

# 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

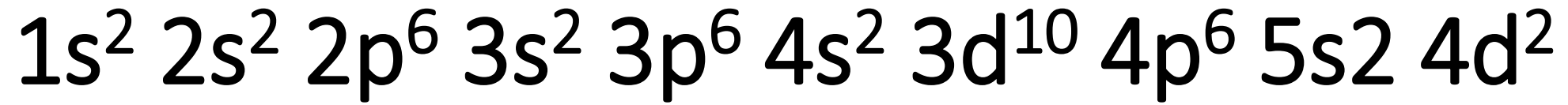
**Most Xs at the end of game wins!**

Which element is this?

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

**Manganese**

Give name and write out noble gas notation:



**Zirconium**  
**[Kr] 5s<sup>2</sup> 4d<sup>2</sup>**

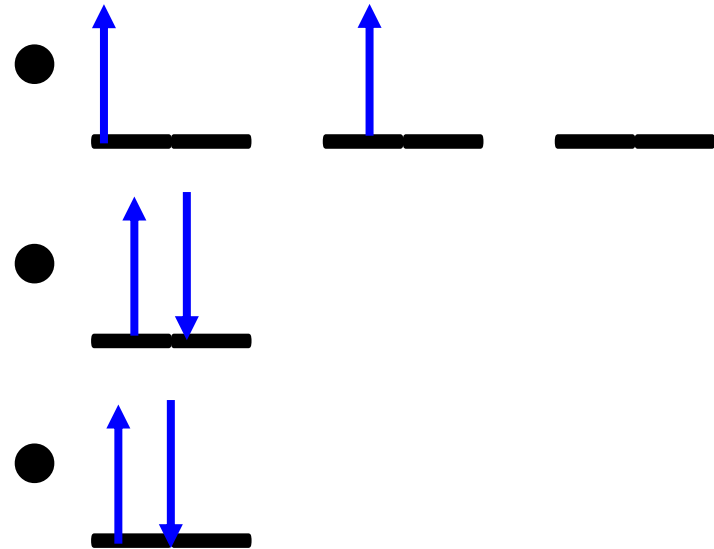
# What does the Pauli Exclusion Principle say?

**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<sup>2</sup>**

How many unpaired electrons  
are in chromium?

**Four**

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

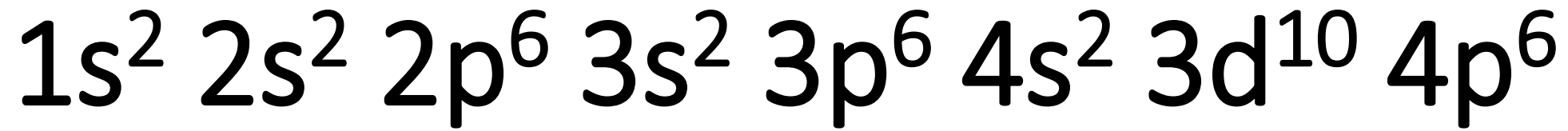
**s - 1**

**p - 3**

**d - 5**

**f - 7**

What is the highest energy level in the element below:



**Fourth energy level**

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

**Ti**

# 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**

# 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



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

**Left**  
**Up**

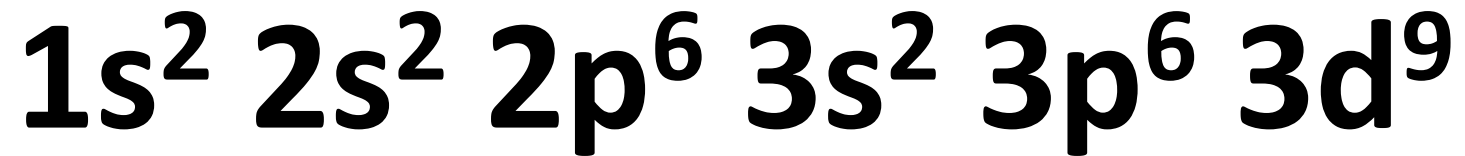
Which element is in period 4  
group 3B

**Scandium**

# Draw a diagram for absorption and emission.



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



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.**