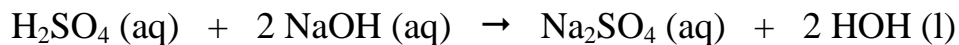
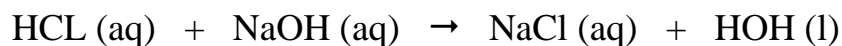


**CEM 101 – Unit 10**  
**Practice Problems**

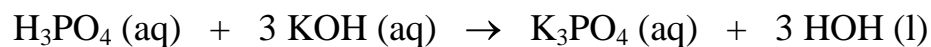
1. If 20.00 mL of H<sub>2</sub>SO<sub>4</sub> are neutralized by 32.81 mL of 0.1124 M NaOH, what is the molarity of the sulfuric acid solution?



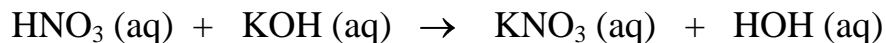
2. If 25.00 mL of 0.0973 M HCl are neutralized by 30.20 mL of NaOH, what is the molarity of the NaOH solution?



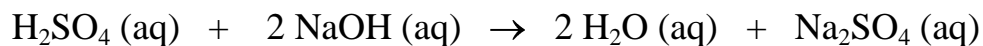
3. A student finds that 34.8 mL of 0.483 M KOH are required to neutralize a 10.0 mL sample of a certain H<sub>3</sub>PO<sub>4</sub> solution. What is the molarity of the H<sub>3</sub>PO<sub>4</sub> solution?



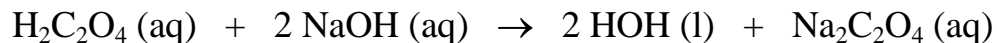
4. A student finds that 20.0 mL of 0.395 M HNO<sub>3</sub> are required to neutralize a 29.7 mL sample of a certain KOH solution. What is the molarity of the KOH solution?



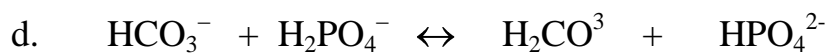
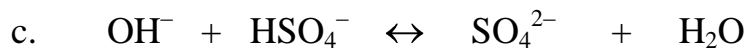
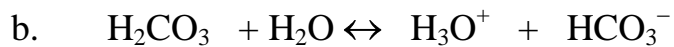
5. A student finds that 15.0 mL of 0.186 M H<sub>2</sub>SO<sub>4</sub> are required to neutralize a 26.3 mL sample of a certain NaOH solution. What is the molarity of the NaOH solution?



6. A student finds that 46.1 mL of 0.244 M NaOH are required to neutralize a 25.0 mL sample of a certain H<sub>2</sub>C<sub>2</sub>O<sub>4</sub> solution. What is the molarity of the H<sub>2</sub>C<sub>2</sub>O<sub>4</sub> solution?



7. Identify the conjugate acid and base pairs in each of the following:



8. Fill in the following table:

Conjugate Acid	Conjugate Base
HI	
	$\text{ClO}^-$
$\text{HS}^-$	
$\text{HC}_3\text{H}_5\text{O}_2$	
	$\text{C}_2\text{O}_4^{2-}$
	$\text{NH}_3$

