

IONS

- **IONS** are atoms or groups of atoms with a positive or negative charge.
- Taking away an electron from an atom gives a **CATION** with a **positive charge**
- Adding an electron to an atom gives an **ANION** with a **negative charge**.
- To tell the difference between an atom and an ion, look to see if there is a charge in the superscript! Examples: Na^+ Ca^{+2} I^- O^{-2}
Na Ca I O

Forming Cations & Anions

A CATION forms
when an atom
loses one or
more electrons.

Cation



Mg 12 protons, 12 electrons



An ANION forms
when an atom
gains one or
more electrons

Anion



F 9 protons, 9 electrons



PREDICTING ION CHARGES

In general

- **metals** (Mg) lose electrons ---> **cations**
- **nonmetals** (F) gain electrons ---> **anions**



Learning Check – Counting

State the number of protons, neutrons, and electrons in each of these ions.



19

#p⁺

#n^o

#e⁻



8



20

One Last Learning Check

Write the nuclear symbol form for the following atoms or ions:

A. 8 p⁺, 8 n, 8 e⁻ _____

B. 17p⁺, 20n, 17e⁻ _____

C. 47p⁺, 60 n, 46 e⁻ _____