

Honors Chemistry Review - Matter

Name KEY
Period _____

1. Name each of the following elements:

P phosphorus

Cu Copper

I iodine

Mg magnesium

Li lithium

Si silicon

Zn Zinc

Hg mercury

Ca calcium

Cl chlorine

S sulfur

H hydrogen

Pb lead

2. Write the chemical symbol for each of the following elements:

K potassium

Al aluminum

Na sodium

Br bromine

Ag silver

C carbon

Sn tin

Fe iron

O oxygen

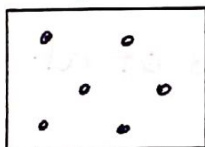
F fluorine

He helium

N nitrogen

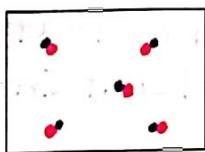
3. Write 3 facts and draw a particle diagram for each type of matter listed below:

a. Element



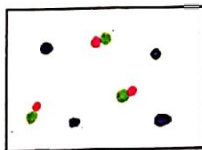
- only 1 type of atom
- uniform throughout (pure)
- cannot separate

b. Compound



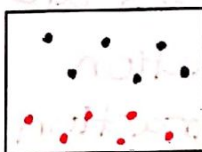
- 2+ types of atoms chemically bonded together
- uniform throughout (pure)
- can separate chemically

c. Solution
(homogenous mixture)



- uniform throughout (not pure)
- 2+ substances existing in same space
- can separate physically

d. Heterogeneous
Mixture



- 2+ substances existing in same space
- not uniformly distributed
- can separate physically

4. What does the Law of Definite Proportions state? Which type of matter does this relate most closely to?

Chemical composition of a compound will always be the same

ex) H_2O , $NaCl$, $C_{12}H_{22}O_{11}$, $C_6H_{12}O_6$

5. Identify each of the following materials as a heterogeneous mixture (HM), solution (S), compound (C) or element (E).

carbon dioxide	<u>C</u>	oxygen	<u>E</u>
sodium	<u>E</u>	salt water	<u>HS</u>
milk	<u>HM</u>	cereal	<u>HM</u>
blood	<u>HM</u>	smoke	<u>HM</u>
pure water	<u>C</u>	sand	<u>HM</u>
tap water	<u>HS</u>	liquid with a precipitate	<u>HM</u>

6. What is mass? How is the mass of an object determined?

↳ amount of matter in a sample

↳ use a *balance*

7. Could two objects with the same volume have different masses?

Which, if either, would contain more matter?

Yes - the one that is more dense or has more particles in that particular volume would have more matter

8. If a compound and a mixture are both a combination of two or more materials/atoms, then aren't they the same thing? If not, what about them is different?

No, they are not the same

- compound is 2+ types of atoms chemically bonded together

- mixture is 2+ substances that are existing in the same space/container

9. What are the three states of matter of most concern to chemists?

Solid, liquid, gas

10. What do we mean by *interparticle attractions*?

Describe each state of matter in terms of interparticle attractions.

- how attracted particles are to one another

• solid - high attraction

• liquid - some attraction

• gas - little to no attraction

11. What is *compressibility*? Describe each state of matter in terms of compressibility.

↳ how much you can force the particles in a sample to get closer together

gases are compressible, solids and liquids are not since they have a fixed/definite volume

12. Classify each of the following as physical, (P) or chemical, (C).

P a) a towel absorbing water

C g) baking a cake

C b) rusting nail

P h) boils at 88°C

P c) mothballs subliming

P i) deflating a basketball

P d) is blue

P j) volume

P e) malleability

P k) sugar dissolving in water

P f) alcohol evaporating

P l) sewing a hem

13. How is a qualitative observation different than a quantitative observation?

Give an example of each.

qualitative \rightarrow focuses on non-numerical observations (color, relative size)

quantitative \rightarrow numerical data/observations (mass, volume, temp., etc)

14. How are extensive properties different than intensive properties?

Give 3 examples of each type.

extensive \rightarrow depend on the amount of matter present (mass, volume, shape)

intensive \rightarrow properties that are always the same no matter how much you have of a substance

15. List the four main observations which indicate that a chemical change has occurred.

a) change in temperature

b) change in color

c) production of a gas

d) formation of a precipitate

(color, odor, density, hardness, ductility, malleability)

16. Name the type substance that sometimes forms when two liquids are mixed together.

Describe what this substance looks like (state of matter, etc.).

precipitate \rightarrow solid that forms/settles out when two liquids are combined during a chemical reaction

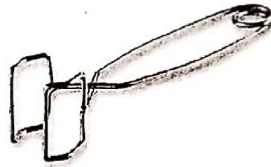
- often makes the solution appear cloudy or opaque due to solid particles being suspended in the solution

17. Name the following pieces of laboratory equipment:

scoopula



test tube clamp



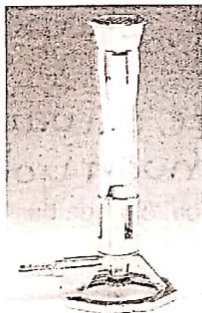
beaker



flask



bunsen burner



graduated cylinder



18. Draw a concept map (or make a list) to describe each of the 6 phase changes that we discussed in class. Make sure to show both the starting and ending phase for each one.

- Melting (S → L)
- Freezing (L → S)
- Condensing (G → L)
- Evaporation (L → G)
- Sublimation (S → G)
- Frosting (G → S)