

Lake Harbor Middle School's Academic Fairs

Dear Parents,

Enclosed you will find a copy of directions and guidelines for the school science or social studies fair projects. We hope that the packet will assist you as you guide your child through the process of completing his/her science or social studies project. We encourage participation in the academic fairs to give our students the opportunity to research or explore a topic in a systematic scientific way. Besides the academic benefits, the students also have the chance to express their creativity, curiosity, and ingenuity.

The primary goal for our school fair projects is student learning, however, competition is a very real part of life. It is important to give your child positive opportunities for competition at an early age. These academic fairs challenge children to produce a product that meets certain standards and gives them the opportunity to present their information and findings to a group or audience. The fairs also give them the chance to learn how to win and lose gracefully.

The staff at Lake Harbor Middle School realizes that competition can also have a negative side. Some students for academic, social, emotional, or personal reasons may not be able to handle competition in a school fair. For this reason, we have made changes to our academic fair program. We have added the LHMS EXPO Fair. Students choosing not to enter the social studies or science fairs will have the opportunity to enter their project into the EXPO Fair. It will simply be a school-wide display of the projects that the students have worked so hard to prepare. Also, students who do not meet all criteria set for the science or social studies fair will automatically have their projects displayed in the Expo Fair. This will not be a competitive fair. All project grades are assigned before fair entry.

All grades must teach the Scientific Method in science by the end of October. Research skills and guidelines should be taught in the language arts classroom as well.

This year ALL 5th will be required to do a science fair project. ALL 6th grade students will be required to do a social studies fair project. ALL 4th grade students will be work on using science and social studies fair terminology through the use of the scientific method and will develop other research skills including outlining and creating bibliographies. The student may choose to enter it into the competitive fairs or to display it in the EXPO Fair. Fourth graders will have the option to do a project or not. Gifted classes must check with their teachers about specific or further requirements.

Important Dates:

Social Studies Competitive and Expo Fair	January 12, 2010 – Grade 6
Science Competitive and Expo Fair	January 27, 2010 – Grade 5
School-wide Science & Social Studies (this determines regional competition)	February 5, 2010
School Social Studies & Science Fair Ceremony	February 10, 2010 – 2 p.m.
Regional Social Studies Fair	March 17, 2010 (Hammond)
Regional Science Fair	March 18, 2010 (Hammond)



Parental Agreement

I have read the Science Fair Information Packet with my child, _____, and we are aware that if any requirements are not met as stated in the packet, the student will not participate in the competitive fair on January 27, 2010. The project can be displayed in the EXPO Fair at school.

Parent's signature _____

Student's signature _____

Date _____

Part I Conducting the Investigation

Step 1

Start with a **Problem** that you can solve through experimentation. **No hazardous substances or alcohol should be used when conducting an experiment.** The Problem should be written in simple question format form: What is the effect of _____ on _____? How does _____ affect _____? Which _____ (verb) _____?

Examples of ways to state the Problem Statement:

1. What is the effect of _____ on _____?
Detergent on germination of seeds
Light on growth of plants
Temperature on the volume of air
2. How/to what extent do/does the _____ affect _____?
Color of light to growth of plants
Color of material to its absorption of heat
Humidity to growth of fungus
Viscosity of a liquid to its boiling point
3. Which/ what _____ verb _____?
Paper towel is most absorbent
Detergent makes the most bubbles

Step 2

Next begin your research to gain background information on the topic. This is called your **Review of Literature.**

Do not use any wikis or Wikipedia due to the fact this is an source that can be edited.

Use primary sources such as books, encyclopedias, magazines, and textbooks. Use updated sources such as the Internet, videos (United Streaming) or interviews to collect information. Take notes on your topic. Your review of literature **must be written in your own words. Do not copy words exactly from a source. Do not use the word I in your report. Do not explain your experiment, this is simply a brief review of research. Do not state in your Review of Literature the source of your information.**

Proofread your review. You must have correct spelling and grammar. **Always record the answers and sources.** Write your **Review of Literature.** Center the words **Review of Literature** at the top of the page. At this time, go ahead and do your **Bibliography.** See guidelines.

