Experiments and Hypotheses

Scientific Method

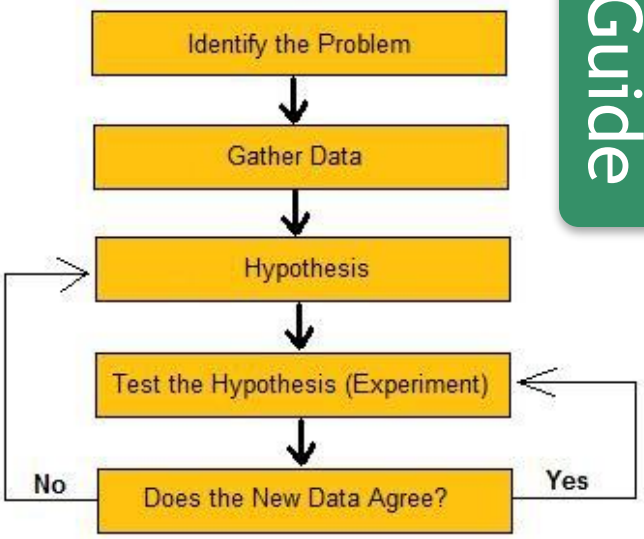
The **Scientific Method** is a way that scientists are able to gain understanding about the universe. The Scientific Method consists of:

- Asking a question
- Doing background research
- Creating a hypothesis
- Doing experiments or making observations in order to test the hypothesis
- Gathering data
- Formulating a conclusion

It is important that the scientist conducting the experiment is asking a question that can be answered using data. A question like this is called a "scientific question."

Study Tip

Remember that the steps in the scientific method may not always happen in the order they are listed in. You may want to do background info before designing an experiment. If your hypothesis does not work, you may want to develop a new hypothesis or new experiment.



Here is a flow chart that outlines how to use the scientific method in order to draw results and formulate a conclusion.

Hypothesis

A **hypothesis** is an explanation for phenomena. A hypothesis must be:

- Testable
- Falsifiable

One can create multiple hypotheses to be tested through experimentation. Doing this is called having **multiple working hypotheses.** Another way to test a hypothesis is by looking to scientific literature for data.

Testing Hypotheses

There are many different ways to test a hypothesis. You can:

- Develop an experiment that uses the scientific method in order to generate data
- Look to scientific literature in order to find data that was generated using the scientific method

Using the data found, one needs to determine whether the hypotheses they made are true or false.

Concept Check

- Know the steps of the scientific method.
- Be able to design an experiment using the scientific method.
- Be able to develop and test a hypothesis.