

# Homework: 5-9, 12, & 14

## Chapter 11 Problems



# Ch 11: Chemical Reactions

# Where Reactions Occur

- Human Body: Digestion & Respiration
- Plants: Photosynthesis
- Machines (Engines): Combustion

Anywhere that a chemical change occurs

# Representing Reactions

- Word Equations: Reactants ----> Products
  - Iron + Oxygen ----> Iron(III)Oxide “Rust”
- Chemical Equations: Same format, different representation of chemicals.
  - $\text{Fe} + \text{O}_2 \text{----> Fe}_2\text{O}_3$

# Skeleton vs. Balanced Equations

- Skeleton Eqn: Has both the reactants and the products of a chemical reaction, but lacks the proportions of chemicals needed.
- Balanced Eqn: Each side of the equation has the same number of atoms of each element **and** mass is conserved.

# Skeleton Eqn

- The most basic form of reaction.
- Contains all of the chemicals needed to perform the rxn.
- Lacks the proper amounts of particles needed.
- Ex: ●  $\text{Fe} + \text{O}_2 \text{---} \rightarrow \text{Fe}_2\text{O}_3$

# Balanced Eqn

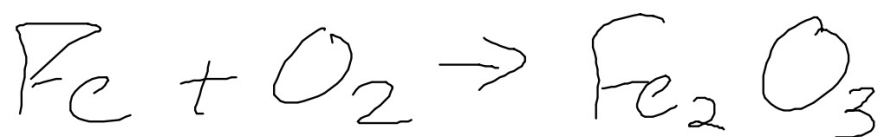
- Like a skeleton eqn, contains all of the chemicals needed to perform the rxn.
- Has the proper proportions of chemicals to “balance” the equation.
- Ex: ●  $4\text{Fe}_1 + 3\text{O}_2 \text{ ---> } 2\text{Fe}_2\text{O}_3$

# States of Matter

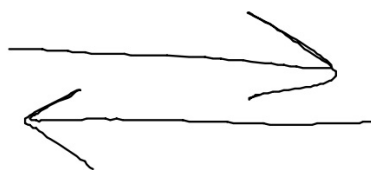
- You may see letters in parenthesis following a chemical. This is a description of the chemical's state of matter.
- These are (s): solid, (l): liquid, (g):gas, & (aq): aqueous.
- Aqueous means that the chemical is dissolved in a solution, specifically in water (think aqua).



# Symbols in Reactions



- **+**: used to separate reactants and products.
- **$\rightleftharpoons$** : Used to denote a reversible reaction.





- What indicates the number of atoms in a chemical reaction?
- How can I make it so that there are the same number of atoms of each element on either side of the arrow?

