Welcome to

The Pulaski Road School

Science Fair

This March, we welcome you and your child to share an experience that is both fun and educational – **The Pulaski Road School Science Fair.** Please refer to the posted information to help you better prepare for the upcoming event:

- Dates to Remember
- Official Registration
- Pulaski Road School Science Fair Rules and Information
- Booklet: *Elementary Science Fair Planning Guide*
- Judges' Rubric
- Summary of Project Form
- Brookhaven Lab Useful Links

It is important for all young people to see the connection in their lives to science. From the earliest grades onward, science fairs give children an experience that uses their natural curiosity to safely explore the world. A science fair investigation helps a child develop the ability to question, to try out ideas and to draw conclusions – meaningful skills that carry over into a child's performance in many learning areas.

Children also develop socially by working with peers, parents and other adults during the project. The process is great training for valuable skills like listening well, following directions and seeing a task through to completion. It is also a great way to bring children together in a school-wide learning activity. We hope that your child can participate in the **Pulaski Road School Science Fair** and we encourage you to read through the following pages and get involved in this year's exciting event.

Sincerely,
Chris Spiros
Pulaski Road School Science Fair Advisor

Attention All Scientists!

The Pulaski Road School Science Fair begins on Tuesday, March 19, 2019.

Get involved. Any student in Grades K-5 can enter!

IMPORTANT DATES TO REMEMBER!

Tuesday, January 15 — *Elementary Science Fair Launch - 7:00 pm @ WJB.*

Thursday, March 14 — *Last day to officially register and reserve a place for your project.*

Monday, March 18 — *Bring your completed science project to the All Purpose Room after school between 2:25 p.m. and 3:00 p.m. for set up.*

OR

Tuesday, March 19 — *Bring your completed science project to the All Purpose Room before school between 7:30 a.m. and 8:00 a.m. for set up.*

Student viewing will take place by grade level during the school day (day1).

EVENING: Parent and community viewing will take place from 7:00 p.m. to 8:00 p.m. in the All Purpose Room. Come and explain your project to friends and family. Take some pictures as well!

Wednesday, March 20 — *Student viewing will take place by grade level during the school day (day2).*

Judging of science exhibits by school district science committee. Winners announced at end of day. ***Please arrange to bring your project home after school.*** Congratulations for being a participant in Pulaski Road School's Science Fair.

Saturday, May 4 — Brookhaven National Laboratory Science Fair. First Place Winners by grade level may qualify to represent our school. Good luck!

A Guide to Creating a Science Fair Project is posted on the Pulaski Road School Website!

Get Involved!!
Attention All Scientists!

IMPORTANT!

Please fill out BOTH of these Official Registrations and place in the Science Fair Mailbox in the main office no later than March 14 to reserve a place for your project!

Official Registration 2019

Name of Participant(s)____

Classroom Teacher(s)________________________ Grade _______

Official Project Title

____

Official Registration 2019

Name of Participant(s)____

Classroom Teacher(s)________________________ Grade _______

Official Project Title

____

The Pulaski Road School
Science Fair
Get Involved and Have Fun!
<u>Rules and Information</u>

* Individual or group projects are acceptable for grades k, 1 and 2.

* Only individual projects are acceptable for students in 3, 4, and 5

* Participants of group projects must be of the same grade level. Size of the group project limited to one class (a.m. and p.m. Kindergarten taught by the same teacher can be considered as one class).

* Student s will not be present during judging. Any project having moving parts must have a "start" mechanism that can be easily activated by a judge.

* Pulaski will not provide facilities or outlets for electricity, running water, drainage, gas or compressed air. Dangerous chemicals, open flames and explosives may not be exhibited. All projects must be durable and safe. Moveable parts must be firmly attached.

* Any project deemed to be unsafe or inhumane in any way will not be displayed at Pulaski and will not be judged. Live animals will not be exhibited, but photographs are acceptable.

* Each project must include a ***<u>Summary of Project</u>*** form prominently displayed with the project. If a parent should complete this form for their child, please sign it in the space provided.

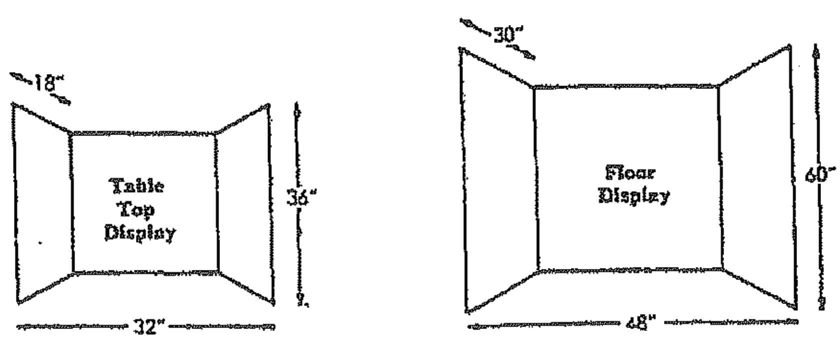
* The project must clearly reflect the student's own efforts. If adult support is given, it should be acknowledged on the display.

* The student should be able to explain each step of their project if asked.