Minimum requirements:

Fourth Grade	1 reference and 1 paragraph
Fifth Grade	2 references and 2 paragraphs
Sixth Grade	3 references and 3 paragraphs

Example Review of Literature

Example: Review of Literature

Sand is found normally on beaches and ocean shelves. It is made up of feldspar, mica, quartz, and other minerals. It is mostly "heavy minerals." Sand is only a geographic word. It stands for any particle from 1/16mm to 2mm. It is only called sand if it is from 0.0624mm to 2mm. Below that is silt and clay, and above that are granule, pebble, cobble, and boulder. Sand can also have different roundness. There is angular, sub angular, sub rounded, rounded, and well rounded. Geologists identify sand using different properties. They use color, grain size, and how the grains are sorted. There are different types of beach sand. On most tropic islands, sand is made up of the skeletons of algae, coral, and mollusks. However, Hawaii's beaches are made up of eroded volcanic rock. Dunes have mostly very well-rounded sand.

Erosion happens when something like water, wind, or ice displaces some type of solid. Wind is a common cause of erosion. There are two things that can happen. Small particles can be lifted and carried to a different place. That is referred to as deflation. The other thing is that the particles are carried into a large object, like a rock, and weathered away. Wind erosion often happens at beaches and deserts. There aren't a lot of plants, so the ground is loose and gives way easily. To prevent, or at least reduce, wind erosion, farmers put up windbreaks. These protect fields during seasons that the fields are empty.

In places like deserts and beaches, there are few, if any, plants. The soil is not held in place properly. It is easily picked up and thrown through the air. It hits other objects, causing them to erode. This reduces beaches, deserts, sandbars, and dunes.

Step 3

Bibliography and References:

When reviewing literature, be sure to copy all important information to be included in the bibliography. This includes the author, dates, titles, publication names and other pertinent information. You must use the APA format. Center *Bibliography* at the top of the page.

Students can use the Internet to cite sources. Follow the directions from the site. You will then cut and paste the information directly into a word document in alphabetical order.

Websites: to help with bibliographic citations

<http://noodletools.com/login.php>

<http://citationmachine.net/index.php?reqstyleid=2>

APA Format: The references (with hanging indent) begin on the line following the Bibliography or References heading. Entries are organized alphabetically by surnames of first authors. Most references have three components.

1. Authors: Authors are listed in the same order as specified in the source, using surnames and initials. Commas separate authors. When there are seven or more, list the first six and “et al.” for remaining authors. If no author is identified, the title of the document begins the reference.
2. Year of publication: In parentheses following authors, with a period following the closing parenthesis. If no publication date is identified, use “n.d.” in parentheses following the authors.
3. Source reference: Includes title, journal, volume, pages (for journal article) or title, city of publication, publisher (for books). Italicize titles of books, titles of periodicals, and periodical volume numbers.

Examples of Sources: (Do not use bold printed reference types in your bibliography).

Journal Article

Mellers, B. A. (200). Choice and relative consequences. *Psychology Bulletin*, 126, 910-924.

Magazine Article

Kandel, E. R. & Squire, L. R. (200, November 10). Breaking down scientific barriers to the study of the brain and mind. *Science*, 290, 1112-1113.

Book

Mitchell, T. (1987). *People in organizations: An introduction to organizational behavior* (3rd ed.). New York: McGraw-Hill.

Encyclopedia Article

Bergmann, P. G. (1993). Relativity. In *The encyclopedia Britannica* (Vol. 26, pp. 501-508). Chicago: Encyclopedia Britannica.

Newspaper Article

New drug appears to sharply cut the risk of death from heart failure. (1193, July 15). *The Washington Post*, p. A12.

Videotape

Scorsese, M. (Producer), & Lonergan, K. (Writer/Director). (2000). *You can count on me* [Videotape]. United States: Paramount Pictures.

Audio Recording

Costa, P. T., Jr. (Speaker). (1998). *Personality, continuity, and changes in life* (Cassette Recording No. 207-433-88A-B). Washington, DC: American Psychological Association.

Stand-alone Web Document (no date)

Nielsen, M. E. (n.d.). *Notable people of science*. Retrieved August 3, 2001, from <http://psywww.com/psyrelpr.htm>

Stand-alone Web Document (no author, no date)

Gender and society. (n.d.). Retrieved December 3, 2001, from <http://www.society.edu/gender.html>

Internet-only Journal

Bergen, D. (2002, Spring). The role of science in education. *Journal of Applied Science*, 20, 168-172. Retrieved July 23, 2001, from SciINFO database.

