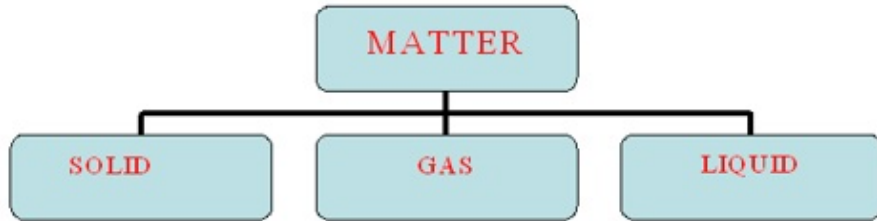


Science 7
Unit 2: Heat and Temperature
Topic 3: Matter And The Particle Theory



Student Name: _____

Matter is anything that has mass or takes up space.



Examples: Books, humans, Oxygen, water...etc

Non Examples: Heat, Light Gravity...etc

The hypothesis that matter is made up of tiny particles - has become widely accepted as the "particle theory of matter. The theory has proven useful in explaining many observations of matter.

Particle theory of matter states that :

- 1) All matter is made up tiny particles.
- 2) All particles in a thing are the same.
- 3) Different things are made up of different particles.
- 4) Particles are attracted to each other.
-They can have a strong attraction or a weak attraction.
- 5) Particles are always moving.
-When particles gain energy, (heat up) they move faster.
-When they lose energy, (cool down) they move slower.
- 6) There are spaces between all particles

Solid, Liquid and Gas

The particle theory is useful in explaining the differences among solids, liquids and gases:

Solids:




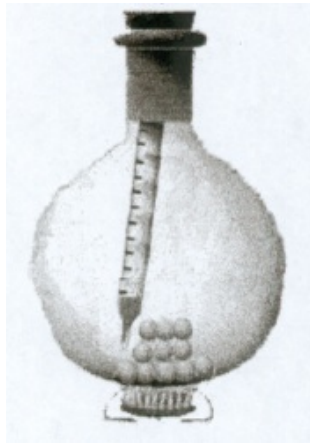
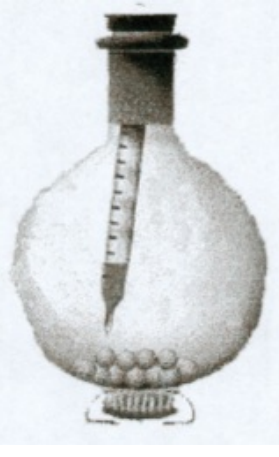
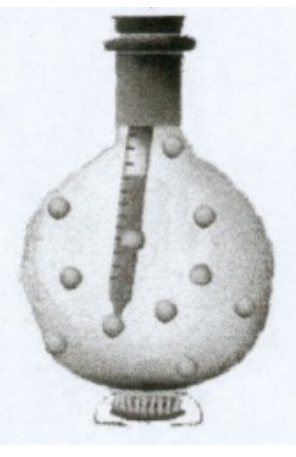
A solid has a definite shape and volume because the particles of a solid can move only a little. They vibrate back and forth, but strong forces hold them in fixed positions. As a result solids are very hard to compress.

Liquid:

A liquid takes the shape of its container because the particle can move more free than in a solid. Its particles are held together by strong attractive forces causing liquid to occupy a definite volume.

Gas:

The attractive forces among the particles of gases are so weak that the individual particles are quite far apart, with space among them. A gas will spread out to fill whatever container it is placed in. This is due to the fact that gas particles are constantly moving randomly in all directions. They spread throughout the container, regardless of the shape and volume of the container.

Solid	Liquid	Gas
		
		
<ul style="list-style-type: none"> • Definite Volume • Definite Shape • Noncompressible 	<ul style="list-style-type: none"> • Definite Volume • No Definite Shape • Noncompressible 	<ul style="list-style-type: none"> • No Definite Volume • No Definite Shape • Compressible

PART A: MULTIPLE CHOICE.

Instruction: Circle the correct answer below each question. Also, transfer your answers to the bubble sheet provided.