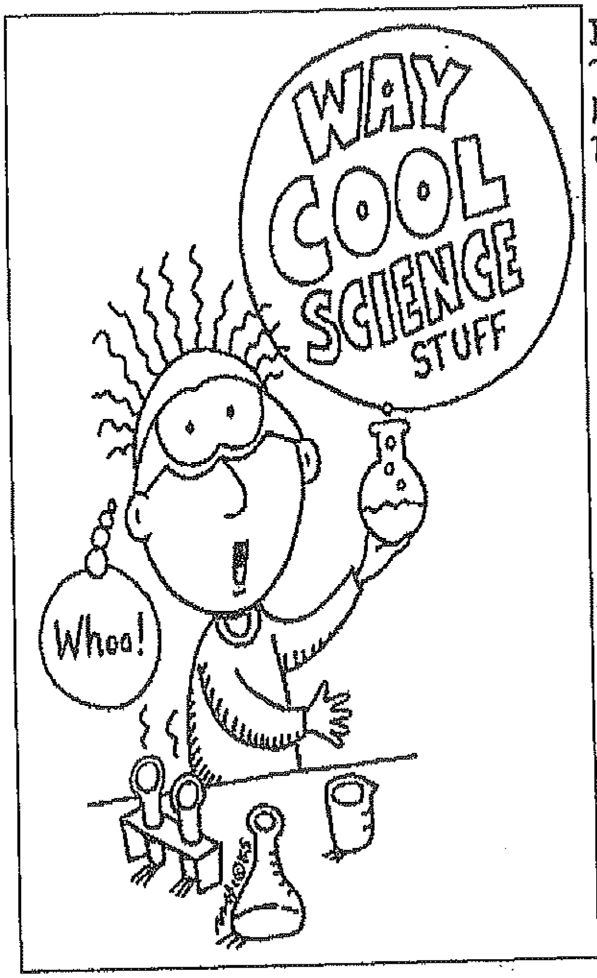
* Only one project may be submitted per student unless they are involved in a "whole class" entry.

* Please see the ***<u>Judges Rubric</u>*** for criteria that will be used in judging the projects.

* Size of project:



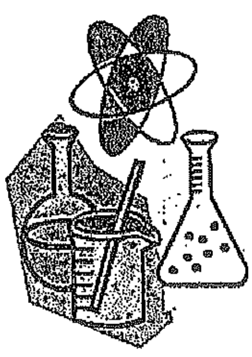
Okay, now get to work on your project!!
What's that? You still need help getting started?



Introducing:
The Most Fabulous, Scientific, All Helpful, Kid Friendly and Most Excellent Science Fair Project Planner Known to Kid Kind:

Elementary Science Fair Planning Guide

Just follow these easy steps and you too can create a wonderful award winning science project, thought up entirely by you!!!



VERY IMPORTANT: *Before you turn this page, recruit an adult to help you. They come in very handy, especially if you are nice to them and tell them you won't blow up anything....*

My adult's name is ____________________

From this point forward you are now... A SCIENTIST!!

The Elementary
Science Fair Planning Guide

By Lora Holt (a science lab teacher, pretty cool, for an adult)
With help from Tim Holt (a very smart science and technology dude)
Inspired by past EPISD science packets. [Thank you Margaret Johnson and all past EPISD Science Gurus]
Translated by Morayma Esquivel and Alma Veronica Ortega
(two very awesome science teachers who also happen to speak Spanish)

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-Or-

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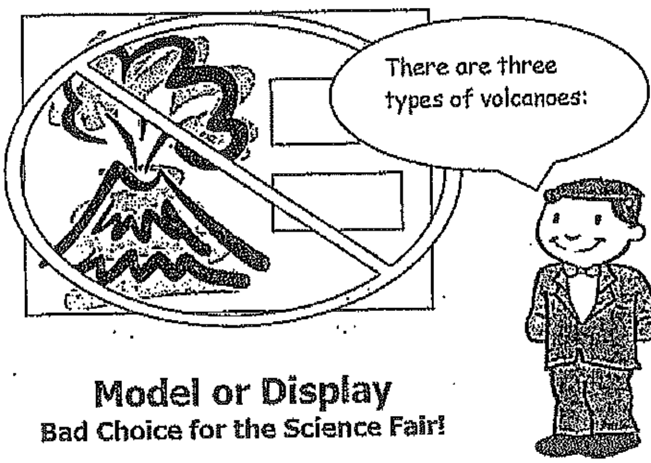
Types of Science Projects:

There are two types of science projects: Models and Experiments. Here is the difference between the two:

BORING !!!!! DON'T DO THIS......



Model or Display
Bad Choice for the Science Fair!

A Model, Display or Collection:

Shows how something works in the real world, but doesn't really test anything

Examples of display or collection projects can be: "The Solar System", "Types of Dinosaurs" , "Types of Rocks", "My gum collection..." Examples of models might be: "The solar system" or "How an Electric Motor Works", "Tornado in a Bottle"

