**SNC 1DI**

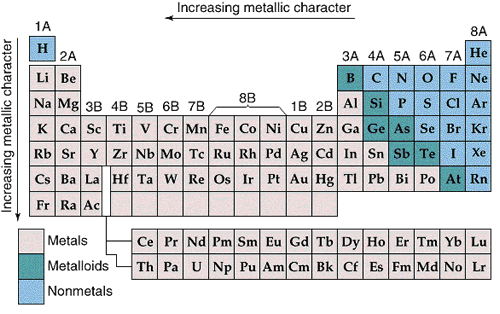
**Chemistry: Atom****s, Elements & Compounds – PART 2**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Lesson | Topic | Lesson | Learning Goals | Homework |
| **1.10** | Exploring the Periodic Table | * Historical Organization of Table * Modern Periodic Table | * understand the fundamentals of the modern periodic table including development and historical arrangements * know key patterns in the arrangement of the periodic table | HW: pg190 Q#1-3  Pg193Q#1-2  Pg199Q#1-3 |
| **1.11** | Groups of the Periodic Table | * Major Groups (4) * Metals, Non Metals, Metalloids | * compare & contrast the physical/chemical properties of elements within a group and between other groups * describe the characteristics of M, NM & Mlds | HW: pg195 Q#1-4  Pg193Q#1-2 |
| **1.12** | Ions & Stability | * Ions & Octet Rule – note * Ions – worksheet | * understand why & how ions form from metals and nonmetals * show how charges on ions are related to their formation | HW: pg213 Q#1-5  Pg217Q#7-10 |
| **1.13** | Formation of Compounds | * Forming & Naming Compounds: Ionic * Counting Atoms | * demonstrate how to form a compound from ions * identify the name & formula for common ionic compounds * calculate the number of atoms in a specified compound | HW: pg220 Q#1-3  Pg221-PracticeProblems  Worksheet: Ionic Compounds |
| **1.14** | Are Chemicals Good for Us? | * Harmful Chemicals in Our Environment | * assess social, environmental and economic impacts of the use of common elements or compounds |  |
| **1.15** | Review | * Review | **Pg 242 – unit outline**  **Pg246-247 Q#1-20, 21a-c, 27-31, 35,36,51,55-57a-f** |  |
| **1.16** | TEST | * Unit Test |  |  |

**The Periodic Table**

The periodic table of the elements was originally developed, in the form that we are familiar with, by a Russian chemist named \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. His table was based on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the elements known at the time. Mendeleev noticed that these \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ over and over again when the elements were \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It was this repetition that led to the choice of the name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

For our purposes the table organizes the elements in three ways:

**Metals and Non-Metals**

Elements that tend to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are found on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the periodic table. These elements are **\_\_\_\_\_\_\_\_\_\_\_\_\_** and have the characteristic properties of metals: they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Elements that tend to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and become \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are found on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the periodic table. These elements are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** and have the characteristic properties of non-metals: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

There is no clear-cut division between the two types of elements but the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, toward the right hand side of the table, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_the metallic elements from the non-metallic elements. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ may have properties of both types of elements and are called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

**Families or Groups**

The columns in the periodic table organize the elements into groups or families \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Each group is identified by a Roman Numeral and may, or may not, use a letter of the alphabet. Groups of elements have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ caused by their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. In groups of \_\_\_\_\_\_\_\_\_\_\_\_\_, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. In groups of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ element is at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The elements of one family, group VIII, also called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, are almost completely \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because they have the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electron arrangement.

**Periods**

These are the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ across the table. In a period there is a gradual change from metals to non-metals as the atomic number increases and as the number of electrons in the outside shell increases. A period always \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the outermost shell and ends with 8 electrons in this outer shell, period 1 being the only exception.

****Groups of the Periodic Table

Chemical Group – the set of elements in the same column. These elements tend to have similar physical and chemical properties.

