

Science Fair Journal

This journal must be completed and turned in with
your science project.

Name _____

Date _____

Helpful Hints!

- Experiments with humans or animals are NOT allowed
- Experiments need to have 3 trials – so they must be repeated 3 times
- Items can be turned in ahead of time
- Don't wait until the last minute
- Keep all parts together
- Start typing each part once you get it back and approved from the teacher
- Make revisions as you go – they must be TYPED and then turned in to be checked
- All drafts and revisions MUST stay in the packet
- Students should ask questions as they come up
- Many answers to questions are found in the packet, be sure to read through it carefully!

Science Fair Due Dates

*For each item that is turned in late, you will lose one point on your final grade.

Page Title	Page Number(s)	Date Due	Date Completed	Teacher Initial
Question and Variables	3-5	Wednesday, December 14 th		
Research and Hypothesis pages	6-9	Wednesday, January 18 th		
Procedures and Materials pages	10-12	Wednesday, February 1 st		
Experiment Results	13-16	Wednesday, February 15 th		
Conclusion page and Title page	17-18	Wednesday, February 22 nd		
Finished Project	NA	Wednesday, March 7 th		
Presentation to Scientists	21	Wednesday, March 7 th		

Finished Project Board and Journal are due

*Wednesday, March 7th, 2012

If you have your project done early, you may bring your board in starting the Friday before it is due.

Science Fair is on Wednesday and Thursday March 7th and 8th during the school day and on Thursday, March 8th at night from 6:30-8:00!

The Question

When forming a question...

***the goal** is to ask a question which can be answered by observation in an experiment.

We need to **ask a testable question**.

***think about** questions you have wondered about, but have never been able to answer or prove.

***try some experiments** and think how you could choose one variable to test. During your experiment it is important to **test one variable at a time**

*Remember you **CANNOT test animals or people!**

Sample Questions....

- 1) Which paper towel is the strongest (or which type of paper is the most absorbent)?
- 2) Does an ice cube melt faster in air or water?
- 3) How long can suction cups stick to different surfaces?
- 4) Which cheese grows mold the fastest?
- 5) Which brand of diaper holds the most water?
- 6) Does a plant grow bigger if watered by milk or water?
- 7) Which grows mold faster -- moist bread or dry bread?
- 8) What type of soil filters water best?
- 9) How does friction affect the distance an object will travel?
- 10) How does temperature affect the water uptake of celery stalks?
- 11) Does applying more friction affect the ability (lasting power) of static electricity?
- 12) At what rate do various metals rust?
- 13) Does the temperature of water affect the speed at which something dissolves?
- 14) Does the weight of paper used to construct a paper airplane affect the distance it can travel?
- 15) Do different kinds of chocolate (white, milk, dark, etc) melt at the same rate?

Once you have an idea, use the questions below to see if it is a good fit for you!

Can you answer "YES" to all the following questions? If not, select another idea.

1. Am I interested in the topic?
2. Can I find research material on this topic?
3. Does the question require an experiment and testing to answer it?
4. Can I get all the necessary materials to do the experiment?
5. Can I do the experiment with only a little adult help, or all by myself?
6. Will I be able to do the experiment at least 3 times?
7. Will I be able to measure my test results in some numerical way through a graph or data table?
8. Do my parents approve of my project?

Question

If you would like to create your own questions, use the format below!

Your question must fit into one of the following word formats. Choose one.

1. How does _____ affect _____? (Example: How does the type of insulation used affect the temperature of water in a container?)
2. What is the effect of _____ on _____? (Example: What is the effect of glycerin on a bubble solution recipe?)
3. Which _____ is _____? (Example: Which brand of paper towel is the most absorbent?)

Variables

(this DOES NOT go on the display board)

- **Independent Variable** – the factor that will be changed on purpose during the experiment to find out what effect it has on something else.
 - ONLY ONE
- **Dependent Variable** – the factor that is observed and measured to see if it is affected by the change made in the independent variable.
 - ONLY ONE
- **Control Variables** – the factors in the experiment that must be kept exactly the same to make sure that they are not having any effect on the dependent variable.
 - WILL HAVE MORE THAN ONE

Identify the independent, dependent and control variables for your experiment. Write them on the lines below.

