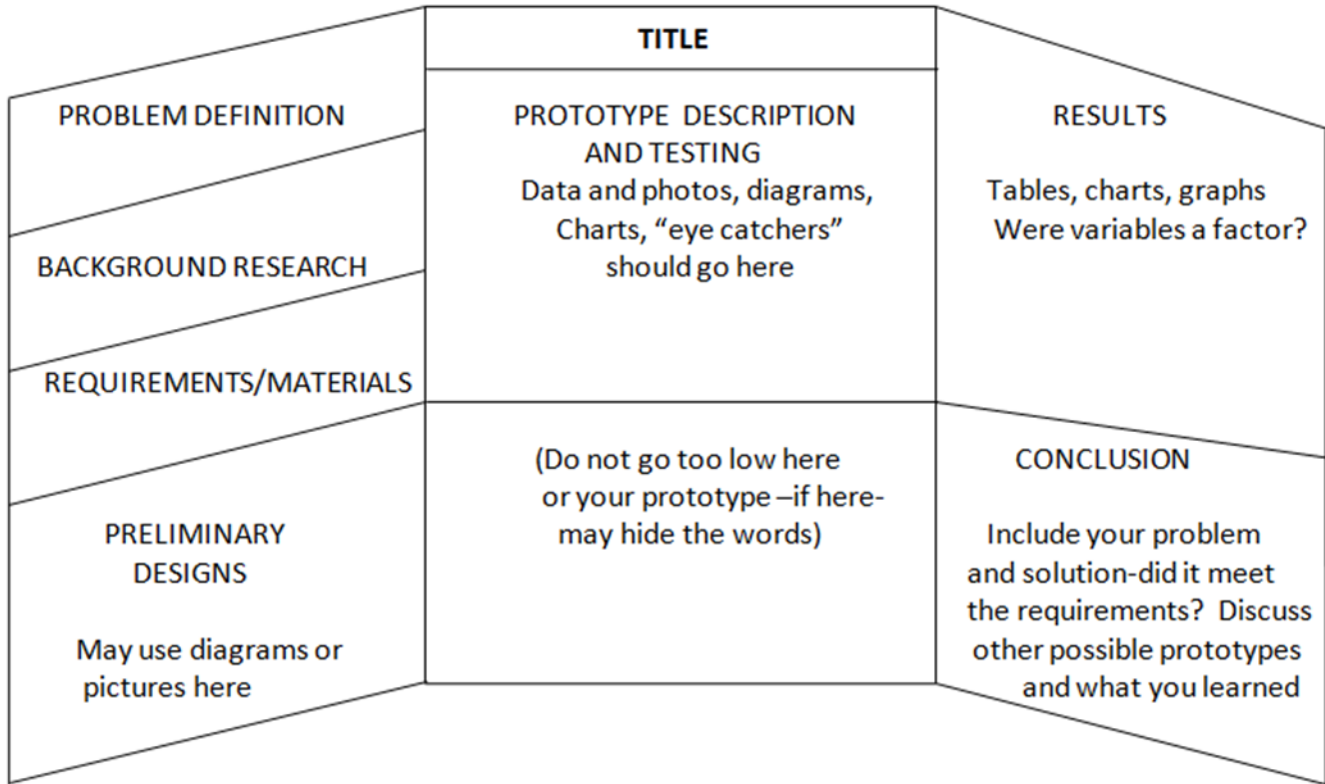


Number of animals per week

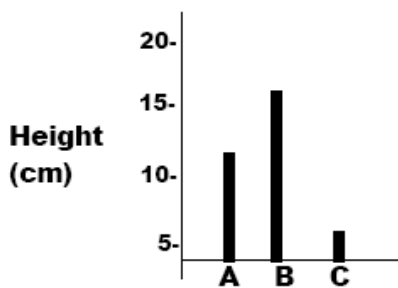
Graphs should include a TITLE, AXES SCALE, AXES LABELS and UNITS.
Select the type of graph that is best going to display and highlight your data.

Engineering Design Display Board

Displays must be free-standing
Maximum display size: 48" H X 36" W X 28" D



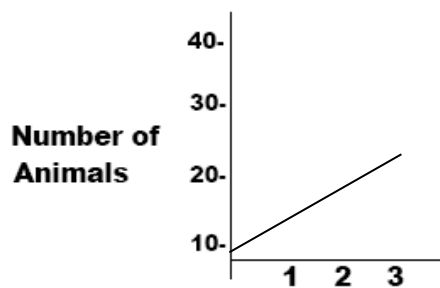
Fertilizer vs. Height



Fertilizer Type

**Average height of plants grown
In different fertilizers**

Animal Growth Rate



Week

Number of animals per week

Graphs should include a TITLE, AXES SCALE, AXES LABELS and UNITS.
Select the type of graph that is best going to display and highlight your data.

SCIENTIFIC PROCESS Rubric

Judge Number _____

Project Title _____

Category _____ **Project #** _____

Scientific Process	Needs Improvement	Satisfactory	Good	Excellent	Superior
Testable Question					
Research Present					
Hypothesis if....then statement					
Variables Defined					
Design procedure					
Materials					
Results: graphs, charts & journals with units					
Conclusion/Reflection					
Presentation	Needs Improvement	Satisfactory	Good	Excellent	Superior
Display: organized & attractive to audience					
Display: student uses notebook to discuss findings & data					
Oral Discussion Quality					
Time and Effort	Needs Improvement	Satisfactory	Good	Excellent	Superior
Thoroughness					
Effort					
Scoring					
Checks per column					
Multiply by	X 1	X 2	X 3	X 4	X 5
Totals	+	+	+	+	=
				Grand Total	

ENGINEERING DESIGN Rubric

Judge Number _____

Project Title _____

Category _____ **Project #** _____

Engineering Design Process	Needs Improvement	Satisfactory	Good	Excellent	Superior
Problem addresses a real and specific need					
Research Present					
Requirements and materials specified					
Preliminary design evidence (more than one solution)					
Well-developed prototype					
Defined prototype testing					
Results: graphs, charts & journals with units					
Conclusion/Reflection (supported with data)					
Presentation	Needs Improvement	Satisfactory	Good	Excellent	Superior
Display: organized & attractive to audience					
Display: student uses notebook to discuss findings & data					
Oral Discussion Quality					
Time and Effort	Needs Improvement	Satisfactory	Good	Excellent	Superior
Thoroughness					
Effort					
Scoring					
Checks per column					
Multiply by	X 1	X 2	X 3	X 4	X 5
Totals	+	+	+	+	=
				Grand Total	

Registration

Registration is limited to the first 125 participants.
Registration deadline **11:59 PM Sunday, April 9th**
No late registrations accepted.

Registration

1. Go to <https://www.d11.org/Page/5377>.
2. Click the link for the ZFairs platform.
3. Create an account or login in to your account if you are a returning participant.
4. Register student and project.

THANK YOU FOR SUPPORTING OUR YOUNG SCIENTISTS AND ENGINEERS!



Contact Darian Founds, PPESEF Director, at darian.founds@d11.org or 719-520-2034