

## Judging:

### Tips:

- **Practice**—practice with friends, parents, teachers how you will present
- **Stay at your project**—judges may want to talk to you about your project; this is part of the judging, so make a good impression
- **Dress Well**—wear a neat shirt and pants to make a good impression. Do not wear a hat or chew gum.
- **Stand when the judges talk to you**—you will appear willing to answer questions and your voice will sound better when standing
- **Show enthusiasm**—Be proud of your project and share your excitement with the judges
- **Ask questions**—After the judge has asked you questions, you could ask advice on how to improve the project or continue your work
- **Relax and enjoy the day**— You have worked hard on your project. Enjoy the opportunity to share it with others.



For the Scientist in Everyone

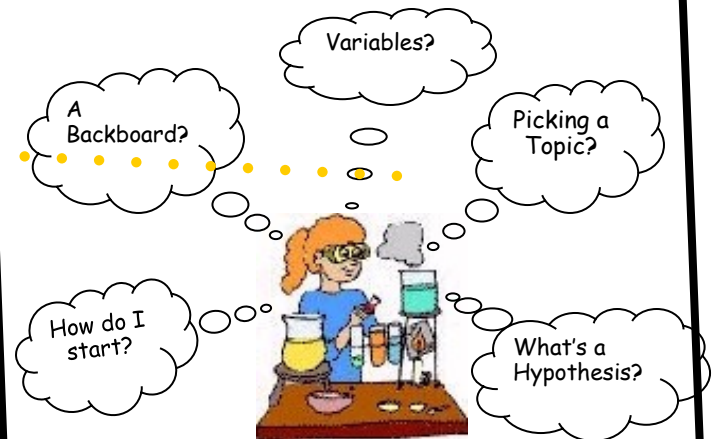
**Cobb Middle School  
915 Hillcrest Avenue  
Tallahassee, FL 32308  
(850) 488-3364**



For the Scientist in Everyone



## Science Project Help Book



Produced By: Cobb Middle School

## WHY DO A SCIENCE FAIR PROJECT?

### FROM STUDENTS:

"I like to work on something that is interesting to me."

"It's not a lot of bookwork."

### FROM TEACHERS:

"A student gets to do real science."

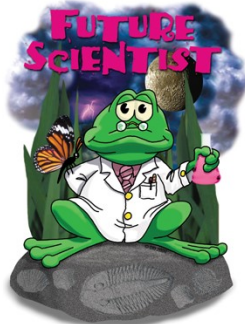
"Students get to become scientists."



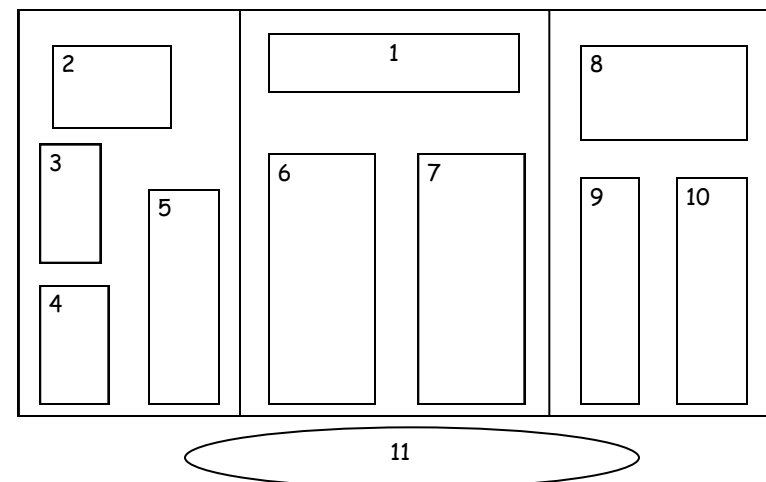
### FROM PROFESSIONALS:

"The basic ideas of science are learned by doing, seeing, touching, and smelling."

"Being able to form a question and then try to answer it are skills everyone uses."



## SETTING UP THE DISPLAY BOARD



1. **Title** —Catchy, Letters large, Use a font that's easy to read
2. **Problem** — Problem you hope to answer
3. **Hypothesis** —statement that predicts what you think will happen
4. **Abstract** — Short, one-page summary of the project, about 250 words. Should contain the purpose, procedures, data summary, and conclusions.
5. **Materials List** —List of everything used in the experiment, specific amounts and details
6. **Procedure & Variables** —Write a step-by-step procedure. List of independent, dependent, and control variables
7. **Data** —Visual explanation- charts, graphs, photos of what happened
8. **Results** —Summary of results using words instead of charts or graphs
9. **Conclusion** —Statement of whether hypothesis was supported or not
10. **Next time** —How you could improve your project
11. **Logbook/Notebook** —never leave empty

**\*\*Make sure that the text on the board is large enough to read from a distance. \*\***

## ANALYZING THE DATA:

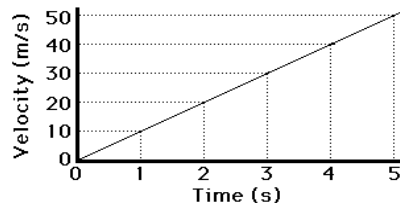
- Select the correct graph to display your data

### TYPES OF GRAPHS

**Bar Graph** - for comparing 2-4 independent groups

**Line Graph** - If the independent variable is numerical

**Circle Graph** - if graphing parts of a whole (percentages)



## CONCLUSION:

- Look back at the hypothesis,
- Based on your data, accept or refuse your hypothesis

## WRITING THE ABSTRACT:

- A one page summary of the purpose of your project, the procedures, data, and conclusion. This part basically has you sum up your whole project in several paragraphs.

