

The Scientific Method

Observation

The first step of the scientific method is to make an observation regarding some event or characteristic of the world. This observation should lead to a question regarding the event or characteristic.

Question

Ask a Question

The scientific method starts when you ask a question about something that you observe:

How • What • When • Who • Which • Why • Where

In order for the scientific method to answer the question it must be about something that you can measure, preferably with a number.

Research

Do Background Research

Rather than start pulling something from out of your head, be a savvy astute scientist and use library and internet research to help you find a possible answer to your question.

Hypothesis

Construct a Hypothesis

A hypothesis is an educated guess about how things work:

“If [I do this], then [this] will happen.”

You must state your hypothesis in a way that you can easily measure and so that you answer your original question.

Experiment

Test Your Hypothesis with an Experiment

Your experiment tests whether your hypothesis is supported or not. It must be a fair test. All conditions must be the same for each factor in your experiment except the one factor you are testing. That factor is called the **variable**. All other factors are **controlled**.

You should also repeat your experiments several times to make sure that the first results were not merely an accident.

Conclusion

Analyze Your Data and Draw a Conclusion

Once your experiment is complete, collect your measurement and analyze them to see if your hypothesis is supported or not.

Scientists often find that their hypothesis was wrong, and in such cases, they will construct a new hypothesis starting the entire process of scientific method over again. Even if they find that their hypothesis was supported, they may want to test it again in a new way.