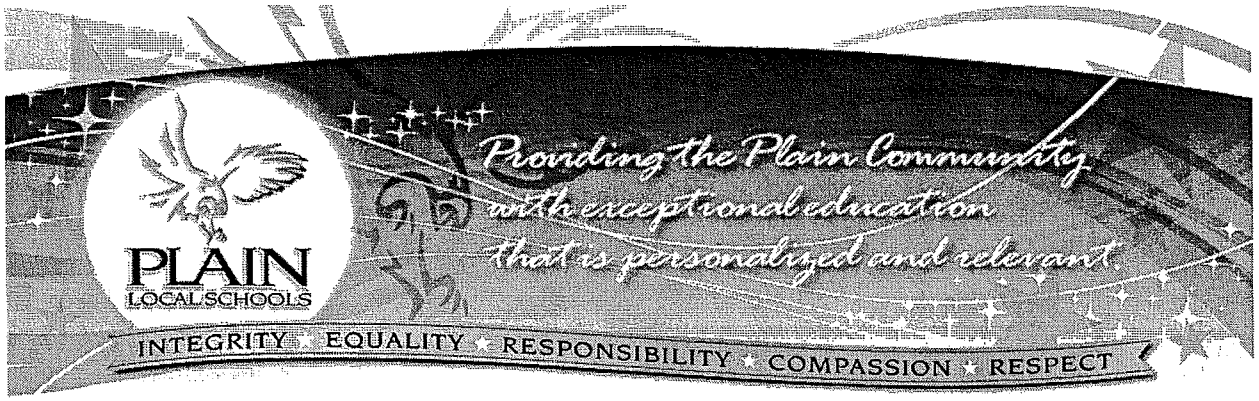


5th Grade

Science Fair

Parent Packet

PLAIN
LOCAL SCHOOLS
1801 Schneider St NE
Canton, Ohio 44721

Office of Curriculum and Instruction
Phone: 330-491-3877

Office of Special Education and Pupil Personnel
Phone: 330-491-3839

Fall 2010

Dear Fifth Grade Parents/Guardians:

Children are naturally curious and an excellent way to teach them problem-solving skills is to direct their curiosity towards scientific investigation through the use of the scientific method.

To enhance your child's abilities to solve problems and think logically, he/she will be required to complete a science project as part of Plain Local's 5th grade science program. Completing this science project will support your child's preparation for the Science Ohio Achievement Test in the spring.

In order to guide your child's progress toward completion of the project, the teacher will set aside time for questions and review every week but the majority of the work will be done at home. Deadlines for completion of each part of the project have been established throughout the process to be sure the final completion date is achieved.

This experience should be viewed as a means for your child to engage in the scientific method. Your child's teacher will provide him/her with a project guide that will include the step-by-step process and calendar of due dates for each portion of the project. **Completed projects are due on February 9, 2011.**

As a culminating experience following the completion of this project, all 5th graders will be invited to showcase their work at the Plain Local Science Fair held on Wednesday evening, February 23, 2011 at GlenOak High School. More information will be sent to you at a later date regarding this event.

Please review the attached papers that provide information about the expectations, guidelines and scoring for the science project. For your convenience, we have also attached a list of possible topics as well as websites that might be helpful.

Please sign the letter where indicated below and return it to the school by Friday, December 3rd. Your child will then be given the project guide of detailed information. If you have questions, please call or email your child's science teacher.

Sincerely,

Plain Local 5th Grade Science Staff

Yes, I understand that I will be required to complete a Science Fair Project.

_____
Student's Signature

I agree to encourage, guide and support my child's Science Fair endeavor.

