

Isotopes

Things at the “same place” in the periodic table

14 6 protons 8 neutrons
13 6 protons 7 neutrons
12 6 protons 6 neutrons
C Element No. 6
Carbon

15 7 protons 8 neutrons
14 7 protons 7 neutrons
N Element No. 7
Nitrogen

18 8 protons 10 neutrons
17 8 protons 9 neutrons
16 8 protons 8 neutrons
O Element No. 8
Oxygen

19 9 protons 10 neutrons
F Element No. 9
Fluorine

An element is all of the atoms with the same number of protons (e.g., 6 for carbon). Within one element, isotopes are atoms with different numbers of neutrons (e.g., 6, 7, and 8 for carbon), which give the different weights by which the isotopes are known (e.g., 12, 13, and 14 for carbon). When chemists were first learning about all of this and assembling the periodic table, they realized that isotopes of an element were all things that should be at the same place in the periodic table, and “same place” or “iso - tope” from Greek gave the name “isotope”.

31 15 protons 16 neutrons
P Element No. 15
Phosphorus

36 16 protons 20 neutrons
34 16 protons 18 neutrons
33 16 protons 17 neutrons
32 16 protons 16 neutrons
S Element No. 16
Sulfur

37 17 protons 20 neutrons
35 17 protons 18 neutrons
Cl Element No. 17
Chlorine