

Name: \_\_\_\_\_

Group: \_\_\_\_\_

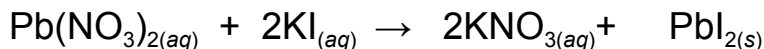
### Practice Comp #3

- When snow is created, water vapors become solid ice in clouds. This process is an example of \_\_\_\_\_.  
A. Evaporation  
**B. Deposition**                      Gas  $\rightarrow$  Solid = Deposition  
C. Condensation  
D. Sublimation
- An ion contains 18 electrons, 15 neutrons and 14 protons. What is the charge of this ion?  
A. -1                      A neutral atom has the same number of  $e^-$  and  $P^+$ . This ion contains 4  
B. +1                      more electrons than protons.  
C. +4  
**D. -4**
- A neutral atom with the electron configuration,  $1s^22s^22p^63s^23p^4$ . It has \_\_\_\_\_ energy shells and \_\_\_\_\_ valence electrons.  
A. 6, 5                      The coefficients represents the energy shell number and the  
B. 5, 6                      superscripts represent the number of electrons in that shell.  
**C. 3, 6**                      For the example above there are s and p components to the  
D. 3, 4                       $2^{nd}$  and  $3^{rd}$  energy shells. The  $3^{rd}$  shell is the valence shell  
   which contains 2 in s and 4 in p for a total of 6 valence  $e^-$ .
- Sodium is found in group \_\_\_\_\_ and in period \_\_\_\_\_ on the periodic table.  
**A. 1A, 3**                      Groups extend up and down along a column of the periodic  
B. 6A, 4                      table. Periods extend left and right. Sodium (Na) is the first  
C. 1A, 2                      element in the  $3^{rd}$  period and it also has 3 energy shells.  
D. 6A, 2
- Which of the following families would have a predicted charge of  $1+$ ?  
A. Noble Gases                      Alkali metals lose 1  $e^-$  to acquire a full valence shell  
B. Halogens                      and stability. After losing the  $e^-$  the atom has  
C. Alkaline earth metals                      one fewer  $e^-$  than  $P^+$  and so the atom is an ion with a  
**D. Alkali metals**                      charge of  $+1$

6. What is the mass number of  ${}^7_3\text{Li}^{1+}$  ?
- A. 1+                      The number in the top left corner of the symbol represents  
 B. 3                        the mass number, the sum of the protons and neutrons.  
**C. 7**  
 D. 4
7. Which of the following pure substances are likely to be a good conductor of heat?
- A. NaCl                      Metals are good conductors of heat.  
**B. Fe**  
 C. O<sub>2</sub>  
 D. CO<sub>2</sub>
8. Which of the following pure substances has the lowest melting point?
- A. Mg                        Nonmetals tend to have lower melting points.  
**B. NO<sub>2</sub>**  
 C. NaCl  
 D. NH<sub>4</sub>NO<sub>3</sub>
9. Which of the following substances would you expect to be brittle?
- A. CO<sub>2</sub>                      Ionic compounds and metalloids tend to be brittle.  
**B. CaO**  
 C. NO  
 D. O<sub>2</sub>
10. In which of the following pure substances would electrons be completely transferring from one atom to another?
- A. H<sub>2</sub>O                      Ions are created by when electrons completely transfer from  
 B. CO<sub>2</sub>                      one atom (usually a metal) to another (usually a nonmetal).  
 C. C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>  
**D. MgO**
11. A sample containing 2.5 moles of magnesium chloride contains how many chloride ions?
- A. **3.0 x 10<sup>24</sup> Cl<sup>1-</sup> ions**                       $2.5 \text{ mol MgCl}_2 \times \frac{2 \text{ mol Cl}^{1-}}{1 \text{ mol MgCl}_2} \times \frac{6 \times 10^{23} \text{ Cl}^{1-} \text{ ions}}{1 \text{ mol Cl}^{1-}}$   
 B. 1.5 x 10<sup>24</sup> Cl<sup>1-</sup> ions  
 C. 4.5 x 10<sup>23</sup> Cl<sup>1-</sup> ions  
 D. 1.5 x 10<sup>23</sup> Cl<sup>1-</sup> ions



17. During an lab procedure, 110.4 grams of aqueous lead (II) nitrate react with 110.7 grams of potassium iodide according to the balanced equation below. When the reaction is over, 153.7 grams of solid lead (II) iodide are obtained. What is the mass of the potassium nitrate still dissolved in water?