1. All of the following are states of matter EXCEPT:
 - (A) Solid
 - (B) Liquid
 - (C) Gas
 - (D) Gravity

2. Which statement about the particle theory of matter is true?
 - (A) A solid stays in one place because its particles are at rest
 - (B) The particles in a liquid have more energy than the particles in a gas
 - (C) When a solid melts its particles no longer exist
 - (D) The particles that make up matter are too small to see without a microscope

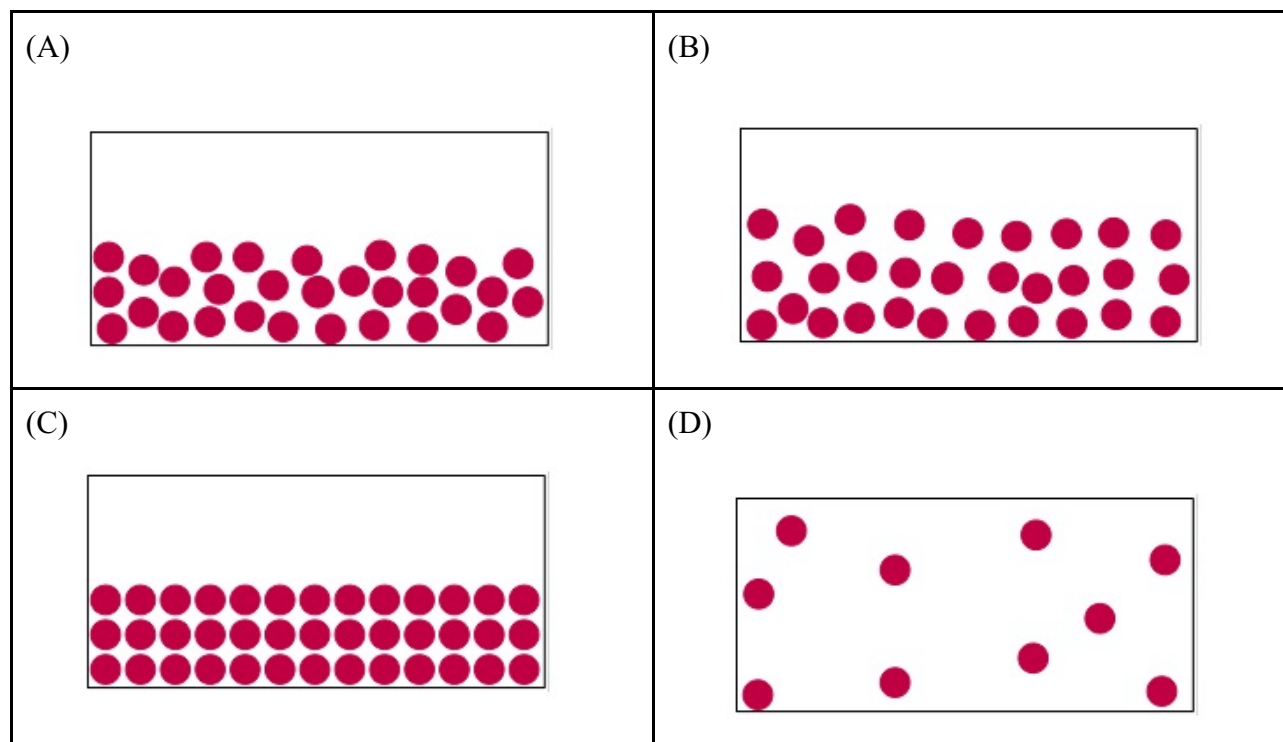
3. Which statement is not a key point of the particle theory of matter?
 - (A) Particles naturally repel one another
 - (B) The particles of matter are in constant motion
 - (C) There are spaces between particles
 - (D) All matter is made up of particles

4. Which of the physical states of water contains particles with the lowest kinetic energy?
 - (A) Ice
 - (B) Melting ice
 - (C) Steam
 - (D) Water

5. The force of attraction is greatest between the particles of a

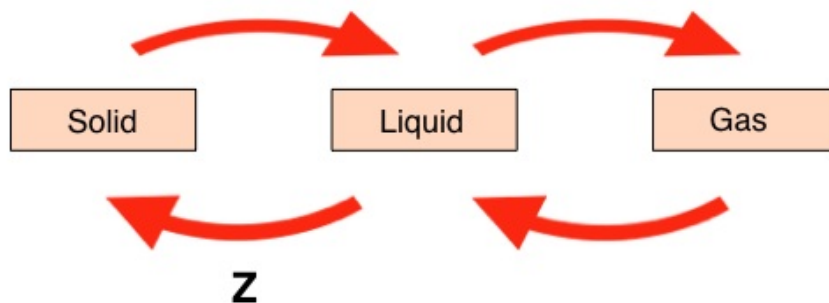
- (A) Gas
- (B) Mixture
- (C) Pure substance
- (D) Solid

