

Question #70630, Chemistry / General Chemistry

How many ml of 10.0 M HCl do I need to add to 100 ml of 1.00 M NaOH to get a solution with pH = 7?

Answer:

If the pH of solution is 7, then

$$[H^+] = [OH^-]$$

Thus, we can postulate

$$[HCl] = [NaOH]$$

Or

$$n(HCl) = n(NaOH)$$

$$n = c \times V$$

$$c(HCl) \times V(HCl) = c(NaOH) \times V(NaOH)$$

$$V(HCl) = \frac{c(NaOH) \times V(NaOH)}{c(HCl)}$$

$$V(HCl) = \frac{1.00 M \times 100 mL}{10.0 M} = \mathbf{10.0 mL}$$