

Trace Elementary Science Fair 2017 Handbook



Welcome to the 2017 Trace Elementary Science Fair!

Congratulations! You have decided to participate in the Science Fair! On the pages that follow, you will find details about the types of projects that can be done, where to research, and how the project will be judged. But first, an overview of the next few months:

1. **Jan 18:** Flyers with registration information will be in the Wednesday envelopes. Get them back to your teacher as soon as possible!
2. **Jan 18:** This handbook will be available on the PTO website and distributed to interested students.
3. **ASAP:** Get working on your project!
4. **Jan 30:** Confirmation forms will be sent to registered students the week of Jan 30 (to finalize the number of boards needed).
5. **Feb 16:** Students who confirm they are doing a science project will be given a tri-fold standing board to display their project. The board will include a space number to guide set-up the day of the science fair.
6. **March 23:** Science Fair Projects need to be delivered to the multipurpose room by 8:30 AM.
7. **March 23:** Science Fair, 6:30pm. All students who have created a display board are encouraged to attend, present their project to the judges, and be eligible for a prize!

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First, the Rules!

1. Students can enter only one project in the science fair.
2. Groups of up to 3 students may work on a project together.
3. Students can get advice and help from adults, but the student should be doing the actual work on the project.
4. All projects must be displayed on the display board provided by the PTO.
5. Students do not have to attend the science fair and explain their project to the judges, but since this is an important part of the project it is included in the scoring.
6. First, second, and third prize ribbons will be awarded at the end of the science fair for each grade level. Additional prizes may be awarded in addition to the ribbons
7. Items that are expensive, fragile or irreplaceable should **not** be displayed with your project (take a picture instead!).
8. The following may NOT be used in your project:
 - illegal substances
 - explosives, open flames
 - dangerous chemicals
 - any other safety hazard, whether part of your experiment or the experiment itself
9. Sorry, NO VOLCANOES!

And now on to the fun stuff!

Wait, you think science is not fun?

Honestly, *seriously*, this is probably because you haven't seen a part of science that interests YOU. This is your chance to change all that!

Does someone in your family drink decaf coffee? Ever thought about how they get the caffeine out? Chemistry!

Do you watch the weather report on the news? How do they predict the weather? Physics!

Do you know someone with cancer who was made better for a while or cured with medicine? It takes biology to discover the medicine (and then biologists, chemists, and engineers to make the medicine).

Ever thought about the dust on your floor? Do you know what is in a dust ball? Dirt, lint, *bugs*? Biologists can figure it out!

Liking science starts with being curious about the world around you. Finding out more by investigation and experimentation requires creativity just like your art class. Go ahead...give it a try!

Choosing a project

For our science fair we'll have 5 types of projects:

- Collections (open only to K-2)
- Demonstrations (open only to K-3)
- Models
- Experiments
- Inventions

1. Collections

For students Kinder-2nd grade only. Collections of rocks, seashells, leaves or other items from nature.

- They should be labeled with the name of the rock (research time!), where it was found/came from, etc.
- Think about how you can be creative in this project – group the items by color, shape, or use a map to show where they came from.
- Explain on your board why you chose this collection
- These must be primarily attached to the board (a few on the table is ok) – if this is not possible, please use pictures.

2. Demonstrations

For students Kinder-3rd grade only. A demonstration is:

- Re-testing an experiment that has already been done by someone else
- Demonstration of a particular scientific principle or fact, such as the law of gravity, the law of motion, magnetism, etc.

3. Models

A model involves building a model (of an apparatus or of something found in nature) in order to illustrate a scientific concept or principle.

- Model of an apparatus. Students should be able to explain the importance and use in detail.
 - Examples: build and show the function of a radio, a greenhouse, Hover craft, sun dial, solar panel, pinhole camera, super coiling or wind vane
- Model of nature. Students should be able to explain the importance and function in detail.
 - Examples: Make a model of the eye, of the ocean floor, of a cross-section of skin, earth/sun eclipse. Each should show the cross-section, cut-away, etc. as needed to show all of the important parts.

