

HONORS CHEMISTRY: DEFINING SOLUTION STRENGTH

DATE: _____

Learning Activities: SWBAT...

...describe solution strength through both qualitative and quantitative means.

QUALITATIVE DESCRIPTIONS OF SOLUTION STRENGTH:

CONCENTRATED:

DILUTE:

UNSATURATED:

SATURATED:

SUPERSATURATED:

- Usually due to changes in temperature.

As a general rule of thumb,

The solubility of solids tends to _____ with increasing temperature.

The solubility of gases tends to _____ with increasing temperatures.

QUANTITATIVE DESCRIPTIONS OF SOLUTION STRENGTH:

MOLARITY [M] =

- Molarity is the most common unit of concentration used.

Try this... 50.0 grams of sodium hydroxide is dissolved in a 0.500 liter volumetric flask. What is the molarity of the solution?

AS NOTED EARLIER, MOLARITY IS BY FAR THE MOST COMMON MEASUREMENT OF CONCENTRATION, BUT CERTAIN PROFESSIONS USE DIFFERENT UNITS OF CONCENTRATION THAT ARE MORE USEFUL TO THEIR WORK.

MASS PERCENT:

$$\text{Mass Percent} = \frac{\text{mass of solute}}{\text{mass of solution}} \times 100\% = \frac{\text{mass of}}{\text{mass of} + \text{mass of}} \times 100\%$$

Try this... 50.0 grams of sodium hydroxide is dissolved in a 0.500 liters of water. What is the mass percent of NaOH? Density of water = 1.0 g/mL

MOLALITY [m]:

- Since volume can change at different temperatures,
- Since molality uses mass, not volume, it's independent of temp. changes ®
- Even with the advantages of molality, many chemists prefer the ease of using molarity for conc.

Try this... 50.0 grams of sodium hydroxide is dissolved in a 0.500 liters of water. What is the molality of NaOH given that the density of water at that temperature is 1.0 g/mL?



“Don't go around saying the world owes you a living. The world owes you nothing. It was here first.” ~ Mark Twain (1835 - 1910)