## 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.**

_____ [ ] × ( _____ ) × ( _____ ) = _____ [ ]

( _____ ) ( _____ ) ( _____ )

| 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**

_____ [ ] × ( _____ ) × ( _____ ) × ( _____ ) = _____ [ ]

**b)** 100 **$ft^2$** to **$m^2$**

_____ [ ] × ( _____ ) × ( _____ ) = _____ [ ]

- 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)** $2.79 \times 10^6$ km
**D)** 2.79 km

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

**A)** $1.84 \times 10^{13}$ yd/wk
**B)** $1.98 \times 10^{14}$ yd/wk
**C)** $1.78 \times 10^{15}$ yd/wk
**D)** $1.8 \times 10^7$ yd/wk

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

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