

Answer on Question #73463 – Chemistry – Other

Task:

Calculate the volume of 1.01mol/L sodium hydroxide that is required to neutralize 25.00mL of a hydrochloric acid solution that has a pH of 0.32

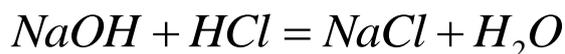
Solution:

$$pH = -\log[H^+] = 0.32;$$

$$[H^+] = 10^{-pH} = 10^{-0.32} = 0.47863M;$$

$$[H^+] = C(HCl) = 0.47863M.$$

The reaction:



By the reaction equation:

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

$$C(NaOH) * V(NaOH) = C(HCl) * V(HCl);$$

$$V(NaOH) = \frac{C(HCl) * V(HCl)}{C(NaOH)} = \frac{0.47863M * 25.00mL}{1.01M} = 11.847;$$

$$V(NaOH) = 11.85 \text{ mL}.$$

Answer: V(NaOH) = 11.85 mL.