

Introduction to Physical Science

Question of the Day: What is science?

Science is a never ending search for truth. Truth is based on a set of facts and our understanding of those facts. A good scientist must be ready to accept new facts as they are discovered and modify what is "true" in light of these facts. Even though science in school is usually taught in classes that are limited to a certain area, such as chemistry or physics, science is science, no matter what topic is involved. Science is being done whenever the scientific method is used.

Pure science is the gathering of information that adds to the body of human knowledge. Pure science is not directly concerned with the practical use and application of the information. Applied science, also known as technology, is the practical use of scientific information.

Physical science

Students are expected to be familiar with computers and some of their applications when they enter this class. During the school year, those skills will be used to gather information from my web site, "www.thesciencedesk.com" as needed, as well as for doing research.

Chemistry and physics are the "physical sciences".

🍏 Chemistry, the study of the structure and properties of matter.

🍏 Physics, the study of the relationships between matter and energy.

Notebook:

Keeping records in an organized fashion is important in science, as well as most other "real world" situations. When scientists make important discoveries, their work and experiments must be able to be reproduced by others. The only way to do this is by following the original records of the work. To gain experience in record-keeping, and to demonstrate improvement through the course of the class, each physical science student is required to keep a Notebook and to have it with you for class every day. Your textbook is to stay at home for homework assignments. You will not need to bring your textbook to class since there is a classroom set of textbooks for you to use if the need arises.

Importance of Lab Safety

Question of the day: What is the main threat to safety in our lab ?

Laboratory experience is essential in all science classes. Experiments are carried out to test a hypothesis formed through researching a particular problem. Although the results of an experiment should not come as a complete surprise, you must always be prepared for the unexpected. For this reason, safety is always a concern with any lab. To insure that you and your classmates will not be injured in science class, be very familiar with the proper science lab safety procedures.



The Laboratory equipment used in this class is not complex, but each piece of lab-ware has a specific purpose. and should be used properly. This not only protects the equipment , it also Improves safety in the lab.

Most of the chemicals used in the Physical Science Class will be diluted to the point that they are not immediately dangerous. However, care should be taken not to get chemicals on your skin and clothing. Every chemical has its own special properties that require certain precautions.

The Scientific Method

🍏 Science is a search for truth.

The scientific method is an organized way to figure something out. Any question or problem can be solved using the scientific method !

The Scientific Method of problem solving

The Basic Steps

1. State the problem - a problem can't be solved if it isn't understood.
2. Form a hypothesis - a possible solution, formed after gathering information about the problem.
3. Test the hypothesis - an experiment is an organized set of procedures performed to determine if the hypothesis solves the problem or not.
4. Draw conclusions - In it's simplest form, the conclusion will be "yes" the hypothesis was correct, or "no" the hypothesis was not correct.

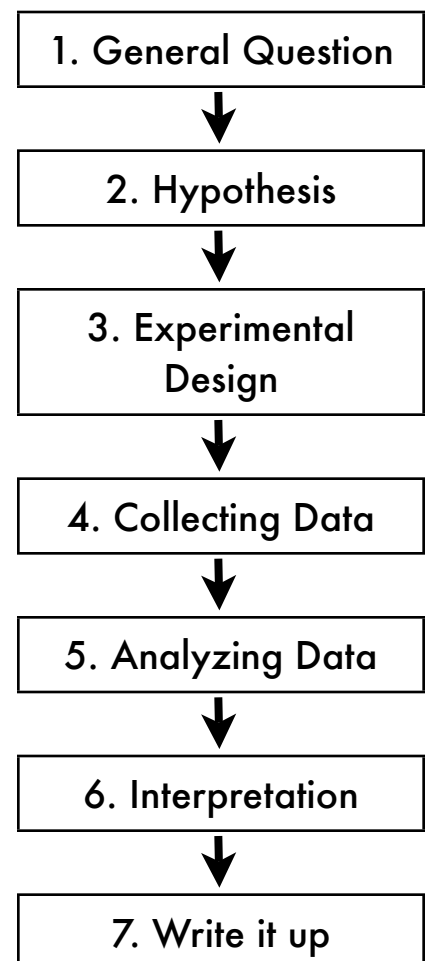


Scientific theory - a generally accepted explanation of a concept or a broad explanation of a natural phenomena.

