Name:_____
Date:_____Core:_____

Model an Atom

Our knowledge of the atom has come a long way. We first began thinking about the structure of the smallest building blocks in our world in 1803 John Dalton proposed that atoms were perfectly spherical and were always in motion. Dalton didn't imagine that there could possibly be anything smaller than an atom. Then in 1911 Ernest Rutherford created a new model of the atom that showed that an atom has a small center with a strong positive charge but most of an atom is empty space. Niels Bohr got a lot closer with his model of the atom in 1922 with the discovery of layers of electrons called shells. It was still another 10 years though before James Chadwick added the existence of the neutron to our understanding of the atom.

Clearly our understanding of the atom has changed immensely over time. Now it's your turn to draw your own model of the atom. These illustrations will be flat on the page but remember that atoms are really 3 dimensional constantly moving or vibrating objects that constantly have electrons moving around the electron cloud.

Part One Directions: Draw an illustration on the left hand side of your notebook for each of the atoms described below making sure you have drawn the correct number of protons and neutrons as well as the correct number of valence electrons and electron shells. You can identify different parts of an electron through color coding or marking their charge (+ for protons, etc.)

*****Remember where protons, neutrons, and electrons are located within the atom as well as that valence electrons go on the OUTERMOST electron shell)*****

1. This atom has…
   - 1 valence electron
   - 1 proton
   - 1 neutron
   - 1 electron shell
2. This atom has…
   - 1 valence shell electrons
   - 11 protons
   - 23 neutrons
   - 3 electron shells
3. This atom has…
   - 4 valence shell electrons
   - 6 protons
   - 6 neutrons
   - 2 electron shells
4. This atom has…
   - 6 valence shell electrons
   - 8 protons
   - 8 neutrons
   - 2 electron shells
5. This atom has…
   - 5 valence shell electrons
   - 7 protons
   - 7 neutrons
   - 2 electron shells
6. This atom has…
   - 2 valence shell electrons
   - 20 protons
   - 20 neutrons
   - 4 electron shells