

Science-O-Rama

Cumberland School's
Fourteenth Annual 4/5 Science Fair
in memory of Eunice Chen



Thursday, March 18, 2010
6:30-8:00 P.M. in the Multi

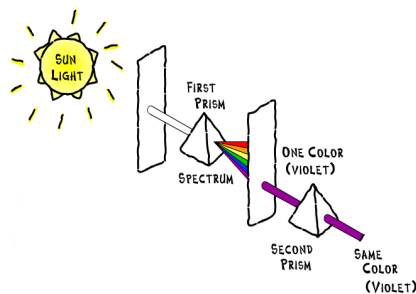
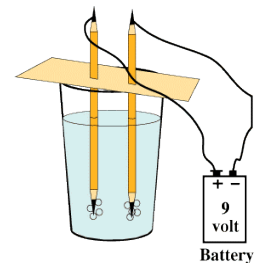
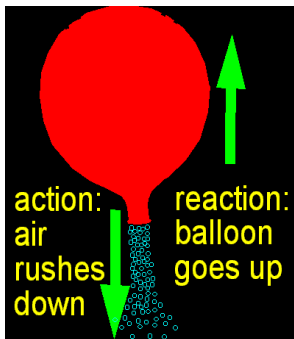


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4th and 5th Grade STUDENT PACKET

Sign-Up Form Due WEDNESDAY, FEBRUARY 3

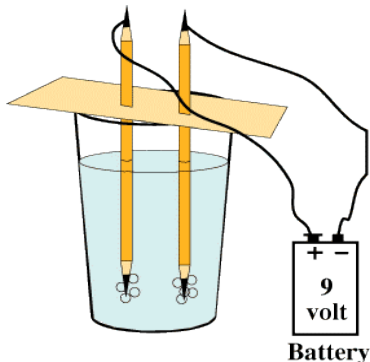
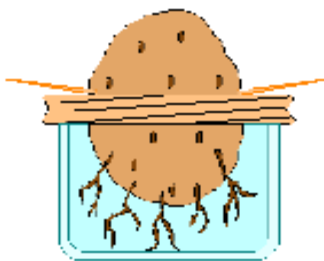
Science-O-Rama

Escuela Cumberland

DÉCIMOCUARTO FERIA ANUAL de las CIENCIAS
en memoria de Eunice Chen



JUEVES, 18 MARZO DEL 2010
6:30 - 8:00 P.M. en el Cuarto



Grados 4 y 5

PAQUETE para el ESTUDIANTE

ULTIMO DIA DE INSCRIPCION:
MIÉRCOLES, 3 DE FEBRERO DEL 2009

Participating in the Science Fair? Here's what to do...

- (1) Think of a question or problem that interests you. For example: How fast do plants grow? How do animals eat? How does a plane fly?
- (2) Learn something about your question or problem (from teachers, books, parents, friends, the Internet, etc.).
- (3) Find someone (parents, teachers, older siblings, etc.) who can help you with your project and discuss your ideas with him/her.
- (4) Fill in the Sign-up Form (last page of this packet) and turn it in to your teacher by Wednesday, February 3, 2010.
- (5) Work on your project and prepare your display according to the steps described on the following pages.
- (6) On Thursday, March 18, bring your display to school in the morning. Keep it in your classroom until setup time. Put YOUR name and your TEACHER'S name on your project. Set up will be in the afternoon in the Multi-purpose Room.
- (7) Come to the Science Fair Thursday evening and bring your parents and friends. The fair is open from 6:30 - 8:00 p.m. The Book Fair will also be open in the Library. DO NOT take your project home that night. You will pick up your project during recess on Friday.

Parents may also come on Friday at 8:00 a.m. before school starts and before the classes go through the Multi to view the projects.

- (8) Have fun with your project! Everyone gets a ribbon and a certificate!

Tips for Parents 2010: Assisting Your Child Scientist With An Enjoyable Project

Selecting a project: Keep it simple! The best project is interesting for your child, but not too complicated or difficult. As one of our teachers put it nicely, “the projects should be done by *child scientists*, with *adult assistants*.” If you are using plants, allow five (5) weeks for them to grow.

Materials: This year, all participating students will receive their display boards from their teachers as a part of a grant from Synopsis. Thank You to Mrs. Yordan for writing the grant application. As for materials for the project itself, many experiments involve things that most people already have in their house, garage or kitchen. It’s usually not necessary to buy a bunch of fancy materials.

