What is the Scientific Method?

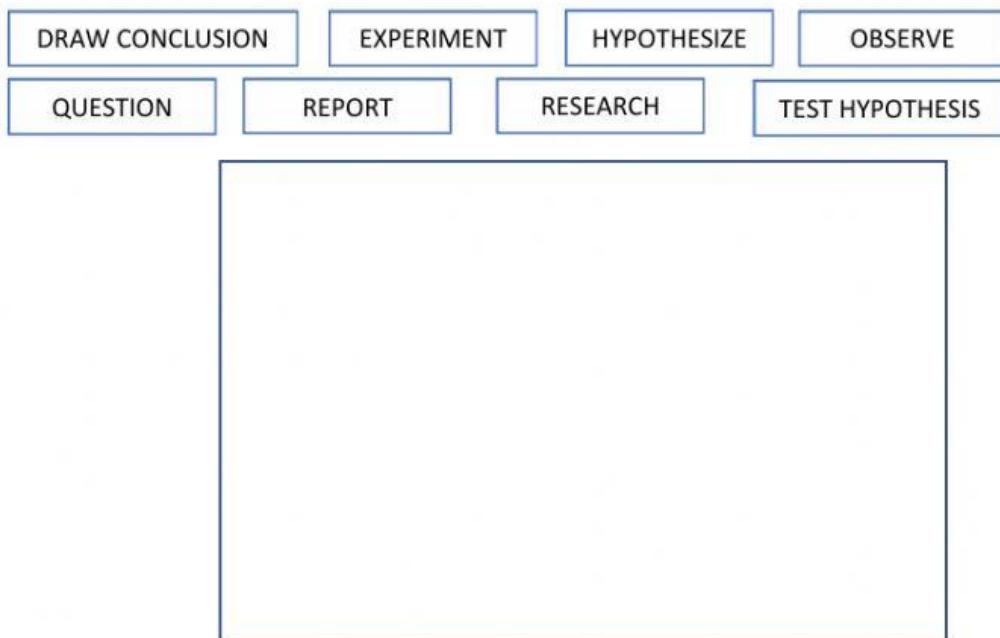|			
back up	digested	easily	evidence
goal	process	scientific method	scientists

The scientific method is a _____ for experimentation that is used to explore observations and answer questions. Does this mean all scientists follow exactly this process? No. Some areas of science can be more _____ tested than others. For example, scientists studying how stars change as they age or how dinosaurs _____ their food cannot fast-forward a star's life by a million years or run medical exams on feeding dinosaurs to test their hypotheses. When direct experimentation is not possible, scientists modify the scientific method. In fact, there are probably as many versions of the scientific method as there are _____! But even when modified, the _____ remains the same: to discover cause and effect relationships by asking questions, carefully gathering and examining the _____, and seeing if all the available information can be combined into a logical answer.

Even though we show the scientific method as a series of steps, keep in mind that new information or thinking might cause a scientist to _____and repeat steps at any point during the process. A process like the scientific method that involves such backing up and repeating is called an iterative process.

Whether you are doing a science fair project, a classroom science activity, independent research, or any other hands-on science inquiry understanding the steps of the _____ will help you focus your scientific question and work through your observations and data to answer the question as well as possible.

Steps – put the steps into correct order.

DRAW CONCLUSION	EXPERIMENT	HYPOTHESIZE	OBSERVE
QUESTION	REPORT	RESEARCH	TEST HYPOTHESIS

Sources:

https://www.sciencebuddies.org/science-fair-projects/science-fair/steps-of-the-scientific-method

https://untamedscience.com/biology/scientific-method/

What happens in each step?

This is what we've all been waiting for—what is the answer to the question? In this step, scientists take a step back, look at the data, and decide whether to accept or reject the hypothesis. Sometimes the conclusion is pretty straightforward, but scientists always do statistical tests just to make sure they're reading the results correctly.

A hypothesis is a statement of what you think the answer to your question is. It's different from the question you formed because it's answering the question you developed with a specific prediction that you'll go on to test. A good hypothesis should be falsifiable, meaning that it's possible to prove it wrong.

You can't study what you don't know is there. This is why scientists are so curious—they're always looking for patterns, trends, questions, and problems that we don't understand. Once a scientist finds a really interesting pattern that they want to know more about, they move onto the next step.

How do you find an answer to your hypothesis? You conduct an experiment to test it! Depending on what a scientist is studying, an experiment can be very quick or take years—some experiments have even been going on for hundreds of years!

Designing a good experiment is a whole industry that some scientists spend their whole careers working on. But any good science experiment must always serve its one main function: to prove or disprove a hypothesis.

Once a scientist finds an interesting thing to study, they need to ask a question that hopefully they can answer.

You've just tested an important piece of information. It's something that nobody else in the world knows. What good is that knowledge if you keep it to yourself? The final step of the scientific process is to report your results. Scientists generally report their results in scientific journals, where each report has been checked over and verified by other scientists in a process called peer review.

To find out the answer to your question, you need to know what potential answers are. That's where background research comes in, remembering that not everything you read online is true. Use reliable sources, like Google Scholar.

Sources:

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