**Forming Ions**

* A neutral atom has the same number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Atoms that lose or gain an electron are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rule: atoms are most stable when their valence shell is full, like that of Noble Gases, so all atoms want to have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ valence shell.
  + “Valence” means outside ring
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: positively charged ions, have lost electrons.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_: negatively charged ions, have gained electrons.
* They achieve this by gaining or losing electrons, depending on how many they have
  + If they have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than 4 e- they will lose them
  + If they have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than 4 e- they will gain them.

EXAMPLE  
Draw a sodium **atom** below:

The last shell wants to contain eight electrons. Is it

easier to lose one or gain seven?

Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Draw a sodium **ion** below

Since the sodium ion now has \_\_\_\_\_\_\_\_ protons (+) and

only \_\_\_\_ electrons(-1), it will have an overall charge of

+1. You can write this \_\_\_\_\_\_\_\_

EXAMPLE  
Draw a chlorine **atom** below:

The last shell wants to contain eight electrons. Is it

easier to lose seven or gain one?

Answer:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Draw a chlorine **ion** below

Chlorine gains one electron giving it a charge of \_\_\_\_\_.

Rule:

* Metals \_\_\_\_\_\_\_\_\_\_\_\_\_ electrons and have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charge equal to the group number.
* Non-metals \_\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons, and have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ charge of eight minus the group number.