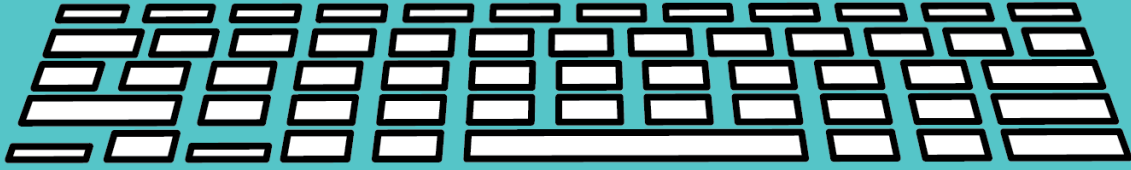


AND IN
VARIABLE IS
THE FACTOR
THAT IS
OBSERVED AND
MEASURED

| Short Answer | Type Answer Here |
|--|------------------|
| 1. What is the word for an educated guess? | |
| 2. What is the one thing that changes called? | |
| 3. What kind of reasoning keeps things scientific? | |
| 4. What is Mr. Descartes first name? | |
| 5. Good experiments need repeated so they can be what? | |
| 6. Method comes from a Greek word that means what? | |
| 7. What can you conduct to test your hypothesis? | |
| 8. What is the last name of the light bulb inventor? | |



| Short Answer | Type Answer Here | Fill in the Blank | Type Answer Here |
|--|------------------|---|------------------|
| 1. Who is the word for an educated guess? | | 9. Science comes from a Latin word that means ____. | |
| 2. What is the thing that change called? | | 10. Francis ____ contributed to the idea. | |
| 3. What kind of reasoning keeps things scientific? | | 11. The ____ step in the method is to ask a question. | |
| 4. What is Mr. Descartes first name? | | 12. The method encourages students to use ____ thinking skills. | |
| 5. Good experiments need repeated so they can be what? | | 13. Books, the internet and ____ are helpful to know things for ____. | |
| 6. Method comes from a Greek word that means what? | | 14. ____ our kids can ____ and describe what they see. | |
| 7. What can you conduct to test your hypothesis? | | 15. Isaac ____ also contributed to the idea. | |
| 8. What is the last name of the light bulb inventor? | | 16. The scientific method is like a path to ____. | |



SCIENTIFIC METHOD

Science is the Latin word that means knowledge. Method comes from a Greek word that means road. Put together, the scientific method is like a path to knowledge.

The scientific method is a process that scientists use to study and learn things about the world around them, but it was first developed by Francis Bacon, Rene Descartes, and Isaac Newton. The scientific method is a way of thinking about the world. The scientific method encourages students to use critical thinking skills to make connections. This way of thinking is used to develop and investigate skills.

Even young kids should be encouraged to explore the world scientifically. Let them wonder, think, and say. Young kids can observe and describe what they see, spark curiosity and stay engaged.

- Wonder - explore the world around
- Think - what could happen?
- Act - test your idea and see what happens.
- Say - was your idea correct?

This inquisitive approach will ultimately lead to scientific reasoning. Preschoolers ask questions constantly. Why? How? If? Turn their constant questions that they ask into something they can observe and ultimately answer for themselves. Ask them to guess what might happen. The next step would be to watch what happens. Finally, a preschooler can compare what they thought would happen with what actually happened.

As kids get older, the scientific method can be more methodical. The major steps in the scientific method are the following:

- Ask a question.
- Research to gather information.
- Form a hypothesis - an educated guess.
- Conduct an experiment to test your hypothesis.
- Make observations and track the results of your experiment.
- Analyze the results of the experiment.
- Draw a conclusion.
- Communicate results.
- Re-test.

The first and most essential step in the scientific method is to ask a

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question. What are you trying to discover? After asking a question on a specific topic, there should be some research. Books, the internet, and interviews are helpful to narrow things down. Use what you know and gather more information to make an educated guess, called a hypothesis.

A hypothesis is a guess, yet it's based on what you know and what you discover with research. The hypothesis is often stated like this: "If I do _____, then _____ will happen." A good hypothesis refers back to the original question for the project. Note that a hypothesis can be proven wrong. Even if something doesn't work out as planned, learning is still happening. Thomas Edison once famously commented on his invention of the lightbulb. He said, "I haven't failed. I've just found 10,000 that won't work."

Now it's time to plan an experiment to prove or disprove a hypothesis. Good experiments need to be repeated so they can be reliable. To properly measure results and make connections, an experiment needs to have only one thing that changes. This is called the variable. Everything else should be the same every time you repeat the experiment. This control allows for proper comparison and analysis in the experiment.

During the experiment, scientists make observations and gather data about what is happening. They keep journals and logs with both results and procedures. After the results of the experiment, Was it successful? Was your hypothesis correct?

If incorrect, perhaps the data can help you form a different hypothesis. Repeat the experiment and change the variable to see if the next hypothesis is correct.

If your hypothesis was correct, repeat the experiment or have others repeat the experiment. Experimentation can prove your theory and makes it more reliable.

Now it's time to share your results with others in the experiment.

Finally, it's time to share your results with others. This is when you use the journals and data from the experiment and share the news. Create a lab report or demonstration for the class. Display a poster for the science fair at school. Other ideas include an oral presentation, a video report, or video. Inform others about your results.

The scientific method requires observation, comparison, contrast, and analysis. Analyzing specific facts, data, and results to formulate an answer or conclusion. This inductive reasoning keeps the scientific method formal, without opinion and judgment.

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