In-class exercise #5: Limiting Reagent Problems

**Example reaction**

2C4H10 + 13O2--------🡪 8CO2 + 10H2O

58 32 44 18 g/mol

m= w/MW **moles (m)** m=N/6.0\*1023

**w** = m\****MW*** N= m\**6.0\*1023*

**weights (w) molecule (atom) count (N)**

MW = mass of species/mol = **M**olecular **W**eight

**5. 1. ID the limiting reagent**

1. 1 mole of C4H10 and 6 moles of O2 are reacted. Which is the limiting reagent?

Limiting =C4H10 O2

1. 10 grams of C4H10 and 100 grams of O2 are reacted. Which is the limiting reagent ?

Limiting =C4H10 O2

1. 2\*1022 molecules of C4H10 and 50 grams of O2 are reacted. Which is the limiting reagent ?

Limiting =C4H10 O2

**5.2 Calculate the maximum yield problems**

*Mole-mol-mol*

1. 0.25 moles of C4H10 and 1.4 moles of O2 are reacted. What is the maximum yield of CO2 in moles?

*Weight-weight-mol*

1. 1 gram of C4H10 and 10 grams of O2 are reacted. What is the maximum yield in H2O in moles ?

*Weight-weight-molecules*

1. 5.8 grams of C4H10 and 160 grams of O2 are reacted. What is the maximum yield of CO2 in molecule count?

*Weight-molecules-weight*

1. 116 grams of C4H10 and 1.66\*1024 molecules of O2 are reacted. What is the maximum yield of H2O in grams?