

Student Name _____

Class _____

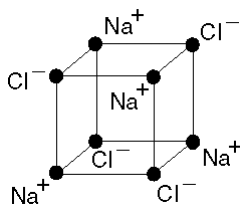
Formation of Ionic and Molecular Compounds

- Compounds are formed when elements combine in different chemical reactions. This identifies which elements combine and how many of them are present in the compound.
 - Atomic Number
 - Chemical Name
 - Atomic Mass Unit
 - Chemical Formula
- In the formula for baking soda $\text{NaHCO}_3(s)$ the following indicates how many atoms are present in each molecule ...
 - 1 atom of each element
 - 1 sodium, 1 hydrogen, 3 carbon dioxide
 - 1 sodium, 1 hydrogen, 1 carbon, 3 oxygen
 - 1 sodium, 1 hydrogen, 1 calcium and 3 oxygen
- In the formula for baking soda $\text{NaHCO}_3(s)$ the (s) indicates that this molecule is ...
 - safe
 - solid
 - stable
 - strong
- Pure substances formed as a result of the attraction between charged particles of opposite charges are ...
 - Stable elements
 - Ionic compounds
 - Charged elements
 - Molecular compounds
- When ionic compounds are formed, the ions combine to form a ...
 - cloud
 - block
 - crystal
 - irregular pattern
- When sodium (a very reactive metal) is placed in chlorine (a green gas), the sodium explodes with a bright yellow flame. As it burns, this white, coarse-grained powder is produced.
 - silicon
 - carbon
 - alum
 - salt
- When naming ionic compounds there are two rules to remember: The first is that the name of the metal is always placed first, the second is the name of the non-metal ion(s) changes to
 - 'ous'
 - 'ade'
 - 'ide'
 - 'ate'
- The ion charges of a particular element will help you determine the chemical formula for the compound that is formed. Calcium $[\text{Ca}^{2+}]$ combines with chlorine $[\text{Cl}^{-}]$ to produce Calcium Chloride. The correct formula for Calcium Chloride is ...
 - Ca_2Cl
 - CaCl_2
 - 2CaCl
 - $\text{Ca}2\text{Cl}$

9. The alkali metals include Lithium and Sodium, each having an ion charge of 1+, are often reactive with the elements that have an ion charge of 1-. The group of elements that alkali metals react with are called the ...

A. Halogens
 B. Metalloids
 C. Non-Metals
 D. Earth Metals

10. This type of lattice structure represents the compound, **sodium chloride**.



The characteristic that identifies this compound as an ionic compound is its **distinct crystal** ...

A. size B. shape C. ion D. element

11. N_2O_3 is a molecular compound. The chemical name - following the rules for naming molecular compounds - for N_2O_3 is ...

A. trinitrogen oxide
 B. dinitrogen oxide
 C. trinitrogen dioxide
 D. dinitrogen trioxide

12. Sugar $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ is a molecular compound. This compound contains ...

A. 3 calcium atoms, 4 helium atoms and 2 organic atoms
 B. 3 carbon atoms, 4 hydrogen atoms and 2 oxygen atoms
 C. 12 carbon atoms, 22 hydrogen atoms and 11 oxygen atoms
 D. 12 calcium atoms, 22 helium atoms and 11 oxidizing atoms

13. Use the information in the following table to answer this question.

Compound	Formula	Melting Point °C	Boiling Point °C
baking soda	NaHCO_3	455°	1550°
carbon dioxide	CO_2	sublimates	-79°
rubbing alcohol	$\text{CO}_3\text{H}_8\text{O}$	-90°	82°
salt	NaCl	801°	1413°

The molecular compounds from the table above are ...

A. baking soda and salt
 B. rubbing alcohol and salt
 C. carbon dioxide and baking soda
 D. carbon dioxide and rubbing alcohol

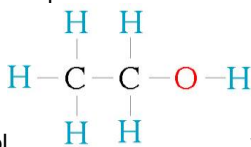
14. A Tetra Pak is a drink container that is used by manufacturers to provide juice in a handy convenient format. Tetra means ...

A. four
 B. wax paper
 C. recyclable
 D. convenient

15. The only compound that contains three elements is ...

A. $\text{H}_2\text{O}_{(l)}$ Water
 B. $\text{C}_6\text{H}_{12}\text{O}_{6(s)}$ Glucose
 C. $\text{CO}_{2(g)}$ Carbon dioxide
 D. $\text{NO}_{2(g)}$ Nitrogen dioxide

16. The chemical formula uses symbols and numerals to identify which elements and how many atoms of each element are present in the compound.

