# ELECTRON CONFIGURATION

- A shorthand way to write about electron arrangement around an atom.

O: $1s^2 2s^2 2p^4$

Shell and subshell

Number of electrons in the subshell!

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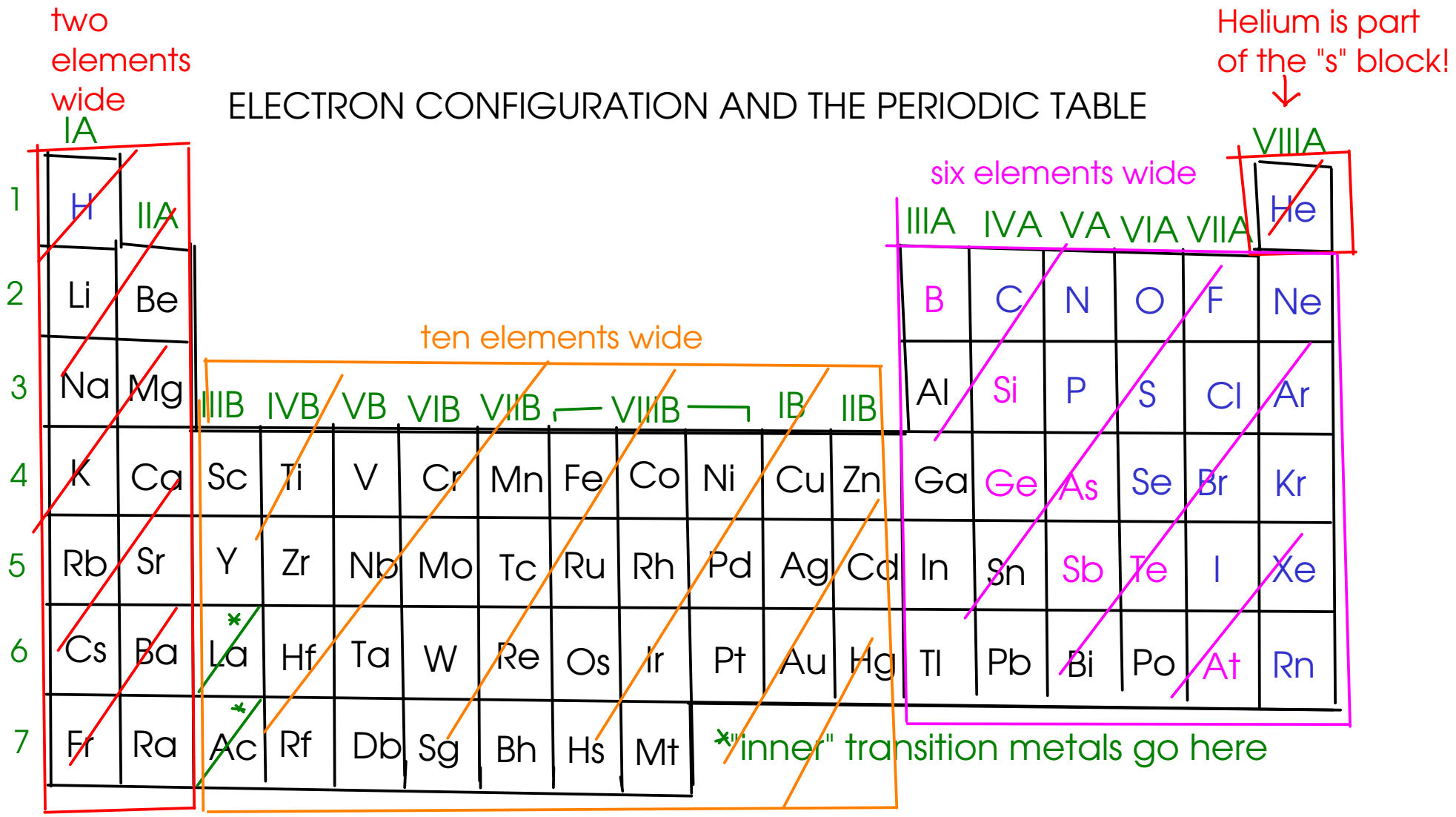
Mg: $1s^2 2s^2 2p^6 3s^2$

Al: $1s^2 2s^2 2p^6 3s^2 3p^1$

Valence electrons are the ones in the outermost SHELL, not just the last subshell. Aluminum has THREE valence electrons.

