YEAR 11 CHEMISTRY PROBLEMS REVISION

1. 20 ml of 0.4M hydrochloric acid was needed to neutralise 40 ml of NaOH. How many grams of NaOH were added to the 40 ml of NaOH to make this solution?

$$HCl + NaOH \rightarrow NaCl + H_2O$$

2. 35 ml of 0.25M phosphoric acid was used to neutralise 15 ml of NaOH.

$$H_3PO_4 + 3NaOH \rightarrow Na_3PO_4 + 2H_2O$$

a. What is the concentration of the NaOH?

b. How many grams of water were produced?

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$HCl + NaOH \rightarrow NaCl + H_2O$

$M_aV_a = M_bV_b$

$M_b = \frac{M_aV_a}{V_b}$

$= \frac{0.4 \times 20}{40}$

$= 0.2M$

$M = \frac{n}{L}$

$n = M \times L$

$= 0.2 \times 0.04$

$= 0.008$ moles $NaOH$

$n = \frac{mass}{molar\ mass}$

$mass = moles \times molar\ mass$

$= 0.008 \times 40$

$= 0.32g\ NaOH$

2. 35 ml of 0.25M phosphoric acid was used to neutralise 15 ml of NaOH.

$H_3PO_4 + 3NaOH \rightarrow Na_3PO_4 + 2H_2O$

a. What is the concentration of the NaOH?

Triprotic acid.

$3M_aV_a = M_bV_b$

$M_b = \frac{3M_aV_a}{V_b} = \frac{3 \times 0.25 \times 35}{15} = 1.75M\ NaOH.$

b. How many grams of water were produced?

Phosphoric acid

$M = \frac{n}{L}$

$n = M \times L$

$= 0.25 \times 0.035$

$= 0.00875$ moles H_3PO_4

Mole ratio according to equ

(1) : 3 : 1 : (2)

1 : 2.

0.00875 : 0.0175

0.0175 moles of H_2O pro

$moles = \frac{mass}{molar\ mass}$

$mass = moles \times molar\ mass$

$= 0.0175 \times 18$

$= 0.315g\ H_2O$