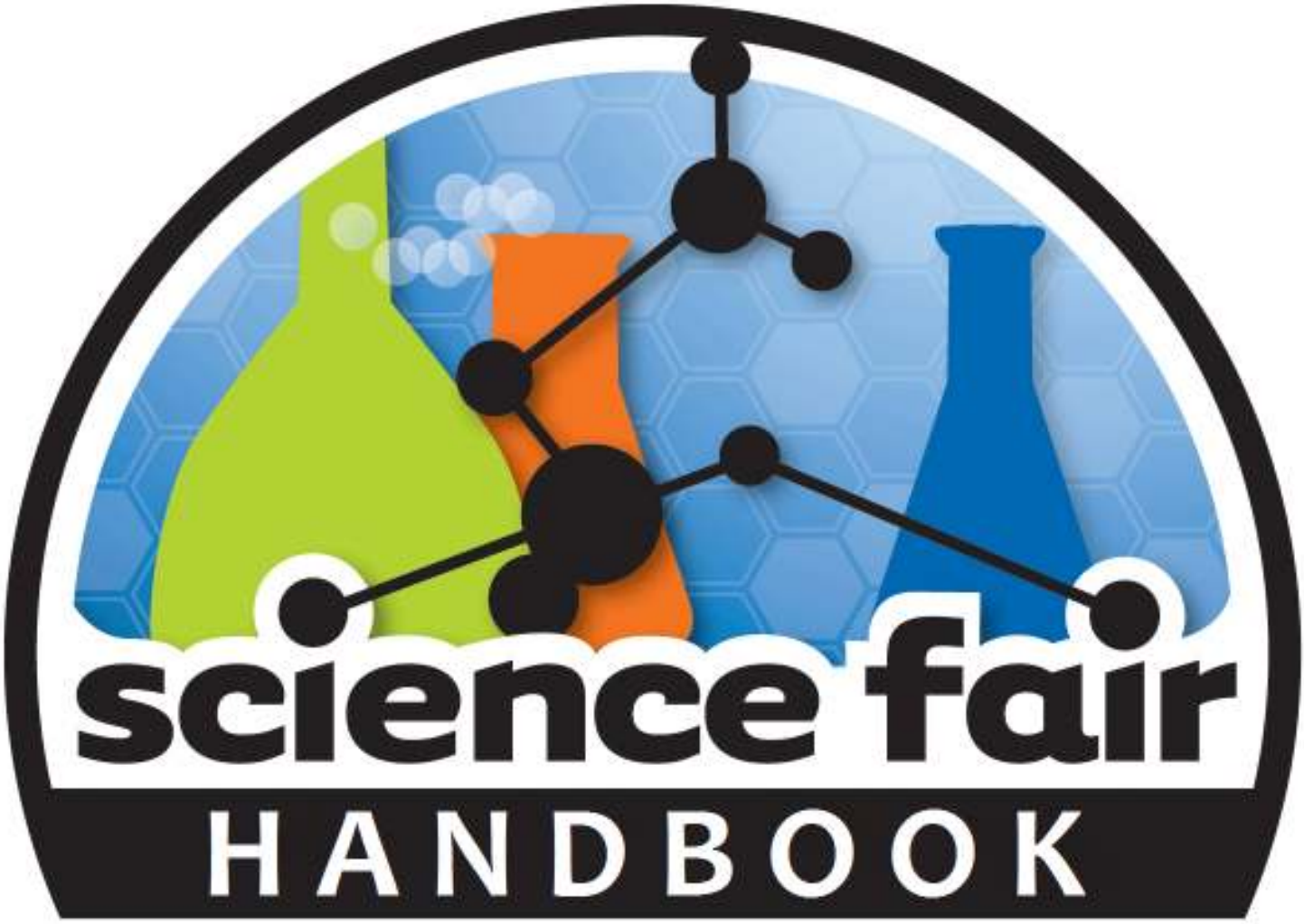
Orange Public School District



Name:_____ School: _____ Grade: _____

My adult helper is:

