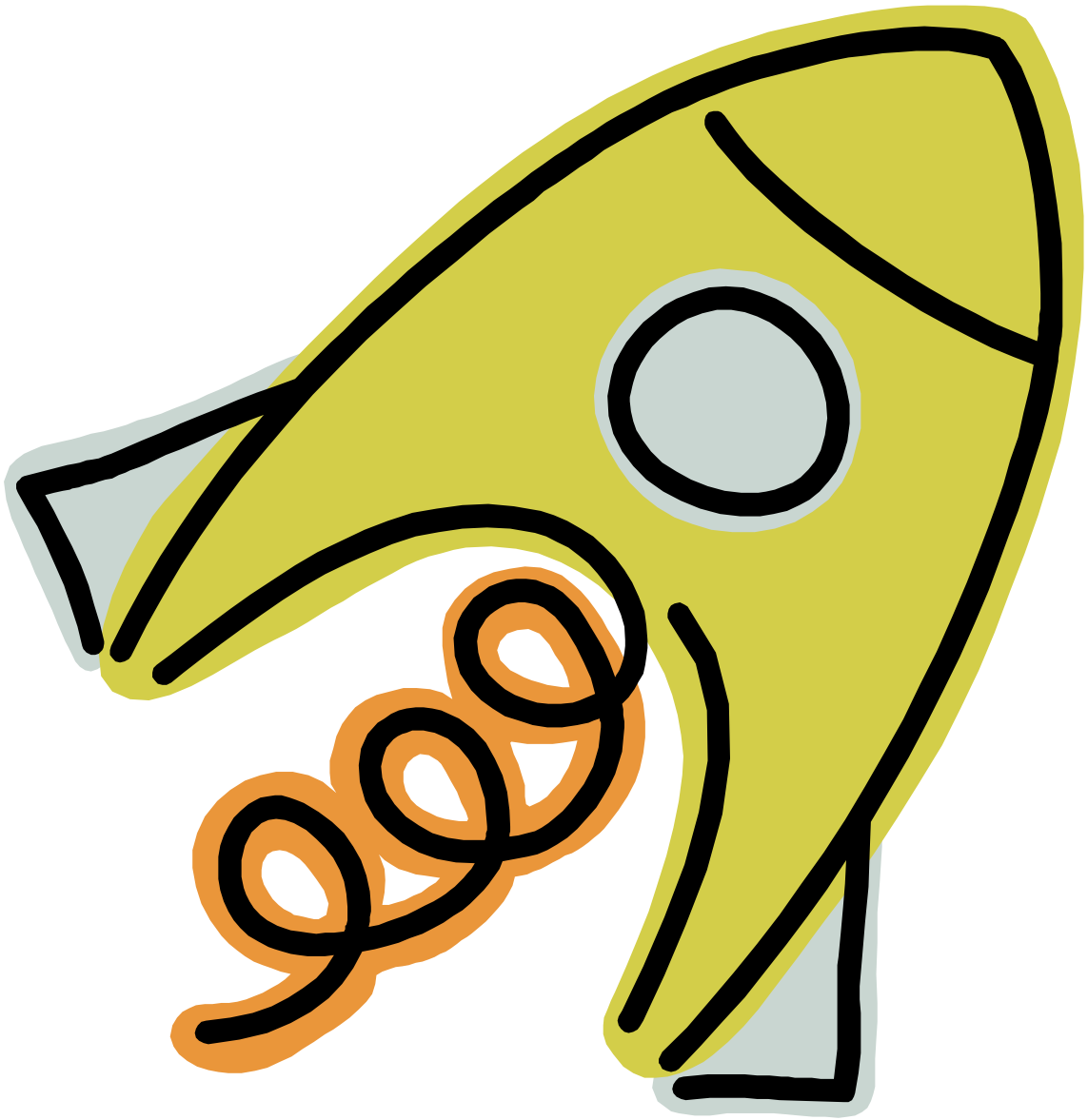
Rolling Ridge Elementary School Grade ____

