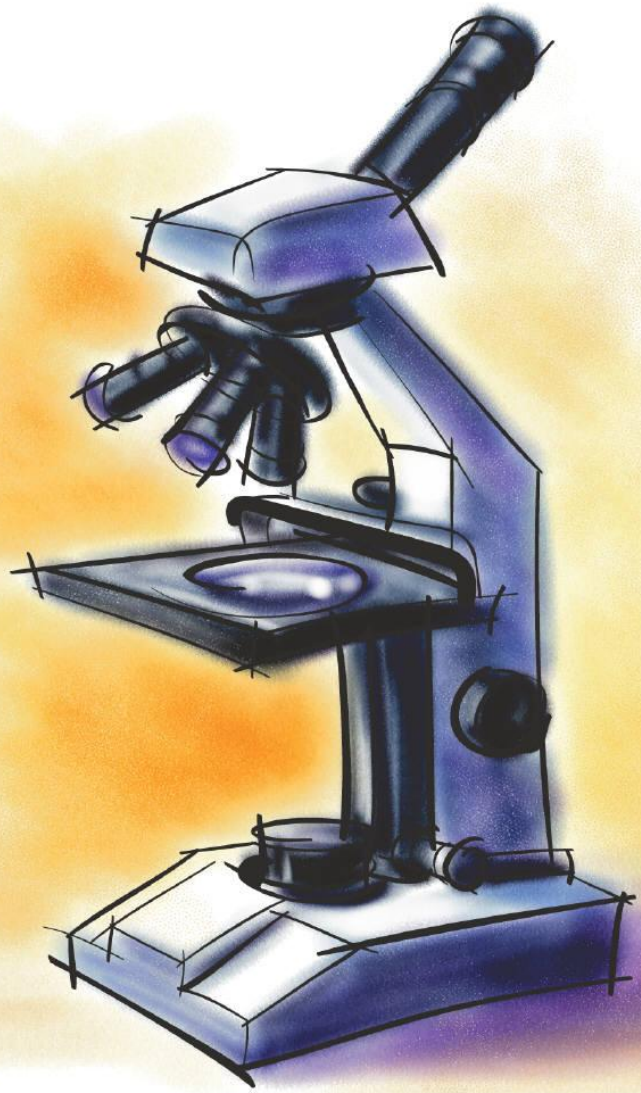
FLORIDA SCIENCE FAIR GUIDELINES
2010-2011



[SCHOOL NAME] | TEACHER NAME

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Imagine Schools
Florida Science Fair Guidelines
STUDENT HANDBOOK

(Adapted from the International Science and Engineering Fair Student Handbook)

The Imagine School's Florida State Science Fair will be held the week of May 12th in the Central Florida Region. The_____ Florida Region Science Fair will be held the week of _____. Our school fair will be held the week of _____ . To be eligible, students in 4th-8th grade MUST first enter the school science fair.

WHY DO A SCIENCE FAIR PROJECT? A science fair project allows you to participate in the scientific process, understand the scientific method, and develop skills in writing, oral presentation, creative thinking and problem solving. Explore a subject that interests you and stimulates your curiosity. You are the scientist. HAVE FUN!

CONFUSED ABOUT GETTING STARTED? Getting a topic requires some thought. Try looking through journals and magazines like *Natural History, Popular Mechanics, National Geographic, Consumer Reports, or Science News*. The internet is also an excellent source of ideas and information. Choose a topic that interests you and then decide how you can do an experiment that deals with this topic. Think how this project might improve the world and its inhabitants. Questioning is probably the most important part of scientific creativity and is often followed by an "if...then" statement. Questioning usually leads to experiments or observations. Choose a limited subject, ask a question, and identify or define a problem.

WHAT'S NEXT? Decide what type of project suits your needs.

1. A field (outdoors) investigation
2. A laboratory (indoors) study
3. A series of experiments or tests
4. A carefully collected set of observations

Reminder: A science project IS NOT a book report, a demonstration or simply building a model! Students cannot experiment on a volcano. Building a model of one, or reporting on one is not a science fair project either.

THEN… The student has to choose a problem or question to be investigated. It must be something the student can test so that it will yield measurable results. The student should ask if he/she has the necessary time, money, equipment, organisms, habitat, computer, technical expertise, etc. necessary to see the project through to its conclusion.

IMPORTANT! All projects MUST include the following 3 components:

I. Data Notebook
II. Written Report
III. Display Board

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Student Documentation Form

Name_____ Homeroom Teacher _____

Category: Circle One

Chemistry	**Environmental**	**Botany**
Biochemistry	**Engineering**	**Physics**
Earth and Space	**Behavioral and Social**	**Microbiology**
Medicine and Health	**Sciences**	

<u>Purpose</u> (the statement that explains why you are doing the experiment):

_____

<u>Problem</u> (the question you will be investigating shouldn't be answered with a yes or no):

_____

<u>Hypothesis</u> (State what you think will happen and the reason for your educated guess based on your research): _____

The items that have an effect on the experiment:

a. <u>Variable</u>(s) (Items that change during the experiment) _____

_____

b. <u>Control</u>(s) (Items that remain the same during the experiment): _____

_____

<u>Equipment</u> you will be using: _____

_____

<u>Length of time</u> (approximately) the experiment will take to complete? _____

***Each experiment should be done at least 3 times in order to find out if the results are the same (valid).**

Parent Signature: _____

****Teacher Approval: _____Date:_____**

Comments: _____

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Category Descriptions

Behavioral and Social Sciences: Human and animal behavior, social and community relationship – psychology, sociology, anthropology, archaeology, animal behavior, learning, perception, urban problems, public opinion surveys, educational testing, etc. When working with humans or animals you must get PRIOR approval from your teacher.

Biochemistry: Chemistry of life processes – molecular biology, molecular genetics, enzymes, photosynthesis, blood chemistry, protein chemistry, food chemistry, hormones.

Botany: Study of plant life – agriculture, agronomy, horticulture, forestry, plant taxonomy, plant physiology, plant pathology, plant genetics, hydroponics, algae, etc.

Chemistry: Study of nature, composition of matter and the laws governing it – physical chemistry, organic chemistry (other than biochemistry), inorganic chemistry, materials, plastics, fuels, pesticides, metallurgy, soil chemistry, etc. You may test some consumer products here. Some examples would include testing the effectiveness of detergents, waxes, cleaning products. Testing physical and chemical changes is appropriate for this category. Ideas: how to prevent rust, mildew, mold.

