**District Assessment Review**

**CLS 3 – Bonding – Ionic and Covalent**
**Determine if the compound is ionic (I) or covalent (C).**
1. SCl2 \_\_\_\_\_\_ 3. KOH \_\_\_\_\_\_

2. CaCO3 \_\_\_\_\_\_ 4. N2O \_\_\_\_\_\_

**Draw the Lewis dot structure and determine if the compound is polar or nonpolar.**
5. CH4 6. NH3

**What is the name of each compound?**
7. CuSO4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. PCl3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. NO \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. Zn(OH)2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**What is the formula of each compound?**
11. carbon tetrachloride \_\_\_\_\_\_\_\_\_ 13. calcium phosphate \_\_\_\_\_\_\_\_\_\_

12. potassium sulfide \_\_\_\_\_\_\_\_\_ 14. lead (IV) oxide \_\_\_\_\_\_\_\_\_\_

**CLS 4 – Equations and Reactions**

**Balance the following equations.**

1. \_\_\_\_ Al + \_\_\_\_ HNO3 🡪 \_\_\_\_ Al(NO3)3 + \_\_\_\_ H2

2. \_\_\_\_ ­(NH4)3PO4 + \_\_\_\_ CuSO4  🡪 \_\_\_\_ ­(NH4)2SO4 + \_\_\_\_ Cu3(PO4)2

**Predict the products of the following reactions.**

3. CaBr2 + KOH 🡪

4. Mg + O2 🡪

5. C3H8 + O2 🡪

6. Ba + FeCl3  🡪

**Classify the type of reaction for each of the chemical reactions above.**

 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Write the correct formula reaction and balance the equation.**

7. Fluorine reacts with sodium chloride.

8. Potassium iodide reacts with magnesium sulfate.

**CLS 5 – Moles & Stoichiometry**

Factor Label

1. Use the following conversion factors to determine how many inches are in 3.76 meters.

Molar Mass
2. What is the molar mass of Zn(NO3)2? 3. What is the molar mass of oxygen gas?

Percent Error
4. A lab group calculated the density of a sample of aluminum. They found it to have a
 density of 2.37 g/mL. The accepted (theoretical) density of aluminum is 2.70 g/mL.
 What is the percent error?

Mole Conversions
5. How many atoms are in 2.13 moles of calcium?

% Error = Theoretical – Experimental x 100

 Theoretical

1 m = 100 cm
1 in = 2.54 cm

6. How many grams are in 4.67 x 1023molecules of H2O?

Stoichiometry
Use the following balanced equation to answer the questions.
 2 Al + 6 HCl 🡪 2 AlCl3 + 3 H2

7. How many moles of HCl need to react to produce 0.760 moles of AlCl3?

8. How many grams of H2 are produced if 34.5 grams of Al react?

**CLS 6 – Gases**1. If the volume of a gas decreases by one half, the pressure of the gas

 will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

2. At STP, the temperature is \_\_\_\_\_\_\_\_ K and the pressure is \_\_\_\_\_\_\_\_atm.

3. What happens to the movement of particles at absolute zero? \_\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_ particles are compressible because \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. A sample of gas has a pressure of 825 torr at 45°C. What is the new pressure
 if the temperature decreases to 15°C and the volume stays constant?

6. A balloon filled with 400. mL of helium gas is at 295 K and 775 torr. If the
 temperature decreases to 275K and the volume is 525 mL, what is the new
 pressure of the helium gas?

7. A 4.75 L sample of gas is at STP conditions. What is the new volume if the
 temperature is 32°C and the pressure is 1.65 atm?

**CLS 7 – Acids & Bases and Solutions**

1. Acid + Base 🡪 \_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_

2. Determine if the following describes an ACID or a BASE.

 a. contains hydrogen ions \_\_\_\_\_\_\_\_\_\_\_\_\_

 b. contains hydroxide ions \_\_\_\_\_\_\_\_\_\_\_\_\_

 c. pH = 10.5 \_\_\_\_\_\_\_\_\_\_\_\_\_

 d. pH = 4.2 \_\_\_\_\_\_\_\_\_\_\_\_\_

3. What is the pH of solution of HNO3 with a concentration of 1.0 x 10-2 M?

4. What is the hydrogen concentration of a solution with a pH of 3.5?

5. 50.0 grams of sucrose is dissolved in water. The volume of the solution is 300 mL.

 a. What is the solute? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. What is the solvent? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Calculate the molarity of a solution that has 0.750 moles of NaCl dissolved into
 525 mL of solution.

7. How many grams of NaOH are needed to make 250. mL of a 2.00 M solution?