_____

Name: _____ Grade:_____

Teacher:_____ School:_____

Date project is due:_____ **Dates of the Science Fair:**_____

Date to begin working on the project: _____

Completing a Science Fair Project - Overview

1. **Choose a topic.** Be sure it interests you. Don't pick one because you think it will be easy. Talk it over with your parents and when you have decided, inform your teacher and get their approval. Do not change your topic later. Get your registration form from your teacher signed by your parent and turn it in. (***Page 6)***
2. **State your purpose as a question.** What is it you want to find out by doing this project? (***Page 7, 18)***
3. **Research your problem.** Look up books/websites that might help you, make observations by simply looking at things, talk to people, and find out as much as possible about your topic. Write down ideas you have and where you got them. Keep note of all information needed for citing your resources.(***Page 7, 19-21)***
4. **Form a hypothesis.** What do you think is going to happen? Based on what you know or found out from step #3, what do you think the results of your experiment will be? After doing the experiment, it may turn out that your guess was wrong. It is okay if this happens. (***Page 7, 22)***
5. **Plan your project.** How will you test your hypothesis? What experiment will you do? How will you measure the results? Where will you keep your information? What materials will you need? Be sure to keep notes and write down everything you do and what happens. (***Page 8, 23)***
6. **Collect all your materials.** Find a place to keep things where others won't bother them. Let your family know what you are doing so they do not throw your materials away by mistake. ***(Page 8)***
7. **Conduct your experiment.** Remember, do the experiment carefully. Use something to measure your experiment: a ruler or yardstick if you are measuring distance, a clock to measure time, etc. Check the measurements to be sure you are correct. (***Page 8)***
8. **Record your data.** As you do your experiment, you will want to write down what you saw or found out. Organize this information in an orderly manner. Put the date, time, and any other useful information. Write your measurements clearly. Draw pictures if possible and label. (***Page 9, 24)***
9. **Prepare your titles, charts, graphs, drawings, and diagrams.** Make them large enough to see, neat, and colorful. This will help you analyze your data. ***(Page 9, 24)***
10. **Draw conclusions.** What did you learn from your experiment? Have you proved or disproved your hypothesis? You made a guess about what you thought would happen. Now tell what really did happen. You don't lose points if your guess turned out to be wrong. (***Page 10, 25)***
11. **Write your report.** Writing your findings and sharing them with others is what scientists do. Write a report that explains your project. Be sure to edit and proofread your rough draft to submit a final draft. (***Page 10-11)***
12. **Construct your science fair presentation.** Get your presentation board from your teacher so you can show all your work. (***Page 12)***
13. **Prepare and practice your presentation.** Be able to tell about what you used, what you did in your experiment, and what you found out. Knowing it well enough that you don't have to read it from the display. (***Page 13)***
14. **Plan a time line so you don't leave everything until the last minute.** If you need help, tell your parents and your teacher, the earlier the better. (***Page 17***)
15. **Relax and enjoy yourself. You will do a GREAT job.**

Orange Public School District

Science Fair Planning Guide

Table of Contents

Information Guide	Sheets that must be turned in to teacher

Developed by the Science Department with source materials from:

http://www.utelementary.org/ourpages/auto/2013/1/9/54511288/ScienceFairGuide%202013.pdf

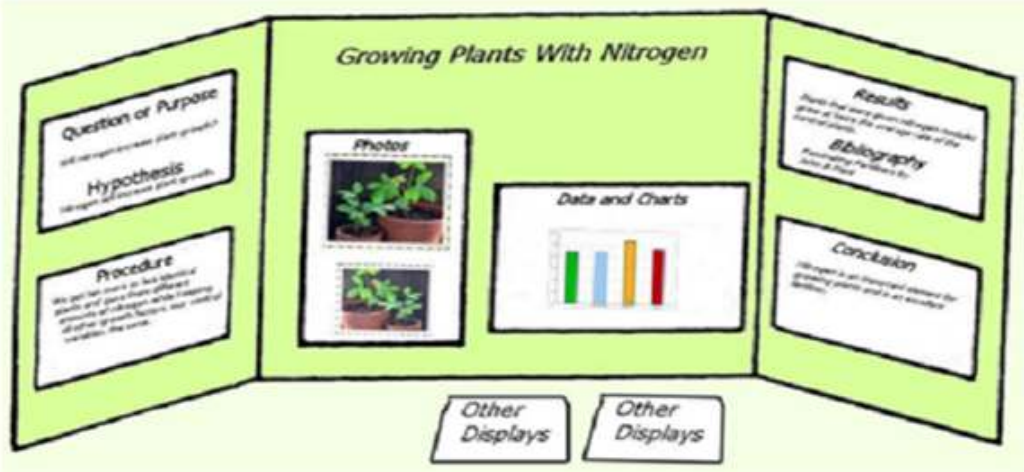
http://www.gwinnett.k12.ga.us/BerkeleyLakeES/Science%20Fair/2013%20BLES%20Elementary%20Science%20Fair%20Student%20Packet.pdf

