

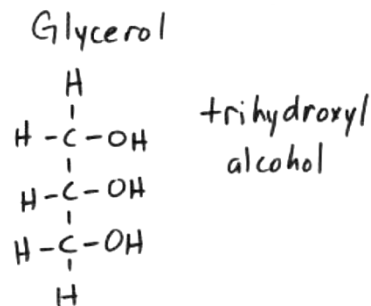
Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_ Seat #: \_\_\_\_\_

**Concentration:**

Concentrated sulfuric acid contains very little water, only 5.0% by mass. It has a density of 1.84 g/mL. What is the molarity of this acid?

**Particles:** When 1 mole of each of the following solutes dissolves in water, how many moles of particles are in the solution? Note: this value is called the van't Hoff factor,  $i$ .

- |                    |                                |
|--------------------|--------------------------------|
| ___ NaCl           | ___ glycerol                   |
| ___ sugar          | ___ $\text{Ca}(\text{NO}_3)_2$ |
| ___ $\text{KNO}_3$ | ___ KCl                        |



**Henry's Law:**  $S_g = k_H P_g$  - **SKIP**

$S_g$  means \_\_\_\_\_  $P_g$  means \_\_\_\_\_  
 $k_H$  is a constant. For oxygen gas in water (at 25°C) it is  $1.66 \times 10^{-6} \text{ M/torr}$ .

Calculate the solubility of oxygen in water at 25°C when the total external pressure is 1 atm and the mole fraction of oxygen in the air is 0.20.

### Problem broken down into steps...

#### Concentration:

Concentrated sulfuric acid contains very little water, only 5.0% by mass. It has a density of 1.84 g/mL. What is the molarity of this acid?

- a) What is the formula for sulfuric acid? \_\_\_\_\_
- b) What is the molar mass for sulfuric acid? \_\_\_\_\_
- c) 5.0% by mass gives you three useful values: Fill in the units for each.
- |     |     |    |
|-----|-----|----|
| 5.0 | 100 | 95 |
|-----|-----|----|
- d) Write the formula for molarity?
- e) Calculate the moles of solute. Show your set-up.
- f) Calculate the volume (in Liters) of the solution. Show your set-up.
- g) Calculate the molarity of the solution.