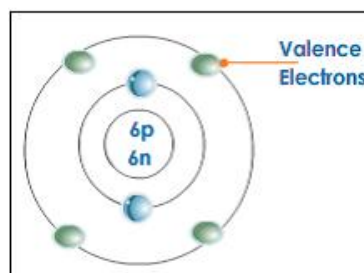


# Ions

Using the work of Mendeleev, scientists learned that all of the elements within each group have the same number of **valence electrons**

Valence electrons are the electrons in the highest occupied energy level of an element's atoms.



The valence electrons can be found by looking at the representative elements group numbers.

Valence electrons are usually the only electrons that are used in chemical bonds. These are shown by **electron dot structures**.

Electron dot structures are diagrams that show valence electrons as dots.

PERIODIC TABLE ELEMENTS 1–20							
HYDROGEN 1  <b>H</b> ·							HELIUM 2  He·
LITHIUM 3  <b>Li</b> ·	BERYLLIUM 4  <b>Be</b> ·	BORON 5  · <b>B</b> ·	CARBON 6  · <b>C</b> ·	NITROGEN 7  · <b>N</b> :	OXYGEN 8  · <b>O</b> :	FLUORINE 9  · <b>F</b> :	NEON 10  · <b>Ne</b> :
SODIUM 11  <b>Na</b> ·	MAGNESIUM 12  <b>Mg</b> ·	ALUMINUM 13  · <b>Al</b> ·	SILICON 14  · <b>Si</b> ·	PHOSPHORUS 15  · <b>P</b> :	SULFUR 16  · <b>S</b> :	CHLORINE 17  · <b>Cl</b> :	ARGON 18  · <b>Ar</b> :
POTASSIUM 19  <b>K</b> ·	CALCIUM 20  <b>Ca</b> ·						

The Octet Rule: In forming compounds, atoms tend to achieve the electron configuration of a noble gas.

Atoms and **metals** tend to **lose** their valence electrons, leaving a complete octet in the **next-lowest energy level**.

Atoms of **non-metals** tend to **gain** electrons or to share electrons with another nonmetal to achieve a **complete octet**.

## Formation of Cations

An ion forms when an atom or group of atoms **gain** or **lose** electrons.

An atoms **loss** of valence electrons produce a **cation**, or a **positively charged ion**.

\*Take a minute to read the bottom of page 188 and pages 189 and 190.

- Summarize (just a couple of points) on what happens to sodium and magnesium

## Formation of Anions

An anion is an atom or a group of atoms with a **negative charge**.

The **gain** of **negatively charged** electrons by a neutral atom produces an **anion**.

The name of the anion typically ends in 'ide'

\*Take a minute to read pages 191-192

- Summarize (just a couple of points) on what happens to chlorine and oxygen

Try questions on page 193 # 1-11