Group 1 – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* all shiny, silver-coloured metals
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* found \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and easily form compounds with other elements

Group 2 – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

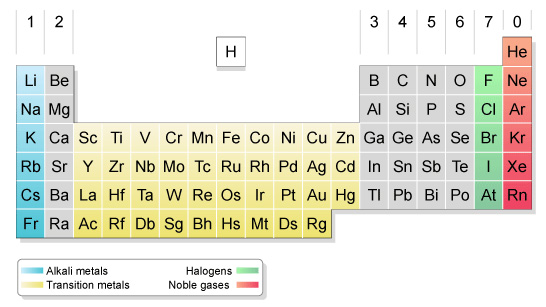
* fairly reactive, but \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Group 7 – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* they often appear as part of a compound rather than as elements

Group 8 – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* these elements are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (almost never react with other elements)



**The Stable Octet and Ion Formation**

Atoms (elements) are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ when they have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. For many elements, they are stable when the outer shell holds eight electrons. This electron arrangement is called a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

Some \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have a full outer electron shell (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_), for example, helium, neon and argon. Because these elements do not want to lose or gain electrons, they are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- they do not react.

eg. Argon, atomic number 18

However, for the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ electron arrangement. These atoms will tend to \_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to achieve a Stable Octet and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

An **\_\_\_\_\_\_\_\_\_** is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, in which the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When an atom **\_\_\_\_\_\_\_\_** valence electron(s), it will form a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** ion. When an atom  **\_\_\_\_\_\_\_\_\_\_** valence electron(s), it will form a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** ion.

# Metals

When an atom has 1, 2 or 3 electrons in its outer shell **(VALENCE SHELL)**, it will tend to lose these electrons to achieve a stable octet electron arrangement.

eg. 3Li

eg. 13Al

**Non-metals**

When an atom has 5, 6 or 7 electrons in its outer shell **(VALENCE SHELL)**, it will tend to gain electrons to achieve a stable octet electron arrangement.

eg. 9F

eg. 8O

eg. 15P

Ionic Bonds: Forming Ionic Compounds

Electrons \_\_\_\_\_\_\_\_\_\_\_\_ (well, almost never), exist just free in space. When one atom loses an electron, the electron is always transferred to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. That is, in order for one atom to lose electrons,\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

When an atom loses one or more electrons, it becomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged ion is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

When an atom gains one or more electrons, it becomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_.

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charged ion is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

From earlier studies, you may know that\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This attraction is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

This attraction is true for ions as well. When an atom loses an electron and becomes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, it will be attracted to the negatively charged ion that was created when another atom \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

For example:

# 12Mg 12Mg2+

Electrostatic attraction between positive and negative ions

# (an Ionic bond)

# 8O 8O2-

The attraction between the positive and negative ions that is created when electrons are transferred is called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

When the ions of metals and non-metals are attracted to each other and an \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_ is formed, the new substance that is formed is called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

We can find the chemical formulas for ionic compounds using the “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” rule:

1. Write the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, including its charge.
2. Write the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, including its charge.
3. Criss-cross just the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the charges.
4. If the subscripts can be reduced to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, do so.

**Practice Questions:**

1. sodium and chlorine
2. lithium and fluorine
3. beryllium and oxygen

4. sodium and oxygen

Naming ionic compounds:

1. Name the metal first, use its regular name
2. Name the non-metal second, change the ending of its name to “ide” (the names are written on your ion chart)

\*\* only the non-metals have “ide” names

For example,

Calcium & fluorine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lithium & sulphur \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Ions & Ionic Bonding**

1. Complete the following chart. Be sure to look at the net charge!

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Element | Atomic  Number | Number of Protons | Number of Electrons | Number of Neutrons | Mass  Number | Net Charge |
| Be |  |  |  | 5 |  | 0 |
|  | 16 |  |  |  | 35 | -2 |
| Fe |  |  | 24 |  | 60 |  |
|  |  | 55 |  | 73 |  | 0 |
|  | 84 |  | 84 |  | 202 |  |
|  |  | 13 |  |  |  | +3 |
|  | 38 |  |  |  |  | +2 |
| I |  |  | 54 |  |  |  |
|  |  |  |  |  | 197 | +1 |
|  |  | 87 | 86 |  |  |  |
|  | 82 |  |  |  |  | -4 |
|  |  |  |  | 35 |  | +1 |
| Po |  |  | 86 |  |  |  |
|  |  |  |  |  | 35 | -1 |
|  |  | 1 | 0 |  |  |  |

2. Complete the formation of ionic compounds using the elements listed below. Be sure to complete all steps to show the transfer of electrons, and name the end products of your reaction.

