

## Formation of Compounds by Electronic Transfer— Ionic Compounds

### Example

To learn about the process of forming an ion, complete the two questions below.

How many positive charges in the atom? 11

An electron is removed from the sodium atom, forming an ion.

How many negative charges in the atom? 11

How many positive charges in the ion? 11

What is the residual (net) charge in the atom? 0

How many negative charges in the ion? 10

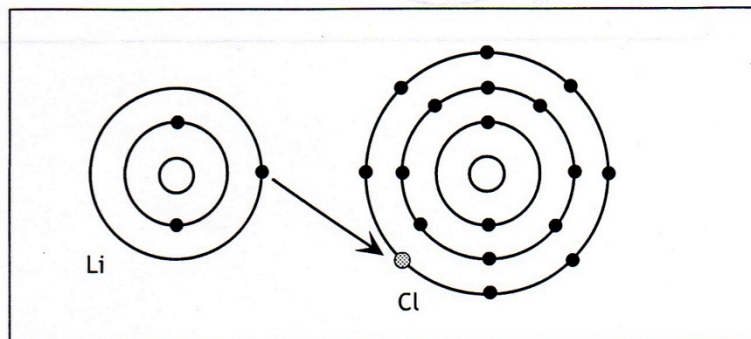
What is the residual (net) charge in the ion? -1

### Learning Activity

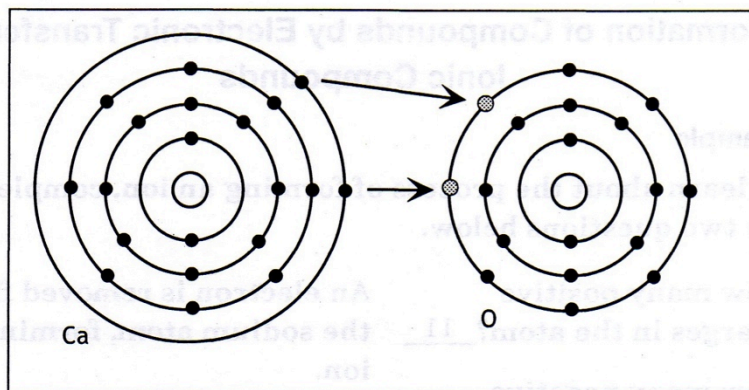
Do the practice questions below to build your skill in writing formulas for ionic compounds.

1. Use Bohr model diagrams to illustrate the compounds formed from the following ions.

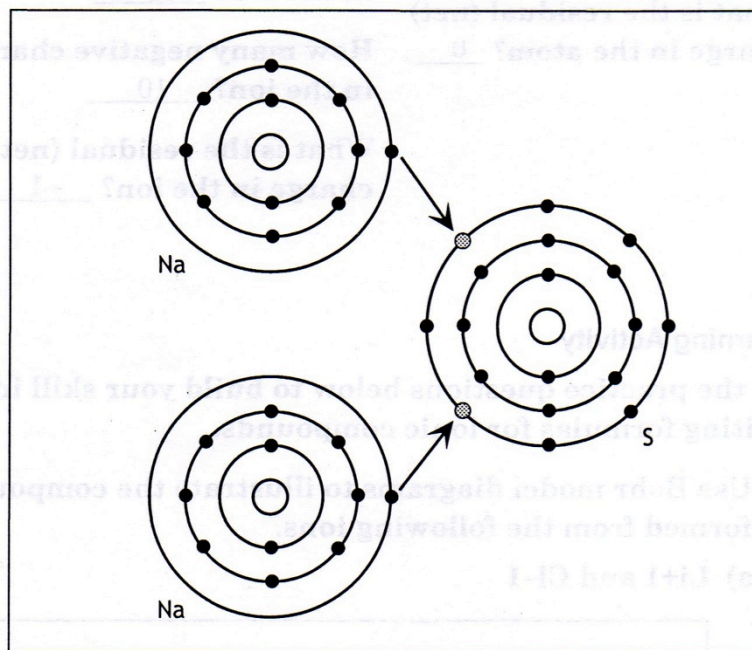
a)  $\text{Li}^{+1}$  and  $\text{Cl}^{-1}$



