

Counting Atoms In Molecules

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., N₂ = 2 atoms of nitrogen

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

e.g., Ba₃(PO₄)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** multiplies the number of atoms of each element in the formula.

e.g., 2H₂O = 4 atoms of hydrogen, 2 atoms of oxygen

3FeSO₄ = 3 atoms of iron, 3 atoms of sulfur, 12 atoms of oxygen

4Cu(NO₃)₂ = 4 atoms of carbon, 8 atoms of nitrogen, 24 atoms of oxygen

Name: _____ Date: _____ Hour: _____

***** Counting Atoms Practice *****

Section A: Identify the coefficients and subscripts in the following formulas.
If there is not one, write: none - means 1

1) 3MgCl_2 coefficient: _____
Subscript for Mg: _____
Subscript for Cl: _____

2) V_2O_5 coefficient: _____
Subscript for V: _____
Subscript for O: _____

3) $4\text{K}_2\text{CO}_3$ coefficient: _____
Subscript for K: _____
Subscript for C: _____
Subscript for O: _____

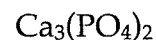
4) $\text{NaC}_2\text{H}_3\text{O}_2$ coefficient: _____
Subscript for Na: _____
Subscript for C: _____
Subscript for H: _____
Subscript for O: _____

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Complete the table for each of the following compounds:



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



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



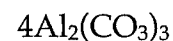
Type of Atom	# of atoms
potassium	
chromium	
oxygen	
Total	



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



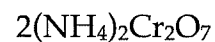
Type of Atom	# of atoms
nitrogen	
hydrogen	
carbon	
oxygen	
Total	



Type of Atom	# of atoms
aluminum	
carbon	
oxygen	
Total	



Type of Atom	# of atoms
lead	
nitrogen	
oxygen	
Total	



Type of Atom	# of atoms
nitrogen	
hydrogen	
chromium	
oxygen	
Total	