1. Li and F
2. Ca and S
3. Al and N
4. Mg and Cl
5. Na and O
6. K and Br
7. Sc and S
8. Al and O
9. Cs and C
10. Sr and Se
11. B and S
12. Be and I
13. i and N
14. Ba and C
15. Na and Br
16. Li and O
17. K and S
18. Ga and Cl
19. Be and S
20. Mg and P
21. Al and F
22. Fr and O
23. B and Br
24. Sc and S

NAMING IONIC COMPOUNDS

1. Write the formula for the following binary compounds:

|  |  |
| --- | --- |
| sodium fluoride | zinc nitride |
| silver nitride | strontium oxide |
| aluminum chloride | aluminum carbide |
| barium oxide | lithium sulfide |
| magnesium bromide | beryllium iodide |
| calcium sulfide | calcium bromide |
| lithium oxide | potassium chloride |
| barium sulfide | silver sulfide |
| potassium phosphide | zinc carbide |
| magnesium carbide | boron nitride |

2. Name the following binary compounds:

|  |  |
| --- | --- |
| Na2O | Zn3P2 |
| Li4C | Ba3N2 |
| MgBr2 | MgO |
| CsI | CaS |
| Ag3N | BeO |
| Sr2C | ZnBr2 |
| CaCl2 | NaF |
| BaO | Sr3P2 |
| AlBr3 | AgI |

# Naming Ionic Compounds

Write the correct name for:

1) MgS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) KBr \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) Ba3N2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) Al2O3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5) NaI \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6) SrF2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7) Li2S \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8) RaCl2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9) CaO \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10) AlP \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11) K2S \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12) LiBr \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13) Sr3P2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14) BaCl2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15) NaBr \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16) MgF2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17) Na2O \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

18) SrS \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19) BN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20) AlN \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Write the correct formula for:

1) magnesium oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2) lithium bromide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3) calcium nitride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) aluminum sulfide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5) potassium iodide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6) strontium chloride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7) sodium sulfide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8) radium bromide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9) magnesium sulfide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10) aluminum nitride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11) cesium sulfide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

12) potassium chloride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13) strontium phosphide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

14) barium iodide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

15) sodium fluoride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

16) calcium bromide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17) beryllium oxide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

18) strontium sulfide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

19) boron fluoride \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

20) aluminum phosphide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Counting Atoms**

2 NH4Cl

3 Al(NO3)3

Na2CO3

|  |  |
| --- | --- |
| **Type of Atom**  *(Provide the name of the element)* | **# of Atoms** |
|  |  |
|  |  |
|  |  |
| TOTAL: |  |

NH4C2H3O2

|  |  |
| --- | --- |
| **Type of Atom**  *(Provide the name of the element)* | **# of Atoms** |
|  |  |
|  |  |
|  |  |
|  |  |
| TOTAL: |  |

Pb(NO3)2

|  |  |
| --- | --- |
| **Type of Atom**  *(Provide the name of the element)* | **# of Atoms** |
|  |  |
|  |  |
|  |  |
| TOTAL: |  |

Ca3(PO4)2

|  |  |
| --- | --- |
| **Type of Atom**  *(Provide the name of the element)* | **# of Atoms** |
|  |  |
|  |  |
|  |  |
| TOTAL: |  |

3 BaCl2

|  |  |
| --- | --- |
| **Type of Atom**  *(Provide the name of the element)* | **# of Atoms** |
|  |  |
|  |  |
| TOTAL: |  |

4 Al2(CO3)3

|  |  |
| --- | --- |
| **Type of Atom**  *(Provide the name of the element)* | **# of Atoms** |
|  |  |
|  |  |
|  |  |
| TOTAL: |  |