http://phsd144.net/cms/lib3/IL01001725/Centricity/Domain/572/ScienceFairPacket.pdf

What Kind of Project Should I Do?

There are two types of projects: Models and Experiments.

Do an Experiment Like This . . .



Experiments use the steps of the Scientific Method to test something. They show gathered data, organize information via charts and graphs for analysis, and form a conclusion.

Your project should include a 3-D Model that corresponds to the experiment, and helps support your display board.

Example: Testing the effect of fertilizer on plant growth is an experiment and your display board would include the plants as your 3-D model in this case.

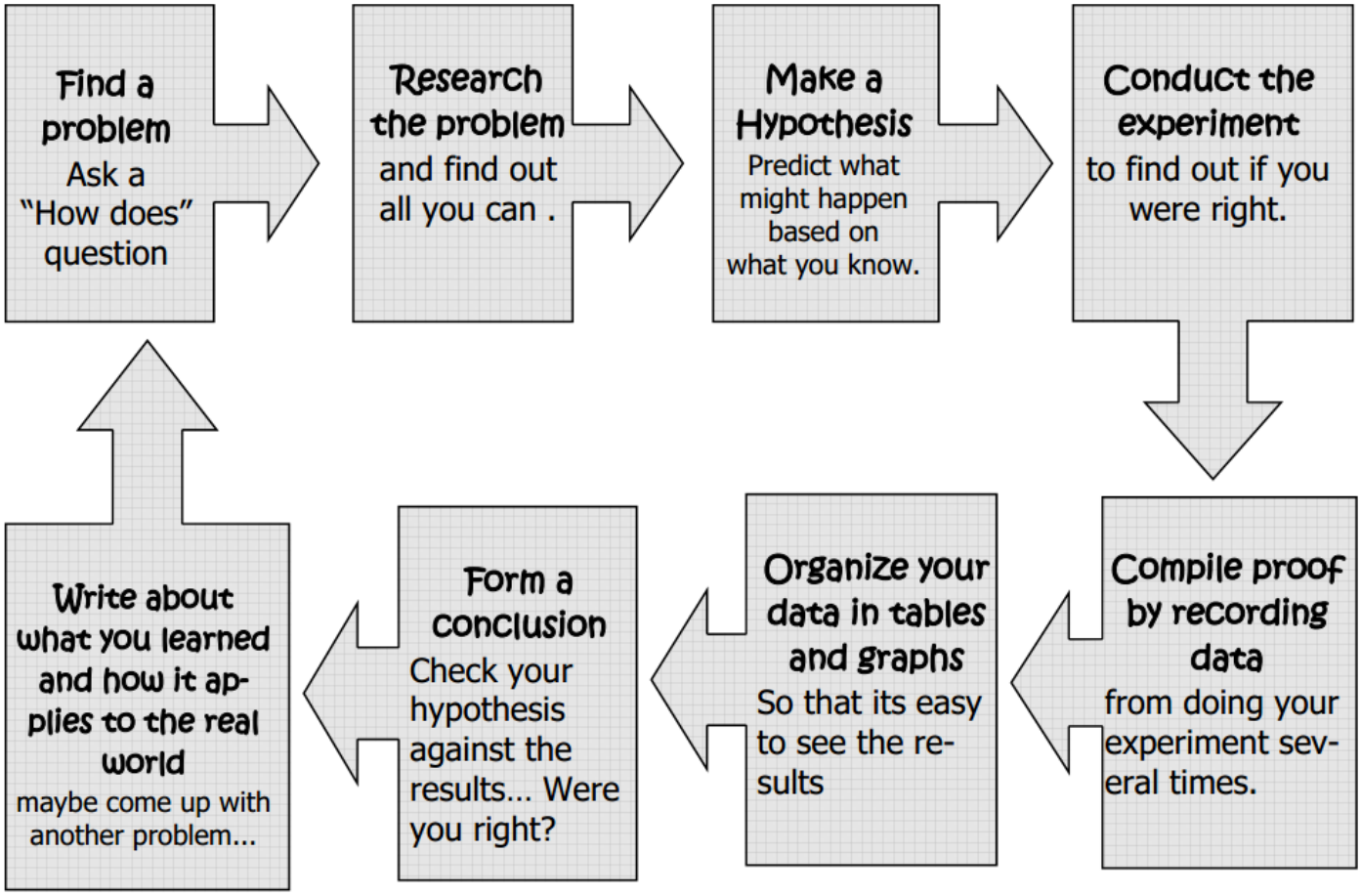
Don't Do This!

