

Isotopes

Many elements have different forms. We have already looked at different ions which vary in the number of electrons. Isotopes are different forms which vary in the number of neutrons.

Remember that neutrons do not have a charge, but they do have mass.

You will need to be able to determine the number of neutrons based on the isotope, and vice versa.

The number of protons does not change. If it changes, then it is a different element altogether.

Carbon has 3 different isotopes

Carbon – 12

Carbon – 13

Carbon – 14

All of these isotopes will have the same number of protons and electrons. However, the number following the element is the **mass number**. The mass number is equal to the number of protons plus the number of neutrons.

Therefore, it is possible to determine the number of neutrons from the mass number and the periodic table (to determine the number of protons).

Since carbon always has 6 protons, we can determine that C-12 has 6 neutrons, C-13 has 7 neutrons, and C-14 has 8 neutrons.

You need to be able to determine the number of protons, neutrons, electrons, and mass number based on any pieces of information provided.