Safety Reminders:

1. All **liquids** must be securely contained.
2. **DO NOT** display anything **hazardous**. (Use diagrams, drawings and photographs instead.) **No flammable, combustible, caustic or dangerous materials** are allowed. (No solid model rocket engines or strong acids, for example.) **No flame**, open or concealed, is allowed. (No candles or Bunsen burners.) Devices producing **temperatures over 120 °F** must be adequately insulated.
3. **Electrical Devices** must be safe. **Bare wire and exposed knife switches** may be used only on circuits of 12 volts or less, otherwise, standard enclosed switches are required. Voltage over 12 volts must be out of reach and protected by an overload safety device. **Batteries** with open top cells (wet) are not permitted.
4. **Bacterial or fungal cultures** (including bread mold and stinky cheese) must be secured in an airtight container. Photos or drawings are preferred to live displays.
5. **Live animals** permitted only with permission of the student’s teacher, and only within an appropriate enclosure. Animals’ basic needs (food, water, bedding) must be met.

Displays considered unsafe will not be allowed in the Fair!

Last, but not least: The Science Fair is not a competition; there is no judging, but you will receive a grade for your project using Rubrics. Every participant is a winner, and everyone gets a ribbon and a participation certificate. Making a Science Fair project can be a really fun way for parents to help their children explore science. So good luck to all, and enjoy the Fair.

Science Fair Project Guidelines

(Upper Grade Students Should Also Refer To Their Teacher's Guidelines)

1. Experiment (also see page 6 of this handout)

An experiment can be a test made to demonstrate a known scientific fact. It can also be a test to determine if a hypothesis (your educated guess of what will happen) is accurate.

Project/Problem: What scientific question will you be attempting to answer?

Research: Learn about your question.

Hypothesis: What do you think will happen (answers the above question)?

Procedure: How will you test your problem?

Materials: What materials will you need?

Data: Show your results in a graph or display.

Conclusion: What did you learn?

2. Model or Demonstration

A model is a small object usually built to scale that represents some already existing object. A demonstration is an illustration or explanation of a scientific principle that shows how and why something works.

Project: What scientific question are you trying to demonstrate or model?

Research: Learn about your question.

Materials: What materials will you need?

Procedure: Write a description of what you plan to do. How will it be displayed?

Conclusion: What do you hope to teach others with your demonstration or model?

3. Collection

A collection is a grouping or gathering of various objects which must be scientifically related and demonstrate that you have learned something through the process of collecting and categorizing. Items should be categorized and labeled correctly using scientific names when available.

Project: *What will you collect?* What scientific question will your collection illustrate?

Research: Learn about your question.

Materials: How will you obtain the items for your collection?

Procedure: How will you organize and label your collection? How will your display illustrate your research and collection?

Conclusion: What do you hope to learn and teach others with your collection?

The Scientific Method

For projects which involve experiments

Use the following five steps of the scientific method when conducting an experiment

1. Identify the problem

Think about what area of science interests you. Narrow your focus down to a specific question.

2. Collecting Information

Research your topic. Take notes on information that you think will be important for your experiment.

3. Develop a hypothesis

A hypothesis is an *educated* guess. It takes into account the research you have done and also your opinion of what you think will happen. What do you think will happen when you perform your experiment? The hypothesis answers your question.

Example: Plant food “B” will cause the lawn to grow faster.

4. Plan and conduct an experiment

First, make a plan for how you will do your experiment and a list of all the materials you will need. Conduct your experiment and observe what happens. In your experiment, make sure that you are only changing one variable at a time. This means that everything should be the same among the tested items (conditions remain constant). The only difference (variable) would be the procedure or item being tested in that part of the experiment. Keep a journal to record what you did and your observations – changes, growth or other results of your experiment. Photos or illustrations of the progress of your experiment are good ways to display what you did and what your results were.

Example: All lawns being tested should be treated the same (conditions remain constant): the same type of grass soil, temperature, sunlight, water feeding times, etc. The only difference (variable) would be the plant food fed to the lawns. Make a chart of the weekly lawn growth.