Model Used Only for Demonstration – No Experiment

Demonstrations are not experiments. They do not test anything; they only demonstrate how something works.

Example: A model of the solar system isn't an experiment; it's only a scale model of our planets demonstrating how they orbit – it's not testing or proving anything.

So What the Heck is the Scientific Method?



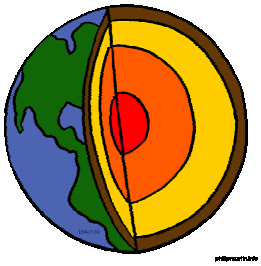
Choosing a category that interests you...

Begin by choosing a question that interests you. There are 3 main categories of science to choose from, in order to develop a question.

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 is against Science Fair rules to intentionally hurt an animal during an experiment. If you are dealing with animals, let an adult assist you. It is okay to do an experiment on plants, as long as they don't belong to someone else: Don't do an experiment on your mom's flowers unless you ask her first!

Life science also includes studying behaviors, so it is a perfect category to try taste tests, opinion surveys, animal behavior training etc.

Physical Science: If you like trying to figure out how things work, this is the category for you! It includes topics about matter and structure, forces and movement, 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 makre sure there is an adult 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 and mix things together to see what will happen. Again, if you are experimenting with possibly dangerous things, you need to get an adult to help you out.



Earth and Space Science: 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 (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 is also a tricky category where most kids mess up and do a collection or model project instead of a true 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:_____

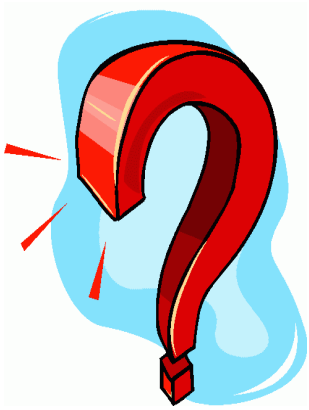
_____

_____

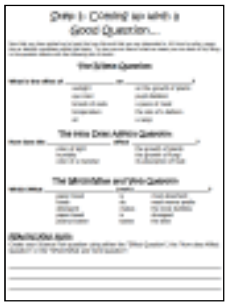
_____

_____

Coming up with a Testable Question: Step 1

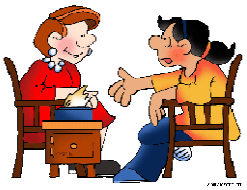


What's the first step of the scientific method? Where do we begin? (Go ahead, check page 5… That's right – coming up with a question! Questions that will be helpful to conduct an experiment have a specific characteristic: they have to be testable. That is, the question must let the reader know what it is you want to test. A question such as, "How do we smell things?" is too broad – plus you cannot test it; it's only a research question. But a question like "Does smell affect taste" – is a testable question. You can test how smell affects taste by doing an experiment.



Hint: Be sure to design your question on ***Page 18***!