_____
Parent/Guardian's Signature

Basics of Science Fairs for Kids

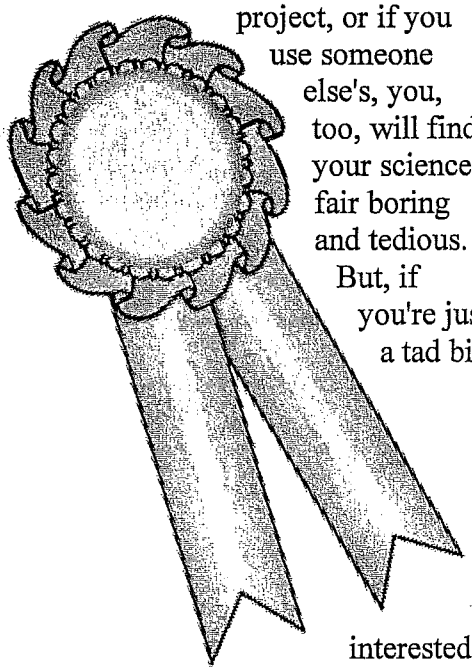
So, what is a science fair, anyway?

Good question! So glad you asked.

Every year, thousands of students around the world are invited to participate in their school's annual science fair. Students then embark on a lengthy, often rewarding and fun, journey into the very heart of science exploration and experimentation. It's a time when students not only learn about science, but actually DO science. And teachers LOVE when that happens; you probably will as well. For example, if you're interested in tennis, you don't just read books about tennis – you play tennis. Working on a science fair project allows you to play with science and then show off your work.

Most science fairs ask their participants to research an interesting question, form an opinion as to its answer, and then devise an experiment to either prove or disprove the answer. This process is known as the *scientific method.* After all that, the students present their findings at the science fair, which is a party thrown to celebrate the students' hard work. Sometimes the presentations are judged, prizes may be awarded, and award winners may be invited to higher competitions.

Unfortunately, if you ask an older brother, sister, or friend what a science fair is, they may tell you something completely different. They might say science fairs are boring and tedious. Maybe they'll tell you the story of how they stayed up until 3 a.m. the night before the project was due. Or they may boast about having simply copied their project straight from a book, or from someone else's work. If you wait until the last minute to do your project, or if you use someone else's, you, too, will find your science fair boring and tedious. But, if you're just a tad bit interested in the world around you, and you take your time with your project, and put a lot of effort into doing your own work, the science fair will feel like a celebration. And you'll probably feel pretty good about yourself and your experience, even if you don't end up winning any awards.



Whoa, back up! What's this scientific method thing?

Another wonderful question!

The bread and butter of most science fairs is the scientific method. Scientists spend a lot of time observing, experimenting, guessing, and creatively finding answers to the world's mysteries, and the scientific method is one way scientists look for answers. In a nutshell, the scientific method is a step-by-step process that helps you form a question in such a way that it can be answered, and then helps you find the answer. Here are the steps:

1. State the Question

You can't answer a question or solve a problem until you understand what you're asking. If you see a red leaf on the ground and are interested in why it's on the ground and not on the tree, you need to form a question before you can move on. You might ask, "Why do leaves turn different colors in autumn?" Now you have a definite question to answer or problem to solve.

2. Gather Background Information

This is another way of saying "do research." If you're interested in your topic, the research will be fun. What do you already know about the subject? Talk to experts. Check resources such as books and the Internet.

3. Form a Hypothesis

This is your personal opinion of what you think the answer to the question will be. It's not a wild guess, especially since you've researched the problem

already, but, instead, more of an educated guess.

4. Test Your Hypothesis

This is where you get to perform an experiment to gather data, which then helps determine whether or not your hypothesis solves the problem.

5. Draw Conclusions

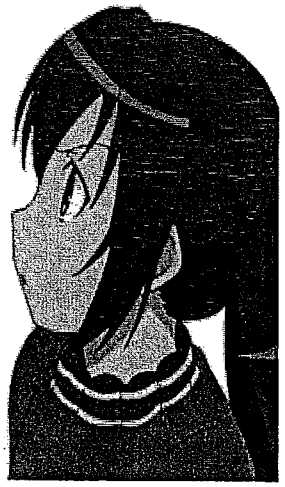
After examining your data from the experiment, you can draw a conclusion. Did you hypothesis hold up after analyzing your data? What happened?