Independent Variable (the one that you changed on purpose)

Dependent Variable (what you are going to record for your results)

Control Variable (what you kept the same)

Research

Topics to research: _____

In order to be able to write an accurate hypothesis you must first do some research on your topic. Go to the library or get on the internet and read up on the topics listed above. Then write a one page report on what you have learned. You must include the resources that you used in a bibliography on page 7. You should have at least two different resources. You need to type it on the computer and it should be about a half a page in length. Attach the report to this packet with a paperclip.

Your report should NOT be placed on your board, but it should be turned in with your final packet and your board.

Research Paragraph Graphic Organizer

This is to use when writing your rough draft. Your final draft is a typed and edited version of what you write below. Remember to share what you learned using YOUR OWN WORDS!

Write at least 3 things you learned from your research below.

TOPIC SENTENCE (what did you research?)

1st Fact

2nd Fact

3rd Fact

Conclusion

BIBLIOGRAPHY

Book

Author: _____

Title: _____

City where it was published: _____

Publisher: _____

Copyright Date: _____

Article

Author: _____

Title of Article: _____

Title of Magazine: _____

Page Numbers of the Article: _____

Reference Book (ie. Encyclopedia)

Article Title: _____

Title of Reference Book: _____

Edition (if stated): _____

Year Published: _____

Film/Video

Title: _____

Medium (film, video, etc.): _____

Production Company: _____

Date: _____

Time Length: _____

Interview

Person you interviewed (name): _____

Type of interview (personal, professional): _____

Date: _____

Internet

Author: _____

Title of Article: _____

Title of File: _____

Year or Date of Publication: _____

Electronic Address: _____

Procedures and Materials

The procedure is the step-by-step directions to do your experiment. Materials are all the items you will need.

In order to test your hypothesis, you must design an experiment. **DO NOT USE A KIT!** Be very specific and give step-by-step directions, just like a cooking recipe or assembly instructions. Be sure to measure (use metric) accurately and record everything. **Remember to repeat the experiment at least 3 times.** Someone else should be able to follow your procedure and get the same results.

The materials for your experiment can often be found around your home, the grocery store, hardware store, or craft store. Control your spending, the cost of the project has no relationship to the quality of the project.

Materials

List your materials below. What do you need to conduct this investigation?

You MUST be specific with the sizes, colors, amounts, etc.

BE SPECIFIC... Use the column titles to GUIDE you!

Material	Color/Type (if needed)	How Much/ How Many?	Amount/Size		

Procedure

Procedure: note where you might like to take pictures with a star so you remember. They make a great addition to a display board. Use the lines below to write your procedure, be sure to write in complete sentences.

***DO NOT use I, as in "I will pour 3 cups of water into the pot"**

***All statements should be a direct command and begin with an action word – "Pour 3 cups of water into the pot"**

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

11. _____

(you may need more space, so continue on another sheet of paper)

Conduct Experiment/ Record Data

First, collect all the materials needed for the investigation. Then, conduct the investigation and record the data in the form of a chart or table. Show the chart/table in the space below.

Look at the sample below for the format to set up your data chart!

Effect of Fertilizer on Plant Height
Height (in centimeters)

Type of Fertilizer	Trial 1	Trial 2	Trial 3	Mean
None				
Miracle Grow				
Organic				
Store Brand				
Commercial				

*Create your own data table, using the above as a model. If you need help creating one on the computer, see your teacher!

Results Display Data

ONLY GRAPH THE MEAN – NOT THE TRIALS

Make your chart or graph and record data on the sheet. You will later need to put your information into the computer, so it is ready for your display board, but I would like it hand written here first. You don't want to do your experiment next to the computer do you?

The following website is a great resource to use if you want to make your graph on the computer.

<http://nces.ed.gov/nceskids/createAgraph/default.aspx>

DO NOT CREATE A 3-D GRAPH!

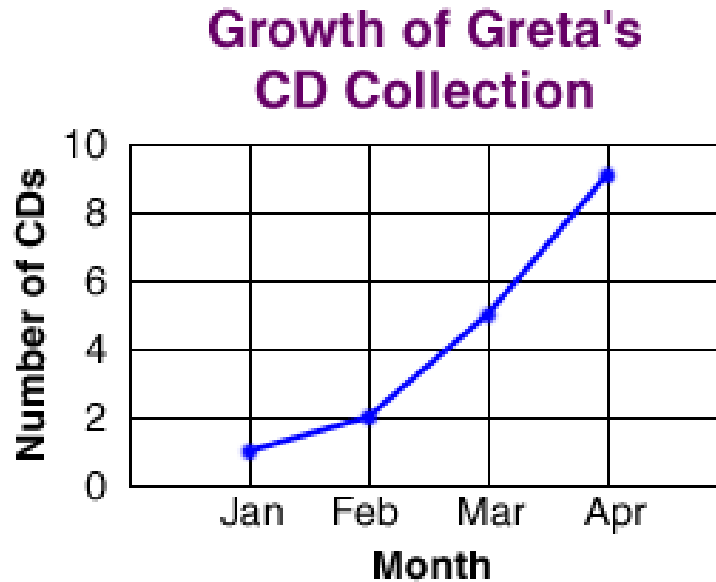
If you do not do your graph on the computer, you must use graph paper and it MUST be neat!

***Remember that you MUST have a
DATA CHART
AND
a GRAPH on your board!**

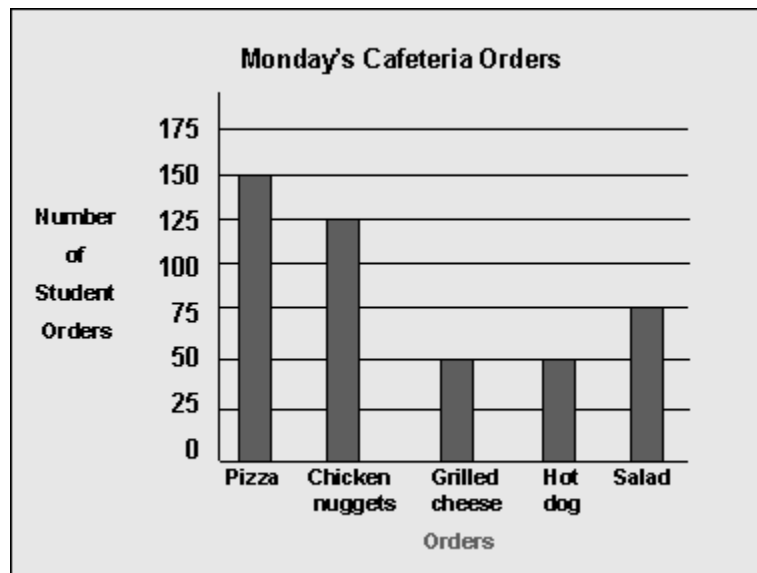
When creating a title for your graphs and data charts, your title MUST explain what the chart/graph is showing!

