

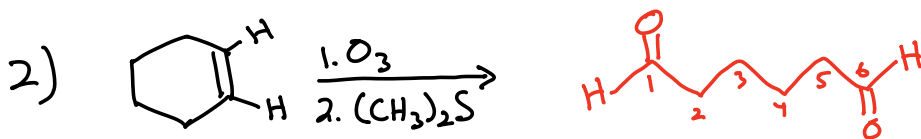
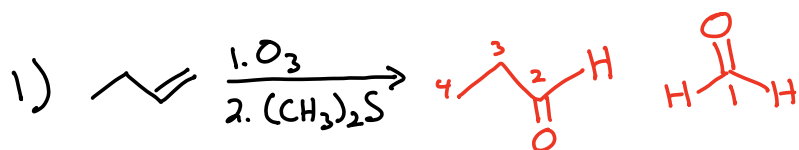
"I believe God gave me another chance to live," Tuhabonye tells PEOPLE in this week's issue. "That's why I'm dedicated to making a difference and preaching peace."



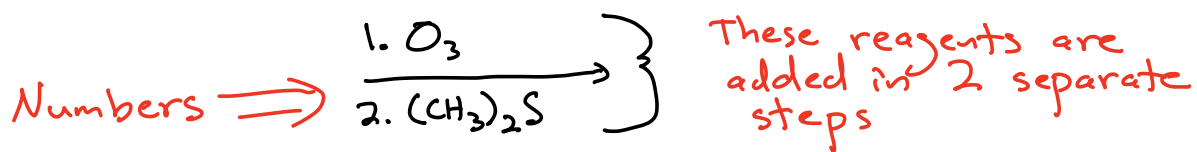
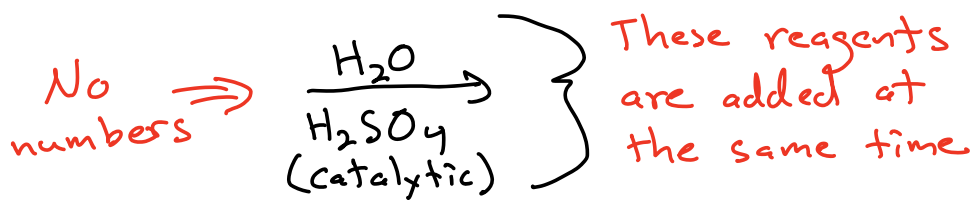
Exam Metrics - 282 points total

Nomenclature	8%
Concepts	35%
Mechanisms	24%
Reactions	33%
("Box problems")	
MCAT Problem	0% ←

Ozonolysis is the only reaction that breaks C=C bonds!

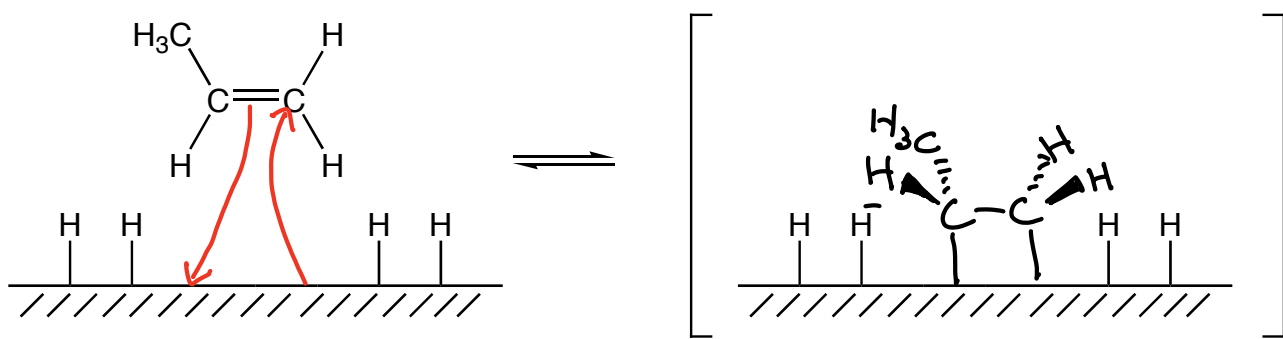
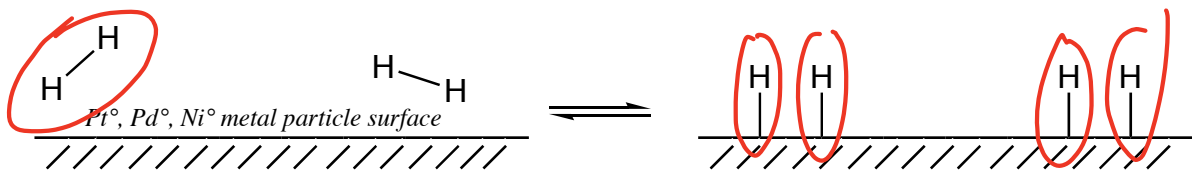


Notice the numbers!

