

CONCEPT: UNIT CONVERSIONS

- You'll often see non-**S.I.** units in problems, so you MUST _____ them to **S.I.** units before using equations!

EXAMPLE: Convert 22 **lbs** into **kg**.

$$\begin{array}{c} \text{---} [\quad] \times \left(\text{---} \right) \times \left(\text{---} \right) = \text{---} [\quad] \\ \text{---} \quad \quad \quad \text{---} \quad \quad \quad \text{---} \\ \text{---} \quad \quad \quad \text{---} \quad \quad \quad \text{---} \end{array}$$

Quantity	Conversion Factors / Ratios		
MASS	1 kg = 2.2 lbs	1 lb = 450 g	1 oz = 28.4 g
LENGTH	1 km = 0.621 mi	1 ft = 0.305 m	1 in = 2.54 cm
VOLUME	1 gal = 3.79 L	1 mL = 1 cm ³	1 L = 1.06 qt

STEPS FOR CONVERTING UNITS

- 1) Write **Given, Target** units
- 2) Write **Conversion Factors / Ratios** as _____
- Write fractions to cancel out _____ units with _____ units
- 3) Multiply all **#s** on top, all **#s** on bottom, and solve

EXAMPLE: Convert the following measurements to the desired units.

a) 67.5 **mi/hr** to **m/s**

$$\text{---} [\quad] \times \left(\text{---} \right) \times \left(\text{---} \right) \times \left(\text{---} \right) = \text{---} [\quad]$$

b) 100 **ft²** to **m²**

$$\text{---} [\quad] \times \left(\text{---} \right) \times \left(\text{---} \right) = \text{---} [\quad]$$

- When converting units with exponents, multiply conversion factors as many times as the # in the exponent.

PRACTICE: Convert 850 ft to km.

- A) 259 km
- B) 0.259 km
- C) 2.79×10^6 km
- D) 2.79 km

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PRACTICE: The speed of light is approximately 3.00×10^8 m/s. Convert this speed to yards/week (yd/wk).

- A) 1.84×10^{13} yd/wk
- B) 1.98×10^{14} yd/wk
- C) 1.78×10^{15} yd/wk
- D) 1.8×10^7 yd/wk

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PRACTICE: How many gallons are in 1 cubic meter (m^3)?

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