Letter to Parents

Dear Parents of Kindergarten-Sixth Grade Students:

GICS students in Kindergarten through Sixth grade may enter the **2nd Annual Green Isle Community School Science Fair**. Their projects will be displayed and feedback will be provided.
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The GICS Science Fair will be held on Tuesday, March 6th.

The information in this packet should help you assist your child in developing his/her Science Fair Project.

Included in this packet is a detailed set of expectations for evaluating Science Fair Projects, the rubrics for an Experiment, Exhibit, Approval form, project categories, research plan guidelines and information on the scientific method should make the learning more focused and successful. A calendar of important dates and information sites are attached.

Team projects will not be allowed. All projects will be done by individual students.

Additional Do's and Don'ts:

- **Do** fill out the project approval form and hand in by January 13.
- **Don't** start any experiments prior to your teacher signing the project approval form.
- **Do** help your child brainstorm Science Fair ideas. Please **don't** choose one for them.
- **Do** go to the library or other places with your child to help them find reference materials. Please **don't** find all the materials yourself and give them to the child.
- **Do** help type information for your child if needed. Please **don't** type information the child cannot read or understand. They will need to explain the entire project to a teacher or judge.
- **Do** go over the expectations as explained in the rubric for the science project with the child.
- **Do** get information from textbooks, library books, and Internet. Please **don't** let children copy information word for word.
- **Do** help students edit their work. **Please** don't revise student's work. It should be in the child's own words.

Important Dates

Science Fair Packet home with student	January 2012
Family Science Fun Night	January 6, 2012
Written idea for project due from student	January 13, 2012
GICS Science Fair	March 6, 2012
Regional Science Fair Registration Due	March 12, 2012
Mankato Regional Science Fair **www.mnsu.edu/sciencefair**	April 28, 2012

Questions? You can contact: Cathy Malinowski 248-3391 satellite69@frontier.com

Table of Contents

Science Fair Experiment

A Science Fair Project should be an experiment or a demonstration. The student must **complete the Elementary Project Approval Form** which should also help them work through ideas for their project. Detailed expectations for each type of project are provided on the next three pages in rubric form. Projects will be evaluated using these rubrics.

An **Experiment** follows the steps of the Scientific Method (information at the end of this packet) and clearly asks a question. An experiment is an operation or set of tests carried out under controlled conditions in order to discover an unknown effect or to test a hypothesis.

Most significantly, the results of the experiment are unknown to the student prior to conducting the experiment. There must be some level of originality to the idea being tested.

In a **demonstration** the student takes known facts and known results to show how a process, device or procedure works. Frequently, ideas from books such as *The Complete Science Fair Handbook* will result in a demonstration because the student already knows the results. Many times, a demonstration can be reworded to ask a question and then be turned into an experiment.

Science Fair Expectations-- Grades K, 1 and 2:

1. **Elementary Project Approval form –** signed by you, your parent and your teacher—**Due January 13**

2. **The problem or idea:** One or two sentences written on the GICS Data sheet telling what you studied. Tell why you picked your topic.

3. **Hypothesis (for experiments):** One sentence written on the GICS Data sheet. It tells how you think the problem can be solved.

3. **Procedure or report:** Tell what you did step by step or learned

4. **Results:** Tell what actually happened or show what your exploration taught you

5. **Display: D**isplay board; you may include your collection, model or other visual materials

   Your display has two main parts:

    a visual display

    an oral presentation

   The visual display should be no higher or wider than 3 1/2 feet and 2 1/2 feet deep. This size will allow you to have half of a table display space.

    **Your visual display should . . .**

   - Be attractive
   - Be easy to read and understand
   - Have pictures or drawings
   - Include your data sheet (and notebook if you choose to do one)

    **Your oral presentation should . . .**

   - Tell how you chose your idea
   - Have answers to questions about your project
   - Tell what new questions you have

5. **Neatness and Appearance:** Your data sheet and visual display should be neat and well organized.

6. **Difficulty:** The project should be appropriate for the grade level and a challenge for the student. It requires research/ looking up facts

7. **Participation and Attitude:** Excited and willing to participate in GICS Science Fair.

Science Fair Expectations—Grades 3, 4, 5, 6:

1. **Elementary Project Approval form –** signed by you, your parent and your teacher—**Due January 13**
2. **Science notebook –** You will need a **Science notebook.** (optional for K - 2) (See What is a Science notebook)

   Write down everything you do every step of the way.