Science Expo

2018/2019 Project Due Date: _____



Project Directions

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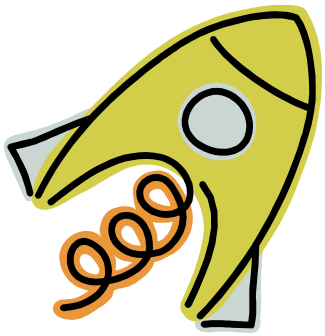
Science Expo



Wed., January 23rd, 2018 at 6-7pm

in the Rolling Ridge Media Center (grades 1-6)

CVUSD District Science Fair:

SET-UP: Friday, February 15, 2019 – 8:00am-3:00pm
JUDGING: Tuesday, February 19, 2019 – all day
AWARDS: Wednesday, February 20, 2019 – 6-8 pm (gr. 4-6)

Dear Families,

As you know, science, technology and engineering are basic skills expected by employers. As Twenty First Century citizens, these students will also have to make some of the toughest decisions of any generation, based on their understanding of emerging science and technology.

Science expos involve students in the practices of science and engineering, requiring them to apply those skills to a topic of interest to them. Doing science is key to understanding science.

Rolling Ridge is holding a Science Expo on **January 23rd, 2018**. All students in **grades 1-6** are been invited to participate. Hands-on scientific investigation and invention are the focus at our particular expo. Over a 4 to 6 week period, your child may design, test, analyze, and present a project that uses scientific methods to solve a problem. The sky's the limit! For **grades 4-6**, several students will be chosen to move onto the District's Science Fair on **February 20th, 2019**.

Please note that the bulk of the work will be done at home. Students will be given project guidelines and timelines at school, and teachers will check in with them periodically. However, much of the work will be self-directed. Parents are encouraged to offer emotional support and reminders, but to allow children to do the projects by themselves. All students participating will receive a ribbon and certificate of participation.

Please review the following project directions for valuable information designed especially for parents like you. Don't hesitate to call or email with any questions. Individual due dates may vary per class so please check with your child's teacher to make sure you get your project in on time. Thank you very much in advance for your support!

Sincerely,
The Rolling Ridge Teachers and Administration

Preparing Your Project
The Scientific Method

Step One: Selecting A Topic/Problem/Question

Pick a topic that interests you. Remember, you will spend a lot of time on this topic. It will only be fun if you want to learn about it. Where do you get ideas?

- Your interests or hobbies -science class topics -the Internet
- Parents, relatives, friends, visit the library
- Check out the idea list in this manual.

Make a list of project ideas that interest you, and decide which topics can be tested. (For example, topics such as space or radiation might be interesting, but it would be difficult to set up an experiment to test your research.)

Step Two: Research

Find out as much about your topic as possible. Encyclopedias will provide an overview of your topic go beyond that and look everywhere to collect information.

- library
- internet
- zoo
- plant nurseries
- magazines
- science journals
- videos
- encyclopedias
- contact experts

Organize your Research Report by keeping track of where you get your information. Write your bibliography as you collect the information. (See format for bibliography on page .)

☑**IMPORTANT:** If your experiment requires time to work, (plants need time to grow) think about starting the experiment process before your research is totally finished. Jump ahead to the next stage and get started, then come back and finish your research.

Step Three: Hypothesis

When you feel that you have enough information to really know your topic, then it's time to make a **hypothesis**. Take the question you wrote earlier and turn it into an "If/then/ because" statement that tells what you predict will be the result of the experiment and why.

Example: If I give the plant more water, then it will grow taller because plants need water to grow.

Step Four: Experiment

Design an experiment to test your hypothesis. Make a step by step list of what you will do to answer your questions. This is called an experimental procedure. Remember to select only one thing to change (independent variable) in your experiment. You must tell how you are going to change your variable, and how you are going to measure that. Also, in some experiments, you will need a control. A **control** is a comparison. It will help you to show that the results were directly related to your independent variable.
Example: The control is that one plant will receive no additional water.

Step Five: Journal and Research Report

This journal will provide interested readers with a comprehensive look at your topic research. It includes a complete description of the problem and all information collected during your research as well as a complete description of your experiment, materials used, data, and conclusions. Display your data as graphs, histographs, or charts. Don't forget the one page summary called an abstract.

