key

The Periodic Table Exam Review

Who designed the first Periodic Table and how was it arranged? Medeleev ; increasing atomic mass

Who designed the modern Periodic Table and how is it arranged? Mosley ; increasing atomic # Periodic Law.

Write the name that is given to the following groups of elements:

Group A Elements: representative elements

Group B Elements: transition metals

Group 1A Elements: alkali metals (NOT H)

Group 2A Elements: alkaline earth metals

Group 7A Elements: halogens

Group 8A Elements: noble gases

Every element needs to become stable-like a noble gas!

* Noble gases have a full valence shell of electrons!

The two rows of elements at the bottom of the Periodic Table: inner transition metals

Fill in the blanks with s, p, d, or f block:

Inner transition metals: F

Groups 1A&2A: S

Transition metals: D

Groups 3A-8A(or 0): P

small to big ↓

Arrange the elements Li, Cs, and F in order of increasing atomic sizes: F, Li, Cs

Fr ↓ ←

In each pair, circle which radius is larger:

K or K^+ (lost e⁻ (cation))

Br or Br^- (gained e⁻ (anion))

tiny cats(+) giant ants(-)

Define ionization energy (IE): the amount of energy required to remove an electron!

He is the highest!

In general, ionization energy increase as you go across a period and decrease as you go down a group.

Circle the element that has the lower IE: (farthest from He)

Cl or Na

Define electronegativity: ability to attract an electron

NO NOBLE GASES! (bc they are full of e-)

F is highest

Rank the elements B, F, Cs, and K from lowest electronegativity to highest: Cs, K, B, F

farthest from F

closest to F

In general, nonmetals have (low or high) electronegativity and tend to (lose or gain) electrons when they form ions.

Nonmetals: anions

Metals: cations

Rank the elements Al, Na, and O in order of increasing ionization energy: Na, Al, O

closest to He

He

tiny cats (+)
giant ants (-)

Circle which element or ion would be smaller:

Ca or Ca^{2+} O or O^{2-}

Br or Br^- Na or Na^+

Br Br^- Na Na^+

As you move from left to right across the periodic table, what happens to the size of an atom?

Fr ← it gets smaller!

Which element on the periodic table has the highest electronegativity? F

Why is the previous answer NOT Helium?

b/c it is a noble gas & they are stable b/c they have a full valence shell of electrons

Circle the element in each pair that has the greatest atomic radius. Fr

sodium or lithium

strontium or magnesium

carbon or germanium

selenium or oxygen

The scientist that first developed the periodic table was Mendeleev. He arranged the elements according to increasing atomic mass. The modern periodic table was designed by Mosley, who arranged the elements according to increasing atomic number.

Arrange the following elements in order of increasing ionization energy. He

small → lg

Be, Mg, Sr Sr, Mg, Be

Bi, Cs, Ba Cs, Ba, Bi

Na, Al, S Na, Al, S

Circle the particle that has the larger radius in each atom/ion pair.

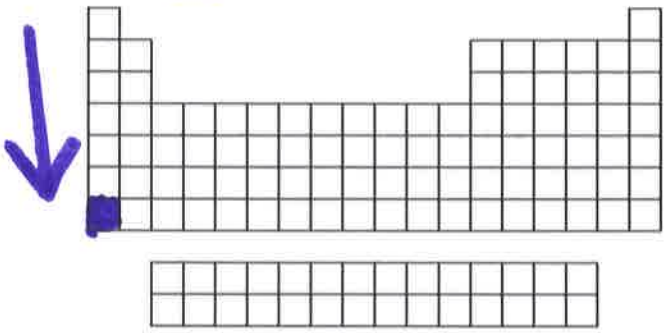
Al^{+3} or (Al) (S^{-2}) or S N^{+3} or (N^{-3})

tiny cat (+)
giant ant (-)

Draw and label the periodic trends. Fill in the element that has the highest value for each trend.

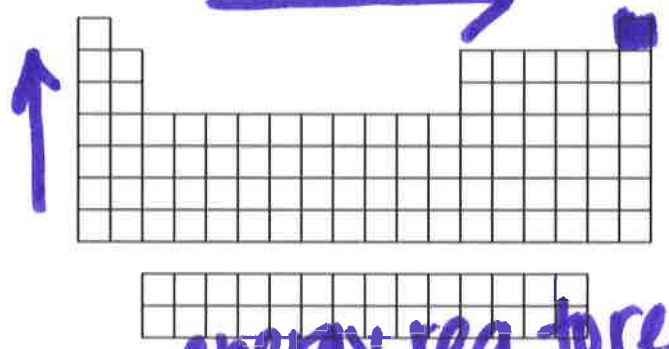
atomic radius (size)

Fr



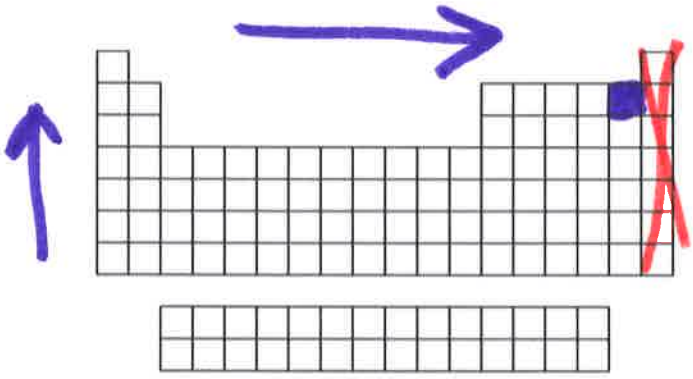
ionization energy

He



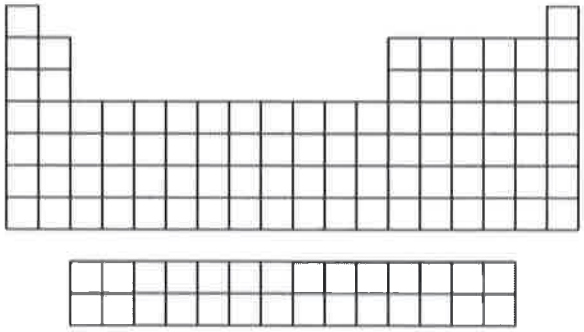
energy req. to remove electrons

electronegativity: F



ability to attract electrons

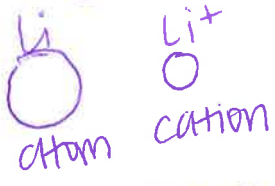
ion size



cations: lose e⁻

positive

get smaller



anions: gain e⁻

negative

get bigger