Science Fair Projects

You will need a science notebook:

Write down everything, for this project, in the notebook.

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 (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!!!

NO MODELS!!!

PHYSICS/ PHYSICAL SCIENCES

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 any-

thing 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.

LIFE SCIENCES

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 inten-

tionally hurt an animal during an experiment. If you are dealing with animals, please let an adult as- sist 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 sur- veys, animal behavior training (or even training behavior in humans...like baby brothers or sisters...)

YOUR TITLE: THE QUESTION!

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:

So How do you become an expert?

YOU READ!!!!

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.

YOU DISCUSS!!

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.... *But again, do not write to anyone on the internet without letting an adult supervise it.* (*hint: take pictures of yourself interviewing people)

Hypothesis

Make your guess

- Use your research to make an educated guess about how you think your experiment will turn out.

- Use the " If I _____ then I think _____"format

Example: If I pour 100ml of coffee on four pea plants and pour 100ml of water in another four pea plants, then I think the plants with coffee will grow taller because caffeine will stimulate the plants.

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:

_____

_____

_____

People I talked to about my topic are:

_____

_____

_____

Some important points that I learned about my topic are

- _____
- _____
- _____
- _____

Hypothesis: I think that _____

(will happen) because (my research shows…)_____

_____

_____

Page 7

_____

Procedure

- Design your experiment:
  - Design your experiment so that they only test for one thing.
  - Make sure that you do the same things to all groups of objects being tested.
- To increase the validity of your experiment
  - Make sure to keep a control group.
  - Keep in mind sample size.
  - The more objects in your sample the more valid your experiment.
  - Use multiple trials. (At least three.)

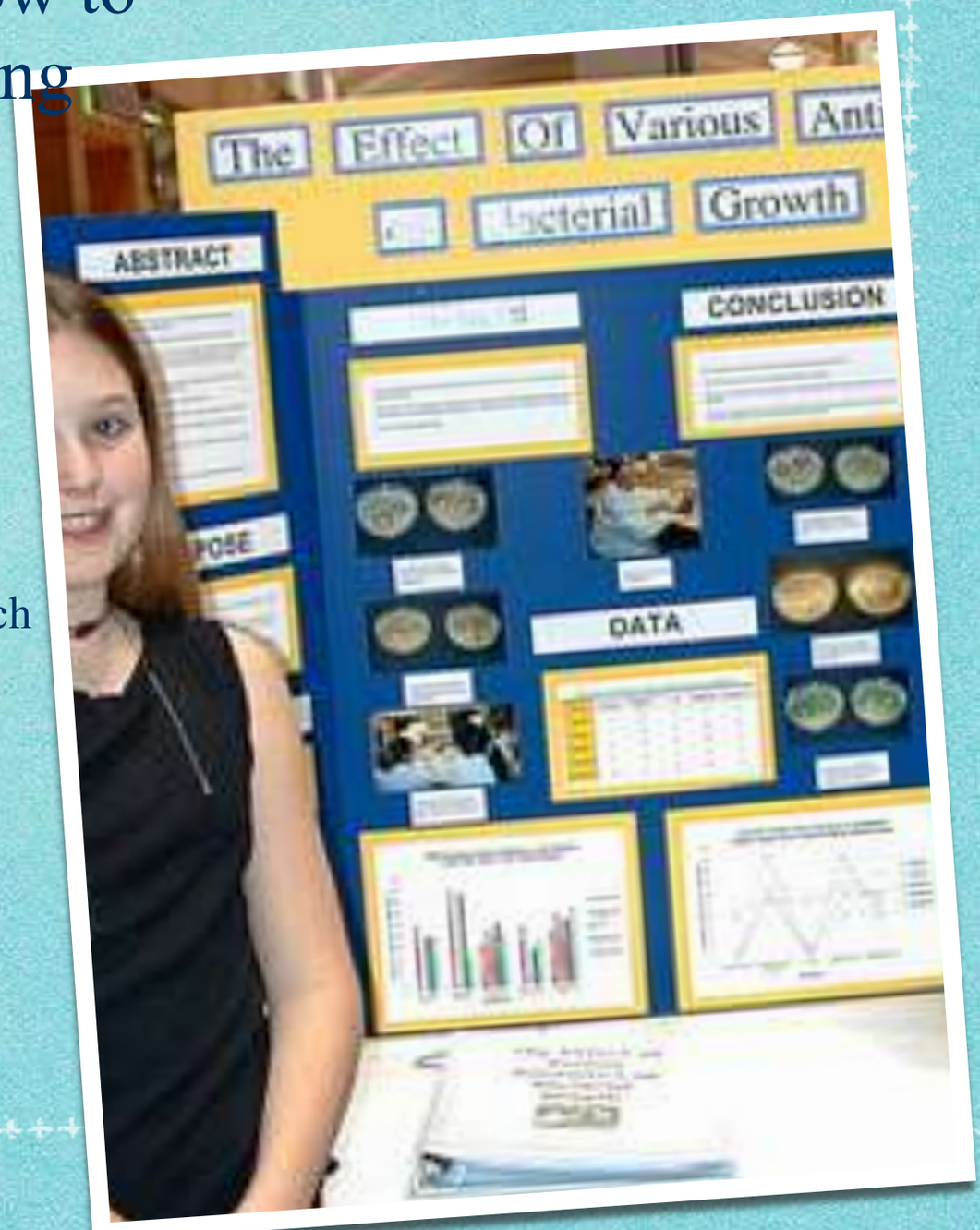
Example: If you are testing plants:

