

Review Unit 2 The Atom and Periodic Table: Name: \_\_\_\_\_

**Section 1: Light & The Bohr Model of the Hydrogen Atom!!**

1. What is the wavelength of light emitted when an electron moves from energy level 6 ( $n=6$ ) to energy level 2 ( $n=2$ )?
2. What is the color of the light?
3. What type of light, wavelength, frequency & energy is emitted when an electron moves from  $n=5$  to  $n=2$ ?
4. What type of light, wavelength, frequency & energy is emitted when an electron moves from  $n=4$  to  $n=3$ ?
5. When is light emitted?
6. When is light absorbed?

**Section 2: Periodic Table Trends and Periodicity!!**

The atomic radius \_\_\_\_\_ across a period and \_\_\_\_\_ a group.

Ionization energy \_\_\_\_\_ across a period and \_\_\_\_\_ down a group.

Electronegativity \_\_\_\_\_ across a period and \_\_\_\_\_ down a group.

Identify the lowest EN: Li K Rb Cs

Identify the highest AR (biggest size): Ca Ge Se Kr

Identify the lowest AR : Na Ga Se Br

The element that is an alkali in the 2<sup>nd</sup> period: \_\_\_\_\_

What is the group name of elements in the 17<sup>th</sup> group? \_\_\_\_\_

Identify the element in the noble gas group and in the 1<sup>st</sup> period: \_\_\_\_\_

### Section 3: Electron configuration, Noble Gas Notation & Orbital Notation

#### Magnesium

E- Config: \_\_\_\_\_

Orbital Notation: \_\_\_\_\_

Nobel Gas Notation: \_\_\_\_\_

E- paired: \_\_\_\_\_ Unpaired E-: \_\_\_\_\_ Valence E-: \_\_\_\_\_

#### Gallium

E- Config: \_\_\_\_\_

Orbital Notation: \_\_\_\_\_

Nobel Gas Notation: \_\_\_\_\_

E- paired: \_\_\_\_\_ Unpaired E-: \_\_\_\_\_ Valence E-: \_\_\_\_\_

#### Strontium

E- Config: \_\_\_\_\_

Orbital Notation: \_\_\_\_\_

Nobel Gas Notation: \_\_\_\_\_

E- paired: \_\_\_\_\_ Unpaired E-: \_\_\_\_\_ Valence E-: \_\_\_\_\_

#### Zirconium +2

E- Config: \_\_\_\_\_

Orbital Notation: \_\_\_\_\_

Nobel Gas Notation: \_\_\_\_\_

E- paired: \_\_\_\_\_ Unpaired E-: \_\_\_\_\_ Valence E-: \_\_\_\_\_

#### Silver +1

E- Config: \_\_\_\_\_

Orbital Notation: \_\_\_\_\_

Nobel Gas Notation: \_\_\_\_\_

E- paired: \_\_\_\_\_ Unpaired E-: \_\_\_\_\_ Valence E-: \_\_\_\_\_

### Titanium +3

E- Config: \_\_\_\_\_

Orbital Notation: \_\_\_\_\_

Nobel Gas Notation: \_\_\_\_\_

E- paired: \_\_\_\_\_ Unpaired E-: \_\_\_\_\_ Valence E-: \_\_\_\_\_

### Section 4: Atomic Structure

ISOTOPIC SYMBOL	NUMBER OF PROTONS	NUMBER OF ELECTRONS	NUMBER OF NEUTRONS	ATOM OR ION?	NET CHARGE
$^{131}\text{Br}^{1-}$					
	34	36	45		
	10		12	Atom	
$^{11}\text{B}^{3+}$					

Draw a model of the atom and label all the parts (nucleus, protons, neutrons, electrons).

Define:

mass number \_\_\_\_\_

atomic number \_\_\_\_\_

ion \_\_\_\_\_

isotope \_\_\_\_\_

## Section 5: People of Chemistry

For each scientist you learned about (see your notes) identify their famous experiment, particle they discovered, their model of the atom, and/or contribution to the history of the atom.

## Section 6: Average Atomic Mass

1. An element X has three isotopes: X-26, X-28, X-29. Calculate the average atomic mass of element X if X-26 has a mass of 25.998 amu and is 20.33% abundant, X-28 has a mass of 28.003 amu and is 5.99% abundant, and X-29 has a mass of 28.986 amu and is 73.68% abundant.
2. Oxygen has three naturally occurring isotopes: O-16 (15.995 amu; 99.762%), O-17 (16.999 amu; 0.038%), and O-18 (17.999 amu; 0.200%). Calculate the average atomic mass of oxygen.
3. If naturally occurring boron is 80.20% B-11 (atomic mass = 11.009 amu) and 19.80 % of some other isotopic form of boron, what must the atomic mass of this second isotope be in order to account for the 10.811 amu average atomic mass of boron? (Express to 3 decimal places)

