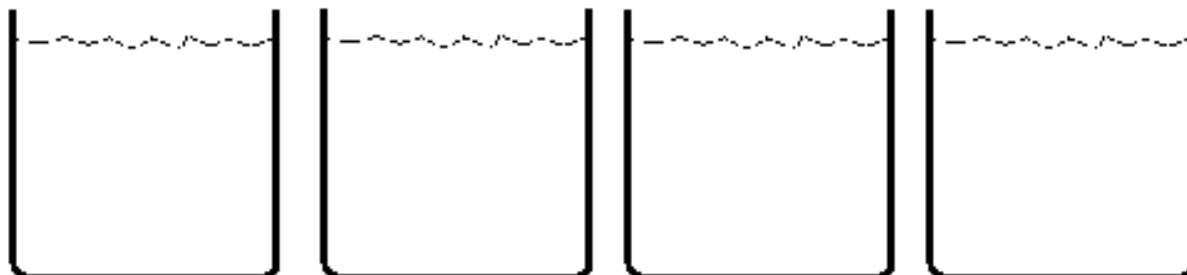


COMMON ION & BUFFER PROBLEMS

- 1) a) What is the pH of a 1.00 M HF solution? For HF, $K_a = 7.0 \times 10^{-4}$
- b) What is the pH of 1.00 M HF solution after adding 0.500 M NaF? For HF, $K_a = 7.0 \times 10^{-4}$
- 2) a) What is the pH of 500.0 mL of 0.10 M formic acid (HCO_2H) combined with 400.0 mL of 0.20 M sodium formate (NaHCO_2)? $K_a = 1.8 \times 10^{-4}$
- b) What is the pH after 20.0 mL of 0.50 M HCl is added to the buffer solution in part a?
- c) What is the pH after 20.0 mL of 0.50 M NaOH is added to the buffer solution in part a?

SA-SB Titration Problems

- Use the 4 beakers below to draw these stages for a SA-SB titration.
 - Draw 2 moles HCl. (How do we draw a SA in solution?)
 - Draw what happens when 1 mole NaOH is added.
 - Draw what happens when 2 moles NaOH are added.
 - Draw what happens when 3 moles NaOH are added.

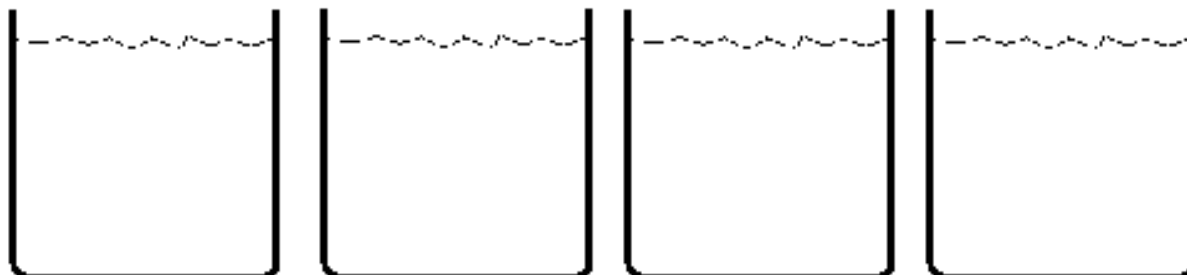


- Consider the titration of 20.00 mL of 0.200 M HCl with 0.100 M NaOH.
What volume of NaOH must be added to reach the equivalence point?

Calculate the pH of the solution after the following volumes of NaOH have been added:
a) 0 mL; b) 5.00 mL; c) 40.00 mL; d) 50.00 mL.

WA-SB Titration Problems

- Use the 4 beakers below to draw these stages for a WA-SB titration.
 - Draw 2 moles of acetic acid. (How do we draw a WA in solution?)
 - Draw what happens when 1 mole KOH is added.
 - Draw what happens when 2 moles KOH are added.
 - Draw what happens when 3 moles KOH are added.



- Consider the titration of 50.00 mL of 0.100 M acetic acid with 0.150 M KOH. For acetic acid, $K_a = 1.8 \times 10^{-5}$

What volume of NaOH must be added to reach the equivalence point?

Calculate the pH of the solution after the following volumes of NaOH have been added:

a) 0 mL; b) 10.00 mL; c) the equivalence point volume; d) 50.00 mL.