Step Six: Preparing Your Display Board

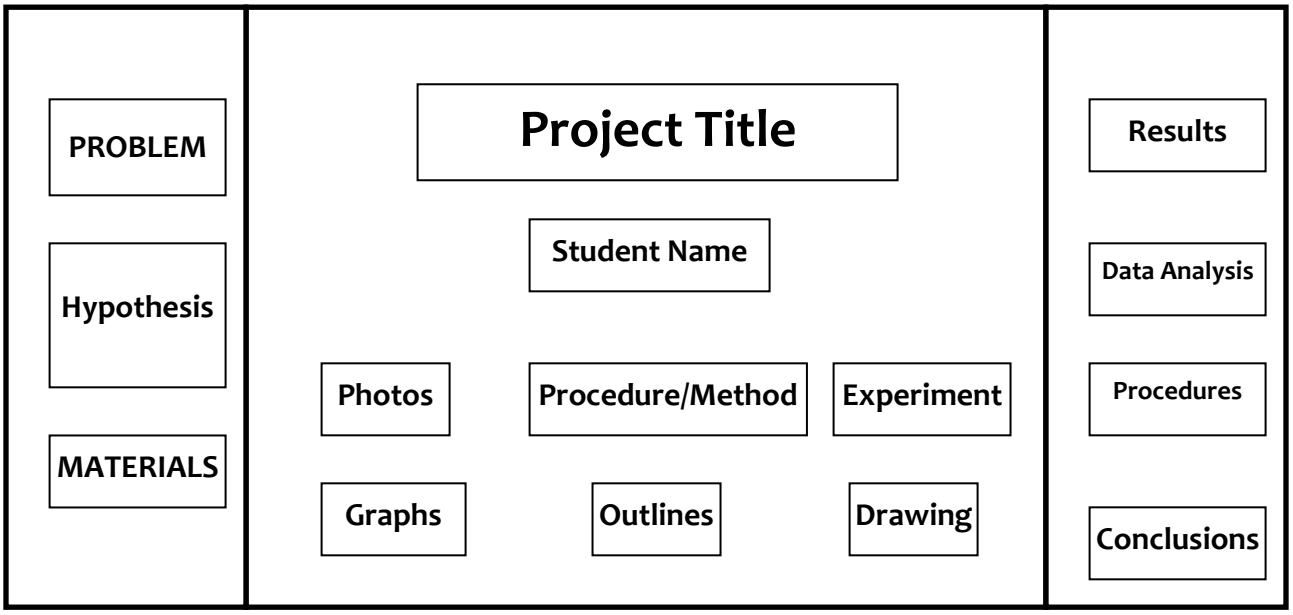
Now that you have finished all of your hard work, it is time to show it all off. How you present your experiment and your findings is just as important as the experiment itself. Science Fair display boards consist of three panels and are available at most office supply stores. If you cannot find one, see your teacher. Your written journal/report should be on the table, in front of the center panel. The traditional way to set up the board is: (variations are acceptable)

Maximum size accepted is: 4 ft. wide x 2.5 ft. deep x 6.5 ft. tall
All projects must be pre-approved by teacher.

Left panel: PROBLEM; HYPOTHESIS MATERIALS; MATERIALS

Center panel: TITLE, METHOD,EXPERIMENT/GRAPHS - Student Name, (use photos, drawings, outlines)

Right panel: RESULTS, DATA ANALYSIS; CONCLUSIONS



Science Expo Ideas

This list is not meant to be all-inclusive. Rather, it should be used to stimulate and encourage other ideas and possibilities on the part of the students. There is certainly lots to explore, lots to discover, and lots to investigate in a science expo.

