

Directions: In this assignment, your goal is to explore the structure of an atom and discover which particles affect the mass, name, and charge of an atom.

1. Add protons, neutrons, and electrons to your atom. Play around with adding different numbers of each.

Which particles change the name of the atom?

2. There are different locations in atoms. The center of the atom is called the **nucleus**. The rings around the atom in this simulation are called **shells**. Make sure you have a proton, neutron, and electron in your atom. Below tell if each particle listed is found in the nucleus (center of the atom) or in the shells (rings around the atom).

- a. Protons are found in the _____
- b. Neutrons are found in the _____
- c. Electrons are found in the _____

3. Build each of the atoms below in the simulation. What is the name of each of the following atoms?

- a. An atom with 3 protons and 4 neutrons: _____
- b. An atom with 2 protons and 4 neutrons: _____
- c. An atom with 4 protons and 4 neutrons: _____
- d. An atom with 2 protons and 3 neutrons: _____

4. Play around with the simulation by adding and removing different numbers of protons, neutrons, and electrons in order to discover which particles affect the charge of an atom or ion.

- a. Which particle adds a positive charge to the atom? _____
- b. Which particle adds a negative charge to the atom? _____
- c. Which particle does not affect the charge? _____
- d. What needs to be true in order for an atom to have a neutral charge?

5. Play around with the simulation by adding and removing different numbers of protons, neutrons, and electrons in order to discover which particles affect the mass of an atom or ion.

- a. Which particle(s) affect the mass?

- b. Which particle(s) do not affect the mass?
