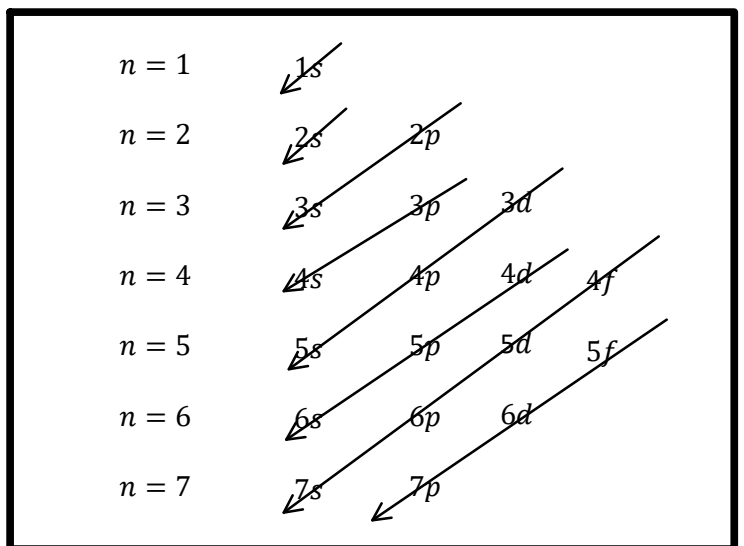
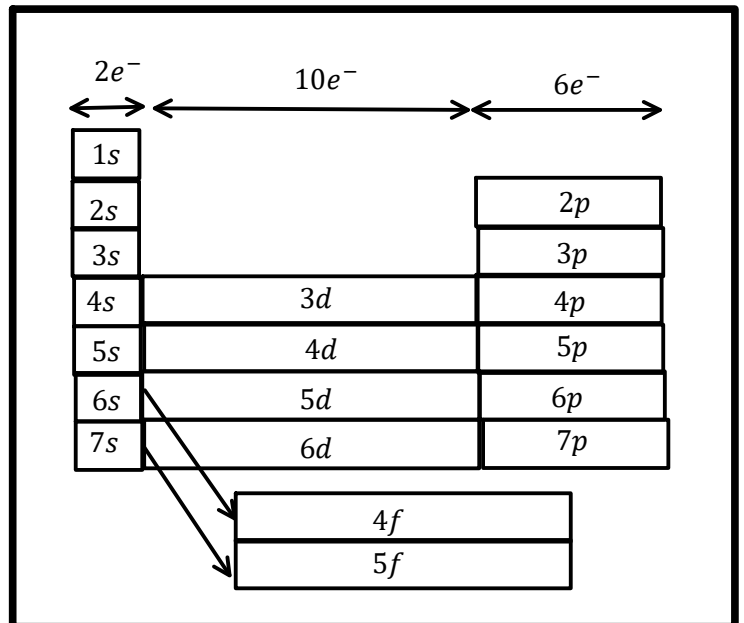
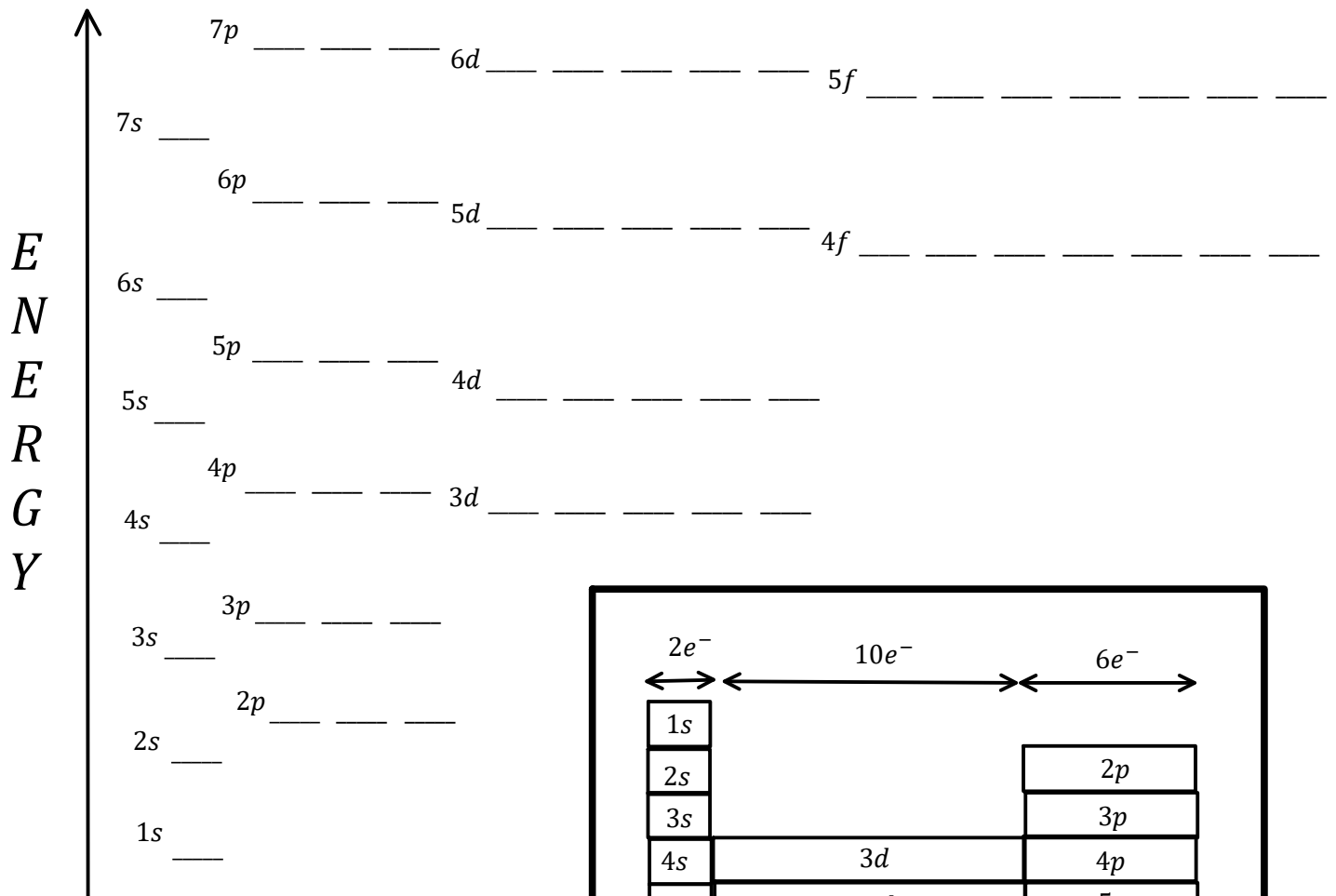