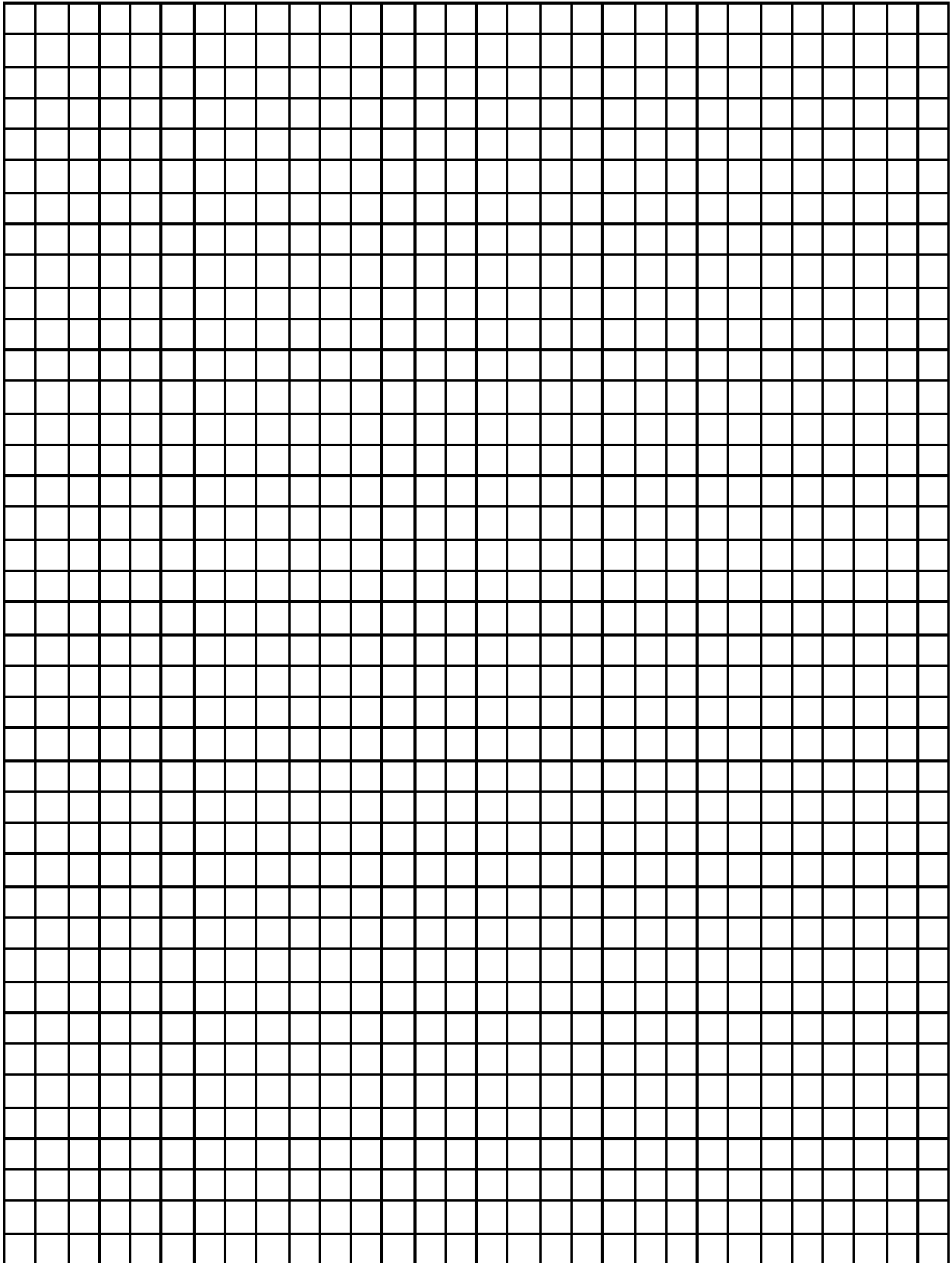
Types of Graphs

- A **line graph** is graph using line segments to connect points. Line graphs usually show changes that happen over a period of time.
- For example:



- A **bar graph** is a kind of graph that we use to compare categories or groups of information. Bar graphs are usually formed with rectangular bars, arranged either horizontally or vertically, to show information.
- For example:





Conclusion

Study your data and think about what happened. Is the conclusion the answer to your question or the solution to the problem? Is it based upon the results of the experiment? The data may be inconclusive. Did your hypothesis prove to be true? Your conclusion is a statement of the support or non-support of your results against your hypothesis. Fill in the conclusion outline that is listed below.

Your conclusion should be in PARAGRAPH form when placed on your backboard.

My hypothesis was/was not supported by the investigation. I thought that

In this experiment, I found out that (answer the original question)

The data showed that (include numbers)

One thing that I can infer from my experiment is (a reason why this happened)

I would also like to find out (additional testable question to be investigated on same topic)

Date this page is due: 2/22/12

Choose a Title

Think of something original. List some words or phrases that are relevant to your topic, and that you might consider. Put a star next to the one you chose. Remember, it must be short, catchy, on the topic and **NOT** in the form of a question. **Make sure this title finds its way to your display board, and to the cover of your journal.**

Project Display

The project should be displayed in a neat, clearly visible, well organized and concise format. Use your creativity to design the display, with the following considerations: (see attached diagram)

- The title should be placed on the center panel and should be at or near the top of the board. *The question, hypothesis, procedure & materials, and the results & conclusions pages should all be typed and included on the display board.* If you have trouble typing any of the materials, graphs, charts, data tables above see me and I would love to help you out. *Research summaries do not go on your board!*
- Your name, grade, and teacher should be at the top under the title of the project.
- You may want to have a table display that goes along with your project. Small scales models or photographs can replace inappropriate or oversized equipment. (please do not bring glass items)
- All parts of your display should be neatly and clearly displayed. Your display should reflect the effort that you put into your project. IF the display board is white don't put white computer paper directly on it. The white paper should be backed then attached to your display board.
- All parts of project should be typed and backed with construction paper (**NO MORE THAN 2 COLORS** are allowed for the background).

