

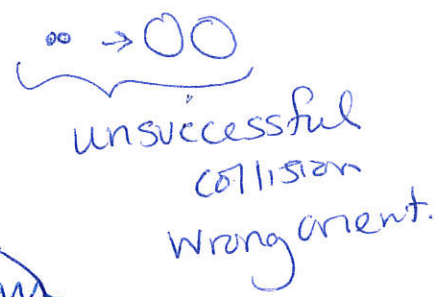
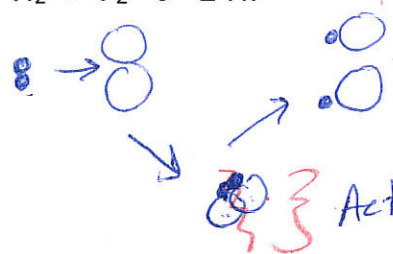
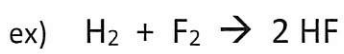
You can't have a rxn w/out an effective collision
 ↑ # of effective collisions, ↑ rate

Collision Theory:

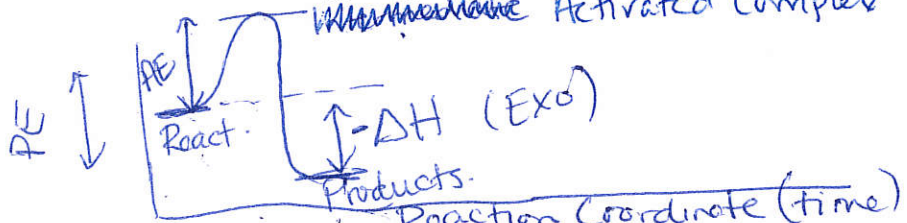
A reaction can only occur if: there is an effective collision

1. correct orientation (direction of molecules)
2. correct speed (energy (KE))

Activation Energy

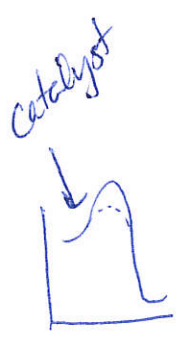


Potential Energy Diagram:

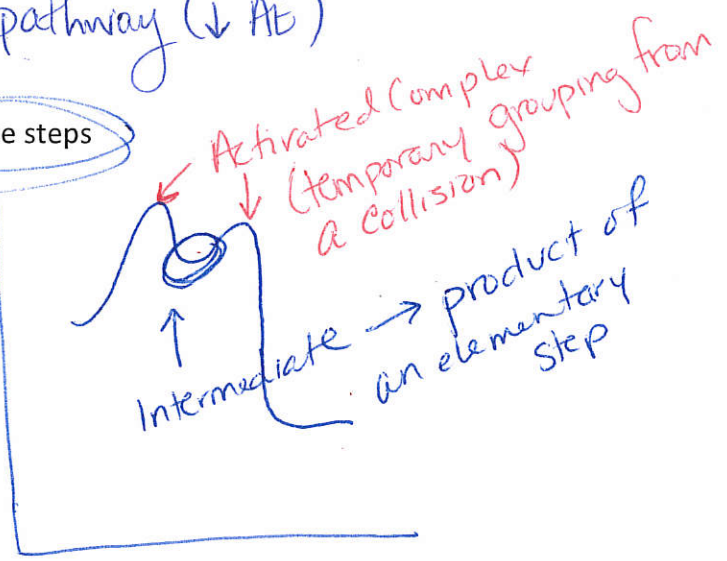
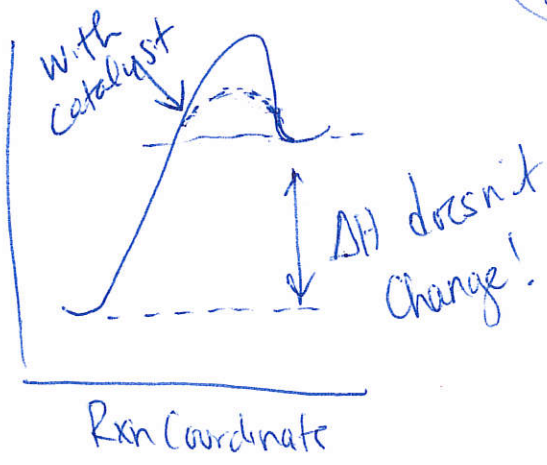


Factors that increases effective collisions:

1. Nature of the reactant- ↑ rate → ionic (aq) + acids (Ionic also have ↑ magnitude of charge)
2. Temperature- ↑ frequency + effectiveness of collisions
3. Pressure of a gas/volume/concentration- ↓ particle spacing ↑ collisions
4. Surface area/agitation- ↑ SA, ↑ collisions
5. Catalyst- creates an alternate pathway (↓ AE)



Potential Energy Diagram with catalyst, with multiple steps

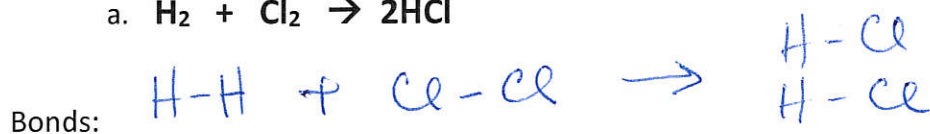


all steps
→

Kinetics: the study of the RATE of reactions (ie how fast a reaction occurs)

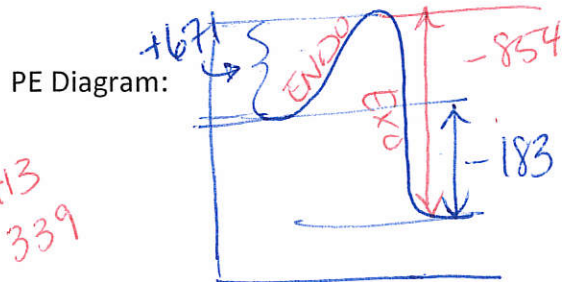
Mechanisms: (steps of a rxn)

↳ each step is called an elementary step.

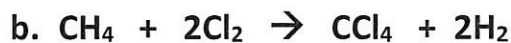


Mechanism:

- 1a. Break H-H $+ 432 \text{ kJ/mol}$ } ENDO
- 1b. Break Cl-Cl $+ 239 \text{ kJ/mol}$ }
- 2. Form 2 H-Cl $(-427) \times 2$ } EXO
kJ/mol



$$\boxed{-183 \text{ kJ} = \Delta H}$$



Bonds:

Mechanism:

PE Diagram: