N31 – Separation Techniques and [ ] Calcs

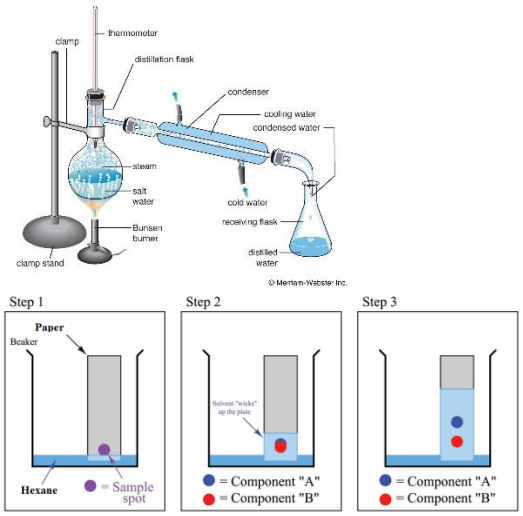

TABLE 12.5 Solution Concentration Terms

Unit	Definition	Units
Molarity (M)	$\frac{\text{amount solute (in mol)}}{\text{volume solution (in L)}}$	$\frac{\text{mol}}{\text{L}}$
Molality (m)	$\frac{\text{amount solute (in mol)}}{\text{mass solvent (in kg)}}$	$\frac{\text{mol}}{\text{kg}}$
Mole fraction (χ)	$\frac{\text{amount solute (in mol)}}{\text{total amount of solute and solvent (in mol)}}$	None
Mole percent (mol %)	$\frac{\text{amount solute (in mol)}}{\text{total amount of solute and solvent (in mol)}} \times 100\%$	%
Parts by mass	$\frac{\text{mass solute}}{\text{mass solution}} \times$ multiplication factor	
Percent by mass (%)	Multiplication factor $= 100$	%
Parts per million by mass (ppm)	Multiplication factor $= 10^6$	ppm
Parts per billion by mass (ppb)	Multiplication factor $= 10^9$	ppb
Parts by volume (%, ppm, ppb)	$\frac{\text{volume solute}}{\text{volume solution}} \times$ multiplication factor *	

*Multiplication factors for parts by volume are identical to those for parts by mass.

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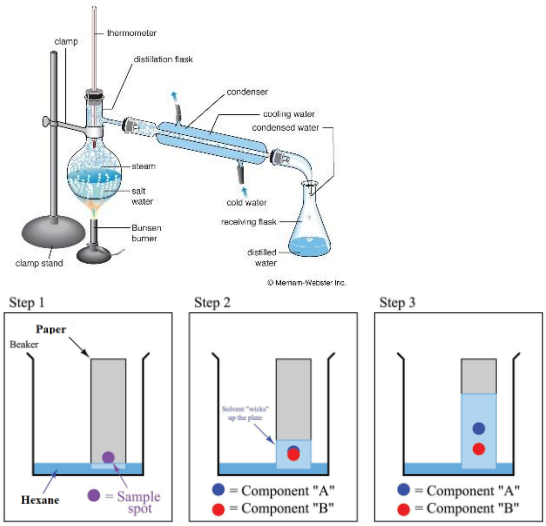

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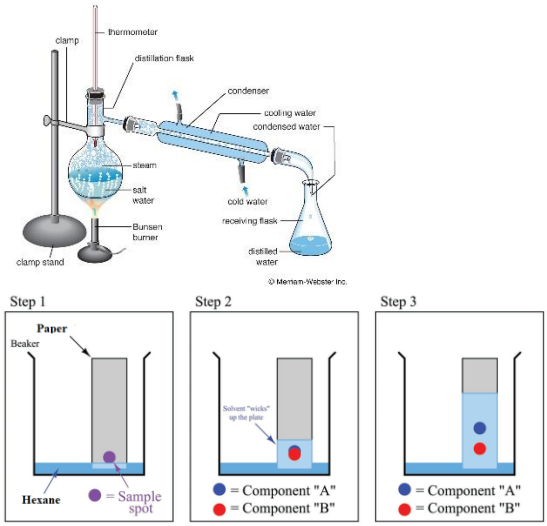

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