On **March 7th** –Bring the following completed items to school:

Everything will be collected and kept in your homeroom!

_____ Display Board

_____ Optional Table Display

_____ (this) Packet

_____ Grade Sheet

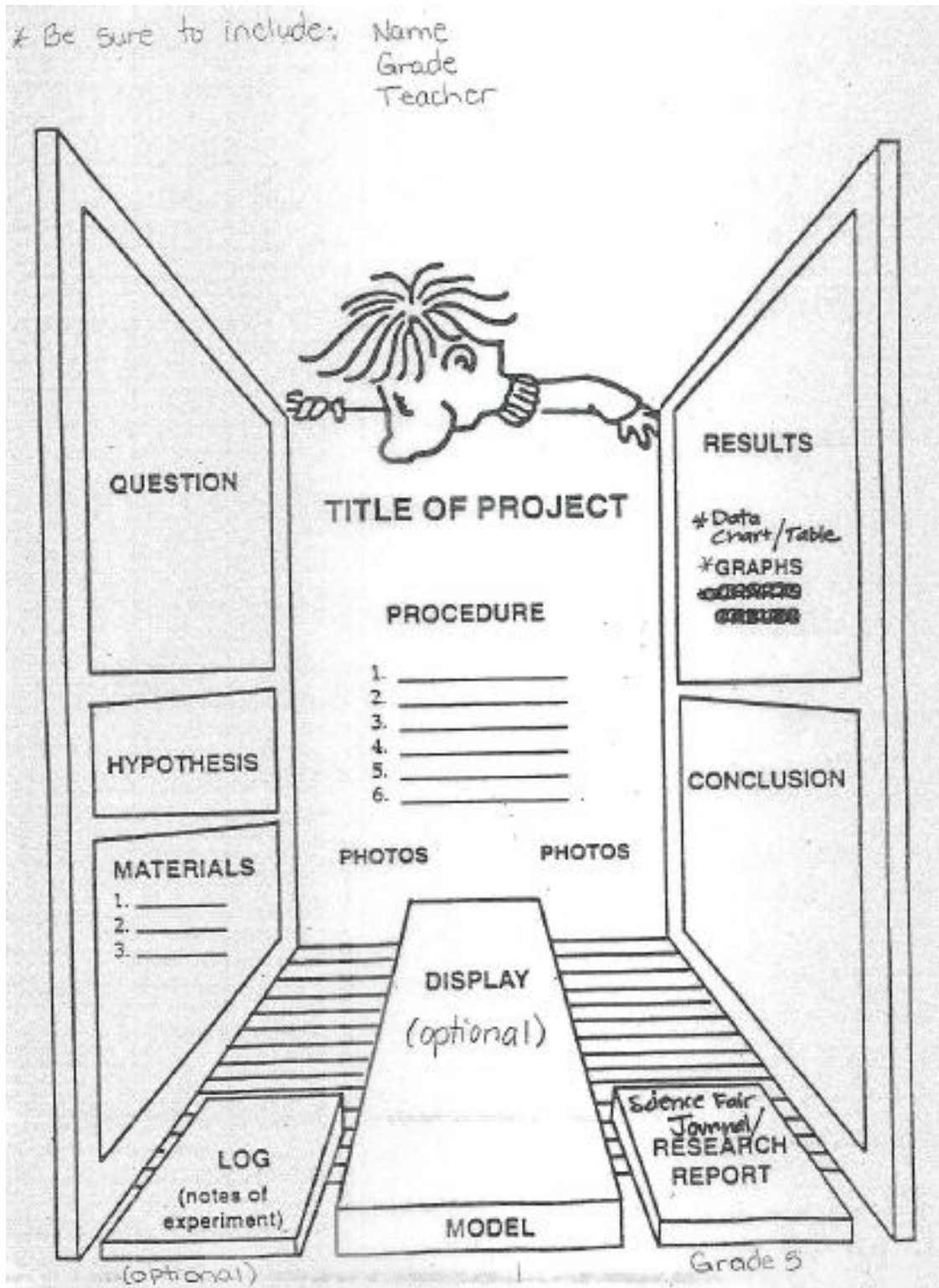
Science Fair is on Wednesday March 7th and Thursday, March 8th during the school day and on Thursday, March 8th at night from 6:30-8:00!