Research Your Topic: Step 2!



Scientists complete research on topics that interest them. This allows them to learn more about their topic so they can design an experiment, and make an informed prediction on what the outcome of the experiment will be.

You must have 3 resources; *either* Internet, book, or interview.

Hint: Be sure to fill out the Research Sheets when you look something up on **pages 19-21.** Turn them in to your teacher.

FORM A HYPOTHESIS

Now that you've done some research, you can start thinking about what will happen in your experiment. Refer to your testable question to predict what will happen.

Hint: Be sure to fill out the Hypothesis form on **Page 22.**

GUIDE ON HOW TO PLAN AN EXPERIMENT (STEPS)

First: Gather up all 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. Did we mention to take *pictures*, or draw your materials? This will help when making your display board.

Second: Write a Procedure. This is the list of steps you will do to perform an experiment. If you end up changing your procedure after you write it down, be sure to update it. Writing it down helps other people understand how your experiment works. If they want to try it, they need the steps too! Scientists do this so that people will believe that they did the experiment and also let other people test what they found out. Take *pictures* of yourself doing the steps!

Third: Identify your variables. The variables are any factors that can change in an experiment. Remember that you should only test one variable at a time to get accurate results. There are different types of variables in an experiment:

Control Variables: These are the variables that stay the same in your two systems.

Independent Variable: This is the factor that you are testing.

Dependent Variable: This is what happens as a result of your test – the data you are going to measure.

For Example: If you are testing the effect of water on plant growth you would set up at least two groups of plants. One group will receive water, and the other will not. There will be more than one plant in each group. The size of the pots and type/amount of soil, plant types, temperature, and light conditions will always be the same. The size of the plants will be recorded during regular intervals – every day. In this example:

The **controlled variables** are: Size of the pots, amount of soil, type of soil, temperature, type of plants, amount of light.

The **Independent Variable** is: Amount of water

Dependent Variable: Size of the plants

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. If you want more practice on variables, check out these sites:

- http://www.quia.com/quiz/162310.html
- http://www.sciencebuddies.org/science-fair-projects/project_variables.shtml
- http://sciencespot.net/Media/scimethodconvar.pdf
- http://www.sophia.org/concepts/independentdependent-variables

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 step by step. So that means you need to do the experiment more than once in order to test it properly. We recommend 3-5 trials. Don't forget to take *pictures* of the science project being done, and the results!

Fifth: Collect your Data. This means record results of the experiment every time you test it. You also need to organize it in a way that 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. Don't make a graph or table just because we asked you to; use it to benefit your project and make sense of the results. There is nothing worse than having graphs and tables that have nothing to do with the question on the science project.

Hint: Be sure to design and plan your experiment on ***Page 23***!

Now you are ready to complete your experiment and record data!

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!

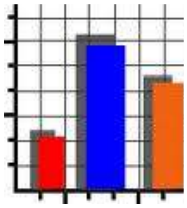
Tables, charts and diagrams are generally the way a good scientist like you would keep track of your experiment trials. Remember you are testing at least 5 times or more. A table is organized in columns and rows and **ALWAYS** has labels or headings telling what the columns or rows mean. You will probably 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

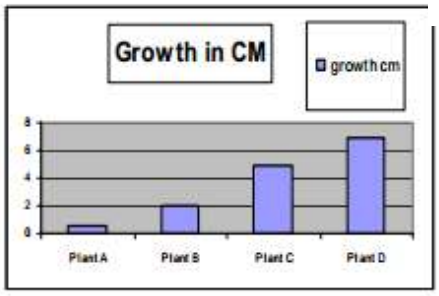
Be accurate and neat! When you are writing your tables and charts please make sure that you record your data in the correct column or row, that you write neatly, and most of all that you record your data as soon as you collect it **SO YOU DON'T FORGET WHAT HAPPENED!!!!** Sometimes an experiment might 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.

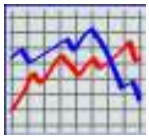
Use the right graph for your experiment. There is nothing worse than a bad graph. There are all types of graph designs, but these seem to be easy to use for science fair experiments.

- **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.

