

Introducing



Four elements make up most living things — including you! The elements are carbon, hydrogen, oxygen, and nitrogen.



Carbon

C

12 6

A carbon atom has 6 protons and 6 neutrons and an atomic mass of 12. Just like all other kinds of atoms, how carbon atoms are organized, held together, and combined with other atoms determines what they form.

Carbon is mixed with atoms of other elements to form the lead in your pencil. Carbon combines with oxygen to form carbon dioxide (CO₂). Carbon dioxide is what you exhale when you breathe. It is also the fizz in the sodas you drink.



Hydrogen is the most common element in the universe. It is also the lightest, with an atomic mass of 1. In its most common form, hydrogen has 1 proton and no neutrons. Hydrogen combines with carbon atoms to form gasoline, candle wax, kerosene, and petroleum. Hydrocarbons,

Hydrogen

H

1 1

as these compounds of hydrogen and carbon are called, are very common.



Oxygen is an element that occurs naturally. About 20 percent of the air you breathe is made up of oxygen. About 60 percent of your body mass is oxygen. An oxygen atom has 8 protons and 8 neutrons and an atomic mass of 16. Oxygen combines with hydrogen to form water, H₂O.



Oxygen

O

16 8

When oxygen atoms are grouped in threes, they form a molecule known as ozone (O₃). Ozone is a gas in the upper atmosphere which shields us from the sun's dangerous ultraviolet rays.



Plants use nitrogen and other elements to manufacture amino acids, the building blocks of protein.

Nitrogen has 7 protons, 7 neutrons, and an atomic mass of 14. It makes up almost 80 percent of our atmosphere. Nitrogen is an important part of protein, the major ingredient of cell tissue.

Nitrogen

N

14 7