Name: KEY Date: 2/21/14 Period: ALL

Quiz 3: Classifying Reactions, Stoichiometry - KEY

1. When calcium hydroxide reacts with hydrofluoric acid, water and calcium fluoride are produced.

$$\_\_Ca(OH)_2 + \_\_\_HF \rightarrow \_\_\_H_2O + \_\_\_CaF_2$$

a. Write the balanced chemical equation

$$Ca(OH)_2 + 2\ HF \rightarrow 2\ H_2O + CaF_2$$

b. Classify the type of reaction

Double Replacement

c. How many moles of hydrofluoric acid are required to react to produce 1.72 moles of water?

$$1.72\ \text{moles}\ H_2O \times \frac{2\ \text{moles HF}}{2\ \text{moles}\ H_2O} = 1.72\ \text{moles HF}$$

2. A handheld lighter uses butane as its fuel. When butane (C_4H_{10}) is burned in air, it forms carbon dioxide and water.

$$\_\_\_C_4H_{10} + \_\_\_O_2 \rightarrow \_\_\_CO_2 + \_\_\_H_2O$$

a. Write the balanced chemical equation

$$2\ C_4H_{10} + 13\ O_2 \rightarrow 8\ CO_2 + 10\ H_2O$$

b. Classify the type of reaction

Combustion (notice the CO_2 and H_2O on the products side)

c. If 19.4 moles of oxygen reacted, how many moles of carbon dioxide were produced?

$$19.4\ \text{moles}\ O_2 \times \frac{8\ \text{moles}\ CO_2}{13\ \text{moles}\ O_2} = 11.9\ \text{moles}\ CO_2$$