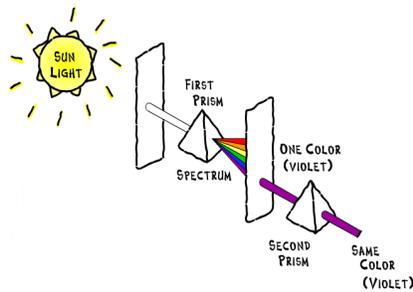
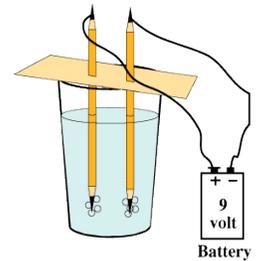
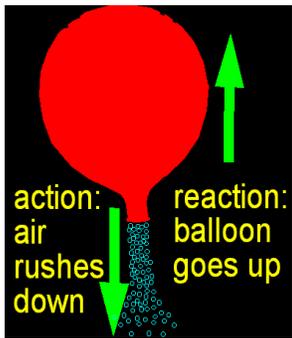


# Science-O-Rama

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



## Table of Contents

Here's What To Do	page 3
Tips For Parents	page 4
Safety	page 4
Project Guidelines	page 5
The Scientific Method	page 6
Displaying A Project	page 7
Project Resources	page 8
Project ideas	page 9
4 <sup>th</sup> /5 <sup>th</sup> Grade Student Timeline	page 10
Science Fair Sign-Up Form	page 11
Formulario de Inscripcion para la Feria de las Ciencias	Página 12

4<sup>th</sup> and 5<sup>th</sup> Grade STUDENT PACKET

Sign-Up Form Due WEDNESDAY, FEBRUARY 3

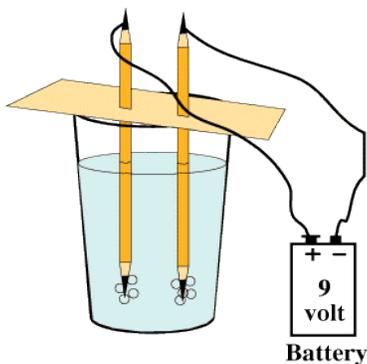
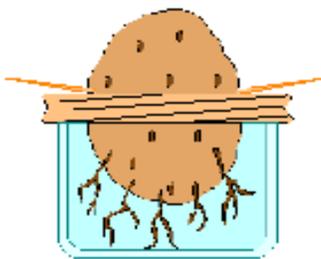
# Science-O-Rama

