

# Official Handbook for Flora Singer Science & Engineering Fair

Saturday, March 18, 10:00 am - 12:00 pm

Student Set Up: Friday, March 17, 8:00 pm - 9:00 pm

Location: All Purpose Room and Gymnasium

Official Site: <http://florasinger.oursciencefair.com>

For more Information: [flora.sciencefair@gmail.com](mailto:flora.sciencefair@gmail.com)



# General Information

- All grades (K-5) are welcome and encouraged to participate.
- Each student chooses, organizes and completes one science or technology project at home.
- Projects should be student driven Ideas should come from the students. Parent guidance is encouraged. However, parents should use their best judgment in deciding when to get involved, such as when there is a potential safety issue. It is important that the kids be able to call the project their own.
- Students may work on their project independently, or in a small group (max 3-4 students).
- Each participant will have an opportunity to briefly present their project to an expert and receive a participation certificate. A schedule with presentation times will be made available on the day of the fair.
- A display board is required to present your results. Display boards (48" X 36" with header in white) can be purchased from the PTA. The money will support the event.
- It is not a problem if your experiment or invention doesn't turn out the way you plan it. In science and technology, results are frequently different from expectations. This leads to even more discoveries.

**In order to participate, Registration and Permission forms need to be filled out and signed by a parent.**

Forms can be returned via backpack to your child's teacher or via email to [flora.sciencefair@gmail.com](mailto:flora.sciencefair@gmail.com) Forms can also be found on our website: <http://florasinger.oursciencefair.com>

# Project Guidelines

**The student's project topic must be approved by the Science Fair Committee.**

Make sure to clearly write down on the Registration Form your information. If the project topic is not approved, you will receive an email from [flora.sciencefair@gmail.com](mailto:flora.sciencefair@gmail.com) or will be contacted by phone.

- Two type of projects are recommended: **“The Scientific Method”** or **“How Stuff Works”**.
- Investigations involving living creatures (pets or wild animals) will not be approved.
- No open flames, dangerous chemicals, or sharp objects are permitted for safety reasons.
- Please do not bring food samples, molds or yeasts to the fair for health reasons! Models that involve food, including candies, are allowed only if not shared with the audience and stored in well-sealed containers not to be opened.
- If you are bringing a model we suggest that you also bring a "DO NOT TOUCH" sign. We expect a big crowd so we don't want participants to lose any of their wonderful project accessories.
- If you need an electrical outlet, you will need to bring an extension cord and a surge protector and specify on the Registration Form that you will need an electrical outlet. Make sure that all electrical materials and wires are safe and insulated if used.
- If you are bringing a volcano, a bottle fountain model or any "possible messy" models, please bring a tarp or old towel to place on the floor or around the model. No solvents are allowed inside the school.

# Examples of Past Projects



From the “**Candy Corner**” category:

- How are different dyes used to make up the different colors of the outsides of M&Ms?
- How does light and temperature affect the rate of rock candy crystals?
- Ratio of 49 Jelly beans flavors in 4lb package

From the “**It’s a Snap!**” category:

- Making a battery--powered light bulb
- Snap circuits parts to build an electronic spinner
- Is it a conductor?
- Electrical city model

From the “**Newton’s Nook**” category:

- How do different environments affect the evaporation of water?
- Which objects float and which objects sink in different liquids?
- How does the Solar System work?

From the “**Brain Benders**” category:

- How old are some trees in the Forest Estates neighborhood?
- How does the behavior of a beta fish change when its environment changes?
- How did dinosaurs disappear?
- How is the rainbow made?

From the “**Rock and Roll**” category:

- How does a volcano erupt?
- Fossils and how they are formed
- How do waves build and erode the beach?

From the “**It’s Alive!**” category

- How do different moisture levels affect the rate of decomposition of animal flesh and bones?
- How does light affect spring bulbs?
- Does water make mold grow faster on bread?
- What is the best thing to start seeds in?
- DNA extraction from an onion.

# The Scientific Method

## Step 1: Ask a Question

Observe and ask questions such as WHY? and HOW?

Research for a possible answer (school library, web, books...)



*Example: How does adding sand to potting soil affect the growth of a bean plant?*

## Step 2: Hypothesis

Predict and write down a possible answer to your question or problem.

Congratulations! You came up with your hypothesis!



*Example: If I plant a bean seed in 100% potting soil then it will grow taller than a bean seed in 50% potting soil and 50% sand because potting soil has more nutrients.*

# The Scientific Method

## Step 3: Materials

Make a list of the things you will need for your experiments.

