

Review 2; This won't be checked.

Chemistry: <https://genest.weebly.com>

Check the answers to this online after 6pm.

After-class question? Email me at home: eogeees1@madison.k12.wi.us



Name \_\_\_\_\_  
Period \_\_\_\_\_

1. Take 99 mL of sugar water that is 0.730 mol/L. Add 99 mL of water to it. What is the final concentration of the new solution?

final volume = 198 mL  
initial volume = 99 mL

$$M_2 = \frac{M_1 V_1}{V_2}$$

$$M_2 = \frac{(0.730)(0.099L)}{(0.198L)}$$

$$M_2 = 0.365M$$

2. 1.5 moles of carbon dioxide can make a 4 mol/L solution. What volume should the solution be?

$$\text{Volume} = \frac{\text{moles}}{M}$$

$$\text{Volume} = \frac{1.5 \text{ moles}}{4 \text{ mol/L}}$$

$$\text{Volume} = 0.375L$$

$$V \approx 4L$$

3. A study of dog sweat finds 0.003 moles of potassium ion in 30 milliliters of sweat. What is the concentration?

$$M = \frac{\text{moles}}{\text{Volume}}$$

$$M = \frac{0.003 \text{ moles}}{0.030 L}$$

$$M = 0.1M$$

4. Write the charges of the following ions with the aid of a periodic table:

+ Na ion

2- Oxygen ion

2+ Zn ion

3+ Al ion

5. How many of the ions in the previous question are "Anions"? JUST ONE, OXYGEN

6. In the second box, redraw how the first drawing would look if the ion in the middle were "-" instead of "+".



7. In  $(NH_4)_2CO_3$  Carbonate is the (cation / anion) and Ammonium is the (cation / anion)

8. If you have 1.0 M solutions of the compounds above which would raise the freezing point the most? Which would raise the freezing point the least?

- a. Sugar ( $C_{12}H_{22}O_{11}$ ) 1 piece  
b. Sodium chloride 2 pieces  
c. Aluminum fluoride 4 pieces ( $AlF_3$ )  
d. Magnesium bromide 3 pieces ( $MgBr_2$ )

ANSWER:  $AlF_3$  would lower it most

Sugar would lower it least

10. Explain why salt is added to water when you are cooking pasta.

Higher boiling point from adding solute to solvent  
 Higher water <sup>so</sup> temperature  
 It <sup>so</sup> cooks faster

11. Explain why you put antifreeze in your car during the winter AND also during the summer.

In the winter it inhibits water from freezing [MAKES FREEZING PT LOWER]  
 In the summer it inhibits water from boiling [MAKES BOILING PT HIGHER]

12. In  $\text{FeCO}_3(s)$  iron is the (cation / anion) and  $\text{CO}_3$  is the (cation / anion)

13. The following are all water based solutions. Rank the solutions from coldest freezing point (1) to highest freezing point (4)

- a. 1 0.5M  $\text{AuF}_3(aq)$  four particles  
 b. 3 0.5M  $\text{NO}_2(aq)$  one particle (IT'S MOLECULAR)  
 c. 4 pure water no particles  
 d. 2 0.5M  $\text{NaCl}(aq)$  two particles

14. How many grams of  $\text{SF}_4$  are contained in 606. mL of a 0.075 M solution?

moles =  $M \cdot L$       moles =  $(0.075M)(0.606L)$       moles = 0.04545 mol  
 $0.04545 \text{ mol} \times \left( \frac{108.06 \text{ grams}}{1 \text{ mol}} \right) = 4.9 \text{ grams}$

15. Circle the metallic element in each.

Circle any element that is a metal	This substance is...
<u>Al</u> (OH) <sub>3</sub>	ionic / molecular

Circle any element that is a metal	This substance is...
N <u>H</u> <sub>4</sub> Br	ionic / molecular

16. How many pieces will this fall apart into if made into an aqueous solution? (circle your choice)

$\text{NH}_4\text{Br}$  | 1? 2? 3? 4? 5?

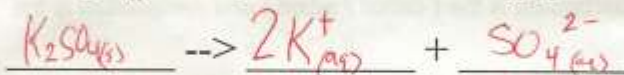
$\text{CaCO}_3$  | 1? 2? 3? 4? 5?

$\text{Mg}_3(\text{PO}_4)_2$  | 1? 2? 3? 4? 5?

$\text{Na}_2\text{S}$  | 1? 2? 3? 4? 5?

17. Write your answer with a coefficient in front of each particle. For example, instead of writing Br- Br- Br- it is more common and easier to write a coefficient: 3Br-

$\text{K}_2\text{SO}_4(aq)$  dissolving. Use a coefficient where appropriate.



18. How many moles of nitrate ions are in 50.0 mL of a 1.9850 M magnesium nitrate solution?

moles =  $M \cdot L$

moles =  $(1.9850M)(0.0500L)$

moles = 0.0993 moles