

Name \_\_\_\_\_

## Topic 2 - Lesson 3: "Modeling Chemical Reactions"

### Guiding Questions: Use pgs. 90-97

- How can a model be used to identify the components of a chemical reaction?
- How can a chemical reaction be used to model the conservation of mass?
- 1. What is a chemical equation?

2. What 3 things does a chemical equation convey?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

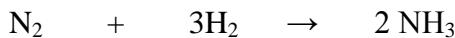
3. If there is no number behind the element in the formula, how many atoms of that element are there?

4. What is a subscript?

5. What does the arrow mean in a chemical equation?

6. What is a coefficient?

7. Use Figure 2 on Page 92: The following chemical equation represent the formation of ammonia from nitrogen and hydrogen gas.



- a. Circle the product in the equation above.
- b. Underline the coefficient in the equation above.
- c. How many atoms of Nitrogen are in the reactant side. \_\_\_\_\_
- d. Are any atoms created or destroyed in this reaction? Explain.

8. Record the name and formulas of the reactants and products of methane combustion.

\_\_\_\_\_

9. According to the law of conservation of mass, why must a chemical equation be balanced?

\_\_\_\_\_

10. Why are coefficients used to balance equations?

11. Because mass is conserved in a chemical reaction, chemical equations must be balanced. Use the Math Tool Box on Page 95, to match the answer to the following questions.

- a. None of the atoms in balance \_\_\_\_\_
- b. Oxygen atoms not balanced \_\_\_\_\_
- c. Iron atoms not balanced \_\_\_\_\_
- d. All the atoms balanced \_\_\_\_\_

12. What is the difference between an open and closed system?

\_\_\_\_\_

13. A neighbor wants to use his backyard garden to conduct an investigation of how tomato plants use specific amounts of carbon dioxide and water to grow at a certain rate. Is this a good idea? Explain.

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14. What are 3 general types of chemical reactions?

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15. Explain why magnesium oxide is created in a synthesis reaction.

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16. Define a decomposition reaction.

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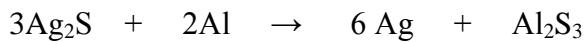
17. Write a sentence using the word decomposition.

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18. What happens in a replacement reaction.

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19. Aluminum (Al) and silver tarnish (Ag<sub>2</sub>S) yield pure silver (Ag) in an aluminum sulfide solution.



a. What are the reactants and products in this reaction?

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b. Is this reaction a replacement reaction? Explain.

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