

Name
Chemistry
Stoichiometry Review

(#6-1) For the following determine the number of molecules

- 9.8 moles of O₂ $9.8 \text{ moles} \cdot \frac{6.022 \times 10^{23} \text{ molecules}}{1 \text{ mole}} = 5.9 \times 10^{24}$
- 5 moles of H₂O $5 \text{ mol} \cdot \frac{6.022 \times 10^{23}}{1} = 3.01 \times 10^{24}$

(#6-1) For the following determine the amount of moles

- 2.3×10^{12} molecules of H₂ $2.3 \times 10^{12} \cdot \frac{1}{6.022 \times 10^{23}} = 3.8 \times 10^{-12}$
- 3.2×10^{28} molecules of C₂H₄ $3.2 \times 10^{28} \cdot \frac{1}{6.022 \times 10^{23}} = 0.53$

(#6-1) For the following determine the Formula Weight (in grams/mole)

- H₂ 2 g/mol
- NaOH 40 g/mol

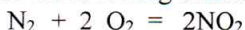
(#6-1) For the following determine the mass (in grams)

- 5.3 moles of O₂ $5.3 \text{ mol} \cdot \frac{32 \text{ g}}{1 \text{ mol}} = 0.16 \text{ g}$
- 45.2 moles Fe₂O₃ $45.2 \cdot \text{mol} \cdot \frac{159 \text{ g}}{1 \text{ mol}} = 7190 \text{ g}$

(#6-1) For the following determine the amount of moles found in each mass

- 22 grams of O₂ $22 \text{ g} \cdot \frac{1 \text{ mol}}{32 \text{ g}} = 0.687 \text{ mol}$
- 305.6 grams of C₆H₁₂O₆ $305.6 \text{ g} \cdot \frac{1 \text{ mol}}{180 \text{ g}} = 1.69 \text{ mol}$

(#6-2) For the following determine the amount of moles using the following equation



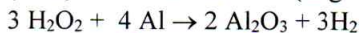
- If one used 6 moles of O₂, how many moles of NO₂ would be formed?

$$6 \text{ mol} \cdot \frac{2}{2} = 6 \text{ mol NO}_2$$

- If one formed 4.2 moles of NO₂, how many moles of N₂ are needed?

$$4.2 \text{ mol NO}_2 \cdot \frac{1 \text{ mol N}_2}{2 \text{ mol NO}_2} = 2.1 \text{ mol N}_2$$

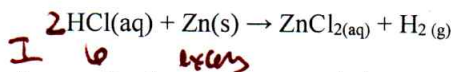
(#6-2) Determine the mass (in grams) using the following equation



- 90.2 grams of Al was added to an excess of hydrogen peroxide, how much aluminum oxide was formed?

$$90.2 \text{ g} \cdot \frac{1 \text{ mol}}{27.0 \text{ g}} \cdot \frac{2 \text{ mol}}{4 \text{ mol}} \cdot \frac{101.9 \text{ g}}{1 \text{ mol}} = 170 \text{ g}$$

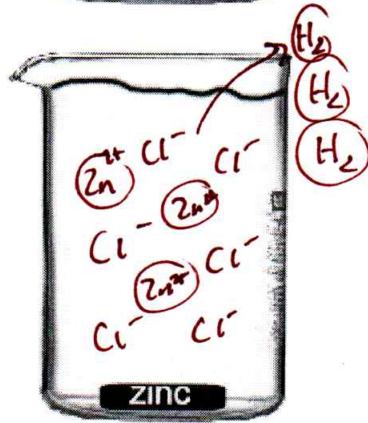
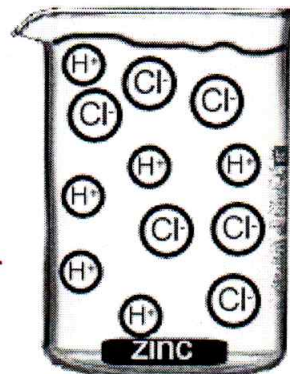
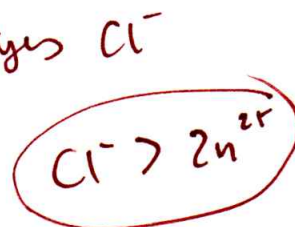
In the beakers above there is a particulate representation of a beaker containing excess zinc and a solution of hydrochloric acid. The zinc and the HCl will react according to the reaction below.



- Draw the beaker after the reaction has gone to completion.

- Why are the HCl not connected to each other in the first beaker?

- Is there a spectator in this reaction? If so, what?



(159 g/mol)
Fe₂O₃