Earth and Space Science: Geology, mineralogy, physical oceanography, meteorology, seismology, geography, topography. (You can't really test planets or comets or the moon and stars – so no solar systems please). Ideas: test weather tools, test the causes of earthquakes, test the strength of rocks.

Engineering: Technology projects that directly apply scientific principles to manufacturing and practical uses – civil, mechanical, aeronautical, chemical, electrical, photographic, sound, automotive, marine, heating and refrigeration, transportation, environmental engineering. Ideas: What structures are the strongest (test shapes) – think of bridge designs. Why are cars made in different shapes? Will a "Hummer" go as fast as a "Corvette?" – test the design.

Environmental Science: Study of pollution (air, water, and land) sources and their control, ecology, waste disposal, impact studies. Ideas: ways to prevent erosion, study on decomposition (this takes a while so get started right away). How about studying air pollution from different pollutants: cars, buses, trucks – be careful, wear protective covering over you own nose. Test things marketed as biodegradable.

Medicine and Health: Study of diseases and health of humans and animals – medicine, dentistry, pharmacology, pathology, veterinary medicine, nutrition, sanitations, pediatrics, allergies, speech and hearing, etc. Be Careful with this section. You must get approval from your teacher when working with people or animals PRIOR to starting your project.

Microbiology: Biology of microorganisms – bacteriology, virology, protozology, fungi, bacterial genetics, yeast. Remember to take pictures. You can't display these organisms because someone may be allergic to them.

Physics: Pertaining to the part of the Physical Science Strand: Energy (light, sound, heat, and electricity) – Think of something with light waves (light bulbs, sound waves (IPods), radio waves, materials that protect us from heat (oven mitts) electrical circuits (what about those Christmas tree bulbs and if one is burned out), force (gravity, friction, magnetism) and motion. Ideas: roller coaster, design of airplanes, rockets as it affects motion and or speed, type of materials used that may affect physical laws: type of pavements, type of baseball bat, football other sporting equipment. How about a study on equipment used in the winter Olympics such as skates, skis, snowboards.

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Example of an organization format

Science Fair Project Classroom Timeline and rubric for classroom grades

Submittal Date	Assignment	Completed
Week of	1. Research various topics 2. Select a topic 3. Consult at least **3** sources to prepare your written report • Internet • Books • Encyclopedia • Contact a professional in the area of study • Write a letter to a business or manufacturer for information 4. Write bibliography 5. Write a written report of at least one page (5 paragraph report)	
Week of	1. Formulate hypothesis 2. Articulate the problem and purpose 3. Describe the experimental procedures 4. Develop a materials list	
Week of	1. Conduct experiment at least three times (trials make it more valid) 2. Take photos (Optional) 3. Record on-going observations (not just procedures) in data notebook (required)	
Week of	1. Write the results (what happened) in paragraph form. 2. Create graphs, chart, tables of the results (minimum of one)	
Week of	1. Write applications 2. Write recommendations 3. Write acknowledgements, include the reasons why you are thanking them	
Week of	1. Write abstract (one page summary of the whole experiment, not your written report) 2. Design your display board: border, catchy title, frames for typed sections, pictures to decorate	
Week of	1. Complete display board (glue on the sections - follow the placement exactly as the example's layout) 2. Compile written report (all sections from your display board as well as the written report and a creative cover - do not display your name on cover – put it on the back of the report) 3. Decorate data notebook	
Week of	1. Practice presentation (using the abstract as your guide)	
Week of April 25th and 26th	School Fair	
May 6th	Regional Fair at Imagine School at North Port	
May 20th	State Fair in Kissimmee, Florida	

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EXAMPLE

Student's Name _____ **Category** _____

CLASS GRADING SHEET: Each item will be graded and points will be deducted for lateness (1 pt. each day late). These grades are entered into grade book as class assignment grades. The final draft is a "project" grade.

Date Due*	**Part Due: Each item must be typed; double-spaced in 12-14 font**	**Total Points**	**Points Earned/Grade**	**Comments**
	Parent Acknowledgement Form	5		
	Student Documentation Form *** Items below will be turned in on the due dates listed**	5		
Pre-Experiment				
	Purpose and Problem	5		
	Research/ Background Information	15		
	Bibliography	5		
	Hypothesis	5		
The Experiment				
	Materials & Procedures	10		
	Control & Variable(s) (Subjects)	10		
	Results	5		
	Data (Tables, Graphs, Diagrams and/or charts (minimum of one)5	5		
	Conclusion	10		
	Application & Recommendations	10		
	Acknowledgements	5		
	Title Page & Table of Contents	5		
	Abstract Summary (including all components)	10		
	TOTAL POINTS	100		
*** Dates are subject to change**				

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CLASSROOM CHECK WRITTEN REPORT (BINDER) RUBRIC

Student's Name _____ Final Draft Project Grade _____

Category _____Homeroom Teacher _____

COMPONENTS- All items must be typed in 12-14 font & double-spaced; in the order listed below	**Total Points**	**Points Earned**	**Comments**
Title Page	1		
Abstract Summary w/Components	10		
Table of Contents	1		
Purpose	5		
Problem	5		
Research/Background Info *In own words, at least three sources, correct topic*	**15**		
Hypothesis	5		
Subject(s)	1		
Control & Variables	10		
Materials & Procedures	6		
Tables, Graphs, Diagrams (use metric measurements)	5		
Results	5		
Conclusion	10		
Application	5		
Recommendations	5		
Acknowledgments	1		
Bibliography	**5**		
Writing/Mechanics	5		
Neatness/Appearance/Order	10		
TOTAL	**100**		

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DISPLAY BOARD: CLASSROOM CHECK

Components	**Total Points**	**Points Earned**	**Comments**
Display Board: Neatness/ Appearance	20		
Scientific Method: Complete and ordered correctly	40		
Thoroughness	25		
Conventions: Grammar; Mechanics	15		
Total	**100**		

DATA NOTEBOOK: CLASSRROM CHECK

Components	**Total Points**	**Points Earned**	**Comments**
Journal Format: Observations			
Overtime: Dates/Times Statistics			
Total	**25**		

ORAL PRESENTATION: CLASSROOM CHECK

Components	**Total Points**	**Points Earned**	**Comments**
Voice			
Eye Contract			
Knowledge Level			
Enthusiastic			
Total	**100**		

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Project Ideas

Life Science

Behavioral and Social Science

Animals

What cat food do cats purr – fer (for)?
How does the color of a birdhouse affect feeding habits of birds?
Can birds see color (test three different bird feeders – and change the color)?
Do mice really like cheese?
Are dogs colorblind?
Do fish see colors?
How will holding a mirror in front of a fish change its behavior?
What color of birdseed do birds like best?
How does temperature affect the behavior of insects?
Can animals tell time?
Do male gerbils and girl gerbils behave differently?
Can you teach a cat tricks?
Which breed of dog learns faster?
What food do mealworms prefer?
What travels faster; a snail or a worm?
What effect does temperature have on the metamorphosis of a butterfly?
Which do ants prefer- cheese or sugar?

