

2019 Canyon Vista SCIENCE & ENGINEERING EXPO Entry Form

EXPO ENTRY FORM FINAL DEADLINE:

Wednesday, January 30, 2019 at 2:05 PM

TURN IN THIS ENTRY FORM TO THE FRONT OFFICE IN THE SCIENCE ENVELOPE

Note: Unless notified by February 14th consider your application accepted.



ENTERING SCIENCE & ENGINEERING EXPO AS A(N) (select one):

1. **Individual**

2. **Group** (submit ONLY one entry form per group, with **maximum group size of 3** per group).

Designate the person in group in the highest grade level to be the group leader, or if in same grade pick one person.

3. **Class** (one entry form per class, teacher is the Participant on the entry form)

Participant Name(s), Grade Level(s) and Teacher(s) of each participant:

1. _____
2. _____
3. _____

Group Leader (if participating in a group): _____

Parent Contact (or Teacher if a class project): _____

Email (please print clearly): _____ Telephone: _____

WHAT IS THE SCIENTIFIC INQUIRY OR ENGINEERING CHALLENGE YOU PLAN TO EXPLORE? (Choose one)

• SCIENTIFIC INQUIRY

Does _____ affect _____?
(Independent Variable) (Dependent Variable)

OR

1) ENGINEERING CHALLENGE (Select One)

- Build a bridge that can support at least 1/2 lb (the equivalent of 100 pennies in a cup). Aim for the most weight!
- Create an electrical circuit that turns something on or moves something, using only a battery or solar power.
- Build a vehicle that can move under self-propulsion without electrical input, (for example, rubber band-powered).
- Build a musical instrument.

I Understand:

- Adult supervision and use good safety practices are required at all times.
- No animals or hazardous chemicals/materials may be used for projects.
- Canyon Vista PTA, Canyon Vista Elementary School, and event volunteers are not responsible or liable for any damage, injury, harm, etc., resulting from conducting science or engineering projects or participation in the Expo.
- Project displays will be limited to a 36" H x 48" W, tri-fold, self-standing display boards.
- **Small Props will be allowed, BUT must conform to the following RULES:**
 - They must be **safe, non-hazardous, non-spillable, stable for transport, and fit in the confines of your poster display board, measuring no larger than 24" long x 10" deep**. If your prop is larger, please take plenty of pictures of it, but please leave it at home.
- It is the discretion of the Science Committee to decline a project if it is not appropriate to the student's grade level and limit the number of projects with the same inquiry (i.e., Mentos experiment, flowers changing color).
- Display boards should be dropped off on Wednesday, March 20, 2019, between 7:00-7:40 AM or 2:00-3:00 PM in the MPR.
- Props will be set up by the student, not the PTA volunteers, so arrive early enough to check in and set these up.
- Displays will be available for viewing during school and at the Science & Engineering Expo, the same night as Curriculum Night: Thursday, March 21, 2019, from 4:00-7:00 PM in the MPR. Please note: Projects will not be judged.
- Display board and props (if used) must be taken home at the end of school on Friday, March 22, 2019.
- By signing below, I give permission for the participant(s) above to participate in the 2019 CVES Science & Engineering Expo.

Parent/Guardian/Teacher Signature

Date

Contact the Science Committee with any questions:
Heather Brusky (twinfitz@hotmail.com) or Cindy Klein (cklein92656@yahoo.com)

2019 Canyon Vista SCIENCE & ENGINEERING EXPO Information

KEEP THIS ON YOUR FRIDGE!

KEY DATES:		
Expo Entry Form Deadline (all projects)	Project Drop-off (with props, if used)	Science & Engineering Expo
<u>Wednesday, January 30, 2019</u>	<u>Wednesday, March 20, 2019</u>	Curriculum Night
2:05 PM	7:00-7:40 AM or 2:00-3:00	<u>Thursday, March 21, 2019</u>
Front Office	Multi-Purpose Room (MPR)	4:00-7:00 PM (MPR)

WHAT IS THE SCIENCE & ENGINEERING EXPO?

An opportunity for students to conduct a scientific or engineering project to share with their peers and community. The purpose is to encourage curiosity and enthusiasm for science and engineering. Students will conduct a scientific inquiry or engineering project and prepare a display board. ***Students may bring props, as long as the rules below are followed.

WHEN AND WHERE IS THE SCIENCE & ENGINEERING EXPO?

