

Name \_\_\_\_\_  
Date \_\_\_\_\_

Honors Test Review

- \_\_\_\_ 1. Which list includes three types of chemical reactions?  
(1) condensation, double replacement, sublimation. (3) decomposition, double replacement, synthesis  
(2) condensation, solidification, synthesis (4) decomposition, solidification, sublimation
- \_\_\_\_ 2. Given the balanced equation:  $\text{KClO}_3 \rightarrow 2 \text{KCl} + 3 \text{O}_2$  which type of reaction is represented by this equation?  
(1) synthesis (2) decomposition (3) single replacement (4) double replacement
- \_\_\_\_ 3. According to reference Table J, which of these metals will react most readily with HCl to produce  $\text{H}_2$  (g)?  
(1) Rb (2) K (3) Ba (4) Al
- \_\_\_\_ 4. When the equation is balanced using the smallest whole-number coefficients, what is the coefficient of Al?  
 $\text{Al} + \text{CuSO}_4 \rightarrow \text{Al}_2(\text{SO}_4)_3 + \text{Cu}$   
(1) 1 (2) 2 (3) 3 (4) 4
- \_\_\_\_ 5. Given the reaction:  $\text{PbCl}_2(\text{aq}) + \text{Na}_2\text{CrO}_4(\text{aq}) \rightarrow \text{PbCrO}_4(\text{s}) + 2 \text{NaCl}(\text{aq})$  what is the total number of moles of NaCl formed when 4 moles of  $\text{Na}_2\text{CrO}_4$  reacts completely?  
(1) 4 moles (2) 5 moles (3) 6 moles (4) 8 moles
- \_\_\_\_ 6. Which reaction represents a double replacement reaction?  
(1)  $2\text{Na}(\text{s}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow 2 \text{NaOH}(\text{aq}) + \text{H}_2(\text{g})$ . (3)  $\text{LiOH}(\text{aq}) + \text{HCl}(\text{aq}) \rightarrow \text{LiCl}(\text{aq}) + \text{H}_2\text{O}(\text{l})$   
(2)  $\text{CaCO}_3(\text{s}) \rightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$  (4)  $\text{CH}_4(\text{g}) + 2\text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{g})$
- \_\_\_\_ 7. Given the reaction:  $\text{Ca}(\text{s}) + 2 \text{AgNO}_3(\text{aq}) \rightarrow \text{Ca}(\text{NO}_3)_2(\text{aq}) + 2 \text{Ag}(\text{s})$  which type of reaction is represented?  
(1) single replacement (2) synthesis (3) decomposition (4) double Replacement
- \_\_\_\_ 8. Given the balanced equation:  $\text{X} + \text{Cl}_2 \rightarrow \text{C}_2\text{H}_5\text{Cl} + \text{HCl}$  which molecule is represented by X?  
(1)  $\text{C}_2\text{H}_4$  (2)  $\text{C}_2\text{H}_6$  (3)  $\text{C}_3\text{H}_6$  (4)  $\text{C}_3\text{H}_8$
- \_\_\_\_ 9. Which barium salt is insoluble?  
(1)  $\text{BaCO}_3$  (2)  $\text{BaCl}_2$  (3)  $\text{Ba}(\text{OH})_2$  (4)  $\text{Ba}(\text{NO}_3)_2$
- \_\_\_\_ 10. Given the incomplete equation for the combustion of ethane:  $2 \text{C}_2\text{H}_6 + 7 \text{O}_2 \rightarrow 4 \text{CO}_2 + 6$  \_\_\_\_\_ what is the formula for the missing product?  
(1)  $\text{CH}_3\text{OH}$  (2)  $\text{HCOOH}$  (3)  $\text{H}_2\text{O}$  (4)  $\text{H}_2\text{O}_2$
- \_\_\_\_ 11. When the equation  $\text{Fe}_2\text{O}_3 + \text{H}_2 \rightarrow \text{Fe} + \text{H}_2\text{O}$  is balanced using whole-number coefficients, what is the sum of the coefficients?  
(1) 9 (2) 9 (3) 12 (4) 8
- \_\_\_\_ 12. Given the balanced equation:  $\text{CaCO}_3(\text{s}) + 2 \text{HCl}(\text{aq}) \rightarrow \text{CaCl}_2(\text{aq}) + \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g})$  what is the total number of moles of  $\text{CO}_2$  formed when 20. moles of HCl is completely consumed?  
(1) 5.0 moles (2) 10. moles (3) 20. moles (4) 40. Moles
- \_\_\_\_ 13. Given the equation:  $\text{Al}(\text{s}) + \text{I}_2 \rightarrow \text{AlI}_3(\text{s})$  what is the missing substance?  
(1) I (2)  $\text{AlI}_2$  (3)  $\text{Al}_2$  (4)  $\text{I}_2$