Animals or Humans

How does smell affect the taste of food?
On which surface can a snail move faster (dirt, sand, soil, grass, cement etc.)?

Humans

What effect does taping your fingers together have on the time required to button a shirt or jacket?
Is your handwriting affected by how tired you are?
Does music affect the time it takes children to put a puzzle together?
Do commercials influence the toys children want?
Does a reward system produce faster learning?
Can you identify objects just by touching them?
Can tell what something is just by its smell?
How can cologne/perfume affect your mood (or pulse rate)?
Compare whether or not we smile or frown more throughout the day.
Do different brands of the same flavor soft drinks taste different from each other?
Does music affect your heart rate?
Who gets more attention from teachers in the classroom: males or females?
What are the effects of playing video games on hand-eye coordination?

Microbiology

In what type of condition do algae grow best?
What makes yeast form?
Do all foods grow the same kind of mold?
Which citrus food is the best electrolyte?
What form of sugar combined with baker's yeast will produce the most carbon dioxide?
Which materials grow molds?
What prevents the growth of molds?
What bacteria are in pond water?
What bacteria are on the doors of restrooms?

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Botany

What is the effect of crowding on plants?
In what kind of material (sand, clay etc.) do seeds grow the best?
How does the direction in which you plant a seed affect the direction it grows?
How do vitamins affect the growth of a plant?
What fertilizer is the best for plant growth?
Compare the growth of planting frozen seeds and non-frozen seeds?
Can plants grow without soil?
Does the type of apple affect the number of seeds inside?
Does the size of the seeds affect the size of the plant?
Experiment with different way to germinate plants (seeds, leaves, roots).
How can you prevent fruit from turning brown?
How fast does grass grow?
What soil grows the best plants?
How does sugar affect the life of cut flowers?
Compare the effect of distilled water and filtered water on plants.
Compare the effect of rainwater and tap water on the growth of plants.
What are the effects of varying amounts of water on seed germination?
How does colored light affect radish growth?
What is the duration needed to chill tulips to get the tallest growth?
What type of soil do cacti grow better in: topsoil or sand?
What is the physical effect of ultraviolet rays on the germination and growth of phaseolus vulgari (or other plants) in different magnetic fields?
What is the effect of increased CO2 levels on pinus elliotti (or other plants)?
How do plants survive in extreme temperatures?
What is the affect of radiation (put seeds in microwave) on plant germination?
What is the effect of common window cleaners on plants?
What sunlight is better for plants- through a window, directly outside, through a shade?
What is the affect of colored cellophane on the growth rate of a plant?
What is the effect of blue food coloring on white carnations?
What is the effect of temperature on the growth of plants?

Health/Medicine

What removes plaque better from teeth: dry brush or moist toothbrush?
Compare a person's height on lung capacity?
What is the relationship between muscle strength and body fat?
Design an experiment that compares whether boys are more physically fit than girls?
How does washing your hands get rid of germs?
How do sanitation wipes at the grocery store clean the grocery cart?

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Florida Science Fair Guidelines
Physical Science

Physics

Energy (light)

Investigate whether or not a photograph can be made without a camera.
How do sunglasses protect your eyes?
How are different sunglasses different?
Can light bend?
How are different light bulbs different?
Does every object make a shadow?
Which colors fade the most?
What can prevent fading?
What is the difference between translucent materials and transparent materials?
What makes the colors in the rainbow?
What shows up the best in a black light?
What is the difference between regular light bulbs and fluorescent bulbs?

Energy (sound)

Why do different drums sound differently?
What makes the loudest drum beat?
What is the difference between the sound of an acoustic guitar and an electric guitar?
What is the difference in sound between a piano and an organ?
Investigate whether or not you can hear under water.
What is the difference between FM and AM radio?
Can you tell where sound comes from when you are blindfolded?

Energy (Heat)

How does preparation of food affect taste the when cooked in the oven vs. microwave?
Does the color of an object affect how hot it will get?
Does heat affect the size of things?
How does temperature affect the height that a dropped ball bounces?
Does temperature affect the height that a dropped ball bounces?
What is the effect of temperature on the distance a soccer ball can be kicked?
Does temperature affect the distance a golf ball can travel?
Does temperature affect tire pressure?
Does temperature affect a baseball's bounce?
What would make an M & M melt in your hand?
Do various materials all melt at the same rate?
Does temperature affect make-up?
Does the type of chocolate affect the melting rate?
Does the color of an object affect how warm it absorbs heat?
Why do you feel cooler when a fan is blowing?
What is the effect of color on the rate of evaporation of a liquid?

Energy (Electricity)

Which battery lasts the longest?
What objects conduct electricity the best?
How is static electricity produced?
How do you get the cling out of clothes?
What cell phone keeps its charge the longest?
What foods conduct electricity?
What circuits last longer?
How is the strength of a magnet affected by glass, cardboard and plastic?

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Force and Motion

How can you measure the average speed of an object between two points?
Which rubber bands stretch the farthest?
Which skateboards go faster?
How does the weight in a container affect its ability to slide?
What is the effect of the amount of cargo on the travel of a toy truck?
What is the effect of the length of a cylinder on the width of a field of vision?
How does the size of a coin affect the number of water drops that can be placed on it?
How does the amount of salt in a container of water affect the height an egg floats?
How can the design of a roller roaster track affect the speed of travel?
What type of wheel reduces friction the best?
What reduces friction?
How do the Olympic athletes increase their speed (on the snowboards, skis, bobsleds, skates)?
How do skaters do those spins?
How do ski jumpers stay in the air so long?
How are skateboarders able to do those turns in the air?
What kinds of forces do you see at amusement parks?
How does switching gears on your bike change the force needed to pedal?
What is the easiest way to lift a rock?
What is the easiest way to move your belongings into an apartment on the 14th floor?
What is the effect of different street materials on the speed of cars?
Why are there different shoes for different sports?
On what kind of surface do balls roll faster?
How does the weight of a pendulum affect the swing?
Compare how watches keep time?
How does changing the position of a fulcrum affect the level of movement?