*Example:*

- *4 cups of potting soil*
- *1 cups of sand*
- *6 bean seeds*
- *6 clear plastic 9 oz. cups*
- *water*
- *metric measuring cup*
- *spoon*

# The Scientific Method

## Step 4: Experiment

- Plan an experiment to test your hypothesis.
- Conduct the experiment.
- Don't forget to write down your observations and results.
- Confirm the results by repeating the experiment.



### Example:

1. Label three plastic cups "Potting Soil 1", "Potting Soil 2", and "Potting Soil 3".
2. Fill each cup labeled "Potting Soil" with 1 cup of potting soil.
3. Label the other three plastic cups "Potting Soil and Sand 1," "Potting Soil and Sand 2," and "Potting Soil and Sand 3".
4. Fill each cup labeled "Potting Soil and Sand" with  $\frac{1}{2}$  cup potting soil and  $\frac{1}{2}$  cup sand and mix them with the spoon.
5. Dig a  $\frac{1}{2}$  inch deep hole in the center of each cup.
6. Place a bean seed in each hole.
7. Spread the soil over the bean seed.
8. Water each seed with 25 ml of water.
9. Place the cups in a sunny window.
10. Repeat step 8 daily for three weeks.

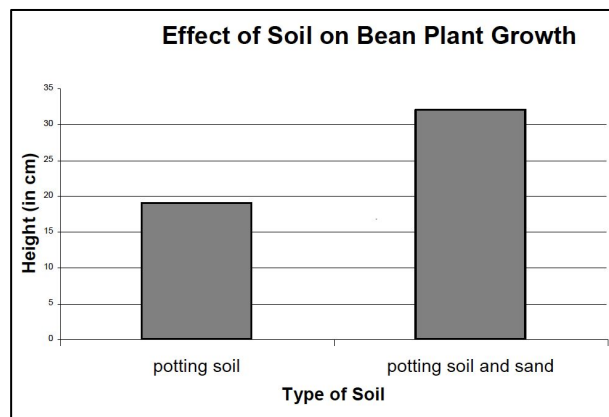
# The Scientific Method

## Step 5: Data Analysis

Organize and communicate your results. You can include tables, graphs, photographs, movies...

*Examples:*

Type of Soil	Trial 1	Trial 2	Trial 3	Average Height in cm.
Potting Soil	20 cm	18 cm	19 cm	19 cm
Potting Soil and Sand	32 cm	33 cm	32 cm	32.33 cm



## Step 6: Conclusions

- What did you learn?
- Was your hypothesis correct?
- What questions do you have now?
- What recommendations you have for further study and improvements?
- Don't get upset if your hypothesis was wrong. Be happy because you learned something new!

*Example:*

*The bean seeds planted in 50% potting soil and 50% sand grew taller and had more leaves than the bean seeds planted in 100% potting soil.*



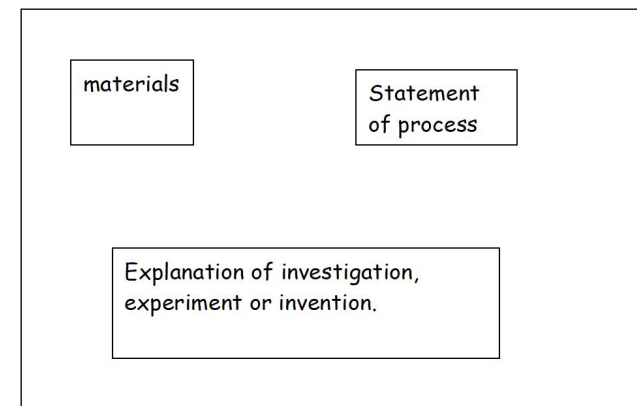
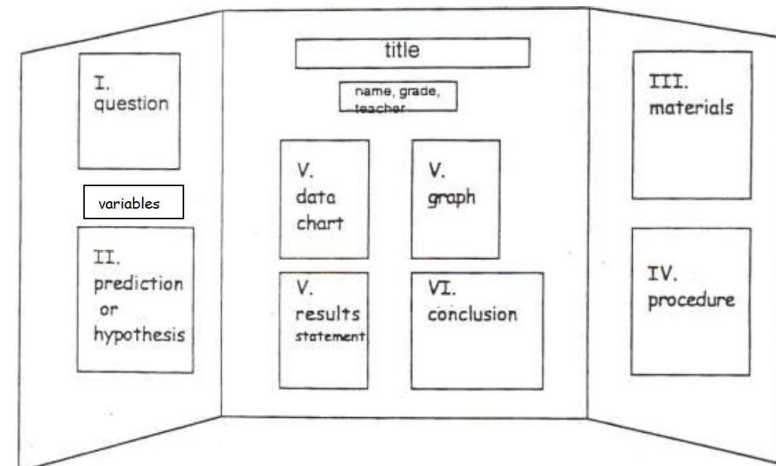
# The Scientific Method

## Step 7: Prepare Presentation

You can display your project on a tri-board (max 36 x 48 inches).

