

CHATFIELD SCHOOL SCIENCE FAIR EXTRAVAGANZA HANDBOOK

**THE CHATFIELD SCIENCE FAIR
MARCH 4, 2010**

**THE FLINT AREA SCIENCE FAIR
MARCH 5-7, 2010**



**YOUR GUIDE TO BEING PART
OF A GREAT LEARNING
EXPERIENCE!**

Chatfield School's Science Fair Extravaganza!

To: Students and Parents

From: Science Fair Committee

Date: December 7, 2009

We are pleased to announce that The Chatfield School will hold its annual Science Fair Extravaganza from 6:00 - 8:00 pm on Thursday, March 4, 2010.

The purpose of the Science Fair is to encourage students to develop greater interest in and awareness of science and technology; in addition, the students will develop skills in critical thinking, research, problem solving, and the use of the scientific method. This is an opportunity for students to be challenged and to grow academically. Students will have the opportunity to present their projects and to learn from one another.

While teachers are available to advise students, the emphasis of the Science Fair is for students and parents to work together at home in an area of Science that interests them most. Completed projects should be brought to Chatfield on Thursday, March 4. Students are encouraged to enter the Flint Area Science Fair which is March 5-7. Information and registration can be found at the Flint Area Science Fair website.

A new component to the fair this year is that families may complete one project to represent the work of all of the children in the family. The idea is that siblings would work together to create one project. Each individual child is still responsible for having his or her homeroom teacher approve the project, writing up a report and presenting the project to his or her homeroom teacher. The family's project must fulfill the eldest child's grade level requirements. The benefit is that families with multiple children can all focus their learning on one science topic and benefit from multi-age input and perhaps a more in-depth study on the topic.

Continued on next page...

All 3rd through 8th grade students are required to enter a Science Project for a Science grade. All fifth through eighth grade students are required to enter a Science Experiment Project for a Science grade. To enter a Science Project, students must complete an entry form and have it approved by the classroom teacher. This form can be found in the back of the Science Fair Manual. In addition a rubric for how the project is graded can be found at the back of the packet.

Science Fair display boards are available to order by February 1.

We suggest the following categories for projects:

Grades K-2:

Collections, Models, Demonstrations, Experiments, or Inventions

Grades 3-4:

Demonstrations of Scientific principles, Experiments using the scientific process, or Inventions (needs to be a working model)

Grades 5-8:

Experiments using the scientific process

Project Pick Up Procedure

In order to use the gym for normal activities on Friday, projects should be picked up on the evening of March 4 between 7:45pm-8:15pm. Projects may also be picked up on the morning of March 5 between from 7:00am-9:00am.

Projects that are not picked up at this time are subject to disassembly/movement. Thank you.

Chatfield School's Science Fair Extravaganza
Upper Elementary & Middle School Suggested Time Line

Begin topic selection	Dec. - Jan. 8
Have project approved by homeroom teacher on or before:	Jan. 8
Conduct research and gather materials	Jan. 8 – Feb. 22
Turn in display board Order form by:	January 22
Register for the Flint Science Fair	January – Feb. 22
Continue work on project	Jan. 8- Feb. 22
Complete project	February 22
Typed (Handwritten Grades 3 and 4) Rough Draft of Report/Display Due to Homeroom Teacher	February 23
Complete the project board	Feb. 15- Feb. 28
Check the project for errors	March 2
Bring project to school	March 4
Science Fair Extravaganza	March 4 6-8pm

COLLECTION: K-2nd Grade Only

Students will collect objects that interest them. Collections may include:

Leaves, insects, fossils, seashells

Seeds, bark rubbings, feathers, bones

Chemical elements, wood types, soil types, rocks

WHAT SHOULD BE INCLUDED IN THE DISPLAY:

A. The collection should be protected with a covering of plastic or plexiglass.

B. The collection should be organized into categories and each object should be labeled.

C. The display should be neat and attractive.

D. A written report on your collection – include observations, where you found each item in your collection, and what you learned.