Example: Bibliography

Bishop, F. C. (2009). Sand. World book student, world book. Retrieved (2009, September 16) from <http://www.worldbookonline.com/student/article?id=488900&st=sand>

Blanchard, P. B. (n.d.) *Secrets of sand*. Retrieved October 23, 2007 from http://lamer.lsu.edu/classroom/seascope/folios/sand_folio.pdf

Parrish, M. (Ed.). (2006). *Encyclopedia of science*. New York, NY: DK Publishing.

Step 4

After you have reviewed the literature, formulate one Hypothesis based on your findings. Make a prediction about the result of the experiment **before conducting the experiment**. It should be written simply. Write your hypothesis in this format: **My hypothesis states that _____ because _____**. **The hypothesis must be based on what you have learned in your research**. Example: The Bounty paper towels will be the most absorbent because it is the thickest.

Step 5

No hazardous substances or alcohol should be used when conducting an experiment. Next, design your **Procedure** for testing your hypothesis. You must write a step by step numbered list on how to conduct the experiment. This should be clear, concise, and logically sequenced. Write your steps so that

anyone can pick up your experiment and duplicate it step by step. Be sure to list the **Materials. Be sure to measure using metric units for mass, volume, distance and Celsius for temperature.**

As you design your test, you must control for all variables except one. This means you can only test **one** variable. (Examples of variables: speed, length, time, temperature, etc.) A variable is something that changes while conducting your experiment. All parts of the test must remain the same for every test except for the **one** thing you think is causing the difference. Example: You want to test to see if the angle of a ramp changes the distance a ball rolls. The only thing that changes is the angle of the ramp (the variable). The same ball and the length of the ramp will stay the same (the control).

Your test must have measurable results. You must be able to get an average. This means you have to have numbers. You have to record the results of each angle 3 times. Example: In the first test the angle was 90 degrees. I used a ruler to measure the distance the ball rolled from the edge of the ramp. I wrote my results on a chart. (10 centimeters) I repeated that angle 2 more times and recorded the number of centimeters the ball rolled. I then averaged this. I will use this average in my analysis of data and on my graph. The second time I tested an angle of 45 degrees. The ball rolled 15 inches, etc.

Make sure that you test your experiment at least **THREE** times for each time you change the test condition, keeping all variables constant except **one**. **If you test plants, you must have 3 plants for each control situation.** You must also create a table or chart to record your observation of the **three tests**. Each test must be labeled. (Test 1, Test 2, Test 3) Be sure to have your graph, table, or chart devised to record results from your experiment. This means do your test 3 times and record the results for each test. **You will be disqualified if you do not include 3 tests or if you do not include a graph, chart, or table. Surveys do not need to be repeated three times, but you must have at least 40 participants in the same age group.** You must control the variable in survey results as well. Example: Everyone must be the same gender or age etc.

Step 6

Analysis of Data is a narrative statement in paragraph form telling what your actual research and results indicated. **This section reports the ONLY averages for the three tests.** This means, whatever information you include on your graph, table, or chart is written in paragraph form here. Ex. I found out that _____. I know this because _____.

Step 7

Conclusion: What did you find out? Did you accept or reject your hypothesis? Ex. I found out that _____ because _____. Therefore, I (accept, reject) my hypothesis which states that _____.

Step 8

Application: How will your research findings help people solve problems or make the world a better place to live? Ex. I can apply this to the real world by _____.

Step 9

Once all of the above steps have been completed and you have finished your experiment, it is time to write your **Abstract** to summarize the results and process. The purpose of an abstract is to provide a condensed version that summarizes the key elements of your project.

Your abstract must be no longer than 250 words. You must center the word **Abstract** at the top of the page. This includes a summary of your procedure. You must turn in 2 copies, one copy with your name on it and one without your name for the fair. Do not list every step here. They are listed on the board. You must have 1 inch margins and you must use 10 or 12 point font. It must be written in Times New Roman font.

On the following page is an example of how to write your abstract.

How to Write an Abstract

This should be in paragraph form.

Example:

Title:

Student: (Name should be on only 1 copy. A second copy should not have a name posted.)

Abstract

I wanted to find out _____. My hypothesis stated that _____ because I think _____. I wrote my problem, reviewed my literature, and wrote my hypothesis. I designed my experiment and gathered my supplies. (*List materials & summarize what you did for your experiment - Procedure.*) I controlled variables by _____. I conducted my experiment and collected data. I analyzed my facts. I wrote my conclusion. I found out that _____. I found out that _____ because _____. Therefore, I (reject, accept) my hypothesis which stated that _____ (*restate hypothesis*). I can apply this to the real world by _____.

