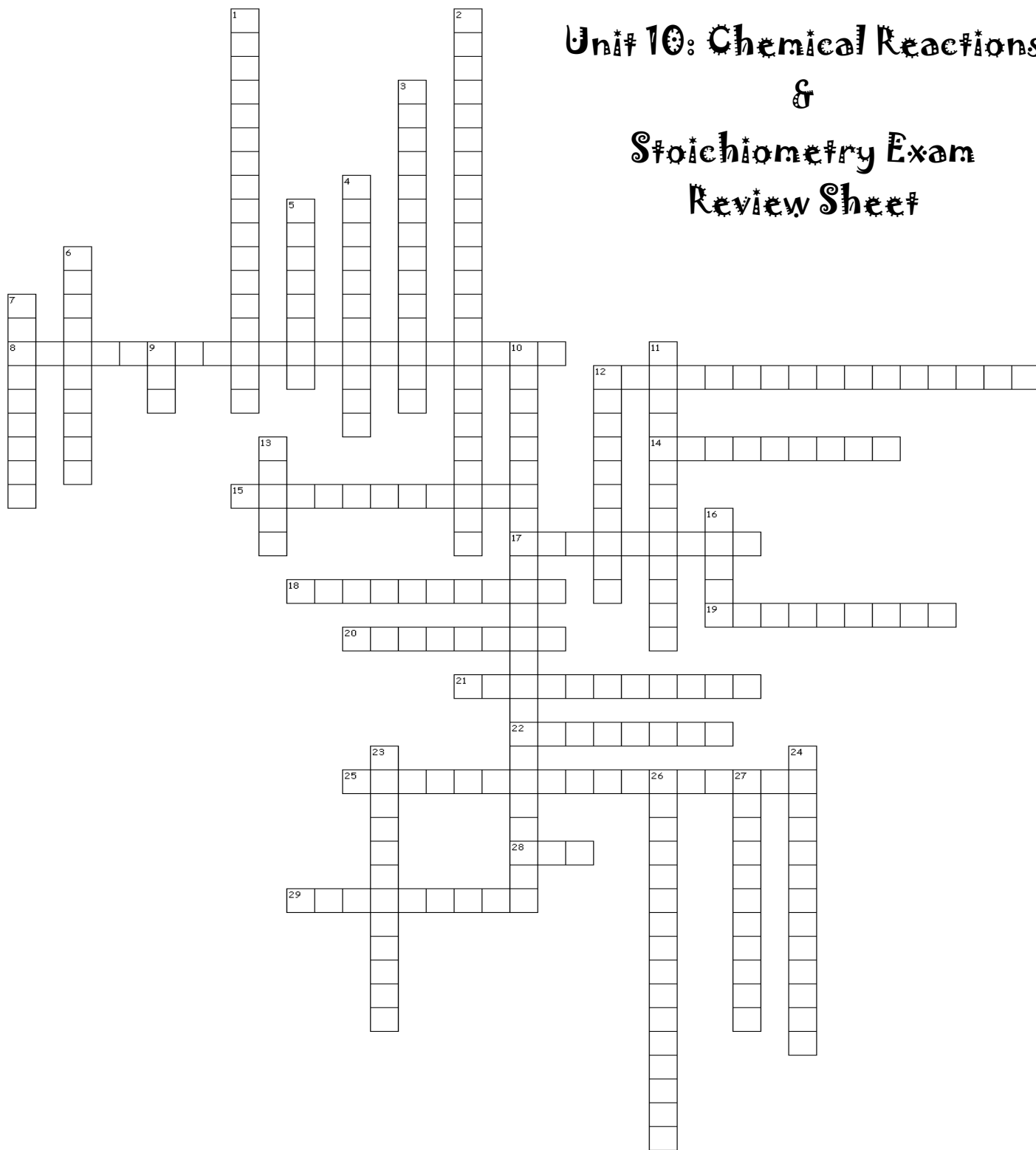# Unit 10: Chemical Reactions & Stoichiometry Exam Review Sheet

