

## Molarity - Example of Work

How many grams of  $\text{KNO}_3$  do I weigh out if I want 250. ml of a 0.427 M  $\text{KNO}_3$  solution?

By Equation:

q. Find m.  $\text{KNO}_3$

$$M = \frac{\text{mole solute}}{\text{L solution}} \Rightarrow \text{mole solute} = (M)(\text{L solution})$$

$$(250. \text{ ml}) \left( \frac{1 \text{ L}}{1000 \text{ ml}} \right) = 0.250 \text{ L}$$

$$\text{mmKNO}_3: 1(39 \text{ g}) + 1(14 \text{ g}) + 3(16 \text{ g}) =$$
$$\frac{101 \text{ g KNO}_3}{1 \text{ mole KNO}_3}$$

$$\text{mole KNO}_3 = \frac{(0.427 \text{ mole KNO}_3)(0.250 \text{ L})}{1 \text{ L}}$$

$$\text{mole KNO}_3 = 0.1067 \text{ mole KNO}_3$$

b. mole  $\text{KNO}_3 \rightarrow \text{g KNO}_3$

$$(0.1067 \text{ mole KNO}_3) \left( \frac{101 \text{ g KNO}_3}{1 \text{ mole KNO}_3} \right) = 10.77 \text{ g KNO}_3$$
$$= \boxed{10.8 \text{ g KNO}_3}$$

By DA

250. ml

$$0.427 \text{ M} = \frac{0.427 \text{ mole KNO}_3}{1 \text{ L solution}}$$

$$\text{mmKNO}_3: 1(39 \text{ g}) + 1(14 \text{ g}) + 3(16 \text{ g}) = \frac{101 \text{ g KNO}_3}{1 \text{ mole KNO}_3}$$

$$(250. \text{ ml}) \left( \frac{1 \text{ L}}{1000. \text{ ml}} \right) \left( \frac{0.427 \text{ mole KNO}_3}{1 \text{ L solution}} \right) \left( \frac{101 \text{ g KNO}_3}{1 \text{ mole KNO}_3} \right) = 10.78 \text{ g KNO}_3$$
$$= \boxed{10.8 \text{ g KNO}_3}$$