Worksheet #4 Names

1. How many molecules are contained in each of the following number of moles?

1. 2.5 mol penicillin molecules
2. 0.82 mol caffeine molecules
3. 55.3 mol of acetaminophen molecules

2. Using the balanced equation for the combustion of ethanol, answer the following questions:

$$C\_{2}H\_{6}O +3O\_{2} \rightarrow 2CO\_{2}+3H\_{2}O$$

1. How many grams of CO2 are formed from 0.50mol of ethanol?
2. How many moles of H2O are formed from 24 g of ethanol?
3. How many grams of O2 are needed to react with 0.25 mol of ethanol?

3. One term in a balanced chemical equation contained the coefficient 3 in front of the formula: Al2(SO4)3. How many atoms of each type of element does this represent?

4. Calculate the mass of the following samples:

1. 0.73 mol Al2O3­

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1. 1.6 mol CH5N
2. 8.49 x 1027 molecules of C2H4O

5. Write a balanced equation for each reaction:

1. CH4 + Cl2 $\rightarrow $ CH2Cl2 + HCl
2. Al + H2SO4 $\rightarrow $Al2(SO4)3 + H2

6. Use the balanced reaction to answer the following questions:

$$N\_{2}+ O\_{2} \rightarrow 2NO$$

1. How many grams of NO are formed from 10.0 g of N2?
2. How many grams of NO are formed from 10.0 g of O2?
3. How many grams of O2 are needed to react completely with 10.0 g of N2?

7. Calculate the number of moles contained in the following samples:

1. 500. g of C16H18N2O4S
2. 0.250 g of Mg(NO3)2

8. How many moles of water contain the following number of molecules?

1. 3.01 x 1022 molecules
2. 9.0 x 1024 molecules
3. 5.71 x 1025 molecules

9. Calculate the formula weight and molar mass of the following compounds:

1. FeSO4
2. C9H8O4
3. KMnO4

10. How many moles of carbon atoms are in the following samples:

1. 0.034 mol C8H10N4O2
2. 0.752 mol C6H6
3. 1.85 mol C16H12FN3O3