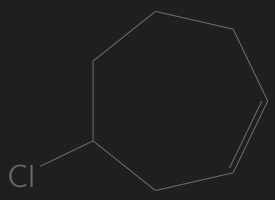
Mini Quizes

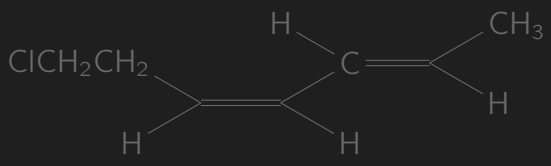
Week 1 — Chapter 14

1. Name the structure:



   - 1-chloro-3-cycloheptene
   - 4-chloro-1-cycloheptene
   - 4-chloro-1-cyclohexene
   - 6-chloro-1-cycloheptene
     - When numbering the parent chain, the double bond should receive the lowest number possible; k=1
       - Note: define the location *k* of the double bond as being the number of its first carbon, not at the end.
     - The locant (*k*) of the double bond should be placed right before the suffix of "ene," though, it was previously recommended before the parent (both are acceptable), e.g., 2-pentene = pent-2-ene; 1-cycloheptene
     - Name and the side groups (other than hydrogen) according to the appropriate rules; chloro
     - Define the position of each side group as the number of the chain carbon it is attached to; 4-

2. Name the structure:

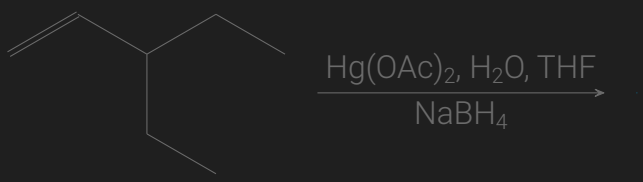


   - (2E,4E)-7-chloro-2,4-heptadiene
   - (2Z,4Z)-7-chloro-2,4-heptadiene
   - (2Z,4E)-7-chloro-2,4-heptadiene
   - (2E,4Z)-7-chloro-2,4-heptadiene
     - **E-Z notation**: recommended instead of *cis* and *trans* in order to account for cases that has more than two different groups attached to the double bond by first determining the priority using the Cahn-Ingold-Prelog System.

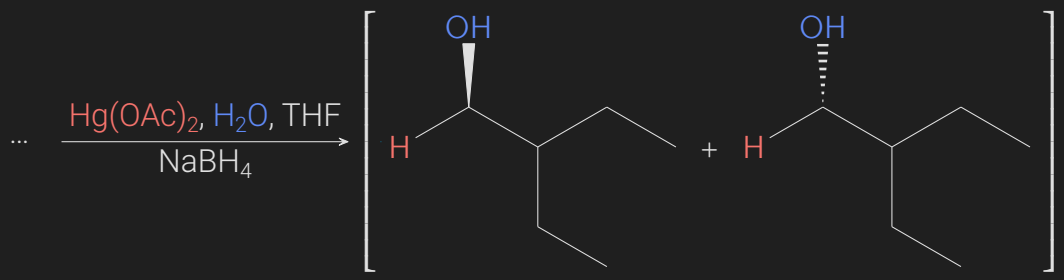
- E, entgegen, “opposite”.
- Z, zusammen, “together”; “on ze zame zide.”

- When numbering the parent chain, the double bond should receive the lowest number possible; k=2
  - The two highest priority groups are on opposite sides; 2E
- There is more than one double bond; $k_2 = 4$
  - The two highest priority groups are on zame side; 4Z

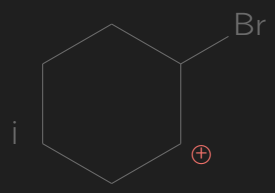
3. How many stereoisomeric product(s) do you get in the reaction below.

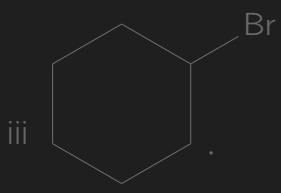


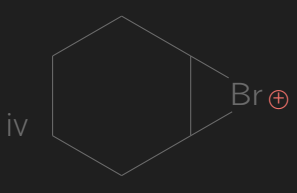
- Oxymercuration-demercuration reactions follow Markovnikov’s rule, i.e., H^+ is added to the carbon with the greatest number of hydrogen atoms while the X^- component is added to the carbon with the fewest hydrogen atoms.
- Drawing the intermediate is not necessary, and no chiral centers are found in the products:

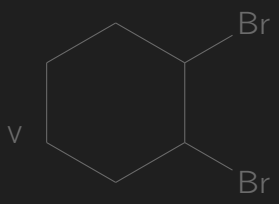


4. Which reaction intermediate is formed when Br2/CCl4 reacts with cyclohexene?









- **Halogenation**: a reaction that involves the addition of one or more halogens to a compound or material.
  - The addition of halogens to alkenes proceeds via intermediate halonium ions.
  - **Halonium ion**: any onium ion containing a halogen atom carrying a positive charge. This cation has the general structure: $R-{+X}-R'$
  - **Onium ion**: a cation formally obtained by the protonation of mononuclear parent hydride of a pnictogen (group 15 of the periodic table), chalcogen (group 16), or halogen (group 17); $Br^{\oplus}$ in our case.