C11 - 5.1 - Energy Level Table Notes

Each blank holds two electrons



C11 - 5.2 - Electron/Ion Configuration/Core Notation Notes

A maximum of two electrons can be put in each orbital (exponent/blank)

Row 1 (Horizontal)	Row 2	Row 2 Cont	Row 3	Row 3 Cont
H (1s ¹)	Li (1s ² 2s ¹)	B (1s ² 2s ² 2p ¹)	Na (1s ² 2s ² 2p ⁶ 3s ¹)	Al (1s ² 2s ² 2p ⁶ 3s ² 3p ¹)
He (1s ²)	Be (1s ² 2s ²)	C (1s ² 2s ² 2p ²)	Mg (1s ² 2s ² 2p ⁶ 3s ²)	Si (1s ² 2s ² 2p ⁶ 3s ² 3p ²)
		N (1s ² 2s ² 2p ³)		P (1s ² 2s ² 2p ⁶ 3s ² 3p ³)
		O (1s ² 2s ² 2p ⁴)		S (1s ² 2s ² 2p ⁶ 3s ² 3p ⁴)
		F (1s ² 2s ² 2p ⁵)		Cl (1s ² 2s ² 2p ⁶ 3s ² 3p ⁵)
		Ne (1s ² 2s ² 2p ⁶)		Ar (1s ² 2s ² 2p ⁶ 3s ² 3p ⁶)

