

Building Scientific Knowledge

Observation - _____

Inference - _____

Empirical Knowledge - _____

Theoretical Knowledge - _____

Theory - _____

Law - _____

Models - _____

Try This Activity: The Burning Candle p. 11

Statement	Observation(O)/ Inference(I)	Statement	Observation(O)/ Inference(I)

Complete the following:

Example. A nurse examining a patient with a high fever

Observation: _____

Inference: _____

Example 2. A firefighter sifting through the debris of a recently extinguished fireObservation: _____

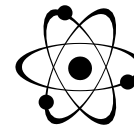
Inference: _____

Example 3. A chef tasting a new recipe of soup

Observation: _____

Inference: _____

Worksheet: Building Scientific Knowledge



Name: _____

1. Classify each of the following statements as primarily empirical knowledge (E) or primarily theoretical knowledge (T).
 - a. A yellow solid forms when two solutions are mixed. _____
 - b. When 3 g of calcium chloride is added to water, the temperature of the water increases by 5°C . _____
 - c. For a chemical reaction to take place, molecules must bump into each other under optimum conditions. Chemical reactions occur faster at higher temperatures because molecules possess more kinetic energy and move faster. Since they move faster, they are more likely to bump into each other, which may result in a reaction. _____
 - d. In winter, as the temperature decreases, the molecules in the air in a tire move more slowly. Therefore, they do not bump into the sides of the wall of the tire as often, and so tire pressure is lower in the winter compared to summer. _____
 - e. Atoms rearrange themselves during a chemical reaction in order to form new products. _____
 - f. Ice melts at 0°C . _____

2. Write a statement of observation and a statement of inference for each of the following situations:

- a. A forensic investigator probes the possibility of arson at a burned building.

Observation:

Inference:

- b. A cashier is short of funds at the end of a shift.

Observation:

Inference:

- c. A student receives a high grade on the last unit test.

Observation:

Inference:

