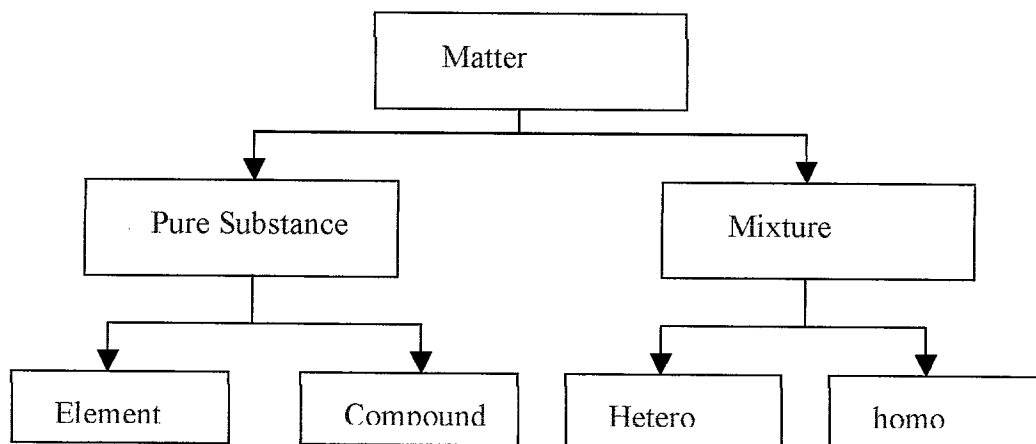


Fill in the blanks. You can use each answer once, more than once, or not at all.

Bohr	Element	Metal	Quantum Mechanical
Billiard Ball	Exchanging	Molecular	Rutherford
Chadwick	Heterogeneous	Nonmetal	Sharing
Compound	Homogeneous	Nuclear	Thompson
Dalton	Ionic	Planetary	

- a) Ionic compounds consist of a(n) **metal** and a(n) **nonmetal** and are bonded together by exchanging electrons.
- b) Molecular compounds consist of a(n) **nonmetal** and a(n) **nonmetal** and are bonded together by **sharing** electrons.
- c) **Homogeneous** mixtures are uniform throughout, whereas **Heterogeneous** mixtures are not uniform throughout.
- d) **Thompson** discovered the electron.
- e) **Chadwick** discovered the neutron.
- f) **Bohr** believed that electrons orbited the atom like planets orbit the sun.
- g) **Dalton** believed that the smallest known particle was the atom.
- h) **Thompson** theorized that the atom was a positively charged sphere embedded with negatively charged electrons.
- i) **Rutherford** discovered the nucleus.
- j) The atomic theory that we use today is called the **Quantum mechanical** model.

1. Matter is organized in several major groups based on its properties. In the chart below fill in the terms that you have learned in this unit. [7]



2. In order to distinguish metal from non-metal we look for characteristics that they do not have in common.

a. List three properties that all metals share. [3]

**Solids, shiny, good conductors, malleable, ductile**

b. List one property that allows you to determine if something is a non-metal. [1]

**Poor conductor, not solid at room temperature**

3. Our present theory of how the atom is structured evolved over many centuries and many scientists contributed to it. Several of the key points and key scientists are listed below.

c. Match the Scientist with the key idea. [4]

<u>  D  </u> Rutherford	a) Electrons are found an specific energy levels
<u>  A  </u> Bohr	b) all matter is made of indivisible particles
<u>  B  </u> Dalton	c) Atoms are made of particles that have charges.
<u>  C  </u> Thomson	d) The mass of the atom is concentrates in the nucleus

d. List the letter of the theories in the order in which they were developed. [2]

**B, C, D, A**

4. Today we know that the atom is composed of three particles, protons, neutrons and electrons. In the list below identify where they are found and what their charge is. [6]

	Location	Charge
Protons	<u>nucleus</u>	<u>positive</u>
Neutrons	<u>nucleus</u>	<u>none</u>
Electrons	<u>orbitals</u>	<u>Negative</u>

5. Using nuclear notation and you periodic table determine the number of elementary particles in these elements [12]

Element	# of protons	# of neutrons	# of electrons
${}^{16}_8\text{O}$	<u>8</u>	<u>8</u>	<u>8</u>
${}^{42}_{18}\text{Ar}$	<u>18</u>	<u>24</u>	<u>18</u>
Magnesium – 22	<u>12</u>	<u>10</u>	<u>12</u>
Boron - 12	<u>5</u>	<u>7</u>	<u>5</u>

Complete the following chart, including states of matter at room temperature.

	Chemical Formula + State	IUPAC Name
1.	NaHS <sub>(s)</sub>	Sodium hydrogen sulfide
2.	Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3(aq)</sub>	Aluminum sulfate
3.	H <sub>2</sub> O <sub>2(l)</sub>	Hydrogen peroxide
4.	<del>CaCl<sub>2</sub></del> <sub>(l)</sub> CaCl <sub>2</sub> • 4H <sub>2</sub> O	Calcium chloride tetrahydrate
5.	H <sub>2</sub> CO <sub>3(aq)</sub>	Carbonic acid
6.	H <sub>2</sub> SO <sub>4(aq)</sub>	Sulfuric acid
7.	MnCl <sub>2(s)</sub>	Manganese (II) chloride
8.	H <sub>2</sub> SO <sub>3(aq)</sub>	Sulfurous acid
9.	Cu(NO <sub>2</sub> ) <sub>2(s)</sub>	Copper (II) nitrite
10.	C <sub>2</sub> H <sub>6(g)</sub>	Ethane
11.	Na <sub>2</sub> CO <sub>3</sub> •7H <sub>2</sub> O <sub>(s)</sub>	Sodium carbonate heptahydrate
12.	S <sub>8(s)</sub>	Sulfur
13.	NaCl <sub>(s)</sub>	Sodium chloride
14.	HF <sub>(aq)</sub>	Hydrofluoric acid
15.	B <sub>2</sub> H <sub>8(g)</sub>	Diboron octahydride
16.	SiO <sub>2(s)</sub>	Silicon dioxide

17. Give two (2) evidences that a reaction has occurred.

Energy change, Odor change, color change, formation gas, formation of solid in solution

18. Define endothermic reaction.

A reaction that releases energy