3.2 Dilution Calculations

Use the formula: $$C_1V_1 = C_2V_2$$

(initial conc.) x (initial volume) = (final conc.) x (final volume)

Example: Suppose you have 300.0 mL of 1.2 M HCl. How much water do you need to add to dilute it to 0.50 M HCl?

$$C_1V_1 = C_2V_2$$

$$(1.2\ M)(300.0\ mL) = (0.50\ M)(V_2)$$

$$V_2 = 720\ mL$$

720 mL – 300 mL = **420 mL water added**

3.2 Dilution Calculations

Example: You have 145 mL of a 8.0 M HNO_3 solution. What is final concentration after adding 650 mL H_2O?

$C_1V_1 = C_2V_2$

$(8.0 \text{ M})(145\text{mL}) = (C_2)(145 + 650\text{mL})$

$C_2 = 1.46 \text{ M} \sim 1.5 \text{ M}$