

To all young scientists:

The time has come to start thinking about this year's science fair. Our theme for this year is "**New Discoveries**". What new, creative projects will there be this year?

The science fair will take place on February 25th for grades 1-4 and March 25th for grades 5 & 6. Now is the time to start getting prepared. This packet has the information to get you started. You will find safety rules, some resources, a sample project and the sign-up form.

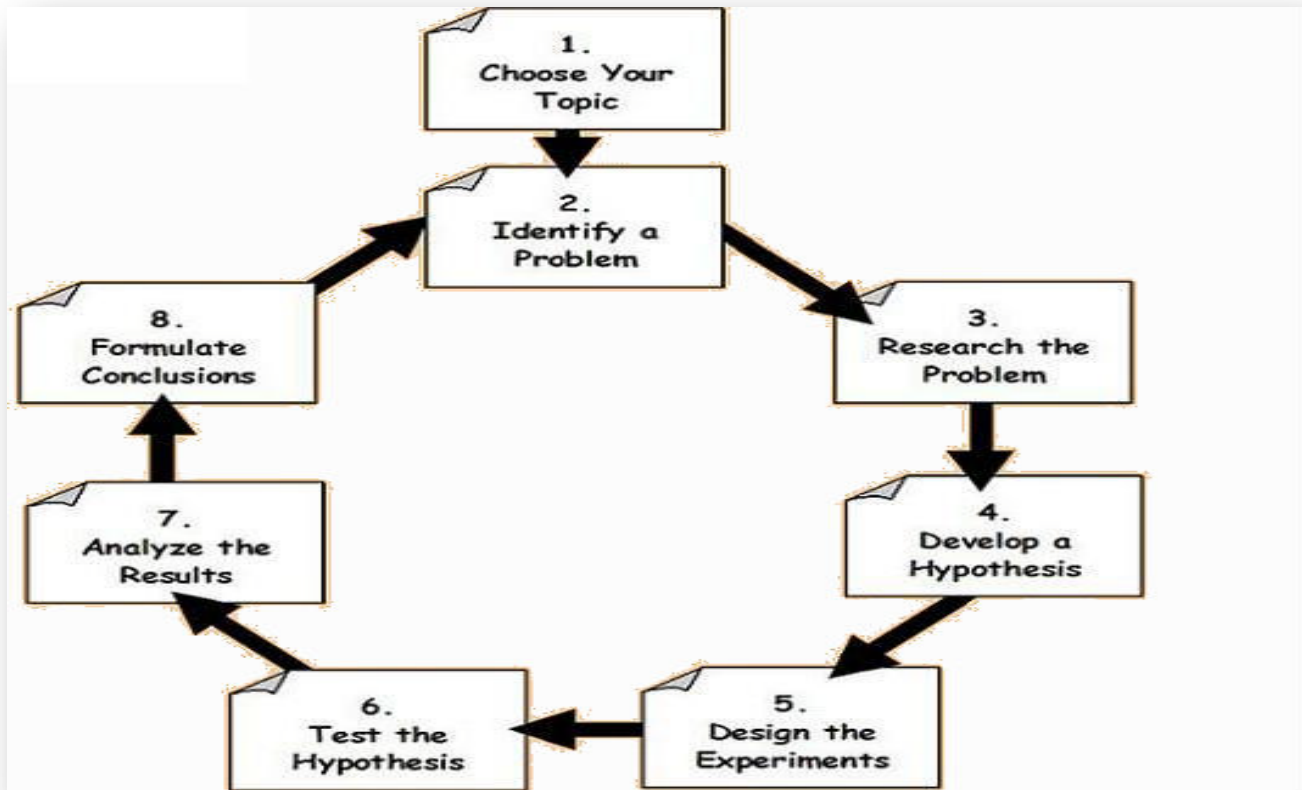
Here are some things to keep in mind:

- You may work alone or in groups of 2 or 3
- Group members must be in your grade level, but in any homeroom
- Each person must be equally knowledgeable of the entire project
- Each person must contribute equally
- There is a rubric included on how the project will be graded
- Judges will choose winners based on the judging sheet in the packet

Start thinking of a project to work on and group members to work with. The sign-up sheets must be turned in by Feb 1, 2010. There is a timeline included that will tell you when parts are due. Be sure you follow the timeline so you receive full credit.