Engineering

How does the shape of a boat affect its speed?
What shape is the strongest?
What is the strongest design for a bridge?
What holds two boards together better: a screw or a nail?
What is the best way to hang pictures on the wall?
What packing materials protect fragile products the best?
What conditions affect the strength of adhesives?
Why are the shapes of cars different?
Will the shape of an airplane affect its speed or distance?
What is stronger against hurricane force winds: tile, gravel roof or shingles?
What kinds of shutters protect glass windows the best during hurricanes?
How can you make the strongest dam?
What structures will prevent flooding

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Chemistry

How does alcohol or water evaporate faster?
Which kinds of kitchen wraps are best for keeping odors contained?
What is the fastest way to cool down hot chocolate?
In which liquid will ice cubes float?
What conditions cause metal to rust quicker?
What materials prevent rust?
What materials remove rust?
What brand of eraser is most effective in removing pencil marks?
What kind of juice cleans pennies?
Which dish soap makes the most bubbles?
What brand of soap lasts longer in water?
How long will it take a drop of food dye to color a glass of still water – will temperature affect this?
Compare the weight of liquids.
Which detergent removes carpet (clothes) stains the best?
Study the how object float in liquids with different densities.
What materials dissolve in water?
Which materials absorb the most water?
Which brand of tape holds the most weight?
What brand or type of paper can best resist penetration by a pencil or pen point?
What holds things together better; tape, liquid glue or glue stick?
What type of tape works best?
Which bar of soap lasts longer?
How long does chlorine stay in water?
How do household bleaches compare?
How is print quality affected by the kind of paper used?

Biochemistry

Why do foods turn colors when you cook them?
What makes a gummy bear sticky?
What spoils faster: egg whites or whipping cream?
Which ice cream melts faster (yogurt)?
Which bacon has the most fat?
Which ketchup is the thickest?
Compare the mass of chewed gum.
Compare the amount of vitamin C in fruit and vegetable juices.
How do hydrating shampoos strengthen hair compared to regular shampoos?

Earth and Space Science

Earth and Space Science

Weather

How does the level of the land affect wind speed?
How does the level of the land affect rainfall?
Which type of thermometer is the most accurate?
How can you make rain?
How do you protect yourself in a tornado?
How can today's clouds predict tomorrow's weather?

Land

Which minerals can you find in sand?
How does light affect the pH of soil?
What prevents erosion?
Why is there snow on mountaintops?
How is the type of soil a factor in landslides?
What kind of land absorbs the most heat?

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Environmental Science

What is the effect of mint leaves on ants?
What product keeps away mosquitoes the best?
What is the effect of detergent on bean seeds?
What are the effects of coffee or tea on germination?
Where does the grass grow greener?
What is better for the environment: paper or plastic?
How does plastic wrap affect a water heating solar panel?
How will reflected light change the efficiency of a solar cell?
Which mulch conserves moisture the longest?
What is the difference between tap and bottled water?
Which cars produce more pollution: American or foreign?
Compare the burning time of firewood and manufactured logs?
How do Earth friendly cleaning products measure up?
What is the biodegradability of packing materials?
Who litters the most: children or adults, girls or boys?
Investigate whether pollution (oil) reaches the aquifer when spilled on different types of land (sand, soil, grassy soil, rocks)?
What produces the most air pollution: cars, trucks, or motorcycles?
What is the effect of octane on gasoline mileage?
How does taking a bath or shower affect the amount of water used?

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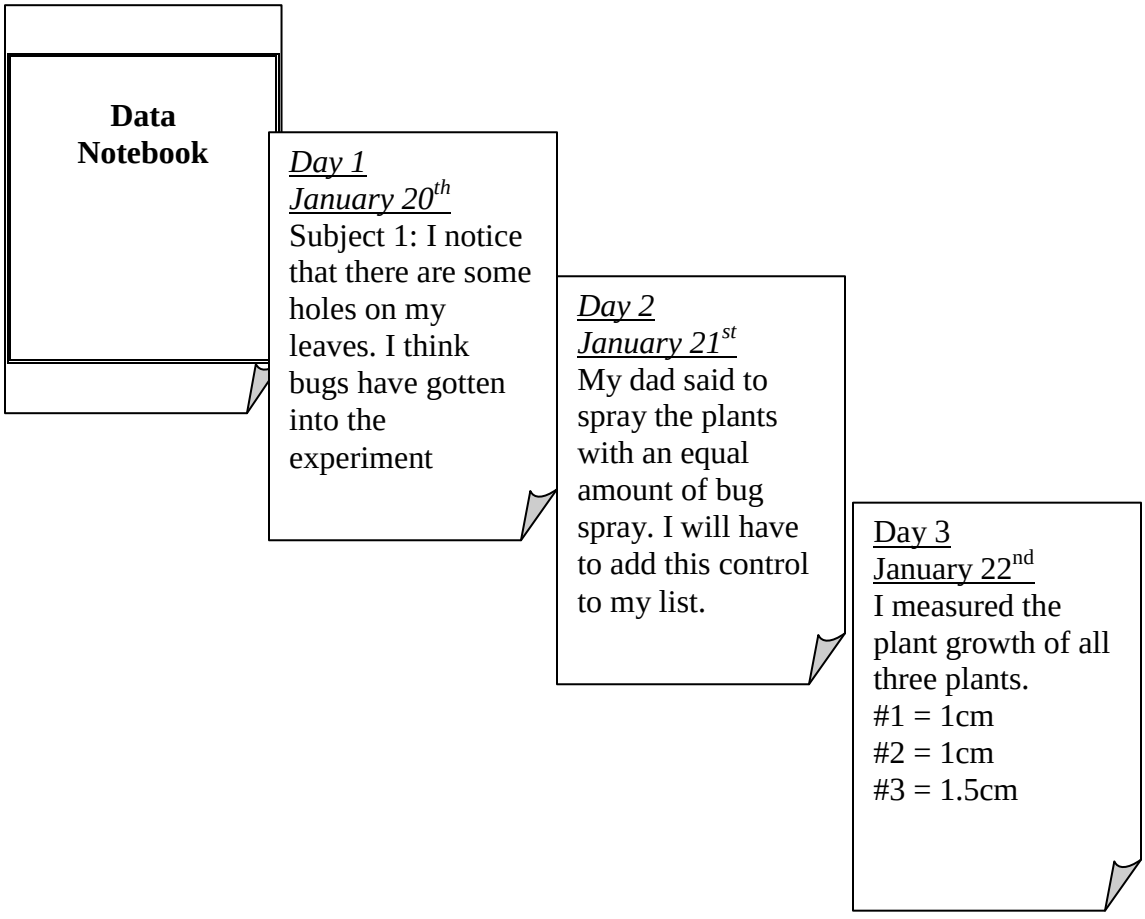
I. DATA NOTEBOOK