MODEL/DEMONSTRATION

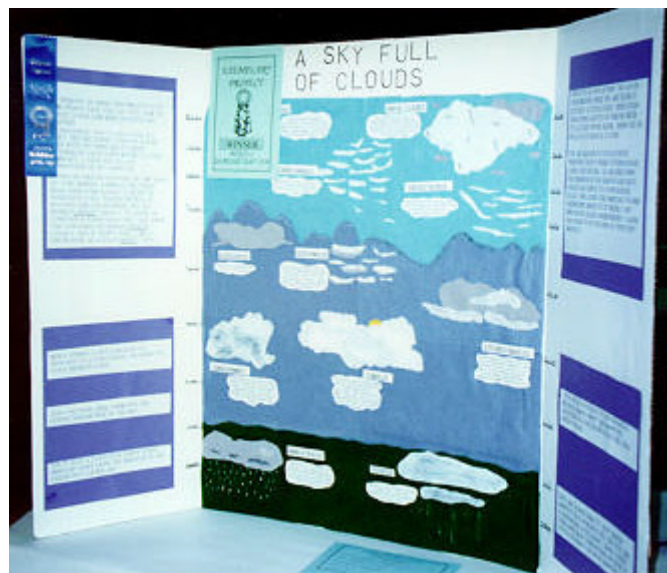
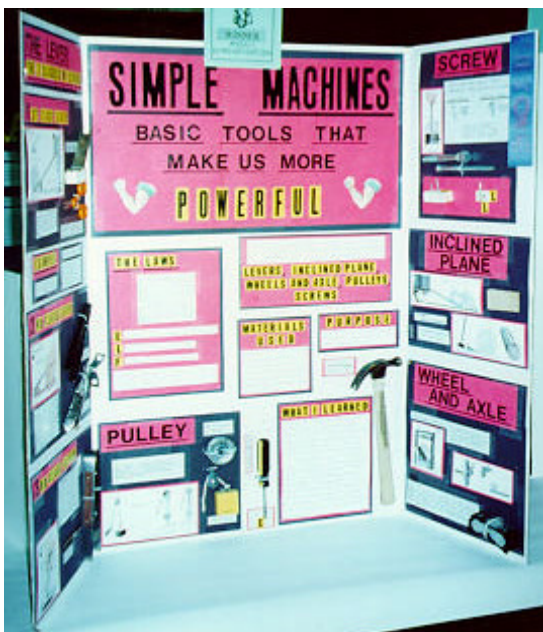
K- 4th Grade Only

Identify a scientific model or scientific principal you want to create or demonstrate. You will need to collect the necessary materials and build the model or demonstration apparatus. This type of project is not an experimental investigation. Its purpose is to show or demonstrate how something is put together or how a scientific phenomena works. There will not be a problem statement that is investigated through the scientific process. There will not be a hypothesis. If you have a question in the title, it would be something that asks how something works, how it is put together or what it is. The question should lead to a model or demonstration to show or teach the viewer.

Examples: How magnets work for us, Simple Machines, How a bicycle works, Osmosis, Optical illusions, Hydroponics, Tree rings, Newton's 3rd law, How to recycle paper, an electric motor, What is friction? Composting, Density of liquids, Human body

WHAT SHOULD BE INCLUDED IN THE DISPLAY AND BACKBOARD:

- A. The model or demonstration apparatus
- B. Title
- C. Purpose
- D. Materials: What you used to make the model/demonstration
- E. How it works: Include illustrations or diagrams
- F. Results: What you learned
- G. Optional report: Information about the phenomenon or scientific principle



EXPERIMENT: All levels

In an experiment, the investigator attempts to answer a question or solve a problem using the SCIENTIFIC METHOD. The following five steps are a part of the SCIENTIFIC METHOD used in an experiment.

A. IDENTIFY THE PROBLEM: Use these **three models** to help you phrase appropriate questions.

Model 1. How does _____ affect _____?

Example: How does fertilizer affect plant growth?
How does moisture affect popcorn?

Model 2. What is the effect of _____ on _____?

Example: What is the effect of weed killer on insects?
What is the effect of color on heat absorption?

Model 3. Which _____ is _____?

Example: Which paper towel is the most absorbent?
Which brand of battery lasts the longest?

