



6. The  $K_a$  for hypochlorous acid,  $\text{HClO}$ , is  $3.5 \times 10^{-8}$ . To make a buffer of  $\text{pH} = 7.20$  using this acid, what  $[\text{ClO}^-]/[\text{HClO}]$  ratio is necessary?
7. A buffer is prepared by adding 250 mL of 0.300 M  $\text{NaOH}$  to 250 mL of 0.500 M weak acid,  $\text{HA}$ . If the  $\text{pH}$  of the buffer is 8.15, what is the  $\text{p}K_a$  of the acid?
8. A buffer is composed of 0.250 mol  $\text{H}_2\text{PO}_4^-$  and 0.250 mol  $\text{HPO}_4^{2-}$  diluted with water to a volume of 1.00 L. The  $\text{pH}$  of the buffer is 7.208. How many moles of  $\text{HCl}$  must be added to reduce the  $\text{pH}$  to 6.208?
9. Hydrochloric acid is used to titrate 25.0 mL of 0.0100 M  $\text{NH}_3$ . What is the  $\text{pH}$  after the addition of 40.0 mL of 0.0100 M  $\text{HCl}$ ? ( $K_b$  for  $\text{NH}_3 = 1.8 \times 10^{-5}$ )
10. Hyperventilation can cause your blood  $\text{pH}$  to rise. One way to lower your blood  $\text{pH}$  is to breathe into a paper bag, thus recycling the air you exhale. Why does this procedure lower your blood  $\text{pH}$ ?