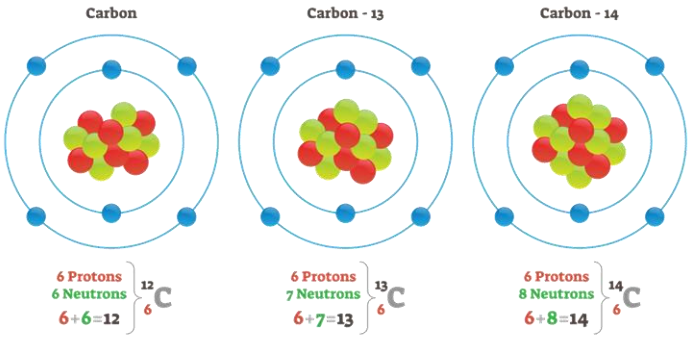
Atoms & the Periodic Table

Section 2: Masses of Atoms

Every element is given a block on the periodic table with information to identify it. Each block includes the element's name, symbol, atomic number, and atomic mass number. The number of protons in an atom of an element is called the **atomic number**. The number of protons also identifies the element. For example, a lithium atom has three protons, so its atomic number is three.

The **atomic mass** is primarily composed of protons and neutrons in the nucleus. It's the average of all the atoms of an element's isotopes or the **average atomic mass**. It is also called the mass number. An element is also given a chemical symbol, the shortened version of its name. The first letter is always uppercase, and the second letter, when there is a second letter, is always lowercase. The element's full name is found at the bottom of each block.

The number of neutrons can vary in an atom. Atoms of the same element with different numbers of neutrons are called **isotope**s. Most elements have more than one isotope; each element has an average atomic mass. The average atomic mass of an element is the weighted-average mass of the mixture of its isotopes. The average atomic mass is close to the mass of its most abundant isotope. For example, every living organism has isotopes of carbon. Two particular isotopes, Carbon -12 and Carbon -14, are used to determine the age of organisms that may have lived in the past. When a living organism dies, it stops taking in new carbon. As a result, carbon -14 will decay while carbon -12 remains constant. Since carbon -14 decays, scientists can compare the amount of carbon -14 to the amount of carbon -12 to determine the organism's age. To find the number of neutrons in an atom, you subtract the mass number from the atomic number.



Review:

1. What is the difference between atomic number and atomic mass?
2. What is an isotope?

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