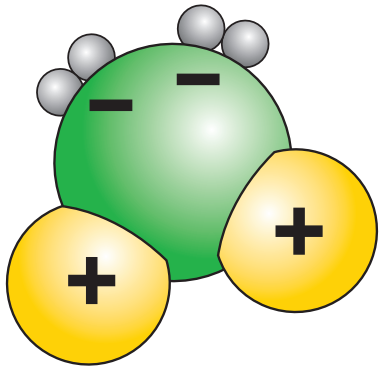


Polar and Nonpolar Molecules

Polar

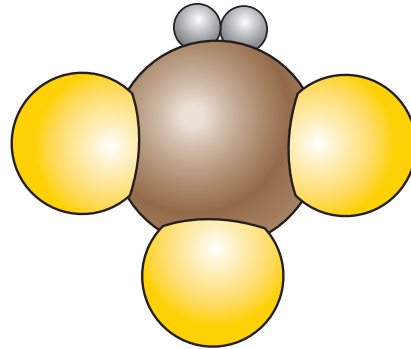
Oxygen end **-**



Hydrogen end **+**

Water

Nitrogen end **-**

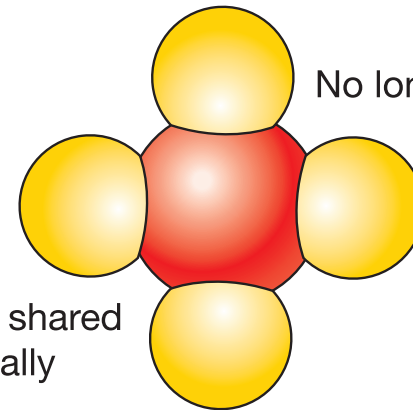


Hydrogen end **+**

Ammonia

Nonpolar

No lone pairs



Charges shared
equally

Methane

Solving Problems: Concentration

CONCENTRATION

$$\text{Concentration} = \frac{\text{Amount of solute}}{\text{Amount of solution}}$$

