

Show All Work To Receive Credit! Conversion factors and prefixes are given below:

$G = 10^9$, $M = 10^6$, $k = 10^3$, $c = 10^{-2}$, $m = 10^{-3}$, $\mu = 10^{-6}$, $n = 10^{-9}$, $2.54 \text{ cm} = 1 \text{ in}$,
 $12 \text{ in} = 1 \text{ ft}$, $5280 \text{ ft} = 1 \text{ mile}$, $3 \text{ feet} = 1 \text{ yd}$, $60 \text{ sec} = 1 \text{ min}$, $1 \text{ hr} = 60 \text{ min}$, $1000 \text{ mL} = 1 \text{ L}$

1. (6 Pts) How many milli-feet are there in 475 kilo-inches?

$$\frac{475 \text{ k in}}{1} \times \frac{10^3}{1} \times \frac{m}{10^{-3}} \times \frac{1 \text{ ft}}{12 \text{ in}} = 3.96 \times 10^7 \text{ mft}$$

2. (4 Pts) Convert each of the following to scientific notation (without the use of prefixes):

a. $75 \text{ centi giga dollars} = 75 \times 10^{-2} \times 10^9 = 75 \times 10^7 \text{ or } 7.5 \times 10^8 \text{ dollars}$

b. $3.0 \times 10^4 \text{ mL} = 3.0 \times 10^4 \times 10^{-3} = 3.0 \times 10^1 \text{ L}$

3. (5 Pts) A car engine size is listed as 4.0 L ~~cubic inches (in³)~~. What would its size be in cubic inches (in³)?

$$\frac{4.0 \text{ L}}{1} \times \frac{1000 \text{ cm}^3}{1} \times \frac{1^3 \text{ in}^3}{2.54^3 \text{ cm}^3} = 244 \text{ in}^3 = 240 \text{ in}^3$$

4. (5 Pts) The following measurements were taken for the perimeter of a rectangle. Calculate the perimeter of the rectangle and express the answer with the proper number significant figures.
Measurements: 167.37 cm, 168.11 cm, 35.2 cm, 34.976 cm.

$$\begin{array}{r} 167.37 \text{ cm} \\ 168.11 \text{ " } \\ 35.2 \text{ " } \\ + 34.976 \text{ " } \\ \hline 405.656 \text{ cm} = 405.7 \text{ cm} \end{array}$$

5. (5 Pts) The density of gold is 19.3 g/cm³. What would be the volume of 937.2 kg of Au? Be sure to watch the significant figures.

$$\frac{937.2 \text{ kg}}{1} \times \frac{10^3}{1} \times \frac{\text{cm}^3}{19.3 \text{ g}} = 48559.58 = 48600 \text{ cm}^3$$

Show All Work To Receive Credit! Conversion factors and prefixes are given below:

G = 10⁹, M = 10⁶, k = 10³, c = 10⁻², m = 10⁻³, μ = 10⁻⁶, n = 10⁻⁹, 2.54 cm = 1 in,
 12 in = 1 ft, 5280 ft = 1 mile, 3 feet = 1 yd, 60 sec = 1 min, 1 hr = 60 min, 1000 mL = 1 L

1. (5 Pts) The density of lead is 11.3 g/cm³. What would be the volume of 937.2 kg of Pb? Be sure to watch the significant figures.

$$\frac{937.2 \text{ Kg} \left| \frac{10^3}{\text{K}} \right| \text{cm}^3}{11.3 \text{ g}} = 82938 \text{ cm}^3 = 82900 \text{ cm}^3$$

2. (4 Pts) Convert each of the following to scientific notation (without the use of prefixes):

a. 33.0 x 10⁻⁹ millimeters = $33.0 \times 10^{-9} \times 10^{-3} = 33.0 \times 10^{-12}$ or 3.30×10^{-11} meters

b. 889 kilo giga dollars = 889×10^{12} or 8.89×10^{14} dollars

3. (5 Pts) A car engine size is listed as 3.5 Liters. What would its size be in cubic inches (in³)?

$$\frac{3.5 \text{ L} \left| \frac{1000 \text{ cm}^3}{\text{L}} \right| \text{in}^3}{2.54^3 \text{ cm}^3} = 213 \text{ in}^3 = 210 \text{ in}^3$$

4. (6 Pts) How many micro-feet (μft) are there in 24 kilo-feet?

$$\frac{24 \text{ Kft} \left| \frac{10^3}{\text{K}} \right| \mu}{10^{-6}} = 2.4 \times 10^{10} \mu\text{ft}$$

5. (5 Pts) The following measurements were taken for the perimeter of a rectangle. Calculate the perimeter of the rectangle and express the answer with the proper number significant figures.
Measurements: 146.32 cm, 147.11 cm, 34.2 cm, 33.976 cm.

$$\begin{array}{r} 146.32 \text{ cm} \\ 147.11 \text{ " } \\ 34.2 \text{ " } \\ + 33.976 \text{ " } \\ \hline 361.606 \text{ cm} \end{array} = 361.6 \text{ cm}$$