Keep your data so you can use it in your written report and display board!

Hint: Include your data and on ***Page 24***

Analyze Data and Draw Conclusions

Congratulations! You finished your experiment and have all this data…. Now what? Look over your data, and analyze it see what it means. Write up your conclusions with your data to back you up! You should also make a connection with how your experiment applies to the world we live in.

Hint: Write your Conclusions and Applications on **Page 25.**

Get Published! Write Your Report

Scientists publish their findings. It is important to document your experience. Proofread and edit your report – don't let your rough draft be your final draft! A science fair report should contain the following categories:

- Title
- Summary
- Question and why you picked the topic
- Background Research
- Hypothesis and variables
- Materials needed
- Experimental Procedure
- Discussion of Data (be sure to include your tables, graphs, etc.
- Conclusions
- Ideas for improvement (if you could change something, what would it be)
- Bibliography and Acknowledgements *not a major portion

Hints: When you put your name on the report, be sure to put it on the **back** of the report to increase fairness in judging. Use a clear, easy to read font of size 12-14 and one inch margins. There is no page requirement; however, you must complete all categories in the report. If you complete each category fully, you will have several pages. Your report should be with your display in the fair. On the next page is an example to help you to format your report:

Title of Science Fair Project

Summary

Write a one-paragraph summary about your project.

Question

Write your question. Why did you pick this topic – what do you find interesting about it?

Background Research

What did you learn from your background research about the topic? Write at least one paragraph.

Hypothesis and variables

What was your hypothesis? What caused you to make this prediction for your experiment? What are the variables for your experiment?

Materials needed

Write out the materials that you used for your experiment. Use sentences; don't list them.

Experimental Procedure

Explain how you performed your experiment. Use sentences and paragraphs; don't just list the steps.

Discussion of Data (be sure to include your tables, graphs, etc.

Discuss your results. Write out the measurements and observations from your experiment and control groups. Include your graphs, tables, etc, and refer to them in this section.

Conclusion(s)

Write your conclusion. What does the data say about your hypothesis? Was your hypothesis supported or not supported? How do you know – what is your proof?

Reflection

What ways could you have improved your experiment? What things would you change or do differently? Are there any questions you still have about your topic – what are they?

Acknowledgements

Acknowledge and thank the people who helped you with your project – teachers, parents, siblings, friends, etc.

Bibliography

List the sources for your information – your research from the books, internet and/or interviews with people. Also list sources for any pictures you may have used, if you did not draw or photograph them yourself.

Display Board Presentation Guide

Grades 3- 7

Question	Title of Project	Results (Explanation of Data)
Hypothesis	Observations/Photographs/Graphs	Conclusion
Materials		Real Life Applications and/or Interactive Portion
Procedure		Acknowledgements and Resources

Written Report

3-D Representation or Model that Corresponds with Project

* Display boards must reflect the order of each component as indicated above to satisfy judging criteria!

Depending on your experiment, narratives, pictures, etc., the space size you will use or need for each section will vary –making it look presentable is the key!!

Display boards must be neat, organized, creative, colorful, and attractive. Display boards must be **typed**- not hand-written. Words should be readable from a distance of 5 feet. Decorations should reflect the theme of the project.

Your Science Fair Oral Presentation

A lot of kids are scared of speaking in public or to a teacher / judge. Just imagine they are a fellow scientist who wants you to share what you learned.

Relax, smile, and have fun. Remember, you are the expert and you had fun doing this project. But if you are a little nervous, we listed some things that you need to do during the presentation.

Helpful hints:

- Practice, Practice Practice! Plan out what you are going to say and do. Practice this at home. You can do this in front of your family, and by looking in a mirror. The more you practice, the more confident you will be!
- Introduce yourself. Point to the title of your display. Tell your audience why you chose to study this.
- State your problem that you studied (your question.) Tell them about your hypothesis (what you thought might happen.)
- Talk about what you learned while researching your topic.
- Talk about the resources (books, websites, and interviews) that helped you understand your topic.
- Tell about your project and explain the steps you took to conduct your experiment. Be sure to mention all the materials involved and point out the pictures that you may have taken.
- Show then all the cool graphic organizers that you made, like your tables and charts. Remember to point you the labeled parts of your graph, table, or drawing to show that you know what it represents.
- Be sure to explain what your data means. Make sure you can read your graphs and tables. Let them know if you were surprised by the results, or if you know what would happen because you studied about it.
- Make sure you sound like an expert on your topic. Always use the appropriate vocabulary especially by using words from the Scientific Method, like: Problem, Hypothesis, Procedure, Results, and Conclusions.

