Unit Conversion

(has nothing to do with Python)

Unit Conversion

Common Units

- Length (meters, cm, km, mm, inch, feet, yard, mile)

- Mass (kilograms, grams, pounds, ounces)

- Time (second, minute, hour, day, week, year)

- Temperature (Fahrenheit, Celsius, Kelvin, Rankine)

- Force/Weight (Newtons, pounds, kilograms)

Unit Conversion

- Find the conversion factor from one unit to another

- Write a simple equation that equates one of one unit to the other

- Convert this equation into a fraction

- If necessary, invert the fraction so the unit you are converting *from* is on the bottom

- Multiply the fraction by the units you have

$$Y\ unit_2 = \underline{\ ?\ }\ unit_1$$

$$1\ unit_1 = X\ unit_2$$

$$1 = \frac{1\ unit_1}{X\ unit_2}$$

$$Y\ unit_2\ *\frac{unit_1}{X\ unit_2} = \frac{Y}{X}\ unit_1$$

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3 meters = _?_ feet

1 meter = 3.28084 feet

$$1 = \frac{1 \text{ meter}}{3.28084 \text{ feet}} = \frac{3.28084 \text{ feet}}{1 \text{ meter}}$$

$$3 \text{ meters } * \frac{3.28084 \text{ feet}}{1 \text{ meter}} = 9.84 \text{ feet}$$

Unit Conversion

- Compound units are expressed as a $unit_1$ per $unit_2$

- Invert and multiply conversion fractions on a per-unit basis to cancel out the *from* units

3 miles/hour = _?_ m/s

1 mile = 1609.34 meters

1 hour = 3600 seconds

$$\frac{1609.34 \text{ meters}}{1 \text{ mile}} \qquad \frac{1 \text{ hour}}{3600 \text{ seconds}}$$

$$60 \text{ mph} * \frac{1609.34 \text{ meters} * 1 \text{ hour}}{1 \text{ mile} * 3600 \text{ seconds}} = 26.8 \text{ m/s}$$