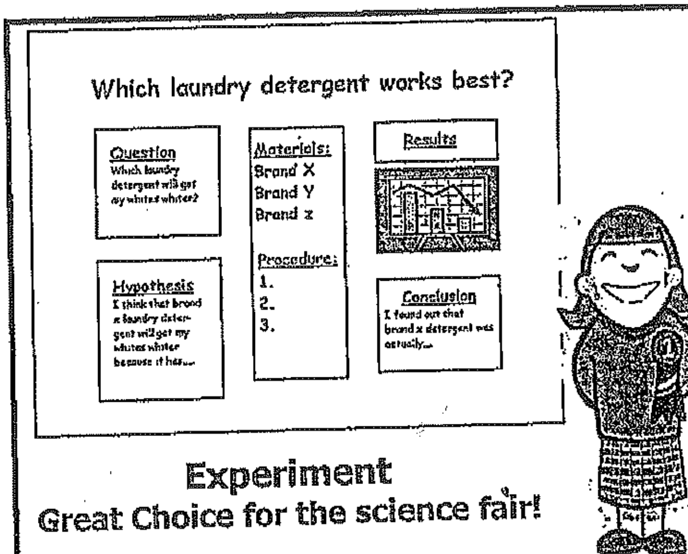
COOL!!!!! DO THIS

An Experiment:

Lots of information is given, **but it also has a project that shows testing being done and the gathering of data.**

Examples of experiments can be: "The Effects of Detergent on the Growth of Plants", "Which Paper Towel is more Absorbant" or "What Structure can Withstand the Most Amount of Weight"

You can tell you have an experiment if you are testing something several times and changing a variable to see what will happens. We'll talk about variables later....

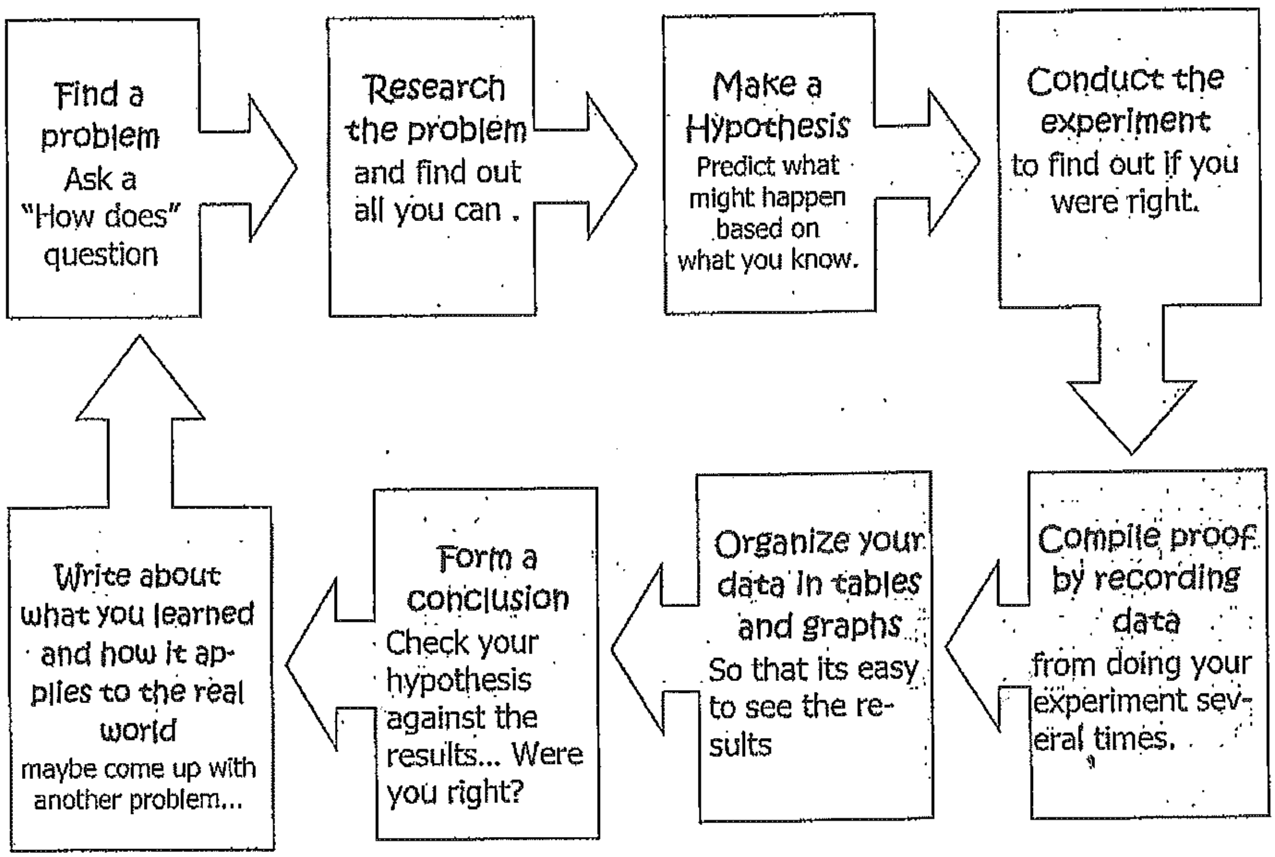


Experiment
Great Choice for the science fair!

So What Type of Project Should You Do?

Even though you can learn a lot from building a model or display, <u>we recommend that you do an **Experiment!!!**</u> Why? Well, they are fun, they are more interesting and most of all, they take you through the **SCIENTIFIC METHOD,** which is the way real scientists investigate in real science labs. Besides that, the **scientific method** is what the judges are looking for!!

So What the Heck is the Scientific Method?



Choosing a category that interests you...