The exponent is the number of electrons on that level.
The Coefficient is the level

Row 4
K (1s²2s²2p⁶3s²3p⁶4s¹)
Ca (1s²2s²2p⁶3s²3p⁶4s²)

Row 4 Continued
Sc (1s²2s²2p⁶3s²3p⁶4s²3d¹)
V (1s²2s²2p⁶3s²3p⁶4s²3d³)

Cr (1s²2s²2p⁶3s²3p⁶4s¹3d⁵) 4s²3d⁴ → 4s¹3d⁵

Mn (1s²2s²2p⁶3s²3p⁶4s²3d⁵)
Fe (1s²2s²2p⁶3s²3p⁶4s²3d⁶)
Co (1s²2s²2p⁶3s²3p⁶4s²3d⁷)
Ni (1s²2s²2p⁶3s²3p⁶4s²3d⁸)

Cu (1s²2s²2p⁶3s²3p⁶4s¹3d¹⁰) 4s²3d⁹ → 4s¹3d¹⁰

Zn (1s²2s²2p⁶3s²3p⁶4s²3d¹⁰)
Ga (1s²2s²2p⁶3s²3p⁶4s²3d¹⁰4p¹)
Ge (1s²2s²2p⁶3s²3p⁶4s²3d¹⁰4p²)
As (1s²2s²2p⁶3s²3p⁶4s²3d¹⁰4p³)
Se (1s²2s²2p⁶3s²3p⁶4s²3d¹⁰4p⁴)
Br (1s²2s²2p⁶3s²3p⁶4s²3d¹⁰4p⁵)
Kr (1s²2s²2p⁶3s²3p⁶4s²3d¹⁰4p⁶)
Ti (1s²2s²2p⁶3s²3p⁶4s²3d²)

Negative Ions: O ([He]2s ² 2p ⁴) + 2e ⁻ → O ²⁻ ([He]2s ² 2p ⁶) Cl ([Ne]3s ² 3p ⁵) + 1e ⁻ → Cl ⁻ ([Ne]3s ² 3p ⁶)	Positive Ions: Remove 'p' before 's' before 'd' Sn ([Kr]5s ² 4d ¹⁰ 5p ²) - 2e ⁻ → Sn ²⁺ ([Kr]5s ² 4d ¹⁰) Sn ([Kr]5s ² 4d ¹⁰ 5p ²) - 4e ⁻ → Sn ⁴⁺ ([Kr]4d ¹⁰)
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Full Notation: Core Notation:

Row 1

H (1s¹)
He (1s²)

H (1s¹)
He (1s²)

Row 3

Na (1s²2s²2p⁶3s¹)
Mg (1s²2s²2p⁶3s²)
Al (1s²2s²2p⁶3s²3p¹)
Si (1s²2s²2p⁶3s²3p²)
P (1s²2s²2p⁶3s²3p³)
S (1s²2s²2p⁶3s²3p⁴)
Cl (1s²2s²2p⁶3s²3p⁵)
Ar (1s²2s²2p⁶3s²3p⁶)

Na ([Ne]3s¹)
Mg ([Ne]3s²)
Al ([Ne]3s²3p¹)
Si ([Ne]3s²3p²)
P ([Ne]3s²3p³)
S ([Ne]3s²3p⁴)
Cl ([Ne]3s²3p⁵)
Ar ([Ne]3s²3p⁶)

Row 2

Li (1s²2s¹)
Be (1s²2s²)
B (1s²2s²2p¹)
C (1s²2s²2p²)
N (1s²2s²2p³)
O (1s²2s²2p⁴)
F (1s²2s²2p⁵)
Ne (1s²2s²2p⁶)

Li ([He]2s¹)
Be ([He]2s²)
B ([He]2s²2p¹)
C ([He]2s²2p²)
N ([He]2s²2p³)
O ([He]2s²2p⁴)
F ([He]2s²2p⁵)
Ne ([He]2s²2p⁶)

Row 4 ...

