Problem 49

A fluid ounce is about 30 mL. What is the volume of a 12 fl-oz can of soda pop in cubic meters?

Solution

Starting with the given volume of 12 fl-oz, multiply by the appropriate conversion factors so that cubic meters remains in the numerator. Note that 1 mL is the same volume as 1 cm^3.

$$12\ \cancel{\text{fl-oz}}\ \times \frac{30\ \cancel{\text{mL}}}{1\ \cancel{\text{fl-oz}}} \times \frac{1\ \cancel{\text{cm}^3}}{1\ \cancel{\text{mL}}} \times \left(\frac{1\ \text{m}}{100\ \cancel{\text{cm}}}\right)^3 = \frac{12 \times 30}{100^3}\ \text{m}^3 = 3.6 \times 10^{-4}\ \text{m}^3$$