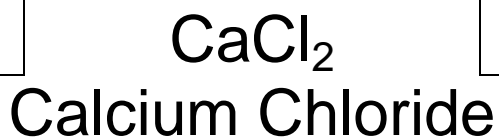
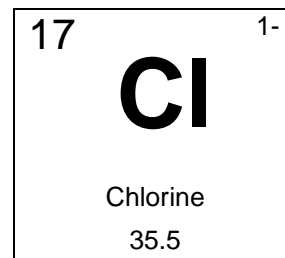
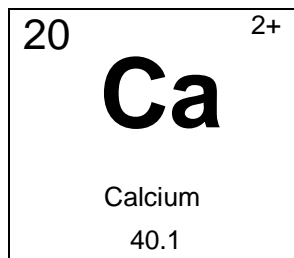


The chemical formula for ethanol would be written as ...

- A. $\text{C}_2 \text{H}_6 \text{O}$
 B. $\text{H}_3\text{CH}_2 \text{COH}$
 C. $\text{C}_2 3\text{H}_2 \text{O}$
 D. $\text{H}_2 \text{HC}_2 \text{OH H}_2$
17. In molecular pure substances the bonding between atoms is strong, but the attraction between the molecules is weak. They are good insulators, poor conductors and have a distinct crystal shape. This type of molecular compound is produced when ...
- A. **metals combine**
 B. **non-metals combine**
 C. **gases and solids combine**
 D. **non-metals and metals combine**
18. Some molecular compounds are better known by their common names rather than their chemical names, example: water H_2O is actually
- A. **hydroxide**
 B. **dihydroxide**
 C. **hydrogen dioxide**
 D. **dihydrogen oxide**
19. When dissolved in water, the metal (**Na**) loses an electron and the nonmetal (**Cl₂**) gains an electron forming an aqueous solution of ions like these ...
- A. (**Na**)⁺ (**Cl₂**)⁺
 B. (**Na**)⁻ (**Cl₂**)⁺
 C. (**Na**)⁺ (**Cl₂**)⁻
 D. (**Na**)⁻ (**Cl₂**)⁻
20. Some ions can also form when certain atoms of elements combine. These ions are called **polyatomic** ions (*poly* meaning "*many*"). Polyatomic atoms are a group of atoms acting as one. The compound that contains a polyatomic ion is ...
- A. $\text{H}_2\text{O}_{(l)}$
 B. $\text{NaCl}_{(s)}$
 C. $\text{C}_6\text{H}_{12}\text{O}_{6(s)}$
 D. $\text{CaCO}_{3(s)}$
21. Some compounds of copper such as Copper II Sulfate used use a roman numeral in its chemical name. **Cu(II)SO₄** The roman numeral is used to show ...
- A. **which ion is used**
 B. **how the ion is used**
 C. **the order of ions used**
 D. **how many ions are used**
22. The formula for carbon tetrachloride is ...
- A. C_4Cl
 B. CCl_4
 C. C_4Cl_4
 D. Cl_4C

23. Show how the following ionic compound is formed (use Bohr's Atomic Model)

Use the following except from the periodic table to help you decide on what the atomic model looks like for each of the elements in the ionic compound.



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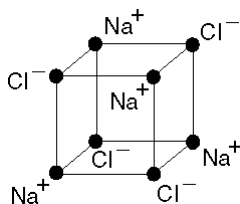
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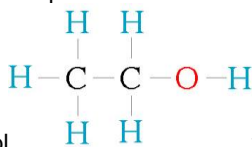
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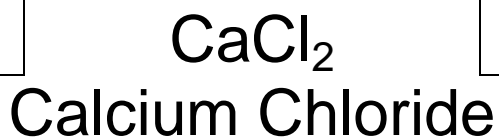
- A. **C₂H₆O**
 B. H₃CH₂COH
 C. C₂3H₂O
 D. H₂HC₂OH₂
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- A. C₄Cl
 B. **CCl₄**
 C. C₄Cl₄
 D. Cl₄C

23. Show how the following ionic compound is formed (use Bohr's Atomic Model)

Use the following excerpt from the periodic table to help you decide on what the atomic model looks like for each of the elements in the ionic compound.

20	Ca	2+
Calcium		
40.1		

17	Cl	1-
Chlorine		
35.5		



ANSWER