All Great Projects start with great questions but before you get started on a great question you need to pick a subject or topic that you like. There are three different categories of the Science Fair to choose from. They are:

Life science: This category deals with all animal, plant and human body questions that you might have and want to do an experiment about. Remember that it is against Science Fair Rules to intentionally hurt an animal during an experiment. If you are dealing with animals, please let an adult assist you. It is okay to do experiment on plants, as long as they don't belong to someone else, like don't do an experiment on your mom's rose bushes unless you ask her first...

Life science also includes studying behaviors, so its a perfect category to try taste tests, opinion surveys, animal behavior training (or even training behavior in humans...like baby brothers or sisters...)

Physical Science: If you like trying to figure out how things work, then this is the category for you! It includes topics about matter and structure, as well as electricity, magnetism, sound, light or anything else that you might question, "How does it work and what if I do this to it, will it still work?" *But remember, you always need to ask an adult first (and always make sure there is one of those adult guys with you when you try it.)*

Physical Science also includes the composition of matter and how it reacts to each other. These are the science experiments that may have bubbling and oozing going on, like figuring out what is an acid and what is a base. It is a perfect category to try to mix things together to see what will happen. *Again, if you are experimenting with possibly dangerous things, you need to recruit an adult to help you out.*

Earth and Space Sciences: This category is really awesome because it covers all sorts of topics that deal with the Earth or objects in space. This includes studying weather, Geology (which is the study of everything that makes up the Earth, like rocks, fossils, volcanoes, etc..), and the study of all that is in space, including the stars, our sun and our planets. Unfortunately this topic is also where most kids mess up and do a collection or model project instead of an "Experiment," so be careful!!!

Now It's Your Turn:

Write down your favorite Science Fair Category and what it is you want to learn more about:

My favorite Category was ________________________________
(Life Science, Physical Science, Earth and Space Science)

I want to do an experiment involving

____

____

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Step 1: Coming up with a Good Question...

Now that you have picked out a topic that you like and that you are interested in, it's time to write a question or identify a problem within that topic. To give you an idea of what we mean you can start off by filling in the question blanks with the following list of words:

The Effect Question:

What is the effect of ________________ on ____________________?

sunlight	on the growth of plants
eye color	pupil dialation
brands of soda	a piece of meat
temperature	the size of a balloon
oil	a ramp

The How Does Affect Question:

How does the ____________________ affect ____________________?

color of light	the growth of plants
humidity	the growth of fungi
color of a material	its absorption of heat

The Which/What and Verb Question

Which/What ____________________ (verb) ____________________?

paper towel	is	most absorbent
foods	do	meal worms prefer
detergent	makes	the most bubbles
paper towel	is	strongest
peanut butter	tastes	the best

Now its your turn:

Create your Science Fair question using either the "Effect Question", the "How does Affect Question" or the "Which/What and Verb Question":

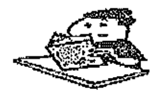
____

____

____

Step 2 : Doing the Research and forming a Hypothesis

So you've picked your category and you've chosen a topic. You even wrote a question using our cool fill in the blank template. Now it is time to research your problem as much as possible. Becoming an expert at your topic is what real scientists do in real labs.

So How do you become an expert? 

<u>YOU READ!!!!</u>
READ about your topic. READ encyclopedias. READ magazine articles and books from the library. READ articles from the internet. Take note of any new science words you learn and use them. It makes you sound more like a real scientist. Keep Track of all the books and articles you read. You'll need that list for later.

<u>YOU DISCUSS!!</u>
Talk about it with your parents. Talk about it with your teachers. Talk about it with experts like Veterinarians, Doctors, Weathermen or others who work with the things you are studying. Sometimes websites will give you e-mail addresses to experts who can answer questions.... *<u>But again, do not write to anyone on the internet without letting an adult supervise it.</u>* (*hint: take pictures of yourself interviewing people)

Whew.....

Then when you think that you can't possibly learn anymore and the information just keeps repeating itself.. You are ready to...

Write a Hypothesis 

Now it is the time to PREDICT what you think will happen if you test your problem. This type of "SMART GUESS" or PREDICTION is what real scientists call A HYPOTHESIS. Using this fancy word will amaze your friends and will have you thinking like a full fledged scientist.

So how do you begin? Well, just answer this very simple question:

What do you think will happen, (even before you start your experiment)?

Example Problem: *Which Paper Towel is more absorbent?*

Example Hypothesis: *I think Brand X will be more absorbent because it's a more popular brand, it is thicker and the people I interviewed said that the more expensive brands would work better*

(This hypothesis not only predicts what will happen in the experiment, but also shows that the "Scientist" used research to back up his prediction.)

Now its your turn:

Write down the problem and create a Hypothesis based on what you have researched.

Problem:____

____

Research: My problem is about this subject: ________________________
(sample topics could be magnetism, electricity, buoyancy, absorbency, taste, plant growth, simple machines or other scientific topics that relate to your problem. If you are having problems finding out what the topic is, ask your teacher or an adult to help you on this one....)

Books I found in the library on my topic are:

Title: Author:

____

____

____

Internet sites that I found on my topic are:

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____

People I talked to about my topic are:

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Some important points that I learned about my topic are

- ______________________________________
- ______________________________________
- ______________________________________
- ______________________________________

Hypothesis: I think that ____________________________________

(will happen) because (my research shows...)__________________________

____

____

____

Step 3: Testing your Hypothesis by doing an experiment

Now we've come to the good part. The part that all scientists can't wait to get their grubby little hands on... you guessed it... The EXPERIMENT!