   It will be a record of all your topic ideas, hypothesis', resources, test results, and conclusions. Use it to keep track of all your ideas even if you don't end up using them. You should bring your Science notebook to the science fair and include it in your display
3. **Data form –** to help you with your exhibit
4. **Display** (display board)
   a. Your display has two main parts:

 a visual display

 an oral presentation

The visual display must stand up on a table by itself. It should be no higher or wider than 3 1/2 feet and 2 1/2 feet deep. This size will allow you to have half of a table display space.

 **Your visual display should . . .**

- **Be attractive**
- **Be easy to read and understand**
- **Include your Science notebook**
- **Have pictures or drawings**
- **Have some examples of your experiments**
- **Have charts or graphs**

 **Your oral presentation should . . .**

- **Tell how you chose your idea**
- **Tell what you thought would happen**
- **Explain how you set up your experiment**
- **Have answers to questions about your experiment**
- **Explain what happened**
- **Tell if your hypothesis was correct**
- **Tell what new scientific information you learned**
- **Tell what new questions you have**

5. Models, additional visual materials (optional)

Rules

1. Get your project approved by January 13, 2012.
2. **Space limitation**: Each project is limited to a size that allows display on a space (36 inches wide). Display boards will be available through school. More info to follow. Or they can be purchased at stores such as Target or Hobby Lobby.
3. Team projects will not be allowed.
4. **Living things**: Students should not cause injury or stress to any animals for their project. If **vertebrate animals** are going to be part of your science fair project, you will need another form. (Please contact Cathy at 248-3391 or satellite69@frontier.com for more information.) This includes giving chemicals to an animal, killing or dissecting an animal, or keeping an animal in a container not similar to its usual habitat. Live animals must not be brought for display at the science fair.
5. **Safety**: Electrical projects may use batteries as sources of electricity. Projects using electrical current must indicate upon project approval that they require an outlet.
6. The following items WILL NOT be permitted at the exhibit floor:
    a. Glass containers
    b. Liquids
    c. Live animals
    d. Open food items
    e. Bacteria
    f. Mold Cultures
    g. Dirt

    Students may have projects involving these items at the GICS fair, but must simulate and/or photograph and document the use of these items.
7. **Pictures**: Pictures of the students and the project in progress or at conclusion are encouraged.
8. Place the student(s) name(s) on the back of the display board.

Remember:

Your project must not hurt anyone.

Your project must not hurt animals.

Dangerous chemicals are not allowed.

No open flames are allowed.

ELEMENTARY PROJECT APPROVAL FORM

This completed form is required for ALL projects.

1) Student's Name: _____ **Grade:** _____

Email (Optional):_____

(Team) 2nd Student's Name: _____ **Grade:** _____

Email (Optional):_____

(Team) 3rd Student's Name: _____ **Grade:** _____

Email (Optional):_____

2) Title of Project:_____

3) Briefly outline or describe your Research Plan:

4) School: _____ **School Phone:** _____

School Address: _____

1) REQUIRED FOR ALL PROJECTS

a) Student Acknowledgment:

☐ I am sure that my project does not involve hazardous materials, chemicals, activities, or devices and does not place humans or animals at risk.

☐ My experiment as described in the Research Plan will be performed in a safe environment and will not endanger others.

_____	_____	_____
Student's Printed Name	Signature	Date Acknowledged (Must be prior to experimentation.)

b) Parent/Guardian Approval: I have read and understand the Research Plan. I consent to my child participating in this research and certify that the research will be conducted safely.

_____	_____	_____
Parent/Guardian's Printed Name	Signature	Date of Approval (Must be prior to experimentation.)

c) Teacher Approval: I have read and understand the Research Plan and certify that it is safe for the student.

_____	_____	_____
Teacher's Printed Name	Signature	Date of Approval

This form must be with the student's project on the day of the local and/or regional science fair.
Team projects only need one of these forms.

GICS Science Fair Data Sheet

1. What is the problem that you are going to find out more about with this science fair project?

_____

_____

2. Why do you want to learn more about this? _____

_____

3. My hypothesis is:

_____

_____

_____

4. Procedure: My steps in this project. You should have at least 3 steps.

_____

_____

_____

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5. Results: What actually happened in the experiment or what did you learn with your exhibit? Please write one or two sentences.

_____

_____

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6. References: keep track of all websites, books and articles that you use to help you create your exhibit, conduct your experiment, or find supporting materials from (create a bibliography—2or more references K-2; Gr 3-6 must use 5 or more).