Scientists developed the scientific method so that when a question forms in a scientist's mind, or when they see something curious, they can come up with a possible solution to the question and test their solution. Scientists do things this way so that if anyone else wants to find out if they're telling the truth, they can, by repeating the experiment. That's not only a courteous thing to do – it's the only way scientists will believe other scientists. If they can't see it for themselves, they will ignore you, or even worse, get angry.

Now, the scientific method can't answer every question in the universe. Astronomers, for example, can't visit distant stars and perform experiments. They rely on other techniques to find answers. But the scientific method does provide a wonderful introduction to how a lot of scientists think and work.

It's a way of learning about the world, and it's *something you already know how to do.* Skeptical? Good, you've got a scientist's mind already. Here's an example:

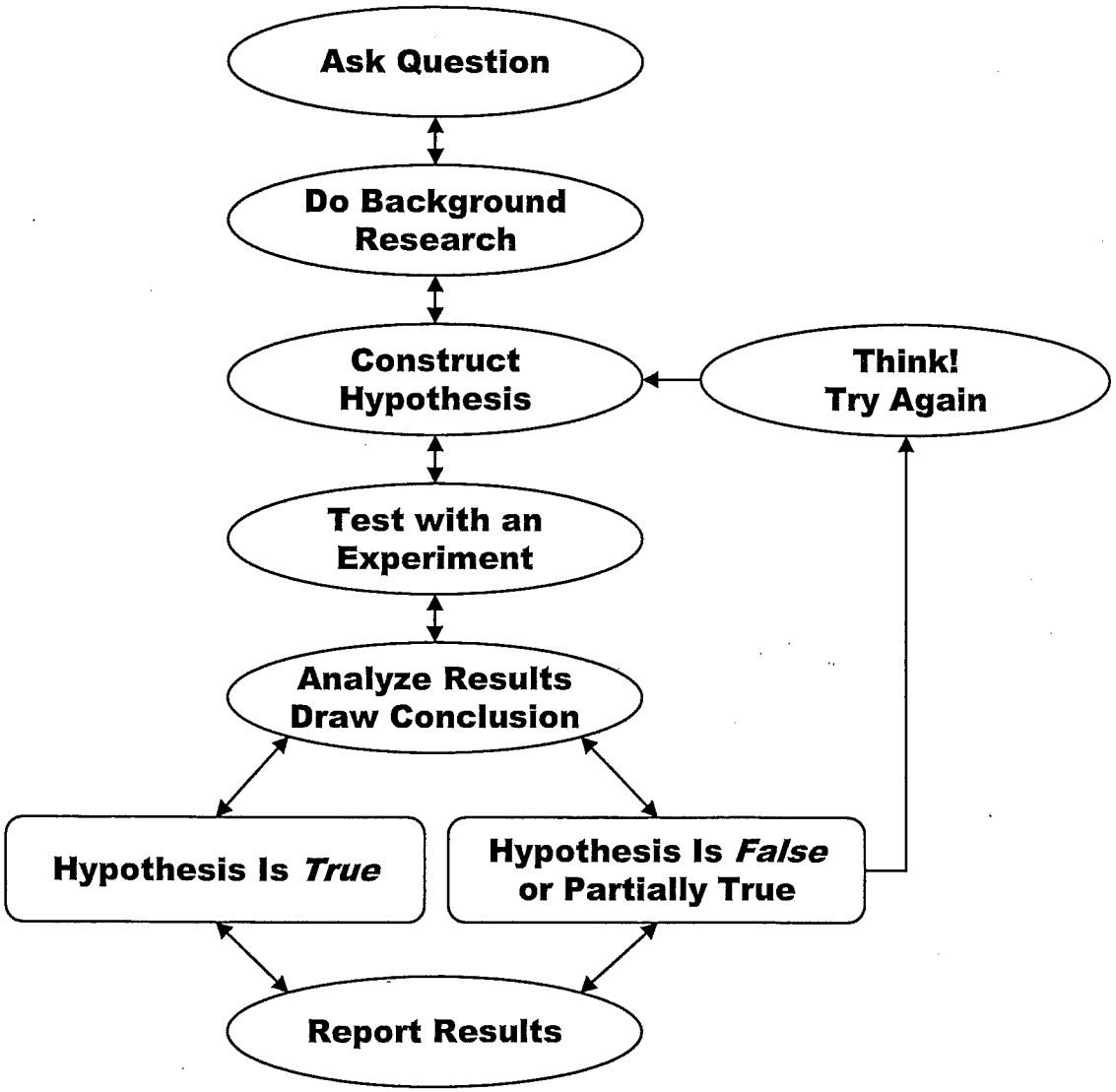
You're hanging out at your favorite candy store, and you notice a new bubble gum that promises "THE BIGGEST AND THE BADDEST BUBBLES EVER!" You say to yourself, "Yeah right! I don't believe that for a second." But maybe, just maybe, a question pops into your head: "How do the bubbles made with this new gum compare with the bubbles made with my favorite bubble gum?" You've just stated a *problem.* Maybe, just maybe, you then ask the store owner if he or she