4. Experiments

In this project you use the scientific method to propose and test a hypothesis. Design an experiment to investigate a question, record and report the results, and draw conclusions based upon the results.

- Examples
 - How do preservatives in bread impact the growth of mold?
 - Why do different fabrics have different insulation properties?
 - What is the influence of salt on the properties of water?
 - What type of light bulb lasts the longest? What is the best value?
 - Will chilling an onion before cutting it keep you from crying?
 - Are night insects attracted to lamps because of heat or light?
 - What type of plastic wrap best prevents evaporation?
 - Does the shape of an ice cube affect how fast it melts?
 - How are different soils (clay, sandy, etc.) affected by erosion?

5. Inventions

In this project you should find a problem and design/create something new (and original!) to solve the problem. Keep a journal – record the problem, your ideas and the steps you take to solve the problem. Even if you do not succeed in creating an invention to solve the problem, you can still present the information from your journal on your board. If the invention is successful, present that as well.

Where to go for project ideas

You probably have a good idea already if you have been looking around you with a curious mind. (How does that work? Why does that happen?) But if you need some help to get started, here are some places to go:

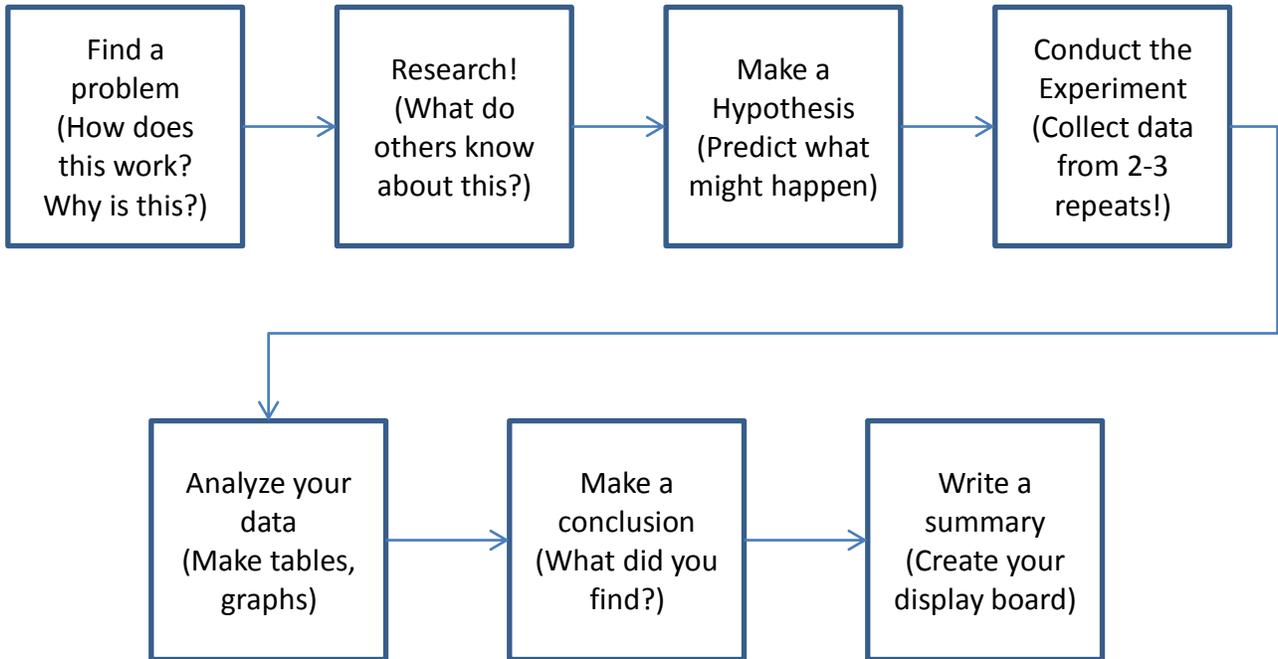
1. San Jose Public Library
2. Trace Elementary Library
3. The following websites:
 - www.sciencefair-projects.org
 - www.all-science-fair-projects.com
 - www.super-science-fair-projects.com
 - www.billnye.com
 - www.sciencebuddies.org/science-fair-projects/project_ideas.shtml
 - www.exploratorium.edu/science_explorer/index.html
 - www.sciencemadesimple.com/science.html
 - www.buzzle.com/articles/elementary-science-fair-projects.html
 - www.newtonsapple.tv
 - www.reekoscience.com
 - www.homeworkspot.com/sciencefair
 - www.sciencefair-project-idea.com