How do I get started?

Select a Topic:
Remember a Science Fair Experiment Project is a test you do to find an answer to a question. An experiment helps find the answer to your problem or question and in an exhibit/exploration research and observations show what you know about something. You must choose a question or problem that can be tested. What are you trying to find out?

State Your Hypothesis:
A hypothesis tells how you think the problem can be solved. It is a reasonable guess to a solution for the problem. It is a statement of what the experimenter thinks will happen.

Procedure:
Tell what you did to answer your question or solve your problem. Write down the steps in order. Data and observations are what actually happen. Careful observations must be recorded.

Results:
Tell what actually happened in the experiment.

Conclusions:
Now using your results, tell if your experiment proved or disproved your hypothesis. If you disproved your hypothesis, that is OK, but record it. If your results caused other questions, record those too.

BE CAREFUL! DO A GOOD JOB! LEARN! CHALLENGE YOURSELF AND HAVE FUN!

Science Fair Project Ideas:

Holly Harjes has many resources available for the Science Fair. There are many books available at the GICS Library at many different levels of difficulty.

Here is a list of **possible** science fair projects. By no means are these the only topics you can use for the science fair. Hopefully, they will help you come up with a creative idea of your own.

1. How much salt does it take to float an egg?
2. What kind of juice cleans pennies best?
3. Which dish soap makes the most bubbles?
4. What brand of raisin cereal has the most raisins?
5. Do ants like cheese or sugar better?
6. How long will it take a drop of food dye to color a glass of still water?
7. Does warm water freeze faster than cool water?
8. Do different types of apples have the same number of seeds?
9. Does holding a mirror in front of a fish change what a fish does?
10. Will bananas brown faster on the counter or in the fridge?
11. Which paper towel is the strongest?
12. What did Minnesota look like during the Jurassic period?
13. Do plants need water?
14. Do plants like a certain color?
15. Do plants like music?
16. Do plants grow in different soils?
17. Do plants like different kinds of liquids?
18. What kind of pet food does my pet like best?
19. What stains won't come out of clothing?
20. What things are and aren't picked up by a magnet?
21. How long does it take a plant to grow?
22. How does solar energy work?
23. How is a video game made?
24. How does sound travel under water?
25. How does an electric car work?
26. Can I turn one of my battery operated cars into a solar car?
27. Which trees are most common in my community? Why?
28. Which breed of chicken lays the most eggs in the winter?
29. Which fabric is most water resistant?
30. Can garbage be used to generate electricity?
31. What kind of rocks are in my rock collection? Where are they from?
32. How does wind energy work?
33. What is the best shape for a bridge?

Some More Science Project Ideas

What's the science behind baseball, the skateboard, & hockey www.exploratorium.edu/sport/index.html
http://www.crystal-clear-science-fair-projects.com/
http://scienceclub.org/scifair.html
http://www.cool-science-projects.com/elementaryScienceProjects.html
http://sf.factmonster.com/spot/sciproject2.html

2011-2012 Elementary Science Fair Project Categories (Gr. 3-6)

Page address: **http://www.mnsu.edu/sciencefair/school/elemcat.html**

The following are the categories for the 2012 Regional Science & Engineering Fair. Please note that some of the categories have changed. On your entry materials, you must specify one of the following categories for your project:

Animal Sciences
Animal life - worms, snails, insects, spiders, crustaceans, and other invertebrates, fish, amphibians, reptiles, birds, and non-human mammals. Includes animal behavior, life cycles, body structure and function, animal genetics, classification of animals, animal breeding, farm animals, veterinary medicine, etc.

Behavioral and Social Sciences
Human behavior, social and community relationships, psychology, sociology, anthropology, archaeology, ethnology, linguistics, learning, perception, urban problems, reading problems, public opinion surveys, educational testing, etc.

Chemistry and Biochemistry
Study of nature and composition of matter and laws governing it - general chemistry, organic chemistry, inorganic chemistry, materials, plastics, pesticides, metallurgy, soil chemistry, physical chemistry, acids and bases, testing of products of a chemical nature, and the chemistry of life processes — enzymes, fermentation, metabolism, etc.

Earth and Planetary Sciences
Geology, geography, meteorology, crystals, rocks, minerals, soils, volcanoes, weather, fossils, gravity, atmosphere, rivers, lakes, sea and oceans, earth resources, earth structure, early earth, and astronomy, including the sun, planets, solar system, earth and moon interactions, the stars, galaxies, the universe, comets, life on other planets, etc.

