Dear Parents and/or Guardians,

It is that time of year again. It is time for our annual Science Fair! This valuable experience will help your child begin to think scientifically. It is a wonderful opportunity to work together as a family and explore science themes. We look forward to seeing many projects represented from our students on display.

Science Fair projects are optional for all grade levels. The attached informational packet will provide you with important information, suggested topics, how to conduct a science fair project, display guidelines, and a time line to keep your child on target. We do have a very limited amount of Science Fair display boards on sale for $7.00. On a first come first serve basis. Please contact Misty Burtz at mburtz@forsyth.k12.ga.us if you are interested.

Each class will have one project selected to enter the school science fair. Winners from the school wide Science Fair will have their projects displayed at County Office. We encourage you to guide your child and provide some help, but not complete the project for them. The most important aspect is what they learn by doing it. If you have any further questions, please do not hesitate to contact the science fair coordinator Misty Burtz at mburtz@forsyth.k12.ga.us.

Thank you in advance for your support. We look forward to seeing many interesting projects on display.

Sincerely,

Misty Burtz

Science Fair Coordinator

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mburtz@forsyth.k12.ga.us

Coal Mountain Elementary School

2011-2012

Science Fair

Informational Packet

Coal Mountain Elementary School

Science Fair 2012

Student Information Packet

This packet includes information needed for our upcoming school-wide science fair. The following items are included:

- Steps Involved in Conducting a Science Fair Project
- Science Fair Paper Guidelines
- What is the Scientific Method?
- Science Fair Topic and Ideas
- Displaying a Science Fair Project
- Science Fair Project Time Line
- Silver City Elementary Guidelines

Thank you in advance for helping make the first annual north cluster Science Fair a success!

Misty Burtz

CMES Science Fair Coordinator

Steps to Prepare a Science Project

1. **Select a Topic -** See the ideas list (projects are not limited to this list). Remember – a Science Fair Project is a test you do to find an answer to a question. It is not just showing what you know about something.

2. **Gather Background Information -** Gather information about your topic from books, magazines, the internet, people and companies. Keep notes about where you got your information.

3. **Scientific Method –**
   State the purpose of your experiment – What are you trying to find out?
   Select one variable (something you will change/vary) that will help you find your answer.
   State your hypothesis - your guess about what the answer will be.
   Decide on and describe how you will change the thing you selected.
   Decide on and describe how you will measure your results. Results must be measureable.

4. **Run controlled Experiment and Record Data –** Do the experiment as described above. Keep notes in one place. Write down everything you can think of; you might need it later. The experiment should be preformed three times (three trials).

5. **Graphs and Charts –** What happened? Answer that question, and then put the results in graphs and charts.

6. **Construct an Exhibit or Display –** It has to be neat, but it does NOT have to be typed. Make it fun, but be sure people can understand what you did. Show that you used the scientific method. If you use photographs of you doing the experiment, please do not photograph your face.

7. **Write a Short Report –** Tell the story of your project – tell what you did exactly and how you did it. Include a page that shows where you gathered background information. It can be two pages or even more. Use "paper guidelines" to help you out.

Science Fair Paper Guidelines

Using your notes you can make a first-class science fair project by writing a good paper explaining what you did.

Title Page
List the parts of your report and the page numbers where they begin. You'll have to make this page after the others.

- Introduction
- Hypothesis
- Research
- Procedures/Experiment
- Etc.

Introduction

The introduction is one paragraph that tells the whole story. One way to do this is to write a sentence for each idea in the scientific method. Make one sentence for Purpose, one telling what experiment or test you did, etc.

Hypothesis and Background Research

State your purpose in more detail; What made you think of this project? Tell what you found out from the books or other sources you used to learn about your topic, and be sure those sources are listed in your bibliography.

Procedures/Experiment

List the materials you used and what you did. If drawings will make it clearer, draw on separate pages and pit in this section. Explain in detail things you made.

Results

Describe what happened, and what you observed. Show your data (graphs and charts are useful for this).

Conclusion

Describe your interpretation of the results. Look over your notes, charts, and log. Write what you think your data shows. You may put your opinions here. Was your hypothesis correct? **Don't be afraid to say that you might have made a mistake**

somewhere. Great discoveries can come from what we learn from our mistakes!

What is the Scientific Method?

The Scientific Method features these steps:

1. **Purpose**
   - Identify a problem
   - What do you want to find out?

