Date: Name: Which statement correctly describes both gases and liquids? 6. A scientist uses an instrument to observe the pattern of molecules 1. in a substance. The picture below shows what the scientist sees. A. Their shapes stay the same in any container. В. Their shapes change when they are in different containers. C. Their volumes stay the same in any container. What state of matter is the scientist most likely observing? Their volumes change when they are in different containers. D. A. gas B. liquid C. vapor D. solid 2. On a warm sunny afternoon, ocean water splashed onto a rock. A short time later, the rock was dry. Which statement best Within a substance, atoms that collide frequently and move 7. explains what happened to the water on the rock? independently of one another are most likely in a A. Heat caused the water to become a gas. C. gas. A. liquid. B. solid. D. crystal. Heat melted the water and it disappeared. В. Salt caused the water to become a gas. С. As a sample of water turns to ice, 8. D. Salt melted the water and it disappeared. A. new molecules are formed. Β. the mass of the sample is increased. The picture below shows the melting of an ice cube. 3. C. the arrangement of the molecules changes. energy is absorbed by the molecules. D. 9. Which of the following graphs shows how the rate of evaporation before after changes with changes in water temperature? The ice cube changed because it Rate of Evaperation Rate of Evaporation A cooled warmed в hardened. C. D. evaporated. Water Water Temperature Temperature Four materials are put into small containers. These materials 4. are then moved from the small containers into larger containers. Rate of Evaporation Rate of Evaporation C. D. Which material will spread out to completely fill a larger container? A. air B. ice C. sand D. water

- 5. A glass of ice water is placed on a table. After 10 minutes, there are drops of water on the outside surface of the glass. Which change in phase caused the drops of water?
 - A. Liquid water in the air evaporated into a gas.
 - B. Liquid water in the air condensed into a solid.
 - C. Water vapor from the air evaporated into a liquid.
 - D. Water vapor from the air condensed into a liquid.

10. Ms. Bristol measured the mass of a closed beaker containing several ice cubes. The mass was 100 g. An hour later, after the ice cubes had melted, Ms. Bristol measured the mass of the beaker again.

Water

Temperature

Water

Temperature

What was the mass of the beaker of water the second time?

A. 50 g B. 75 g C. 100 g D. 125 g

11. In the Kitchen

Common kitchen appliances include electric stoves, toasters and blenders. Each appliance uses an energy source and involves energy changes to prepare food.

An open pot of water is heated on the stove. As water boils, the molecules ______.

- A. move slower and closer together
- B. move faster and farther apart.
- C. get larger
- D. get smaller
- 12. When water changes from solid to liquid to gas, which statement is true?
 - A. The mass (amount) stays the same.
 - B. The temperature goes down.
 - C. The temperature stays the same.
 - D. The mass (amount) is greater.
- 13. If enough heat is taken away from a container of water, what will happen to the water?
 - A. It will begin to boil. B. It will become a solid.
 - C. It will turn into a gas. D. It will increase in weight.
- 14. A pond is pictured below in two different seasons.



Which of the following has caused the changes in the pond from A to B?

- A. The pond water has lost heat energy.
- B. The pond water temperature has increased.
- C. Warm water has risen to the top of the pond.
- D. All of the water has evaporated from the pond.

15. In a laboratory, a sealed container with 100 g of steam is cooled until all the steam becomes a liquid. The container is then cooled further until all the water becomes a solid.

Which of the following remains constant during both of these changes?

- A. the mass of the water
- B. the pressure in the container
- C. the total energy of the water
- D. the position of the atoms in the container
- 16. The picture below shows a demonstration of water changing from the liquid phase to the gas phase as it boils in a beaker.



Which of the following statements explains why this demonstration *cannot* be used to prove that matter is conserved during a change of phase?

- A. The change of phase is incomplete.
- B. Water is changing both phase and temperature.
- C. Water in the gas phase is lighter than liquid water.
- D. The change of phase is taking place in an open system.
- 17. Lorraine puts a pot of water on the stove. She turns on the heat and the water boils. What does the water change to as it boils?

A. Gas B. Heat C. Solid D. Liquid

- 18. Which term describes when a substance is changed from a liquid to a gas?
 - A. Condensation B. Evaporation
 - C. Filtration D. Precipitation

19. The diagram below represents a phase change for some copper atoms.



Which of the following phase changes are the copper atoms undergoing?

- A. gas to liquid B. liquid to gas
- C. solid to liquid
- D. liquid to solid

20. Which diagram represents the change of ice to water?