When you do an experiment, you make observations. You may record changes in your subjects, make notes about possible influences in your experiment that you didn't anticipate, or draw pictures of results along the way. All scientists are constantly recording relevant observations. A DATA NOTEBOOK is required for all experiments no matter how lengthy or short it might be. A data notebook is a journal that may be set up to reflect observations by the week, day, hour or minute, depending on the type of experiment. You could organize it by putting a day's observation on each page. A student's data notebook should also contain any other notes he/she may have made from the research, such as article summaries, important phone numbers or even possible contacts. Entries should be neat, dated, and orderly. It should be a complete and accurate record of the student's project from start to finish. It shows all the time and effort that went into the project. Suggestions: ½ inch binder, composition book of journal, notebook, and folder.



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Written Report Guidelines
The actual written report will contain research from reference materials, a bibliography AND all the section that are ALSO on your display board.

A student chooses a topic, researches important background information on the topic, and writes a paper about this research. This part is sometimes called the "Background Information". It is important that the student use the most current information he/she can obtain and that the paper is written in the STUDENT'S OWN WORDS. Research copied from the internet will not be judged highly. Use only data-based sites for research on the computer. Websites such as Wikipedia are not recommended as they may not have accurate information because they can be edited

The written report (packet put together in a binder or report folder with clear cover) is in addition to the information put on display and goes beyond the actual experimentation. It gives more detailed information about the science project and may include pictures, diagrams and added knowledge the student has gained through reading or talking with professionals in the area of research. This written report may also include any materials that the student may have sent away for, newspaper or magazine articles, and emails from other research scientists. THIS RESEARCH INFORMATION DOES NOT GO ON THE DISPLAY BOARD.

Why is the research to be done? In order to develop a "good" hypothesis, you need to do research on your topic. Only those students who KNOW something about their topic will become finalist. This makes the difference between projects done for a grade and projects that show students are truly interested in the topic.

DO NOT confuse the written report with your data notebook. Research is based on reference information. The data notebook is from your observations (watching your experiment).

Writing the Written Report

II. <u>Written Report</u>

The entire report should be typed (12-14 font), double-spaced, and placed 3-ring binder or folder with a clear plastic front, as it is a formal presentation of your science research project. The more thorough (more pages 2-3) your research is, the more points you will earn. Try to use at least three sources (books, internet sites, interviews).

Students are to use the rubric provided to keep track of their progress. The components are listed in the order they should appear in the written report.

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Written Report (Binder/Folder) Components

The components should be placed in a binder or folder with a report cover and must be in the same order as explained below: Those components on your display board indicated by an asterisk (*) should also in your binder, so make two copies of each when you run them off (one for your board and one for your written report binder).

I. Title Page: Students need to have a title that reflects their science project. This is not the problem. Type only the project title; Center the project title. Do not type name or any other information on this paper. Students should include graphics, clip art, or pictures on the Title Page.

II. *Abstract: Can only be done when your experiment is complete. It gives a summary of the project in a brief, but thorough paragraph form. This is a one page, 250-word maximum summary of the entire project that includes the components below. Judges and the public should have a fairly accurate idea of the project after reading the abstract. It should summarize the purpose, procedure, results and conclusions of the student's investigation; therefore, it is one of the last items done. An abstract does not give details about the materials used unless it greatly influenced the procedure or had to be developed to do the investigation. An abstract should only include procedures done by the student. Work done by someone else (scientist) must not be included. Place a copy of the abstract **on the display board and in the written report binder.**

Abstract Components: (write in paragraphs)

1. Purpose: The statement that explains why the student is doing the experiment
2. Problem: The question telling what the student is trying to find out.
3. Hypothesis: An explanation of what prompted the student's research, and what the student hopes to achieve, and what the student thinks the outcome might be (before doing the experiment).
4. Procedures: A brief summary of how the experiment was performed & the key points
5. Results: A brief description of the important results that lead directly to the student's conclusion-do not give too many details or include tables or graphs of data.
6. Conclusions: A brief summary paragraph of why the experiment had those results and if your hypothesis was correct or incorrect.
7. Appplications: A brief summary paragraph of how you think your results can be used by others and what you would differently in future experiments on this topic.

III. Table of Contents: A list of where to find specific information in the student's written report. Include page numbers (placed behind the Abstract summary). See page 2 as the example.

IV. Experimental Design: Make this word the title page for this section which includes: your purpose, problem, research (background information) hypothesis, subjects, variables, materials, and procedure, your charts and graphs and any summary you want to put in written form including conclusion, application, recommendation and interview summaries (if applicable) Each of the following items is on a separate page with its title.

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1. *Purpose: The reason why the student is conducting this research and doing this experiment.

2. *Problem: The question the research answers. In question format- the scientific question to be solved. It should be an open-ended question that is answered with a statement, not a yes or no. Ex: "How does the color of light affect the growth of a plant?"

3. Research (Background Information): A summary in paragraph format of all of the information the student has gathered from reference materials. Report of all information related to the subject telling what was learned about the problem, using reference materials (books, magazines articles, personal communication, internet, etc) before and during the experiment.

4. *Hypothesis: The 'educated guess' that is the answer to the problem. It is statement with a reason. The experiment is designed to test this hypothesis. The hypothesis does not change even if the results are different. Ex: "I believe that all plants need regular white light to grow. I base this hypothesis on the information I learned in my background research that showed me how plants convert light energy into food." The format can be: I think…; It is my opinion that…; I believe…because or based upon….(the reason) or a cause and effect statement:

If_____(what you plan to test), then _____(what you think will happen).

5. Subject(s): Explain what organism, item or parameter the student is testing. Any matter, living or nonliving is the subject.

6. *Variable(s): The items that have an effect on the experiment. The variable or item that the student changes purposely that will yield different results.

7. *Control(s): The parameters you keep the same so that the experiment is valid. The items that do not change during the experiment that test the hypothesis.

8. *Materials: A bulleted list of any supplies necessary to complete your study of the problem and testing of your hypothesis. Be sure to include the quantity of any items listed.

9. *Procedures: Step-by-step process used to carry out the experiment. The experiment must be done at least three times to increase the validity of the results. It should be detailed so that someone would be able to repeat the experiment. Use numbers to list steps beginning with a verb (like in a recipe). Do not use pronouns in listing the steps. **It is highly recommended to use the metric system.**

Example:

1. Measure 500mL of de-ionized water into three plastic cups
2. Time the reaction with a stopwatch with 0.1 second accuracy
3. Place each type of AA alkaline batteries into each plastic cup
4. Record results
5. Repeat steps two more times

10. *Tables, charts, pictures, graphs, diagrams: The data represented in easy- to- see format and in the metric system. Students must include a minimum of one.

11. *Results: A breakdown, in summary form, of what happened in your experiment. Just give the facts not the interpretation (those are in your conclusion section). Example: Plant A grew 5 cm higher than Plant B after 2 weeks. INCLUDE STATISTICS (metrics is preferred when possible.

12. *Conclusion: Specifically summarizes what the student has discovered, how the results compare to the hypothesis and why the hypothesis was correct or incorrect. Review how the data related to any information the student has learned while doing his/her background research.

13. *Application: A summary about how the project relates to real world problems or situations.

14. Recommendations: Indicate any changes or improvements to the experimental design or give possible extensions to the research.

15. Interview Summaries: Interviews, personnel, phone, email, and communications from any professional that have helped the student in any way.

V. Acknowledgments: The student gives credit to anyone who has helped them during the project. It is not a list of names, but a short paragraph stating the names of people who helped the student, and how they helped.

VI. Bibliography: Properly formatted list of all sources and reference materials the student has used. (See itemized list of proper formats).

*** Starred items are also on the display board**

Imagine Schools
Florida Science Fair Guidelines

Science Fair Project Reference Worksheet

(Use Information for Bibliography)

1. Author(s) Last name, First name _____

Title of magazine or book _____

Publisher _____

Volume_____Title of Article _____

Place of Publication _____Date of Publication _____Pages _____

Library _____ Library call number _____ Summary _____

_____

_____

2. Author(s) Last name, First name _____

Title of magazine or book _____

Publisher _____

Volume_____Title of Article _____

Place of Publication _____Date of Publication _____Pages _____

Library _____ Library call number _____ Summary _____

_____

_____

3. Author(s) Last name, First name _____

Title of magazine or book _____

Publisher _____

Volume_____Title of Article _____

Place of Publication _____Date of Publication _____Pages _____

Library _____ Library call number _____ Summary _____

_____

_____

4. Author(s) Last name, First name _____

Title of magazine or book _____

Publisher _____

Volume_____Title of Article _____

Place of Publication _____Date of Publication _____Pages _____

Library _____ Library call number _____ Summary _____

_____

_____

5. Author(s) Last name, First name _____

Title of magazine or book _____

Publisher _____

Volume_____Title of Article _____

Place of Publication _____Date of Publication _____Pages _____

Library _____ Library call number _____ Summary _____

_____

_____

6. Interview Summaries:

Name _____
Information:_____
_____
_____

Name _____
Information:
_____
_____

Name _____
Information:
_____
_____

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Florida Science Fair Guidelines

Science Fair Project Bibliography

Follow the format below for the various types of resources:

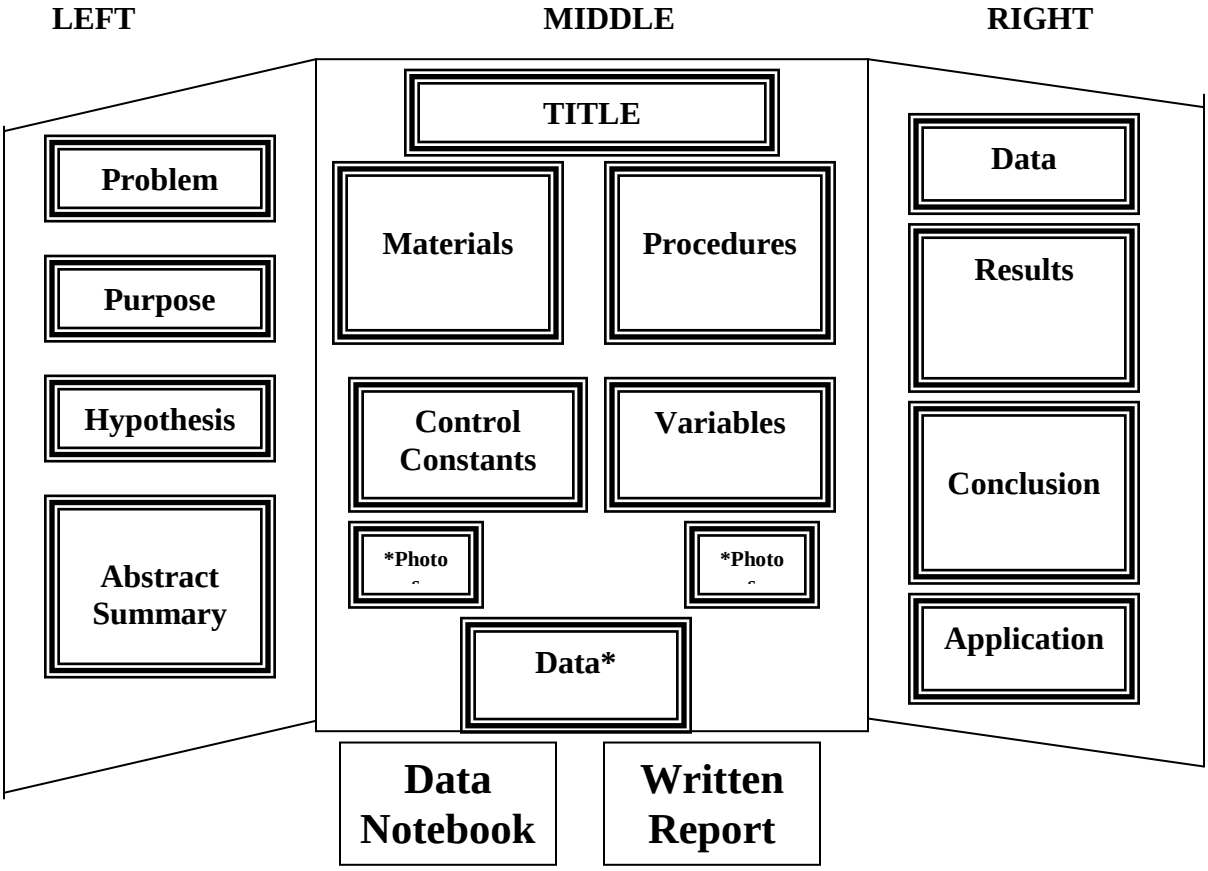
Reference Material	How to site information
Book	Author(s). Title of Book. Place of Publication: Publisher, Year of publication
Book with corporate author	American Medical Association. Diabetes in Adults. New York: Random, 1998.
Magazine or Newspaper Article	Johnson, Dennis. "Science is Cool." Engineering 15 Jan 1999: 44-45.
Article in Reference Database on CD-ROM	"World War II." Encarta. CD-ROM. Seattle: Microsoft, 1999
Government Publication	United States Department of Health and Human Services. Healthy People 2010: Understanding and Improving Health. Washington: GPO, 2000
Interview that the student conducted	Presley, Elvis. Personal Interview. 1 January 2004
Sound Recording	U2. All That You Can't Leave Behind. Interscope, 2000
Email	Author. "Title of Message (if any)" Email to the author. Date of message.
Article from a reference book	"Science". Encyclopedia Britannica. 1999 ed.
Web site	First, Hugo. All About Science Fair Projects. 17 December 1999. Awesome Guides. 15 November 2000 http://www.awesomeguides.com/student_science_fair-project_help.htm

