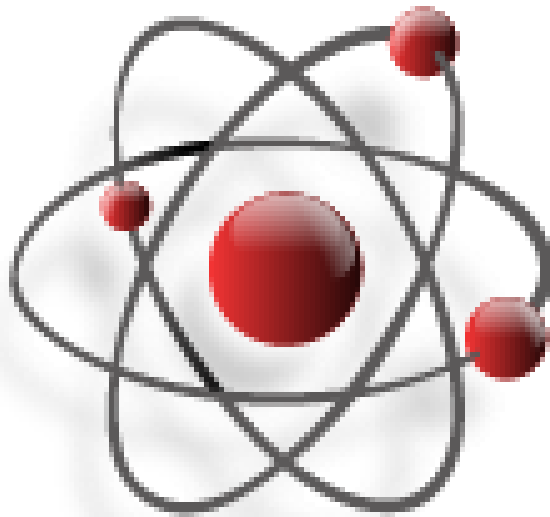


Mandeville Middle School
2011 Science Fair Guide



Science Fair Dates:

4 th & 5 th grades	Jan. 17, 2012
6 th grade	Jan. 19, 2012

Name: _____

MMS Science Fair is an exhibition in which students present an individual science research project and its results. These results are to be presented written, orally and visually through the use of a display board, graph, and report.

1. Pick a topic of interest to you

If you like sports, music, plants, food, or have a hobby start with one of these topics first.

I like _____, _____, _____, and _____.

I am interested in _____, _____, _____, and _____.

2. Read and Review

Read several science projects from a book, article or on the web. Look for science projects that are:

- on your topic
- at your grade level
- can be completed in a short period of time (10-14 days)
- not a demonstration

Below is a list of science project websites to start with or you may also pick a project from the attached Science Fair Project listing.

www.Sciencebuddies.org

www.Discoveryeducation.com/sciencefaircentral/Parentresources.html

3. Statement of Problem. A Testable Question. Will _____ affect _____?

A testable question begins with: How, What, If, and/or I want to find out. To discover your testable question, fill in the blanks below (using nouns) from your topic.

What is the affect of _____ on _____?

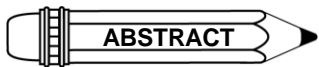
How does _____ influence _____?

To what extent does _____ influence _____?

I want to find out how/if _____ will/will not influence (result)?

EXAMPLE

I want to find out if the type of container will/will not influence how fast ice will melt (result)?



Rewrite the Statement of Problem in part I (①) of the Abstract (attached).

4. Research Your Topic ... this means **READ** about it!

In order to write and speak about your topic, you must be well-informed on your topic. For example, before you would attempt to repair something, you would first read about it or talk to an expert. A science fair project is no different. Research your topic in books, magazines or on the web. Print out and/or copy articles that you find. Take notes in your own words.

★ **SHORTCUT.** As you research and read about your topic, write down all the websites, titles of books and articles that you read and the dates that you found them. This will help you later with your "Work Cited."

□ 5. Write Review of Literature

A review of literature is a short summary of what is currently known about your topic and what you have learned about it. Its main purpose is to communicate about your topic to others. When you write:

- Say what you mean **in your own words**.
- Do not copy sentences. Rewrite sentences in your own words. Use a thesaurus to help you.
- Do not use words you can not pronounce or words that you do not know the meaning of.
- Do not refer to yourself directly. Do not use the words I, my or me while writing.

For example: Incorrect: “ I have invented a new way”
 Correct: “A new way has been invented.....”

Review of Literature Format: Title: Review of Literature (Bold, top-center of page)

Paragraph length: 4th grade: 1 paragraph minimum
 5th grade: 2 paragraphs minimum
 6th grade: 3 paragraphs minimum

□ 6. Works Cited

An A-B-C listing of your sources and the dates that you found the source.

- **4th Grade: 1 Source** (minimum)
- **5th Grade: 2 Sources** (minimum)
- **6th Grade: 3 Sources** (minimum)

As you research and read about your topic in step 4, you wrote down the titles of books, articles and websites you researched your topic and the dates you found them. These are your sources for your Works Cited.

List your sources alphabetically (A-B-C) in the following format:

- Book: Title of Book, ISBN number, volume, series and edition (if applicable); date found
- Website: Web address, title of site, title of article (if applicable); date found

★ **OPTIONAL.** Easybib.com may also be used to gather Works Cited.

1. Go to easybib.com, select format MLA (free) button
2. Choose sources from the scroll down button, select source (ex. Book, internet, etc)
3. Enter book's ISBN number in the AUTOCITE! Button and volume, edition and/or series below, if applicable or enter website in AUTOCITE!
4. Website will fill all areas
5. Register as a new user (create username and password. Write it down and save)
When saved, it will title it with the date.
6. When finished select the button on the top export to word. It will become a word document.
Save it somewhere safe!

