

## SOL 5.4 – MATTER

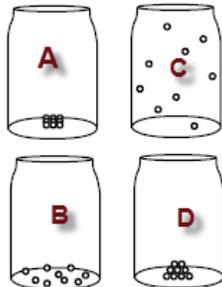
Matter is anything that has mass and takes up space; and occurs as a solid, liquid, or gas. Key concepts:

- properties of each phase of matter;
- the effect of temperature on the phases of matter;
- atoms and elements;
- molecules and compounds;
- mixtures including solutions

### SOLID-LIQUID-GAS – PHASES OF MATTER

1. The circles in the bottles represent the same particles of matter. Which pattern of particles represents a gas in a bottle?

(2005-28)



2. What will happen if the lid is removed from a container that holds helium gas?

(2004-12)

- The gas will expand and escape from the container.
- The gas will slowly change back into a liquid.
- When light hits the gas, it will change colors.
- Gravity will keep the gas in the container.

3. Oxygen, nitrogen, and carbon dioxide may be grouped together because at room temperature they are all a —

(2001-7)

- solid
- liquid
- gas
- colloid

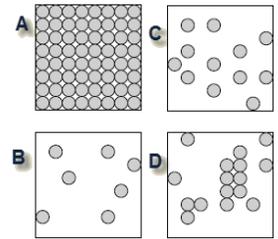
4. Which of these will happen if the temperature of a metal pan is increased?

(2001-13)

- The pan will begin to lose heat.
- The molecules of the pan will move faster.
- The metal will change into another metal.
- The pan will contract.

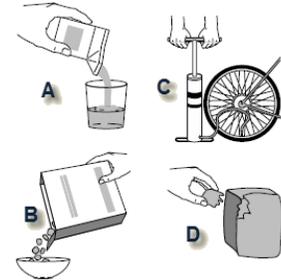
5. Which of the diagrams best shows the arrangement of molecules in a solid?

(2006-34)



6. Which picture shows a liquid at room temperature?

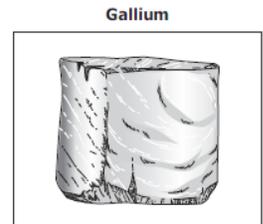
(2005-4)



7. Gallium is a metal that melts at about 30°C. If a person, whose body temperature is 37°C, held a cube of gallium for five minutes, what will most likely happen to the gallium?

(2011-18)

- It will change to a gas.
- It will change to a liquid.
- It will become a solution.
- It will become a mixture.



8. When ice cream is left out of a freezer, the ice cream

9. changes from a —

(2009-4)

- solid to a gas
- gas to a liquid
- solid to a liquid
- liquid to a gas

10. Which of these shows how frozen water changes as the temperature of the air increases?

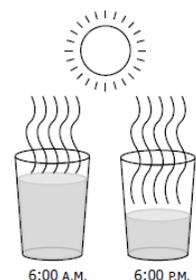
(2007-17)

- Gas → liquid → solid
- Solid → gas → liquid
- Liquid → gas → solid
- Solid → liquid → gas

11. The process shown would be classified as —

(2010-12)

- precipitation
- condensation
- transpiration
- evaporation



13. Which of these will change solid iron to a liquid?

(2006-15)

- a. Raising the air pressure
- b. Increasing its temperature
- c. Crushing the solid iron
- d. Adding water to the iron

14. Which of the following changes is possible with the addition of heat?

(2003-3)

- a. Liquid water changes to ice.
- b. Water vapor changes to ice.
- c. Water vapor changes to liquid water.
- d. Ice changes to liquid water.

## ATOMS, ELEMENTS, MOLECULES, COMPOUNDS

15. Water, ice, and steam are alike because they —

(2006-28)

- a. are the same compound
- b. have the same shape
- c. look the same
- d. feel the same

16. The smallest quantity of an element is —

(2002-10)

- a. a compound
- b. an atom
- c. a solution
- d. a molecule

17. The smallest part of matter that is identifiable as an element is the —

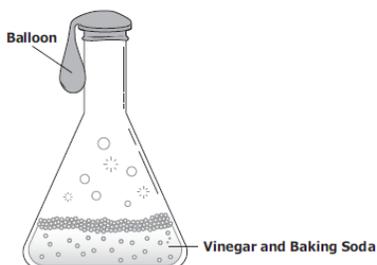
(2003-36)

- a. atom
- b. molecule
- c. cell
- d. compound

18. Which of these will most likely happen to the balloon as the chemicals react?

(2011-6)

- a. It will float.
- b. It will break.
- c. It will inflate.
- d. It will change color.



## MIXTURES & SOLUTIONS

19. Which of these is a mixture?

(2006-13)

- a. Salt
- b. Water
- c. Lemonade
- d. Sugar

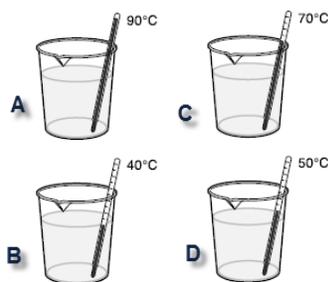
20. People put sugar in their tea to make it sweet. The sugar will dissolve fastest when the tea —

(2004-16)

- a. is hot
- b. is cold
- c. is in a tall glass
- d. has lemon in it

21. In which beaker of water will sugar dissolve the fastest?

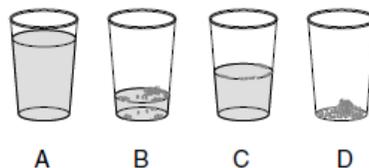
(2005-35)



22. A student makes a fruit drink by stirring a powdered mix into cold water. Why is the fruit drink a solution?

(2009-18)

- a. The powder dissolves in the water.
- b. The water changes color.
- c. The student stirs the water.
- d. The water is the proper temperature.



23. Which set of pictures shows what happens to a glass of salt water when it is left out on a counter for several weeks?

(2006-31)

- a. C → D → A → B
- b. A → C → B → D
- c. B → A → C → D
- d. D → B → A → C