AP Chemistry Daily Videos

8.8 Properties of Buffers

1. Describe the function of a buffer and how it resists pH changes.

2. Evaluate your work.

Solution X	100mL of 0.10M NaOH(aq) is mixed with 100mL of 0.10M HBr(aq)
Solution Y	100mL of 0.10M NaBr(aq) is mixed with 100mL of 0.10M HBr(aq)
Solution Z	100mL of 0.10M HC$_2$H$_3$O$_2$(aq) is mixed with 100mL of 0.10M NaC$_2$H$_3$O$_2$(aq)

A student prepares three solutions, X, Y, and Z, as described in the table above. The values of K_a for the acidic species in the solutions are given in the table on the right.

Species	K_a
HBr(aq)	>>1 (very large)
HC$_2$H$_3$O$_2$(aq)	1.8×10^{-5}

(a) Using the information above, write the letters of the solutions in the boxes below to rank the solutions in order of increasing pH. Explain your reasoning for the ranking.

Lowest pH   Highest pH

	<		<	

(b) Does the pH of solution Y increase, decrease, or remain the same when 100 mL of water is added? Justify your answer.

(c) The student adds 0.0010 mol of NaOH(s) to solution Y, and adds 0.0010 mol of NaOH(s) to solution Z. Assume that the volume of each solution does not change when the NaOH(s) is added. The pH of solution Y changes much more than the pH of solution Z changes. Explain this observation.