

These are Ions (polyatomic ions contain more than one atom which bond together covalently)	These are Atoms or Molecules of Elements. i.e. Cu is an atom while H ₂ is a molecule.	These are Compounds
$Na^+_{(aq)}$ $F^-_{(aq)}$ $Ca^{+2}_{(aq)}$ $O^{2-}_{(aq)}$ $B^{3+}_{(aq)}$ $P^{3-}_{(aq)}$ $CO_3^{2-}_{(aq)}$ $NH_4^+_{(aq)}$ $SO_4^{2-}_{(aq)}$	$Na_{(s)}$ $F_{2(g)}$ $Ca_{(s)}$ $O_{2(g)}$ $B_{(s)}$ $P_{5(g)}$ $U_{(s)}$ $Fr_{(l)}$ $Fe_{(s)}$	$NaCl_{(s)}$ $Ca(OH)_{2(s)}$ $NH_3_{(l)}$ $H_2O_{(g)}$ $BF_3_{(l)}$ $CO_{2(g)}$ $K_3PO_4_{(s)}$
Ions have the following characteristics: charge of + or - ions go into solution ie (aq) 1 or more elements	Atoms have the following characteristics: -neutral, state (s) (s, l, or g) -made of one element type	Compounds have the following characteristics: -2 or more different elements -no charge
Give 3 more examples of ions: S^{2-} K^+ Mg^{2+}	Give 3 more atom examples: $Cl_2(g)$ $Br_2(l)$ $K(s)$	Give 3 more compound examples: $MgCl_2(s)$ $KBr(s)$ $CO(g)$

Circle all ions and cross out all compounds

only elements remain

S^{2-} CO_3 CH_3OH Zn Cu^{2+} Cu_2SO_4
 Ag Hg^+ $NaNO_3$ Mg $C_6H_{12}O_6$ BrO_3^{2-}
 H_2S OH^- H^+ H_2O Mn SO_2 $Cr_2O_7^{2-}$

An Ion is ... any element or group of elements with a charge → due to loss or gaining e⁻

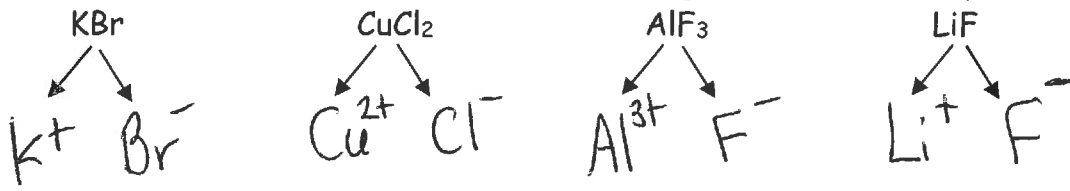
An Atom is ... a neutral single element

A molecule is ... two or more atoms with a neutral charge.

A Compound is ... a substance with no charge containing more than 1 element bonded chemically.

When compounds are "ionized" they form ions (ie: NaCl becomes Na⁺ and Cl⁻)

Below, write the following compounds showing the ions that they form: Use periodic table!



Name _____

Date _____

Use with textbook pages 76–80.

Comparing ionic and covalent compounds

Use the chart to help you compare ionic compounds and covalent compounds. On the left side, place the letters of the statements that are only true of ionic compounds. On the right side, place the letters of the statements that are only true of covalent compounds. In the middle, place the letters of the statements that are true of both compounds.

- A. atoms gain or lose electrons to form ions
- B. pure substance made up of two or more kinds of elements
- C. compound is made of a positive ion and a negative ion
- D. atoms join by sharing electrons
- E. atoms are joined to each other by chemical bonds
- F. exist as a solid in the form of an ionic lattice
- G. oppositely charged ions attract each other
- H. molecule made of uncharged atoms
- I. bond between atoms is due to electron transfer
- J. compound is made of a non-metal and a non-metal
- K. sodium chloride (NaCl) is an example
- L. water (H₂O) is an example

Ionic compound	Both	Covalent compound
A C F	B	E D
G I	E	H J
K		L

Use with textbook pages 76–80.

Compounds

Match each Term on the left with the best Descriptor on the right. Each Descriptor may be used only once.

Term	Descriptor
1. <u>E</u> molecule	A. pure substance made of one type of atom
2. <u>C</u> ionic lattice	B. atoms combine by gaining or losing electrons
3. <u>F</u> polyatomic ion	C. repeating pattern of positive and negative ions
4. <u>B</u> ionic compound	D. atoms combine by sharing electrons to form molecules
5. <u>D</u> covalent compound	E. neutral particle that is made up of atoms that are joined together by covalent bonds
	F. ion made up of two or more atoms that are held together with covalent bonds

Circle the letter of the best answer.

6. Atoms in non-metals tend to gain

- A. molecules
 B. ions
 C. atoms
D electrons

7. Which of the following can be formed when there is electron transfer between metals and non-metals?

- A. molecule
 B. element
C ionic bond
 D. covalent bond

8. Which of the following is formed due to the sharing of electrons between two non-metals?

I.	a molecule
II.	a covalent bond
III.	a covalent compound

- A. I and II only
 B. I and III only
D C. II and III only
 D. I, II, and III

9. Water is a(n)

- A. element
 B. polyatomic ion
 C. ionic compound
D covalent compound

10. Sodium chloride is a(n)

- A. element
 B. polyatomic ion
C ionic compound
 D. covalent compound

11. Which of the following can be formed when a non-metal atom reacts with a non-metal atom?

- A. element
 B. polyatomic ion
 C. ionic compound
D covalent compound