Percentage of Water in Popcorn

OBJECTIVES

- ***Measure*** **the masses of various combinations of a beaker, oil, and popcorn kernels.**
- ***Determine*** **the percentages of water in popcorn kernels.**
- ***Compare*** **experimental data.**

MATERIALS

- **aluminum foil (1 sheet)**
- **beaker, 250 mL**
- **Bunsen burner with gas tubing and striker**
- **kernels of popcorn for each of three brands (80)**
- **oil to coat the bottom of the beaker**
- **ring stand, iron ring, and wire gauze**

BACKGROUND

Popcorn pops because of the natural moisture inside each kernel. When the internal water is heated above 100°C, the liquid water changes to a gas, which takes up much more space than the liquid, so the kernel expands rapidly.

The percentage of water in popcorn can be determined by the following equation.

$$\frac{\text{initial mass} - \text{final mass}}{\text{initial mass}} \times 100 = \text{percentage of } H_2O \text{ in unpopped popcorn}$$

The popping process works best when the kernels are first coated with a small amount of vegetable oil. Make sure you account for the presence of this oil when measuring masses. In this lab, you will design a procedure for determining the percentage of water in three samples of popcorn. The popcorn is for testing only, and *must not* be eaten.

SAFETY

For review of safety, please see **Safety in the Chemistry Laboratory** in the front of your book.

PREPARATION

1. In your notebook, prepare a data table like the one your teacher has made on the board. The table should have three columns, one for each brand of popcorn.