Imagine Schools
Florida Science Fair Guidelines

Science Fair Display Board

Project Display Board: **Size: Standard**– After all the research, experimentation, time & effort spent on the preparation of the science fair project, the student's presentation should show off his/her hard work. First impressions can make a difference. **Be creative. Boards are judged on: Creativity, Scientific Thought, Thoroughness, and Neatness.** All items must be typed and placed in the correct location and order.

All students will need to follow the project guideline below when assembling the display board. These display boards can be purchased in local stores, school and office supply stores. Board must be free standing and sturdy.



Data Notebook & Written Report are separate from the board and will be displayed in front of the board
*photos are optional

Display Board Checklist All items must be typed and placed in the correct order.

___Problem
___Purpose
___Hypothesis
___Abstract Summary

___Title
___Materials
___Procedure
___Controls/Constants
___Variables
___*Photos (optional)
___Data (*overflow area)

___Data (minimum of one)
___Results
___Conclusion
___Application

Imagine Schools

Oral Presentation Tips

In order to have an informative thorough oral presentation, the student should do the following:

- Begin by stating the title of the project. If the student does not know the judges, he/she should introduce themselves to the judge by shaking their hands and giving his/her name.
- Describe the project's purpose, problem, and hypothesis.
- Clearly explain the procedure. Point out pictures, diagrams, or other objects on display. Visuals help to explain the project and help the judges to understand how much work has been done.
- Describe the results.
- Discuss the conclusion. Was the hypothesis right or wrong? Let the judges know any interesting observation that may have made
  or recommendations the student might have to continue his/her project.
- Discuss any application or practical uses to humankind.
- Include a very brief discussion on the background material.
- Be sure to know and understand all the terms associated with the written report.
- Limit the presentation to 3-5 minutes, and then ask the judges, "Do you have any questions?"
- Write the presentation on note cards. Only refer to them, but never read word for word.
- If a judge asks you a question on something you do not know, don't dwell on that. Discuss what you do know.
- Be sure to practice the presentation. Use family members, friends, or a mirror.
- Make sure that the terms used in the presentation are pronounced properly.
- Look people in the eye.
- If you get nervous, it's usually a good idea to reference pictures and graphs.
- Speak clearly and slowly