2. **Hypothesis**
   - Make an intelligent guess
   - What do you think will happen?

3. **Materials**
   - Gather materials needed to do the experiment
   - What materials do you need to use?

4. **Procedures**
   - Things done to solve the problem
   - What will you do to find out the solution to your problem?

5. **Collect Data from Trials and Tests**
   - Methods of recording data
   - What things can you count and measure?
   - Three trials should be completed

6. **Results**
   - Observe what happened
   - What happened when you did your experiment?

7. **Conclusions**
   - Answers to the questions

- What did you learn from the experiment and how is it related to your everyday life?

Coal Mountain Elementary School

Science Fair Time Line

Keeping a schedule for yourself would be highly useful. It will keep you on task at a reasonable rate and help eliminate a last-minute rush. Generally six weeks should be plenty of time to complete a project.

Brainstorm **January 14, 2012**

- Choose topic

Research **January 19, 2012**

- Identify research variables
- Gather information
- Write bibliography
- Write hypothesis

Experiment **January 24, 2012**

- Write procedure
- Identify the variable
- Gather materials
- Conduct experiment

Record Results **January 30, 2012**

- Write Observation
- Prepare graphs and charts

Draw Conclusions **February 3, 2012**

Write Report **February 6, 2012**

Prepare Exhibit **February 7, 2012**

Bring Project to school (judging week) **February 10, 2012**

School Science Fair Night **February 23, 2012**

EXPERIMENTS

More Consumer projects

The effectiveness of pre-wash products
Waterproofing agents - which is best?
The effects of deodorants on clothes
Which paint protects wood the best?
The effectiveness of different wood preservatives
*Shampoo evaluation
*Water solubility of suntan lotions
*Meat, fat and moisture content of hot dogs
*Do sausages vary in fat and water content?
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?
Which lighter has the most fuel?
Comparison of locks - which is best?
Which nails have the best holding power?
*The best air pressure for an A.T.C. (3-wheeler)
How long are yellow lights at various intersections?
Do parking meters give us the right time?

Life Science

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 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?
Do mirrors affect the way plants grow?
*Does leaf surface area affect plant growth?
Leaf size vs. location
Effects of artificial vs. natural light on plants
Under which color celophane do plants grow best?
Can you give a plant too much fertilizer?
Testing different potting soils
Which mulch covering works best?
*Does the phase of the moon affect the germination of seeds?
Do seeds sprout better in cold or hot climates?
*How does gravity affect the growth of seeds?
*Does acid rain affect the germination of seeds?