Please mark your calendars so that you can attend the night program. There will be a scavenger hunt (with prizes), a drawing for a science prize (one for each grade level)—BUT YOU MUST ATTEND THE NIGHT PROGRAM IN ORDER TO HAVE A CHANCE TO ENTER YOUR NAME FOR THE DRAWING, as well as some science related activities in the cafeteria.

If you have any questions, please see Ms. von Schwarz.

Thanks!

Use the diagram below to model how your science fair board should be arranged.



Date you will present to scientists: 3/7/12

Presentation to Scientists

You will be presenting your project to the scientists on Wednesday, March 23rd in school. You should be able to clearly state what you did and found out in your science experiment. Use the outline below to practice, so you are prepared to give a well thought out presentation.

Follow the steps for a good presentation:

1. Tell how you came up with the idea.
2. Explain the question.
3. Explain your experiment; include the procedure, materials and data collection.
4. Summarize your conclusions.
5. Describe what you learned about how this information could be applied to future learning.

If you do not like to talk in front of people, practice your presentation in front of a mirror. Practice until you're ready for friends or family to listen.

Your presentation will be better if you're prepared.

Above all, be interested in your project. Your enthusiasm will make others interested in your project too.

Name: _____ Homeroom Teacher: _____

Science Fair Project Scoring Rubric

Due: March 7, 2012

_____ Appropriate Title—short, catchy, on topic, not a question (4 points)

_____ Testable Question (4 points)

_____ Typed Research Report (16 points) – **see attached rubric**

_____ Bibliography—at least two different sources (4 points)

_____ Hypothesis with reason (6 points)

_____ Materials List—specific (6 points)

_____ Step by step procedure that has logically sequenced/specific steps and reflects repeated trials, controlled variables and one independent variable (10 points)

_____ Collected data is displayed in a chart/table and graph (10 points)

*Chart has...

- an appropriate title
- labels for data
- shows repeated trials (or if plants repeated plants)
- has an average column and averages are accurate

*The graph has...

- a title
- labels for the horizontal and vertical axis
- zero in the corner
- appropriate scale and interval
- appropriate graph is chosen (bar vs. line), and bar graphs have bars separated

_____ Conclusion includes: a statement about whether or not their hypothesis was supported by the investigation along with a restating of their original hypothesis, an answer to the original question with data to support their discovery, an inference as to why the experiment happened the way it did and a question for further exploration on the same topic (10 points)

_____ Organization and neatness of the board—including correct spelling and vocabulary (10 points)

- _____ late points

Overall Grade _____/80 _____%

Comments:

Name: _____

Date: _____

Assignment: Science Fair Research Report

Points:	1 point Emerging	2 points Developing	3 points Competent	4 points Strong
Ideas and Development <ul style="list-style-type: none"> Develops a clear and focused topic Uses at least 3 accurate, specific details/facts to support topic sentence 				
Organization <ul style="list-style-type: none"> Develops a topic sentence that states the topic being researched Details are logically sequenced Includes a clear concluding sentence that mirrors topic sentence 				
Content and Resources <ul style="list-style-type: none"> Provides information relating to science fair question Sources are accurate and details are used from the two sources to support topic Content is written in students' own words 				
Overall Grade: /12				

Points:	1 point Emerging	2 points Developing	3 points Competent	4 points Strong
Usage Grade: Conventions	Errors in spelling, punctuation, capitalization, usage and grammar and/or paragraphing repeatedly distract the reader and make the text difficult to read.	The writer stumbles in conventions even on simple tasks. The spelling is phonetic and many punctuation and capitalization errors are present. (7-11 errors)	The writer shows reasonable control over a limited range of standard writing conventions. Some errors were distracting and impair readability. (4-6errors)	The writer demonstrates a good grasp of standard writing conventions and uses conventions effectively to enhance readability. (0-3 errors)
Overall Usage Grade: /4				