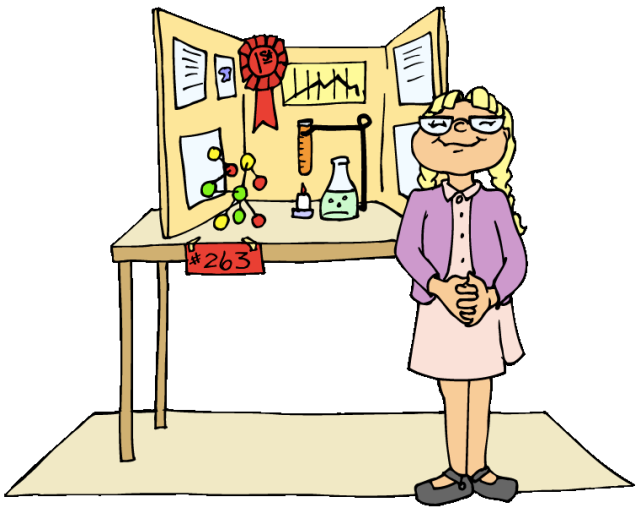
BFCCPS
Science Fair Packet
7th Grade
2015-2016



Name_____

Section_____

Welcome Page

Hello 7th grade scientist and welcome to your official science fair packet!

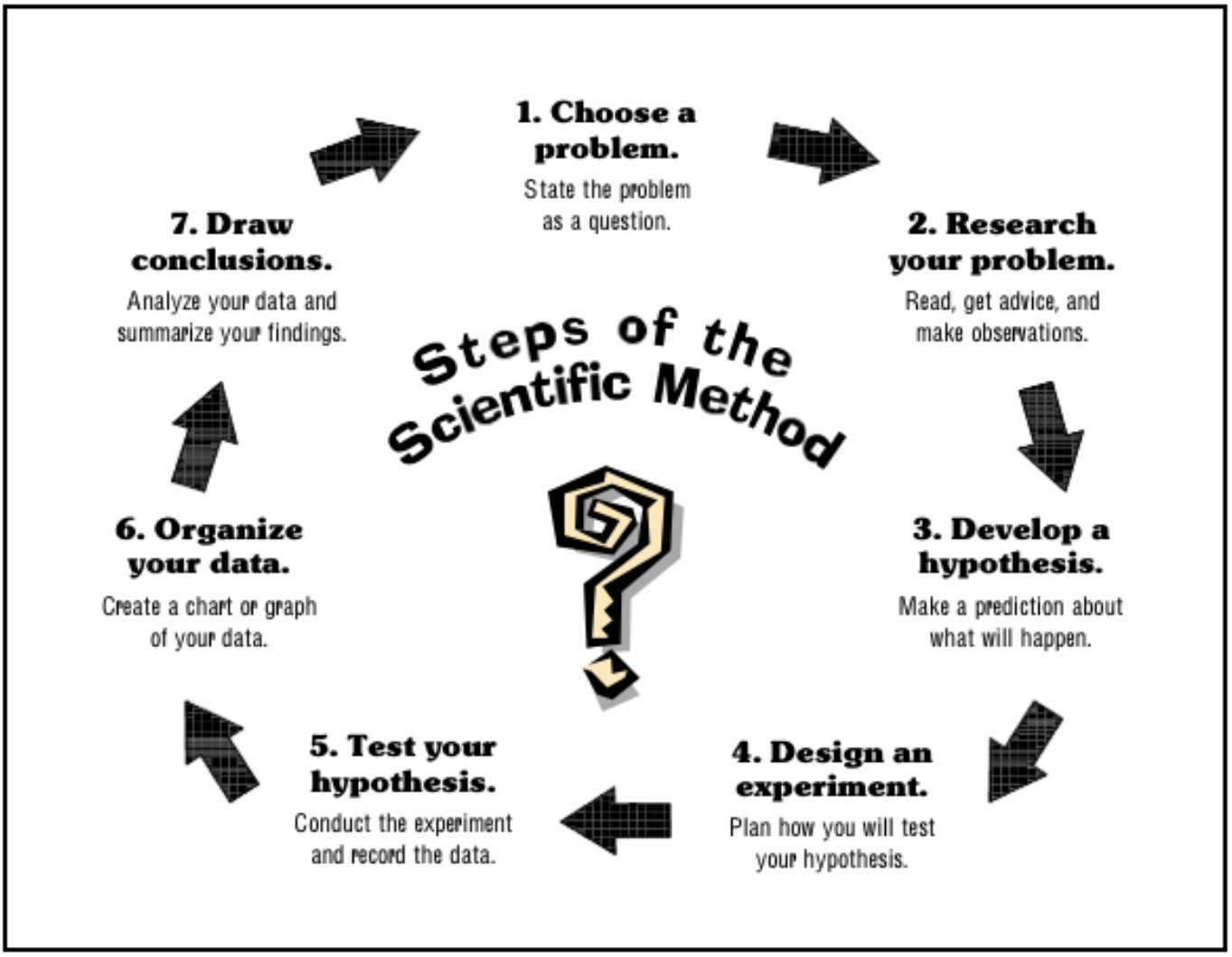
In this packet you will find all of the necessary deadlines and important information to make your science fair project a success!