- How does the angle of a ramp affect how quickly a ball will roll down it?
- Which chewing gum's flavor lasts the longest?
- Which cleaning product is best for removing carpet stains?
- Which brand of diaper is the most absorbent?
- Which brand of paper towel is the strongest?
- Which brand of popcorn leaves the fewest unpopped kernels?
- Which fast-food burger contains the least grease?
- Which cereal will stay crispy the longest when placed in milk?
- Do suction cups stick equally well to all surfaces?
- What effect does the weight of a bat have on how far a ball can be hit?
- Which paper airplane will fly the farthest?
- Is an egg stronger one way or another?
- Compare the bonding strength of various types of glue.
- What effect does moisture have on various types of glue?
- Does the color of an object determine how much heat it absorbs from sunlight?
- Does temperature affect the strength of rubber bands?
- Which materials are the best insulators? What factors affect insulation?
- Which would melt first, ice wrapped with plastic wrap or with aluminum foil?
- Which freezes faster? Hot water or cold?
- Which will boil faster? Hot water or cold?
- What factors determine how long a candle will burn?
- Does the color of a liquid contribute to its ability to absorb heat?
- Does temperature affect how much salt or sugar can be dissolved in water?
- How does surface area affect the evaporation rate of liquids?
- What effect does temperature have on water evaporation?
- What factors affect the period of a pendulum?

- Do sunscreens really reduce the amount of ultraviolet radiation?
- Does temperature affect how well seeds sprout?
- Will soaking in water before planting help seeds sprout?
- What effect would freezing have on how well seeds sprout?
- Does soil acidity affect how well seeds sprout?
- Does the depth a seed is planted affect its ability to sprout?
- Does the type of water source used affect seed germination?
- Is plant growth affected by how closely together the seeds were planted?
- Do plants grow better with tap water or distilled water?
- What is the effect of different colors of light on plant growth?
- Is plant growth affected by exposure to ultraviolet light?
- Does sound have any effect on plant growth? Does music?
- What effect does different types of music have on plant growth?
- Which additive is the best for preserving cut flowers? (salt, aspirin, 7-up, etc.)
- Does the angle that the stalk is cut have any effect on the life of cut flowers?
- What effect does salt water have on plant growth?
- Would soapy water harm or help seed sprouting and/or plant growth?
- What would be the effect on plants of using liquids such as milk, Coke, or juice instead of water?
- How animals grow
- Animals and their young
- Animals in our lives
- Endangered animals
- What do roots, stems, and leaves do?
- Growing and caring for flowers
- The food we get from plants
- How are some plants dangerous?
- Properties of matter
- How does matter change?
- Work, force, and energy
- Pushing and pulling

Resource List

Books

100 Amazing Make-It-Yourself Science Fair Projects
by Glen Vecchione
50 Nifty Science Fair Projects
by Carol Amato,et al.
Kidsource: Science Fair Handbook
by Danna Voth
More Blue Ribbon Science Fair Projects
by Maxine Haren Iritz
Environmental Science: 49 Science Fair Projects
by Robert L. Bonnet
Experiment With Plants
by Monica Byles
The First Timer's Guide to Science Fair Projects
by Q.L. Pearce
Botany: 49 Science Fair Projects
by Robert L. Bonnet
The Complete Handbook of Science Fair Projects
by Julianne B. Bochinski
Magic Mud and Other Great Experiments
by Gordon Penrose
Janice VanCleave's Spectacular Science Series
by Janice VanCleave
175 More Science Experiments to Amuse and Amaze Your Friends
by Terry Cash
200 Illustrated Science Experiments for Children
by Robert J. Brown
PAGE 25
Adventures With Atoms and Molecules: Chemistry Experiments for Young People
by Robert C. Mebane
50 Terrific Science Experiments
by Lisa Taylor Melton
Science for You
by Bob Brown
Mr. Wizard's 400 Experiments in Science
by Don Herbert
Dr. Zed's Zany Brilliant Book of Science
by Gordon Penrose

Web Sites

http://school.discoveryeducation.com/sciencefaircentral/
http://www.ipl.org/div/projectguide/
http://www.sciencebuddies.org/

Bibliography A bibliography is a listing of the books, magazines, and Internet sources that you use in designing, carrying out, and understanding your science expo project.

Books

Format:
Author's last name, first name. *Book title*. City of publication: Publishing company, publication date.