Energy and Transportation
Fossil fuel energy, alternative energy sources, including wood, wind, solar, nuclear, biofuels, non-renewable and renewable energy sources, energy efficiency in appliances, furnaces, air conditioners, insulation, batteries, automotive and aeronautical engineering, vehicle development, ships and boats, flight, aircraft design, engines, cars, motorcycles, rockets, space travel, etc.

Engineering, Computers and Math
Technology projects that directly apply scientific principles to manufacturing and practical uses - civil, mechanical, chemical, electrical, photographic, sound, controls and thermostats, product testing of engineered products, thermodynamics, robotics, environmental engineering, computer hardware, software engineering, Internet networking and communications, graphics (including human interface), simulations/virtual reality or computational science (including data structures, encryption, coding, and information theory), statistics and probability, mathematics, etc.

Environmental Science
Pollution (air, water, and land), pollution sources, waste disposal, measurement of air quality, soil and water contamination, bioremediation, ecology, ecosystem management, land resource management, pollution from farms and cities, herbicide and pesticide usage relative to species declines, acid rain, recycling, waste management, etc.

Family Consumer Science
Interpersonal relationships, family issues and strengths, stress and crisis, food and nutrition, food and culture, dietetics, food preservation, experimental food science, textiles and clothing, child development, product testing of foods, clothing, household products, etc.

Health Sciences and Human Performance
Medicine, dentistry, pathology, ophthalmology, sanitation, pediatrics, dermatology, allergies, speech and hearing, human genetics, human anatomy and physiology, holistic health and wellness, human chronic and infectious diseases, health and aging, exercise, human performance and athletics, fitness for living, products testing of sports equipment, health and beauty aids, etc.

Microbiology
Biology of microorganisms, bacteria, viruses, protozoans, bacterial genetics, yeast, molds, mildews, other fungi, antibiotics, animal and plant diseases, including agricultural diseases, soil microorganisms, etc.

Physical Science
Theories, principles, and laws governing energy and the effect of energy on matter - solid state, optics, acoustics, particle, nuclear, atomic, plasma, superconductivity, fluid and gas dynamics, electricity, magnets, simple machines, heat and heat transfer, motion, friction, gravity, pressure, sound, light, lenses, mirrors, buoyancy, levers, testing of products at physical science nature, etc.

Plant Sciences
Plant life - flowering and non-flowering plants classification, plant structure and function. Includes agriculture, agronomy, horticulture, forestry, paper production and wood products, plant genetics, hydroponics, genetically modified crops, effects of light on plants, flower preservation, plant communities, etc.

Science Fair FAQ:

- **Why we have a Science Fair?** The science project gives students an opportunity to learn science on their own in an area that particularly interests them. The Science Fair gives them an opportunity to share their discoveries with others and to learn from the discoveries of their classmates.

- **Who participates in the Science Fair?** All GICS students can participate in the Science Fair by presenting a project of their own choosing. Students in grades 3-6 are required to display a science fair project.

- **When do we work on the Science Fair?** Some work on the Science Fair is done at school. But much of the work will need to be done at home. I recommend that you start the project as soon as possible. The deadline will sneak up on you. If you need suggestions on the Science Fair or have questions, please feel free to contact Cathy Malinowski at satellite69@frontier.com or 507-248-3391.

- **What kind of project can we do?** An Experiment. For an experiment, you must choose a topic that can be made into an experiment (something your child can test) or observations. I am enclosing a list of Science Fair topics for you to get ideas from. Please do not use this as a limit to what you and your child can do for a project. Have him or her pick something that is interesting to them or something they have a question about.

- **What steps do we need to follow?** You should follow the scientific method when creating your Science Fair Experiment project. I am enclosing a data sheet that will be included with your completed project and will be part of the Science Fair grade. By following the data sheet, you will follow the scientific method steps.

- **When is the Science Fair?** The Science Fair will be held at School Tuesday, March 6, 2012. Students will set up their projects in the morning. Judging will take place from 11:00 am to 1:00 pm. The science fair will be open to the public in the morning before judging and after 2:30 pm.

- **Where is the Science Fair? When do projects need to be completed?** Science Fair projects will be displayed in the gym to be viewed by students and judges during the school day. Parents, friends and community members may view the projects in the morning until judging and then again after 2:30 pm. There will be an awards ceremony at 2:30 pm. Projects must be left at school that afternoon so the public can view the projects during conferences.

