

1. Define chemistry. *study of matter*
2. Define matter. *anything that has mass and takes up space.*
3. Draw the arrangement and describe the movement of particles in each state of matter: solid, liquid, gas.



Solid: *vibrate on fixed point*

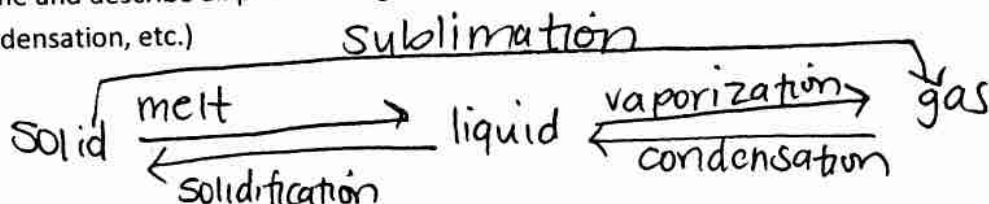


liquid: *flows*



gas
random movement

4. Name and describe all phase changes among the three states of matter (i.e. melting, solidification, condensation, etc.)



5. How are mixtures different from substances?

Substances are chemically combined mixtures are physically together

6. Identify each of the following as either a mixture or substance.

a. Carbon dioxide *substance*

d. H_2O *substance*

b. Soil *mixture*

e. $Fe + Zn$ *mixture*

c. Raisin bread *mixture*

7. There are two types of substances: element and compound. What is the difference between the two?

Compound: two or more different types of atoms chem. combined / bonded

element: one type of atom

8. Identify each of the following as either an element or compound.

a. Carbon *element*

d. KBr *compound*

b. Calcium *element*

e. Fe *element*

c. Glucose *compound*

9. Identify each of the following as either a metal or nonmetal.

a. Aluminum *metal*

c. Phosphorus *nonmetal*

b. Helium *nonmetal*

d. Potassium *metal*

10. There are two types of compounds: ionic and covalent. What types of elements combine to form an ionic bond? What types of elements combine to form a covalent bond?

Ionic bond: Metal and Nonmetal

Covalent bond: Nonmetal and Nonmetal

11. Name the following compounds correctly.

a. Rb_2O *rubidium oxide*

d. PO *phosphorus monoxide*

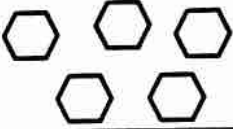
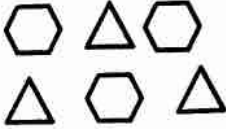
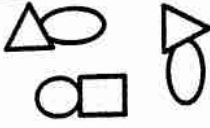
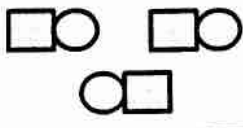
b. N_5S_7 *pentanitrogen heptasulfide*

e. MgO *magnesium oxide*

c. $BaCl_2$ *barium chloride*

f. Ga_2O_3 *gallium oxide*

Use the diagrams and key below to answer Questions 11-13.

Key	Mg \triangle	Kr \hexagon	KCl $\square \circ$	MgO $\triangle \circ$
Answer Choices				
	A	B	C	D

12. Which diagram(s) above represent(s) a pure substance? **A and D**

13. Which diagram(s) above represent(s) a mixture of elements? **B**

14. Which diagram(s) above represent(s) a mixture of compounds? **C**

15. How is a chemical change different from a physical change?

chem. Δ atoms are rearranging can not be reversed
 phy. Δ can be undone.

16. List four (4) indications of a chemical change.

energy: fire, light, electricity, Δ temp

precipitate: liquid + liquid = solid

color Δ : unpredictable

gas production: fizz, bubbles, smoke, odor Δ

17. Identify each of the following change as either physical or chemical.

a. Dissolving Kool-Aid powder in water **physical**

b. Melting of ice ~~physical~~ **physical**

c. Fizzing when an Alka-Seltzer tablet is added to water **chem**

d. Decomposition of food by stomach acid during digestion **chem**

e. Burning of wood at a camp fire **chem**

18. What is the difference between a homogeneous mixture and a heterogeneous mixture?

homogeneous uniform heterogeneous can see different parts

19. Identify each of the following mixture as either homogeneous or heterogeneous.

a. Italian dressing **Heterogeneous**

b. Soda **Homogeneous**

c. Chocolate chip cookie **Heterogeneous**

20. Describe the ~~six~~ ^{four} techniques used in lab to physically separate mixtures.

① filter

④ chromatography

② evaporation

③ magnetism

21. Describe the one (1) technique used in lab to chemically change a substance.

electrolysis

22. Name the lab equipment that you used in lab and describe its function.