CHM 151 Quiz 1a 25 Pts Fall 2007 Name: Key

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 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. (6 Pts) How many milli-feet are there in 249 kilo-feet?

$$\frac{249\ \cancel{k}ft \mid 10^3 \mid m}{\cancel{k} \mid 10^{-3}} = 2.49 \times 10^8\ m\,ft$$

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

a. 89 kilo centi giga dollars = 89×10^{10} or 8.9×10^{11} dollars

($10^3\ 10^{-2}\ 10^9$)

b. 3.0×10^{10} kilometers = 3.0×10^{13} meters

(10^3)

3. (5 Pts) A car engine size is listed as 240 cubic iches (in^3). What would its size be in Liters?

$$\frac{240\ \cancel{in^3} \mid 2.54^3\ \cancel{cm^3} \mid 1\ \cancel{mL} \mid 10^{-3}}{1^3\ \cancel{in^3} \mid 1\ \cancel{cm^3} \mid \cancel{mL}} = 3.93\ L$$

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: 157.32 cm, 158 cm, 25.2 cm, 24.976 cm.

$$\begin{array}{r} 157.32 \\ 158 \\ 25.2 \\ +\ 24.976 \\ \hline 365.496 \end{array}$$

365 cm

5. (5 Pts) The density of aluminum is 2.70 g/cm^3. What would be the volume of 937.2 kg of Al? Be sure to watch the significant figures.

$$\frac{937.2\ \cancel{kg} \mid 10^3 \mid cm^3}{\cancel{k} \mid 2.70\ \cancel{g}} = 347\,000\ cm^3$$

or

$3.47 \times 10^5\ cm$

CHM 151 Quiz 1b 25 Pts Fall 2007 Name: Key

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}, 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 aluminum is 2.70 g/cm^3. What would be the volume of 937.2 kg of Al? Be sure to watch the significant figures.

$$\frac{937.2\ \text{kg} \mid \text{cm}^3 \mid 10^3}{2.70\ \text{g} \mid \text{k}} = 347000\ \text{cm}^3$$

or $3.47 \times 10^5\ \text{cm}^3$

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

a. 33.0×10^{12} kilometers = 10^3 ↙ 33.0×10^{15} or 3.30×10^{16} meters

b. 889 kilo centi giga dollars = $10^3\ 10^{-2}\ 10^9$ 889×10^{10} or 8.89×10^{12} dollars

3. (5 Pts) A car engine size is listed as 340 cubic iches (in^3). What would its size be in Liters?

$$\frac{340\ \text{in}^3 \mid 2.54^3\ \text{cm}^3 \mid 1\ \text{L} \mid 10^{-3}}{1^3\ \text{in}^3 \mid 1\ \text{cm}^3 \mid \text{m}} = 5.57\ \text{L}$$

4. (6 Pts) How many milli-feet are there in 249 kilo-feet?

$$\frac{249\ \text{k ft} \mid 10^3 \mid \text{m}}{\text{k} \mid 10^{-3}} = 2.49 \times 10^8\ \text{m ft}$$

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: 156.32 cm, 157 cm, 24.2 cm, 23.976 cm.

156.32
157
24.2
+ 23.976
361.496 cm

361 cm