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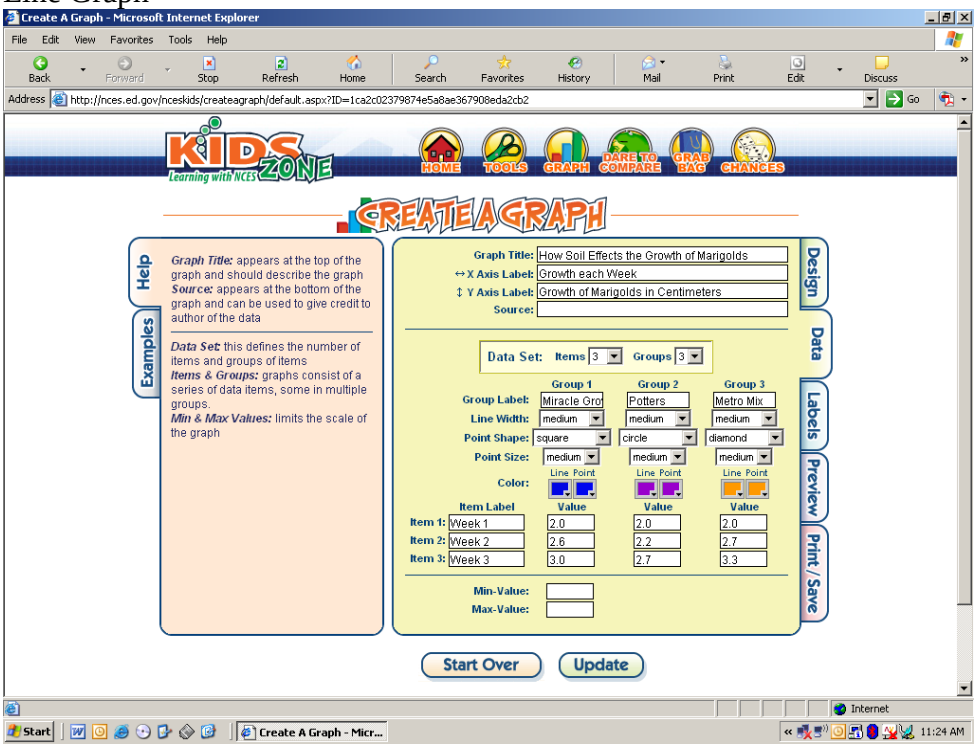
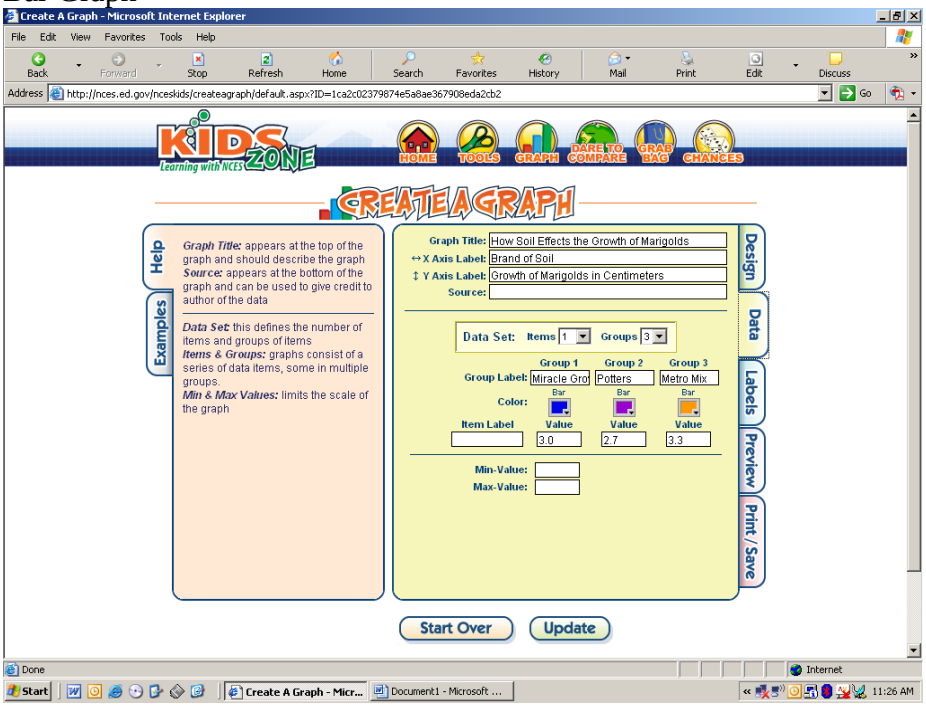
Below are a few screenshots from the "Create A Graph" site. I thought it might be helpful when assisting your child with their graphs. Students can use a line graph to show data over a period of time, a bar graph, a circle graph, a frequency table/chart, and/or a tally chart to show their data. There should be at least 2 graphs showing the data collected. This is the link for the "Create A Graph" website http://nces.ed.gov/nceskids/createagraph/

Line Graph



Bar Graph



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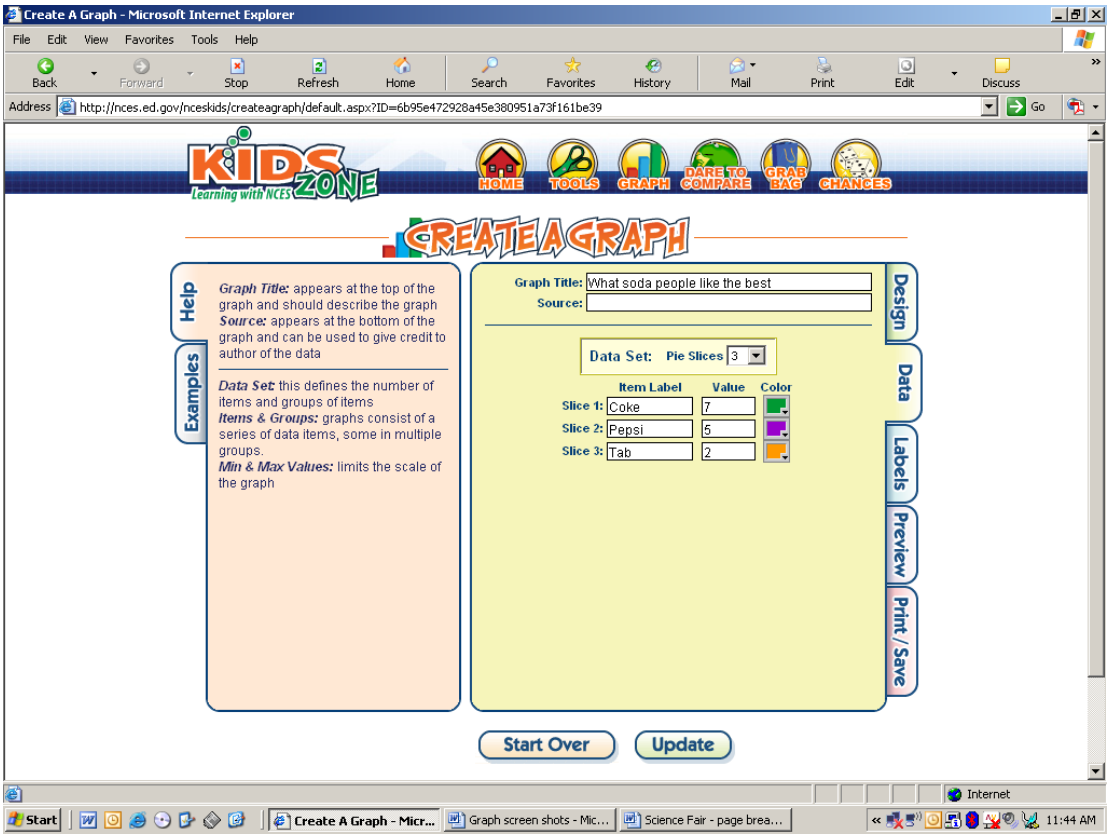
Circle/Pie Chart



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Bibliography Support

This link www.noodletools.com is a free site (you need to sign up to use the tools) that builds a bibliography and all your students have to do is plug in the information.

- Create a log in account
- Select the type of citation (book, website, magazine, etc.)
- Fill in the info. Once you've completed filling in the *required areas, the citation will appear
- Copy and paste it onto the Bibliography page (in alphabetical order) of your science fair written report

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Science Fair Parent Form

Student's Name:_____ Homeroom:
Teacher:_____

Parent/Guardian Acknowledgement Form

Dear Parents/Guardians,

Please sign this document as acknowledgement that:

1. **Student has brought home the Science Fair Packet.**
2. **You are aware of the time line (included in the packet) that lists the items due dates.**
3. **This is an individual project that is to be done at home.**
4. **You are aware of the grading rubric and project rules.**

Signature

Date