

Student Objectives for Solutions Quiz

Review Questions - KEY

1.
$$\frac{250.0 \text{ mL}}{1} \cdot \frac{.10 \text{ moles CaCl}_2}{1000 \text{ mL}} \cdot \frac{110.98 \text{ g CaCl}_2}{1 \text{ mol CaCl}_2} = \boxed{2.8 \text{ g CaCl}_2}$$

 .10 M molar mass

OR

2. $M_1 V_1 = M_2 V_2$

$(.50 \text{ M})(500.0 \text{ mL}) = (.35 \text{ M})(V_2)$

$V_2 = 714.3 \text{ mL}$

$714.3 \text{ mL} - 500.0 \text{ mL} = \boxed{214.3 \text{ mL of dH}_2\text{O must be added}}$

$M = \frac{\text{moles}}{\text{L}}$

$.10 \text{ M} = \frac{x}{.2500 \text{ L}}$

$x = .025 \text{ moles CaCl}_2$

$$\frac{.025 \text{ mol CaCl}_2}{1} \cdot \frac{110.98 \text{ g CaCl}_2}{1 \text{ mol CaCl}_2} = \boxed{2.8 \text{ g CaCl}_2}$$

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3. $M = \frac{\text{mol}}{\text{L}}$

$1.0 \text{ M} = \frac{x}{.2500 \text{ L}}$

$x = .2500 \text{ moles NaC}_2\text{H}_3\text{O}_2$

$$\frac{.2500 \text{ moles NaC}_2\text{H}_3\text{O}_2}{1} \cdot \frac{82.04 \text{ g NaC}_2\text{H}_3\text{O}_2}{1 \text{ mol NaC}_2\text{H}_3\text{O}_2} = 20.51 \text{ g NaC}_2\text{H}_3\text{O}_2$$

- ① measure out the salt using a balance.
- ② Put approximately 150 mL of dH₂O into a graduated cylinder.
- ③ Add salt to grad. cyl. and dissolve well.
- ④ Add dH₂O to the 250.0 mL mark

4. Use Solubility curve!

$$\text{(at } 10^\circ\text{C)} \frac{75\text{ g NaNO}_3}{100\text{ g H}_2\text{O}} = \frac{X}{450\text{ g H}_2\text{O}}$$

$$X = 337.5\text{ g NaNO}_3$$

5. Supersaturated (above the curve)

$$6. \quad 1.2\text{ M} = \frac{X\text{ mol}}{1.0500\text{ L}} \qquad .80\text{ M} = \frac{X\text{ mol}}{.7500\text{ L}}$$

$$X = 1.26\text{ mol} \qquad X = .60\text{ mol}$$

1.3 mol (total moles)

$$M = \frac{1.9\text{ mol NaCl}}{1.8000\text{ L}} = 1.06$$

1.1 M

(total volume) + $\frac{1.0500}{.7500}$
1.8000

