



Bohr-Rutherford Diagrams

We use Bohr-Rutherford diagrams to help us visualize what an atom of a certain element would look like.

Reminder:

- Number of protons = atomic number
- Number of electron = atomic number (in a neutral atom)
- Number of neutrons = atomic mass - protons (atomic number)

An **energy shell** is the shell surrounding the nucleus that hold electrons.

A **valence energy shell** is the outermost shell. The electrons in this level are called **valence electrons**.

Shell #	Number of Electrons
1	2
2	8
3	8

The **duet rule** states that the maximum number of electrons that the first shell can hold is two.

The **octet rule** (for now) states that the maximum number of electrons that the second and third shell can hold is eight.

*You must FILL each energy level before you are able to move on to the next energy level.

To draw a Bohr-Rutherford Diagram

- 1) Draw your nucleus and put the number of protons and the number of neutrons inside.
- 2) Draw the first electron shell and fill it with two electrons (if available).
- 3) Once the first shell is full of electrons, draw the next shell and place the correct number of electrons. If the second shell become full (8 electrons), draw the next shell and place the remaining electrons.

Example: Calcium

P (+) =

E (-) =

N (o) =

Element: Carbon P= E= N=	Element: Lithium P= E= N=	Element: Potassium P= E= N=
Element: Phosphorous P= E= N=	Element: Sodium P= E= N=	Element: Helium P= E= N=
Element: Chlorine P= E= N=	Element: Argon P= E= N=	Element: Magnesium P= E= N=
Element: Boron P= E= N=	Element: Neon P= E= N=	Element: Oxygen P= E= N=