If you have questions or concerns talk with your teacher or you can talk with Mr. Rybarczyk (x3858 brybarczyk@mvracs.org, rm14a) or Mr. Addesa (x3859 baddesa@mvracs.org, rm6a).

The Scientific Method



A Science Fair Project starts with a **question** or a **problem** that you want to answer. To find the answer, you do an experiment. Before you can do the experiment, you make an educated guess, called a **hypothesis**, about what will happen during the experiment. You make the hypothesis *after* you get information about your topic, but *before* you begin experimentation. It is OK if your hypothesis is incorrect-that is what science is all about! This does not mean you have a poor project or will get a lower grade. After you perform the **experiment**, you will record what has happened, these are your **results**, or **data**. The last part of your project is your **conclusion**, where you figure out and explain why the experiment turned out the way it did. You will also describe what you would do differently if you were to do the experiment again.

Safety Rules & Special Notes

The safety of students and those attending the Science Fair is most important. In order to assure a safe environment, the following safety rules will be implemented. Keep them in mind when deciding on a project for the fair.

A. Please use common sense and think about the safety aspects of your project. Make sure you ask if you have a question.

B. The following are NOT allowed:

- | | | |
|---------------------------|--|--|
| 1. Open flames | 8. High voltage equipment | 12. Carcinogens (substances known to cause cancer) |
| 2. Highly toxic chemicals | 9. Controlled substances (drugs) | 13. Knives or other sharp objects (if you need to cut fruit or other items, speak to your teacher ahead of time) |
| 3. Radioactive materials | 10. Blood products or use of obtaining blood specimens | |
| 4. Explosive materials | 11. Hazardous substances | |
| 5. Animals | | |
| 6. Poisonous plants | | |
| 7. Projectiles | | |
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Special Notes

- Only projects that observe normal animal behavior and conditions will be allowed. Since the **animals** cannot be brought to school, you will need to take photographs as you work on your project.
- Electrical outlets** are limited, so you **MUST** request a plug on your sign up sheet. You will need to bring your own extension cord, labeled with your name on it.
- VCR/TV:** sometimes, students request to use a TV and VCR to show a video they have made during their projects. Keep these rules in mind:
 - You must be able to explain to your teacher why you cannot show your work in any other way.
 - The tape that you prepare to show the judges must be less than three minutes long. This is because your time with the judges is limited.
 - If you want to show an informational video during the family viewing time, the tape length is up to you.
 - You must bring in your own TV, VCR and extension cord.
 - The school cannot take responsibility for it.
 - You must stay with your project the **ENTIRE** family viewing time.
- Computer/Laptops:** If you chose to present your experiment on a laptop, keep these rules in mind:
 - You must also have a print out of the project.
 - You must bring in an extension cord with the laptop.
 - The laptop will stay with you the entire day; bring it to the hall for judging only. After that, it goes back to your classroom.
 - You must stay with your laptop while your project is on display during the family viewing time.

Resources

You have a wide range of information just waiting to be discovered. Use your imagination.

- MVRCS library
- All of the local **libraries** have great information.
- Look in **bookstores** (like Barnes & Noble and Borders) in the science and education sections for books containing ideas.
- You can read **science textbooks, lab manuals, magazines, encyclopedias and newspapers.**
- Local **museums** (for example, the Museum of Science library located on their 5th floor) can provide ideas as well as resources.
- **Educational stores** such as The Learning Tree and Lakeshore Learning have lots of information.
- **Talk with professionals** who are involved with your subject.
- **Search the Web.**

Supply Sources: You can obtain supplies from many sources: pet stores, supermarkets, craft stores, office supply stores, The Museum of Science, other museums.

