

How to Count Atoms

Solin

Worksheet

1. The **symbol** of an element represents one atom of that element.
e.g., Ba = 1
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, then a subscript is used to indicate the number of atoms.
e.g., Cl₂ = 2

3. A **subscript outside a bracket** multiples all the elements inside the brackets.
e.g., Ca₃(PO₄)₂ =

$$\begin{array}{l} \text{Ca} = \underline{3} \\ \text{P} = \underline{2} \\ \text{O} = \underline{8} \end{array}$$

3. A **coefficient** is a number written **in front of a chemical symbol** and indicates the number of atoms of that element or number of molecules

$$\begin{array}{l} \text{e.g., } 3\text{C} = \underline{3} \\ 2\text{NaSO}_4 = \underline{2}\text{Na} \quad \underline{2}\text{S} \quad \underline{8}\text{O} \end{array}$$

A **subscript** is a number written **after an atom in a formula** and indicates the number of atoms of the kind in the molecule.

$$\text{e.g. H}_2\text{SO}_4 \text{ The subscript of H} = 2 \text{ and the subscript of O} = \underline{4}$$

Note: a coefficient multiples the number of atoms of each element in the formula

e.g.,



2 molecules of H₂O

4 H (hydrogen)

2 O (oxygen)



3 molecules of Na₂SO₄ ←

6 Na (copper)

3 S (sulphur)

12 O (oxygen)



4 molecules of Pb(NO₃)₂

4 Pb (Lead)

8 N (nitrogen)

24 O (oxygen)

Counting Atoms

Worksheet

Count the atoms present in the different compounds by using the coefficients and subscripts.



Type of Atom	# of Atoms
<u>Potassium</u>	<u>2</u>
<u>Carbon</u>	<u>1</u>
<u>Oxygen</u>	<u>3</u>
Total	<u>6</u>



Type of Atom	# of Atoms
<u>Barium</u>	<u>3</u>
<u>Phosphorus</u>	<u>2</u>
<u>Oxygen</u>	<u>8</u>
Total	<u> </u>



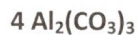
Type of Atom	# of Atoms
<u>Sodium</u>	<u>2</u>
<u>Chromium</u>	<u>1</u>
<u>Oxygen</u>	<u>4</u>
Total	<u>7</u>



Type of Atom	# of Atoms
<u>Calcium</u>	<u>3</u>
<u>Chlorine</u>	<u>6</u>
Total	<u>9</u>



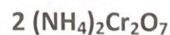
Type of Atom	# of Atoms
<u>Nitrogen</u>	<u>1</u>
<u>Hydrogen</u>	<u>7</u>
<u>Carbon</u>	<u>2</u>
<u>Oxygen</u>	<u>2</u>
Total	<u>12</u>



Type of Atom	# of Atoms
<u>Aluminum</u>	<u>8</u>
<u>Carbon</u>	<u>12</u>
<u>Oxygen</u>	<u>36</u>
Total	<u>56</u>



Type of Atoms	# of Atoms
<u>Lead</u>	<u>1</u>
<u>Nitrogen</u>	<u>2</u>
<u>Oxygen</u>	<u>6</u>
Total	<u>9</u>



Type of Atom	# of Atoms
<u>Nitrogen</u>	<u>4</u>
<u>Hydrogen</u>	<u>16</u>
<u>Chromium</u>	<u>4</u>
<u>Oxygen</u>	<u>14</u>
Total	<u>38</u>