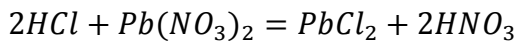


Answer on Question # 63546, Chemistry, Physical Chemistry

How many milliliters of a 2.00 M HCl solution would need to be combined with 450 mL of a 0.330 M Pb(NO₃)₂ solution to promote the complete precipitation of the lead as PbCl₂?

Solution



The amount of HCl is:

$$v(\text{HCl}) = 2 \times v(\text{Pb}(\text{NO}_3)_2) = 2 \times 0.33\text{M} \times 0.45\text{L} = 0.297 \text{ mol}$$

The volume of the solution is:

$$V(\text{HCl}) = \frac{v(\text{HCl})}{C_M(\text{HCl})} = \frac{0.297 \text{ mol}}{2.00 \text{ M}} = 0.1485\text{L} = 148.5 \text{ mL}$$

Answer: $V(\text{HCl}) = 148.5 \text{ mL}$