

Practice Problems:

I. 643 cm = ? ft (one inch = 2.54 cm)

$$\frac{643 \text{ cm}}{2.54 \text{ cm}} \times \frac{1 \text{ inch}}{12 \text{ inch}} \times \frac{1 \text{ ft}}{12 \text{ inch}} = 21.1 \text{ ft}$$

II. 5.00×10^7 mg = ? pounds (one pound = 454 grams)

$$\frac{5.00 \times 10^7 \text{ mg}}{10^3 \text{ mg}} \times \frac{1 \text{ g}}{454 \text{ g}} \times \frac{1 \text{ lbs}}{454 \text{ g}} = 110. \text{ lbs}$$

III. 25.3 micrograms / min = ? pounds / week

$$\frac{25.3 \mu\text{g}}{\text{min}} \times \frac{1 \text{ g}}{10^6 \mu\text{g}} \times \frac{1 \text{ lbs}}{454 \text{ g}} \times \frac{60 \text{ min}}{1 \text{ hour}} \times \frac{24 \text{ hour}}{1 \text{ day}} \times \frac{7 \text{ day}}{1 \text{ week}} = 5.62 \times 10^{-4} \frac{\text{lbs}}{\text{week}}$$

IV. 100. pounds / inch² = ? kilograms / cm²

$$\frac{100 \text{ lbs}}{\text{in}^2} \times \frac{454 \text{ g}}{1 \text{ lbs}} \times \frac{1 \text{ kg}}{10^3 \text{ g}} \times \frac{1 \text{ in}^2}{(2.54 \text{ cm})^2} = 7.04 \frac{\text{kg}}{\text{cm}^2}$$

Solve the following using the Factor-Label Method. Show complete setup and ALL units !!!

1) 500. cm = ? m

2) 1.00×10^4 mL = ? dL

$$\frac{1.00 \times 10^4 \text{ mL}}{10^2 \text{ mL}} \times \frac{1 \text{ dL}}{10^2 \text{ mL}} = 1.00 \times 10^2 \text{ dL} \text{ or } 100. \text{ dL}$$

3) 7.20 ft = ? cm

4) 2.00 lbs = ? kg

$$\frac{2.00 \text{ lbs}}{1 \text{ lbs}} \times \frac{454 \text{ g}}{1 \text{ lbs}} \times \frac{1 \text{ kg}}{10^3 \text{ g}} = 0.908 \text{ kg}$$



5) $6.00 \text{ kg} = ? \text{ cg}$

6) $0.010 \text{ Mm} = ? \text{ cm}$

$$\frac{0.010 \text{ Mm}}{1 \text{ Mm}} \times \frac{10^8 \text{ cm}}{1 \text{ Mm}} = 1.00 \times 10^6 \text{ cm}$$

7) $1.00 \text{ mile} = ? \text{ m}$ (one mile = 5280 ft.)

8) $500. \text{ dL} = ? \text{ gallons}$ (one gallon = 3.785 L)

$$\frac{500. \text{ dL}}{10^1 \text{ dL}} \times \frac{1 \text{ L}}{3.785 \text{ L}} \times \frac{1 \text{ gallon}}{3.785 \text{ L}} = 13.2 \text{ gallon}$$

9) $10.0 \text{ gallons} / \text{min} = ? \text{ mL} / \text{sec}$

10) $5.00 \text{ lbs} / \text{inch}^2 = ? \text{ mg} / \text{mm}^2$

$$\frac{5.00 \text{ lbs}}{\text{in}^2} \times \frac{454 \text{ g}}{1 \text{ lbs}} \times \frac{10^3 \text{ mg}}{1 \text{ g}} \times \frac{1 \text{ in}^2}{(2.54 \text{ cm})^2} \times \frac{1 \text{ cm}^2}{(10^1 \text{ mm})^2} = 3.52 \times 10^3 \frac{\text{mg}}{\text{mm}^2}$$



11) $20.0 \text{ kg} / \text{m}^3 = ? \text{ pounds} / \text{yards}^3$