

December 3, 2012

Why do some elements form +1 ions? Why do others form +2 ions? And yet, still others form -1, -2 or -3 ions?

Open the PHET simulation entitled "Build An Atom" (<https://phet.colorado.edu/en/simulation/build-an-atom>)

- 1.) Construct a stable, neutral atom of Beryllium.
 - a. What's its atomic number?
 - b. How many total electrons does it have?
 - c. How many valence electrons does it have?
 - d. When forming a bond with another atom, how many electrons would it have to lose to have a full outer electron shell?
 - e. After losing this number of electrons, what would the total charge on a Beryllium Ion be?

- 2.) Construct a stable, neutral atom of Oxygen.
 - a. What's its atomic number?
 - b. How many total electrons does it have?
 - c. How many valence electrons does it have?
 - d. When forming a bond with another atom, how many electrons would it have to gain to have a full outer electron shell?
 - e. After gaining this number of electrons, what would the total charge on an Oxygen Ion be?

- 3.) How many ions of Beryllium would have to bond with one ion of Oxygen to create an electrically neutral compound? Write this compound with the appropriate subscripts. Draw a picture of this neutral compound, representing each ion with a circle.

- 4.) Construct a stable, neutral atom of Lithium.
 - a. What's its atomic number?
 - b. How many total electrons does it have?
 - c. How many valence electrons does it have?
 - d. When forming a bond with another atom, how many electrons would it have to lose to have a full outer electron shell?
 - e. After losing this number of electrons, what would the total charge on a Lithium Ion be?

- 5.) Construct a stable, neutral atom of Nitrogen.
 - a. What's its atomic number?
 - b. How many total electrons does it have?
 - c. How many valence electrons does it have?
 - d. When forming a bond with another atom, how many electrons would it have to gain to have a full outer electron shell?
 - e. After gaining this number of electrons, what would the total charge on a Nitrogen Ion be?

- 6.) How many ions of Lithium would have to bond with one ion of Nitrogen to create an electrically neutral compound? Write this compound with the appropriate subscripts. Draw a picture of this neutral compound, representing each ion with a circle.