Designing an experiment is really cool because you get to use your imagination to come up with a test for your problem, and most of all, you get to prove (or disprove) your Hypothesis. **Now Science Fair Rules state that you cannot perform your experiment live, so you'll have to take plenty of pictures as you go through these seven very simple steps.**

First: ***Gather up your materials***. What will you need to perform your experiment? The safest way to do this is get that adult you recruited to help you get the stuff you need. Oh, did we mention to take pictures or draw pictures of your materials. This will come in handy when you are making your board display.

Second: ***Write a PROCEDURE.*** A procedure is a list of steps that you did to perform an experiment. Why do you need to write it down? Well it's like giving someone a recipe to your favorite dish. If they want to try it, they can follow your steps to test if its true. Scientists do this so that people will believe that they did the experiment and also to let other people test what they found out. Did we mention to take pictures of yourself doing the steps?

Third: ***Identify your variables.*** The variables are any factors that can change in an experiment. Remember that when you are testing your experiment you should only **test one variable at a time** in order to get accurate results. In other words, if you want to test the affect that water has on plant growth, then all the plants you test should be in the same conditions, these are called **controlled variables:** same type of dirt, same type of plant, same type of location, same amount of sunlight, etc. The only variable you would change from plant to plant would be the amount of water it received. This is called the **independent or manipulated variable.** The independent variable is the factor you are testing. The results of the test that you do are called the **dependent or responding variables.** The responding variable is what happens as a result of your test. Knowing what your variables are is very important because if you don't know them you won't be able to collect your data or read your results.

Fourth: ***TEST, TEST, TEST.*** Remember that the judges expect your results to be consistent in order to be a good experiment, in other words, when you cook from a recipe you expect the outcomes to be the same if you followed the directions (or procedure) step by step. So that means you need to do the experiment more than once in order to test it properly. We recommend five times or more. More is better!
Don't forget to take pictures of the science project being done and the results.

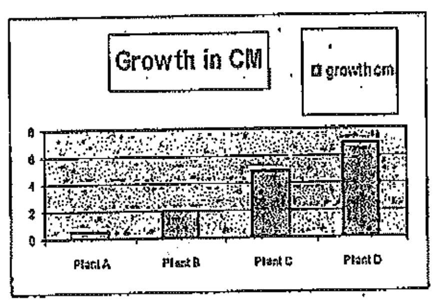
Fifth: ***Collect your DATA.*** This means write down or record the results of the experiment every time you test it. Be sure You also need to organize it in a way that it is easy to read the results. Most scientists use tables, graphs and other organizers to show their results. Organizing makes the results easy to read, and much easier to recognize patterns that might be occurring in your results. (Besides, it impresses the judges when you use them.) But don't make a graph or table because we asked you to, use it to benefit your project and to help you make sense of the results. There is nothing worse than having graphs and tables that have nothing to do with answering the question of a science project.

Time out: How Do You Collect Data?!!?

- **Keep a science journal:** A science journal is a type of science diary that you can keep especially if your experiment is taking place over a long period of time. We suggest you do that if your experiment is over a period of a week or more. In your journal you can record observations, collect research, draw and diagram pictures and jot down any additional questions you might have for later.
- **Have the right tools to do the job:** make sure you have the stuff you need to take accurate measurements like rulers, meter tapes, thermometers, graduated cylinders or measuring cups that measure volume. The recommended standard of measurement in science is metric so if you can keep your measurements in meters, liters, Celsius, grams, etc, you are doing great!
- **Tables, charts and diagrams** are generally the way a good scientist like you would keep track of your experiment trials. Remember you are testing at least 5 times or more. A table is organized in columns and rows and **ALWAYS** has labels or headings telling what the columns or rows mean. You will probably need a row for every time you did the experiment and a column telling what the independent variable was (what you tested) and the responding variable (the result that happened because of the independent variable)

Plant	Amount of water per day	Size it grew in two weeks
(controlled variable)	(independent variable)	(responding variable)
Plant A	none	.5 cm
Plant B.	5 ml	2 cm
Plant C	10 ml	5 cm
Plant D	20 ml	7 cm

- **Be accurate and neat!** When you are writing your tables and charts please make sure that you record your data in the correct column or row, that you write neatly, and most of all that you record your data as soon as you collect it **SO YOU DON'T FORGET WHAT HAPPENED!!!!** Sometimes an experiment might be hard to explain with just a table, so if you have to draw and label a diagram (or picture) to explain what happened, it is recommended that you do.
- **Use the right graph for your experiment.** There is nothing worse than a bad graph. There are all types of graph designs, but these seem to be easy to use for science fair experiments.
  - **Pie graphs** are good to use if you are showing percentages of groups. Remember that you  can't have more than 100% and all the pieces need to add up to 100%. This type of graph is great if you are doing surveys
  - **Bar graphs** are good to use if you are comparing amounts of things because the bars show those amounts in an easy to read way. This way the judges will be able to tell your results at a glance. Usually the bars go up and down. The x axis (or horizontal axis) is where you label what is being measured, (like plant A, B, C and D) and the y axis (or vertical axis) is labeled to show the unit being measured (In this case it would be centimeters that the plant grew)



  - **Line graphs** are good to use if you are showing how changes occurred in your experiments  over time. In this particular case you would be using the x axis to show the time increments (minutes, hours, days, weeks, months) and then you would use the Y axis to show what you were measuring at that point in time.

