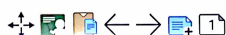


$$\text{Mass water} = \text{Mass hydrate (Before)} - \text{Mass anhydrous (After)}$$

(mol water) → ratio (# mol water) ← (mol anhydrous)



<u>A:</u> <u>large</u>	<u>Beaker Mass</u>	<u>Starting</u>	<u>heat</u>	<u>Final</u>	<u>Water</u>
	50.0g	56.2g	→	51.9g	56.2g - 51.9g
		56.2g - 50.0g		51.9g - 50.0g	= 4.3g
		= 6.2g		= 1.9g	
		hydrate		anhydrous salt	water

$$\begin{array}{l}
 \text{mol MgCl}_2 (\text{anhydrous}) \\
 \text{MM} = 95.21 \text{ g/mol} \\
 \text{mass MgCl}_2 = 1.9 \text{ g} \\
 \text{1.9 g} \quad | \quad \text{1 mol} \\
 \hline
 \quad \quad | \quad 95.21 \text{ g} \\
 = 0.01995 \text{ mol MgCl}_2
 \end{array}$$

$$\begin{array}{l}
 \text{mol water} \\
 \text{MM} = 18.02 \text{ g/mol} \\
 \text{mass H}_2\text{O} = 4.3 \text{ g} \\
 \text{4.3 g} \quad | \quad \text{1 mol} \\
 \hline
 \quad \quad | \quad 18.02 \text{ g} \\
 = 0.2386 \text{ mol H}_2\text{O}
 \end{array}$$

$$\textcircled{1} \quad 0.01995 \text{ mol MgCl}_2 \quad | \quad \textcircled{2} \quad 0.2386 \text{ mol H}_2\text{O}$$

$$\begin{aligned}
 \text{mol ratio} &= \frac{\text{mol H}_2\text{O}}{\text{mol MgCl}_2} = \frac{0.2386 \text{ mol}}{0.01995 \text{ mol}} \\
 &= \underline{\underline{11.95}} \quad \textcircled{3} \\
 \text{MgCl}_2 \cdot 12 \text{ H}_2\text{O} \\
 1 \text{ mol MgCl}_2 : 12 \text{ mol H}_2\text{O}
 \end{aligned}$$