The same night as Curriculum Night, Thursday, March 21, 2019 from 4:00-7:00 PM, in the MPR.

WHO MAY PARTICIPATE?

Any Canyon Vista student may enter as an individual, group, or class.

HOW DO I PARTICIPATE? Pick either a scientific inquiry OR an engineering challenge.



1. **Develop a scientific inquiry to study.** "Does _____ affect _____?"

PLEASE WRITE IT DOWN HERE SO YOU DO NOT FORGET YOUR QUESTION!!!

- **If choosing to do an Engineering Project, please choose from the 4 Challenges below:**

- Build a Bridge that can support at least 1/2 lb (the equivalent of 100 Pennies in a cup). Aim the most weight!
- Create an electrical circuit that turns something on or moves something, using only a battery or solar power.
- Build a vehicle that can move under self-propulsion without electrical input (for example, rubber band- powered).
- Build a musical instrument

UNLESS NOTIFIED BY 2/14/19, CONSIDER YOUR APPLICATION ACCEPTED, AND START YOUR WORK:

- **Conduct your scientific study or engineering project.** Remember to have adult supervision and use good safety practices. **Remember: No animals or hazardous chemicals/materials may be used for projects.**
- **Take photos of yourself with your scientific study or project.** If interested, please submit photos to <http://community.pictavo.com> (school code: 50561) for a possible inclusion in the 2018-19 Canyon Vista Yearbook.
- **Prepare a display board.** Display boards (36"H x 48" W, tri-fold, self-standing) are available in stores, such as Michaels, Hobby Lobby (watch for the 40% coupons) and Staples. Please contact Mrs. Dagley if you need financial assistance to purchase a display board. Be sure to include photos of your scientific study or the making of your engineering project on the display board. **See the Project Help Guide on the PTA website@ CanyonVistaPTA.com** for more information on what to include on your display board and how to properly conduct a scientific experiment.

BRING YOUR GREAT PROJECT TO SCHOOL FOR ALL TO ADMIRE AND LEARN FROM:

- **Drop off your display board on Wednesday, March 20, 2019, between 7:00-7:40 AM or 2:00-3:00 PM in the MPR.** Props will be set up by the student, not the PTA volunteers, so arrive early enough to check in and set these up.
- **Attend Science & Engineering Expo, along with Curriculum Night, on Thursday, March 21, 2019, from 4:00-7:00 PM in the MPR.** Students will also have the opportunity to view the projects during the school day with their teachers on March 21st and March 22nd. Please note: Projects will not be judged.
- **Take your display board and props (if used) home at the end of school on Friday, March 22, 2019.**

*** Small Props allowed, BUT please remember the following RULES:

They must be safe, non-hazardous, non-spillable, stable for transport, and fit in the confines of your poster display board, measuring no larger than 24" long x 10" deep. If your project used larger items, it is okay! Just take lots of pictures to display your cool work on your display board! However, we can not accommodate larger props, so please leave them at home.

Canyon Vista PTA, Canyon Vista Elementary School, and event volunteers are not responsible or liable for any damage, injury, harm, etc., resulting from conducting science or engineering projects or participation in the Expo.

Contact the Science Committee with any questions:
Heather Brusky (twinfitz@hotmail.com)
Cindy Klein (cklein92656@yahoo.com)

A program of the 2018-19 Canyon Vista PTA.

2019 Science & Engineering Expo PROJECT HELP GUIDE

SCIENTIFIC METHOD (FOR SCIENTIFIC INQUIRIES)

2. Choose a **Question** to investigate ("Does ____ affect ____?" works well for investigations).
3. Determine **Constants** (things that stay consistent in experiment), the **Independent Variable** (the one thing you change in the experiment) and the **Dependent Variable** (the one thing that changes based upon the independent variable) for your experiment.
4. Conduct **Background Research** and get advice on your topic.
5. Develop a **Hypothesis** based upon your background research.
6. Decide on **Procedures** you will use to test your hypothesis. Be sure to run at least 3 trials.
7. Make a list of **Materials** you will need. Gather your materials.
8. Conduct your **Investigation**. Collect **Data**. (Be sure to have adult supervision and use good safety practices).
9. Organize your data. Summarize your **Results**. Use charts and graphs.
10. Write the **Conclusion** based upon the results of the investigation. Compare to hypothesis.
11. Consider any future investigations to answer other questions or extend your experiment.

