



SCIENCE FAIR PROJECT

Name _____

You will be turning this packet in to your teacher.

All information that is written on this packet should be put on your display board in final draft form. If you have questions about what is expected, let your teacher know sooner, not later...

Timeline:

December 22 – January 6:

Choose a topic, Research the Topic, Develop a Hypothesis, Create a Procedure, Gather Materials, Conduct Experiment, Collect Data

December 22 – January 6:

Analyze Data, Draw a Conclusion, and Complete Project Board

January 7th : Project is Due

January 10-11: Hand Middle School Science Fair

Projects available for viewing 9:00am until 4:00pm, check in with the front Office

January 15-17: District Science Fair (Winners from grade levels)

How Do I Get Started?

1. CHOOSE A TOPIC

Science Fair projects ARE NOT:

- Building a model of something (like a VOLCANO).
- Finding the answer to a question by doing research (like about the SOLAR SYSTEM).
- Conducting a survey (like "WHAT ARE 8TH GRADERS' FAVORITE COLORS").

Science Fair projects ARE:

- Testable
- Interesting

Check the "Science Fair Project Ideas" list and visit www.sciencebuddies.org for topic ideas.

2. YOUR QUESTION: What idea are you trying to investigate? Write it in the form of a testable question. Here are some possible formats:

- How will changing ____ affect ____?
- What are the effects of ____ on ____?
- Will ____ be different when ____?

Science Fair Project Ideas List

Here are a few testable questions that students can use for their science fair projects. If students need additional project ideas, please allow them to explore some of the links below.

1. What type of plastic wrap best prevents evaporation?
2. Do white candles burn at a different rate than colored candles?
3. Does the presence of detergent in water affect plant growth?
4. Does the shape of an ice cube affect how quickly it melts?
5. Do different brands of popcorn leave different amounts of un-popped kernels?
6. How do differences in surfaces affect the adhesion of tape?
7. If you shake up different kinds or brands of soft drinks (e.g., carbonated), will they all spew the same amount?
8. Are all potato chips equally greasy (you can crush them to get uniform samples and look at the diameter of a grease spot on brown paper)? Is greasiness different if different oils are used (e.g., peanut versus soybean)?
9. Does light effect the rate at which foods spoil?
10. Do all brands of diapers absorb the same amount of liquid? Does it matter what the liquid is?
11. Do different brands of batteries (same size, new) last equally long? If a brand lasts longer than others, does this change if you change the product (e.g., running a light as opposed to running a digital camera)?
12. Do all brands of bubble gum make the same size bubble?
13. Do all dishwashing detergents produce the same amount of bubbles? Clean the same number of dishes?

14. Do all brands of paper towels pick up the same amount of liquid?

15. How Strong Is It? Which trash bag is the strongest?

Test the strength of trash bags, grocery store bags, or plastic wrap.

16. Which stain remover works best?

17. How does the shape of a paper airplane affect its distance?

18. Which brand of cooking spray works best?

19. Can people tell the difference between regular and low-fat foods?

20. Which cereal absorbs the most milk?

21. Where is the best place to store a banana?

22. Which liquid preserves a cucumber the best (cola, white vinegar or carbonated water)?

23. Which liquid will freeze the fastest, milk, water or soda?

24. Which brand of ice cream melts the slowest?

25. How does fat affect the freezing rate of milk (1% milk, 2%, lowfat, nonfat etc.)?

26. Which brand of soil holds water the best?

27. Which liquid will evaporate the fastest (water, soda, juice or milk)?

28. How does exercise affect body temperature?

29. How does salt affect the freezing and boiling points of liquids?

30. Which colors absorb the most heat, light or dark?

31. Do certain types of music affect animal behavior?

32. Which soda decays fallen out teeth the most?

33. Which paper towel brand is the strongest?

3. RESEARCH: What did you learn about the topic? This information should help you form your hypothesis, making it a truly educated guess. Resist the urge to decide what you think is going to happen before you do this research. Use the internet or and gather 10 facts that apply to your experiment. You can write them word for word like they are, as long as you tell me the source. You may not use Wikipedia and you must have at least three different websites as sources.

FACT	WHERE YOU FOUND IT

4. HYPOTHESIS: States what you think is going to happen BEFORE you conduct the experiment. Don't go back and change your hypothesis. Getting it wrong shows you learned something! A hypothesis should be based on the research you've done. We use the "If..., then ..." format for writing a hypothesis.