5. Display results.

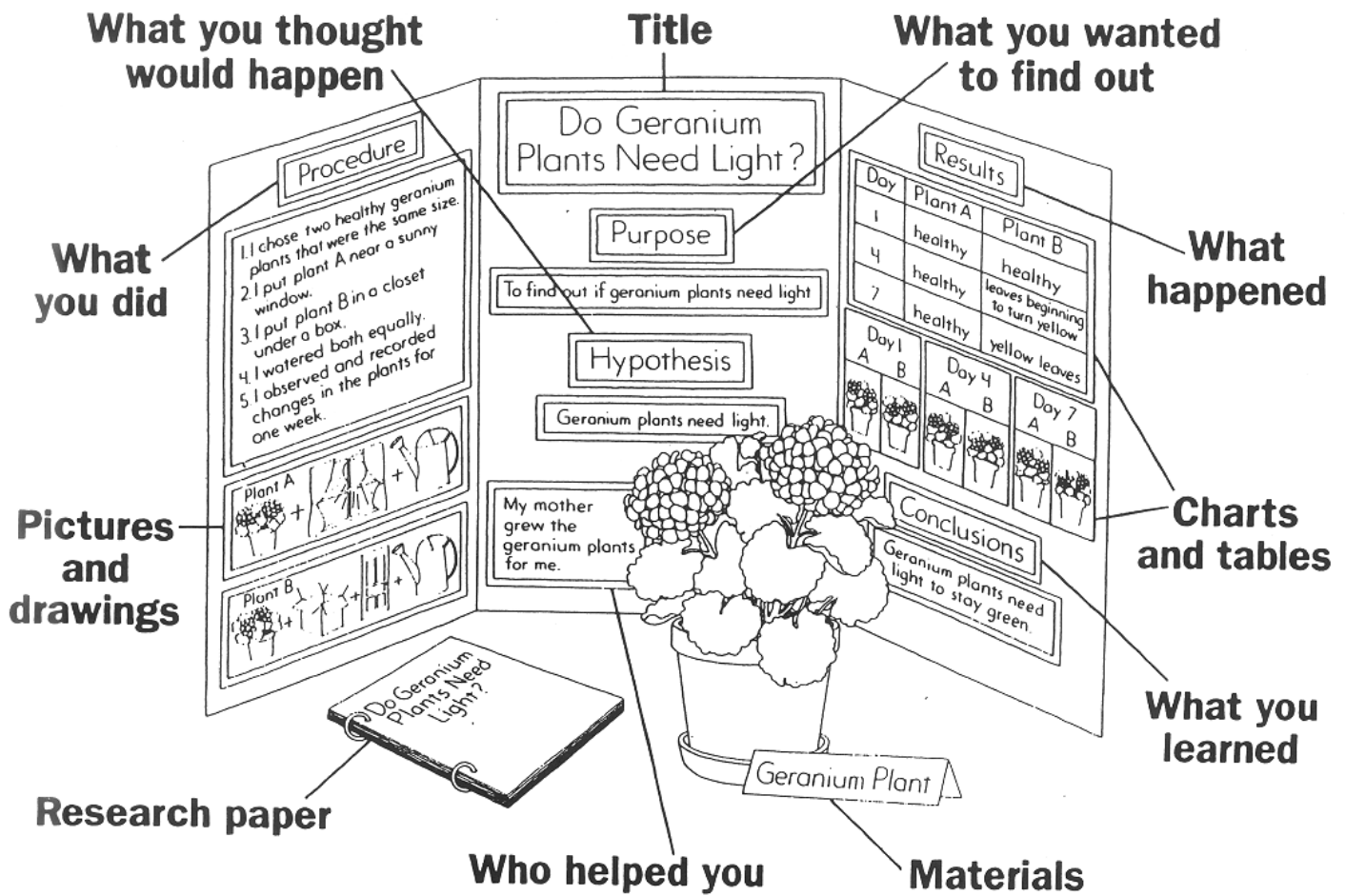
This could be a picture or a graph or a table showing your results.

6. Draw a conclusion

Analyze the results of your experiment. Draw a conclusion based on your results. Was your hypothesis correct? Why or why not? Your conclusion should tell what you learned by conducting the experiment. Remember, an experiment is *not* a failure if the hypothesis is proven wrong!

Example: The lawn fed with plant food “A” grew faster than any of the other plant foods tested. My hypothesis was not correct, even though plant food “B” cost more and promised better growth. Plant food “A” contained more nitrogen than “B.” I learned that not all plant foods are the same and that advertising is not always true.