Examples

Toomer, Jean. *Cane*. Ed. Darwin T. Turner. New York: Norton, 1988.

Boorstin, Daniel J. *The Creators: A History of the Heroes of the Imagination*. New York: Random, 1992.

Encyclopedia & Dictionary

Format:
Author's last name, first name. "Title of Article." *Title of Encyclopedia*. Date.

Examples

"Azimuthal Equidistant Projection." *Merriam-Webster's Collegiate Dictionary*. 10th ed. 1993.

Pettingill, Olin Sewall, Jr. "Falcon and Falconry." *World Book Encyclopedia*. 1980.

Magazine & Newspaper Articles

Format:
Author's last name, first name. "Article title." *Periodical title* Volume # Date: inclusive pages.

Examples

Kalette, Denise. "California Town Counts Down to Big Quake." *USA Today* 9 21 July 1986: sec. A: 1.

Kanfer, Stefan. "Heard Any Good Books Lately?" *Time* 113 21 July 1986: 71-72.

Website or Webpage

Format:
Author's last name, first name (if available). "Title of work within a project or database." *Title of site, project, or database*. Editor (if available). Electronic publication information (Date of publication or of the latest update, and name of any sponsoring institution or organization). Date of access and <full URL>.

Note: If you cannot find some of this information, cite what is available.

Examples

Lancashire, Ian. Homepage. 28 Mar. 2002. 15 May 2002 <http://www.chass.utoronto.ca:8080/~ian/>.

Levy, Steven. "Great Minds, Great Ideas." *Newsweek* 27 May 2002. 10 June 2002 <http://www.msnbc.com/news/754336.asp>.

Scientific Method Form

Question: What do you want to find out? Make observations. Look at your environment. Look at the materials you have available.

_____

Hypothesis: What do you think you'll find out? What do you predict the outcome of the experiment will be?

_____

_____

Experiment: How will we find out? (List step by step)

_____

_____

_____

_____

Results: What actually happened?

_____

_____

Conclusion: What did we learn? Analyze your results and compare actual results with your hypothesis. Decide whether or not your hypothesis was supported. Think about further research. Write up your findings to share with other scientists.

_____

_____

_____

On your presentation board, Remember to:

1. Identify and clearly state both the problem and hypothesis.

2. Clearly list procedures in a way that others cold repeat the experiment.

3. Identify and control variables.

4. Use a sufficient sized sample and repeat the experiment in order to provide sufficient data for analysis.

5. Carefully organize data and observations. Present these in the journal.

6. Summarize data and observations on a table, graph, or chart.

7. Formulate and state a logical, conclusion based on the data or observations that were collected. Make the conclusion relevant to the problem/hypothesis.

8. Demonstrate creativity and originality in the analysis, interpretation. And application of the data.

9. Make sure that you clearly communicate an understanding of the goal, procedures, and findings.

10. Acknowledge any remaining unanswered questions and possible investigation.

General Regulations

1. Human parts other than teeth, hair, nails and liquid tissue slides (properly fixed and acquired) may not be displayed.

2. Photographs or other visual presentations of any surgical techniques, dissections, autopsies, and/or laboratory techniques depicting vertebrae animals in other than normal conditions ***may not*** be displayed on the student's exhibit table, but may be contained in accompanying notebook.

3. No project may use consumable alcohol, tobacco, or illegally obtained narcotics and/or controlled substances. This includes surveys on projects that compare the use of the above substances; (e.g. smokers versus non-smokers).

4. No living or non-living plants, mold, viral, or bacterial materials may be on display.

5. Live animals may not be displayed during the Expo.

6. Glass containers of any kind may not be used.

7. Electrical materials must be in keeping with standard safety laws and practices. Displays will be inspected for compliance with items listed below:

8. Wiring must be properly insulated and fastened.

9. Wiring switches and metal parts of high voltage circuits must be located out of reach of observers and must include an adequate overload safety device.

10. High voltage equipment must be shielded with the grounded metal box or be caged to prevent accidental contact.

11. Open flames will not be permitted.

12. All experimental work must be done by students. Adults may supply materials, advice, and consultation.