



What is the difference between an atom and a molecule?

## Choose the correct Statement.

- A. Atoms are bigger than molecules
- B. Atoms are made up of multiple elements, while molecules are made up of a single element
- C. Atoms can exist independently, while molecules cannot
- D. Atoms are the basic building blocks of matter, while molecules are formed by the combination of atoms

Show Answer...

**Correct Answer: D (Atoms are the basic building blocks of matter, while molecules are formed by the combination of atoms)**

## What is the difference between an atom and a molecule?

### Explanation:

An atom is the smallest unit of matter that retains the properties of an element. It consists of a nucleus, which contains protons and neutrons, and electrons that orbit around the nucleus. Atoms are the basic building blocks of matter and cannot be broken down into smaller units by ordinary chemical means.

A molecule, on the other hand, is formed by the combination of two or more atoms held together by chemical bonds. Molecules can be made up of atoms of the same element or different elements. For example, a water molecule is made up of two hydrogen atoms and one oxygen atom held together by covalent bonds.

The key difference between atoms and molecules is that atoms are the basic building blocks of matter, while molecules are formed by the combination of atoms. Atoms are indivisible and cannot exist independently, while molecules can exist independently and have their own unique properties.



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## Importance in Science

Understanding the difference between atoms and molecules is important in various scientific fields, including chemistry, physics, and biology. It helps scientists to understand the properties of matter and how substances interact with each other. For example, understanding the molecular structure of a substance can help scientists predict its behavior under certain conditions and develop new materials with specific properties.

## What Is The Difference Between A Molecule And An Atom | Table

Here's a simplified table explaining the difference between atoms and molecules:

Atoms	Molecules
Basic building blocks of matter	Formed by the combination of two or more atoms
The smallest unit of an element	Can be made up of atoms of the same or different elements
Consists of a nucleus with protons and neutrons, and electrons that orbit around the nucleus	Held together by chemical bonds
Cannot be broken down into smaller units by ordinary chemical means	Have their own unique properties
Indivisible and cannot exist independently	Can exist independently and interact with other substances

This table can be helpful for smaller graders to understand the key differences between atoms and molecules in a simple and visual way.

Atoms and molecules are the basic building blocks of matter. While they are often used interchangeably, they have distinct differences that set them apart from one



## What is the difference between an atom and a molecule?

another. Understanding these differences is important in gaining a deeper understanding of the physical world around us.

Atoms are the smallest unit of an element that retains the properties of that element. They are indivisible and cannot be broken down into smaller units by ordinary chemical means. Atoms consist of a nucleus with protons and neutrons, and electrons that orbit around the nucleus. The number of protons in an atom determines what element it is, while the number of neutrons can vary to form different isotopes of the same element.

**Molecules, on the other hand, are formed by the combination of two or more atoms.** Molecules can be made up of atoms of the same element or different elements. They are held together by chemical bonds, which can be covalent, ionic, or metallic, depending on the elements involved. Molecules have their own unique properties, which are different from the properties of the individual atoms that make them up.

One of the most significant **differences between atoms and molecules is their size.** Atoms are much smaller than molecules, and cannot be seen with the naked eye. In fact, they are so small that it takes millions of atoms to make up a single strand of human hair. Molecules, on the other hand, can be seen with the naked eye, and are often visible in the form of gases, liquids, or solids.

Another difference between atoms and molecules is their behavior. Atoms are indivisible and cannot exist independently, whereas molecules can exist independently and interact with other substances. Atoms are also inert, which means they do not react with other atoms or molecules unless they are forced to do so by an external force. Molecules, on the other hand, can react with other molecules to form new substances through chemical reactions.

In conclusion, atoms and molecules are the basic building blocks of matter, but they have distinct differences that set them apart from one another. Atoms are the smallest unit of an element and cannot be broken down further, while molecules are formed by the combination of two or more atoms and can exist independently. Understanding the difference between these two fundamental concepts is crucial in understanding the physical world around us.

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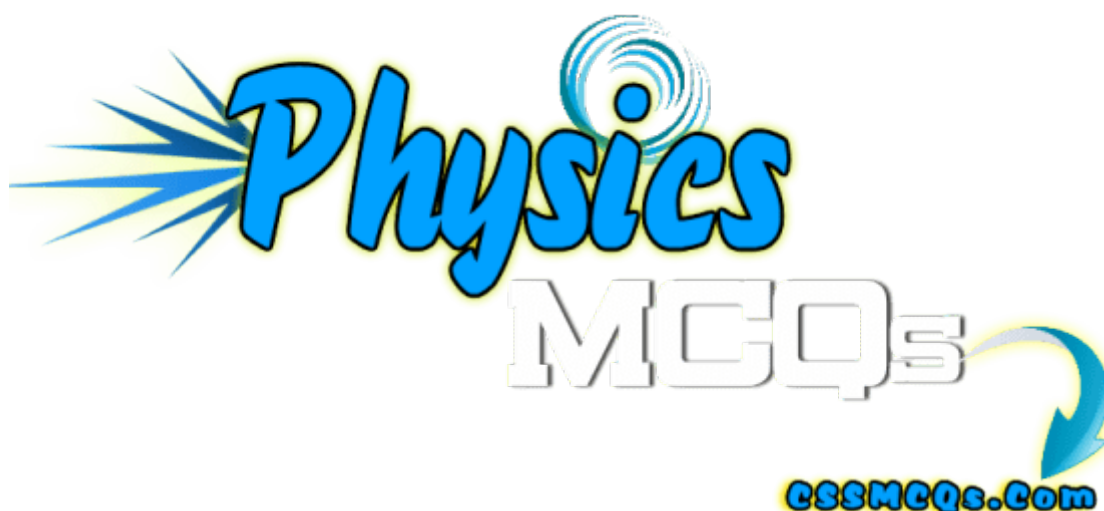
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