Make sure to include the following on your presentation:

- Title
- Name of Student
- Name of Teacher
- Hypothesis
- Methods and Materials
- Procedure
- Results
- Conclusions



# Need Help Finding a Topic

- When it comes to choosing a topic, the sky is the limit. The best topics come from your own genuine curiosity about how something works or why something is the way it is.
- The Flora M. Singer ES Media Center has a vast and comprehensive collection of books for all grades (K-5) on Science and Engineering fair projects.
- Some of the books illustrate step-by--step instructions for how to conduct an experiment.
- The Media Center is opened to parents on Thursdays from 3:40 pm to 4:15 pm.
- Examples of science fair project book topics that you can find at the Media Center: Sports, Senses, Air, Energy, Propulsion, Dry Ice, Heat, Liquids, Weather Science , Plant and Animal Science, Cell and Microbe Science, Environmental Science, Light , Sound, and Waves, Forces and MoMon, Water Science, Earth Science, Planet Science, Electricity and Magnetism, etc.

# Web Resources

## **PBS Kids DragonflyTV**

You can turn the investigations that you see on DragonflyTV into your own science fair project!

<http://pbskids.org/dragonflytv/scifair>

## **Discovery Education**

Good resource for projects.

<http://school.discoveryeducation.com/sciencefaircentral/>

## **Science Buddies**

Looking for inspiration for a science fair project? Science Buddies has over 1,150 project ideas.

<http://www.sciencebuddies.org>

## **All Science Fair Projects**

Projects for all levels. Hundreds of ideas for every science topic.

<http://www.all-science-fair-projects.com>

## **School Water Test Kits**

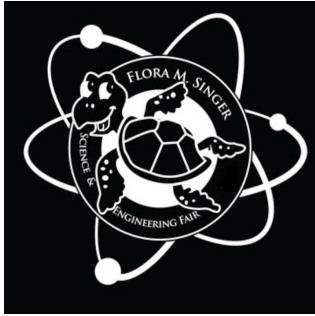
Project ideas plus supplies and experiment kits for sale.

<http://sciencefaircenter.com/>

## **California Energy Commission**

Several ideas here cannot be done without direct parent involvement in the experiment.

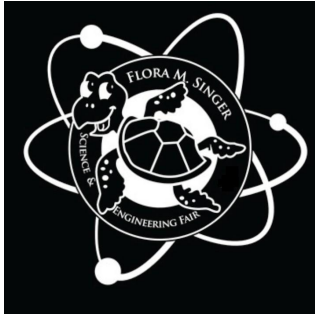
<http://www.energyquest.ca.gov/projects/index.html>



## Flora Singer Science and Engineering Fair Registration Form - Due February 3, 2017

Register to participate using the online form that you can find at the official site <http://florasinger.oursciencefair.com> or return this form via backpack.

Student (First, Last Name)	
Teacher (Name, Grade)	
Display Board (Order \$7) If "Yes." please include \$7 or a check written to "Flora Singer ES PTA"	Yes ___ No ___
Parent (First, Last Name)	
Phone Number	
Email Address	
Project Title (can be submitted or edited later)	
T-shirt Size	XS ___ S ___ M ___ L ___ XL ___ Adult S ___



## Flora Singer Science and Engineering Fair Permission Form - Due February 3, 2017

Submit Permission form using the online form that you can find at the official site <http://florasinger.oursciencefair.com> or return this form via backpack.

**Parents - by filling in the boxes below, you agree that:**

Your young scientist or engineer has your permission to participate in the science fair.	Yes ___ No ___
Any photos or videos of your student(s), taken by the PTA or submitted by you, may be included in science fair slide show and displayed during the fair.	Yes ___ No ___
You will ensure that appropriate safety precautions are taken when performing experiments at home or elsewhere, and that no experiment causes harm to any person or animal. Flora Singer ES and the PTA may not be held responsible for any loss or damages.	Yes ___ No ___
The Fair will be held on Saturday, March 18, 10 am - 4pm in the All Purpose Room and the Gym. Please make sure to arrive by 9:45 am. We ask that a parent remain at the display board with their child to assist.	
Set up of the students' displays will be on Friday, March 17, 8 pm - 9 pm in the All Purpose Room and the Gym. Please bring your display boards and other items to display.	