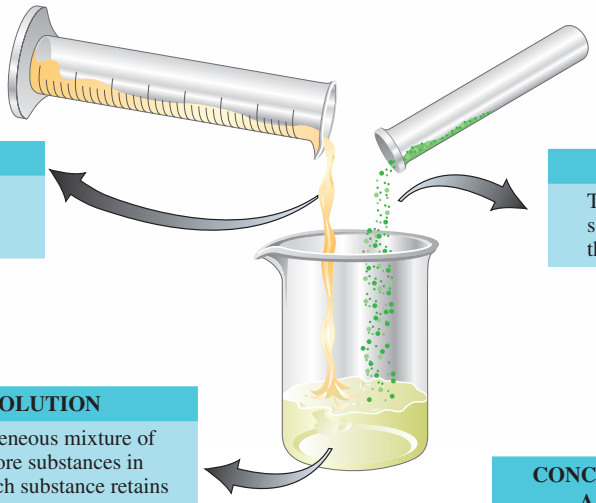
CHEMISTRY AT A GLANCE

Solutions

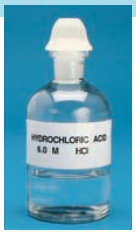


SOLVENT
The component of a solution present in the greatest quantity

SOLUTE
The component of a solution present in the lesser quantity

SOLUTION
A homogeneous mixture of two or more substances in which each substance retains its chemical identity

CONCENTRATION OF A SOLUTION
The amount of solute in a specified amount of solution

PERCENT BY MASS	PERCENT BY VOLUME	MASS–VOLUME PERCENT	MOLARITY
$\%(m/m) = \frac{\text{mass of solute}}{\text{mass of solution}} \times 100$	$\%(v/v) = \frac{\text{volume of solute}}{\text{volume of solution}} \times 100$	$\%(m/v) = \frac{\text{mass of solute (g)}}{\text{volume of solution (mL)}} \times 100$	$M = \frac{\text{moles of solute}}{\text{liters of solution}}$
			
1%(m/m) milk	**70%(v/v) rubbing alcohol**	**0.9%(m/v) physiological saline solution**	**6.0 M hydrochloric acid**

Substituting the known quantities into the dilution equation, which has been rearranged to isolate V_d on the left side, gives

$$V_d = \frac{C_s \times V_s}{C_d} = \frac{3.0\%\,\cancel{(m/v)} \times 24\ \text{mL}}{1.0\%\,\cancel{(m/v)}} = 72\ \text{mL}$$

The solvent added is

$$V_d - V_s = (72 - 24)\ \text{mL} = 48\ \text{mL}$$

(continued)