- **What kind of a display should we use?** Your display board should be 36 inches wide. Your size should be limited to the size of a desktop. If you anticipate a larger display, please contact me and we will try to accommodate you. You should display your experiment or parts of the experiment. You should include a visual display which tells what the experiment is about, your hypothesis, your steps, your results, and conclusion. The data sheet and/or notebook will be included with the display. The data sheet will help you create your visual display.

- **What is the written presentation?** Your child needs to complete the data sheet which explains the project and have a Science notebook (Required for Grades 3-6) documenting their progress. These will help with the visual display.

- **What is the oral presentation?** Your child will need to share the information about their science fair project at school. He or she will also need to share this information with parents and friends at the Science Fair. The oral presentation is an important part of the science fair.

- **How will the Science Fair be graded?** I am enclosing a grading sheet for you to use a guide to help you when working on projects at home. K, 1, 2 projects will not be judged but will be given feedback.

- **What can I do after the GICS Science Fair?** Students in grades 3-6 may be eligible to compete in the South Central/Southwest Minnesota Regional Science and Engineering Fair held in Mankato on April 28, 2012. Registration deadline is March 12, 2012. For more information go to www.mnsu.edu/sciencefair The cost is $20.

Experiment Rubric

Point Value	1 - Beginning	2 - Developing	3 - Accomplished	4 - Exemplary
Title	No title.	Title with problems in *writing mechanics*.	Student has title with correct *writing mechanics*.	The title is in the form of a question with correct *writing mechanics*.
Problem	No question is asked. No problem is identified.	Incomplete problem statement.	Complete problem written as a question with correct *writing mechanics*.	Complete problem written as question and including the information that led student to ask the question. Correct writing mechanics.
Background Information (Research)	No background information.	Incomplete background information.	Background information states some work done prior to experiment with correct *writing mechanics*.	Details which show that student has gathered information and learned about the topic(s) in the project, referring to specific references. Correct *writing mechanics*.
Definitions	No definitions of terms.	Some definitions, but incomplete.	Complete definitions of terms with correct *writing mechanics*.	All key vocabulary for experiment and research correctly defined. Student understands definitions. Correct *writing mechanics*.
Hypothesis	No *hypothesis*.	Incomplete *hypothesis* or hypothesis does not follow "If…. then…." format	*Hypothesis* written with correct *writing mechanics* but is not completely testable.	The *hypothesis* is a "If … then…." statement. The *hypothesis* is testable. Hypothesis is linked to background information. Correct *writing mechanics*.
Experimental Procedure	Experimental procedures not listed.	Experimental procedures listed but are incomplete and/or not listed step by step.	Experiment procedures are listed in sequential order with correct *writing mechanics*. Include materials list.	Experimental procedures are *quantitatively* and/or *qualitatively* expressed and are listed step by step. Includes complete materials list and correctly identifies *dependent* and *independent variables*.
Results	No results.	Results are written but not connected to hypothesis.	Results are clearly written with correct *writing* mechanics and connected to hypothesis.	Student gives brief, clearly written description of what happened and shows results using clearly labeled graphs, charts, time lines, etc., clearly indicating variables.
Conclusion	No conclusion.	Student's conclusion is not based on the results and/or is not connected to the hypothesis.	Student makes a conclusion based on the hypothesis with correct *writing mechanics*.	Student answers question formed by *hypothesis* based on results, using an "I did. … and then… happened" statement. Student explains why (or why not) specific results were achieved. Conclusion is based on the results and answers the question.
References & Acknowledgments	No *references* or *acknowledgments*.	*References* or *acknowledgments* but not both, incorrect format.	*References* and *acknowledgments* but in incorrect format.	Complete list of *references* and *acknowledgments* in correct bibliographic format.

For Grades 3-6 only. This is the judging form used at the regional science fair.

SC/SW Minnesota Regional Science & Engineering Fair ELEMENTARY JUDGING FORM

Student's Name _____
Project Number _____
Project Title _____
_____

Students are judged on the following criteria—creative ability, scientific thought, thoroughness, skill, and clarity—as reflected by the questions listed below.
RATING SYSTEM: 1 = unsatisfactory, 2 = needs improvement, 3 = satisfactory, 4 = very good, 5 = excellent

JUDGES: (1) circle the point value, (2) fill in the point blank, and (3) total the points.