Please see the following pages for the overview and science fair timeline.

Also, if you have been approved to test human subjects or your project requires an adult supervisor, you must also submit all necessary paperwork by November 17th!

Please see Ms. H. with any questions. Best wishes and good luck! HAVE FUN!

Pathway 1: The Scientific Process



Science-Fair Timeline and Checklist: Pathway 1

Assignment	Draft Due	✔	Final Draft Due	✔	Possible Points	Points Earned
1.) Brainstorm at least two project ideas in bound (composition) notebook: Use the internet, books, and other library resources. You could also visit museums, colleges, talk to a local expert, and so on for project ideas. Keep bibliographic notes on all sources in notebook.	October 15/16		N/A		10	
2.) Investigative (experimental) question (final draft)	Oct 22/23		N/A		10	
3.) Bibliography (correctly formatted) with 4 potential **reliable** sources for your research section	Oct 29 / 30		Nov. 19/20 (with research section)		10	
4.) Research Organizers (4-6) Glued into science fair notebook!	Nov 12/13		N/A		20	
FORM DEADLINE: **PLEASE NOTE-** anyone using human test subjects or requiring an adult supervisor- MUST HAVE ALL NECESSARY **FORMS COMPLETED** BY NOVEMBER 17TH	Nov 17		N/A			
5.) Background Research Section and Bibliography (5 paragraphs with 4 sources in bibliography)	Nov 19/20		Jan. 21		20	
6.) Lab Report Sections: investigative question, purpose, general knowledge, hypothesis, and variables	Dec 3/4		Jan. 21		20	
7.) Material List and Procedure (first draft) sections of lab report.	Dec 10/11		Jan. 21		20	

Assignment	Draft Due	✔	Final Draft Due	✔	Possible Points	Points Earned
8.) Regional Science Fair Forms	Dec 10/11		N/A		10	
9.) Receive final approval of your project from Ms. H. (meet with Ms. H. as needed)	Dec 17 / 18		N/A		10	
10.) Begin Experiment- observations of experiment and record data in notebook (if approved by Ms. H.)	Dec. 17 to Jan. 17		N/A		10	
10.) Material List and Procedure	Jan. 19		Jan. 21/22		10	
11.) Data Table	Jan. 19		Jan. 21/22		10	
12.) Graph	Jan. 19		Jan. 21/22		10	
13.) Peer Editing- Conclusion	Jan. 19/20		Jan. 21/22		10	
14.) Conclusion Final Draft	N/A		Jan. 21/22		10	
15.) Peer Editing- Final Draft of Lab Report (including bibliography)	N/A		Jan. 21/22		30	
16.) Peer Editing- Project Notebook	Jan. 21/22		TBD		30	
17.) Display Board, Oral Report, Lab Report, Notebook and Presentation Bring project display board, oral report, notebook, and lab report to class	N/A		TBD		100	
18.) Peer Review of projects	N/A		TBD		100	

Assignment	Draft Due	✔	Final Draft Due	✔	Possible Points	Points Earned
20.) BFCCPS Science Fair! (please wear professional dress)	N/A		TBD		Exam Grade	

Project Requirements: Pathway 1			
Requirement	**Description**	**Due Date**	**Grade Weight**
Science Fair Board Presentation	A tri-fold display board that graphically displays all steps of the scientific or engineering design process.	Jan. 26	Exam Grade
Lab Report	The final lab report is a complete description of your project written for a general audience. It will be written with proper scientific formatting and includes a works cited page.	Jan. 26	TBD
Lab Notebook	The lab notebook includes your data and observations from your experiment. Each entry includes the date and time. Measurements use the metric system.	Jan. 26	Part of Presentation Exam Grade
Oral Presentation	A verbal presentation that explains and interprets your display.	Jan. 26	Part of Presentation Exam Grade

Steps to the Scientific Method:

(Taken from http://www.massscifair.com)

A good science-fair project question is testable and measurable. For example: Which brand of bubble gum keeps its flavor longest? You can test this by chewing different brands of gum and measuring how long the flavor lasts for each brand. The best questions are usually ones that you have a genuine interest in answering.

Identify the variables and controls:

A science-fair project involves *variables,* or things that change or could be changed. There are three types of variables: **independent, dependent, and standardizing variables.**

An **independent variable** is one that you change on purpose. For instance, if you were experimenting to find out how much water a sunflower plant requires for optimum growth, you would water four plants a different amount of additional water.

The **dependent variable,** or the factor that is measured as a response to the independent variable, would be the height of the sunflower plant.

You'll also want to identify your constants, or things that will stay unchanged, also known as **standardizing variables.** For instance, you would want to use the same soil, climate, type of water, type of plant, location, etc.

Lastly, you want to include a **control group,** or the "normal" or baseline of the experiment that is used for comparison. Most experiments have a control group, such as the sunflower plant that does not receive any extra water.

Research your topic to learn more about it:

Research comes in many forms. You can research a topic by going to the library, performing internet research, interviewing a scientist, or even speaking with experts at museums, zoos, hospitals, and so on. For our example, you might interview a spokesperson or scientist from a bubble gum company.

