

Dimensional Analysis.

Convert 3.50 gal to fl. oz. (1 gal = 4 qt = 16 fl oz)
 Strategy gal \rightarrow fl oz.

$$3.50 \text{ gal} \times \frac{16 \text{ fl oz}}{1 \text{ gal}} = 56 \text{ fl oz}$$

$$= \boxed{56.0 \text{ fl oz}}$$

* Find the volume of a cube that is 7.36 in \times 4.13 in \times 4.41 in in dimensions. Find the volume in cubic cm (cc or cm^3)

Two ways:

① Convert all values to cm first. or

② Do ~~att~~ vol. calc. and then conv. once.

① Convert all values to cm:

$$\left[4.13 \text{ in} \times \left(\frac{2.54 \text{ cm}}{1 \text{ in}} \right) \times 4.41 \text{ in} \times \left(\frac{2.54 \text{ cm}}{1 \text{ in}} \right) \times 7.36 \text{ in} \times \left(\frac{2.54 \text{ cm}}{1 \text{ in}} \right) \right]$$

$$= 2.20 \times 10^3 \text{ cm}^3$$

② Do vol. calc first.

$$(4.13 \times 4.41 \times 7.36) \text{ in}^3 \times \frac{(2.54)^3 \text{ cm}^3}{(1)^3 \text{ in}^3} = \boxed{2.20 \times 10^3 \text{ cm}^3}$$

* One cubic foot of water weighs 62.4 lb. What is the mass in grams of the 1.00 L of water?

Strategy: L \rightarrow mL \rightarrow cm^3 \rightarrow in^3 \rightarrow ft^3 \rightarrow lb \rightarrow g

$$1.00 \text{ L} \times \frac{10^3 \text{ mL}}{1 \text{ L}} \times \frac{1 \text{ cm}^3}{1 \text{ mL}} \times \frac{(1)^3 \text{ in}^3}{(2.54)^3 \text{ cm}^3} \times \frac{(1)^3 \text{ ft}^3}{(12)^3 \text{ in}^3} \times \frac{62.4 \text{ lb}}{1 \text{ ft}^3}$$

$$\times \frac{453.59 \text{ g}}{1 \text{ lb}} = \boxed{99.9 \text{ g}}$$

↑
given