

The Number of Neutrons

Atoms are composed of electrons, protons, and neutrons. The relative mass of the electrons is 0 amu, while the relative masses of the protons and neutrons are each 1 amu. The mass of an atom (A) is therefore equal to the sum of the atoms protons (Z) and neutrons (N). The number of protons (Z) is also known as the atomic number. Atomic number and atomic mass are both given on the periodic table. The mass listed on the periodic table for each element is the average mass of the isotopes. When this mass is rounded off, it gives the mass of the most common isotope. The number of neutrons for the most common isotope of an element can be found by rounding off the mass of the element on the periodic table and subtracting the atomic number from it. See the box to the right.

Fill in the table below using data from the *Periodic Table*. For each element listed below, look up the mass, round it off, and record the result. Then look up the atomic number, write the symbol for the most common isotope and calculate the number of neutrons.

Calculating the Number of Neutrons

A = atomic mass number

Z = atomic number

N = number of neutrons

☞ $N = A - Z$

☞ ${}^A_Z\text{X}$ is the symbol for an isotope of element X with atomic number Z and atomic mass number A

☞ For the element ${}^{23}_{11}\text{Na}$, the number of neutrons (N) is determined as follows:
 $N = 23 - 11 = 12$

Element	Mass (A)	Atomic Number (Z)	Isotopic Symbol (${}^A_Z\text{X}$)	Number of Neutrons (N)
Oxygen				
Chlorine				
Calcium				
Iron				
Iodine				
Silver				
Bromine				
Copper				
Potassium				
Phosphorus				
Tin				
Zinc				
Sulfur				
Neon				