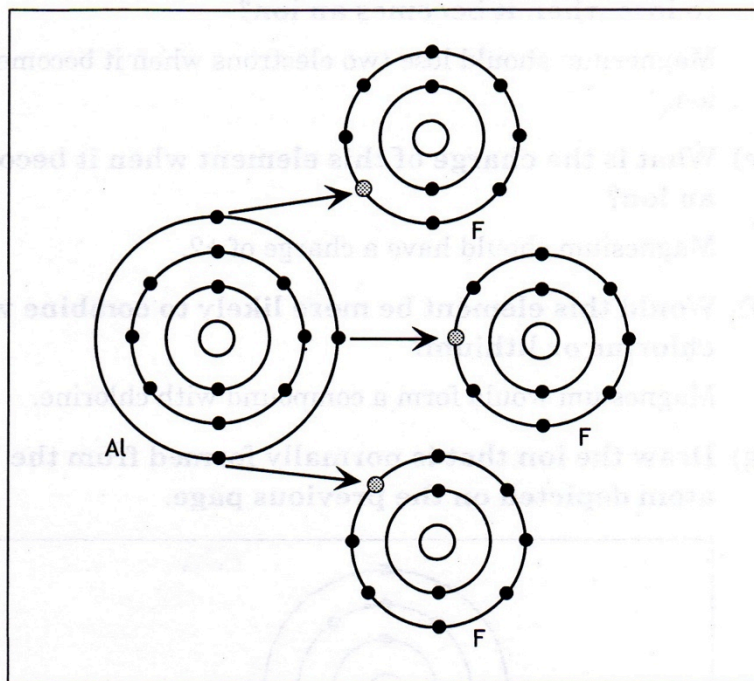
b)  $\text{Ca}^{+2}$  and  $\text{O}^{-2}$



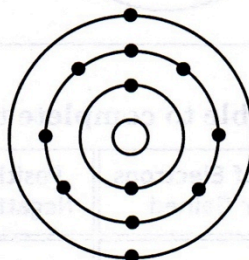
c)  $\text{Na}^{+1}$  and  $\text{S}^{-2}$



d)  $\text{Al}^{+3}$  and  $\text{F}^{-1}$



2. Use the diagram below to answer the following questions.



a) Use the periodic table to name this element.

Magnesium

b) To which family does this element belong?

Alkaline earth metals

c) Would you classify this element as a metal or non-metal?

Magnesium is a metal.



d) How many electrons would you expect this element to lose when it becomes an ion?

Magnesium should lose two electrons when it becomes an ion.

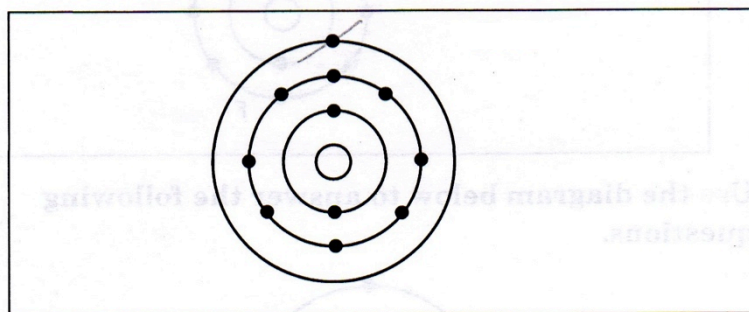
e) What is the charge of this element when it becomes an ion?

Magnesium should have a charge of +2.

f) Would this element be more likely to combine with chlorine or lithium?

Magnesium would form a compound with chlorine.

g) Draw the ion that is normally formed from the atom depicted on the previous page.



3. Use the periodic table to complete the table.

Element	Number of Electrons Lost or Gained	Positive or Negative Ion	Charge on Ion
Sulfur	2	Negative	-2
Boron	3	Positive	+3
Calcium	2	Positive	+2
Chlorine	1	Negative	-1