- ✶Use the same seeds.
- ✶Plant all of them with the same soil.
- ✶Put them all in the same amount of light for the same amount of time.
- ✶The only thing that should be different about the plants is that one received coffee and the other water.

PROCEDURE:

- Write down step-by-step directions on how to do your experiment. Do not leave anything out!

1. Get 8 pea plants (100 cm tall).
2. Place 4 pea plants on each tray.
3. Label one set of plants “Caffeine”.
4. Label the second set “Water”.
5. Pour 100ml of coffee(with caffeine) onto the soil of each plant twice a week.
6. Pour 100ml of water onto the soil of each plant twice a week.
7. Measure each plant with a metric ruler
8. Record data in record book.



Make Charts and Graphs

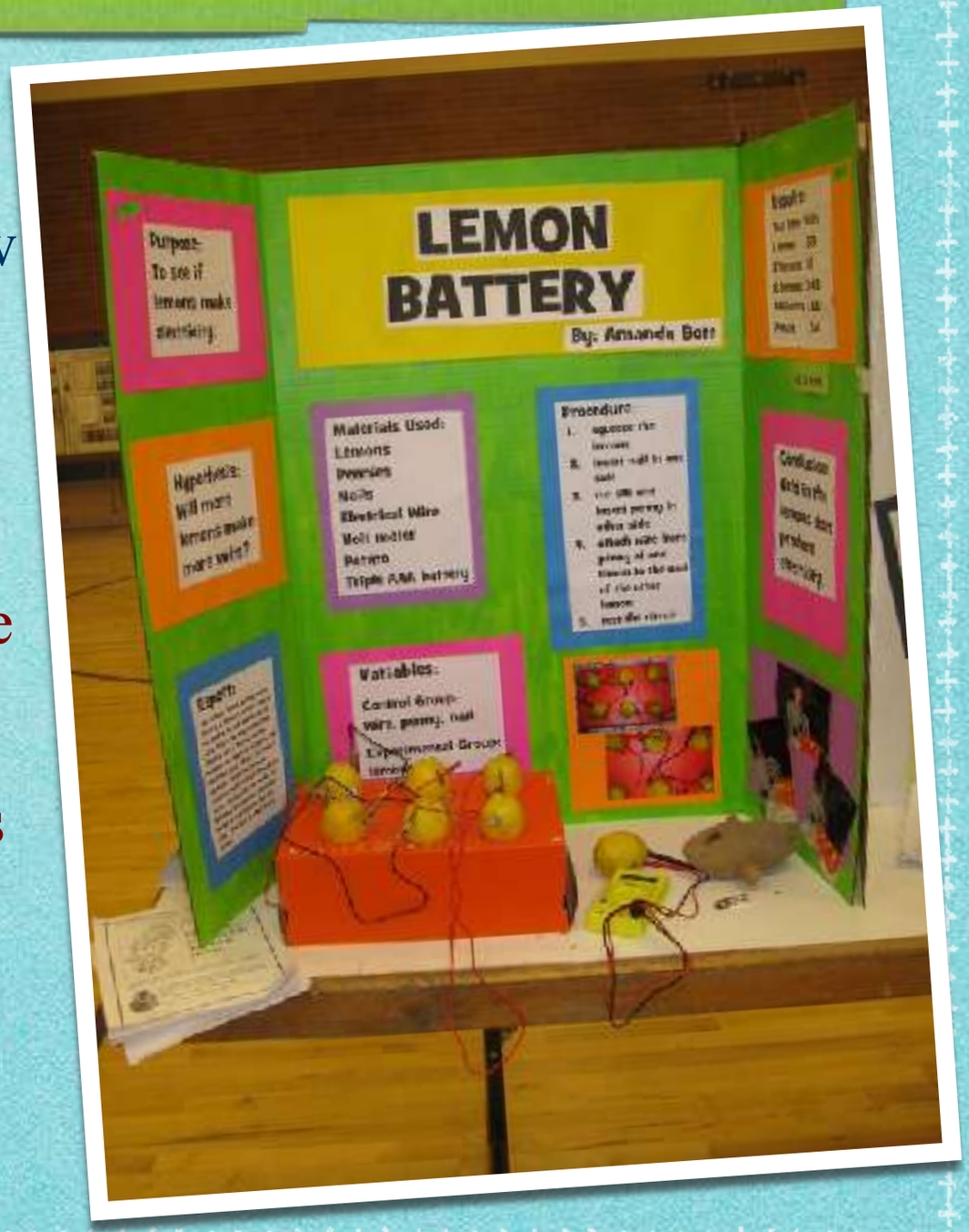
- Display data using charts, tables, and graphs.
- Use the excel spreadsheet (remember our class from a earlier?). Just ask for help, I will show you!
- Choose the correct graphs for your data.
  - Bar-comparison
  - Pie-percentage
  - Line-change/time

Results

- Using your data write a few sentences how your experiment turned out.