Science Fair Rules and Regulations

Aw! You mean there are rules? Of course there are silly, this is made by adults!

Safety Rules First!

1. Number one rule… think safety first before you start. Make sure you have recruited your adult to help you.
2. Never eat or drink during an experiment and always keep your work area clean.
3. Wear protective goggles when doing any experiment that could lead to eye injury.
4. Do not touch, taste or inhale chemicals or chemical solutions.
5. Respect all life forms. Do not perform an experiment that will harm an animal.
6. All experiments should be supervised by an adult!
7. Always wash your hands after doing the experiment, especially if you have been handling chemicals or animals.
8. Dispose waste properly.
9. Any project that involves drugs, firearms, or explosives are not permitted.
10. Any project that breaks district policy, and/or local, state or federal laws are not permitted.
11. Use safety on the internet! Never write to anyone without an adult knowing about it. Be sure to let an adult know about what websites you will be visiting, or have them help you search.
12. If there are dangerous aspects of your experiment, like using sharp tools or experimenting with electricity, please have an adult help you or have them do the dangerous parts. That's what adults are for, so use them correctly. (Besides, it makes them feel important!)

Science Fair Rules

1. Only one student per entry.
2. Adults can help, in fact we want them to get involved. They can help gather materials, supervise your experiment and even help build the display. They just can't be with you during the judging. (So parents, no peeking!)
3. Experiments are recommended over collections and models. You will not be able to enter unless you do an experiment, so save the models and collections for a class project. You will be judged on the use of the Scientific Method.
4. Follow the display board guidelines. Bring your written paper and a model that relates to your experiment. You cannot bring the materials of your experiment for the display or perform the experiment live. YOU MAY NOT BRING ANY FOOD OR ORGANIC MATERIALS!
5. Displays must be on display board. They can be no longer than 100cm in height, 180 cm in length and 75 cm deep. They must stand alone. See the display making page if you need a diagram.
6. Respect all adults involved in the fair… especially the judges!
7. All decisions of the judges and science fair committee are final.

Helpful Websites

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 of websites that you can check out about science fair projects to give you even more ideas.

Science Buddies
http://www.sciencebuddies.org/
Looking for inspiration for a science fair project? In need of fun, at-home science experiments? Science Buddies has over 1,000 Project Ideas in all areas of science.

Internet Public Library
http://www.ipl.org/div/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.discoveryeducation.com/sciencefaircentral/?campaign=SFC
"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.

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.

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.

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

PBS Kids – Dragonfly TV Science Fair
http://pbskids.org/dragonflytv/scifair/index.html
Science Fair Topic spinner, and experiment project ideas from the TV show!

Individual Science Fair Registration Form

PLEASE RETURN YOUR FORM TO YOUR TEACHER by _____

Every student must register and is <u>required</u> to submit a project as part of their graded class work.

<u>It is a Science Class Requirement</u>

Grade Level _____

Homeroom Teacher _____

Student Name _____

Project Title _____

Description:

_____

_____

_____

_____

All parents must sign and approve their child's Science Fair Project.

I acknowledge that I have received and reviewed the materials for the Science Fair and I am aware that my child is **<u>required</u>** to complete a Science Project.

