

Lakeview Elementary PTA Presents:

LAKEVIEW ELEMENTARY SCIENCE FAIR 2023

Open to Grades TK-5

Congratulations for signing up for the Science Fair!
Now it's time to get started on your experiment and
display board.

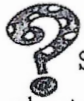
The first step is to select an experiment. Be sure to
know the difference between an experiment and a
demonstration before you begin. You can research
experiments online, check out library books, or come
up with your own project!

The science project will be done entirely at home with parent
supervision. Be sure to do your own work. You
will explain your findings to judges.

Use this packet to guide you through the steps as you
complete your experiment and board. This packet is a
tool and won't be collected. Boards are due in the MPR
on April 27, 2023 by 3PM.

You will be invited to a special "Science Fair Awards
Night" on May 4, 2023. Details to follow.





The Scientific Method

Some of the most important discoveries have come about as a result of questioning why things are the way they are. That is how science begins. In order for scientists to investigate and answer questions about the natural world that surrounds them, they have to follow a series of steps called the **scientific method**. It's kind of like a road map that scientists use in order to understand how things work and why they work the way they do.

When using the scientific method, one of the first steps involves making **observations**, or gathering information on a topic of interest. This step comes natural to most people. It involves using the 5 senses to *see, hear, taste, touch, or smell* what is going on in the world.

The next step is to come up with a **problem**, or a good question to be answered. Ask yourself questions about something that interests you and what you would like to learn more about. Does something seem strange to you? Do you want to find out how something works? Questions should be clear and testable, not opinions or questions that test more than one thing.

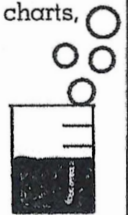
The next stage of the scientific method involves forming a **hypothesis**, or a possible solution to the problem. This is when scientists use what they already know and have observed, to say what *they believe* the outcome of the experiment will be.

The best part about a hypothesis is that it is simply a *prediction* of what you think is going to happen. If a scientist's results do not match their hypothesis, this does NOT mean that the experiment was a failure.

The most important and exciting step of the scientific method is conducting **experiments**. In this phase, scientists design and carry out tests, or trials, that will help them determine if their hypothesis is correct. This step also requires scientists to write down clear and concise procedures, or steps to follow, and to keep a list of the materials used. Keeping such careful records will allow other scientists to repeat the experiment at a later date.

As scientists work on their experiments, they are constantly making observations and collecting data. This part of the process is known as the **results**. It is important to keep careful records so that they can be shared with other scientists. Data can also be in the form of notes, tables, pictures, charts, and even graphs.

The final step is the **conclusion**. This involves analyzing and summarizing the results. This is also where scientists reveal whether or not the data found supports their original hypothesis. If results do not support the hypothesis, scientists do NOT go back and change their predictions. Instead they try to figure out what might have been wrong with their hypothesis.



Science Fair Project Planner

Project Question

Name(s): _____

Think of a Question

Your question will drive your entire project. Make sure that your question is something that can be measured and answered by following the scientific process. You may use the project question for your project title.

Brainstorm some possible questions that you are interested in learning more about.



Once you have decided on your project question, write it on the lines below.

| | |
|--|--|
| | Choose topic and write project question. |
| | Research your topic. Write science terms and paragraph. |
| | Write hypothesis. |
| | Design experiment; list variables and write procedure. |
| | List and gather materials. |
| | Conduct experiment multiple times. Record observations and data. |
| | Create a table, chart, or graph of the data. |
| | Draw conclusions. Explain how you would improve your experiment. |
| | Make the project display. |
| | Write and print abstract. |
| | Present project at science fair. |

Project Research

Research Your Topic

Spend some time learning more about your topic. Use reliable Internet sources, books from the library, your science book, or other resources. Not only do you want to be an expert on your topic, but you want to teach others about your topic.

Science Terms - locate at least 3 key science words related to your topic. Your science book is an excellent place to find these. Make sure that the words you choose are directly related to your topic. Provide a definition of each key word IN YOUR OWN WORDS.

| Science Term | Definition |
|--------------|------------|
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Project Hypothesis

State Your Hypothesis

Based on your research, decide what you think the outcome of the project will be and make a good guess as to what you think the answer to your question will be. Also explain **WHY** you think that will be the outcome. Remember, it is ok if you don't have the right answer; that is how scientists make discoveries. Make sure that your hypothesis is written in a complete sentence.

Start by listing some possible outcomes or answers to your question.

Decide which outcome is most likely. This will be your hypothesis. Clearly write your hypothesis in complete sentences.

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.

Project Experiment

Procedure

Write out each step of your experiment. Remember to number each step and clearly explain what to do. Other scientists should be able to follow the same steps and get similar results.

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 Results

Determine the Results

You will also write out the results of each test in the experiment in paragraph form using complete sentences. Make sure that you include the numerical data (measurements) as well as any other important observations that you made.

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? _____

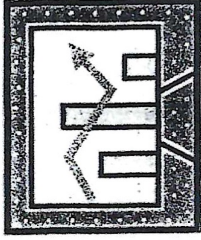
Project Presentation

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:

Other board guidelines:

- Font should be easy to read and at least a size of 16pt or greater.
- Information on the board can be typed or written neatly by hand.

| | | |
|---|---|--|
| <p>Hypothesis</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div> | <p>Question/Title</p> <div style="border: 1px solid black; height: 30px; width: 100%;"></div> | <p>Results</p> <div style="border: 1px solid black; height: 80px; width: 100%;"></div> |
| <p>Key Words and Research</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div> | <p>Photos or Drawings</p> <div style="display: flex; justify-content: space-around;"><div style="border: 1px solid black; width: 30px; height: 30px;"></div><div style="border: 1px solid black; width: 30px; height: 30px;"></div><div style="border: 1px solid black; width: 30px; height: 30px;"></div></div> | <p>Conclusion</p> <div style="border: 1px solid black; height: 80px; width: 100%;"></div> |
| <p>Procedure and Materials</p> <div style="border: 1px solid black; height: 80px; width: 100%;"></div> | <p>Graphs</p> <div style="border: 2px solid black; padding: 5px; text-align: center;"></div> | |