## 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.

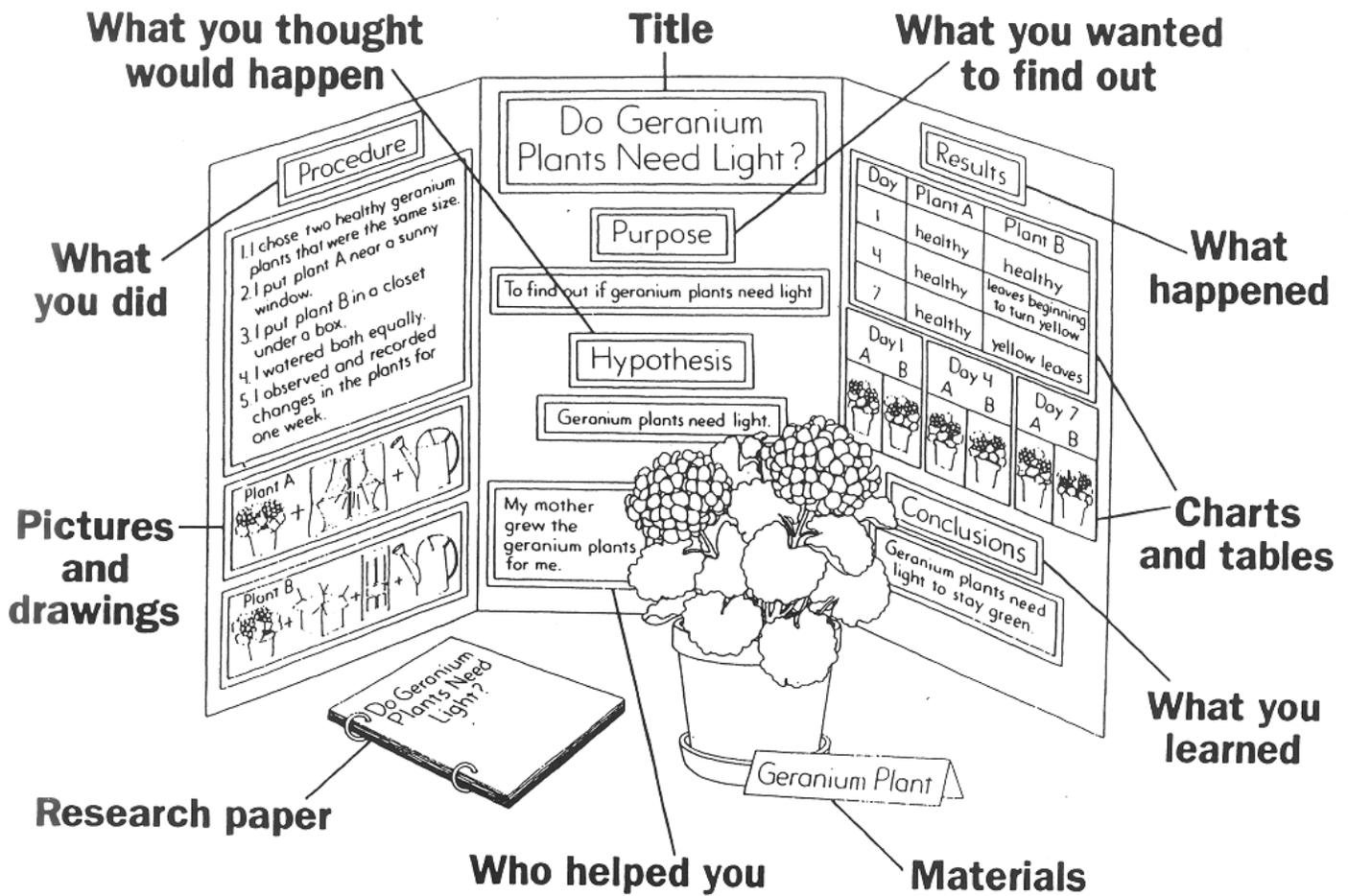
This could be a picture or a graph or a table showing your results.

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

## 4<sup>th</sup> – 5<sup>th</sup> GRADE STUDENT TIMELINE

Dates	Check off when completed	
Feb 2 <sup>h</sup>	_____	Choose a topic that <b>YOU</b> are interested in doing. For ideas you can read books, talk to your parents or talk to your friends.
Feb 3 <sup>th</sup>	_____	Fill out the project approval form and turn it in to your Teacher.
Feb 3 <sup>th</sup> thru Mar 12 <sup>th</sup>	_____	<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>_____ <b>Organize</b> everything you plan to do.</p> <p>_____ <b>Research</b> your idea.</p> <p>_____ If you are doing an experiment, <b>make</b> a hypothesis (an educated guess on what you think will happen).</p> <p>_____ <b>Write</b> out your procedure.</p> <p>_____ <b>Gather</b> your materials.</p> <p>_____ <b>Perform</b> your experiments.</p> <p>_____ <b>Record</b> 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 <sup>st</sup>	_____	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. <b>If you plan to use photographs, allow enough time to print them.</b>
Mar 6 <sup>th</sup>	_____	Prepare to talk about your project. Be able to explain what you did and what you learned.
Mar 18 <sup>th</sup>	_____	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 <sup>th</sup>	_____	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: \_\_\_\_\_