Student's Signature: _____

Parent's Signature: _____

Teacher's Approval of Project ☐ ***(initial) Date:*** _____ Please Conference with your teacher about Project ☐ ***(initial) Date:*** _____

Teacher's Signature _____ Date _____

STUDENT CHECKLIST

Due Date	Component	Completed	Parent signature
	Registration Form- Signed and returned		
	Topic: *Be sure it interests you. Don't pick one because you think it will be easy. Talk it over with your parents and when you have decided, inform your teacher and get their approval, and do not change your topic later. Get your registration form from your teacher signed by your parent and turn it in.*		
	Question: *State your purpose as a question. What is it you want to find out by doing this project?* (Included in Project Summary Worksheet)		
	Hypothesis. *What do you think is going to happen? Based on what you know or found out from step #3, what do you think the results of your experiment will be? After doing the experiment, it may turn out that your guess was wrong. It is okay if this happens.* (Included in Project Summary Worksheet)		
	Materials*: List all materials that will be used in your experiment. Include exact quantities for each item used.* (Included in Project Summary Worksheet)		
	Procedure: *List and describe steps taken to complete the project. Presented in chronological order or numbered order.* (Included in Project Summary Worksheet)		
	Research: *Look at any books that might help you, make observations by simply looking at things, talk to people, and find out as much as possible about your topic. Write down any ideas you have and where you got them.* (Included in Resource Form-you must have **3**!)		
	Experiment Paper: Written report according to the guidelines on your experiment.		
	Display board: *Create and complete your display board. Be sure to set it per district standards, neatly and with model / experiment.*		
	Presentation*: Practice so you are prepared and ready.*		
	Deadlines: All deadlines to turn in components were met.		

*****Due Dates are determined in class by your teacher.***

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:

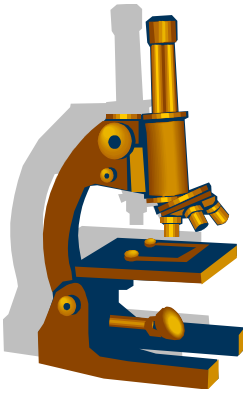
Create your Science Fair question using either the "Effect Question", the "How does Affect Question" or the "Which/What and Verb Question":

_____

_____

_____

Research



Resource #1

Type of Resource: _____

Website: http:// _____

Author: _____

Title: _____

Publishing Company: _____

Location of Publishing Company: _____

Date of Publication: _____

Information found in your own words:

(Must be at least one paragraph summary.)

_____

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Research

Resource #2

Type of Resource: _____

Website: http://_____

Author: _____

Title: _____

Publishing Company: _____

Location of Publishing Company: _____

Date of Publication: _____

Information found in your own words:

(Must be at least one paragraph summary.)

_____

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Research

Resource #3

Type of Resource: _____

Website: http:// _____

Author: _____

Title: _____

Publishing Company: _____

Location of Publishing Company: _____

Date of Publication: _____

Information found in your own words:

(Must be at least one paragraph summary.)

_____

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FORM A HYPOTHESIS

This is a prediction about your experiment based on your research. This is done before you start your experiment.

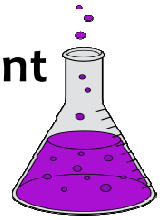
Example Question: Which paper towel is strongest?
Example Hypothesis: The scientist predicts that Paper Towel A will be the strongest because it is the thickest, and costs more than Towels B and C.
Do not use Brand Names. Label them with a Letter. In the conclusion you can reveal the Brand.

Question**:**_____
_____
_____

Hypothesis: I think _____
_____

will happen because my research shows _____
_____
_____
_____
_____

Test Your Hypothesis by Planning and Completing an Experiment



Now it's your turn:

What are all the **materials** you will need for your experiment? List them here. Be sure to take pictures!

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

***Controlled Factors**: The things that are the same between the control and variable groups:*_____

_____

_____

***Independent Variable**: The factor that I am testing; it changes from one experiment to the next) is:* _____

_____

_____

***Dependent Variable**: (the factor that I am measuring; the result of my experiment) is:* _____

_____

_____

Procedure: (take pictures!) I need to perform these steps:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____

Submit this Page to Your Teacher

Data – Evidence for your Experiment

Include your data via a graph, diagram, chart, table etc below:

Data Analysis/Conclusion and Application

Write your conclusion. What does the data say about your hypothesis? How do you know – what is your proof?

Conclusion: _____

_____

_____

_____

_____

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_____

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_____

Application: How does your experiment relate to real life?

_____

_____

_____

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