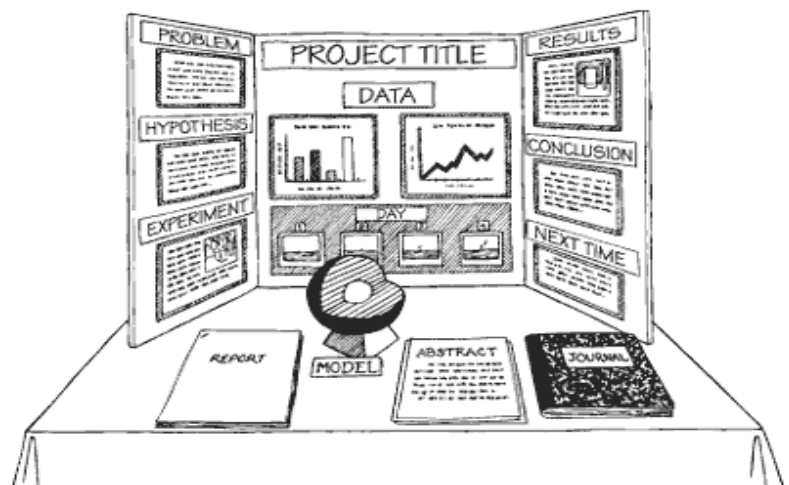
Displaying Your Project

Science Fair boards can be purchased at Staples, Office Max, Michael's and AC Moore craft stores. If you tape your information to the board, you will be able to re-use it. Here are some things to think about when planning your project:

- You will be setting up a presentation board on a table. It must be able to stand up on its own. The board will look like this:



- Maximum table space will be 40"x40" and maximum weight is 50 lbs. These rules will be strictly enforced.
- Only students who have signed up for an electrical outlet will be given one, don't forget your extension cord!
- The **board** is a visual display; you will want to make it attractive and easy to read.



Using color will improve the way it looks. You may print or type all information; lettering should be large enough to be read from several feet away. Each part of the experiment should be labeled: hypothesis, question etc. Pictures and diagrams make it interesting to look at.

Sample Project

Title: Dew Drops

The Question (also called the problem or purpose): What causes dew?

Hypothesis: I believe dew is caused by warm air hitting a cold item.

Materials Needed: 2 plastic drinking cups, tap water, ice, paper towel, and timer

Procedure:

1. Fill one of the cups with tap water.
2. Fill the second cup with ice, and then add enough tap water to cover the ice.
3. Dry the outside of each glass with the paper towel.
4. Allow the cup to sit undisturbed for 15 minutes in a draft free area.
5. Observe the outside of the each cup.

Results (or Data):

The outside of the cup of water without ice was dry, but the outside of the cup of water with ice is covered with water droplets.

(pictures of both cups before and after would be good to put on the project board)

Conclusion: NOTE-A CONCLUSION IS DIFFERENT THAN THE RESULTS

My hypothesis was partially correct, because the ice water cup formed dew; the plain water cup did not. I thought my hypothesis would be correct **because** I have seen my water bottle drip with water as it sits on my desk on a warm day. My research shows that the dew formed because the air near the ice cup became cold, the air around the plain water cup did not because there was no ice in it. Less water vapor is needed to saturate the cold air, that's why the ice cup had the condensation on it. Condensation occurred, that's what the water clinging to the side of the cup was. This is how dew is formed: water vapor in the air comes in contact with cool surfaces, like the ground, it condenses and the water droplets are dew.

If I were to do this experiment again, I would repeat the procedure with cups made of other materials, such as metal and glass. I might also try to make a hygrometer, which measures humidity-the amount of water vapor in the air. It would be interesting to observe how the humidity in the air changes each day.