B. *FORM A HYPOTHESIS*: Make an educated prediction of what you think is going to happen. You do not have to be right in your prediction!

Example: Dark colors will absorb heat more than light colors.

C. *DEVELOP THE PROCEDURE AND CONDUCT THE EXPERIMENT*: Explain how you will conduct your experiment. Diagrams can also be included. In an experiment, you must control all the variables except the one that you are testing in order to determine cause and effect.

A variable is the factor that affects the results or shows change in an experiment. A control group is a sample that does not include the variable being tested. Your experiment should include a control group.

The experiment should be repeated a number of times to get an adequate number of test samples.

D. *RECORD YOUR RESULTS*: Results should be carefully measured and recorded. The results should be presented so they are easy to read, such as in a table or a graph. Many investigators use a daily journal to record observations and measurements.

E. *DRAW CONCLUSIONS*: What did you learn from this experiment? Did you answer the original question? Was your hypothesis correct? Why or why not?

WHAT SHOULD BE INCLUDED IN THE DISPLAY AND BACKBOARD:


- A. Title/Problem (The question you are investigating - What is the Effect of Acid Rain on Plant Growth?)
- B. Hypothesis
- C. Materials: List what you used to conduct the experiment.
- D. Procedure
- E. Results
- F. Conclusions
- G. Your actual experiment, samples, props, etc.
- H. Optional written report: This should include a **title page**, **table of contents**, **summary** of your project, **introduction** (what you are going to do), **experimental procedure** (how you did your experiment with details), **results**, **discussion**, **conclusion**, **credits** and **references**.

Problem/ Purpose
State the problem you meant to solve.

Project Title
by
Your Name

Results
What did you learn from your work?
Explain your data.

Hypothesis
State your hypothesis.

Data & Graphics

Display your data and pictures in this area.
Graphics are very effective for explaining results.

Conclusions
Was your hypothesis right or wrong? Can you make a new one?

Procedures
Explain the experiments you did. What? How? Why?

Recommendations
From what you learned, try a...

~~ Science Fair Board Layout ~~
Experimental Project

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Blooming Algae!

Question: How does fertilizer affect algae?

Hypothesis: The more fertilizer there is, the more the algae will grow.

Background Research: Eutrophication is caused by Algal Bloom. This happens when nitrogen and phosphorus cause the algae overgrowth. The bacteria eat the dead algae and use up all the oxygen. This kills the aquatic life.


Materials: 4 80oz (jars/2.2 liter) Fertilizer Water from pond Measuring cup Aluminum foil

Procedure:

1. Fill each jar with water.
2. Measure and add 1 liter of fertilizer to one jar and 20ml to another jar.
3. Add 10ml of fertilizer to a third jar and cover with aluminum foil.
4. Add anything to the fourth jar. This is control.
5. Label each jar and place on a sunny window sill.

Results: The jar with 10ml grew good, but not the best. The jar with none did not grow. The jar with 25ml grew the best. The jar with 10ml and the foil cover did not grow very well.

Conclusion: Fertilizer definitely has a negative effect on ponds. The algae pollute the water. This eutrophication destroys the aquatic life.

After 75 Days


Look closely... see the algae!

INVENTION: K- 4th Grade Only

An invention is a creation of your own design to solve a problem you have identified. Inventions usually make life easier, save time, permit you to engage in an activity previously found difficult.

Use the following to come up with ideas for inventions:

1. Brainstorm problems or tasks that take too much time and energy. What task could you make easier through an invention? What objects do you use that could work better?