Your abstract should include:

Problem Statement and Hypothesis: (*What do you want to find out and what do you think will happen?*)

I wanted to find out _____. My hypothesis stated that _____ because I think _____.

Methodology: (*How will you test what will happen? List all materials needed. Explain how your research will be conducted.*)

This must be in paragraph form:

I wrote my problem, reviewed my literature, and wrote my hypothesis. I designed my experiment and gathered my supplies. (*List materials & summarize what you did for your experiment - Procedure.*) **I controlled variables by _____.** **I conducted my experiment and collected data.** **I analyzed my facts.** **I wrote my conclusion.**

Analysis of Data: (*What did the data you collected indicate about what happened in your research? Include all data here.*)

I found out that _____.

Conclusion: (*What did you find out? Did you accept or reject your hypothesis?*)

I found out that _____ because _____. **Therefore, I (reject, accept) my hypothesis which stated that _____** (*restate hypothesis*).

Application: (*How will your research findings help people solve problems or make your world a better place to live?*)

I can apply this to the real world by _____.

After this, you will need to work on your **Backboard**, a visual representation to convey the results of your experiment.

Hints for a Super Science Fair Exhibit

1. *Materials you may need:*

project board

border - Place border around the board.

rubber cement for mounting – It is the most forgiving adhesive when making mistakes

precut lettering - For emphasis use a contrasting color.

2. *Size of Board:*

standard size board - 30” wide by 30”

Choose a color scheme and stick with it.

3. **Plan the layout of the project.**

Lay captions, pictures, graphs, charts, etc. out to be sure everything fits.

Attach visuals to the board.

All pictures and visuals should be mounted on a piece of construction paper before tacking it to the board.

Part II

Working on the Backboard

The purpose of the Science Fair Board is to offer a visual summary of your entire project in a simple format for a judge or observer to peruse. The wording on the board will be slightly different from the abstract. For example, the **materials and procedural steps should be numbered or bulleted for easy viewing**. The preparer wants the observer to know exactly what was done without having to search for information or have difficulty reading the information.

Problem	Science Project Title	Data Analysis
Hypothesis	Use this area for Visual Displays - graphs, charts, tables, and photos	Conclusions
Materials		Application
Procedures		

Font size should be large enough to read. Type, color, and size is up to you. The font type is up to you but it must be legible and easy to read.

The parts of the board are:

Title: Catchy and centered across the top/center of your board.

Problem: The statement should be written in question form.

Hypothesis: The statement about what you think will occur.

Materials: List in bulleted or numbered format.

Procedure: List in bulleted or numbered format. This is for the board only. It is narrative form for the abstract.

Data: Charts or graphs that give visual representation of all the data collected. If a graph or chart is not appropriate, then photographs should be included, but only to show progression over time. Pictures of students are not allowed.

Analysis of Data: Written in paragraph form, just like in the abstract. However, the board should also contain a graphic depiction of the data, which is NOT included in the abstract.

Conclusion: Briefly tell what you found out and talk about the original hypothesis – just like in the abstract. One nice paragraph is appropriate.

Application: Should be included on the board as well.

Part III
The Packet

The **Packet** to be displayed in front of the project board is a synopsis of your entire work. It contains at least five pages that should be typed. **Do not attach this to the backboard.**

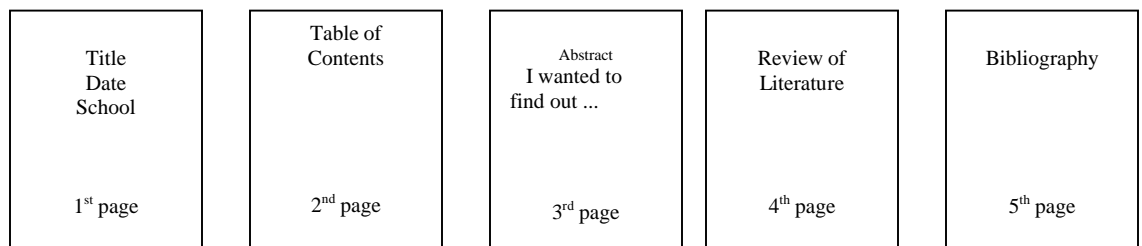
1. **Title Page:** State title and date. No student name should be here at all!
2. **Table of Contents** – Include Title page as page 1

Example:

Table of Contents	
Abstract	3
Review of Literature	4
Bibliography	5

3. **Abstract:** See attached section – **How to Write an Abstract**
4. **Review of Literature:** (See example)
Fourth grade – at least one paragraph and one source
Fifth grade – at least two paragraphs and two sources
Sixth grade – at least three paragraphs and three sources
5. **Bibliography:** (see example)
APA Style. Word “Bibliography” centered at top of page. Entries in ABC order by first word of entry.
Fourth grade – at least one reference source
Fifth grade – at least two reference sources
Sixth grade – at least three reference sources

The diagram below is for the separate packet that will be placed in front of your display board.