The next step

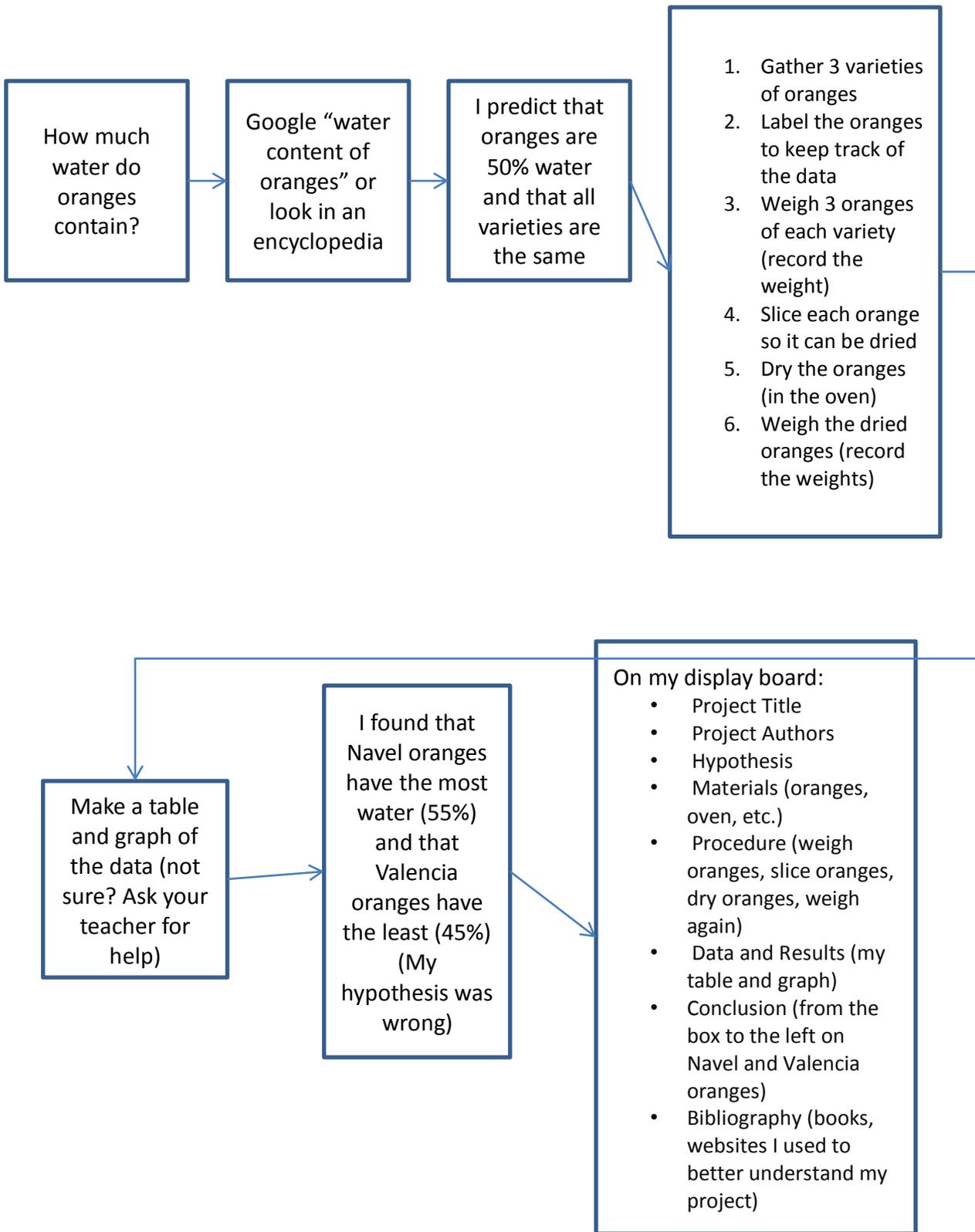
Talk to your family or your teacher about your project idea. Brainstorm with them about ways to make the project unique (just your own). The judges love this!

