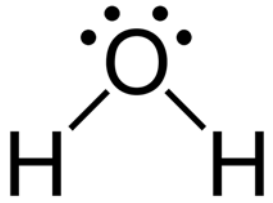
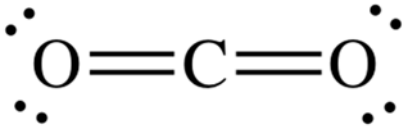
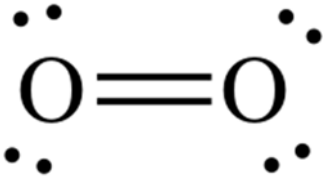
Name _____ **Hydro 6 Practice 4**

Target	1	2 (all of 1 plus)	3 (all of 2 plus)	4 (all of 3 plus)
LE 5.7 Preparedness	Does not complete formative or summative in an effortful and timely manner, is not engaged, does not arrive on time with class materials ready to learn, does not communicate when issues arise	Completes formative or summative in an effortful or timely manner, is sometimes engaged, sometimes arrives on time with class materials ready to learn, sometimes communicates when issues arise	Completes formative or summative in an effortful and timely manner, remains engaged, arrives on time with materials ready to learn, communicates when issues arise	Completes formative or summative in an effortful and timely manner, remains engaged, arrives on time with materials ready to learn, communicates when issues arise, and is reflective on strengths and challenges within your preparedness skill
LE 5.6 Precision	Recognizes the importance of products that are planned, edited, and completed with care	Attempts products that are planned, edited, and completed with care	Creates products that are planned, edited, and completed with minimal errors	Creates products that are planned, edited, and completed free from errors or need for revision
Hydro 6	I can identify solvent, solute and solution and create/interpret a diagram of solution at the molecular scale	I can recognize that polarity has a role in solubility	I can predict solubility based on polarity of solute and solvent	I can interpret/explain the consequence(s) of solubility with respect to pollution
MP3 Hydrosphere (Shape, Polarity, Solubility)	I can create a Lewis structure of a particle of a substance, and use it to predict the shape of a molecule.	(all of 1 plus) I can use electronegativities of atoms and shapes of molecules to predict polarity	(all of 2 plus) I can demonstrate an understanding of the relationship between polarity and solubility	(all of 3 plus) aced it!

Inquiry into Dissolved Gases

Predictions:

		
polar or non-polar	polar or non-polar	polar or non-polar

Would you predict that CO_2 would be significantly soluble (dissolve "a lot") in water? Briefly explain.

Would you predict that O_2 would be significantly soluble (dissolve "a lot") in water? Briefly explain.

Lab Activity

Materials:

Bromothymol blue solution (in a dropper bottle), 2 Erlenmeyer flasks (250 mL), goggles, straw

Directions:

1. Fill each flask with about 100 mL of tap water.
2. Add ten (10) drops of bromothymol blue solution to each Erlenmeyer flask and swirl.
3. Record the starting color of the mixture in the table below.
4. EXHALE into the mixture in **ONE** of the flasks using the straw (*ie, blow some bubbles into the mixture*).
5. Continue to blow bubbles into this mixture, until you note a significant color change.
6. Observe the color change, and record in the table.

Name _____ **Hydro 6 Practice 4**
Partner(s) _____

Demonstration: Dissolving Gas in Water

	Starting Color	**Ending Color**
Control (*do not blow into this one*)		
Test Subject		

KEY points…..

1. As you metabolize the carbohydrates you eat, carbon dioxide (CO_2) is produced.
2. You breathe out some of that CO_2 .
3. Bromothymol blue in water + CO_2 produces a yellow colored solution.

Analysis

1. The mixture you exhaled into turned what color ? _____
2. It turned this color because …?

3. Where did the carbon dioxide that was exhaled through the straw end up? Name two places…

4. What evidence do you have to support your answer to Question 3?

5. Swirl your control sample of water. Swirling allows some air to dissolve into the water. What can you say about the **quantity of CO_2** in your breath compared to the **quantity of CO_2** in the air? What evidence do you have to support your answer?

6. Predict how the mass of the contents in the beaker changed after carbon dioxide was added to the solution. (*Assume nothing splashed out of the flask.*)
    a. The mass would increase
    b. The mass would decrease
    c. The mass would stay the same

Fill in the table below in your own words:
Do not use the words 'solute', 'solvent', 'solution' in your definitions.

Word	Definition	In this mini-lab
Solvent		
Solute		
Solution		

Law of Conservation of Matter	Definition: Which of the options for question #6 is consistent with the Law of Conservation of Matter? _____

Questions continue on next page…..

Considering a sample of fish tank water, what must be in the fish tank water in order for the fish to survive?

What do fish “breath” out (*just like* humans) that would also dissolve in water?

<u>For Fish Tank Water</u>

Measure _____ = _____ppm (parts per million)

$$\frac{grams\ O_2}{grams\ H_2O}$$

Translation…

$$1gram\ of\ H_2O\ x\ \frac{1mL\ of\ H_2O}{1gram\ of\ H_2O} = 1ml\ of\ H_2O$$

So…

$$\frac{grams\ O_2}{mL\ H_2O}$$

We have sample of 100mL of water…

$$\frac{grams\ O_2}{mL\ H_2O}$$

	amount dissolved in 1,000,000mL of H_2O (g)	Amount dissolved in 100mL of H_2O (g)
O_2		
CO_2		
Sugar ($C_{12}H_{22}O_{11}$)		(max)
Salt (NaCl)		(max)