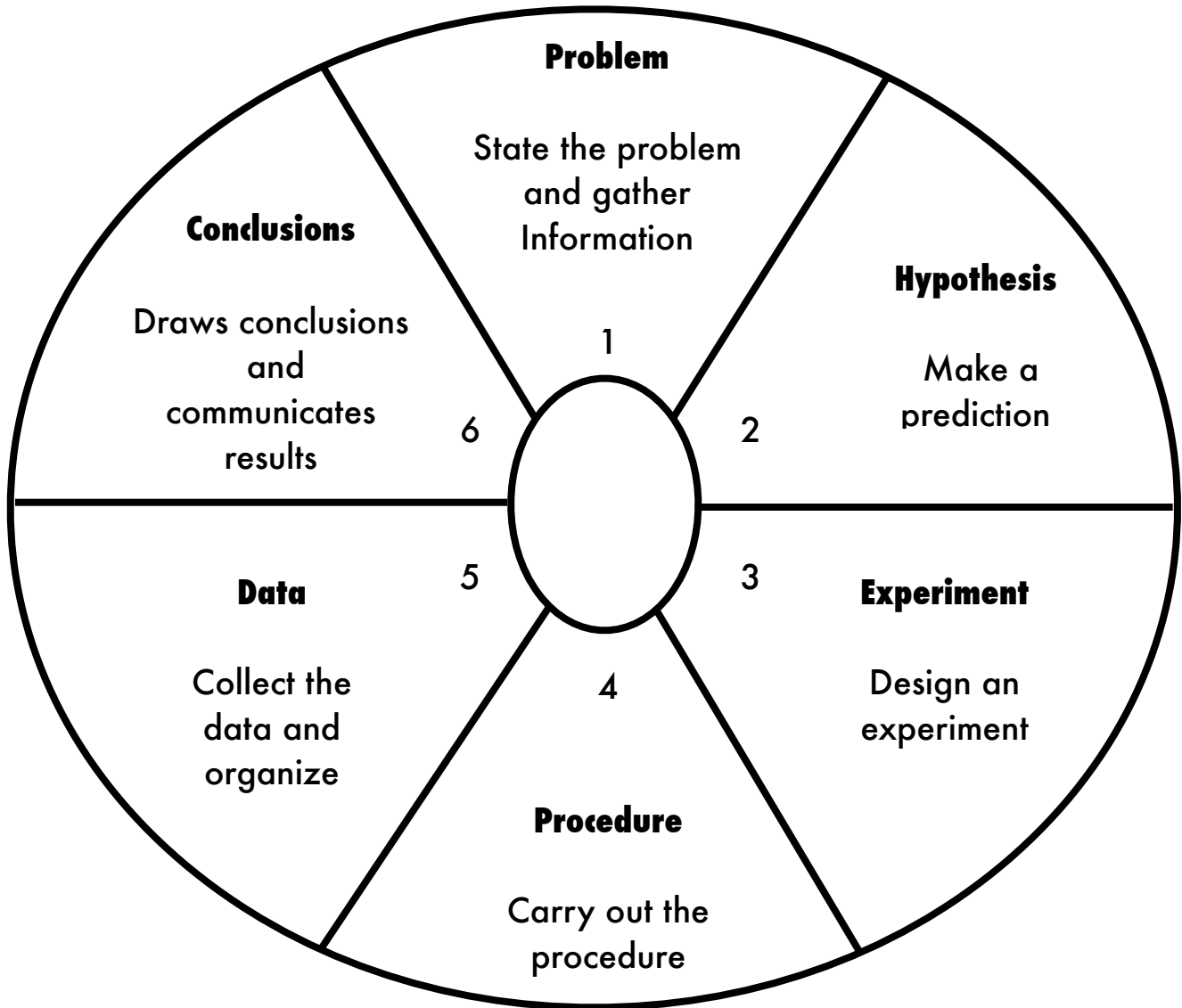
Scientific law or principle - a description of a natural phenomena that does not vary.

Experimental design:

The foundation of any scientific investigation is its experimental design, a logical outline that guides the gathering and evaluation of information.



SCIENTIFIC PROBLEM SOLVING MODEL



The following refer to the numbered steps in the diagram above

1-formulates questions, refines, refocuses and clarifies them

2 -formulates a testable hypothesis

3-understands that if more than one variable changes at the same time in an experiment, the outcome of the experiment may not be clearly attributable to anyone of the variables

4 -properly and safely handles materials and equipment used in an investigation

-makes systematic observations which are free from speculation

-selects and uses appropriate tools (including computers) and techniques to gather, analyze and interpret scientific data

5-designs, organizes and interprets information in tables and graphs

- describes qualitative and quantitative relationships using data observations and graphs

6-logically synthesizes evidence to draw conclusions and formulates new questions

-presents results of Investigation for critical response

-appreciates that there may be more than one good way to interpret a given set of findings and it is not always possible to tell which one is correct