

The background of the slide is a light green color with a pattern of faint, overlapping hexagons. A white rectangular box is positioned on the right side of the slide, containing the text. The top portion of this box is a solid dark grey color. A thick green horizontal line is located at the bottom of the white box.

Chapter 7 Review

- Redox reactions – electrons are either lost or gained.
 - Oxidation → loses electrons
 - Reduction → gains electrons
- Reactants – present before chemical reaction
- Products – present after chemical reaction
- Coefficients – the number that precedes symbols and formulas
 - helps determine mole ratios

- Arrows – forms, produces, yields
- Synthesis reaction – one product, reactants are either a compound or element
 - $A + B \rightarrow AB$
- Decomposition reactions – reverse of synthesis
 - $AB \rightarrow A + B$
- Single replacement
 - $A + BC \rightarrow AC + B$



- Double replacement



- Combustion - burning in presence of oxygen

- Bonds – holds the chemical energy

- Catalyst – substances that speed up a reaction

- Equilibrium – forward and reverse reactions occur at same rate
- Physical equilibrium – change of phase, evaporation to condensation
- Chemical equilibrium – $2\text{SO}_2 + \text{O}_2 \rightleftharpoons 2\text{SO}_3$
- Balanced equations – to maintain mass, same number of atoms on both sides of equation

- Molar mass – atomic mass – expressed as g/mol
 - examples
- Writing and balancing equations
- 1 mole = 6.022×10^{23} atoms
- 180 grams = _____ moles of iron

- Classify exothermic and endothermic reactions
 - Exothermic = releases energy – product side
 - Endothermic = absorbs energy – reactant side
- Conservation of mass – total amount of mass remains the same
- Conservation of energy – total amount of energy remains the same before and after reaction

- Rates of reaction

- Temperature increases – rate increases
- Concentration increases – rate increases
- Surface area increases – rate increases
- Pressure increases – rate increases

- Using balance equations



- Use 10 moles of H_2 , how many moles of H_2O are produced?

- $\text{Ca} + \text{O}_2 \rightarrow \text{CaO}$, to balance it a student did the following – $\text{Ca} + \text{O}_2 \rightarrow \text{CaO}_2$ – is this correct – Explain – if not balance correctly.
- No – cannot balance equations by adding subscripts – can only use coefficients
- $2 \text{Ca} + \text{O}_2 \rightarrow 2 \text{CaO}$

- Why is ice in liquid water at 0°C in physical equilibrium?
 - Because water is freezing and ice is melting at the same rate
- Why do we balance chemical equations?
 - Helps to show that mass is conserved to maintain an equal # of atoms on both sides
- How does conservation of mass explain why a bit of ash is left after wood is burned?
 - Total mass of log and oxygen equals the total mass of ash and gases formed

- Balance equations
- Identify drawings as types of reactions
 - Synthesis, decomposition, single replacement and double replacement
- Describe parts of equation
 - Reactants, products, yields, coefficients, solids, liquids, gases, and aqueous solutions

- Questions pertaining to exothermic/endothermic reactions
 - Which has more energy products/reactants
 - diagrams
- Cooking steak – endothermic- which has more chemical energy – cooked or uncooked steak?
 - Cooked steak – more chemical energy in bonds because energy was absorbed
- Heat packs vs cold packs
 - Heat pack gives off heat → exothermic
 - Cold pack absorbs heat → endothermic