

1. What is the octet rule?
2. What is an Oxidation Number?
3. Why do atoms form chemical bonds?

Element	Atomic # (Protons)	Mass # (P + N)	Number of Neutrons (Mass # - Atomic #)	# of Valence Electrons	Unoccupied spaces in outermost level	Oxidation #
Hydrogen						
Helium						
Lithium						
Beryllium						
Boron						
Carbon						
Nitrogen						
Oxygen						
Fluorine						
Neon						
Sodium						
Magnesium						
Aluminum						
Silicon						
Phosphorus						
Sulfur						
Chlorine						
Argon						

3. What do Lithium, Sodium, Hydrogen, and Potassium have in common? What group are they in?
4. What do Magnesium, Calcium, and Beryllium have in common? What group are they in?
5. What do Fluorine and Chlorine have in common? What group are they in?

6. What do Sulfur and Oxygen have in common? What group are they in?
7. What do Neon and Argon have in common? What group are they in?
8. In order to complete its outermost energy level (valence shell), do you think sodium will lose its only valence electron, or gain seven? Explain your answer.
9. In order to complete its outermost energy level (valence shell), do you think chlorine will tend to lose all seven of its valence electrons, or gain one electron? Explain your answer.

Draw the Bohr model for Sodium and Chlorine.

10. Remove the valence electron from sodium. What has happened to the balance of positive and negative charges? What is Sodium's oxidation number?
11. Move the electron you took from Sodium and add it to Chlorine. What happens to Chlorine's charge when it gains the electron from the Sodium atom? What is Chlorine's oxidation number?
12. When sodium and chlorine form a chemical bond, what is the overall charge of the molecule? Why do you think Sodium and Chlorine combine in a 1:1 ratio?
13. Draw Lewis Structures for individual atoms listed below **AND** the molecules they form when they chemically bond.
 - a. Lithium & Chlorine
 - b. Magnesium & Iodine
 - c. Boron & Fluorine