□ 7. Identify Variables

In order to test your experiment, you must change one (1) variable of your experiment and repeat the entire procedure three (3) times while controlling all the other variables.

Independent Variable is “What I changed” so that I can observe what happens.

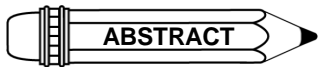
Controlled Variables are “What I keep the same” in each of the 3 tests.

Dependant Variable is a measured Variable. It is “What I observed”

□ 8. Write a Hypothesis

A prediction of what will happen in the experiment.

The success of your experiment does not depend on whether your hypothesis is correct or not. A Hypothesis is an educated guess or prediction of what will happen in the experiment. You should write your hypothesis based on what you have read and written in your “Review of Literature.” This should help you to make your prediction based on facts rather than guessing.



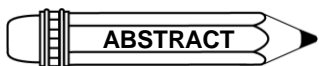
Rewrite your Hypothesis in part I (②) of the Abstract.

□ 9. Procedure

Your recipe for your experiment.

A procedure is a step-by-step instruction on how you did your experiment. It is like a recipe for baking a cake. A complete list of materials that you used in your experiment should appear prior to your procedure.

★ **Special Note:** Your procedure needs to be detailed to enough so that if someone wanted to do your experiment, exactly as you did it, they could. Test and/or demonstrate your procedure to a family member or friend. Edit your procedure with any steps that you missed.



Rewrite your Procedure in paragraph form for part II (③) of the Abstract.

EXAMPLE

Statement of Problem (from step#3):

I want to find out if the type of container will influence how fast ice will melt?

Independent Variable (change): Container

1st Change: Styrofoam Container

2nd Change: Plastic Container

3rd Change: Glass Container

Controlled Variables (kept the same):

Same amount of ice, same room temperature, same size of container, same placement of experiment while being conducted.

Dependent Variable (observed): Time it took the ice to melt in each container.

EXAMPLE

Testable Question (from step#3):

I want to find out if the type of container will influence how fast ice will melt?

Hypothesis Statement:

If ice is placed in a Styrofoam container (variable 1), it will take longer to melt than if the ice is placed in a plastic (variable 2) or glass container (variable 3).

EXAMPLE

Materials:

Clock (to measure time)

Paper and pencil to write start/end times

3- 5cm glass containers

3- 5cm plastic containers

3- 5cm Styrofoam containers

27 Ice cubes

Data Collection Sheet

Procedure:

1. Place 3 ice cubes in the Styrofoam container (variable 1)
2. Place the container on the end of the kitchen counter
3. Write down the start time
4. Check ice cubes every 2 minutes until they have melted completely.
5. Write down the end time
6. Repeat steps 1- 5 changing the container to variable 2 – plastic.
7. Repeat steps 1-5 changing the container to variable 3 – glass.

□ 10. Test, Observe and Graph Data. Do your experiment.

Before you begin testing your experiment – make a table to record your data and observations. Use the metric system. This data table and observation notes should be included on your display board as well as in your written report.

Metric Conversion websites: www.sciencemadesimple.com/conversions
www.extremescience.com/metricalc.htm

★ **Special Note:** **One graph must be included on your backboard.** The graph should show the data you collected. This graph may be done in Excel (see attached directions) or by hand on graph paper. Make sure you label and title your graph correctly.

□ 11. Data Analysis. What did you observe?

Write in paragraph form what you observed and recorded on your Data Collection form. What happened in each one of your changed variable experiments (see example). Then write a sentence or more which states the averages for the variables. These sentences are facts, not what you think.

EXAMPLE

I found out that when I place ice in the **Styrofoam** container it Next, I found out that when I place ice in the **plastic** container it And finally, I found out that when I place ice in the **glass** container it The **average** rate the ice melted at was ...



Rewrite your Data Analysis sentences in part III (④) of the Abstract

□ 12. Summary and Conclusion

Accept or Reject Your Hypothesis.

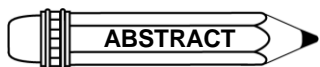
A conclusion summary is a recap of your data analysis. It should answer what the data show, what the data means and what has been learned from it.

The conclusion should also support or reject your hypothesis.

EXAMPLE

I found out that when I place ice in the Styrofoam container it the average time ...

Therefore, I accept/reject my hypothesis which stated that (copy your hypothesis statement).



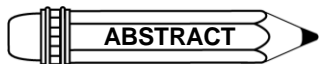
Rewrite your Summary and Conclusion in part IV (⑤⑥) of the Abstract.