Student Name: _____

Science Fair Rubric 2010

CATEGORY	4	3	2	1	0
Question	Identifies a good, quality, focused question that can be answered with an experiment.	Identifies a focused question that can be answered with an experiment.	Identifies a question that can be answered with an experiment but is unclear or incomplete.	Identifies a question that cannot be answered by an experiment.	Does not identify a question.
Hypothesis	The hypothesis is detailed and directly related to the question.	The hypothesis is directly related to the question.	The hypothesis is somewhat detailed and related to the question.	The hypothesis is not directly related to the question.	Does not state a hypothesis
Procedure	Fully describes a method that allows for the collection of data that will help answer the question	Describes a method that allows for the collection of data that will help answer the question.	Minimally describes a method that allows for the collection of data that will help answer the question.	Describes a method that does not allow any data to be collected.	Does not state a procedure.
Data and Results	Records and presents ample data, includes pictures, charts, tables or other graphics	Records and presents ample data.	Records and presents some data	Records and presents minimal data.	Does not record and present any appropriate data.
Conclusion	Provides a logical conclusion based on appropriate interpretation of the results. There is sound reasoning supporting the hypothesis. It is detailed and specific.	Provides a logical conclusion based on appropriate interpretation of the results with an explanation and sound reasoning.	Provides a conclusion that has weakness in logic, reasoning or detailed explanation	Provides a conclusion that has weaknesses in both logic based on interpretation of data and details in explanation.	Provides no conclusion and no explanation or reasoning.
Improving the Investigation (Next Time)	Identifies weaknesses and states realistic suggestions to improve the investigation. Includes ideas for follow-up experimentation.	Identifies weaknesses and states realistic suggestions to improve the investigation.	Identifies weaknesses and suggests only simple improvements to the investigation.	Identifies weaknesses and suggests unrealistic improvements to the investigation.	Does not identify weaknesses and makes no suggestions to improve the investigation.
Visual Display	The project board is very visually appealing. It is neat, organized, colorful, and proofread for CUPS.	The project board is very visually appealing. It is neat and organized. CUPS errors detract from the quality of the board.	The project board is mostly visually appealing, but neatness and/or organization detract from the quality of the board.	The project board is minimally visually appealing. It has weakness in more than one area: neatness, organization, color, and proofreading for CUPS.	The project board is not visually appealing. It is difficult to understand or illegible.
Oral Presentation	Student speaks loudly and clearly for all to hear, makes eye contact, and has thorough knowledge to their project. S/he can answer questions from the teacher and audience.	Student shows weakness in one of the following categories: speaks loudly and clearly for all to hear, makes eye contact, and has thorough knowledge of their project.	Student shows weakness in two of the following categories: speaks loudly and clearly for all to hear, makes eye contact, and has thorough knowledge of their project.	Student shows weaknesses in all of the following categories: speaks loudly and clearly for all to hear, makes eye contact, and has thorough knowledge of their project.	Student does not present project.
Assignments Turned In	All assignments turned in on the assigned due date including: 1. question/hypothesis 2. materials/procedure 3.data/results 4.conclusion 5.final project board	Four of the five assignments turned in on time.	Three of the five assignments turned in on time.	Two of the five assignments turned in on time.	Zero or one of the assignments turned in on time.

Judge _____

Judge _____

12th Annual MVRCS Science Fair 2010
Judges Evaluation Sheet Grade 5 6

Student Name(s) _____ HR Teacher _____
_____ HR Teacher _____
_____ HR Teacher _____

1. Defining the problem/question	1	2	3	4	5	6	7	8
2. Formulating a hypothesis	1	2	3	4	5	6	7	8
3. Designing a procedure that has the potential to answer the question	1	2	3	4	5	6	7	8
4. Collecting and organizing raw data/results	1	2	3	4	5	6	7	8
5. Drawing Conclusions	1	2	3	4	5	6	7	8
6. Improving the investigation	1	2	3	4	5	6	7	8
7. Complexity of experiment	1	2	3	4	5	6	7	8
8. Appearance of board	1	2	3	4	5	6	7	8
9. Verbal presentation/ ability to answer questions	1	2	3	4	5	6	7	8
10. Overall impression	0	1	2	3				

