**CHM151 Quiz 1a 25 Pts Spring 2006 Name:** Key

**Show work to receive credit. Conversion factors:** centi (c) = $10^{-2}$, milli (m) = $10^{-3}$ , micro (μ) = $10^{-6}$, nano (n) = $10^{-9}$, pico (p) = $10^{-12}$, kilo (k) = $10^{3}$, 2.54 cm = 1 inch, 12 inches = 1 ft, 5280 ft = 1 mile, 60 s = 1 min, 60 min = 1 hr.

1. (5 Pts) How many inches are there in 14 miles?

$$\frac{14\ \text{mi} \mid 5280\ \text{ft} \mid 12\ \text{in}}{\mid 1\ \text{mi} \mid 1\ \text{ft}} = 887{,}040\ \text{in}$$

2. (5 Pts) The density of ethanol is 0.789 g/mL. What volume of ethanol is needed to provide 28.6 g of ethanol?

$$\frac{28.6\ \text{g} \mid \text{mL}}{\mid 0.789\ \text{g}} = 36.24\ \text{mL}$$

3. (5 Pts) How many micro inches are in 5 ft?

$$\frac{5\ \text{ft} \mid 12\ \text{in} \mid \mu}{\mid 1\ \text{ft} \mid 10^{-6}} = 60{,}000{,}000\ \mu\text{in}$$

$$6 \times 10^{7}\ \mu\text{in}$$

4. (5 Pts) A sample of gold ore is found to contain 0.14% gold by mass. How many kg of ore are needed to obtain 500 mg of gold?

$$\frac{500\ \text{mg Au} \mid 10^{-3} \mid 100\ \text{ore} \mid k}{\mid \text{m} \mid 0.14\ \text{Au} \mid 10^{3}} = 0.357\ \text{kg ore}$$

5. (5 Pts) How many $cm^2$ are there in one $ft^2$?

$$\frac{1\ \text{ft}^2 \mid 12^2\ \text{in}^2 \mid 2.54^2\ \text{cm}^2}{\mid 1^2\ \text{ft}^2 \mid 1^2\ \text{in}^2} = 929\ \text{cm}^2$$

**CHM151 Quiz 1b 25 Pts Spring 2006 Name:** Key

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1. (5 Pts) The density of ethanol is 0.789 g/mL. What volume of ethanol is needed to provide 48.6 g of ethanol?

$$\frac{48.6\ \cancel{g} \mid \text{mL}}{\mid 0.789\ \cancel{g}} = 61.59\ \text{mL}$$

2. (5 Pts) How many inches are there in 18 miles?

$$\frac{18\ \cancel{\text{mi}} \mid 5280\ \cancel{\text{ft}} \mid 12\ \text{in}}{\mid 1\ \cancel{\text{mi}} \mid 1\ \cancel{\text{ft}}} = 1{,}140{,}480\ \text{in}$$

3. (5 Pts) How many pico inches are in 6 ft?

$$\frac{6\ \cancel{\text{ft}} \mid 12\ \text{in} \mid \text{p}}{\mid 1\ \cancel{\text{ft}} \mid 10^{-12}} = 7.2 \times 10^{13}\ \text{pin}$$

4. (5 Pts) A sample of gold ore is found to contain 0.24% gold by mass. How many kg of ore are needed to obtain 600 mg of gold?

$$\frac{600\ \cancel{\text{mg Au}} \mid 10^{-3} \mid 100\ \text{ore} \mid \text{k}}{\mid \cancel{\text{m}} \mid 0.24\ \cancel{\text{Au}} \mid 10^{3}} = 0.25\ \cancel{\text{kg}}\ \text{ore}$$

5. (5 Pts) How many $cm^2$ are there in two $ft^2$?

$$\frac{2\ \cancel{\text{ft}^2} \mid 12^2\ \cancel{\text{in}^2} \mid 2.54^2\ \text{cm}^2}{\mid 1^2\ \cancel{\text{ft}^2} \mid 1^2\ \text{in}^2} = 1858$$