Name: _____ Date _____ Mod _____

A. Identify each of the following symbols:

- (s) _____
- (g) _____
- (l) _____
- (aq) _____
- --Δ→ _____

B. Why do chemical equations have to be balanced?

- _____
  _____
  _____
  _____

C. **On loose-leaf**, identify the indicators of a reaction.

D. Complete the puzzle using the following clues.

Across

8. when a system at equilibrium is disturbed, it finds a new equilibrium that reduces the effects of the disturbance
12. describes a chemical reaction using chemical formulas and other symbols
14. a conversion factor derived from the coefficients of a balanced chemical equation used in stoichiometry
15. an insoluble solid that results from the addition of two aqueous solutions
17. a substance that slows down chemical reactions
18. energy is given off during the reaction; spontaneous
19. type of reaction where two or more substances combine to form a new compound
20. a chemical equation is _____ when the same number and kinds of atoms are on both sides of the reaction
21. the sum of the average atomic mass of all the atoms in an element/compound
22. one or more new substances formed from a reaction
25. type of reaction where the ions of two compounds exchange places in aqueous solution to form two new compounds
28. in stoichiometry problems, if you start in moles you do not need step # _____
29. one or more substances that start a reaction

Down

1. type of reaction where one element replaces a similar element in a compound to form a new element and a new compound
2. matter cannot be created or destroyed; mass is conserved
3. another name for a chemical reaction
4. energy is absorbed during the chemical reaction; require energy to proceed
5. a substance that decreases the energy required to activate a reaction
6. these numbers can never be changed when balancing equations
7. the mass of one more of an element/compound
9. in stoichiometry problems, you ALWAYS need step # _____
10. law that states that a compound always contains the same elements in the same proportions despite how it was formed or the amount of compound that was made
11. type of reaction where a single compound undergoes a reaction that produces two or more simpler substances
12. type of reaction where a substance, usually a hydrocarbon, combines with oxygen, releasing a large amount of energy in the form of light and heat and the same two products: CO2 and H2O
13. in stoichiometry problems, if you end in moles you do not need step # _____
16. the coefficients in a balanced equation represent the _____ of a substance
23. the numbers in front of formulas which represent relative amounts of atoms in a reaction
24. the calculation of the quantities of reactants and products involved in a chemical reaction
26. a change in which substances are converted to new substances with different properties
27. the balanced state in which a chemical reaction and its reverse occur at the same time and the same rate

E. Balance the following equations (use phases) **on loose-leaf**. **Identify** the type of reaction.
- 1. Lithium metal and iron (II) bromide dissolved in water form lithium bromide dissolved in water and iron metal.
- 2. Aluminum metal and hydrogen chloride dissolved in water form aluminum chloride dissolved in water and hydrogen gas.
- 3. Lithium metal and nitrogen gas yield solid lithium nitride.
- 4. Magnesium carbonate and hydrogen chloride produce magnesium chloride and water and carbon dioxide.
- 5. Nickel (II) chloride reacts to form solid nickel and chlorine gas.
- 6. Carbon, hydrogen gas and oxygen gas form C_2H_6O.
- 7. Solid $C_{12}H_{22}O_{11}$ reacts to form solid carbon and water.
- 8. Barium chloride and potassium iodate react to produce barium iodate and potassium chloride.

F. **On loose-leaf,** solve the following stoichiometry problems.
- 1. Methanol (CH_3OH) when burned combines with oxygen gas (in the air) to form carbon dioxide and water. How many moles of oxygen will be needed to completely react with 4.5 mol of methanol?
- 2. Zinc hydroxide and hydrogen phosphate react to produce zinc phosphate and water. How many grams of zinc hydroxide are necessary to form 2.8 mol of zinc phosphate?
- 3. Iron (III) chloride and calcium hydroxide react to form iron (III) hydroxide and calcium chloride. How many grams of calcium chloride can be formed from 125g of iron (III) chloride?