SELECTING A SCIENTIFIC INQUIRY TOPIC

When considering a project topic, ask yourself:

- What are your interests?
- Are there any questions you have asked or pondered?
- Do you prefer Earth, Life or Physical Science?
- What sparks your curiosity?
- Consider: Does ____ affect ____?

SAMPLE SCIENTIFIC INQUIRIES

BIOLOGICAL:

4. How does age affect a person's reaction time?
5. What is the effect of different soil types on plant growth?
6. Do different types of fertilizer affect plant growth?
7. What are the effects of sugar on growth of yeast?
8. How does pulse rate change with body temperature?
9. Does the size of the seed affect the plant's growth?
10. How does the temperature affect the number of seeds that germinate?
11. How do different forms of exercise affect heart rate?
12. How does salt affect the growth of rye grass seeds?
13. How does environment affect the growth of mold?
14. What are the effects of cleaning agents on the growth of bacteria?
15. Will different liquids affect the germination of seeds?
16. Does water temperature affect the growth of hydroponic plants?
17. What effect does acid rain have on plants?
18. How do different types of water affect bread mold growth?
19. Do different additives in water prolong the life of freshly cut flowers?
20. How does the pH of the soil affect seed germination?
21. What is the effect of light energy on bacteria?
22. How does the amount of disinfectant affect the growth of algae?
23. How does temperature affect plant life?

PHYSICAL:

4. What are the effects of different colored containers on the retention of heat?
5. What is the effect of placement of weight on a plane flight?
6. Does the temperature of water affect the time it takes to freeze?
7. Does heat affect the speed of crystallization?
8. Does an electromagnet get stronger as the current goes up?
9. Will different liquids evaporate at different rates?
10. Do different metals conduct heat at different rates?
11. Does the size of a soccer ball affect how high it will bounce?
12. How does corrosion affect different kinds of metals?
13. Are different materials better insulators of heat?
14. How does the angle a rocket is launched affects its trajectory?
15. Do boats carry more weight in tap water or salt water?
16. How do different types of landscaping affect erosion?
17. Will different liquids affect the amount of electrical current that passes through them?
18. Will various substances affect the time it takes an ice cube to melt?
19. Do different kinds of water affect the rate a nail will rust?
20. Do different geometric shapes have varying structural strengths?
21. Does temperature affect the bonding of glue?
22. Does the shape of a paper airplane affect its flight time?
23. How do lubricants affect the amount of friction?

Looking for more topics? Try searching online or in books for "Elementary Science Fair Questions."

2019 Science & Engineering Expo PROJECT HELP GUIDE

ELEMENTS NEEDED FOR YOUR SCIENTIFIC INQUIRY

- **Scientific Inquiry** (Does _____ affect _____?)
- **Student Scientist Name(s)**
- **Grade/Teacher**
- **Hypothesis** (I think _____ because _____)
- **Constants** - Things that stay consistent in the experiment.
- **Variables**
 - Independent Variable (the one thing you change in the experiment)
 - Dependent Variables (the thing that changes based upon the independent variable)
- **Background Research/Bibliography** (if applicable)
- **Materials List**
- **Procedures**--Be sure to run at least 3 trials of your experiment.
- **Data**--Use a chart to show data collected during the 3 trials of your experiment.
- **Results** --Present your results in a graph by totaling or averaging the data you collected.
- **Conclusions**—Summarize results and compare to hypothesis.
- **Photos or Drawings**--Help the project come alive to your audience!

SAMPLE LAB WORKSHEET

* Note: This is not required to be completed, but may assist you as a guide to conduct your experiment *

Scientific Method

QUESTION: Does the _____ _____ affect _____ _____	HYPOTHESIS: I think _____ _____ because _____ _____	MATERIALS: 	PROCEDURES: 1.
CONSTANTS: The constants are: _____ _____	DATA: Trial: 1 2 3 Total: Divide by 3 Average result:	GRAPH: 	CONCLUSIONS: _____ _____ _____ _____ _____ _____ _____ _____
VARIABLES: The independent variable is: _____ The dependent variable is: _____ _____			

2019 Science & Engineering Expo PROJECT HELP GUIDE

ELEMENTS NEEDED FOR YOUR ENGINEERING CHALLENGE:

Adapted from Mister Science Fair: <http://mistersciencefair.com/getting-started/engineering>

Just like the Scientific Method, the **Engineering Method** includes a series of steps that serve as a guideline, but not to answer a question. With the Engineering method, the goal is to address a need or to solve a problem.

