

Review

#1

A solution containing 30% by mass sodium sulfate in an aqueous solution contains how many grams of sodium sulfate in a 200 g sample?

$$\frac{\text{mass solute}}{\text{mass solution}} \times 100$$

$$\frac{x}{200g} = \frac{0.30}{1}$$

$$\frac{xg \text{ Na}_2\text{SO}_4}{200g \text{ sol.}} \times 100 = 30\%$$

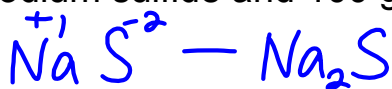
~~100~~ 100

$$60g \text{ Na}_2\text{SO}_4$$

Apr 27-8:00 AM

Review

Determine the percent by mass of a solution containing 10 moles of sodium sulfide and 100 grams of water.



$$10 \text{ mol Na}_2\text{S} \times \frac{78g \text{ Na}_2\text{S}}{1 \text{ mol Na}_2\text{S}} = 780g \text{ Na}_2\text{S}$$

$$\text{Na} = 2 \times 23 = 46$$

$$\text{S} = 1 \times 32 = \frac{32}{78g/\text{mol}}$$

$$\frac{780g \text{ Na}_2\text{S}}{880g \text{ sol.}} \times 100 = 88.6\% \text{ Na}_2\text{S}$$

Apr 27-8:01 AM

Review

What is the molality of a solution that has 50 moles of solute in 1000 mL of water?

$$m = \frac{\text{mol}}{\text{kg}}$$

$$1000 \text{ mL} = 1000 \text{ g} \times \frac{1 \text{ kg}}{1000 \text{ g}} = 1 \text{ kg}$$

$$m = \frac{50 \text{ mol}}{1 \text{ kg}} = 50 \text{ m}$$

Apr 27-8:03 AM

Review

What is the volume of a 0.5 M solution that has 10 moles of solute?

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

$$\frac{0.5 \text{ M}}{1} = \frac{10 \text{ mol}}{X \text{ L}} = 20 \text{ L}$$

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Dilutions

-- adding solvent to decrease the concentration

Concentrated Solution : has a large amount of solute per solvent

Dilute Solution : has a smaller amount of solute per solvent

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Creating a Dilute Solution

$$M_1 V_1 = M_2 V_2$$

M_1 = molarity (M) of the original solution

V_1 = volume (mL or L) of the original solution

M_2 = molarity (M) of the dilute solution

V_2 = volume (mL or L) of the dilute solution

- stock solution

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Practice:

What volume of a 3.00 M KI stock solution would you use to make 0.300 L of a 1.25 M KI solution?

$$M_1V_1 = M_2V_2$$

$$3.00\text{M} \cdot V_1 = 1.25\text{M} \cdot 0.300\text{L}$$

$$\frac{3.00\text{M} \cdot V_1}{3.00} = \frac{0.375}{3.00}$$

$$V_1 = 0.125\text{L}$$

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Practice:

How many milliliters of a 5.0 M H_2SO_4 stock solution would you need to prepare 100.0 mL of 0.25 M H_2SO_4 ?

$$M_1V_1 = M_2V_2$$

$$5.0\text{M} \cdot V_1 = 0.25\text{M} \cdot 100\text{mL}$$

$$V_1 = 5\text{mL}$$

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Practice:

If 0.50 L of 5.00 M stock solution of HCl is diluted to make 2.0 L of solution, how much HCl, in grams, is in the solution?

$$M_1V_1 = M_2V_2$$

$$0.50\text{L} \cdot 5.00\text{M} = 2.0\text{L} \cdot M_2$$

$$M_2 = \frac{1.25\text{M}}{1} = \frac{x \text{ mol}}{2.0\text{L}}$$

$$2.50\text{mol HCl} \times \frac{36\text{g HCl}}{1\text{mol HCl}}$$

$$= 90\text{g HCl}$$

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Attachments

solutionSalt.zip

clipboard(20615).galleryitem