2. Think of an invention that could help someone with a handicap.

3. Find uncommon uses for a common object.

4. Design an invention that will move an object from one place to another.

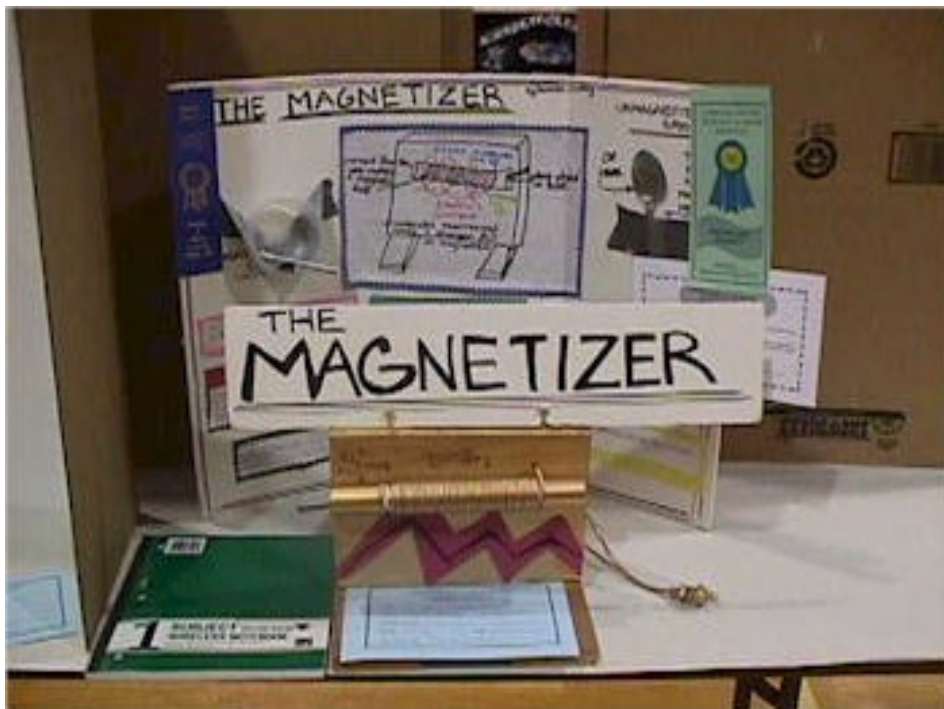
Create a Rube Goldberg invention that completes a task using a series of action and energy transfers.

5. Use the unlikely association technique.

For example, you might decide to invent a pair of slippers with a flashlight built in so if you got up in the middle of the night you would be able to move through the house without bumping into things.

WHAT SHOULD BE INCLUDED IN THE DISPLAY AND BACKBOARD:

- A. The invention
- B. Title
- C. Purpose
- D. Materials: What you used to make the invention
- E. How it works: Include illustrations and diagrams
- F. Results: What you learned



Steps to a great Science Fair Project:

- ❑ Read the Science Fair packet completely.
- ❑ Decide on the type of project you will do. Remember that some classes are required to do an experiment.
- ❑ Make sure you understand all of the requirements of the project.
- ❑ Fill out the project sheet and have it signed by your parent and teacher.
- ❑ Order a display board
- ❑ Do the project, making sure to record observations and data.
- ❑ Create the display making sure to label each required section.
- ❑ Have a teacher proofread and revise your work.
- ❑ Bring the finished display project (packed up) on the day of the Science Fair, Thursday, March 4.

Understand the vocabulary:

Title: Name the project...it should be creative and meaningful.

Purpose: Describe your reasons for doing the project.

Materials: List everything you used to do the project.

How it Works: Explain in detail how the model or demonstration does its job.

Results: Explain what you observed and what you learned from the project.

Problem: Tell the original question that your experiment is about.

Hypothesis: Write your best guess to answer the original problem/question.

Procedure: List the steps you will take in the experiment to answer the original problem/question.