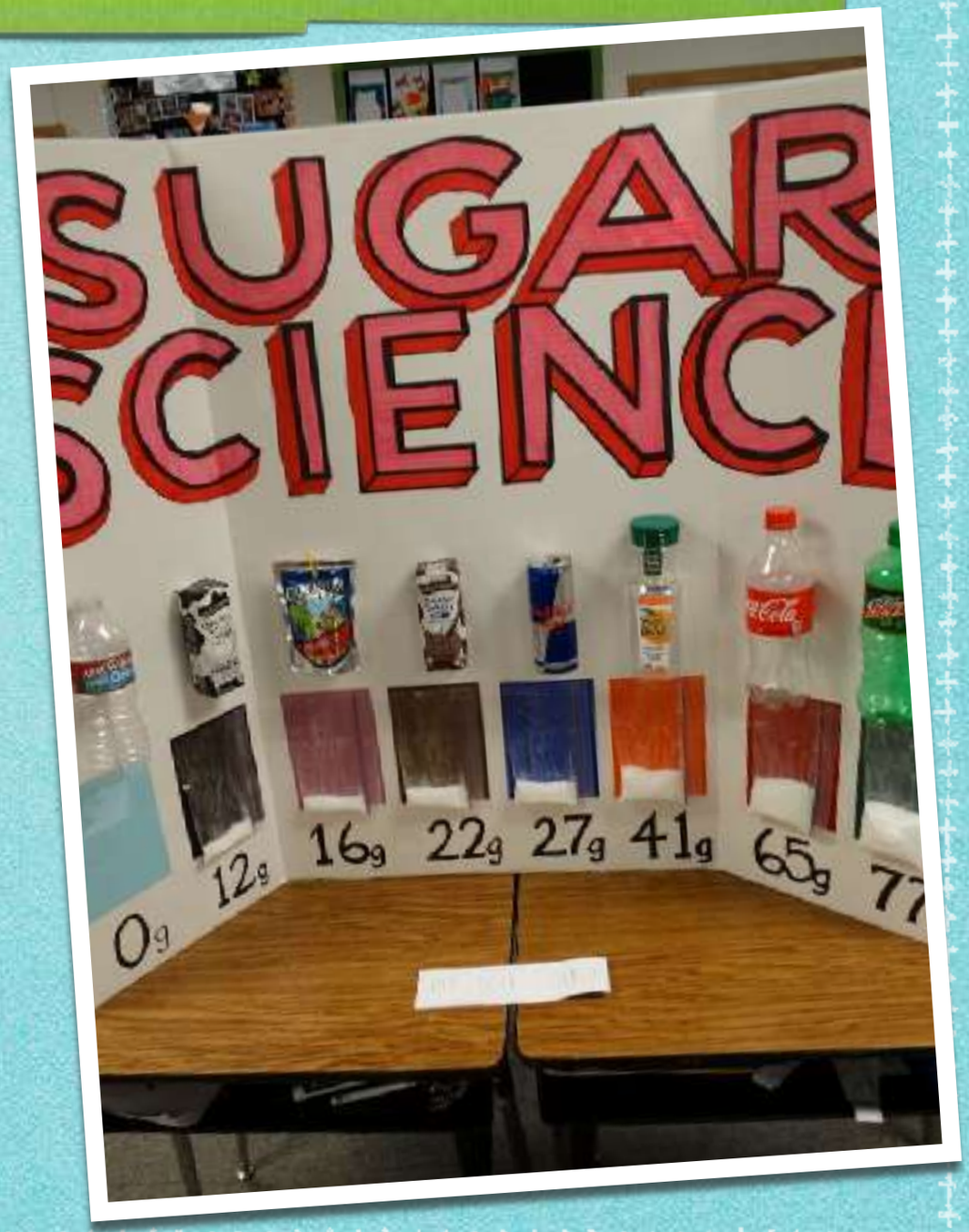
Example:

From reading my charts and graphs, I know that Plant Group #1 grew an average of 40cm with 100ml of coffee. Plant Group #2 grew and average of 20cm with 100ml of water. The Plant Group that was given coffee grew 20cm more on the average than the Plant Group that was given water.



Conclusion

- Write down why you think your experiment turned out the way it did, include if your hypothesis was supported or not.
  - Be sure to use the term " My hypothesis was/was not supported because,…
  - Do not say I was right/wrong.
  - Even when your hypothesis was not supported you gain information about your topic, what was it?



Conclusion (Continued)

