

Scientific Method Explained

What is Science?

The Goal of Science

- 1) deals only with the natural world
- 2) to collect and organize information
- 3) propose explanations that can be tested

Science – using evidence to learn about the natural world; a body of knowledge

Science begins with **observations** – often taking data on what you see, hear or smell

data – the information gathered from observations

quantitative data = numbers

qualitative data = descriptive



Inference – a logical interpretation based on prior knowledge or experience (Ex. You see a window broken and a baseball on the floor next to the shattered glass. You can -infer- that a baseball broke your window)

Hypothesis – a proposed scientific explanation. This statement is testable and can be confirmed with experimentation or further observation.

Prediction – An if-then statement that shows what you expect to see as a result of an experiment or observation (Ex. If fertilizer makes a plant grow faster, then seedlings planted with fertilizer will be taller than the ones planted without fertilizer)

Steps of the Scientific Method

- 1) Ask questions, make observations
- 2) Gather information
- 3) Form a hypothesis
- 4) Set up a controlled experiment

Manipulated variable – the variable that is deliberately changed (independent variable)

Responding variable is variable that is observed (aka dependent variable)

- 5) Record and analyze results
- 6) Draw a conclusion
- 7) Repeat