knows if the new gum does indeed deliver bigger and badder bubbles. You've just done some *research.* Then you purchase the new gum, along with a pack of your favorite gum, and do a simple *experiment.* You blow several bubbles with your old favorite gum. Then you blow several bubbles with the new gum. You compare the sizes of the bubbles and reach a *conclusion.*

The Scientific Method

Even though this diagram shows the scientific method as a series of steps, keep in mind that new information or thinking might cause a scientist to back up and repeat steps at any point during the process. A process like the scientific method that involves such backing up and repeating is called an **iterative process**.



Guidelines for Science Fair Projects

1. All projects must be presented on a white tri-fold presentation board. Presentation boards may be purchased through the school. If wishing to purchase a board through the school, parents should send in $2.50 with the signed contract. A board will be sent home with the information packet. Students may also purchase boards on their own. These must be white tri-fold boards with the dimensions of 36" x 48".

2. All material must be presented on the front of the board. Refer to the student packet for guidelines.

3. Usable headings are included in the student packet.

4. Projects should be safe as well as fun! Please make sure that you remember the following safety precautions:

   √ Never eat or drink in your "laboratory" area.

   √ Read all directions before you begin any experiment; if you have any questions, ask an adult!

   √ Watch out for small pieces, balloons or rubber bands that may be a part of your materials. Not only are they easy to lose but they can be a choking danger to young brothers and sisters or pets who might try to swallow them.

   √ Never be careless in your "lab;" rough play can lead to spills, broken equipment and injuries.

   √ If you are using any type of chemicals, please make sure that your parent is present.

5. Things that can't be used in a science project:

   *NO FIRE

   *Equipment which requires an electrical supply other than a battery that is a part of the project

   *NO LIVE animals

6. Don't spend a lot – look around your house and be creative. Recycling materials is a very environmentally sound response and shows good scientific thinking.

7. Remember, you will only be judged against yourself! Doing your best doesn't mean that your project has to be glamorous and glitzy; it means applying yourself seriously to produce a science project that you will be proud of and that brings you the satisfaction of accomplishing a self-designed goal!

There are many things a parent can do to help his/her child with a science project.

1. Although this is your child's project and is to be his/her effort, there is no substitute for your support. Be sure to encourage your child.

2. Listen to and praise your child. Let the child know that you are interested in his/her ideas.

3. Help your child with skills that he/she is still working to master such as organizing, measuring, calculating and constructing.

4. Help your child construct and follow a schedule to complete the project on time.

5. Provide a space at home where your child can work without worrying about brothers, sisters or pets.

6. Help your child acquire the materials needed for the project.

7. Help your child take the necessary safety precautions to ensure a safe project.

8. Offer to provide transportation to places such as libraries, museums, nature centers, etc., that can help your child find information about the topic.

9. Contact your child's teacher if there are any questions regarding the science project.

10. Realize that the real prize of a science project is the development of your child's skills, not the award presented by a science fair judge.

