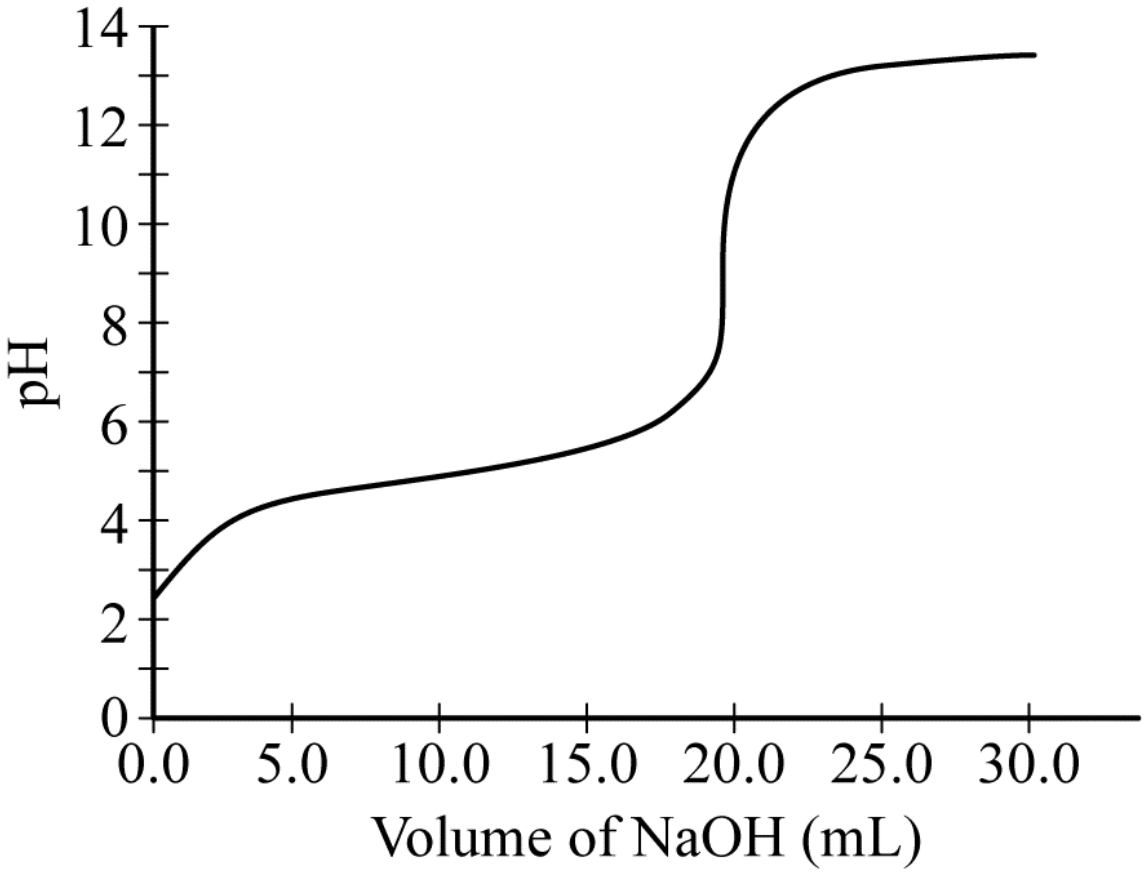
Here's why you should know this.



38. Data collected during the titration of a 20.0 mL sample of a 0.10 *M* solution of a monoprotic acid with a solution of NaOH of unknown concentration are plotted in the graph above. Based on the data, which of the following are the approximate pK_a of the acid and the molar concentration of the NaOH?

	pK_a	[NaOH]	
A	4.7	0.050 *M*	First, you know the [NaOH] = 0.10 *M* because at the equivalence point, the same volume (20.0 mL) of NaOH is used as the volume of acid, which you've been told is 0.10 *M*. Second, it's important to remember that at the halfway point of the titration, the pH = pK_a of the weak acid. At the halfway point, [HA] = [A^-]. Plugging that in to the K_a formula, you'll see that [H^+] = K_a, therefore at the halfway point, the pK_a = pH
B	4.7	0.10 *M*	
C	9.3	0.050 *M*	
D	9.3	0.10 *M*	