Grudge Ball !!!

Match #2:

Electrons

Periodic Table

GRUDGE BALL RULES

Each team gets 10Xs

- **Teams will take a turn answering a review Q**
- **Correct answer**
  - **= 2Xs to take from any team (splitting is ok) and a shot at the hoop.**

Successful shot from the:

2 point line = +2X (4 total)

3 point line = +3X (5 total)

GRUDGE BALL RULES

No More Xs?
Gain back 2Xs by answering the Q correctly.

Incorrect Answer?
If team gets incorrect answer, random choice gets to steal the Q, so BE READY!

Winning
Most Xs at the end of game wins!

Which element is this?

$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^5$

Manganese

1

Give name and write out noble gas notation:

$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^{10}\ 4p^6\ 5s2\ 4d^2$

Zirconium

[Kr] $5s^2\ 4d^2$

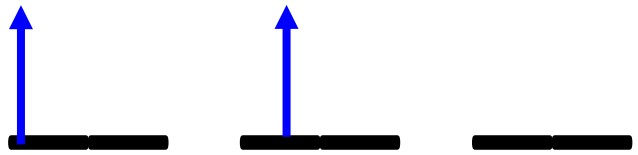
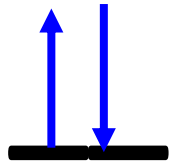
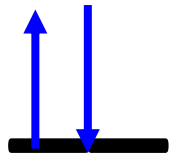
What does the Pauli Exclusion Principle say?

No two electrons can have the same set of quantum numbers – they can't occupy the "same space" - they can't have the same "address."

What does the Aufbau Principle say?

Electrons are lazy!
They want to occupy the lowest energy orbitals first.

Draw the orbital diagram for carbon. How many unpaired e- does it have?

- 
- 
- 

What is the noble gas configuration for calcium?

[Ar] $4s^2$

How many unpaired electrons are in chromium?

Four

How many orbitals in a set of each type/shape orbital?

s - 1

p - 3

d - 5

f - 7

What is the highest energy level in the element below:

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

Fourth energy level

Which element might form a ion by losing electrons from the s and d orbitals F, S, Li, Ti

Ti

10

What is the atomic radius?

Measure of the distance from the center nucleus to the outer electron.

Atomic radius increases as you go (left or right?) and (up or down?)

Left

Down

Atomic radius decreases going right because _____ and increases going down because _____

Greater effective nuclear charge = more protons pulling electrons in closer

More energy levels and increased shielding cause nucleus to not pull electrons in as hard

Order these elements from smallest to largest?

Se, S, Cl Na

Cl, S, Se, Na

Of the elements in the alkaline earth metals which has the highest electronegativity

Beryllium

Why does it take less energy to remove e- as you go down a group?

More energy levels, so electron is further from the nucleus, and more shielding which means the nucleus isn't able to attract as well.

Describe the trend for reactivity of halogens.

Reactivity increases as you move UP the periodic table.

What is the sum of the charges from the atoms below when they are ions?
Calcium, nitrogen, and strontium

1

2+(-3)+2 =1

How many electrons are in a set of p orbitals?

6 electrons

What is the term for the ability of metals to be pounded and shaped into sheets?

malleability

20

What is the definition of ionization energy?

The amount of energy needed to remove one electron from a neutral atom.

Predict the ions of the following atoms and then rank the ions
from smallest to largest radius
S , P , Cl , Ca , K

$Ca^{2+} < K^{+} < Cl^{-} < S^{2-} < P^{3-}$

Electronegativity increases going (left or right?) and increases going (up or down?)

Right

Up

Which element is in period 4 group 3B

Scandium

Draw a diagram for absorption and emission.

What is the e- configuration for copper (II)?

$1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^9$

How many electrons can fit in a d orbital?

2

Electronegativity (increases or decreases?) as you move down a group. WHY?

DECREASES

More energy levels → more shielding

→ further from nucleus harder to attract electrons

Does Metallic Character (reactivity) increase or decrease going down a group?

Increases

Define “effective nuclear charge.”

The attractive positive charge of nuclear protons acting on valence electrons.

Give an example of two ions that each have a larger atomic radius than their neutral parent atom.

Anions are larger than neutral parent atom.