**EOG REVIEW for Chemistry**

U USE THE FOLLOWING WORDS TO FILL IN THE BLANKS BELOW: **PROTONS (2) GROUPS ATOMS ELEMENTS MIXTURE GROUP 18 ONE ELECTRONS ATOMIC MASS GROUP MOLECULES ELEMENTS PERIODS ALKALIS METALS HYDROGEN NEUTRON TRANSITION HALOGENS METALLOIDS (2) DUCTILE NON-METALS MALLEABLE GAS (2) SOLID UNSTABLE COMPOUNDS COEFFICIENT SUBSCRIPT DIFFERENT PHYSICAL SOLUTION PURE CHEMICAL SOLUBILITY COLOR pH RUSTING PRECIPITATE TEMPERATURE MASS RIGHT LEFT**

What are the building blocks of all matter? \_\_\_\_\_\_\_\_\_\_\_  
The biggest parts of an atom are in the center: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ **(+) and \_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( o).**

**\_\_\_\_\_\_\_\_\_\_\_ (-) orbit around every atom and are what connects atoms to form \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**   
The **atomic number** tells **how many \_\_\_\_\_\_\_\_\_\_\_\_\_\_** are in the nucleus of an atom.  
The atomic number of elements **increases by \_\_\_\_\_ across the table from left to right**.  
**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is equal to the number of protons and neutrons in the nucleus of an atom.

**The biggest atoms (beyond 92) are the most \_\_\_\_\_\_\_\_\_\_\_ and so, are often radioactive & not found in nature.**  
  
The periodic table is a **map of the \_\_\_\_\_\_\_\_\_\_**.  
The rows in the table are called **\_\_\_\_\_\_\_\_\_\_** and the columns (up & down) are called **\_\_\_\_\_\_\_\_\_\_**.

**Most elements are \_\_\_\_\_\_\_\_\_\_\_\_ even though life is made mostly of \_\_\_\_\_\_\_\_\_\_\_\_\_.**

**A small band of elements go down to the right between metals and non-metals. These elements can have both metal and non-metal properties and are known as semi-metals or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Metals** are generally **shiny, dense, can be flattened (\_\_\_\_\_\_\_\_\_\_\_\_\_) can be stretched into wire (\_\_\_\_\_\_\_\_\_\_\_) and are good conductors of heat and electricity. All but mercury (Hg) is \_\_\_\_\_\_\_\_ at room temperature.**  
**Non-metals**  are generally **dull, brittle, least dense and poor conductor of heat and electricity**. Many non-metals are \_\_\_\_\_\_\_ at room temperature (its standard state).  
\_\_\_\_\_\_\_\_\_\_\_\_ make good semiconductors and have some properties of both metals and non-metals.  
  
**Elements which share similar properties are in the same \_\_\_\_\_\_\_\_\_\_\_\_.**  
Elements in **group 1, A\_\_\_\_\_\_\_\_\_\_** **are the most reactive metals. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a reactive member of this group but not a metal. It is also the only element without a \_\_\_\_\_\_\_\_\_\_\_\_.**

Elements in **group 17 are the most reactive NON-metals**. Elements in **group 17 are called H\_\_\_\_\_\_\_.**

Metals in **groups 3 – 12 are called T \_\_\_\_\_\_\_\_\_\_ metals** and are in the middle of the table.  
Elements in **\_\_\_\_\_\_\_\_\_\_, the noble gases, are very stable and do not react** with anything.

**Two or more different elements are connected to form \_\_\_\_\_\_\_\_\_\_\_\_\_.**  
The properties of compounds are \_\_\_\_\_\_\_\_\_\_\_\_\_ from the elements that combine to make them.  
Chemical symbols are used to represent when atoms combine to form molecules (for e**xample, H2O)**. The 2 in **H2O tells us there is 2 atoms of H in this molecule and is known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ .** If you have more than 1 molecule (for e**xample, 3 H2O) the 3 is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** .

If your substance is made of just one element, or one molecule (even a compound like sugar C6H12O6) you have a \_\_\_\_\_\_\_\_ substance. If you have more than one element &/or molecule swirled together like milk, brass, or ocean water, you have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_. A mixture where the solute completely dissolves within the solvent is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  
When a substance changes its appearance but not its chemical formula we call this a **\_\_\_\_\_\_\_\_\_\_\_ change ...for example melting ice or breaking glass.**  
Substances each have their own **physical properties** that don’t change over time: **melting point, boiling point, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, density, conductivity and specific heat.**  
A change in the chemical composition of a substance to form a new substance is a **\_\_\_\_\_\_\_\_\_\_\_\_ change….for example spoiled milk or burning paper**.

Substances each have their own **chemical properties** to react with other things: **flammability, oxidation aka \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, combustability, \_\_\_\_)**.

You know **a chemical reaction occurs** when you have 1 or more of the following:

1. A dramatic **\_\_\_\_\_\_\_\_\_\_\_ change**,

2. A dramatic **\_\_\_\_\_\_\_\_\_\_\_ change**,

3. A **\_\_\_\_\_\_\_ is formed**,

4. A **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is formed** (a solid forms from two liquids).

Whatever happens during a chemical reaction, **the total amount of reactants** (\_\_\_\_\_\_\_ side) must **equal the total amount of products** (\_\_\_\_\_\_\_\_ side). This is known as the **Law of Conservation of Matter (\_\_\_\_\_\_\_)**.

