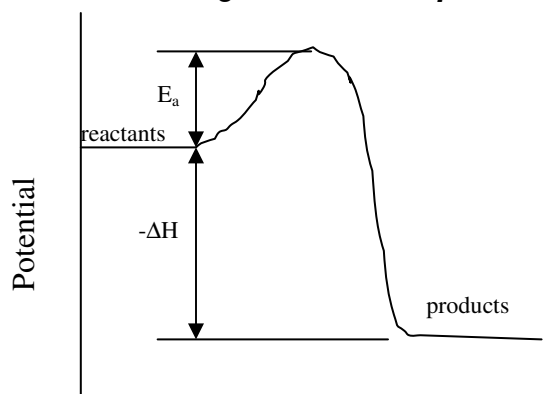
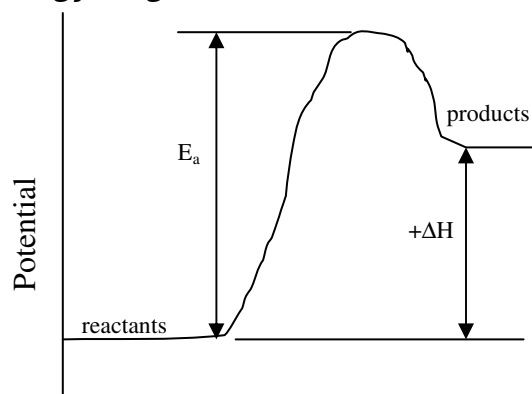


Kinetics and Equilibrium

1. Covalently bonded substances tend to react more slowly than ionic compounds.
2. Increasing the concentration of reactants will increase reaction rate.
3. Increasing the surface areas of the reactants will increase reaction rate.
4. Increasing the pressure on gases increases reaction rate.
5. **Catalysts** speed up reactions by lowering their **activation energies**. They are not changed themselves and can be reused many times over.
6. Increasing temperature increases reaction rate.
7. Be able to recognize and read **potential energy diagrams**.



Reaction Coordinate
Exothermic
 “downhill”



Reaction Coordinate
Endothermic
 “uphill”

8. ΔH is (+) for endothermic reactions and is (-) for exothermic reactions.
9. The rates of the forward and reverse reactions are equal at equilibrium.
10. **Adding** any reactant or product to a system at equilibrium will shift the equilibrium away from the added substance.
11. **Removing** any reactant or product from a system at equilibrium will shift the equilibrium point toward that removed substance.
12. An **increase in temperature** shifts an equilibrium system in the **endothermic direction**.
13. A **decrease in temperature** shifts an equilibrium system in the **exothermic direction**.
14. **Increasing the pressure** on a gaseous equilibrium will shift the equilibrium point toward the side with **fewer moles of gas**.
15. **Decreasing the pressure** on a gaseous equilibrium will shift the equilibrium point toward the side with **more moles of gas**.
16. **Catalysts** have **no effect** on an **equilibrium**. It just establishes itself quicker.
17. For the hypothetical reaction $wA + xB \rightarrow yC + zD$, $K_{eq} = \frac{[C]^y[D]^z}{[A]^w[B]^x}$
18. **Enthalpy (H)** is the heat energy gained or lost in a reaction.
19. **Entropy (S)** is high in a highly unorganized system, such as a gas, a messy room, etc.

USE THE REFERENCE TABLES!!!