Science Fair Resources

Science Buddies
sciencebuddies.org/science-fair-projects

Science Bob
sciencebob.com/sciencefair/ideas

School Discovery Education
school.discoveryeducation.com/sciencefaircentral/

Winning Science Fair Projects
terimore.com/science-fair-ideas/winning-science-fair-ideas.htm

Other Science Fair Web Sites

* Fun Science Fair Projects That Capture Kids Attention
* Crystal Clear Science Fair Projects
* Do Science
* Science Fair Preparation
* Science Fair Project Ideas

SCIENCE FAIR QUESTIONS

The questions listed below can be used to start a science fair investigation. Another topic may be chosen, but all topics must be approved by the teacher.

1. On which type of bread (or food) does mold grow fastest?
2. What is the best insulation to use to keep heat in?
3. What kind of fertilizer works best for growing plants?
4. What brand of diaper holds the most liquid?
5. What brand of cereal soaks up the most milk?
6. What affect does temperature have on growing plants?
7. Which first aid bandage holds longest underwater?
8. What brand of battery last longest?
9. Do plants grow best using different types of liquids?
10. Which brand of popcorn produces the most popcorn?
11. Does the size of the container affect the rate of evaporation?
12. Which brand of toilet paper absorbs the most water?
13. Does the shape of an ice cube affect its rate of melting?
14. What kind of wrap keeps objects colder?
15. Does mold grow faster on moist bread or dry bread?
16. How does exercise affect heart rate?
17. Will water with salt evaporate faster than water without salt?
18. Which kind of cheeses molds fastest?
19. Which type of grass seed grows the fastest?
20. Do detergents affect plant growth?
21. Will spaghetti cook faster with or without salt?
22. What type of metal will rust the fastest?

December 2010

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1 Send out Parent Packet	2	3 Contact with parent signature is due	4
5	6	7	8 Question is due today	9	10 Variables (all 3) are due today	11
12	13	14	15 Hypothesis due today	16	17	18
19	20	21	22	23 Winter Break	24 Dec. 23-Jan. 2	25
26	27	28	29	30	31	

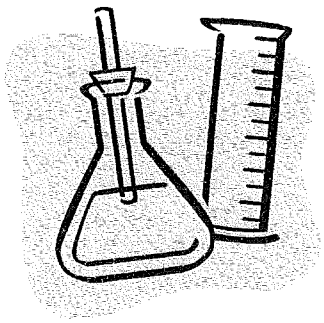
January 2011

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4 List of Materials due	5	6 Procedures and Safety Rules are due	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26 Results (graph) due today	27	28	29
30	31					

February 2011

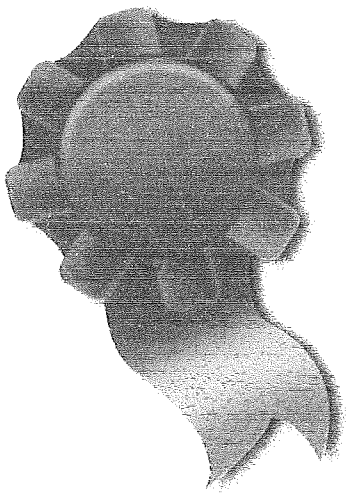
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		1	2 Conclusion with reflection due	3 Pass out Journals	4	5
6	7	8	9 Project is due today	10	11	12
13	14	15	16	17	18	19
20	21	22	23 Science Fair @ GOHS	24	25	26
27	28					

Science Fair Project Rubric



Scientist's Name_____
Topic_____

Title					1	0
Question					1	0
Hypothesis				2	1	0
Materials List				2	1	0
Safety Procedure				2	1	0
Procedure (Steps)			3	2	1	0
Variables			3	2	1	0
Results--graph		4	3	2	1	0
Results—summary				2	1	0
Conclusion and Reflection			3	2	1	0
Display Board	5	4	3	2	1	0
Final Journal				2	1	0



Scoring

Total: 30 points

27 – 30	Superior
24 – 26	Excellent
21 – 23	Good
18 – 21	Honorable Mention