Displaying a Science Fair Project



Science Fair Project Resources

Books: Books on science experiments and science projects are available in libraries, including Cumberland's and in bookstores. Here are a few titles.

101 Great Science Experiments: A Step-by-Step Guide, by Ardley, N.

Science Fun: Simple Experiments and Projects, by Nevins, D.

365 Simple Science Experiments With Everyday Materials, by Churchill, E.R., Loeschig, L.V., and Mandell, M.

Science Fairs Made Easy!, published by the Chicago Academy of Sciences

Science Fair Supplies and Materials: There are many stores that carry science fair materials, including craft stores, supermarkets or hardware stores depending on your project. Here are some stores that carry science and laboratory supplies or equipment.

The Science Shop (laboratory supplies and equipment and science fair and science kits and books)
1043 Di Giulio Ave
Santa Clara, CA 95050
<http://www.scienceshopusa.com/>

Morrison School Supply (crafts and basic science fair supplies and kits)
560 E. El Camino Real
Sunnyvale, CA 94087
<http://www.morrisonsschoolsupplies.com/>

Michaels (crafts and basic science fair supplies and kits)
<http://www.michaels.com/>

Web Sites: Science web sites for kids are available.

www.scifair.org
www.lhs.berkeley.edu/kids/kidshome.html (Lawrence Hall of Science at Berkeley)
www.nwf.org/kids/ (National Wildlife Foundation)
www.sciencebuddies.com/ (how to do science fair projects)
www.EnchantedLearning.com
www.seaworld.org/ (Sea World/Busch Gardens Animal Resource)
www.nationalgeographic.com (National Geographic)
www.mobot.org/MBGnet/sets/ (Biomes, site for Missouri Botanical Gardens)
www.ran.org/ran/kids_action/ (Rain Forest information)
www.hhmi.org/coolscience/ (Hughes Medical Center site of science for kids)
www.brainpop.com
www.madsci.org
www.geocities.com/Athens/1850/listsscience.html (experiments included)
www.nyelabs.com or www.billnye.com (Bill Nye, the Science Guy)
www.cotf.edu/ete/modules/msese/earthsysflr/rock.html (resource about rocks)
www.exploratorium.edu
www.terimore.com/ (site costs money for project blueprints, but has lists of great ideas)
<http://school.discovery.com/sciencefaircentral> (Science Fair Central)
www.all-science-fair-projects.com/ (science fair ideas and how to do them)
www.scienceproject.com
www.ipl.org/div/kidspace/projectguide/ (science Fair Project Research Guide)
<http://sciserv.org> (International Science Fair)
http://othello.mech.northwestern.edu/~peshkin/scifair/chias_ideas.html (list of ideas)
www.energyquest.ca.gov/projects/ (projects to try)
www.juliantrubin.com/fairprojects/physics/optics.html (ideas and sample projects)
www.froguts.com (virtual dissection software)

PROJECT IDEAS

Please note there are many other possibilities – These are just a few ideas to help you get started!

The effectiveness of pre-wash products
Shampoo evaluation
Water solubility of sunscreen lotions
Effectiveness of sunscreens
Compare fat and moisture content of food
Which popcorn pops the most?
Up to bat – wood or aluminum?
Fishing lines take the strength test
Sole traction – which sole is best?
Skateboard wheels – which are best?
Leaky faucets – how much do they cost us?
Which uses more water, a shower or a bath?
Which container (or wrapping) preserves food best?
Which paper towel is most absorbent?
Which diaper is best?
How long are yellow lights at various intersections?
Does a magnetic field affect the growth of beans?
Does electricity affect the growth of beans?
Does temperature affect the growth of plants?
How do plants react to different kinds of music?
How do detergents affect the growth of plants?
Do plants grow better with tap water or distilled water?
The effects of rootbounding on plant growth
Do roots always grow down?
Does leaf surface area affect plant growth?
Effects of artificial vs. natural light on plants
Can you give a plant too much fertilizer?
Testing different potting soils
Does acid rain affect the germination of seeds?
Do avocados ripen more evenly with the stems left on?
*Which banana has the most sugar – green, yellow or brown?
*Compare the moisture content of five varieties of apples.
*A study of marine growth on various surfaces
The speed of snails on different surfaces
*Ant control – natural vs. chemical repellants
*How does our vision or smell affect our taste?
Light vs. vision – which color is best?
Night vision and the effects of colored objects
The relationship between age and response time
Left-hand, right-hand transference using a “mirror tracing”
Reading and remembering with different colored paper – which works best?
Do adults know U.S. geography? (or math skills, science concepts, etc.)
*How do teeth react to different liquids?
*Do taste buds grow weaker as you get older?
*Effects of coffee on a person’s steady hand
*Effects of caffeine on blood pressure
*Effects of foul smells on blood pressure
Lung power of different age groups