□ 13. Application to the Real World

How could you use the information you gathered in real life? How might your experiment solve a real world problem or make the world a better place to live. Who might be able to use this information?

EXAMPLE

I can apply this to the real world byor the experiment observations may help to solve



Rewrite Application to the Real World in part V (⑦) of the Abstract.

□ 14. Abstract. Finalize and Review

The second page of your science report will be in abstract form (see attached Abstract). An abstract is a summary of the main points of your experiment. If you have followed the “Add to Abstract” arrows throughout your experiment, your Abstract should be complete. Read, edit and finalize it.

Experiment Presentation: Oral, Visual (Board Display), Written

Oral Presentation grade is based on the following criteria:

- Student talks with details of the experiment. Why they chose this project?
- Student describes scientific method steps with help from board. How did they do this project?
- Student understands vocabulary and scientific process and can explain what they observed?
- Student’s presentation is clear and may be heard by an audience

Written Presentation

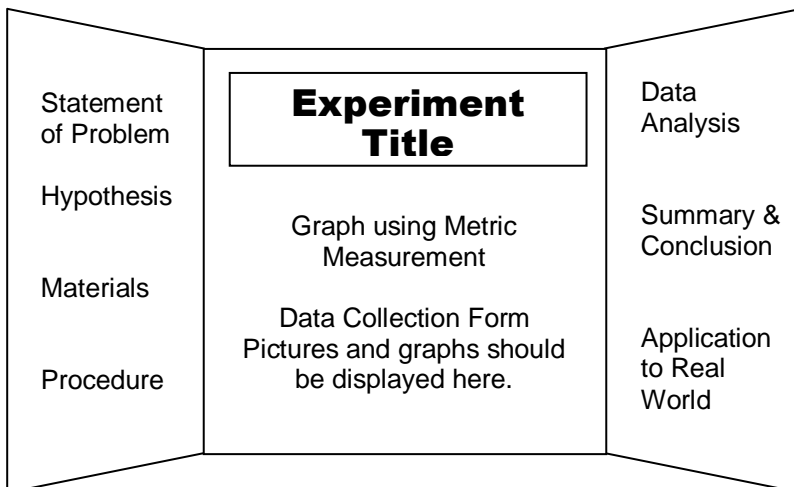
A written report must accompany all projects and should be in the following order.

Title Page (Page 1)	Title of Project School Name Date (NO STUDENT NAME)	Abstract (Page 2)	Remove or rewrite from science packet and add into final report
Review Of Literature (Page 3)	4 th Grade: 1 paragraph 5 th Grade: 2 paragraphs 6 th Grade: 3 paragraphs	Works Cited (Page 4)	4 th Grade: 1 source 5 th Grade: 2 sources 6 th Grade: 3 sources

Board Presentation (Project Boards are for sale in the MMS Library)

Layout your project on your board before you attach it to make sure it all fits (see board layout below).

- **Size:** Maximum size 72”high x 36”wide x 30” deep, free-standing board.
- **Color Scheme:** Use 2-3 colors that go with each other and stick with them throughout the board.
- **Glue:** Use Rubber Cement only.
- **Border:** Placing a border on your board is optional (Borders are available at Playville, Office Depot, etc.)
- **Lettering:** Large print legible captions/written explanations that someone may read from a short distance. The title of the experiment should be centered at the top of the project.



Board display grade is based on the following criteria:

- Board title placement and scientific method (Statement of Problem, hypothesis, Materials, procedure, etc.) is in correct order onboard.
- Board appearance (color scheme, clean layout, legible writing)
- Data Collection Form and graph displayed using the Metric system.

I. Statement of Problem and Hypothesis: What do you want to find out?

I wanted to find how/if ① _____ has an affect on _____.

My hypothesis stated that ② _____.

II. Methodology: How will you test for what you think will happen?

This will include in paragraph form your list of materials and the procedure you followed to conduct your experiment. ③

I stated my problem, reviewed the literature, and wrote my hypothesis. I designed my experiment and gathered my materials (list materials and tell step by step what you did). I conducted my experiment and recorded the data. I analyzed the results and wrote a summary and conclusion. I Then applied my findings to the real world.

III. Analysis of Data: Write out the data in paragraph form. Describe all data here.

In trial one, I found out ④ _____. In trial two, I found out ④ _____. In trial three, I found out ④ _____ for average of ④ _____.

IV. Summary and Conclusion: What did you find out? Did you accept or reject your hypothesis?

I found out that ⑤ _____. Therefore, I (accept or reject) my hypothesis which stated that ⑥ _____ (rewrite hypothesis).

V. Application: How will your research help people solve problems, or make the world a better place to live? How can you use the new information you have found?

I can apply this to the real world by ⑦ _____.

I can share this information with ⑦ _____ because _____.