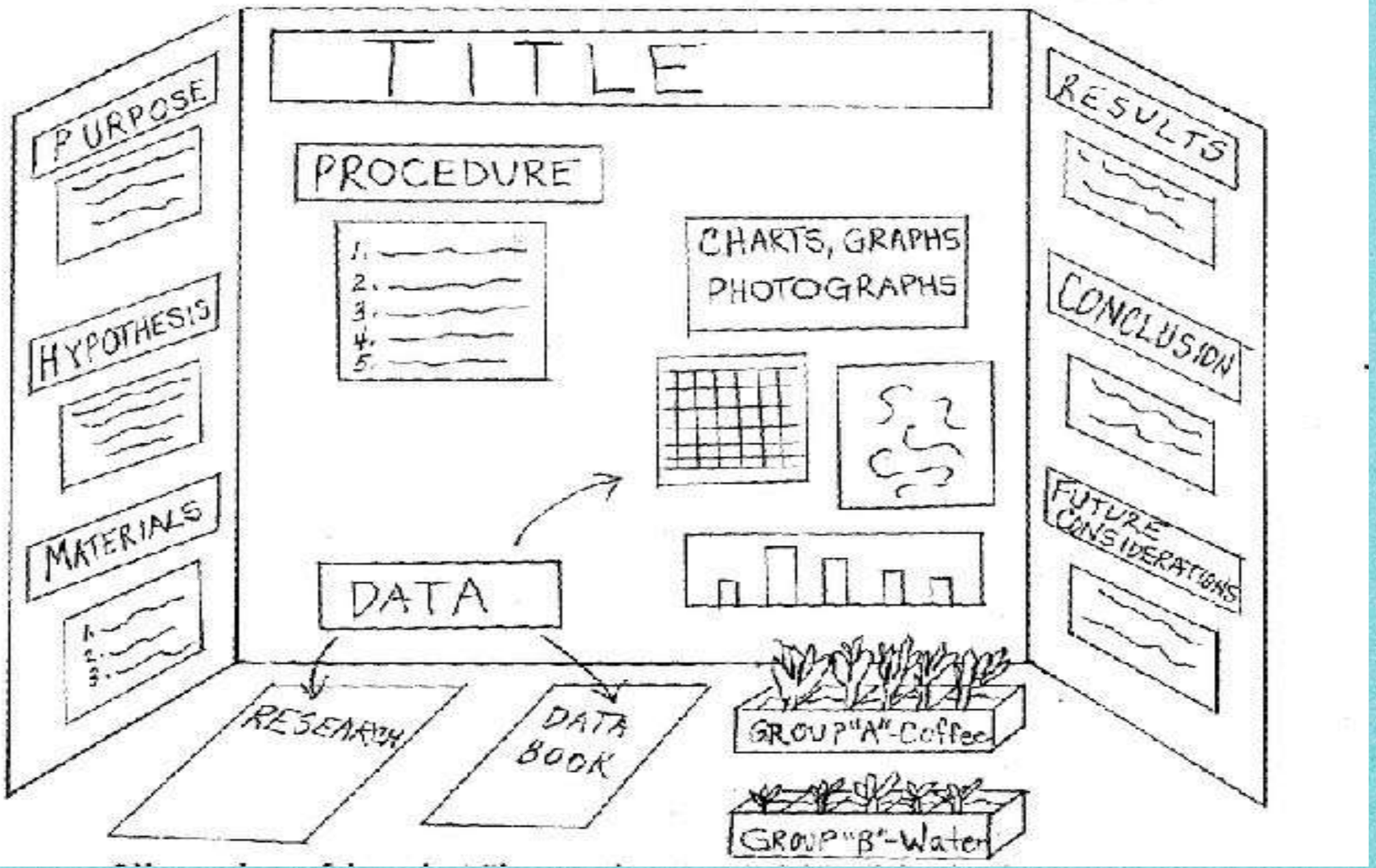
- Example:

  My hypothesis was supported. The plants that were watered with coffee (caffeine) grew taller than those that were given water. Therefore, caffeine has a positive effect on the growth of pea plants. This may be due the fact that caffeine is a stimulant. The caffeine could have stimulated the plant to grow.

Make Your Board

- Start your information on the top left panel of the board, move down the left panel, across the middle panel, and from the top down on the right panel.
- Place pictures of your experiment on your board.

SCIENCE FAIR BOARD FORMAT



. MY SCIENCE FAIR PROJECT TIMELINE

Task	Date Due
1. Choose a problem to investigate.	MARCH 20TH
2. Do some background research and get advice.	MARCH 20TH
3. Develop a hypothesis.	MARCH 20TH
4. Decide on the procedures you will use.	MARCH 27TH
5. Make a list of materials you will need and gather materials.	MARCH 27TH
6. Conduct your investigation and collect data.	THROUGH APRIL 6TH
7. Organize your data or results.	APRIL 3RD
8. Draw your conclusions.	APRIL 10TH
9. Keep a project notebook (log).	THROUGH APRIL 6TH
10. Proofread your work.	APRIL 10TH
11. Design your exhibit.	APRIL 3RD
12. Construct your visual aids and exhibit backdrop.	APRIL 3RD & 10TH
13. Turn in your project.	APRIL 11TH
14. Present your project.	APRIL 12TH

Science Fair Rules and Regulations

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

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!)