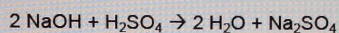


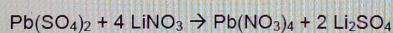
Warm-up:

1) Using the following equation:



How many grams of sodium sulfate will be formed if you start with 200 grams of sodium hydroxide and you have an excess of sulfuric acid?

2) Using the following equation:



How many grams of lithium nitrate will be needed to make 250 grams of lithium sulfate, assuming that you have an adequate amount of lead (IV) sulfate to do the reaction?

### Making Trail Mix:

2 cups of Raisins [the yogurt covered type]

4 cups of M&M's [the Pb type]

2 cups of Cashews

• How many batches if 16 cups of raisins, 32 cups of M&M's and 14 cups of cashews

$$\frac{16 \text{ cups raisins}}{2 \text{ cups}} \Bigg| \frac{1 \text{ batch}}{2 \text{ cups}} = 8 \text{ batches}$$

$$\frac{32 \text{ cups M\&M's}}{4 \text{ cups}} \Bigg| \frac{1 \text{ batch}}{4 \text{ cups}} = 8 \text{ batches}$$

$$\frac{14 \text{ cups cashews}}{2 \text{ cups}} \Bigg| \frac{1 \text{ batch}}{2 \text{ cups}} = 7 \text{ batches}$$

★ We are limited by # of cashews

↳ Limited reagent = cashews  
↳ Excess = Raisins & M&M's

### Chemistry Example:



• Which is limiting/excess if 0.37 mol Al & 2.0 mol HCl

$$\frac{0.37 \text{ mol Al}}{2 \text{ mol Al}} \Bigg| \frac{3 \text{ mol H}_2}{2 \text{ mol Al}} = 0.56 \text{ mol H}_2$$

Limiting



$$\frac{2.0 \text{ mol HCl}}{\text{Excess}} \left| \frac{3 \text{ mol H}_2}{6 \text{ mol HCl}} \right| = 1.0 \text{ mol H}_2$$

• How many grams of  $\text{H}_2$  are theoretically produced?

$$\frac{0.56 \text{ mol H}_2}{1 \text{ mol H}_2} \left| \frac{2.02 \text{ g H}_2}{1 \text{ mol H}_2} \right| = 1.1 \text{ g H}_2$$

• How many moles of excess reactant are left?

$$\frac{0.37 \text{ mol Al}}{2 \text{ mol Al}} \left| \frac{6 \text{ mol HCl}}{2 \text{ mol Al}} \right| = 1.1 \text{ mol HCl} \quad 2.0 \text{ mol HCl} - 1.1 \text{ mol} = 0.89 \text{ mol HCl Left}$$

Practice Problems Due next block:

Find the limiting reagents.