....And Now back to the Experiment Steps

Sixth: ***Write a Conclusion:*** tell us what happened. Was your hypothesis right or wrong or neither? Were you successful, did it turn out okay? Would you change anything about the experiment or are you curious about something else now that you've completed your experiment. And most of all, **TELL WHAT YOU LEARNED FROM DOING THIS.**

Seventh: ***Understand its Application.*** Write about how this experiment can be used in a real life situation. Why was it important to know about it?

Now it's your turn

Materials: (take pictures!)

List the Materials that you will need for your science experiment here:

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________
7. ____________________
8. ____________________
9. ____________________
10. ____________________

Variables:

List the variables that you will control, the variable that you will change and the variables that will be the results of your experiment:

My controlled variables are (the stuff that will always stay the same): ____________________

____

____

My independent variable is (this is the thing that changes from one experiment to the next, it is what you are testing): ____________________

My responding variables might be (in other words, the results of the experiment)

Procedure: (the steps.... Don't forget to take pictures)

List the steps that you have to do in order to perform the experiment here:

1st... ____________________

2nd ____________________

3rd ____________________

4th ____________________

5th... ____________________

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Design a table or chart here to collect your information

(Did we mention that you needed to take pictures of you doing the actual experiment?)

Use the Graph paper at the end of this booklet to make a graph of your results from your table.

Conclusion:

Now tell us what you learned from this and if you were able to prove your hypothesis. Did it work? Why did it work or why didn't it work? What did the results tell you? Sometimes not being able to prove a hypothesis is important because you still proved something. What did you prove?

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Application:

(How does this apply to real life?)
Its important to know about this experiment because......

____

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Step 4: The Presentation or Why you needed all those pictures....

But First, a school Fable....

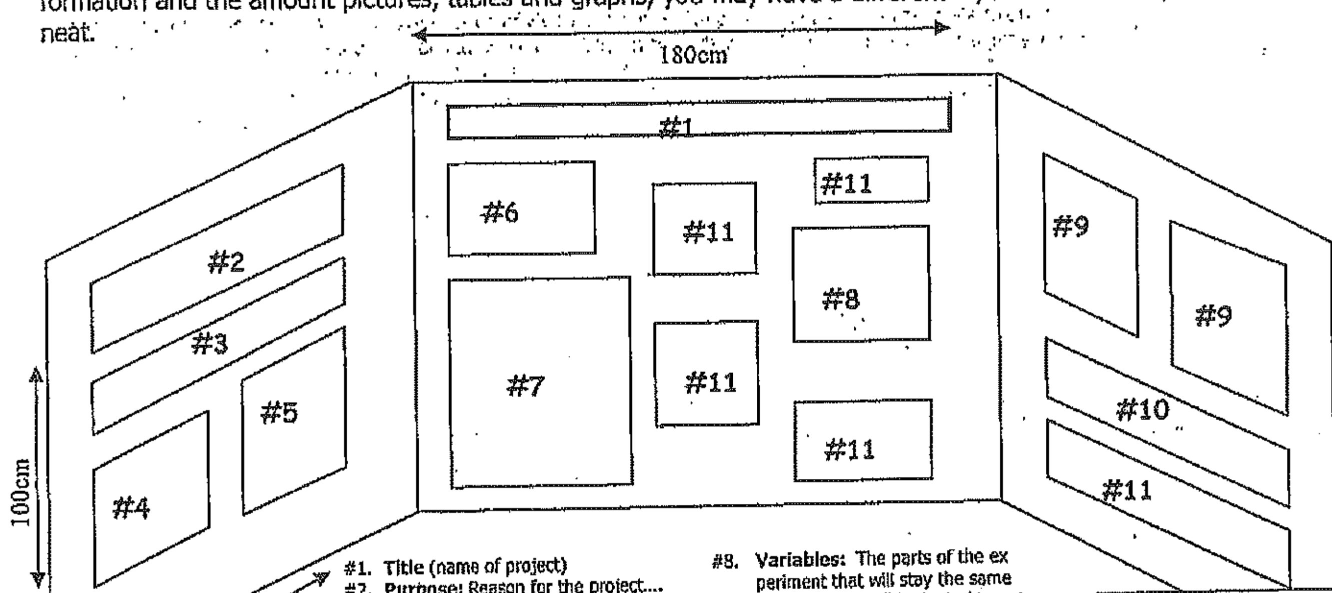
Sammy and Sally both baked cakes for the bake sale with the same cake mix and by following the same directions. When Sammy got his cake out of the oven, he carefully took it out of the pan, smoothed the chocolate frosting neatly and decorated his cake so that it looked delicious. Sally on the other hand, smashed her cake slightly when getting it out of the pan and globbed the frosting on parts of the cake. As you may have already guessed, everyone wanted some of Sammy's cake and no one wanted Sally's. Sally couldn't figure out why, because she tasted both and they both tasted the same...

