1. Calculate the pH of a buffer solution made from equal amounts of 0.30 M hydrofluoric acid and 0.70 M sodium fluoride. $K_a = 7.1 \times 10^{-4}$; $[H^+] = 3.04 \times 10^{-4}$; pH = 3.52

2. Calculate the pH of a buffer solution made from 0.30 M hydrofluoric acid and 0.70 M sodium fluoride after the addition of 0.08 mol of NaOH to 1 L of this solution. Assume no change in volume. $K_a = 7.1 \times 10^{-4}$; $[H^+] = 2.00 \times 10^{-4}$; pH = 3.70

3. Calculate the pH of a 0.08 M NaOH solution. Compare to the pH found in problem 2. pOH = 1.10; pH = 12.90

4. What would be the buffer range for an acid if its $K_a = 7.1 \times 10^{-4}$?
   pKa = 3.15; buffer range 2.15 to 4.15

5. Calculate the pH of a buffer solution made from 0.30 M hydrofluoric acid and 0.70 M sodium fluoride after the addition of 0.04 mol of HCl to 1 L of this solution. Assume no change in volume. $K_a = 7.1 \times 10^{-4}$; $[H^+] = 3.66 \times 10^{-4}$; pH = 3.44

6. Calculate the pH of a 0.04 M HCl solution. Compare to the pH found in problem 5. pH = 1.40