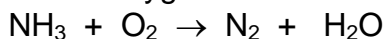


## IN CLASS LIMITING REACTANT PROBLEMS

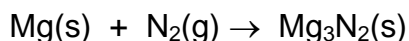
NOTE: Work in groups. None of the equations are balanced. You must show all calculations to receive credit on your own paper.

1. Ammonia (NH<sub>3</sub>) reacts with oxygen as shown in the following equation:



How many grams of H<sub>2</sub>O may be formed from a reaction mixture containing 35.0 grams of NH<sub>3</sub> and 50.0 g of O<sub>2</sub>?

2. Magnesium nitride may be prepared by the direct reaction of the elements as shown by the equation:

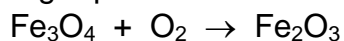


For each of the following combinations of reactants, decide which is the limiting reactant:

- 2.00 moles Mg, 0.500 mol N<sub>2</sub>
  - 3.00 g Mg, 0.100 mole N<sub>2</sub>
  - 3.00 g Mg, 3.00 g N<sub>2</sub>
3. What is the limiting reactant when 2.00 g of Si and 2.00 g of C combine according to the following equation?

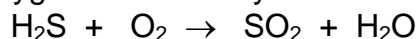


4. A 4.00 g sample of Fe<sub>3</sub>O<sub>4</sub> is reacted with 13.3 g O<sub>2</sub> to produce Fe<sub>2</sub>O<sub>3</sub> according to the following equation:



How many grams of Fe<sub>2</sub>O<sub>3</sub> are produced.?

5. Sulfur dioxide (SO<sub>2</sub>) can be produced from the reaction of hydrogen sulfide (H<sub>2</sub>S) and oxygen as shown by the following equation:



- How many grams of SO<sub>2</sub> can be produced from 70.0 g of H<sub>2</sub>S? and 125 g of O<sub>2</sub>?
  - How many grams of excess reactant is left over after the reaction is complete?
6. A mixture of 80.0 g Cr<sub>2</sub>O<sub>3</sub> and 8.00 g of C is used to produce elemental Cr by the reaction: Cr<sub>2</sub>O<sub>3</sub> + C → Cr + CO
- What is the theoretical yield of Cr that can be obtained from the reaction mixture?
  - The actual yield in the lab is 21.7 g Cr. What is the percent yield for the reaction?