Example:

"If the amount of fertilizer added to the plant is increased, then the plant will grow taller."

"If the paper airplane is heavier, then it will fly farther."

"If someone listens to music, then they will remember more information."

"If you add more salt to water, then it will freeze faster."

5. DESIGN AND COMPLETE YOUR EXPERIMENT: Use the attached "Project Experiment" pages to plan and conduct your experiment.

Take notes and keep careful records of everything that is done. Recording accurate data is the key to a successful project!

1. Write down everything you do.
2. Keep it all in the same notebook.
3. Take photographs of each step to use with the display.
4. Be sure to repeat the experiment in order to confirm the results.
5. Save information carefully and always have a written copy of the information in your computer files.
6. Keep your files and charts organized.
7. Sources need to be written down correctly from the start.
8. Make sure that you give others credit for helping you with your research.
9. Do not procrastinate!

6. RESULTS, GRAPHS, AND CONCLUSION: Use the "Project Results" pages to display your data and communicate your results.

7. BOARD AND PRESENTATION: The final step! Type up final drafts of your question, hypothesis, research, procedure and materials, graphs, results, and conclusion. Use the "Project Presentation" page for tips on how to arrange your board.

Project Experiment

Design Your Experiment

Clearly write out the procedure you are going to follow. Remember that your experiment needs to follow the scientific process and that you need to have one variable that you are going to change (independent variable). There are three variables in a scientific experiment: independent, dependent, and controlled. The *independent variable* is the one, and only one, variable you will change. The *dependent variables* are those being observed and measured throughout the experiment. The *controlled variables* are those that remain constant and allows you, the scientist, to understand how the experiment would react under normal circumstances.

Independent Variable:

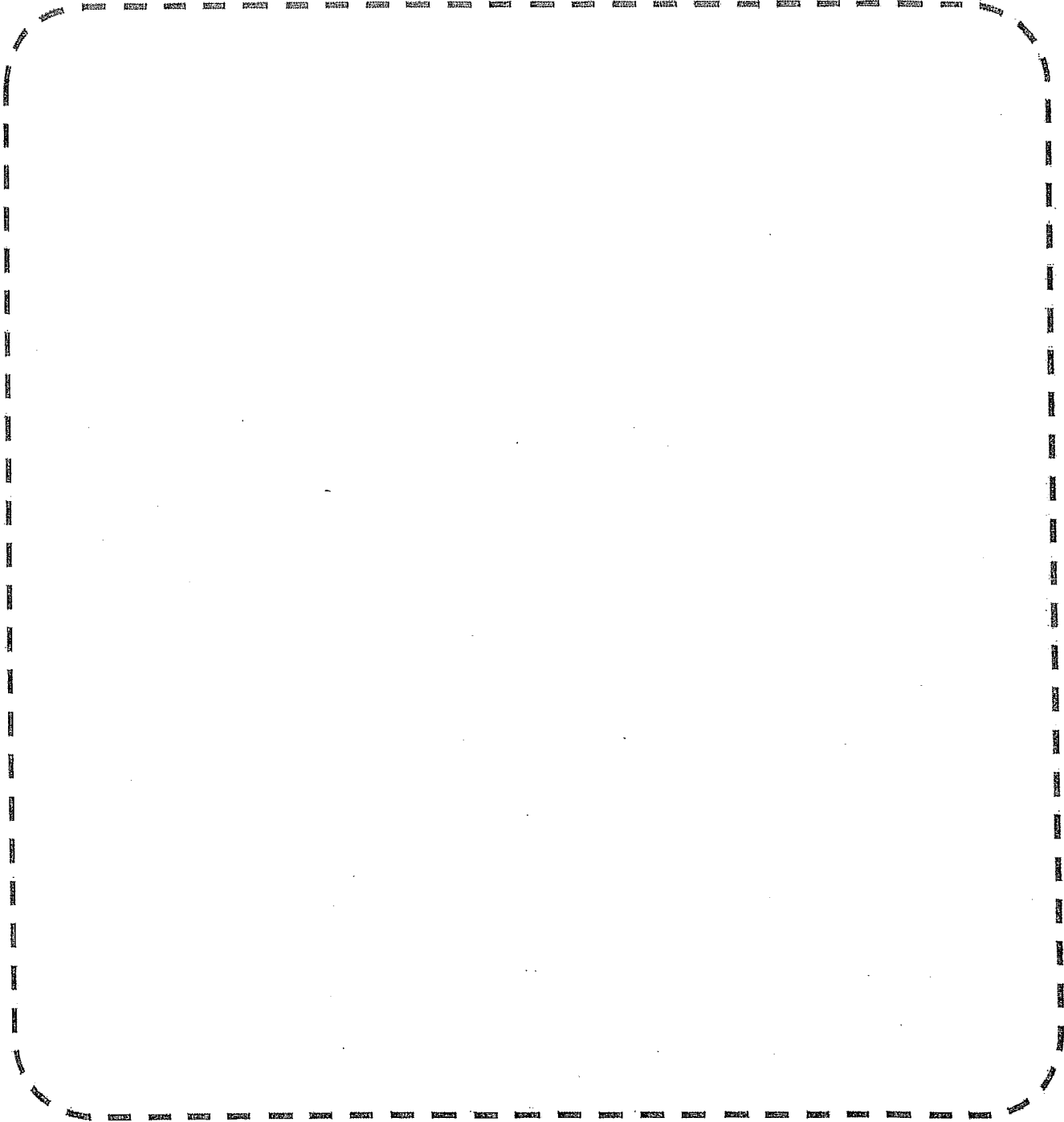
Dependent Variables:

Controlled Variables:

Project Experiment

Materials

List all materials needed to complete the experiment. Be specific about type, size, brand, etc.

A large dashed-line border forming a rounded rectangle, intended for listing materials.

Project Experiment

Conduct experiment

Scientists conduct an experiment many times in order to get the most accurate data, so make sure you also conduct your experiment multiple times. During your experiment you need to collect data and make observations. You will record

these in your Experiment Log. After you have completed the experiment use your log to write down the data and observations below. In your log you will need to: *Collect Data* - you will need to collect numerical data; that means you need to take measurements during the experiment. Measurements can be temperature, distance, height, etc. Creating a chart is a helpful way to organize your data. You will analyze the data later to determine the results of your experiment.

Make Observations - as you conduct your experiment you will use your senses (sight, smell, touch, etc.) and write down any observations you make during the process.

Observations

Project Experiment

Data

Project Results

Determine the Results

Now it is time to review your data and observations to find out what happened during the experiment. Think about the best way to show your data: bar graph, line graph, chart, etc. and then create a table or a graph below. This visual will help you analyze your data for trends.

Results

Use this space, or a separate sheet in your notebook, to sketch 1 or more tables, charts, or graphs to analyze your data.

Project Conclusions

Draw Conclusions

Analyze the results and determine how the results helps you answer your project question. Write your answer in a complete sentence using the question to begin your answer. You also need to tell whether your hypothesis was supported or if the results contradict the hypothesis. If it was not supported, explain why you think so. End this paragraph by saying how you would change or improve your experiment in the future.

Answer to your project question: _____

Did the results support or contradict the hypothesis? Explain. _____

How would you improve or change the experiment? _____

Project Presentation

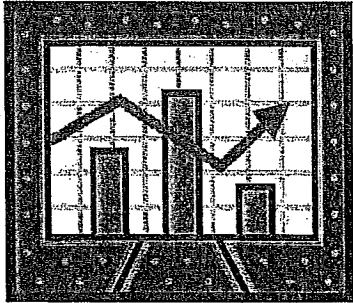
Display board

Now that you have completed your experiment you will begin setting up your display board to communicate the results of your experiment to others.

Remember, the board is graded on the information you present, not how colorful or pretty it looks. Your display board must have ALL of the following components located in the same places:

Other board guidelines:

- Font should be easy to read and at least a size of 16pt or greater.
- Photos should not include faces of students.
- Information on the board can be typed or written neatly by hand.

<p>Hypothesis</p> <div data-bbox="183 926 467 1062"></div> <p>Key Words and Research</p> <div data-bbox="183 1161 467 1318"></div> <p>Procedure and Materials</p> <div data-bbox="183 1417 467 1667"></div>	<p>Question/Title</p> <div data-bbox="548 926 1011 995"></div> <p>Photos or Drawings</p> <div data-bbox="573 1104 1011 1241"></div> <p>Graphs</p> <div data-bbox="613 1350 963 1650"></div>	<p>Results</p> <div data-bbox="1097 926 1385 1199"></div> <p>Conclusion</p> <div data-bbox="1097 1329 1385 1602"></div>
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