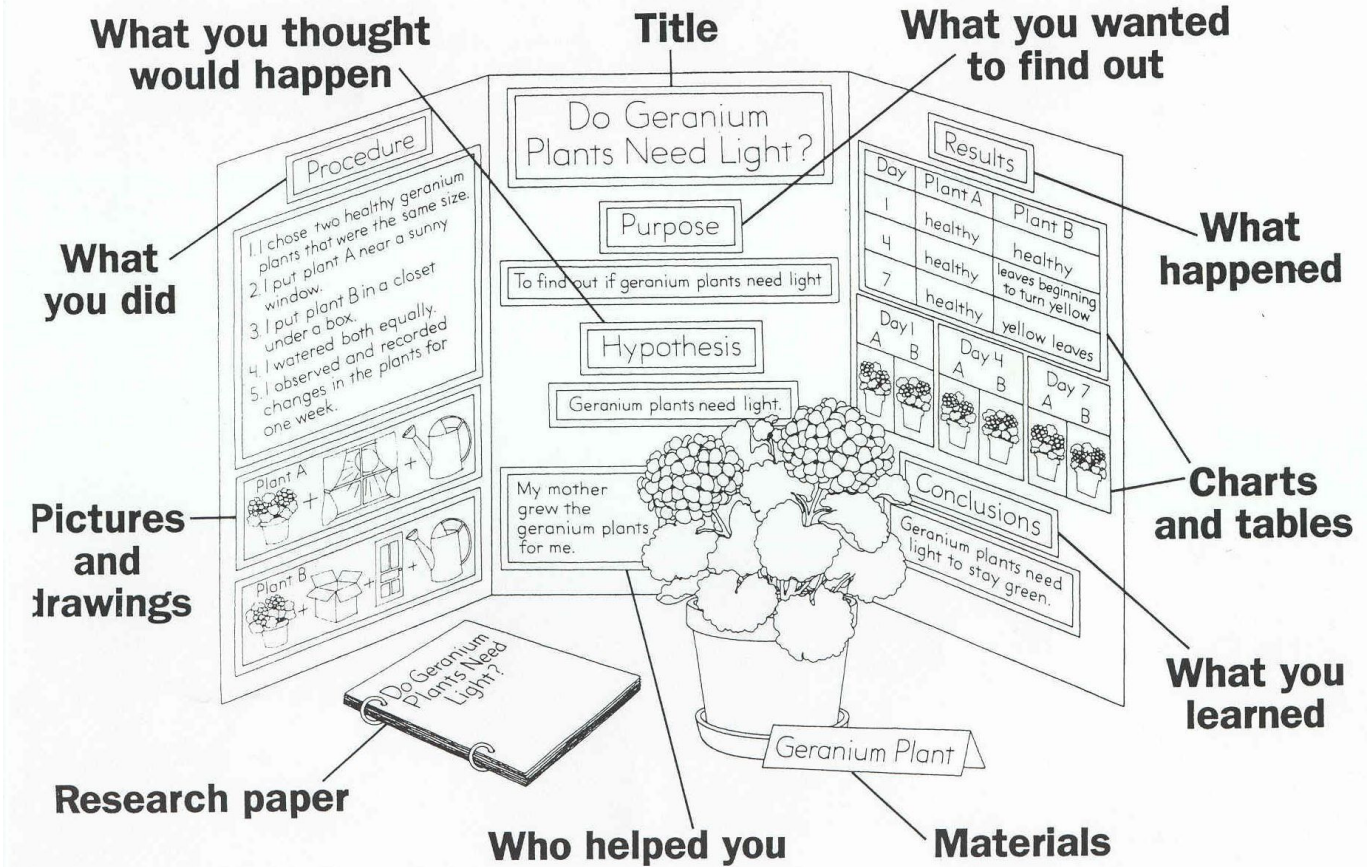
Variable: The variable is thing you change in the experiment. For instance, if you are testing paper towels, the different types of paper towel are the variable.

Data: Report your findings in tables, graphs, or some organized way.

Results: Describe your data.

Conclusion: Explain your answer to the original question and what you learned from doing the project.

Displaying a Science Fair Project



Grades K- 4 FORM

Experiment Form: For an **experiment investigation**, please fill out this form and return to your teacher by: **January 8, 2010.**

Name _____ # _____

Homeroom Teacher _____

The problem or question I plan to investigate is _____

My hypothesis (educated guess to answer the question) is _____

The materials I will need are _____

The basic procedure I will follow is _____

The manipulated variable will be: _____

I know that after I do the procedure I need to collect and record data, organize the data into results, and make conclusions to answer my original question.

I understand that on my final project I must have these parts clearly labeled and displayed:

- QUESTION
- HYPOTHESIS
- MATERIALS
- PROCEDURE
- VARIABLE
- DATA
- RESULTS
- CONCLUSION
- SAMPLES OF THE EXPERIMENT
- OPTIONAL (And a good idea): A WRITTEN REPORT

I know that I am responsible for presenting my completed project at the Chatfield Science Fair on March 4, 2010.

