Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **\*Mnemonics & Memory Triggers\***

**Polar** means opposite (like a polar bear is white)

 **Polar bond** – 2 nonmetals are different

 **Nonpolar bond** – 2 nonmetals are the same

Hydrogen bonding is **F.O.N.**

 -intermolecular forces of attraction between hydrogen and…

 **F**luorine or

 **O**xygen or

 **N**itrogen

**Ion**ic bonding: produces **ions** (metal + nonmetal)

Molecular polarity:

**S**ymmetrical

**N**onpolar

**A**symmetrical

**P**olar

**Di**atomic elements: say **BrINClHOF**

 ^elements come in pairs/twos

**Br**omine **H**ydrogen

**I**odine **O**xygen

**N**itrogen **F**luorine

**C**h**l**orine

Chemical bonds and energy changes:

**B**reak bonds

**A**bsorb energy

**R**elease energy

**F**orm bonds

**Electron**egatvity– attraction for **electron**s

Periodic Table Groups:

Group **1**: Alkal**i** metals – **one** name

Group **2**: Alkaline Earth metals – **two** names

Groups 3-11: **Transition** metals – **transitioning** (moving) left

to right on the PT (from the metal to nonmetal side)

Group 17: **Hal**ogens – see **Hal**ides/**Halo**carbons on Table R

Group **18**: **Noble** gases – noble “better than the rest” and

 these elements are stable

**Iso-** means the same

**Iso**topes – same element, different mass

**Iso**mers – same # atoms, different structures

To calculate **atomic mass** get M.A.D:

**M**ultiply mass of isotope by % abundance

**A**dd above quantities together

**D**ivide by 100

**Ex**othermic – heat **ex**its (released) S 🡨 L 🡨 G

**En**dothermic – heat **en**ters (absorbed) S 🡪 L 🡪 G

Writing reactions :

–lost stuff goes on the right, gained stuff goes on the left

-Energy: Cl + Cl 🡪 Cl2 + energy or Cl2 + energy 🡪 Cl + Cl

-Electrons: Ag 🡪 Ag+ + 1e- or Ag+ + 1e- 🡪 Ag

-Nuclear: Am-241 🡪 42He + Np (alpha particle emitted)

**Effective collision = Homerun**

 Requirements are 1) enough energy (powerful swing)

 2) proper orientation (sweet spot)

**Equil**ibrium – forward and reverse reactions happen at **equal** rates.

At equilibrium, [reactants] and [products] stay the same.

 Ex) During a hockey game, there are 6 players on the ice and 20 on the bench. When 2 players come off, 2 players from the bench go on. The rate of change is **equal**, and the number of players on the ice is always 6 and on the bench is 20 (**constant**).

Radioactivity uses:

 -**I**-131 for your th**yyyyy**roid

 -**C**o-60 for **c**ancer

 -**T**c-99 for brain **t**umor

**Nuclear** reactions:

 -Trans**mutat**ion – **nucleus** decays (**mutates** – changes into a new element)

 -**Fus**ion – to **fuse** 2 things together

 -**Fission** – rhymes with **division** – nucleus splits/**divides** into 2 new elements

Redox and Electrochemistry:

**L**ose **G**ain

**E**lectrons **E**lectrons e- flow from **A**node 🡪 **C**athode

**O**xidation **R**eduction (alphabetical order)

**An** **Ox** met a **Big** **Red** **Cat** – **ox**idation occurs at the **an**ode

 - **red**uction occurs at the **cat**hode

 - **cat**hode gains mass (gets **big**)

**Volt**aic cell – **volt**meter – makes **volts** of electricity – chem 🡪 electrical
**Electr**olytic cell – **electr**ical 🡪 chemical energy

**Neutral**ization reaction: Acid + Base 🡪 Salt + **Water**

 \*Water is **neutral**, pH = 7

If you are **Hydrate**d means you are full of water.

 **Hydrate** – a compound that has water in it.

When you get hot, you sweat (water comes out).

 Heating a hydrate causes it to dry (anhydrous salt).

Identifying chemical reactions:

 **Synthesi**s – **synthesi**ze means to put together

 **Decompos**ition – decompose means to break apart

 **Single** replacement – a **single** atom switches places

with an atom in a compound

 **Double** replacement – start with **2** compounds and

 **both** metals or nonmetals switch places