Total _____ check _____

Timeline for Grades 5&6 Science Fair

Tuesday, January 21

- Packets given out. Begin to research and come up with an idea for your project.
 - Decide if you will work alone, or as part of a group.
 - Look over the judges' criteria in this packet.
 - Keep the criteria in mind when working on your project.
-

Monday, February 1

- **TURN IN Science Fair application to your homeroom teacher; remember to get your parents' signature on it.**
 - Work on creating the procedure: the steps of how you will perform your experiment. (look at the sample for help)
 - **Work on creating a materials list and obtain your materials**
-

Friday, February 5

- Your project has been approved and the assignment sheet for the materials and procedure given out today. Type or write it neatly.
 - **Begin your actual experiment**, it is important not to wait until the last minute to begin experimentation. Your experiment may take more time than you expect or you may need to perform it more than once.
-

Wednesday, February 10

- **TURN IN your materials list and procedure**
 - Your results sheet given out today.
-

Friday, February 19

- **Your experiment is now done, TURN IN your results. Your results will include a paragraph explaining what actually happened when you performed your experiment. It may ALSO include pictures you have drawn, photographs you have taken, or graphs or tables you have made.**
 - Conclusion sheet given out today, remember that the conclusion is the part where you say why you think the results happened the way they did.
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Friday, February 26

- **TURN IN your conclusion today.**
 - **DO NOT put your conclusion on your board until you have received your teacher's approval.**
 - Plan and begin to write up your presentation board. All parts of the scientific method should be on the board, but you should wait to put the conclusion on it until your HR teacher has looked at it. Remember print neatly and proofread your work for CUPS: capitalization, usage, punctuation and spelling errors. Judges consider the appearance of the board very important.
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- Read the grading rubric and the judges' criteria sheet again
 - Practice your presentation **out loud**. You have done a lot of work; it is now time to communicate the information about it. If you are working in a group, **ALL** members of the group must share in presenting your project. Everyone should be able to present the whole project in case any partner is absent the day of the Fair.
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Friday, March 5.

- Your conclusion has been approved and you should finish up your board.
-

Monday, March 15

BRING YOUR PROJECT INTO SCHOOL. The box or bag containing your items should be labeled with your name, grade, and HR teacher's name. Without this, they could be lost when volunteers bring the projects back into school.

- Present your project to your homeroom. You will explain each part of your project and be able to answer questions from the class. Remember to speak clearly and make eye contact with the other students as you speak.
 - This is good practice for the question session with the judges.
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Thursday, March 25 **Science Fair**

- Each class will be called to the church hall to present their projects. Remember to speak clearly and make eye contact with the judges.
 - Family viewing time after school, 3:30-6:00 p.m. Your family may visit the Fair to view all the projects, including the ribbon winners.
 - You will leave your project in the hall; it will be brought back to into school by volunteers at 6:00.
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Sign-up form for Science Fair 2010

Due to your Homeroom teacher by Monday, February 1 (you may turn in earlier)

Your name _____ HR teacher _____

Group member names and HR teachers' names, no more than 3 members per group:

Partner's name: _____ HR teacher: _____

Partner's name: _____ HR teacher: _____

1. Title for Science Fair Project:

2. Question to be answered (also called the purpose or problem):

3. My hypothesis (what I think will happen) is:

I will need an electrical outlet: yes no

I understand I must provide my own extension cord with my name on it.

I understand that my child is working on the science project listed above. If s/he is working with a group, I understand that it will require meeting after school or on weekends. Each group member must contribute equally and be knowledgeable about the entire project.

Student signature

Parent Signature

Name _____

Science Fair Materials List/Procedure

Assigned Friday, February 5

Due Wednesday, February 10

1. List the materials you will use in your experiment:

2. List the steps of the procedure for your experiment (**number each step**)

Reminder: Experiment results are due Friday, Feb. 19



