Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**How To Count Atoms**

1. The **symbol** of an element represents one atom of that element.

Na = **1 sodium atom (element)**

1. A **subscript** is a number written at the **lower right** corner **behind the symbol** of an element.  If there is more than one atom of the element, then a subscript is used to indicate the number of atoms.

H2 = **2 hydrogen atoms (element)**

1. A **subscript outside a bracket** multiplies all the elements inside the brackets.

Mg3(PO4)2 = **1 compound**

 **Mg - 3 magnesium atoms**

 **P - (1x2) 2 phosphorus atoms**

 **O - (4x2) 8 oxygen atoms**

1. a)  A **coefficient** is a number written **in front of a** chemical **symbol** and indicates the number of atoms of that element.

3 C = **3 carbon atoms**

OR

b)  A **coefficient** is a number written **in front of a** chemical **formula** and indicates the number of molecules of that compound.

**\*\*NOTE:**

A **coefficient** multiplies the number of atoms of each element in the formula.

2 H2O = **H - (2x2) 4 hydrogen atoms**

 **O - (1x2) 2 oxygen atoms**

3 CuSO4 = **Cu - (1x3) 3 copper atoms**

 **S - (1x3) 3 sulfur atoms**

 **O - (4x3) 12 oxygen atoms**

4 Pb(NO3)2 = **Pb - (1x**4**) 4 lead atoms**

 **N - (1x**2**x**4**) 8 nitrogen atoms**

 **O - (**3**x**2**x**4**) 24 oxygen atoms**

**Counting Atoms Worksheet**

Use the Periodic Table to complete the following charts.

a) Na2CO3 b) Ca3(PO4)2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element | Number of Atoms |  | Element | Number of Atoms |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Total # of Atoms: |  | Total # of Atoms: |

c) K2CrO4 d) BaCl2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element | Number of Atoms |  | Element | Number of Atoms |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | Total # of Atoms: |
| Total # of Atoms: |  |  |

e) NH4C2H3O2 f) 2 (NH4)2Cr2O7

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element | Number of Atoms |  | Element | Number of Atoms |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Total # of Atoms: |  | Total # of Atoms: |

g) Pb(NO3)2 h) 4 Al2(CO3)3

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Element | Number of Atoms |  | Element | Number of Atoms |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Total # of Atoms: |  | Total # of Atoms: |

**Counting Atoms**

For each compound, list the element and the number of atoms of each element found in the compound.  The first one has been done for you.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Name** | **Formula** | **Common Name** | **Element or Compound** | **Number of Elements** | **Atoms in Formula** |
| silver | Ag | silver | element | 1 | Ag = silver 1 |
| acetic acid | C2H4O2 | found in vinegar | compound | 3 | C = carbon 2H = hydrogen 4O = oxygen 2 |
| paradichlorobenzene | C6H4O2 | mothballs |  |  |  |
| trioxygen | O3 | ozone |  |  |  |
| nitrogen | N2 | nitrogen |  |  |  |
| pyrite | FeS3 | fool’s gold |  |  |  |
| sucrose | C12H22O11 | table sugar |  |  |  |
| butane | C4H10 | lighter fluid |  |  |  |
| asbestos | H4Mg3Si2O9 | insulation |  |  |  |
| ascorbic acid | C6H8O6 | vitamin C |  |  |  |
| sulfuric acid | H2SO4 | battery acid |  |  |  |
| ethanol | CH3CH2OH | rubbing alcohol |  |  |  |