Topic Reminder Q14
Neutralization and Titration

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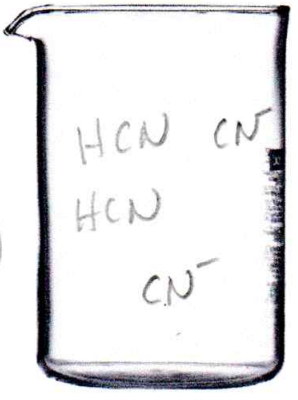
1. Complete the products of these neutralization reactions.
   a. HCl + NaOH → H_2O + NaCl
      - Molecular version:
      - Net ionic version: $H^+ + OH^- \rightarrow H_2O$

   b. Hydrofluoric acid + NaOH →
      - Molecular version: $HF + NaOH \rightarrow H_2O + NaF$
      - Net ionic version: $HF + OH^- \rightarrow F^- + H_2O$

2. A beaker contains, 20mL of a combined 0.1M HCN and adds 10mL of 0.1M NaOH.
   a. Write out the neutralization reaction for this example above. $HCN + NaOH \rightarrow H_2O + NaCN$

   b. Was there enough base to completely reach the equivalence point? Explain. NO, Moles equal
      $M = \frac{mol}{L}$ ← Not Samp
      ½ way (½ equivalence)

   c. Draw the final beaker using only HCN and CN^- in the picture. (There are many versions of correct answers here)



K	UK

3. 15mL of 0.1M NaOH reacts with 0.05M HX.
   a. Write the neutralization reaction. $NaOH + HX \rightarrow NaX + H_2O$
   b. How much HX will be needed to reach equivalence.

$0.5 = \frac{x}{.015}$ $x = 0.0075mol$

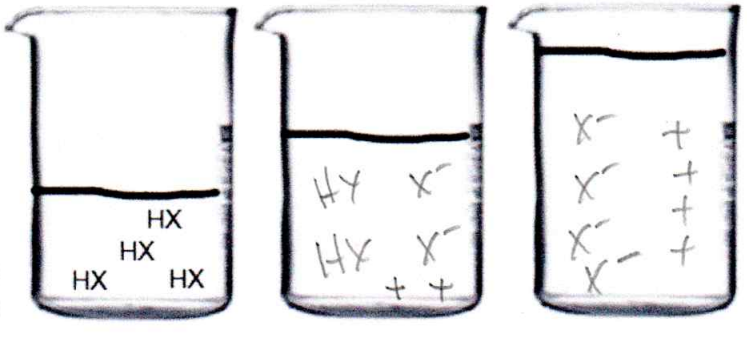
4. 20mL of 0.2M NaOH is needed to reach equivalence while neutralizing 5mL of an unknown concentration of HX.
   a. Calculate the unknown concentration.
   b. Complete a particulate drawing below.

K	UK
M 0.2	?
mol x	x
L .02	.005

$.2 = \frac{x}{.02}$

0.004

$\frac{.004}{.005} = 0.8$



0 ml added 10mL added 20mL added

+ = Spectator cation