

PROBLEM SET: Limiting Reactants

1) Use the following chemical equation: $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$

- A) Balance the equation.
- B) Identify the limiting reactant when 1.22 g of O_2 reacts with 1.05 g of H_2 to produce water.
- C) What mass of water will be formed in the reaction?
- D) What mass of the excess reagent will be left over / unused?

2) Use the following chemical equation: $\text{Fe} + \text{S} \rightarrow \text{FeS}$

- A) Balance the equation.
- B) Identify the limiting reactant when 4.68 g of Fe reacts with 2.88 g of S to produce FeS.
- C) What mass of iron (II) sulfide, FeS, will be formed in the reaction?
- D) What mass of the excess reagent will be left over / unused?

3) Use the following chemical equation: $\text{Mg}(\text{OH})_2 + \text{HCl} \rightarrow \text{MgCl}_2 + \text{H}_2\text{O}$

- A) Balance the equation.
- B) Identify the limiting reactant when 5.87 g of $\text{Mg}(\text{OH})_2$ reacts with 12.84 g of HCl to form MgCl_2 .
- C) What mass of magnesium chloride, MgCl_2 , will be formed in the reaction?
- D) What mass of the excess reagent will be left over / unused?

4) Use the following chemical equation: $\text{SO}_2 + \text{O}_2 \rightarrow \text{SO}_3$

- A) Balance the equation.
- B) Identify the limiting reactant when 12.4 g of SO_2 reacts with 3.45 g of O_2 .

C) What mass of sulfur trioxide, SO_3 , will be formed in the reaction?

D) What mass of the excess reagent will be left over / unused?

5) Use the following chemical equation: $\text{H}_2\text{O} + \text{SO}_3 \rightarrow \text{H}_2\text{SO}_4$

- A) Balance the equation.
- B) Identify the limiting reactant when 6.58 g of SO_3 reacts with 1.64 g of H_2O .

C) What mass of sulfuric acid, H_2SO_4 , will be formed in the reaction?

D) What mass of the excess reagent will be left over / unused?

6) Use the following chemical equation: $\text{Cd} + \text{S} \rightarrow \text{CdS}$

- A) Balance the equation.
- B) Identify the limiting reactant when 8.47 g of Cd reacts with 2.51 g of S .

C) What mass of cadmium sulfide, CdS , will be formed in the reaction?

D) What mass of the excess reagent will be left over / unused?