Does the project show creative ability and originality?	1 2 3 4 5 _____
Does the project demonstrate ideas developed by the student?	1 2 3 4 5 _____
Is the project idea unique or at least reasonably different from the original source of the project idea?	1 2 3 4 5 _____
Is the problem stated clearly and unambiguously?	1 2 3 4 5 _____
Was the problem sufficiently limited to allow a plausible approach?	1 2 3 4 5 _____
Are the methods used unique, appropriate and thorough?	1 2 3 4 5 _____
Are the variables clearly recognized and defined?	1 2 3 4 5 _____
Is the control correctly used?	1 2 3 4 5 _____
Is there adequate data to support the conclusions?	1 2 3 4 5 _____
Are the conclusions accurate and based on data gathered?	1 2 3 4 5 _____
Was the majority of the work done by the student?	1 2 3 4 5 _____
Did the student research the topic using several types of sources? (Internet, articles, books, interviews)	1 2 3 4 5 _____
Is a list of references or bibliography provided?	1 2 3 4 5 _____
Does the student completely and enthusiastically describe the project?	1 2 3 4 5 _____
Does the student answer questions about the project clearly?	1 2 3 4 5 _____
Is he project display visually appealing and well organized?	1 2 3 4 5 _____
Does the student use correct grammar and spelling on the project display?	1 2 3 4 5 _____
Is the student's research log (notebook or journal) complete?	1 2 3 4 5 _____
Does the student have ideas for improving the project?	1 2 3 4 5 _____
Did the student allow an adequate amount of time for completing the project?	1 2 3 4 5 _____

TOTAL POINTS _____

RIBBON POINTS
Purple Ribbon = 100-85 Points
Blue Ribbon = 84-70 Points
Red Ribbon = 69-50 Points
Green Ribbon = 49-20 Points
COMMENTS *(on back side of this judging form)*

The Scientific Method

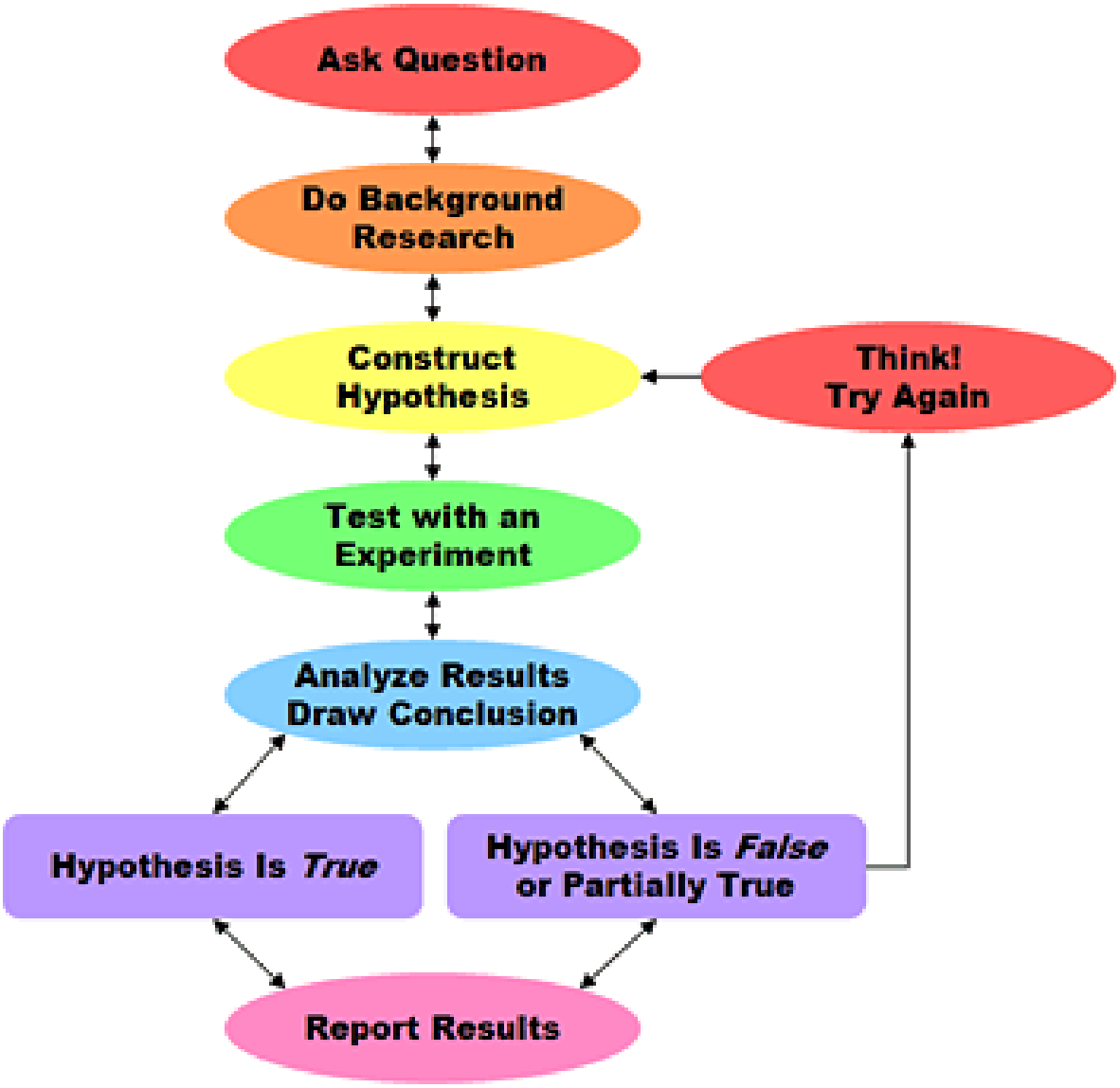
The problem or idea: What are you interested in; what is your question?