Student Signature _____

I understand the goals my child has for his or her project and have read and understand the requirements for the project.

Parent Signature _____

I am aware of the project this student is undertaking at home and will be available to offer support so that it is completed to the best of the student's ability.

Teacher Signature _____

Grade K-4 Form

For a **model, demonstration, invention, or collection** please fill out this form and return it to your teacher by: **January 8, 2010.**

Name: _____ # _____

Homeroom Teacher: _____

My title is _____

My purpose, or reason for doing this is _____

My materials will be _____

How it works (skip if you are doing a collection) _____

I know that when I am done creating my model, collection, or demonstration I must include my results or what I learned.

I know that on my final project I must have these parts clearly labeled and displayed:

TITLE

PURPOSE

MATERIALS

HOW IT WORKS

RESULTS

THE ACTUAL DEMONSTRATION, COLLECTION, OR INVENTION

OPTIONAL (and a good idea): A WRITTEN REPORT

I know that I am responsible for presenting my completed project at the Chatfield Science Fair on March 4, 2010.

Student Signature _____

I understand the goals my child has for his or her project and have read and understand the requirements for the project.

Parent Signature _____

I am aware of the project this student is undertaking at home and will be available to offer support so that it is completed to the best of the student's ability.

Teacher Signature _____

Grade 5-8 Form: For an **experiment investigation**, please fill out this form and return to your teacher by: **January 8, 2010.**

Name _____ # _____

Homeroom Teacher _____

The problem or question I plan to investigate is _____

My hypothesis (educated guess to answer the question) is _____

The materials I will need are _____

The basic procedure I will follow is _____

The manipulated variable will be: _____

I know that after I do the procedure I need to collect and record data, organize the data into results, and make conclusions to answer my original question.

I understand that on my final project I must have these parts clearly labeled and displayed:

- QUESTION
- HYPOTHESIS
- MATERIALS
- PROCEDURE
- VARIABLE
- DATA
- RESULTS
- CONCLUSION
- SAMPLES OF THE EXPERIMENT
- A WRITTEN REPORT

NOTE:
Rough Draft of Typed display papers and written report is due to homeroom teachers by February 15.

Final project must include a written report which can reflect the display papers.

I know that I am responsible for presenting my completed project at the Chatfield Science Fair on March 4, 2010.

Student Signature _____

I understand the goals my child has for his or her project and have read and understand the requirements for the project.

Parent Signature _____

I am aware of the project this student is undertaking at home and will be available to offer support so that it is completed to the best of the student's ability.

Teacher Signature _____

SCIENCE FAIR DISPLAY BOARDS ORDER FORM

To order a display board, this form is due with payment to the homeroom teacher on or before January 22, 2010.

Name _____

Classroom Teacher: _____

Econoboards

Econoboard is made of die cut corrugated cardboard.
Size: 48 inches wide by 32 inches tall

Number ordered:	Money Enclosed:
_____ White \$3.00 each	_____

Proboards

Proboard is made of quality formboard and is very sturdy. A Title Board in the color of your choice can be added to the project. Size: 48 inches wide by 32 inches tall.

Number ordered:	Money Enclosed:
_____ White \$5.00 each	_____
_____ White Title Board 1.25 each	_____
_____ Black \$6.50 each	_____
_____ Black Title Board 1.50 each	_____
_____ Green \$6.50 each	_____
_____ Green Title Board 1.50 each	_____
_____ Blue \$6.50 each	_____
_____ Blue Title Board 1.50 each	_____
_____ Red \$6.50 each	_____
_____ Red Title Board 1.50 each	_____
_____ Yellow \$6.50 each	_____
_____ Yellow Title Board 1.50 each	_____

Example of
Title Board



TOTAL MONEY ENCLOSED: _____

Families should only place one order.
Make checks payable to: Chatfield School
Total payment must be made with the order.
Display boards should be available for pick up by Feb. 12, 2010.

Additional Science Fair
Board options can be
found at:
www.epidisplays.com