* - Denotes more difficult projects

4th – 5th GRADE STUDENT TIMELINE

Dates	Check off when completed	
Feb 2 ^h	_____	Choose a topic that YOU are interested in doing. For ideas you can read books, talk to your parents or talk to your friends.
Feb 3 th	_____	Fill out the project approval form and turn it in to your Teacher.
Feb 3 th thru Mar 12 th	_____	<p>Once you have received approval from your teacher, you can begin work on our project. If you are going to grow a plant for your project start now!</p> <p>_____ Organize everything you plan to do.</p> <p>_____ Research your idea.</p> <p>_____ If you are doing an experiment, make a hypothesis (an educated guess on what you think will happen).</p> <p>_____ Write out your procedure.</p> <p>_____ Gather your materials.</p> <p>_____ Perform your experiments.</p> <p>_____ Record your observations.</p> <p>_____ What did you learn or find out by doing this experiment.</p> <p>_____ See if your hypothesis was correct. Remember, there is no right or wrong.</p>
Mar 1 st	_____	Begin work on your display. Present the information you collected in easy-to-read graphs or tables. If you did an experiment, reserve special areas of your display for your Problem, Hypothesis, Procedure, Results, and Conclusion. If you plan to use photographs, allow enough time to print them.
Mar 6 th	_____	Prepare to talk about your project. Be able to explain what you did and what you learned.
Mar 18 th	_____	Bring your projects to the Multi at 1:30 pm. Come to the Multi with your family and friends starting at 6:00 pm and while you are there, visit the Book Fair.
Mar 19 th	_____	Pick up your projects from the Multi at 10:00 am.

Cumberland 4/5 Science Fair Student Sign-Up Form

Return this form to your teacher by Wednesday, February 3, 2010.

Please Print Clearly!

Question/Problem (What I Want To Find Out): _____

Description of Experiment: _____

Materials Needed (this list will help you gather everything you need before you start your experiment): _____

If you sign up for a project but change your mind on what you want to do, it's okay. Do the new topic. Just have fun with your project! See you at the Science Fair on Thursday, March 18!

Keep the top portion of this form to remind you of your project plans.

Please TURN IN the bottom portion of this form to your teacher.

Cumberland 4/5 Science Fair Student Sign-Up Form

Teacher: _____ Room No.: _____

Student Name (First & Last): _____ Grade: _____

Question/Problem (What I Want To Find Out): _____

I have reviewed my project with my parent/guardian and have his/her support.

Student Signature: _____

Parent/Guardian Signature: _____

**Proyecto para la Feria de las Ciencias (Escuela Cumberland)
Grados 4 y 5**

FORMULARIO DE INSCRIPCION PARA EL ESTUDIANTE

Por favor devuelva este formulario a su maestro a partir Miercoles, 12 de febrero del 2010.

Título del proyecto: _____

Pregunta o Problema (¿Qué quiero descubrir?) _____

Descripción del experimento _____

Los materiales necesarios (esta lista le ayudará a coleccionar todo que usted necesita antes de que usted comience su experimento) _____

Si usted firma para arriba para un proyecto pero cambia su mente en lo que usted desea hacer, es aceptable. Haga el proyecto que usted guste. ¡Sólo divertirse con su proyecto! ¡Veremos usted en la feria de las ciencias el jueves, 18 de marzo!

Guarde la parte superior de esta forma para acordarse de sus planes de su proyecto

Por favor REGRESAR ESTA MITAD de esta forma a su maestro

Formulario de Inscricion para Proyecto de la Feria de las Ciencias para la Escuela Cumberland

Maestro: _____ Numero de Cuarto.: _____

Nombre del Estudiante: _____ Grado: _____

Título del proyecto: _____

Pregunta o Problema (¿Qué quiero descubrir?) _____

He revisado mi proyecto con mis padres ó guardián y tengo su apoyo.

firma de estudiante: _____

firma de padre o guardián: _____