

Molarity Practice

1. I need to make 0.75 liters of 0.4 M Na_3PO_4 solution.
How much sodium phosphate do I need to mass out?

2. I have 25 grams of KNO_3 dissolved in 100 g of water.
What is the molarity? (1 g water = 1 mL water)

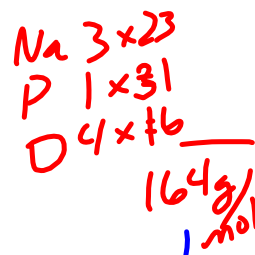
3.a. Draw a model of a saturated solution of KNO_3 .

b. Describe what you can do to dissolve more of the KNO_3 .



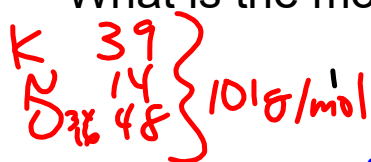
1. I need to make 0.75 liters of 0.4 M Na_3PO_4 solution.
How much sodium phosphate do I need to mass out?

$$0.4 \text{ M} = \frac{x \text{ mol}}{0.75 \text{ L}}$$



$$x = 0.3 \text{ mol} \times \frac{164 \text{ g}}{1 \text{ mol}} = 49.2 \text{ g Na}_3\text{PO}_4$$

2. I have 25 grams of KNO_3 dissolved in 100 g of water.
What is the molarity? (1 g water = 1 mL water)



$$\frac{25 \text{ g}}{101 \text{ g/mol}} = 0.25 \text{ mol}$$

$$\frac{0.25 \text{ mol}}{0.1 \text{ L}} = 2.5 \text{ M}$$

$$\frac{100 \text{ mL}}{1000 \text{ mL}} = 0.1 \text{ L}$$

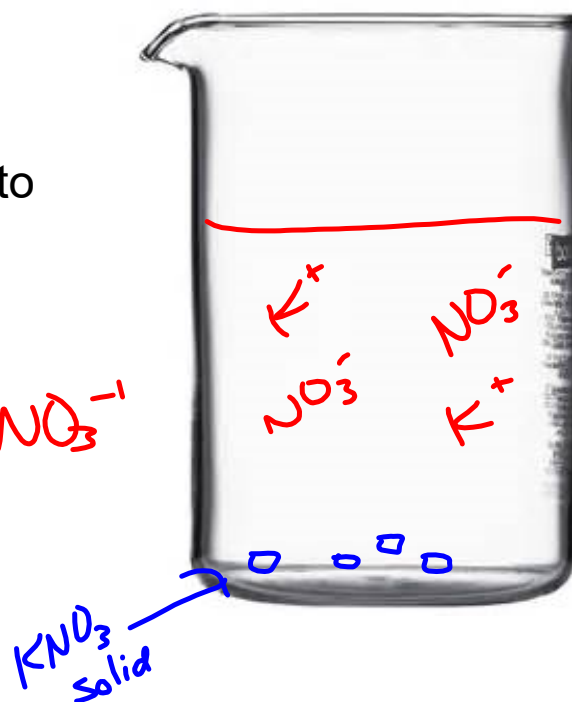
- 3.a. Draw a model of a saturated solution of KNO_3 .

- b. Describe what you can do to dissolve more of the KNO_3 .

① add H_2O ionic



② Raise temp.



200 mL of 0.2 M ammonium nitrate and
200 mL of 0.2 M potassium phosphate are mixed.
There is no reaction.

Draw each solution in a beaker before mixing.

Draw the final solution.

Determine the Molarity of the potassium ion.



200 mL of 0.2 M ammonium nitrate and 200 mL of 0.2 M potassium phosphate are mixed. There is no reaction.

Draw each solution in a beaker before mixing.

Draw the final solution.

Determine the Molarity of the potassium ion.

$$200\text{ mL} \quad 200\text{ mL} \quad 400\text{ mL}$$

$$\text{NH}_4^+ \quad \text{NO}_3^- \quad \text{K}^+ \quad \text{PO}_4^{3-} \quad \text{K}^+ \quad \text{NO}_3^- \quad \text{PO}_4^{3-} \quad \text{NH}_4^+$$

$$\text{NH}_4\text{NO}_3 \rightarrow \text{NH}_4^+ + \text{NO}_3^-$$

$$\text{K}_3\text{PO}_4 \rightarrow 3\text{K}^+ + \text{PO}_4^{3-}$$

$$0.04 \text{ mol} \quad 0.12 \text{ mol} \quad 0.04 \text{ mol}$$

$$200\text{ mL} \quad 0.2\text{ M}$$

$$0.2\text{ M} = \frac{X \text{ mol}}{0.2\text{ L}} \quad X = 0.04 \text{ mol}$$

$$M = \frac{\text{mol}}{L} = \frac{0.12 \text{ mol}}{0.4\text{ L}} = 0.3\text{ M K}^+$$

$$\frac{200\text{ mL}}{1\text{ L}} = \frac{0.2\text{ L}}{1000\text{ mL}}$$