**Homework #8: Chemistry 1013 Spring 2013**

**Due Monday 15 April in class 16 pts**

Your name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**8.1. Scientific notation**

**Write the following decimal expressions in scientific notation**

1. **1,400,000 g = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **0.000433 s = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **6,050 m = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**8.2. Prefix equivalents**

**Write the equivalent prefix values for the above**

1. **1,400,000 g = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
2. **0.000433 s = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
3. **6,050 m = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**8.3. Molecular mass**

**Calculate the molecular weight (MW) in grams/mol for the compounds below to the nearest gram**

1. **Natural gas CH4 MW= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_grams/mol**
2. **Water H2O MW= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_grams/mol**
3. **Gasoline C8H18  MW = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ grams/mol**

**8.4. Gram-mole conversions (show work below or no credit) (round answers to nearest whole #)**

1. **How many moles of CH4 in 320 grams of natural gas ? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_moles**
2. **What does 1.111 moles of water weigh ? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ g**
3. **How many moles of gasoline in 2,280 grams of gasoline ?\_\_\_\_\_\_\_\_\_\_\_\_\_moles**

**8.5. Gram-Molecule count conversions (assume Avogdro’s Number =6.02\*1023) (2 pts each/4 pts)**

1. **How many grams of CH4 are in 2.408\*1024 molecules of CH4 ?**

**\_\_\_\_\_\_\_\_ g CH4**

1. **How many molecules of gasoline are in 189.36 g of gasoline ?**

**\_\_\_\_\_\_ molecules gasoline**