Part IV
Oral Presentation

ORAL PRESENTATION – You should present your project orally to your teacher and your class. This is an opportunity for you to share the information you have learned with your classmates. Your presentation should be organized and clearly presented. Practice at home so that you can face your audience and present it without reading. Remember, your teacher wants to know what **you** know. **Your presentation must be no longer than 5 minutes.**

ORAL PRESENTATION:

- The student should be comfortable with the subject matter.
- Presentation is not "reading" the display board. Students should be clear and confident.
- The student should describe the steps used for the project.
- The student should speak loudly and clearly.

Teacher Review Sheet for Science Fair Projects

This must be completed for all projects entered into the science fair **prior** to the fair.
If a student does not meet all criteria, the student must be given the opportunity to correct the project and resubmit to you **prior** to the fair.
Students who choose not to make corrections prior to the fair may display their project in the EXPO fair. They will not be allowed to compete in the school science fair.

You need to submit this form only for students who are participating in the competitive science fair.

	<u>YES</u>	<u>NO</u>
1. Can the problem be tested? (no demonstrations)	_____	_____
2. Are there 3 trials or at least 40 subjects of the same group for surveys?	_____	_____
3. Are the results graphed, charted, or in table format and displayed ?	_____	_____
4. Is the bibliography in the correct format? (ABC order, majority of the information, does not reveal the source above the citation)?	_____	_____
5. Are all steps of the scientific method labeled and included on the board?	_____	_____
6. Are results measurable with units of time, length, speed, etc.?	_____	_____
7. Does the abstract follow proper format?	_____	_____
8. Is only one variable being manipulated?	_____	_____
9. Are averages included in analysis of data?	_____	_____
10. Is the student knowledgeable of subject matter?	_____	_____

Teacher Signature _____

Name of Student _____

Comments: _____

Score sheet for Science Fair Project

Project Number _____

<u>I. THE PROJECT</u> <u>The Scientific Method</u>	YES 1 point	NO 0 points
Does the project have a correctly stated:		
Problem (What is the effect of _____ on _____?) (How does _____ affect _____?) (Which _____ (verb) _____?)		
Does the project have a correctly stated Hypothesis? (The reason must be research based from the review of literature)		
Does the project have a correctly stated Procedure?		
Numerated or bulleted list		
Steps well stated and clearly explained		
Controlled for all variables except 1		
Experiment conducted 3 times for each time you changed the test condition		
Measured in metric units		
List of materials in measurable units		
Does the project have a correctly stated Analysis of Data?		
Narrative statement in paragraph form		
Averages for 3 tests are reported		
Does the project have graph, table or chart which shows the results of the 3 tests and the average?		
Title on chart		
X axis and Y axis labeled		
Does the project have a correctly stated Conclusion? (I found out _____ because _____. Therefore I accept/reject my hypothesis which states _____.)		
Does the project have a correctly stated Application? How does this apply in the real world?		

PROJECT SUBTOTAL _____

Part II The Backboard	YES 1 point	NO 0 points
Each section labeled and logically ordered		
Balanced display		
Spelling and grammar correct		
Use of color utilized effectively		
Is the project especially creative or original?	3 2 1	

BACKBOARD SUBTOTAL _____

Part III The Packet	YES 1 point	NO 0 points
Title Page		
Table of Contents		
Abstract		
No longer than 250 words		
Word ABSTRACT centered		
Times New Roman font 10 or 12 font size		
Review of Literature		
Enough paragraphs for grade level		
Used primary and updated sources		
Written in own words		
Correct spelling and grammar		
words REVIEW of LITERATURE centered		
Bibliography		
Enough references for grade level		
APA format		
ABC order		
Word BIBLIOGRAPHY centered		

PACKET SUBTOTAL _____

PROJECT TOTAL _____

Circle One:
 Point Range 0-6 7-11 12-16 17-21 22-26 27-31 32-36

Judge's Comments: _____

