

Study Guide for Chemical Compounds

Electron Arrangement

- Explain what elements in the same row (period) on the periodic table have in common.
- Explain what elements in the same column (group) have in common.
- Explain what valence electrons are.
- How many valence electrons do alkali metals have?
- How many valence electrons do the alkaline earth metals have?
- How many valence electrons do boron group elements have?
- How many valence electrons do carbon group elements have?
- How many valence electrons do nitrogen group elements have?
- How many valence electrons do oxygen group elements have?
- How many valence electrons do halogens have?
- Except for helium, how many valence electrons do the noble gases have?

Oxidation Numbers

- What charge do atoms develop when they lose electrons?
- What charge do atoms develop when they gain electrons?
- What is the oxidation number and charge for alkali metals?
- What is the oxidation number and charge for alkaline earth metals?
- What is the oxidation number and charge for boron group elements?
- What is the oxidation number and charge for nitrogen group elements?
- What is the oxidation number and charge for oxygen group elements?
- What is the oxidation number and charge for the halogens?

Chemical Bonding

- Which type of elements form ionic bonds?
- How are ionic bonds formed?
- Which type of elements form covalent bonds?
- How are covalent bonds formed?
- Which type of elements form metallic bonds?
- How are metallic bonds formed?
- Which type of elements form hydrogen bonds?
- How are hydrogen bonds formed?

Properties of Water

- What types of bonds form between the 2 hydrogen atoms and the oxygen atom within a water molecule?
- Explain what makes water a polar molecule.

- Explain how the hydrogen bonds form between different water molecules.
-
- Explain why water has cohesive properties.
- Explain why water has adhesive properties.
- Explain what capillary action is.

- Explain how and why water develops surface tension.
- Explain why water has a high heat capacity.

- Explain why water is less dense as a solid than as a liquid resulting in ice floating on liquid water.