Example 2: The physician's order is for 400 mg. The label reads "200 mg/mL."

Step 1: Set up the D/H × Q formula with known values.

$$\frac{400 \text{ mg}}{200 \text{ mg}} \times 1 \text{ mL}$$

Step 2: Solve the formula.

$$\frac{400 \text{ mg}}{200 \text{ mg}} \times 1 \text{ mL}$$
$$2 \times 1 \text{ mL} = 2 \text{ mL}$$

Often, ordered units do not match the units on the drug's label. Here is how to proceed in such a case:

Example 1: The medication order is for 0.25 gram, but the label has "250 mg/mL."

Step 1: Convert grams to milligrams.

$$0.25 \text{ g} \times 1{,}000 \text{ mg (the number of milligrams in 1 g)} = 250 \text{ mg}$$

Step 2: Set up the D/H × Q formula.

$$\frac{250 \text{ mg (order)}}{250 \text{ mg (label)}} \times 1 \text{ mL}$$

Step 3: Solve the formula.

$$1 \times 1 \text{ mL} = 1 \text{ mL}$$

Example 2: The medication order is for gr X (10 grains), but the label states "300 mg per tablet" (Check Up 8.2).

Step 1: Convert grains to milligrams.

$$1 \text{ grain} = 60 \text{ mg; therefore, 10 grains would be } 10 \times 60 \text{ mg} = 600 \text{ mg}$$

Step 2: Set up the D/H × Q formula.

$$\frac{600 \text{ mg}}{300 \text{ mg}} \times 1 \text{ tablet}$$

Step 3: Solve the formula.

$$2 \times 1 \text{ tablet} = 2 \text{ tablets}$$

Dimensional Analysis

Dimensional analysis uses the ordered amount of a drug to multiply with two equal quantities in different dimensions (units of measurement) to derive the answer. The physician or practitioner always includes both a quantity and a dimension in each medication order. If you focus on the dimension rather than the numbers, you can create a template to use for every problem.

Dimensions (or units) vary depending on the circumstance. They may be tablets, capsules, bottles, milliliters (mL), ounces (oz), tablespoons (T), milligrams (mg), grams, grains, or something else. Calculating the dimension analysis can be done in four steps:

Step 1: Write the *units* of the dose ordered. For example, if the ordered dose is milligrams, write "mg" in the first position of the equation. If the order is in grams, write "grams." An order for 500 mg would be "mg."

Step 2: Write the *units* that are on the label and the *unit* that you plan to give to the patient. For instance, if a label shows that a drug is available in *milligrams*, and you want to give the drug in *milliliters,* you would place the unit of the ordered dose on the bottom of the **conversion factor** (formula to change from one unit of measurement to another). In this way, if you found that this unit of the ordered dose was mg, putting it on the bottom of