

# HOW TO COUNT

## ATOMS WORKSHEET

**Answer the following questions.**

1) What is the element symbol?

2) What does a subscript in the formula of a compound indicate?

3) What is a coefficient with regard to the number of atoms?

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## Answers

Answer the following questions.

1) What is the element symbol?

The symbol of an element represents a single atom of that element. For example, Na represents one atom of sodium.

2) What does a subscript in the formula of a compound indicate?

Depending on its placement, a numerical subscript in a compound can mean different things.

**Case 1:** A subscript is a number written in the lower right corner behind the symbol of an element. If more than one atom of the element is present in the molecule, then a subscript is used to indicate the number of atoms in the compound. For example, *A molecule of  $O_2$  has two oxygen atoms, indicated by the two in the lower right corner.*

**Case 2:** A subscript outside a bracket multiplies all the elements inside the brackets. For example, *A  $Ca_3(PO_4)_2$  molecule has three calcium atoms, two phosphorus atoms, and eight oxygen atoms. The two outside of the bracket indicate eight oxygen atoms  $\{4 \times 2 = 8\}$ .*

3) What is a coefficient with regard to the number of atoms?

A coefficient is a number written in front of a chemical symbol to indicate the number of atoms of that element or, in the case of a chemical formula, to indicate the number of molecules of a compound. It is important to note that the coefficient multiplies the number of atoms in an element. For example,

*In the following reaction,  $2H_2O \rightarrow 2H_2 + O_2$ , there are two molecules of water, two hydrogen molecules, and a single oxygen molecule.*