A good display is a Piece o'cake

You may have become the leading expert of your topic and had the most interesting experiment results, but if you don't make your science project look delicious for the judges eyes to see, well, your chances of winning sweepstakes will crumble like Sally's cake. Your display board is kind of like an advertisement for all your hard work. So take our advice: **BE NEAT!!** The judges like to see a nice, easy to read display, that has neat writing, easy to read graphs and tables and you guessed it.... lots and lots of pictures!! (Did you remember to take pictures?)

MAKING A MOUTH WATERING DISPLAY

This is an example of a neat looking Science Fair Display Board. It is just an example. Depending on your information and the amount pictures, tables and graphs, you may have a different layout. Just make sure it is neat.



- #1. **Title** (name of project)
- #2. **Purpose:** Reason for the project.... your question, what you want to find out.
- #3. **Hypothesis:** A prediction that you make of the results before conducting the experiment.
- #4. **A report** of your research on the subject.
- #5. **Books and Resources:** A list of the books you read and websites you used. Also list your inter views.
- #6. **Materials:** a list of the supplies needed for the experiment.
- #7 **Procedure:** The steps or directions that you used to conduct the experiment.
- #8. **Variables:** The parts of the ex periment that will stay the same and the what will be tested to get the results.
- #8. **Results:** Graphs or charts showing what happened after you conducted your experiment.
- #9. **Conclusion:** Telling what happened.. Did it work, were you right about the hypothesis? What did you learn?
- #10. **Application:** Explain how your experiment relates to the real world.
- #11. **Pictures**, pictures and more pictures...

You can purchase a display board or make your own out of cardboard. The dimensions are:

Height: 100 CM

Length: 180 CM

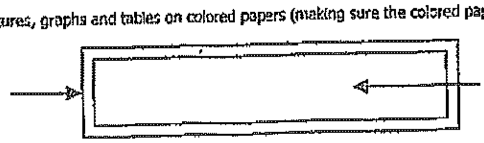
Depth: 75 CM

It has to be able to stand on its own

Display Beauty Secrets:

- Use a computer to type out your information, but if you can't, write out your information in your best writing. Printing the titles is usually best. If you are using a computer, make sure the fonts are readable and only use one or two type faces.
- Use spray adhesive or glue stick to paste up your papers. It is less messy
- Mount white paper, pictures, graphs and tables on colored papers (making sure the colored paper is larger so it creates a border for the white paper.) Do not

Colored paper Creates border



White paper, pictures or graph/tables

If you completed everything in this packet you probably have a terrific science fair project, and you are now a real scientist! Good Job!
But...

If you still need more ideas, here is a list websites that you can check out about science fair projects to give you even more ideas.

Websites

Internet Public Library
http://www.ipl.org/div/kidspace/projectguide/
Are you looking for some help with a science fair project? If so, then you have come to the right place. The IPL will guide you to a variety of web site resources, leading you through the necessary steps to successfully complete a science experiment.

Discovery.com: Science Fair Central
http://school.discovery.com/sciencefaircentral/
"Creative investigations into the real world." This site provides a complete guide to science fair projects. Check out the 'Handbook' which features information from Janice VanCleave, a popular author who provides everything you need to know for success. You can even send her a question about your project.

Science Fair Idea Exchange
http://www.halcyon.com/sciclub/cgi-pvt/scifair/guestbook.html
This site has lists of science fair project ideas and a chance to share your ideas with others on the web!

Cyber-Fair
http://www.isd77.k12.mn.us/resources/cf/welcome.html
This site has one-sentence explanations of each part of a science fair. One of the steps described is presenting your project to judges. This may or may not be a part of your science fair. The site also has an explanation of what makes a good project and an explanation of how to come up with your own science fair project.

Try Science
http://tryscience.com
Science resource for home that gives you labs to try and 400 helpful links all related to science

The Yuckiest Site in the Internet
http://yucky.kids.discovery.com/
Brought to you by Discovery Kids, this site gives you lots of ideas on how to do the messiest yuckiest experiments

Experimental Science Projects: An Introductory Level Guide
http://www.isd77.k12.mn.us/resources/cf/SciProjIntro.html
An excellent resource for students doing an experiment-based science fair project. There are links on this page to a more advanced guide and an example of an actual experiment-based project.

Gateway to Educational Materials: Science Fair Projects
http://members.ozemail.com.au/~macinnis/scifun/projects.htm
The Gateway to Educational Materials extensive and detailed step-by-step guide to doing a science fair project.

Science Fair Primer
http://users.rcn.com/tedrowan/primer.html
A site to help students get started and run a science fair project.

Science Fair Project Guidebook
http://www.energy.sc.gov/K-12/science_fair.htm
The State of South Carolina publishes a K-12 science fair guidebook. It can be viewed using Adobe Acrobat Reader.

Science Project Guidelines
http://www.thesciencefair.com/guidelines.html
The scientists at the Kennedy Space Center have participated in judging local school science fairs for many years and have some great suggestions for student research projects. This information by Elizabeth Stryjewski of the Kennedy Space Center is now provided on a commercial site.

The Ultimate Science Fair Resource
http://www.scifair.org/
A variety of resources and advice.

What Makes A Good Science Fair Project
http://www.usc.edu/CSSF/Resources/Good_Project.html
A website from USC that gives a lot of good tips and ideas to think about regarding what makes a good science fair project. Advice for students as well as teachers and parents is included.

Mr. McLaren's Science Fair Survival Page
http://www.ri.net/schools/East_Greenwich/Cole/sciencefair.html
Tips from Archie R. Cole Junior High school on what makes a good project.

