

### Limiting reactant practice problems

1. When 0.50 mole of aluminum reacts with 0.72 mole of iodine to form aluminum iodide, how many moles of the excess reactant will remain?  
How many moles of aluminum iodide will be formed?
2. When sodium hydroxide reacts with sulfuric acid ( $\text{H}_2\text{SO}_4$ ), water and sodium sulfate are the products. Calculate the mass of sodium sulfate produced when 15.5 g of sodium hydroxide are reacted with 46.7 g of sulfuric acid.
3. A 22.4 g sample of oxygen gas is placed in a sealed container with 2.50 g of hydrogen gas. The mixture is sparked, producing water vapor. Calculate the mass of water formed. Calculate the number of moles of the excess reactant remaining.
4. Nitric oxide (NO) reacts with oxygen gas to produce nitrogen dioxide. A gaseous mixture contains 0.66 g of nitric oxide and 0.58 g of oxygen gas. After the reaction is complete, what mass of nitrogen dioxide is formed? Which reactant is in excess?
5. Zinc sulfide and oxygen gas react to form zinc oxide and sulfur dioxide. Determine the amount of ZnO that should be produced in a reaction between 46.5 g of ZnS and 13.3 g of oxygen. What is the mass of the xs reactant?
6. If 21.4 g of aluminum is reacted with 91.3 g of iron(III) oxide, the products will be aluminum oxide and iron metal. What mass of iron will be produced?