I. Using Single Conversion factor:

Example: A patient has 142 pounds weight. How many Kg is this?

Given: pounds
Wants: Kg

1) Conversion Factor 1 lb = 0.454 Kg

2) Use the Conversion Factor Ratio (C.F.R.):

$$\frac{1\ Ib}{0.454\ Kg} \quad \text{Or} \quad \frac{0.454\ Kg}{1\ Ib}$$

3) Make the equation:

$$Given\ data \times (C.F.R) = Wants$$

4) Results:

$$142\ Ib \times \frac{0.454\ Kg}{1\ Ib} = 64.5\ Kg$$

II. Using Multiple Conversion factors:

Example: A nurse needs to give 25 mg of medicine to her patient. The pharmacist has provided a liquid solution of medicine contains 1.6 drams per liter. How many mL of liquid should the nurse administer?

Given: 25 mg, 1.6 drams/L medicine

(Drams: A unit of apothecary weight)

Wants: mL of medicine

1) Conversion Factors:

1 grams = 1000 mg
1 drams = 3.89 grams
1 L = 1000 mL

2) Use the Conversion Factor Ratio (C.F.R.):

$$\frac{1\,g}{1000\,mg}\;,\;\frac{1000\,mg}{1\,g}\;,\;\frac{1\,dr}{3.89\,g}\;,\;\frac{3.89\,g}{1\,dr}\;,\;\frac{1\,L}{1000\,mL}\;,\;\frac{1000\,mL}{1\,L}$$

3) Make the equation:

$$25\,mg\times\frac{1\,g}{1000\,mg}\times\frac{1\,dr}{3.89\,g}\times\frac{1\,L}{1.6\,dr}\times\frac{1000\,mL}{1\,L}=4.0\,mL$$

4)

$$25\,mg\times\frac{1\,g}{1000\,mg}\times\frac{1\,dr}{3.89\,g}\times\frac{1\,L}{1.6\,dr}\times\frac{1000\,mL}{1\,L}=4.0\,mL$$

Example: A 216 lb., patient needs 40μg/Kg medicine. The medicine is available in solution in concentration 0f 0.25 mg/mL. What volume of drug (in mL) is needed in the initial dose?

Given: 25 mg, 1.6 drams/L medicine
(Drams: A unit of apothecary weight)
Wants: mL of medicine

1) Conversion Factors:

1 lb. = 0.454 Kg
1 g = 10^6 μg
1 mg = 1000 μg
1 Kg = 1000 grams
1 L = 1000 mL

2) Use the Conversion Factor Ratio (C.F.R.):

$$\frac{0.454\,Kg}{1\,lb}\;,\;\frac{1\,mg}{1000\,\mu g}\;,\;\frac{1000\,mL}{1\,L}$$

3) Make the equation:

$$216\ Ib \times \frac{0.454\ Kg}{1\ Ib} \times \frac{40\ \mu g}{1\ Kg} \times \frac{1\ mg}{1000\ \mu g} \times \frac{1\ mL}{0.25\ mg} = 15.7\ mL$$

Example:

Area & Volume Calculation:

Convert 23.5 in^2 to metric units (cm^2).

1 inch = 2.54 centimeters

1 in^2 = (1 in X 1 in) = (2.54 cm x 2.54 cm) = 6.45 cm^2

$$23.5\ in^2 \times \frac{6.45\ cm^2}{1\ in^2} = 152.0\ cm^2$$

Note:

$$Volume = L \times W \times H$$

Temperature Units:

	Fahrenheit (°F),	Centigrade (°C)
Water freezes at (sea level):	**32** °F	**0** °C
Water boils at (sea Level)	**212** °F	**100** °C

$$\frac{F - 32}{180} = \frac{C}{100}$$

Or:

$$F = 1.8\,C + 32$$

And:

Kelvin = °C + 273.15