Mr. Bracken
AP Chemistry

Name _____
Period _____

**Back Titration Practice Problems**

1. A sample of pure calcium carbonate was reacted with excess hydrochloric acid. The remaining hydrochloric acid was then titrated with sodium hydroxide until the endpoint was reached.

**Rxn #1** $CaCO_3$ (solid) + HCl *excess* $\rightarrow$ $CaCl_2$ + $H_2O$ + $CO_2$

**Rxn #2** HCl *remaining* + NaOH $\rightarrow$ NaCl + $H_2O$

An unknown mass of $CaCO_3$ reacted with 41.7 mL of 1.5 M HCl. Then 12.4 mL of 0.50 M NaOH was needed to reach the endpoint in the second reaction.

<u>What was the mass of the calcium carbonate</u>?

2. Consider the following back titration problem.

**Rxn #1** $Mg(OH)_2$ (solution) + HBr *excess* $\rightarrow$ $MgBr_2$ + $H_2O$

**Rxn #2** HBr *remaining* + KOH $\rightarrow$ KBr + $H_2O$

Approximately 24.7 mL of a solution of $Mg(OH)_2$ was reacted with 33.7 mL of 2.50 M HBr. To reach the endpoint in the second reaction, 10.5 mL of 1.00 M KOH was needed.

<u>What was the concentration (molarity) of the original $Mg(OH)_2$ solution</u>?