1. Markovnikov Hydrohalogenation (HX, X = Cl, Br, I)

- Regioselective → what goes where (H & X)? Based on carbocation (C⁺) intermediate (intmd)

- Markovnikov’s Rule: H goes to less substituted (sub’d) C of the alkene, X goes to more sub’d C, based on stability of C⁺ intmd
Add curved arrow notation (mechanism), draw the more stable C\(^{\dagger}\) intmd, then the product.

\[ \text{Draw the products…} \]

Serendipitous twist…

2. anti-Markovnikov Hydrohalogenation (mechanism in chapter 10 – radical reactions)
Carbocation Rearrangements in Markovnikov Additions: Hydride Shifts & Alkyl Shifts

- More sub’d C⁺ is more stable…what if it’s possible to get even more sub’d???

**Hydride Shift** occurs when there’s a $3^\circ$ C⁺ next to $1^\circ$ or $2^\circ$ C⁺

![Hydride Shift Diagram]

**Markovnikov Hydrohalogenation** **Alkyl Shift** occurs when there’s a $4^\circ$ C⁺ next to $1^\circ$, $2^\circ$, or $3^\circ$ C⁺

![Markovnikov Hydrohalogenation Diagram]
Lecture 11 Reaction Puzzle
Includes SN2, SN1, E2, and hydrohalogenation reactions

- NaOH
  - KOt-Bu
    - Cl
    - KOt-Bu
    - HI
      - NaCN
        - NaOH
        - NaSH
        - I
        - KOt-Bu