
NTI Day 3 Assignment

Lesson 3 Review

Content Standard: Properties of Matter

States of Matter and Phase Changes

Class: Chemistry

Teacher: K. Kelly

1. All matter is made up of atoms and molecules. The atoms and molecules are in constant motion, so they often collide with one another. Which of the following is typically transferred during these atomic and molecular collisions?

- A. energy
 - B. gravity
 - C. protons
 - D. all of these
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2. Rotational motion occurs when molecules rotate about their x, y, or z axes.

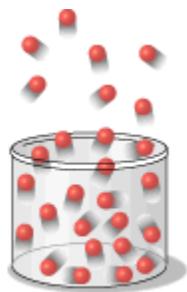
In which of the following states of matter can rotational motion occur?

- I. solid
- II. liquid
- III. gas

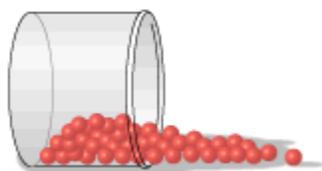
- A. II and III only
 - B. I and II only
 - C. I, II, and III
 - D. III only
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3. The structure and arrangement of particles and their interactions determine the physical state of a substance at a given temperature and pressure.

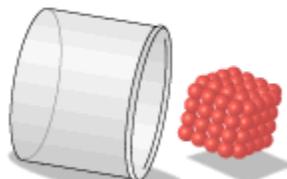
Which of the following diagrams depicts the particle arrangement in a liquid?



(a)



(b)



(c)

- A. a

- B.** b
 - C.** c
 - D.** Any of these diagrams could represent a liquid
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4. In order to change from a solid to a liquid or a liquid to a gas, water must absorb a large amount of heat energy.

Water can absorb a large amount of energy while producing only small changes in temperature because water has a

- A.** high specific heat.
 - B.** low particle density.
 - C.** low specific heat.
 - D.** high particle density.
-

5. Solid carbon dioxide is known as dry ice. Dry ice is often used in theaters, haunted houses, and nightclubs to produce a low dense fog. Which of the following processes does dry ice undergo in order to create the fog?

- A.** deposition
 - B.** sublimation
 - C.** evaporation
 - D.** condensation
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6. During which of the following processes is energy absorbed?

- I. boiling
- II. condensing
- III. evaporating
- IV. freezing
- V. melting
- VI. sublimating

- A.** II and IV only
 - B.** II, III, and IV only
 - C.** I, IV, and V only
 - D.** I, III, V, and VI only
-

7. Which of the following correctly lists the states of matter from the most particle movement to the least particle movement?

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

8. When a substance freezes, it changes from a _____ into a _____.

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

9. Which of the following is an example of distillation?

- A. Ice is warmed by the sun and melts to form a small stream.
 - B. Water droplets are formed on a mirror when you breathe on it.
 - C. Dry ice gives off a cloud of carbon dioxide as it evaporates.
 - D. Salt water is boiled in order to collect the resulting pure water from condensation.
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10. Which of the following is an example of a physical property?

- A. reactivity
 - B. combustibility
 - C. acidity
 - D. phase of matter
-

11. A physical change is best defined as

- A. a process that changes one substance into another.
 - B. a process that changes the mass of a substance.
 - C. a process that changes the chemical composition of a substance.
 - D. a process that does not change the chemical composition of a substance.
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12. Density is defined as the amount of matter, or mass, per unit volume.

According to this definition, which of the following generally has the greatest density?

- A.** a solid
 - B.** a gas
 - C.** a liquid
 - D.** All of these have the same densities.
-

13. Particles in a solid remain in fixed positions primarily due to

- A.** the irregularity of their arrangement.
 - B.** the types of atoms that they contain.
 - C.** the strong attractive forces that exist between them.
 - D.** the low temperatures at which they must exist.
-

14. Which of the following correctly lists the states of matter from the most ordered arrangement of particles to the least ordered arrangement?

- A.** gas, liquid, solid
 - B.** solid, gas, liquid
 - C.** liquid, solid, gas
 - D.** solid, liquid, gas
-

15. Physical properties are

- A.** those properties which can be observed without changing the identity of the substance.
 - B.** those properties which require a chemical reaction to be observed.
 - C.** those properties which include combustibility, flammability, and reactivity.
 - D.** all of these
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16.

Which curve represents vapor-liquid equilibrium in the above diagram?

- A. AB
 - B. AC
 - C. no vapor-liquid equilibrium exists
 - D. AD
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17. The melting point of a substance is _____ its freezing point.

- A. greater than
 - B. less than
 - C. equal to
 - D. There is not enough information to answer this question.
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18. Adding _____ causes the particles in a solid, liquid, or gas to move farther apart and faster.

- A. mass
 - B. gravity
 - C. heat
 - D. all of these
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19. Boiling and evaporation are two types of vaporization. The beaker on the left in the diagram below shows water boiling. The beaker on the right shows water evaporating.

What is the main difference between boiling and evaporation?

- A. Fewer particles vaporize during boiling.
 - B. Particles change from a gas to a liquid during evaporation.
 - C. Particles change from a liquid to a gas during boiling only.
 - D. Only particles at the surface vaporize during evaporation.
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20. Examine the phase-change diagram below.

During which of the following phase changes is there a loss of energy?

- I. condensing
- II. freezing

III. melting

IV. vaporizing

- A. III and IV only
- B. I and II only
- C. I, II, III, and IV
- D. II and III only