

Chemical Reactions

A. Chemical Reactions = show the chemicals _____ and _____ in a chemical equation



Law of Conservation of Mass = total _____ of a closed system _____ during a chemical reaction

Law of Conservation of Atoms = total _____ in a closed system _____ during a chemical reaction

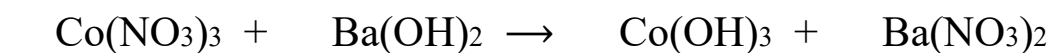
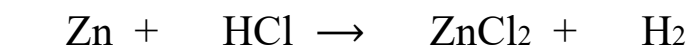
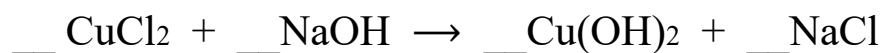
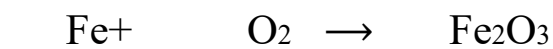
Law of Conservation of Energy = total _____ in closed system _____ during a chemical reaction

B. Balancing Chemical Equations

*mass, atoms & electrical charges must be conserved

*start with atom that is involved only once on each side

*keep polyatomic ions together if they stay together



C. Other stuff about reactions:

- phases can be indicated:
 - s = _____
 - l = _____
 - g = _____
 - aq = _____ = _____
- don't forget diatomic elements + others
 - end in "**gen**" including halogens
 - (_____)
 - phosphorus = _____
 - sulphur = _____
- crystals, powder, precipitate
 - all mean it is a _____
- solution
 - _____

lithium metal and water combine to form lithium hydroxide solution and hydrogen gas

sodium nitrate crystals and solid sodium metal react to form solid sodium oxide and nitrogen gas

D. Types of Chemical Reactions

1. Synthesis

a. Example: _____

b. What happens? _____
_____c. How to identify? _____
_____**2. Decomposition**

a. Example: _____

b. What happens? _____
_____c. How to identify? _____
_____**3. Single Replacement**

a. Example: _____

b. What happens? _____
_____c. How to identify? _____
_____**4. Double Replacement**

a. Example: _____

b. What happens? _____
_____c. How to identify? _____

d. Neutralization is _____

5. Combustion

a. Example: _____

b. What happens? _____
_____c. How to identify? _____
_____**E. Predicting Products**

If you know the _____ of a chemical reaction, you should be able to predict the _____ of that reaction.

****Don't forget to write the formulae CORRECTLY before you balance the equation!**

Synthesis Reactions

_____ → _____
 example: _____ → _____

Decomposition Reactions

_____ → _____
 example: _____ → _____

Single Replacement Reactions (SRR)

_____ → _____
 example: _____ → _____
 example: _____ → _____

Double Replacement Reactions (DRR)

_____ → _____
 example: _____ → _____

Neutralization Reactions - special DRR

_____ → _____
 example: _____ → _____

Combustion Reactions

_____ → _____
 example: _____ → _____

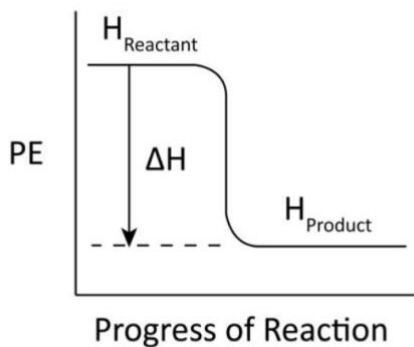
F. Energy in Chemical Reactions

- breaking bonds takes _____
- _____ may be enough
- sometimes, E needs to be _____
- forming bonds _____
- difference between E needed & released determines _____
- _____ (H) = heat contained in a system

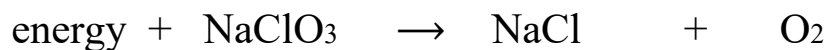
Exothermic = reaction that _____ to surroundings
(exo = outside)



- products have _____ than reactants
- surroundings feel _____



Endothermic = reaction that _____ from surroundings
(endo = inside)



- reactants have _____ than products
- surroundings feel _____