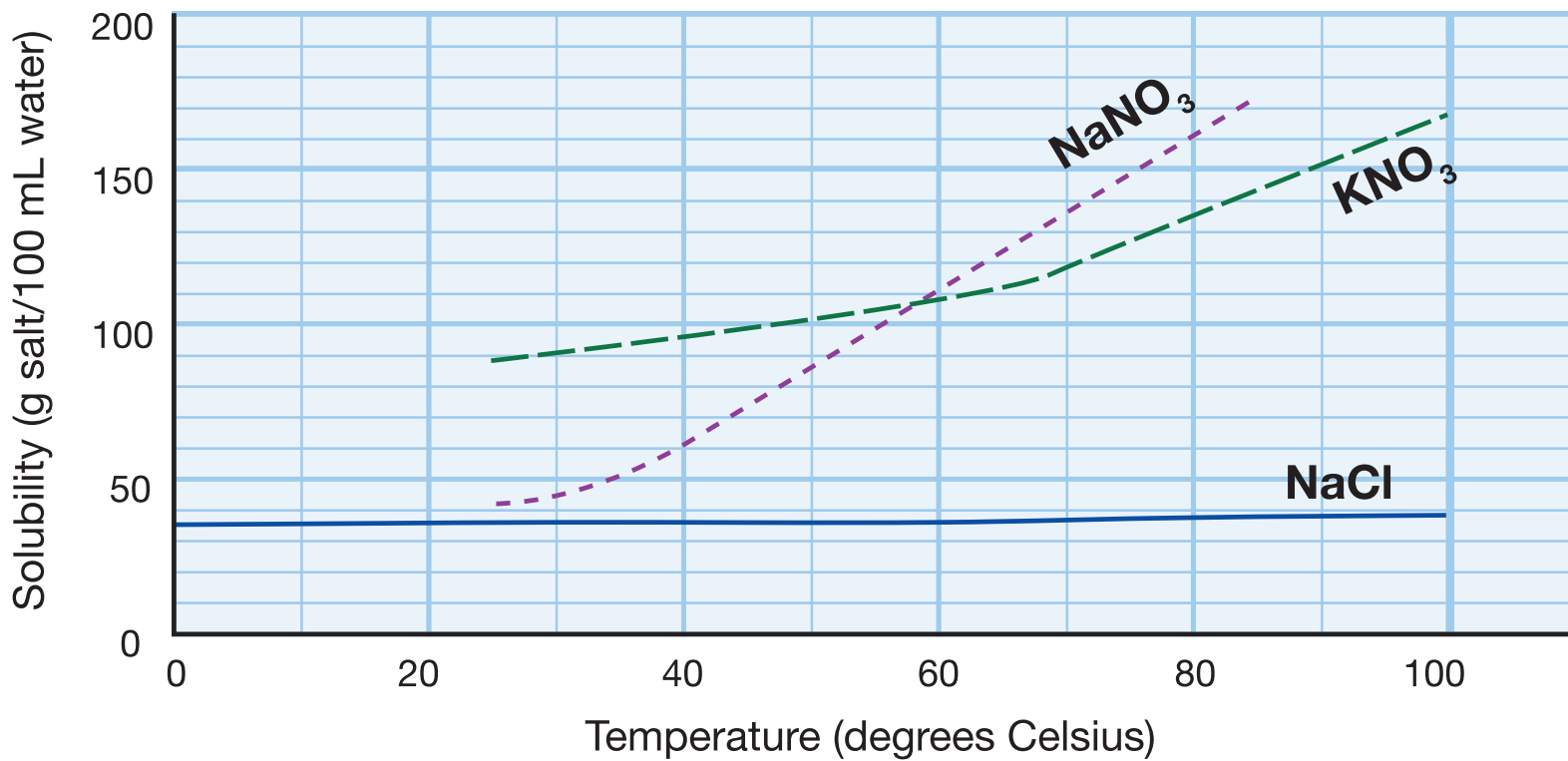
MOLARITY

$$\text{Molarity (M)} = \frac{\text{Moles of solute}}{\text{Liter of solution}}$$

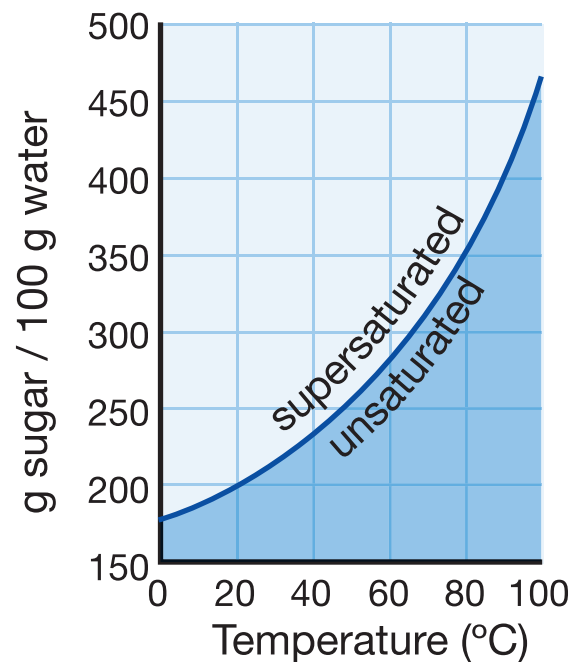
MASS PERCENT

$$\text{Mass percent} = \frac{\text{Mass of solute}}{\text{Mass of solution}} \times (100\%) = \frac{10 \text{ g sugar}}{(10 \text{ g} + 90 \text{ g}) \text{ solution}} \times (100\%) = 10\%$$

Temperature-Solubility Graph for Salts

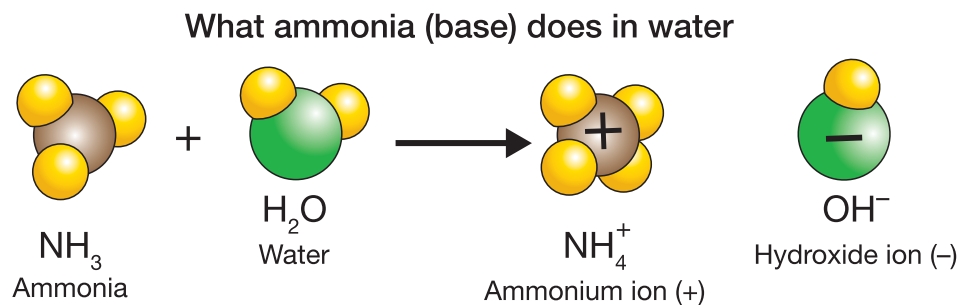
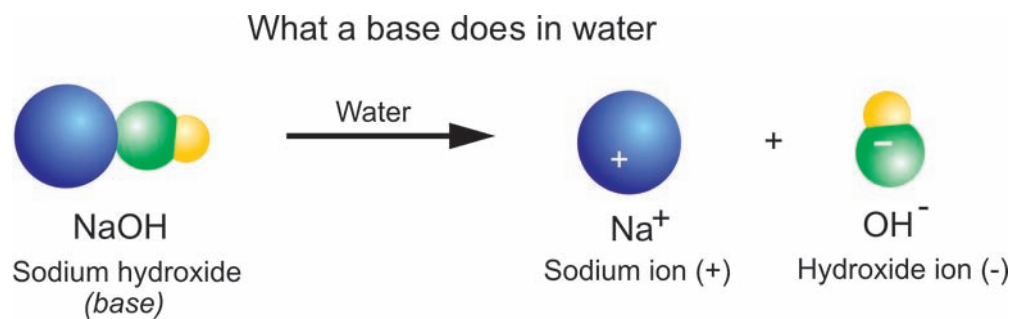
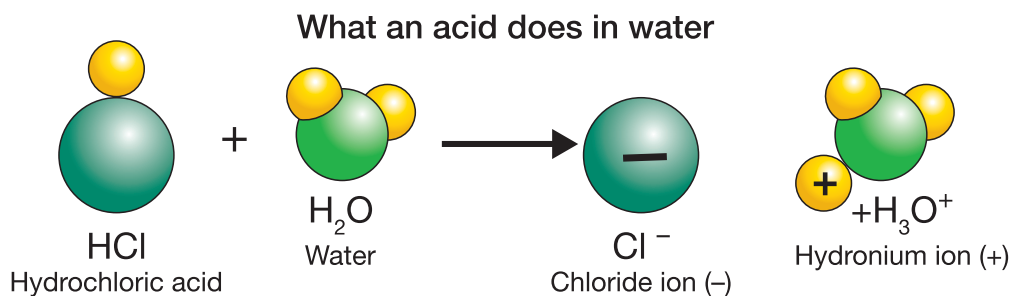