K (1s²2s²2p⁶3s²3p⁶4s¹)
Kr (1s²2s²2p⁶3s²3p⁶4s²3d¹⁰4p⁶)
Rb (1s²2s²2p⁶3s²3p⁶4s²3d¹⁰4p⁶5s¹)

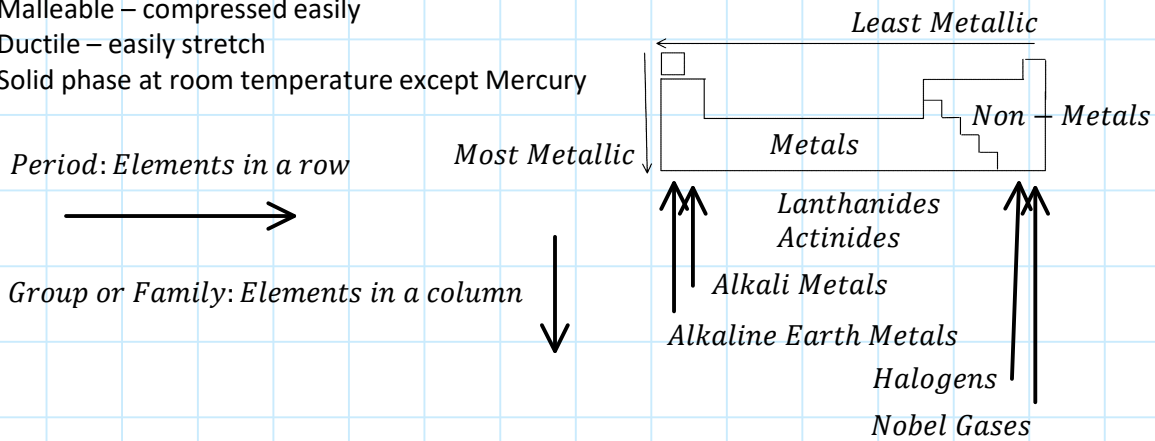
K ([Ar]4s¹)
Kr ([Ar]4s²3d¹⁰4p⁶)
Rb ([Kr]5s¹)

Properties of metals:

- Shiny with a metallic lustre
- Good conductors of heat and electricity
- Sometimes flexible if thin
- Malleable – compressed easily
- Ductile – easily stretch
- Solid phase at room temperature except Mercury

Properties of non-metals:

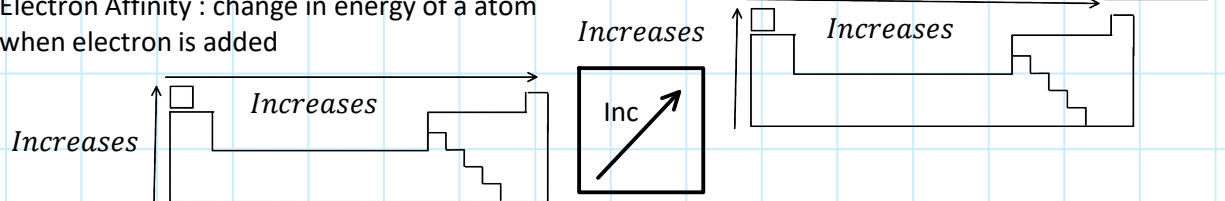
- Gases liquids and weak solids at room temperature
- Bad conductors of and electricity



Ionization energy: the energy required to take away an electron from an uncharged atom.

Electron Affinity : change in energy of a atom when electron is added

Electronegativity: the tendency of an atom to attract/hold electrons.



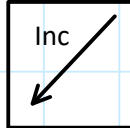
Size of Atom:

Less p^+ pulling in e^-

Increases
(More Shells)

Increases

Size
Inc



F vs O: 9 p^+ pulling 7 valence e^- is a tighter shell than 8 p^+ pulling 6 valence e^- .

Size of Ion: (Anions (-ve) Larger, gain electron/Cations (+ve) Smaller, lose electrons)