Exercise 59

The label on a soft drink bottle gives the volume in two units: 2.0 L and 67.6 fl oz. Use this information to derive a conversion factor between the English and metric units. How many significant figures can you justify in your conversion factor?

Solution

In order to find the number of fluid ounces in one liter, divide 67.6 fl oz by 2.0 L.

$$\frac{67.6 \text{ fl oz}}{2.0 \text{ L}} \approx 34 \text{ fluid ounces per liter}$$

Since there are only two significant figures in the 2.0 L measurement, the final answer is rounded to two significant figures. Alternatively, to find the number of liters in one fluid ounce, divide 2.0 L by 67.6 fl oz.

$$\frac{2.0 \text{ L}}{67.6 \text{ fl oz}} \approx 0.030 \text{ liters per fluid ounce}$$