* - Denotes more difficult projects

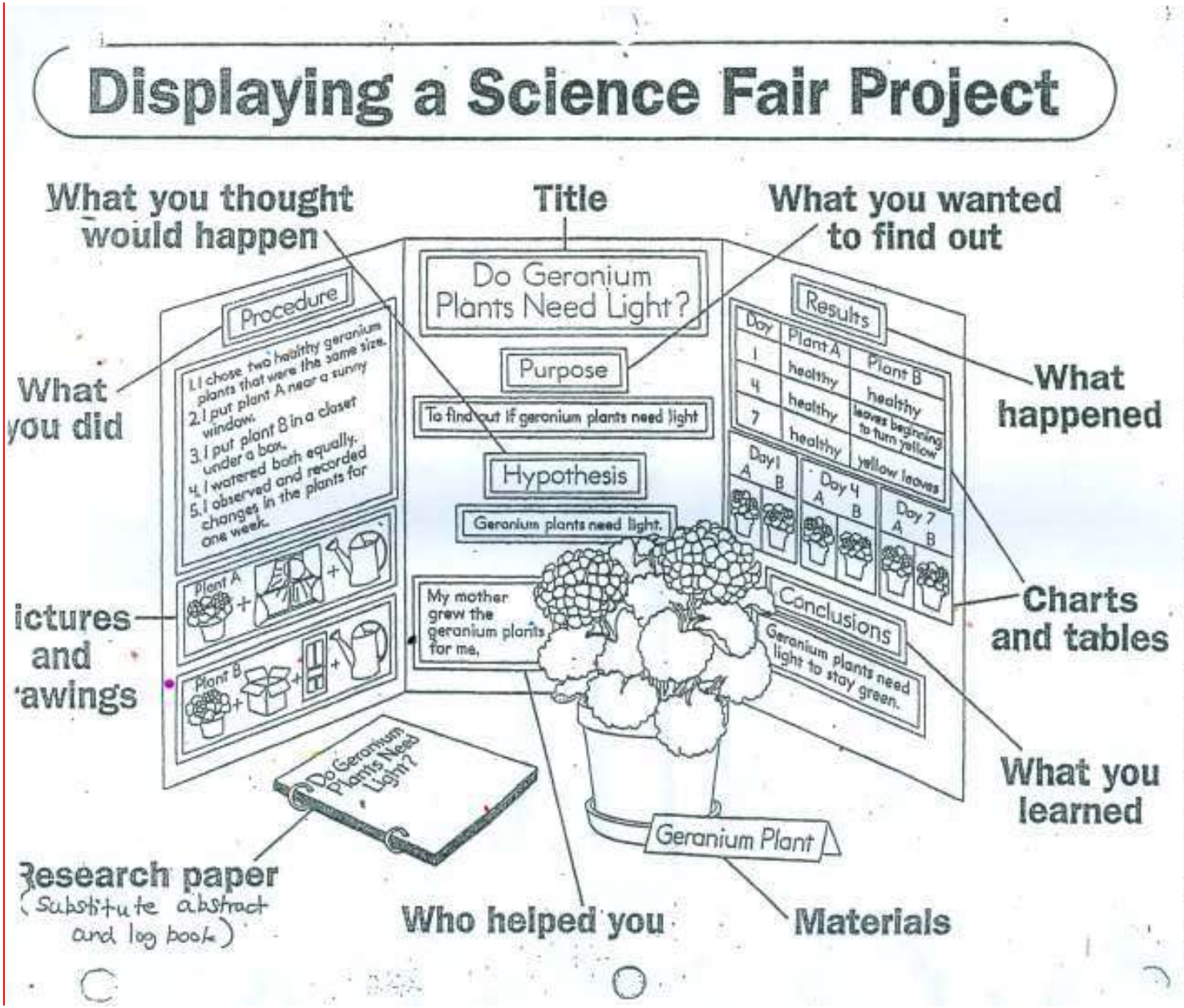
EXPERIMENTS

More Life Science projects

Under which thickness of plastic do radishes grow best?
How the amount of light affects the growth of marigolds
Do avocados ripen more evenly with the stems left on?
*Which banana has the most sugar – green, yellow or brown?
*Comparing the moisture content of five varieties of apples
Effects of the environment on popcorn (heat, cold, moisture, time, etc.)
Does aspirin prolong the life of cut carnations?
*How detergents affect the growth of algae in pond water
*A study of marine growth on various surfaces
How fast does a mealworm (or snail) travel?
The speed of snails on different surfaces
*Horsepower of snails
The effect of different metals on snails
Effects of household pesticides on earthworms
Do earthworms help plants to grow?
*Can insects pull more than their own body weight?
*Ant control – natural vs. chemical repellants
Do goldfish grow larger in a larger tank?
Fish feeding – the effects of light
*Can mice see colors?
*Can mice distinguish shapes (squares, circles, triangles – associate one with food)
*Hamster activity and the phases of the moon
*Can the color of unborn rabbits be predicted?
How many grams of food does a rabbit eat per day?
Chickens and colored corn – which will they eat?
*Will a chicken lay more eggs with rock music playing?
Do pyramids preserve food?
*How does our vision affect our taste?
Light vs. vision – which color is best?
Night vision and the effects of colored objects
*The effect of color on depth perception
Does a blindfolded person walk in a circle?
The relationship between age and response time
*Can you recognize your own profile?
Left-hand, right-hand transference using a "mirror tracing"
Reading and remembering with different colored paper – which works best?
Flexibility: boys vs. girls
Do adults know U.S. geography? (or math skills, science concepts, etc.)
How do people react when seeing a teenager shoplift?
*How 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
Hot tubs and their effect on blood pressure
*Effects of foul smells on blood pressure
*Tar and nicotine in five brands of cigarettes
Smoking vs. lung capacity
Lung power of different age groups

* – Denotes more difficult projects

Displaying a Science Fair Project



Teacher: Reproduce this page and the "Science Fair Time Line" page. Send them home with students to inform parents about the science fair and to help students prepare their projects. You may wish to use this chart with Frank Schaffer's *The Scientific Method* bulletin board set (FS-9492) and *Work Like a Scientist* chart (FS-2427).

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