SNC2P Worksheet

Name Solutions

# Counting Atoms In Molecules

Date _____

Page # _____

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

   e.g., Ca = calcium

2. 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 in the molecule, then a subscript is used to indicate the number of atoms.

   e.g., $N_2$ = 2 atoms of nitrogen

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

   e.g., $Ba_3(PO_4)_2$ = 3 atoms of barium, 2 atoms of phosphorous, 8 atoms of oxygen

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

   e.g., 3C = 3 atoms of carbon

   **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** multiples the number of atoms of each element in the formula.

   e.g., $2H_2O$ = 4 atoms of hydrogen, 2 atoms of oxygen

   $3FeSO_4$ = 3 atoms of iron, 3 atoms of sulfur, 12 atoms of oxygen

   $4Cu(NO_3)_2$ = 4 atoms of carbon, 8 atoms of nitrogen, 24 atoms of oxygen

**PTO**

# Counting Atoms In Molecules

Complete the table for each of the following compounds:

$Na_2CO_3$

| Type of Atom | # of atoms |
|---|---|
| sodium | 2 |
| carbon | 1 |
| oxygen | 3 |
| Total | 6 |

$Ca_3(PO_4)_2$

| Type of Atom | # of atoms |
|---|---|
| calcium | 3 |
| phosphorous | 2 |
| oxygen | 8 |
| Total | 13 |

$K_2CrO_4$

| Type of Atom | # of atoms |
|---|---|
| potassium | 2 |
| chromium | 1 |
| oxygen | 4 |
| Total | 7 |

$3BaCl_2$

| Type of Atom | # of atoms |
|---|---|
| barium | 3 |
| chlorine | 6 |
| | |
| Total | 9 |

$NH_4C_2H_3O_2$

| Type of Atom | # of atoms |
|---|---|
| nitrogen | 1 |
| hydrogen | 7 |
| carbon | 2 |
| oxygen | 2 |
| Total | 12 |

$4Al_2(CO_3)_3$

| Type of Atom | # of atoms |
|---|---|
| aluminum | 8 |
| carbon | 12 |
| oxygen | 36 |
| Total | 56 |

$Pb(NO_3)_2$

| Type of Atom | # of atoms |
|---|---|
| lead | 1 |
| nitrogen | 2 |
| oxygen | 6 |
| Total | 9 |

$2(NH_4)_2Cr_2O_7$

| Type of Atom | # of atoms |
|---|---|
| nitrogen | 4 |
| hydrogen | 16 |
| chromium | 4 |
| oxygen | 14 |
| Total | 38 |