

Proton Positive Plus

+

"Build An Atom" Simulation - Build an Ion

Name: _____
Hour: _____

Key

Date: _____

Part I: Basic Atomic Structure

- Where are the electrons located inside of the atom?
Outside of the nucleus
- How many electrons can fit in the first energy level? Can you ever have more than this number in the first energy level? Can you ever have less?
Two. No. Yes, one.
- How many electrons can fit in the second energy level?
8
- What does changing the number of electrons change about the atom?
Gets bigger. Becomes more negative
- What is not changed when changing the number of electrons in the atoms?
The element. The mass number.
- Where are the protons located inside the atom?
The middle = nucleus
- What does changing the number of protons change about the atom?
The element name and mass number + charge
- How does changing the number of protons affect the charge of the atom?
Becomes more positive
- Where are the neutrons located in the atom?
The nucleus
- What does changing the number of neutrons change about the atom?
The mass number
- What is not changed when you change the number of neutrons?
The element name, charge
- Which particle(s) determine the mass number of the atom?
Proton + neutron
- Write an equation for calculating the mass number of any atom.
mass # = protons + neutrons
- Which particle(s) determine the overall charge of the atom?
Protons + electrons
- Which particle(s) determine the identity of the atom?
(name)

Protons

Electrons

Negative minus

Neutron Neutral No charge

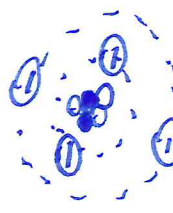
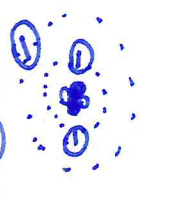
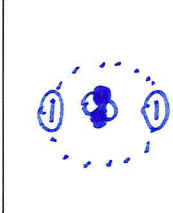
Build some atoms, and write down three examples that have a *neutral charge*. This time, do not draw individual protons and neutrons, just draw one small dot for the nucleus.

Electron

Nucleus

Include a drawing of your atom. The key above is a suggestion for how to draw the parts of your atom.
Be sure to draw the electrons in the correct energy levels.

Picture of Atom

Electrons: <u>4</u> Protons: <u>2</u> Charge: <u>-2</u>		Name: <u>Helium</u> Symbol: <u>He</u>
Electrons: <u>3</u> Protons: <u>2</u> Charge: <u>-1</u>		Name: <u>Helium</u> Symbol: <u>He</u>
Electrons: <u>2</u> Protons: <u>2</u> Charge: <u>Neutral</u>		Name: <u>Helium</u> Symbol: <u>He</u>

Analysis Questions:

- From your observations, what is the relationship between the number of protons and the number of electrons in a neutral atom? Explain your answer.

+
- 0

In a neutral atom, protons equal electrons.

- Without using the simulation, draw another atom you have not yet made in the simulation. Pay attention to the number of protons and electrons.