

## Chapter 14 Worksheet 2 (Solution Concentration and Henry's Law)

Name:

UGA ID:

### Instructions:

- Please enter your first and last name as it appears on the eLC roster (do not use a nickname).
- Your UGA myID is a combination of letters and numbers (example: mine is sre13137). **Do not use your 81x number.**
- If you do not have a printer, type your answers in the then upload the worksheet template to Gradescope by Monday, September 28 at 11:59 pm. Write your work on separate sheets of paper, convert to a PDF and upload to eLC.
- If you have a printer download the worksheet, convert it to a PDF and upload to Gradescope by Monday, September 28 at 11:59 pm. You do not need to upload anything to eLC.

1. A student mixes 0.0100 grams of sodium chloride into a beaker containing 1 liter of water. Select all true statements.

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- A. The solution is 10.0 ppm sodium chloride.
- B. The solution is 0.001% w/w sodium chloride.
- C. The solution is 0.000171 M sodium chloride.
- D. The solution is 0.0171 m sodium chloride.

The mole fraction of sodium chloride is  $3.08 \times 10^{-4}$ .

The density of water is 1.00 g/mL.

2. 100.00 g of a solution of copper(II) sulfate in water is 14.00% copper(II) sulfate by mass. Its density is 1.1545 g/cm<sup>3</sup> at 20 °C.

- A. What is the concentration of copper(II) sulfate expressed in **molarity**?

- B. What is the concentration of copper(II) sulfate expressed in **molality**?

- C. What is the concentration of copper(II) sulfate expressed as a **mole fraction**?



3. Cholesterol counts are given in mg/dL. What is the **molarity** of cholesterol (FW 387) in the blood of a patient with a cholesterol count of 220?

- A.  $(220) / (387)$
- B.  $(22.0) / (387)$
- C.  $(2.20) / (387)$
- D.  $(220) / (0.387)$

4. Which of the four solutions is most concentrated?

- A. 50 ppm  $\text{CaCO}_3$
- B.  $1 \times 10^{-7} \text{ M CaCO}_3$
- C.  $X_{\text{CaCO}_3} = 3.6 \times 10^{-8}$
- D.  $1 \times 10^{-7} \text{ m}$

5. The Henry's Law constant of methyl bromide,  $\text{CH}_3\text{Br}$ , is  $k = 0.159 \text{ mol}/(\text{L} \cdot \text{atm})$  at  $25^\circ\text{C}$ . What is the solubility of methyl bromide in water at  $25^\circ\text{C}$  and at a partial pressure of 250. mm Hg?