Neuroscience for Kids: Successful Science Fair Projects
http://faculty.washington.edu/chudler/fair.html
Site made by Lynne Bleeker a former science teacher, science fair organizer, and judge. Gives a thorough and detailed description of the steps to a successful science fair project

JUDGES' RUBRIC
BNL Elementary School Science Fair

Criteria	4	3	2	1
Originality of Question	Original idea going beyond a traditional or existing idea.	Different perspective on a traditional idea.	Expanding an existing idea.	No originality.
Hypothesis/ Define the Problem	Thoroughly developed with reasoning. Ex. "I think…because…" or a clearly defined problem to be solved or question to be answered.	Sufficiently developed.	Partially developed.	Major flaws.
Procedures/ Engineering Design Solutions	Easy to follow sequence of the Scientific Method or Engineering Design Process. Dated sequence of entire process captured by the student in a log or journal. This includes all observations, data collection, and changes to project.	Easy to follow sequence of the Scientific Method or Engineering Design Process. Dated sequence of entire process captured by the student in a log or journal with moderate detail.	Somewhat difficult to follow because of lapses in the sequence of the Scientific Method or Engineering Design Process. Minimal documentation included in a log or journal.	Difficult to follow; no sequence of the Scientific Method or Engineering Design Process. No data collection shown.
Investigation Trials	Experiment was performed 3 or more times and/or sample size was exceptional or engineering design was tested 3 or more times.	Experiment was performed 2 times and/or sample size was adequate or engineering design was tested 2 times.	Experiment was performed 1 time and/or sample size was minimal or engineering design was tested 1 time.	Experiment was performed incompletely.
Analysis	Data is clearly presented in the form of a table, chart, or other graphic organizer and directly relates to the hypothesis/question/problem.	Data is reasonably presented and shows good relationship to hypothesis/questions/ problem.	Data is minimally presented and shows some relationship to hypothesis/question/ problem.	Data is not presented and no relationship to hypothesis/question/ problem is evident.
Evaluation/ Conclusion/ Solution	A logical conclusion has been drawn based on the data collected or the design(s) tested. The conclusion or design answers the hypothesis/question/problem and/or raises a new hypothesis/question/problem. Has real world application.	A logical conclusion has been drawn based on the data collected or the design(s) tested.	A fairly reasonable conclusion has been drawn based on the data collected or the design(s) tested.	The conclusion drawn or solution designed is not shown to relate to the data collected.
Presentation *(Overall Impression)*				

*Scientific Method: question, hypothesis, investigating/testing, analysis and evaluation/conclusion.

**Engineering Design Process: Identify a need or problem, research/brainstorm possible solutions, choose solution(s), design solution(s), test and evaluate.

Summary of Project
Pulaski Road School Science Fair

This form is to be completed by the student and paper clipped to the project. If a parent should complete this form for their child, please sign here.______________________

Name(s):____

Title of Project:

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Objective (what I intended to accomplish):

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Procedure (what steps I followed to prepare):

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Conclusion (what I learned):

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To get started searching for ideas for Science Fair Projects, here are some useful websites. If you are interested in having your project eligible for the Brookhaven Science Fair, please be sure to review the contest information included on the Brookhaven website.

Brookhaven Science Fair Web Site:
www.bnl.gov/education/contests/sciencefair

Science Fair Information Links for Students, Parents & Teachers

- Science Buddies http://www.sciencebuddies.org/
- Science fair project ideas http://www.education.com/science-fair/
- Science Fair Central http://school.discoveryeducation.com/sciencefaircentral/?pID=fair
- Science Fair Adventure http://www.sciencefairadventure.com/
- Science Bob http://www.sciencebob.com/index.php
- Science Fair Project Resource Guide http://www.ipl.org/div/projectguide/choosingatopic.html
- All Science Fair Projects http://www.all-science-fair-projects.com/
- Science Kids http://www.sciencekids.co.nz/projects.html
- Science Made Simple http://www.sciencemadesimple.com/projects.html
- Science Fair Projects by Branches of Science http://www.juliantrubin.com/branchesofsciencefair.html
- Energy Quest - Science Projects http://www.energyquest.ca.gov/projects/index.html
- Intel - Student Science https://student.societyforscience.org/sciencenews-students

- Try Science - Sample Science Experiments http://www.tryscience.org/
- Little Shop of Physics http://littleshop.physics.colostate.edu/onlineexperiments.htm
- PBS Kids Science Fair http://pbskids.org/dragonflytv/scifair/
- Testable Questions http://teacherweb.com/GA/BeaverRidgeES/Head/testable-questions.pdf
- Science Buddies Project Guide http://www.sciencebuddies.org/science-fair-projects/project_question.shtml
- Science Powerpoint & Intro to Science Questions http://www.slideshare.net/emteacher/science-questions
- BrainpopJr & Science Project Video https://jr.brainpop.com/science/scienceskills/scienceprojects/zoom.weml
- 5 Fun Science Experiments for Kids (w/ Grover!) https://www.youtube.com/watch?v=BeLT-O8Mz2M
- The Scientific Rap Song https://www.youtube.com/watch?v=bUa-ilQqEv0
- The Scientific Method Song http://www.havefunteaching.com/songs/science-songs/scientific-method-song