6. Which one of the following diagrams best represents a model of the particles in a gas?



7. The diagram shows the changes in state of water (H_2O). What is the process Z called?

- (A) Melting
- (B) Evaporation
- (C) Freezing
- (D) Boiling



8. In which state are the distances between the particles greatest?

- (A) Both gas and liquid.
- (B) Gas
- (C) Solid
- (D) Liquid

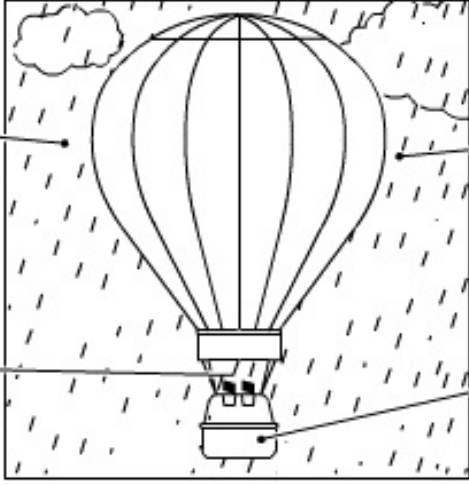
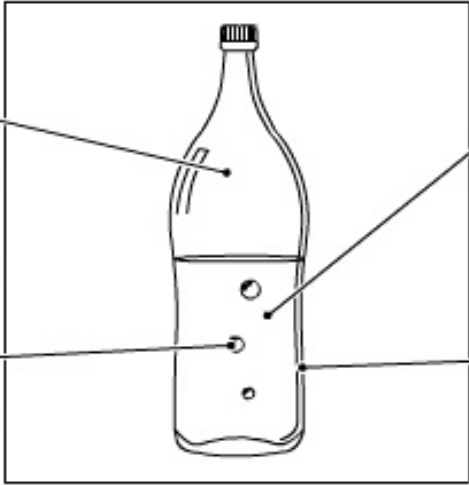
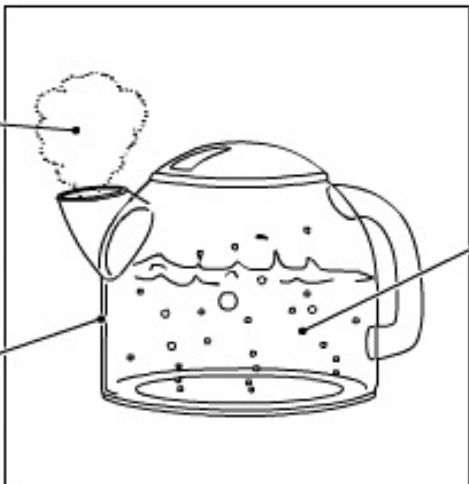
9. Attractive forces between particles is weakest in

- (A) Solids
- (B) Liquids
- (C) Gases
- (D) All of these

10. The particles in a solid that is melting move farther and farther apart because
- (A) The particles begin to lose their shape.
 - (B) The particles slow down.
 - (C) The particles have more energy and bump into each other more often.
 - (D) The particles repel each other more intensely.
11. This matter has a fixed shape and volume with particles closely packed together with little movement. It is a:
- (A) Liquid
 - (B) Solid
 - (C) Gas
 - (D) Plasma
12. Which of the following would you use to describe a liquid?
- I The particles of a liquid are attracted to one another
 - II The particles of a liquid are in motion
 - III The particles of a liquid are able to move past one another
 - IV A liquid has mass and takes up space
- (A) I
 - (B) I and IV
 - (C) I, II and IV
 - (D) I, II, III and IV
13. Which of the following would you use to describe a solid?
- I The particles of a solids are attracted to one another
 - II The particles of a solid are in motion
 - III The particles of a solid are able to move past one another
 - IV A solid has mass and takes up space
- (A) I
 - (B) I and IV
 - (C) I, II and IV
 - (D) I, II, III and IV
14. Which state of matter is represented in the following diagram?
- (A) Gas
 - (B) Gas or liquid
 - (C) Liquid
 - (D) Solid
- The diagram shows a rectangular box with a black border. Inside the box, there are approximately 12 purple dots scattered randomly across the area. The dots are not clustered together and are spread out, which is characteristic of a gas.
15. Which one of the following statements best describes the particles in a gas?
- (A) They are stationary and not able to vibrate.
 - (B) They are very close together and are able to vibrate.
 - (C) They are moving very slow and are far apart.
 - (D) They are moving very fast and are far apart.
16. Which one of the following is not a property of a liquid?
- (A) Definite shape
 - (B) Definite mass
 - (C) Cannot be compressed
 - (D) Definite volume

PART B: FILL IN THE BLANKS

Look at the pictures. Write in each box whether the part is a solid, liquid or a gas.

Sky		Raindrop
Hot air		Basket
Air		Lemonade
Bubble		Bottle
Steam		Water
Kettle		

PART C: WRITTEN RESPONSE

1. Describe the particle theory of matter.

2. Explain how particles in an object can be moving if the object is not moving.
