

Name _____ Date _____ Per _____

Chemistry Unit Take Home TEST

Abby has been reading about mixtures and how they can be classified.

Write the letters of the correct answers on the lines at left.

_____ 1. After reading about the kinds of mixtures and their characteristics, Jasmine wants to know how a heterogeneous mixture is different from a homogeneous mixture. What is the main difference between these two kinds of mixtures?

- A. In a heterogeneous mixture, the components are not evenly spread throughout the mixture. In a homogeneous mixture, the components are evenly spread throughout the mixture.
- B. In a homogeneous mixture, the components are not evenly spread throughout the mixture. In a heterogeneous mixture, the components are evenly spread throughout the mixture.
- C. In a homogeneous mixture, the components are easy to see and are well mixed so the components show up in different parts of the mixture.
- D. In a heterogeneous mixture, the components are difficult to see and are spread out uniformly throughout the mixture.

_____ 2. Connor made toast and buttered it, but then he left the butter out on the warm stove. What kind of change would most likely take place with the butter?

- A. chemical
- B. physical
- C. liquid
- D. solid

_____ 3. Emma has been studying physical and chemical reactions in school. She read about chemical reactions and how energy is either required or released during chemical reactions. Which word describes the direction of heat flow illustrated in the picture?

- A. chemical
- B. endothermic
- C. exothermic
- D. physical



_____ 4. Alex saw a rusty old car in an abandoned lot. Because he had recently read about chemical reactions, he began to wonder how the rust formed. What happened to cause the rust on the steel car?

- A. A physical change took place in the steel of the car to form rust.
- B. Oxygen in the air reacted with the paint on the car and formed rust.
- C. Oxygen in the air chemically combined with the iron in the steel to form rust.
- D. A decomposition chemical reaction took place when the iron in the steel mixed with oxygen to form rust.

_____ 5. After learning about the law of conservation of mass, Heidi began to wonder about how to best test this law. She wanted to show that the amounts of matter did not change but produced an equal amount of a different kind of matter. What is the best way to study this law?

- A. in a homogeneous mixture
- B. in a heterogeneous mixture
- C. in an open system
- D. in a closed system

_____ 6. Alma is learning about chemical reactions and she wants to examine the information that is included in a chemical equation. Which pieces of information does a chemical equation include? Choose all that apply.

- A. the kinds of atoms that form during a reaction
- B. the kinds of molecules involved in the reaction
- C. the kinds of elements that make up a molecule
- D. whether the molecules are products or reactants
- E. whether the products have more mass than the reactants

_____ 7. Alani is exploring the different kinds of changes that can happen to substances. She knows that changes can alter the looks or shape of a substance. Cutting, melting, bending, or crushing are examples of what kind of change?

- A. Reactant
- B. Product
- C. Physical
- D. Chemical

Circle the words that correctly complete the sentences below.

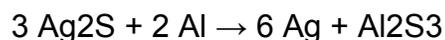
8. After having studied chemical reactions in school, Dabian knew that when oxygen and hydrogen gases combine in the correct amounts, the combination yields a new substance, water.

The hydrogen and oxygen are (products / reactants / synthetics / polymers) while the water is the (product / reactant / synthetic / polymer).

9. Sydney conducted an experiment in which she caused a substance to go from a solid to a liquid. She used a Bunsen burner and a thermometer. She was able to explain that the thermometer was measuring the average kinetic energy of the motion of the molecules and that this was considered (heat / temperature). She was also able to explain that thermal energy was transferred from the Bunsen burner to the substance causing it to melt. The transfer of thermal energy was (heat / temperature)

10. After learning about the law of conservation of mass, Gievens became interested in balancing equations. He knew that the symbol for aluminum was Al and silver tarnish was Ag₂S. He also knew that mixing the two chemicals yielded pure silver, or Ag, in an aluminum sulfide solution.

Here is the equation showing this reaction:



This equation is (synthesis / unbalanced / decomposition / balanced), and it represents a(n) (unbalanced / balanced / synthesized / replaced) chemical reaction.

SHOW YOUR WORK TO PROVE THAT IT IS BALANCED OR NOT.

11. Place a capital **C** after the substances listed if they are a **Compound** and a capital **E** if they are an **Element**

Tin, Sn _____

Hydrogen Gas, H₂ _____

Methane Gas, CH₄ _____

Plutonium, Pu _____

- _____ 12. When a substance changes phase, which statement below best describes what happens to the motion of the particles and their energy?
- Particles will move quicker and get farther apart as they go from a gas, to a liquid, to a solid
 - Particles lose energy as they go from a gas, to a liquid, to a solid and the space between them gets smaller
 - Particles move slower and get closer together as they go from a solid, to a liquid, to a gas
 - Particles move at the exact same rate in the gas form

13. Use the following **diagram** (and **chemical equation**) that represents methane gas burning. **DRAW and LABEL** the products (elements and compounds) of this reaction using colored pens/pencils.

KEY:

Hydrogen - Blue Carbon = Black Oxygen = Red

