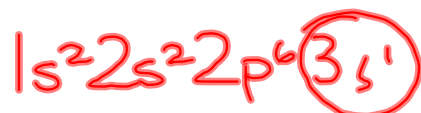


# Chemical Bonding



## Valence electrons

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

- determines the chemical properties of an element
- only electrons used in chemical bonds
- for a representative element, the number of valence electrons corresponds to the group number

## Electron dot structure

diagrams showing the valence electrons as dots

Table 7.1



	Nov	FEB	MAR	JUNE
A	8.0	9.0	0.0	0.0
T	4.0	4.0	0.0	0.0

**Table 7.1****Electron Dot Structure of Some Group A Elements**

Period	Group							
	1A	2A	3A	4A	5A	6A	7A	8A
1	H·							He·
2	Li·	Be·	B·	C·	N·	O·	F·	Ne·
3	Na·	Mg·	Al·	Si·	P·	S·	Cl·	Ar·
4	K·	Ca·	Ga·	Ge·	As·	Se·	Br·	Kr·

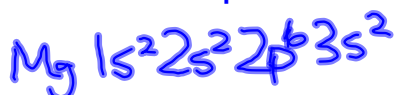
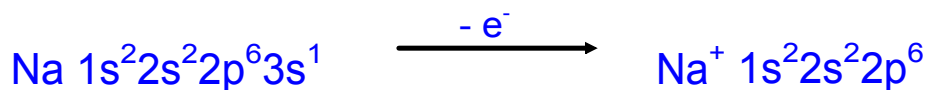
## Octet Rule

To form compounds, atoms usually achieve the electron configuration of a noble gas.

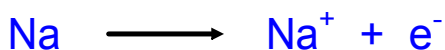
At the highest occupied energy level:  $ns^2np^6$

### <sup>+</sup> *Formation of Cations*

Cations lose valence electrons to form positively charged ions

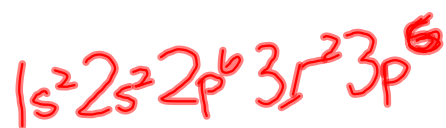
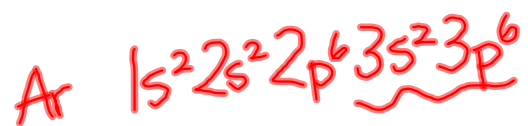
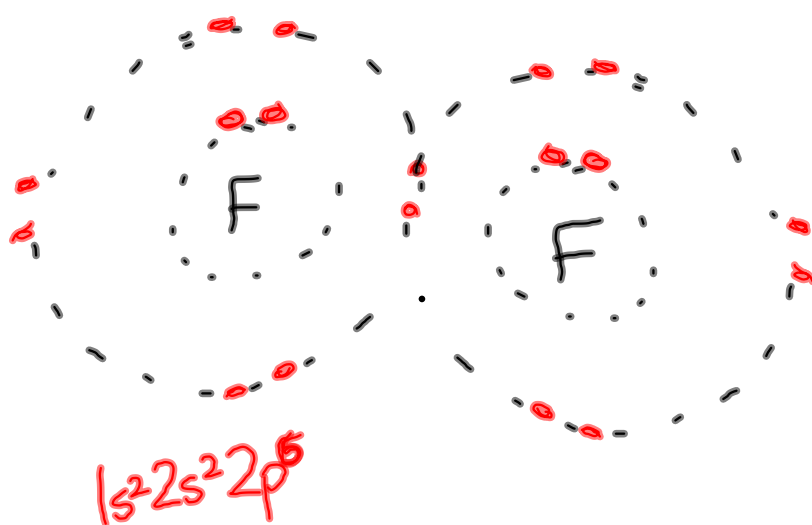


Ionization:



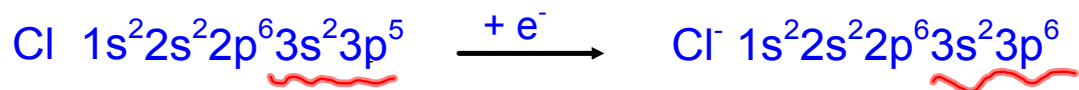
Transition Metals will attempt to form a pseudo noble-gas configuration.



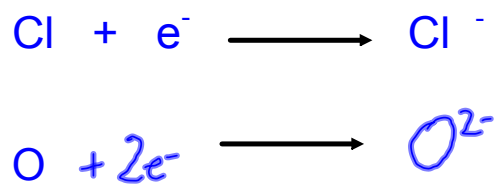


### Formation of Anions

Anions gain electrons to produce a negatively charged ion.



Ionization:



# Homework

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