



Scientific method

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Introduction

- The process by which scientists, collectively and over time, endeavor to construct an accurate (i.e. reliable, consistent and non-arbitrary) representation of the world
- Key Attributes
 - Objective
 - Remove personal and cultural biases by focusing on objective testing procedures
 - Consistent
 - Hypotheses are usually consistent with broader, currently known scientific laws
 - In cases where the hypothesis is that one of the broader laws is incorrect or incomplete, the hypothesis should be composed to challenge only one such law at a time
 - Observable
 - The hypothesis presented should allow for experiments with observable and measurable results

Introduction

■ Key Attributes (Cont.)

□ Pertinent

- All steps of the process should be focused on describing and explaining observed phenomena

□ Parsimonious

- Only a limited number of assumptions and hypothetical entities should be proposed in a given theory, as stated in Occam's Razor ("Entities should not be multiplied beyond necessity")
- The most simple explanation that fits the available data is the one which is preferable

□ Falsifiable

- The hypothesis can be proven incorrect by observable data within the experiment

□ Reproducible

- The experiment should be able to be reproduced by other observers with trials that extend indefinitely into the future