Ready to start?

Now let's talk about the scientific method! No – it isn't scary or bad, just a plan that helps you know what comes next.



Hmmm, is that hard to understand? An example is on the next page. Still not clear? Ask your teacher or a classroom helper.



Great! You are on your way! Before we finish, take a look at the attached pages to see what the judges will be looking for in your project.

Have lots of fun and we will see YOU at the Science Fair!

Appendix

Judging Criteria –EXPERIMENT, DEMONSTRATION or INVENTION

Project Elements	Description of Criteria	Possible Score
Testable Question	Asks a specific, measurable, cause & effect question or clear purpose of project given.	0-5
Prediction	Predicts a reasonable outcome as a result of a specific change OR clearly explains how device will operate.	0-5
Procedure	Describes process. High score would indicate that the project can be repeated after reading.	0-5
Background	Describes why this project was selected and describes the research done. Shows evidence student understands project. Explains why project is important. Includes a bibliography with at least 3 sources.	0-5
Trials/Samples	At least 3 trials or samples are shown OR 3 observations are made.	0-5
Constant Conditions	Identify independent variable, dependent variable and constant conditions.	0-10
Data and identification	<ul style="list-style-type: none"> • Uses photos/charts/graphs /illustrations to show data. • All data is labeled. • High score will show steps in the process throughout experiment, observation or invention. <p><i>(Note to student: Items that are valuable or valued by the student are not to be displayed – use photos/illustrations instead)</i></p>	0-15
Conclusion & Reflection	Reflects what the student has learned. Were there any surprises? What would you do differently or to continue the project?	0-10
Creativity/Innovation	Student demonstrates an innovative and/or creative way of approaching their project.	0-10
Knowledge & Understanding	Student demonstrates an understanding of the subject matter and is able to speak knowledgeably about the project including “Next steps” or “What if?”	0-30
	Total Possible Score	0-100

Judging Criteria - MODEL or COLLECTION

Project Elements	Description of Criteria	Possible Score
Title & Description	Asks a specific, measurable, cause & effect question or clear purpose of project given.	0-5
Procedure	Describes process for collection or making the model. High score would indicate that the project can be repeated after reading.	0-15
Background	Describes why this project was selected and describes the research done. Shows evidence student understands project. Explains why project is important. Includes a bibliography with at least 3 sources.	0-10
Data and identification	<ul style="list-style-type: none"> • Uses photos/charts/graphs /illustrations to show data. • All data is labeled. • High score will show steps in the process of collection or construction (model) as well as presentation of final collection/construction. • High score indicates that the student has written the process, observations, and data during collection or model making. • Collection: High score also indicates that student has collected over 8 samples. <p><i>(Note to student: Items that are valuable or valued by the student are not to be displayed – use photos/illustrations instead)</i></p>	0-15
Conclusion & Reflection	Reflects what the student has learned. Were there any surprises? What would you do differently or to continue the project?	0-15
Creativity/Innovation	Student demonstrates an innovative and/or creative way of approaching their project.	0-10
Knowledge & Understanding	Student demonstrates an understanding of the subject matter and is able to speak knowledgeably about the project including “Next steps” or “What if?”	0-30
	Total Possible Score	0-100