Hypothesis: Tells how you think the problem can be solved, or what you expect to observe or discover.

Procedure or report: Tell what you did step by step or learned

Results: Tell what actually happened

Conclusions: Did your results prove or disprove your hypothesis? What did you learn, what new questions do you have?



What is a science notebook?

For centuries, the science note book has been key in the development of understanding our world as scientists have recorded their discoveries, observations and explorations by writing in notebooks. Today scientists still use notebooks to keep a record of observations that can later be revisited in the learning process. Science notebooks vary as much as the people who create them.

In their notebooks, then, students may:

- List ideas and interests; brainstorm
- Describe problems they tried to solve;
- List the procedures they used;
- Document observations they made;
- Note conclusions they arrived at; and
- Record their reflections.

Notebooks are viewed mainly as a written account, in more or less detail and with diverse quality, of what students do and, hopefully, learn through the exploration of science in whatever interests them .

Why use a science notebook? According to "Science Companion" website (***http://www.chicagoscience.com/node/208***)

A science notebook enables children to work as scientists and keep a cumulative notebook to record their thoughts and observations. Within the context of science activities, notebooks promote the use of literacy while clarifying children's emerging ideas and theories about science phenomena.

A science notebook encourages children to make records using words and drawings in age-appropriate ways. Students are able to impose their ways of seeing and thinking about the science phenomena, constructing or reconstructing the phenomena through their own lens of experience. This not only promotes their literacy skills, but also important scientific process skills such as:

- Observing and describing;
- Making scientific drawings;
- Drawing to scale; and
- Making graphs.

Stating a Hypothesis – for an experiment

Stating a hypothesis is an important part of setting up an experiment. After you decide on the question you want answered, your hypothesis is what you think the answer is going to be. It is an educated guess you make after you think about what you already know. Start by writing your question in your notebook in the following format:

I wonder _____

Now write your hypothesis or what you think the answer will be in your notebook.

My hypothesis is _____

Remember that it is not important whether your hypothesis is right or wrong. What is important is that you find out the correct answer to your question by doing an experiment.

Choosing Controls and Variable(s) – for an experiment

The variable(s) in your experiment is the part of your experiment you change to affect the results. Having only one variable assures that you will know why you got the results you did. For example, if you had two of the same type of plants, the same size in the same type of pot, placed on the same table, and given the same amount of water and light, you would think they would grow to the same height. These are called controls, the things that are the same. But if you planted one in top soil and the other in sand, you might not get the same results. The type of soil you plant the plants in would be the variable. It is the one thing you change.

Write down the controls you plan to have in your experiment in your notebook:

_____

Write down the variable(s) you plan to have in your experiment in your notebook:

_____

Writing a Procedure – for an experiment

Writing a procedure means telling what you plan to do in your experiment or your exhibit. A procedure includes three different parts: a materials list, step-by-step directions, and if it is an experiment, a listing of the controls and variable(s) in the experiment. You can use this sheet below as a guide to write down your procedure in your notebook.