Sugar Solubility

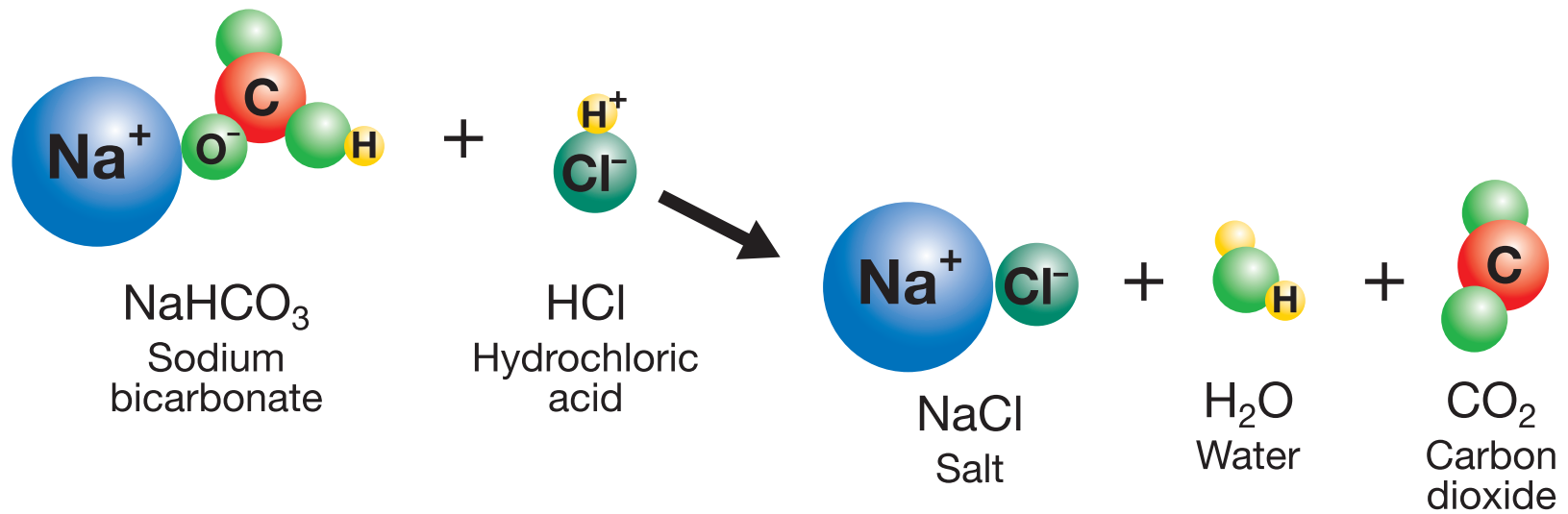


| Temp (°C) | <u>g sugar</u> 100 g H ₂ O | Temp (°C) | <u>g sugar</u> 100 g H ₂ O |
|-----------|--|-----------|--|
| 0 | 177 | 50 | 259 |
| 10 | 189 | 60 | 284 |
| 20 | 204 | 70 | 318 |
| 30 | 219 | 80 | 360 |
| 40 | 238 | 90 | 410 |

Acids and Bases in Water



Neutralization of HCl by NaHCO₃



Solving Problems: The pH Scale

pH

$$pH = - (- \textit{exponent})$$

Negative exponent of H_3O^+ concentration

pH Scale