7 Steps to the Engineering Method:

1) **Decide which Challenge you want to solve.** The first step in The Engineering Method is to identify a need and to define a problem. We have chosen this for you already. You need to pick just one from the list of 3 below:

1. Build a bridge that can support at least 1/2 lb (the equivalent of 100 pennies in a cup).

How much can your bridge hold? Aim for the most weight!

2. Create an electrical circuit that turns something on or moves something, using only a battery or solar power.

3. Build a vehicle that can move under self-propulsion without electrical input, (for example, rubber band-powered).

2) Do some **background research** about your selected problem. Examine the issue and current solutions. You would also need to research what other solutions have already been tested or built.

3) **Brainstorm** about possible solutions with your parents and/or teachers. Use science and math to figure out a few **possible solutions** to the problem. Determine which solutions best meet the original needs and requirements of the problem. Select one solution to develop and try to come up with a rough drawing or model of what your project will look like when it's finished.

4) This is the fun part and is the real difference between a Science Project and an Engineering Project. It's called the **Design, Development, Fabrication, Validation and Testing** phase. You need to come up with a design and build a model of your project, then test it and evaluate the solution. Does it work? Does it meet the original design issues and concerns?

5) **Record the results** of everything you do and every step you take on your Engineering Project in a notebook. Don't just take notes but **draw pictures**, use your camera to **take pictures** of yourself as you work on your project and make simple charts, lists and graphs in your notebook if applicable. **Record all observations** even if they seem simple or uninteresting. Make sure every entry is dated and is in a bound notebook, not a loose-leaf binder. You'll be surprised how much of your data and notes you'll end up using as part of your display board or report. You'll also be able to share the information with others who are interested in what you did as part of your project, like your teachers and peers. If you create something important through your experiments, others will want to be able to repeat your experiment and they can only do this by following your records of what you did and how you did it. You might even be able to file for a patent or a copyright on your project!

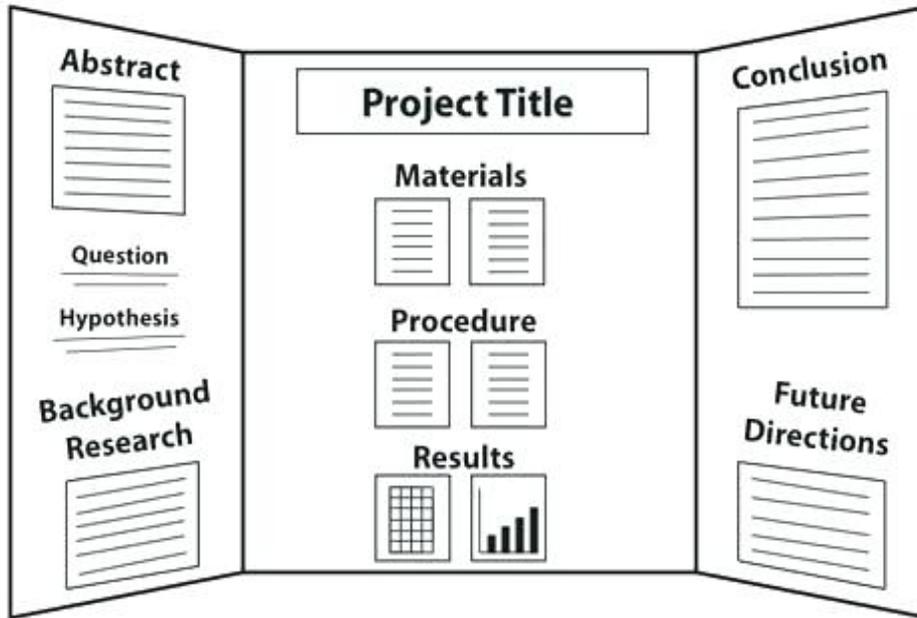
6) **Redesign and Retest** if necessary. If your project did not work as you originally thought it would, you should consider going back to Step 2), doing more research and coming up with another solution based on the information you came up with during the tests.

7) **Draw a conclusion and present the results on your display board.** What are your conclusions? Did your solution meet the needs of the initial problem? Do you think it was the best solution? Can you come up with any impact of your solution to people you know, worldwide? The conclusions should include any surprises you found in the results and thoughts about possible future project improvements. It's okay if your project was not as successful as you thought it would be, but if it didn't work then try to figure out why and be prepared to explain it to the judges or to include it in your report.