Develop a hypothesis, or a possible answer to your question:

Your hypothesis should be based on your research. It is important to remember that it is okay if your hypothesis turns out to be wrong. You can learn a lot from any hypothesis- whether it is right or wrong. Your science fair project will help you test your hypothesis.

Your hypothesis or prediction might look something like this:
If I provide extra water to a sunflower plant, then it will reach a greater height.

You should try to set up the hypothesis in a If_____, then_____ statement.

Design an experiment that will help you answer your research question:

Come up with an experiment procedure. This list of steps should be detailed enough so that anyone could read it and repeat the experiment exactly as you performed it.
You will want to run several trials. That means that you'll want to repeat your experiment several times. The more times you repeat the experiment, the more reliable your results will be. Record your experiment results in a journal. The more notes you take, the easier it will be to type up your report. Also, take photos to document your work as you go.

Draw conclusions from your results and type up a report that explains your project, results, and conclusions:
The report should be typed or written neatly and include neat and colorful charts and graphs.

Writing a Lab Report:

(Taken from http://www.massscifair.com)

Your science-fair lab report should contain the following:

1. A title page. This page is your report's cover. It should contain a snappy title that reflects the subject matter of your project. This text should be centered in the middle of the page. You should also include on the lower right hand corner your name, date, teachers name, section number

2. A table of contents. The table of contents lists every major section of your report. It should include

the page on which each of the major sections can be found.

3. A statement of purpose. The purpose should clearly explain the goal of your project.

4. A statement of hypothesis. Your hypothesis should be a possible answer to your research question based on the background research that you performed.

5. An experiment section. The experiment section of your report should clearly outline your purpose,your variables and controls, your full materials list, your procedures, and your data collection methods. Remember: Your procedure is a detailed list of the steps that you performed throughout your experiment. A well-written procedure is so detailed that anyone who reads your steps should be able to follow them and perform the experiment exactly as you did it.

6. A data section. The data section of your report should show all of the data that you gathered during your experiment in an organized way All of your data should appear in colorful, neatly labeled tables, graphs, and charts.

7. A conclusions section. The conclusions section of your report summarized what you discovered based on your experiment results. It should restate your hypothesis and tell whether or not your data supports it. This is also a good place to write any questions that arose from your experimentation and any project extensions that you would like to do in the future. You should keep your conclusion to one page.

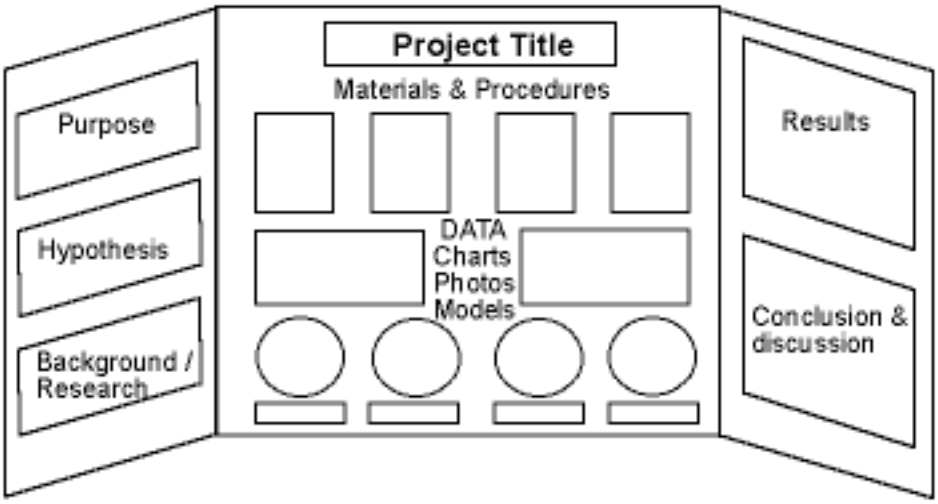
8. A works cited page or bibliography. A bibliography or works cited page is a complete list of sources that you used during your research.

Display Board:

(Taken from http://www.massscifair.com)

This is how your display will look when you bring it in for the annual BFCCPS Science Fair!

Pathway 1



Oral Report:

Complete and write out answers on index cards! Practice!

(Taken from http://www.massscifair.com)

An exciting part of any science fair is the interview. During this question and answer session, a judge will ask you all about your project. It is important to practice your interviewing skills so that you can impress the judges!

Questions you should answer in your oral report!

1. What is your project about?

2. Why did you choose this project?

3. How did you come up with the idea for your project? Mention your general knowledge here as well.

4. What was the purpose of your experiment or design? Mention your hypothesis and background research here as well.

5. Did your experiment or design answer the main questions or solve the problem that you had before you began your project?

6. What was your experimental procedure or design process/testing procedure? You must mention your variables and controls as well.

7. How did you gather data? This is your data collection methods.

8. Can you explain the data that you gathered? What does your data tell you?

9. What conclusions have you drawn from your project? Re-state your hypothesis.

10. What new questions arose from your project? How could you extend your project to answer them?

11. What is the real-world application of your project? How can it be used in the real-world?