# ELECTRON CONFIGURATION AND THE PERIODIC TABLE

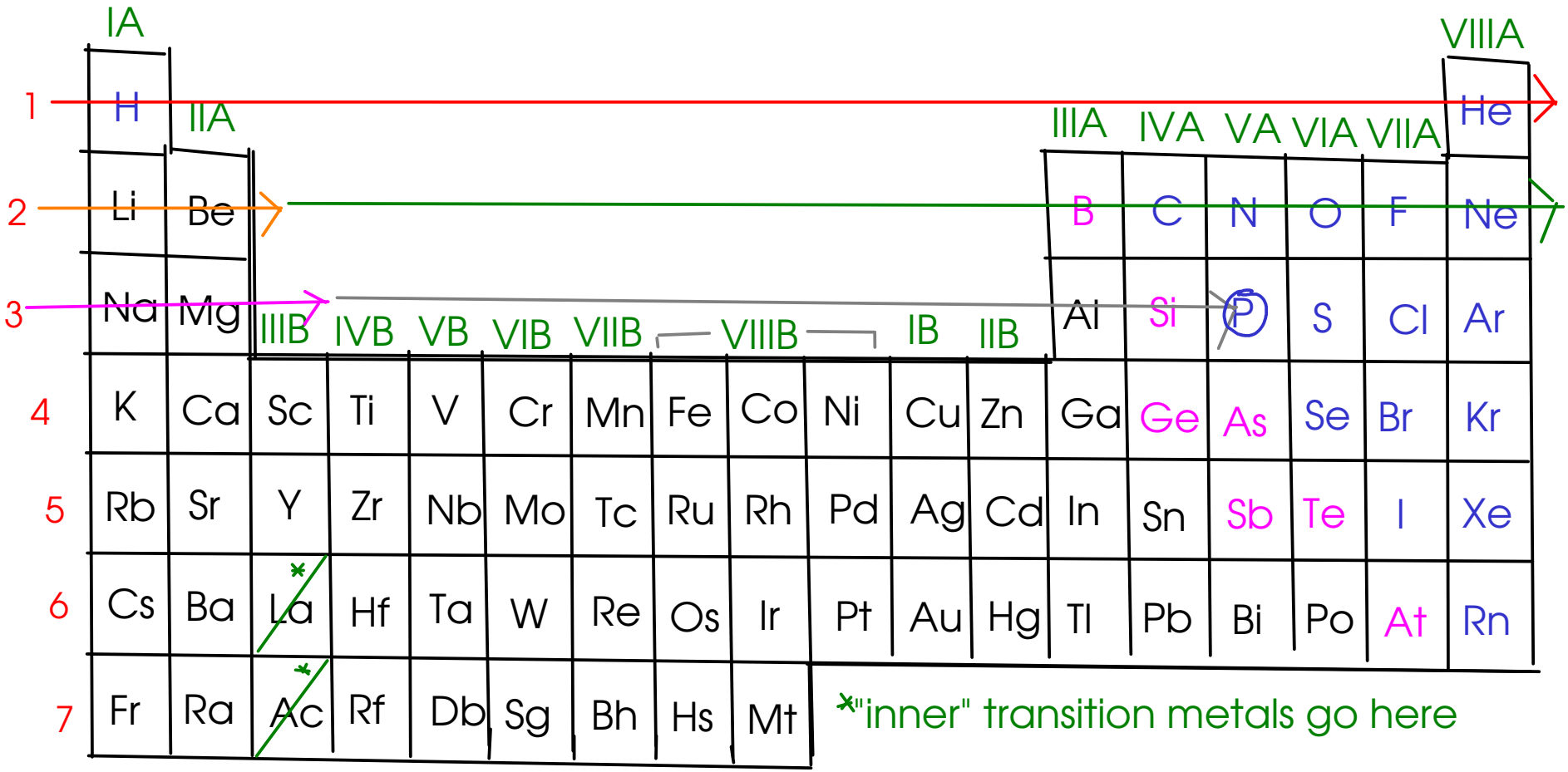



"s" block: last electron in these atoms is in an "s" orbital!

"p" block: last electron in these atoms is in a "p" orbital!

"d" block: last electron is these atoms is in a "d" orbital

- To write an electron configuration using the periodic table, start at hydrogen, and count up the electrons until you reach your element!




Example: Phosphorus (P): $1s^2 2s^2 2p^6 3s^2 3p^3$

Shortcut: You may use "noble gas core" notation - which starts from the previous noble gas rather than hydrogen. This is useful for big atoms.

$[Ne]\,3s^2 3p^3$

# EXAMPLES:

F $1s^2 2s^2 2p^5$

Remember - valence electrons are ALL of the electrons in the outermost SHELL! (may have more than one SUBSHELL)!

S $1s^2 2s^2 2p^6 3s^2 3p^4$

TITANIUM is a transition metal that commonly forms either +2 or +4 cations. The 4s electrons are lost when the +2 ion forms, while the 4s AND 3d electrons are lost to form the +4!

Cl $1s^2 2s^2 2p^6 3s^2 3p^5$

$[Ne]\,3s^2 3p^5$

You can order the subshells in numeric order OR in filling order

Ti $1s^2 2s^2 2p^6 3s^2 3p^6 3d^2 4s^2$ or $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^2$

or $[Ar]\,3d^2 4s^2$

Se $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^4$

or $[Ar]\,3d^{10} 4s^2 4p^4$

Noble gas core notation. Use the previous noble gas on the table, then add the electrons that it doesn't have to the end.

Kr $[Ar]\,3d^{10} 4s^2 4p^6$

You are responsible for writing electron configurations up to Z=18, Argon. These are here to illustrate other points!