## QUESTIONS: ANSWER THESE TO HELP YOU PLAN

1. How long will this whole project take?
2. Whose help will I need?
3. How much money will this cost?
4. What big ideas/concepts does this explore?
5. What materials will I need?
6. How long will the experiment (just the experiment) take?
7. What are my variables?
8. What are my controls?
9. Does my experiment involve humans?
10. Does my experiment involve vertebrate animals?
11. Does my experiment involve harmful organisms?
12. Does my experiment involve harmful chemicals?
13. Does my experiment involve cells or tissues?



## WHAT FORMS DO I NEED?

Doing the necessary forms is often confusing, but it's not that bad. In fact if you follow the chart, you'll see that **most of you only need to do one form.**

IF YOUR PROJECT HAS:      THESE FORMS ARE NEEDED:

A. NO HUMANS, NO VERTEBRATES, NO POSSIBLY HARMFUL CHEMICALS, NO POSSIBLY HARMFUL ORGANISMS	A. RESEARCH PLAN & APPROVAL FORM ONLY
B. IF HUMANS ARE INVOLVED	B. RESEARCH PLAN & APPROVAL FORM, INFORMED CONSENT FORM
C. HUMANS INVOLVED IN EXPERIMENTS	C. RESEARCH PLAN & APPROVAL FORM, HUMAN SUBJECTS FORM, INFORMED CONSENT FORM AND QUALIFIED SCIENTIST FORM
D. NON-HUMAN VERTEBRATE ANIMALS (FISH, MAMMALS, BIRDS, AMPHIBIANS, REPTILES)	D. RESEARCH PLAN, APPROVAL FORM, QUALIFIED SCIENTIST FORM, VERTEBRATE ANIMAL FORM
E. HARMFUL CHEMICALS	E. RESEARCH PLAN, APPROVAL FORM AND QUALIFIED SCIENTIST FORM
F. POTENTIALLY HARMFUL ORGANISM (DISEASE CAUSING BACTERIA, POISONOUS PLANTS, ETC...)	F. RESEARCH PLAN, APPROVAL FORM AND QUALIFIED SCIENTIST FORM

## For the Scientist in Everyone

### COLLECTING DATA:

- Make sure all measurements are in metric units
- Organize the data into a table making sure to include the title, column titles, and units listed for each variable

TEMPERATURE	PLANT GROWTH
°C	cm
10	14.2
15	15.7
20	17.1
25	18.9



## Planning Your Experiment: (Cont'd)

### Variables:

- Factors in your experiment
- **INDEPENDENT**- THE VARIABLE YOU CHANGE ON PURPOSE
- **DEPENDENT**- THE VARIABLE THAT YOU OBSERVE OR MEASURE
- **CONTROL**- VARIABLES THAT REMAIN THE SAME (control variables make the contest fair)

Ex.. If you were testing does salt water affect the growth of plants?

### INDEPENDENT-

SALT WATER OR PLAIN WATER

### DEPENDENT-

THE AMOUNT OF GROWTH FOR PLANTS

### CONTROL-

SAME TYPE OF PLANTS, SAME SIZE PLANTS,  
SAME LOCATION, SAME AMOUNT OF LIGHT,  
SAME AMOUNT OF WATER, SAME TYPE OF  
SOIL



## For the Scientist in Everyone

### TIMELINE

ASSIGNMENT	DUE DATE
Begin Searching for Ideas	___8/20___
*Topic Due	___8/24___
Have access to books and/or computers during class doing background research	_____
*Question/Ind/Dep/Control Due	___9/1___
Rough Draft Annotated Bibliography (wkst)	___9/3___
*Background Research Paper	___9/8___
*Final Annotated Bibliography Due	___9/10___
*Hypothesis Due	___9/13___
*Research Plan (hypothesis, materials, procedures, variables)	___9/21___
Fill out Necessary SRC Forms	___9/21___
Get approval to start experiment	___9/21-9/24___
Actual "experiment," collect data	___9/25- 10/14___
Data collection & experimentation complete	___10/14___
Complete graphs/tables, Analyze Data	___10/15, 10/19___
Tables and Graphs Due	___10/15___
Begin work on Display Board	___10/16(suggested)___
*Abstract Due	___10/22___
*Final Project Due	___10/29___
*- counts as a test grade	

## Looking at Topics

- Make sure to pick a topic that interests you.
- Look in books, encyclopedias, and journals
- Use the World Wide Web  
<http://school.discoveryeducation.com/sciencefaircentral/Getting-Started/Idea-finder.html>

<http://www.sciencebuddies.org/>

<http://sciencefairproject.virtualave.net/>

## Choosing a Problem

- Must be in the form of a question
- Must be narrow enough to be answered in 2-4 weeks of experimentation



## Background research

- Gather information about your topic
- Check at least **6 different** sources
- Ask an expert
- Keep track of where you get your information to document in MLA format
- Write sources in an annotated Bibliography
- Use information gathered to write a review of literature



## Writing a Literature Review

- 2-3 pages describing and explaining what you learned in your background research
- What have others learned about your topic?

## Writing a Hypothesis

- An prediction about the results of the experiments
- Must be in the form of an statement that shows a tentative relationship

example

"The plants receiving the fertilizer will grow the best because fertilizer helps plants grow by giving them nutrients."

## Planning Your Experiment

### Materials:

- List everything you will use in your experiment
- Be specific...give exact quantities and details

### Procedures:

- Steps or directions, in case someone wants to repeat your experiment; be very specific, don't assume the reader will understand

