

SECTION 1.3 THINKING LIKE A SCIENTIST

- One cold morning your car does not start. Make two hypotheses about why the car will not start.
- Suppose you try several experiments with your car. You try a battery jump, which does not work. There seems to be enough gas in the car. You wiggle a wire in the engine, and the car starts on the next try. Explain how these tests help you decide what was wrong with the car.
- The following is a list of observations from everyday experiences:
 - Hummingbirds have long beaks.
 - Moisture forms on the outside of a cold glass.
 - Ice cubes float.
 - Oil and water don't mix.
 - There are fewer fish in a particular creek this year.
 - Propose one hypothesis for each observation.
 - Select one of the hypotheses and describe an experiment that you could do to test it.
- Discuss the statement "No theory is written in stone."

SECTION 1.4 PROBLEM SOLVING IN CHEMISTRY

- Apples are selling for \$1.50 a pound. Each apple weighs, on average, 0.50 pounds. You have \$6.00. How many apples can you purchase?
 - ANALYZE** (List the knowns and unknown.)

| | |
|----------------------|--------------------------------|
| Knowns: | Unknown: |
| cost of apples = | number of apples purchased = ? |
| weight of an apple = | |
| dollars available = | |
 - CALCULATE** (Solve for the unknown.)

Use an expression that converts cost per pound to cost per apple.

$$\text{cost per apple} = 0.50 \text{ pound} \times \frac{\$1.50}{1 \text{ pound}}$$

cost per apple =

Use an expression that relates cost per apple to dollars available.

$$\text{number of apples purchased} = \frac{\$6.00}{\$0.75}$$

number of apples purchased =
- Describe an alternate way to solve Problem 1.