Materials List

Step-by-step directions

Controls in the Experiment (the part of your experiment that stays the same)

Variable(s) in the Experiment (the part of your experiment you change to affect the results)

Forming a Conclusion from an experiment

After you have completed your experiment, it is time for you to make a conclusion. A conclusion is your thoughts and opinions about what happened in your experiment and why you got the results you did. You can use this sheet below as a guide to help you form a conclusion. You should write in your notebook.

What happened in your experiment?

_____

What did you learn that you did not already know?

_____

What made your experiment turn out like it did?

_____

How were the results different from what you expected to happen?

_____

What was your original hypothesis?

_____

Read through your answers above and then complete your conclusion below. Be sure to use the results and data from your experiment to support your conclusion.

After completing my experiment, my conclusion is

_____

Charts and Graphs

Charts and graphs are not required but can really help show what happened with your experiments.

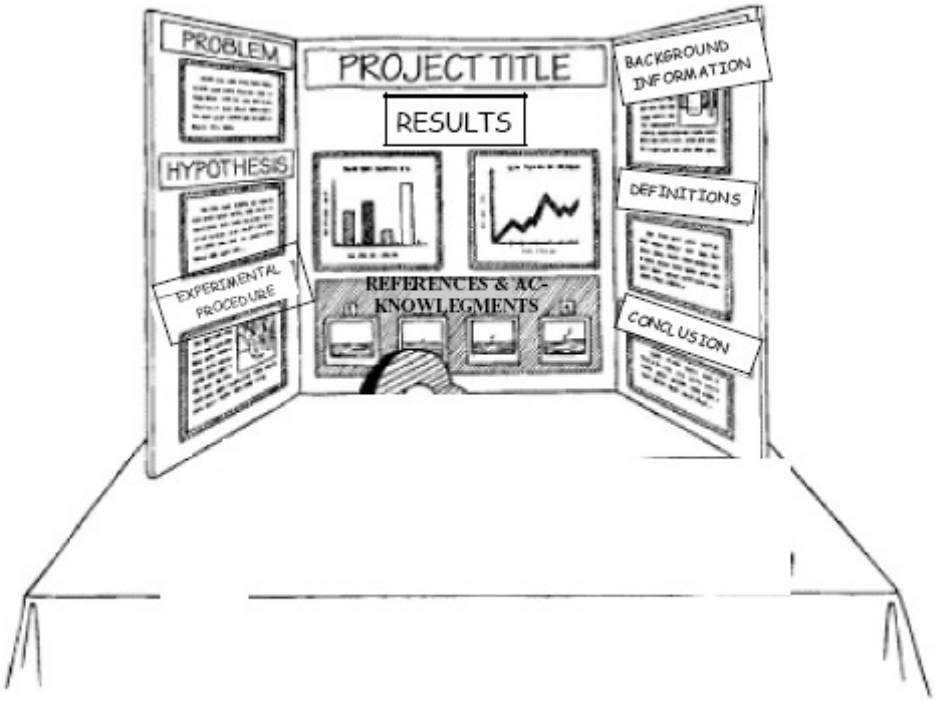
You can use a program such as Microsoft Excel or you can use a free online program such as Create a Graph: http://nces.ed.gov/nceskids/createagraph/

Display of Project

The illustration below gives an example of how a student might want to set-up his/her display board using the Scientific Method. Students may be creative if they choose, but if they do an experiment, the steps of the Scientific Method must be included in the project.

The project must fit entirely on a school desk and not overlap onto another desk. Projects may be smaller, but not larger.

Display boards will be available from school. Hobby Lobby usually has them available in a variety of colors; call the store before you go.



Bibliographic Format

Students in grades 3-6 should have a list of references

Book by one author:
Author Last name, First name. *Book*. City of Publication: Publisher, Year of Publication.

Book by two authors:
Author Last Name, First name and Author Last Name, First Name. *Book*. City of Publication: Publisher, Year of Publication.

Unsigned Encyclopedia Article:
"Title of Article." *Name of Encyclopedia*. Date of edition.

Signed Encyclopedia Article:
Author Last Name, First Name. "Title of Article." *Name of Encyclopedia*. Date of edition.

Periodical Article:
Author Last Name, First Name. "Title of Article." *Periodical*. Date: Pages.

Newspaper Article:
Author Last Name, First Name. "Title of Article." *Newspaper*. Date, edition. Pages

Interview
Person interviewed Last name, First name. Type of interview. Date interviewed.

Lecture
Instructor Last name, first name. Class Lecture. Class. School, City, State, Date.

Internet
(when available) Author Last Name, First name. "Title of Article." Date published. http://internet address. Internet. Date accessed.