

Scientific Language—Opinions, Hypotheses, and Theories

Identify different types of statements as opinions, hypotheses, or theories

Materials

- Table 1.1 and 1.2

Procedure

1. Read each statement. Classify each statement with one of the following codes and write the code in the space to the left of each statement:
 - O = opinion
 - H = hypothesis
 - T = theory
2. In the space after each statement, explain why you chose the classification.
3. Rewrite the statements you labeled with an O for opinion as testable hypotheses. You may revise your classification of the above statements if you need to.
4. For each statement labeled H for hypothesis, list the controls and variables that would need to be tested to prove or disprove the hypothesis. You may revise your classification of the above statements if you need to.
5. What types of evidence might support each statement you labeled as T for theory? You may revise your classification of the above statements if you need to.

Table 1.1. Summary of scientific language and questions to ask when classifying scientific language.

	Definition	Questions to Ask
Opinion	Personal belief that is not objective, tested, or testable as stated.	Is this a personal belief? If yes → OPINION
Hypothesis	A statement that is testable, offers a possible explanation, and is based on observations about the natural world.	Is this scientifically testable? If yes → HYPOTHESIS
Theory	A suggested explanation for a phenomenon in the natural world that is well supported by facts, tested hypotheses, and scientific laws.	Is this supported by scientific evidence? AND Does it offer an explanation of natural phenomena? If yes → THEORY

Activity Questions:

1. What are the differences between an opinion and a hypothesis?

2. Why do you think a theory is never described as absolutely right or true?

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Table 1.2. Classification of opinion, hypothesis, and theory statements.

O/H/T	Statement	Rewrites (O)/Variables (H)/Evidence (T)
	It is better to drink chocolate milk than a sports drink after a workout. Explanation:	
	If the water in a tidepool is too warm, urchins will move until they are in cooler water. Explanation:	
	The earth's crust is not fixed, but is composed of a set of plates that move slowly due to the fluid motion of the mantle beneath, in a process known as plate tectonics. Explanation:	
	There is no life on other planets. Explanation:	
	If a balloon were pulled to the bottom of the ocean, it would decrease in volume, because the pressure at the bottom of the ocean is higher than at the surface. Explanation:	
	All matter is composed of atoms, which can neither be created nor destroyed, only rearranged. Atoms are arranged in molecules in whole number ratios, with set proportions. The composition of atoms and molecules explains how all matter behaves. Explanation:	
	Crayfish that are fed live food grow bigger than those that are fed dry pellets. Explanation:	