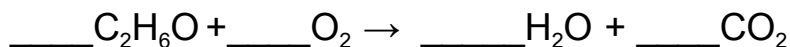
A. 35.9 g KNO<sub>3</sub>    110.4 g + 110.7 g = x + 153.7g.

B. 85.1 g KNO<sub>3</sub>    x = 67.4 g

C. 72.6 g KNO<sub>3</sub>

D. **67.4 g KNO<sub>3</sub>**

18. Ethanol combusts according to the following unbalanced equation. What are the coefficients when the equation is balanced?



A. 1, 3, 1, 2

B. **1, 3, 3, 2**

C. 2, 3, 3, 2

D. 3, 2, 2, 3

19. According to the following *unbalanced* chemical equation, how many moles of potassium chloride are required to produce 3.4 moles of chlorine gas?



A. 1.7 moles KCl

B. **6.8 moles KCl**     $3.4 \text{ mol Cl}_2 \times \frac{2 \text{ mol KCl}}{1 \text{ mol Cl}_2} =$

C. 10.2 moles KCl     $\frac{1 \text{ mol Cl}_2}{1 \text{ mol Cl}_2}$

D. 5.1 moles KCl

20. According to the following unbalanced chemical equation, how many moles of oxygen (O<sub>2</sub>) are required to produce 18.3 moles of Al<sub>2</sub>O<sub>3</sub>?



A. 12.2 moles of O<sub>2</sub>     $18.3 \text{ mol Al}_2\text{O}_3 \times \frac{3 \text{ mol O}_2}{2 \text{ mol Al}_2\text{O}_3} =$

B. 36.6 moles of O<sub>2</sub>     $\frac{2 \text{ mol Al}_2\text{O}_3}{2 \text{ mol Al}_2\text{O}_3}$

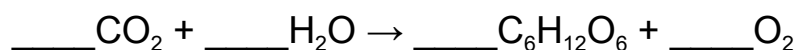
C. **27.5 moles of O<sub>2</sub>**

D. 9.2 moles of O<sub>2</sub>

21. A sample of mercury (Hg) contains  $4.3 \times 10^{24}$  atoms which is equivalent to \_\_\_\_\_ moles of mercury?

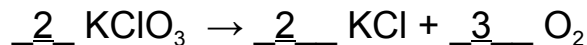
- A. 25.8 mol Hg                       $4.3 \times 10^{24}$  Hg atoms      x       $\frac{1 \text{ mole Hg}}{6 \times 10^{23} \text{ Hg atoms}} =$   
B. 2.6 mol Hg  
C. 0.71 mol Hg  
D. **7.1 mol Hg**

22. According to the following unbalanced chemical equation for the photosynthetic production of glucose, how many moles of  $\text{CO}_2$  are required to produce 1.9 moles of glucose?



- A. 68.6 mol  $\text{CO}_2$   
B. 501.6 mol  $\text{CO}_2$                        $1.9 \text{ mol C}_6\text{H}_{12}\text{O}_6$       x       $\frac{6 \text{ mol CO}_2}{1 \text{ mol C}_6\text{H}_{12}\text{O}_6} =$   
C. 3.16 mol  $\text{CO}_2$   
D. **11.4 mol  $\text{CO}_2$**

**Directions:** The following two problem should be solved below the bubbles on your answer sheet.



23. Balance the chemical equation above.

23. How many moles of oxygen ( $\text{O}_2$ ) will be produced if 8.4 moles of  $\text{KClO}_3$  are decomposed?

$$8.4 \text{ mol KClO}_3 \quad \times \quad \frac{3 \text{ mol O}_2}{2 \text{ mol KClO}_3} \quad = \quad 12.6 \text{ mol O}_2$$