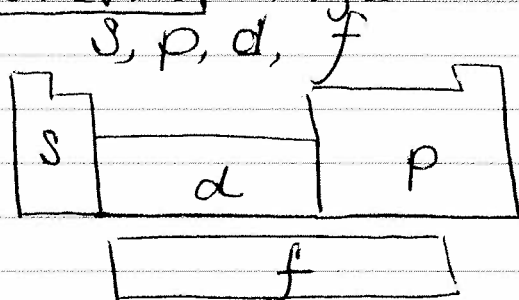


Periodic Trends

Energy level = period # (row), 1-7

Valence e⁻ = group # (column) 1-8 octet rule

Sublevels = regions within the electron cloud.



the large zones on the periodic table refer to the location of the last e⁻ for the element

ex: Calcium = last e⁻ is block s

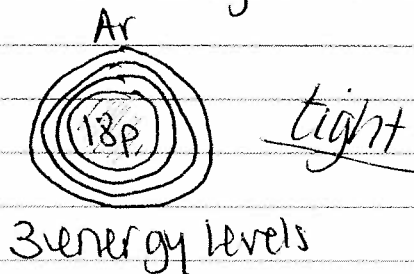
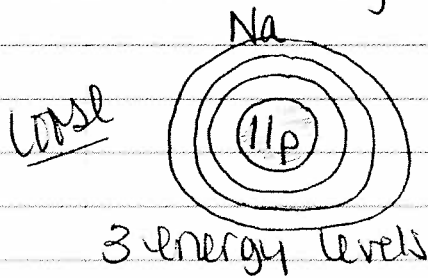
A.R.

Atomic Radius = the distance between the nucleus + the outer most e⁻.

↑ small
↓ large

① Atoms get larger as you go down a group because the # of energy levels is increasing.

② Atoms get smaller as you go from left to right across a period due to the pull from the increasing # of protons on the e⁻ making the energy levels tighten.



Key: the larger the # of protons the stronger the pull on the e⁻.

Ionic Radius = the radius of an atom after an e^- has been gained or lost.

e^- lost = positive charge
atom gets smaller

e^- gained = negative charge
atom gets larger

example:

$K \rightarrow K^{1+}$ lost an e^- , gets smaller

$Br \rightarrow Br^{1-}$ gained an e^- , gets bigger

I.E. **Ionization Energy** = the energy required to remove the most loosely held e^-

Small → Large ① IE increases as you increase the # of protons within a period, because of the pull from the protons.

Large ↓ Small ② IE decreases as you increase the # of energy levels, because the e^- are further away from the proton pull.
* Large atoms have a very low IE
* very small atoms have a very high IE.

E.N. **Electronegativity** = the attraction of an atom to the e^- in a covalent bond.

* elements that are smaller with a high IE have a higher E.N., Large atoms have a low EN.

* Noble Gases do not make bonds \therefore they don't have an EN value *

EN is a measure of the unequal sharing of e^- between two atoms.