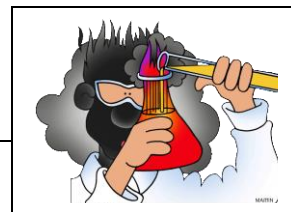


Week 10 – SCIENCE NOTE PAGE

Chemical Properties and Changes



REVIEW of Physical Properties and Changes

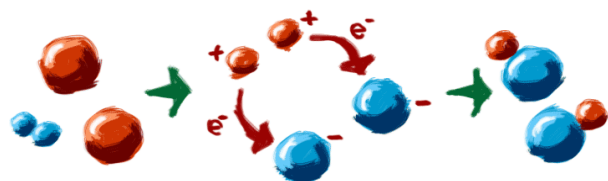
- **Physical properties:** properties of a substance that can be measured or observed
- **Physical changes** occur when only the **speed** or **spacing** of molecules and/or atoms – **because energy is added or removed** (adding or removing heat)!
 - the compounds or elements present remain the SAME
 - **Examples:** *melting, boiling, folding, and cutting*

Chemical Properties of Matter

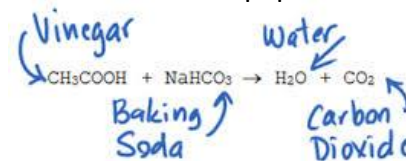
- **Chemical properties** of a substance relate to the chemical nature and reactivity of the substance.
 - This is the way atoms will **bond** to one another by gaining, losing, or sharing electrons to form substances which are combinations of different elements.
 - NEW substances are formed!
 - **REMEMBER:** Atoms with the same number of outer shell electrons tend to **bond and react** in the **same way** and are in the same group or family (column) on the Periodic Table.
 - **Examples** of chemical properties include:
 1. **reactivity** (ability to _____ with other substances)
 2. **flammability** (ability to _____)
 3. **decomposition** (ability to _____ into simpler substances)
 4. **oxidation** (creating a **new substance** by bonding with _____; Example: rusting)
 5. **pH level** (if the substance is an **acid** or **base**)

Chemical Changes:

- **Chemical change:** A chemical change occurs when chemical _____ between atoms are formed or broken creating new substances.
 - Breaking bonds releases energy/heat
 - Forming bonds absorbs energy/heat
- **Examples:** *burning, rusting, and digesting food*
 - **SPECIFIC Examples** of chemical changes:
 - **Burning paper:** the paper burns, creating ash that cannot be made back into paper
 - **Baking soda and vinegar:** when combined, these two substances create water and carbon dioxide



REACTIONS INVOLVE THE CHEMICAL CHANGE OF ATOMS AND MOLECULES.



Physical Change or Chemical Change?

Check the box for the type of change!	Physical Change	Chemical Change
Tearing or cutting paper		
Burning paper		
Bicycle left out in the rain		
Ice melting		

ONE more type of Change: Nuclear Change

- **Nuclear** changes – occur when the nuclei of atoms change and produce _____ **elements**; called fission
 - When nuclei split, the number of protons are divided
 - Remember, the number of protons identifies the element.
 - So a change in protons means there is a change to a NEW element.