Circle which chemical reaction does NOT follow the Law of Conservation of Matter:

Cl2 + 3KNi → 2KCl + Ni2  
  
2Na + MgF2 → 2NaF + Mg  
  
3Fe + 4H2O →Fe3O4 + 4H2

Look at the last reaction above. If you have 4 pounds of iron reactant and produced 6 pounds of iron oxide product and 2 pounds of hydrogen gas, how much water did you use?

\_\_\_\_\_\_\_ pounds.

You repeat this experiment many times but during one attempt, you only seemed to produce 1 pound of hydrogen gas with the same amount of reactants. Explain what could have happened. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Remember your valence electrons? For each column below, circle the one molecular compound which is not very likely possible:

CaO HCl H2O LiF NaKr

NaCl HO CH4 LiCl MgS

CaCl2  Na2S KCl LiBr2  KI

NaO2  CO2 NaS2  Li2O CO2

**CHEMISTRY**

* **ATOMS= THE BUILDING BLOCKS OF ALL MATTER! (**biotic or \_\_\_\_\_\_\_\_\_)
* **THREE (3) parts an atom:**
  1. **Positive (+) particle in the nucleus: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**
  2. **Neutral (o) particle in the nucleus: \_\_\_\_\_\_\_\_\_\_\_\_**
  3. **Tiny negative (-) particle that orbits: \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**(Which one is responsible for electricity? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_? It is the same one responsible for making \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)**

* **Periodic table = ALL OUR DIFFERENT ATOMS = \_ L \_ \_ \_ \_ \_ S**

**(Are most our elements metals or non-metals? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Are most our elements solid, liquid or gas? \_\_\_\_\_\_\_\_\_\_)**

* **ELEMENTS are identified by their ATOMIC \_\_\_\_\_\_\_\_\_\_ = # of \_ \_ \_ \_ \_ \_ \_ (+)**

**(How many protons does aluminum have? \_\_\_\_\_\_\_\_\_\_)**

* **ATOMS** share or exchange **their EL \_ C \_ \_ \_ \_ S (-)** to form **bigger M\_L\_ \_ \_ \_ \_S.** (Which group of elements gives up 1 real easy? \_\_\_ Which group takes one? \_\_\_)

* **MOLECULES with DIFFERENT ELEMENTS = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**(Name the 3 c\_ \_ \_ o \_ \_ \_ s found in the photosynthesis reaction \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_)**

* **PURE SUBSTANCES are made of just a SINGLE \_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_.**
* **MIXTURES = MULTIPLE different elements &/or molecules swirled together.**

**(Circle the substances that is NOT a mixtures: blood, milk, rice, ozone)**

* **If a mixture looks pure, but is actually made of several substances, we call this a \_\_\_\_\_\_\_\_\_\_\_\_\_ mixture, if it’s a liquid mixture we call it a \_\_\_\_\_\_\_\_\_\_\_\_\_, if it’s a metal mixture we call that an \_\_\_\_\_\_\_\_\_\_\_\_.**
* **SORT the following under either physical or chemical properties:** density, solubility, flammability, rusting, freezing point, heat/electrical conductivity, reacts with acids.

**PHYSICAL PROPERTIES CHEMICAL PROPERTIES**

* **Physical properties help P\_\_\_\_\_\_\_\_\_\_\_\_\_ I\_\_\_\_\_\_\_\_\_\_\_ a substance without turning it into S\_\_\_\_\_\_\_\_\_\_\_ E\_\_\_\_\_\_\_.**
* **Chemical properties show how a substance (element, mol\_\_\_\_\_\_ or m\_\_\_\_\_\_\_\_\_\_) can be turned into a completely new substance.**
* **SORT the following under either physical or chemical change:** tearing, burning, oxidizing, boiling, evaporating, chopping, baking, mixing

**PHYSICAL CHANGE CHEMICAL CHANGE**

* **Physical changes do NOT change the matter at the mol \_ \_ \_ \_ \_ \_ \_ level.**
* **Chemical changes DO change the matter into different S\_\_\_\_\_\_\_\_\_\_\_ .**

* **EVIDENCE of CHEMICAL CHANGE:**

1. **\_\_\_\_\_\_\_\_\_\_change**
2. **\_\_\_\_\_\_\_\_\_\_change**
3. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (bubbles)**
4. **P\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (2 liquids form a solid)**

* **Law of Conservation of Matter (Mass)**—**matter is neither \_\_\_\_\_\_\_\_\_\_\_\_ nor \_\_\_\_\_\_\_\_\_\_\_\_\_\_.**
  + **says amount of reactants = products**
    1. If you have 5 pounds of reactants, you will have \_\_\_ pounds of product
    2. If you have 8 oxygen atoms in the reactant, you will have \_\_\_ oxygen atoms in the product.