2019 Science & Engineering Expo PROJECT HELP GUIDE

Key Info

- For your Science or Engineering Project you will need to prepare a **display board** to communicate your work to others. You will use a standard, three-panel display board that unfolds to be 36" tall by 48" wide.



Organize your information like a newspaper so that your audience can quickly follow the thread of your experiment by reading from top to bottom, then left to right.

Include each step of your science or engineering project, as well as your name, grade and teacher:

- **For Science Inquiry Project:** you may include your abstract, question, hypothesis, variables, background research, results of your trials, conclusion, pictures of your experiment (if not bringing in a prop), etc.
- **For Engineering Challenge Project:** include the Challenge you participated in, the procedures you took to create it, pictures of your project in steps and final product (if not brought in as a prop) things that failed, and how you think it could be improved if using different techniques or materials (see The Engineering Method for more info in the Project Help Guide).

Use a font size of at least 16 points for the text on your display board, so that it is easy to read from a few feet away. It's OK to use slightly smaller fonts for captions on picture and tables.

The title should be big and easily read from across the room. Choose one that accurately describes your work, but also grabs peoples' attention.

Follow the rules of the Science & Engineering Expo.

- **Adult supervision** and use **good safety practices** are required at all times.
- **No animals** or **hazardous chemicals/materials** may be used for projects.
- They must be **safe, non-hazardous, non-spillable, stable for transport, and fit in the confines of your poster display board, measuring no larger than 24" long x 10" deep.** If your project used larger items, it is okay! Just take lots of pictures to display your cool work on your display board! However, we can not accommodate larger props, so please leave them at home.

2019 Science & Engineering Expo PROJECT HELP GUIDE

Does your display board include:

- Title
- Abstract
- Question
- Variables and hypothesis
- Background research
- Materials list
- Experimental procedure
- Data analysis and discussion including data chart(s) & graph(s)
- Conclusions (including ideas for future research)
- Acknowledgments
- Bibliography

Yes / No

Are the sections on your display board organized like a newspaper so that they are easy to follow?

Yes / No

Is the text font large enough to be read easily (at least 16 points)?

Yes / No

Does the title catch people's attention, and is the title font large enough to be read from across the room?

Yes / No

Did you use pictures and diagrams to effectively convey information about your science fair project?

Yes / No

Have you constructed your display board as neatly as possible?

Yes / No

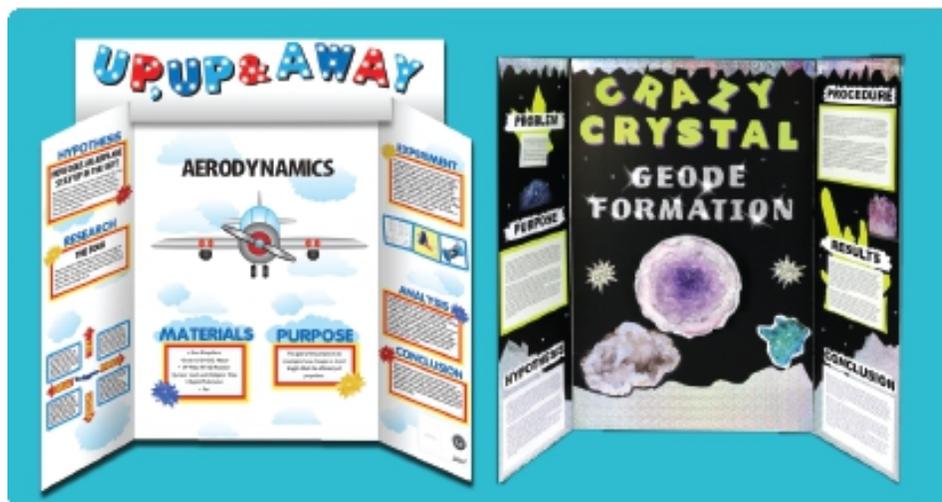
Did you proofread your display board?

Yes / No

Did you follow all of the rules pertaining to display boards for your particular science fair?

Yes / No

A picture speaks a thousand words! Use photos or draw diagrams to present non-numerical data, to propose models that explain your results, or just to show your experimental setup. But, don't put text on top of photographs or images. It can be very difficult to read.



Canyon Vista
PTA
everychild.one voice