\_\_\_ 14. A double replacement reaction takes place when aqueous cobalt (III) chloride reacts with aqueous lithium hydroxide. One of the products of this reaction is:

- (1)  $\text{Co}(\text{OH})_3$             (2)  $\text{LiCl}_3$             (3)  $\text{LiCo}_3$             (4)  $\text{Co}_3\text{OH}$

\_\_\_ 15. Using the following equation:  $2 \text{Al}(\text{s}) + 3 \text{FeO}(\text{s}) \rightarrow 3 \text{Fe}(\text{s}) + \text{Al}_2\text{O}_3(\text{s})$  how many moles of aluminum are needed to completely reaction with 20.4 grams of  $\text{FeO}$ ?

- (1) 0.189 moles            (2) 0.426 moles            (3) 2.35 moles            (4) 30.6 moles

\_\_\_ 16. Which metal is more active than Ni and less active than Zn?

- (1) Cu            (2) Cr            (3) Mg            (4) Pb

Base your answers to questions 17 – 19 on the following reaction:  $2 \text{H}_2\text{O} \rightarrow 2 \text{H}_2 + \text{O}_2$

17. What type of reaction does this represent? \_\_\_\_\_

18. How does the balanced chemical equation show the law of conservation of mass?

19. What is the total number of liters of  $\text{O}_2$  produced when 28.0 grams of  $\text{H}_2\text{O}$  is completely consumed?

For questions 20 – 23, predict the products for each of the following reactions. You do not need to balance.

20. SYNTHESIS: \_\_\_  $\text{Mg}(\text{s}) +$  \_\_\_  $\text{N}_2(\text{g}) \rightarrow$  \_\_\_\_\_

21. SINGLE REPLACEMENT: \_\_\_  $\text{Ca} +$  \_\_\_  $\text{Cu}(\text{C}_2\text{H}_3\text{O}_2)_2 \rightarrow$  \_\_\_\_\_

22. DECOMPOSITION: \_\_\_  $\text{LiF}(\text{s}) \rightarrow$  \_\_\_\_\_

23. DOUBLE REPLACEMENT: \_\_\_  $\text{K}_2\text{SO}_4(\text{aq}) +$  \_\_\_  $\text{Ba}(\text{NO}_3)_2(\text{aq}) \rightarrow$  \_\_\_\_\_

24. a) Write out the equations and predict the products for a reaction between strontium nitrate and potassium sulfate.

\_\_\_\_\_ + \_\_\_\_\_  $\rightarrow$  \_\_\_\_\_ + \_\_\_\_\_

b) Write the total ionic equation:

\_\_\_\_\_

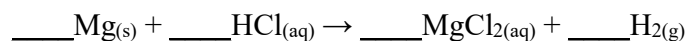
c) Write the net ionic equation: \_\_\_\_\_

d) Determine the spectator ions: \_\_\_\_\_

A student places a 12.50-gram sample of magnesium metal in a bottle and fits the bottle with a 2-hole stopper as shown in the diagram. Hydrochloric acid is added to the bottle, causing a reaction. As the reaction proceeds, hydrogen gas travels through the tubing to an inverted bottle filled with water, displacing some of the water in the bottle.



25. Balance the equation below for the reaction of magnesium and hydrochloric acid, using the smallest whole-number coefficients.



26. In the space below, given the grams of Mg used, calculate the number of grams of magnesium chloride produced in the experiment.

27. Based on Reference Table *J*, explain why Ag<sub>(s)</sub> will *not* react with HCl<sub>(aq)</sub> to generate H<sub>2</sub>(g)