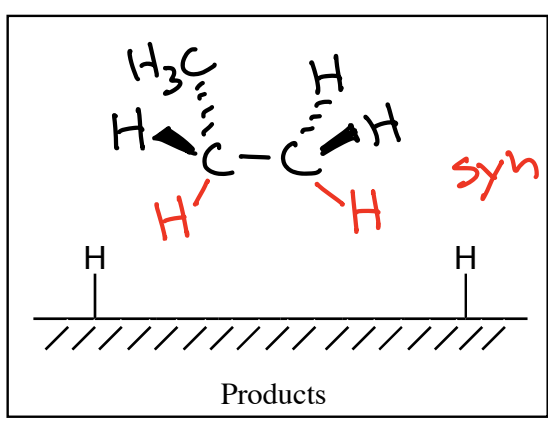


Hydrogenation:  $H_2$  with  $Pt^0, Pd^0, Ni^0$

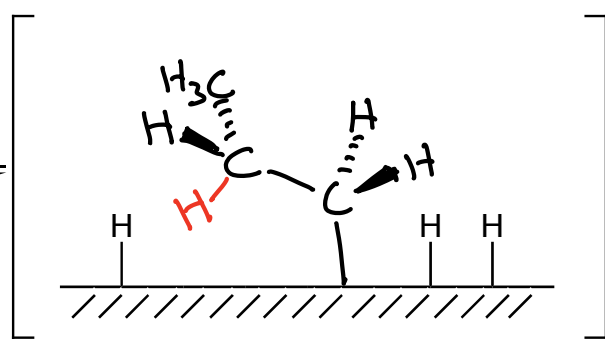
"In the elemental state - a metal"



Very fast



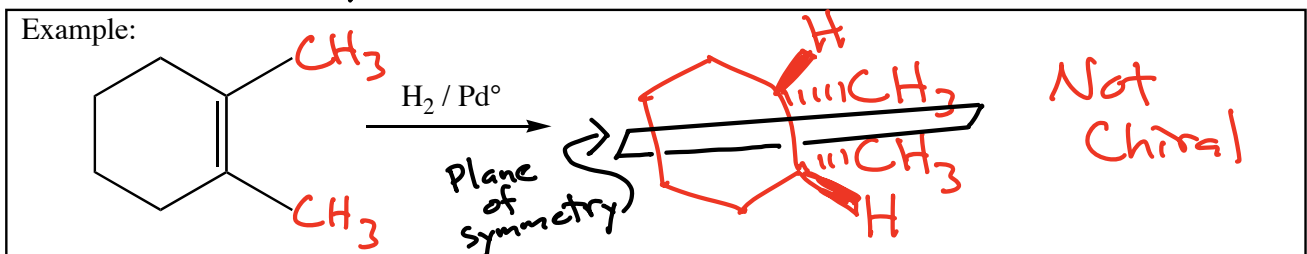
Very fast



Summary:  $H_2$  adsorbs onto the metal surface. The alkene adsorbs onto the metal surface. H atoms transfer to both C atoms  $\rightarrow$  on the same face  $\rightarrow$  before the C-C bond rotates

Regiochemistry: N/A

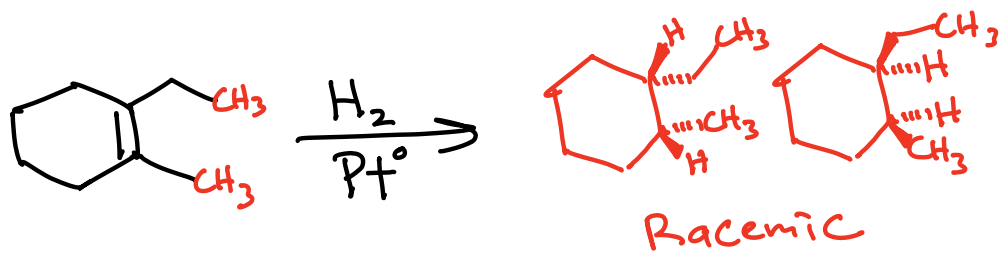
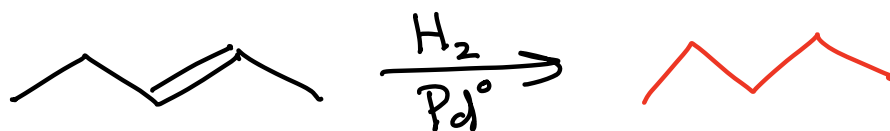
Stereochemistry: Syn



Alkene

Alkane

Examples:



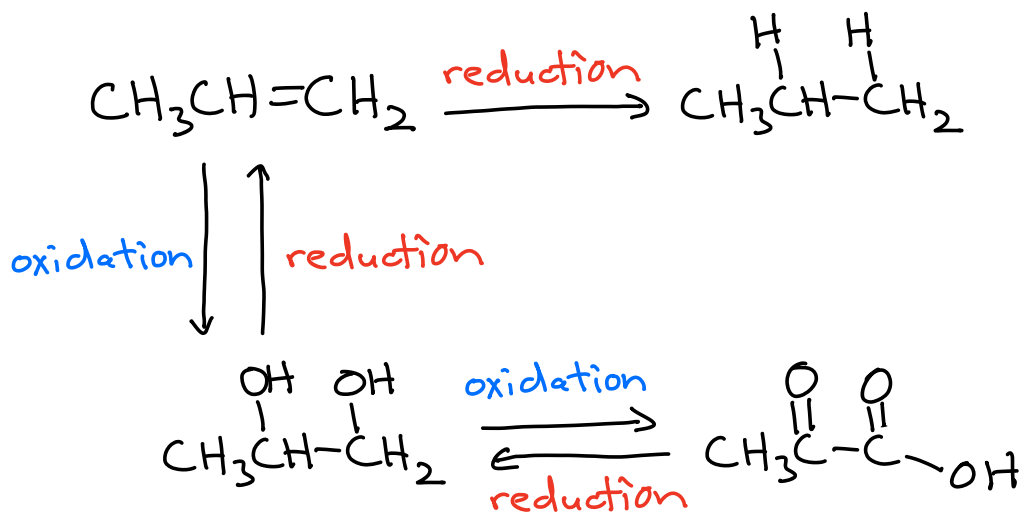
## Important definitions for organic chemistry

Oxidation Reaction  $\rightarrow$  Net loss of electrons

$\hookrightarrow$  A reaction involving loss of bonds to H atoms and/or increase in the number of  $\pi$  bonds or bonds to O atoms

Reduction Reaction  $\rightarrow$  Net gain of electrons

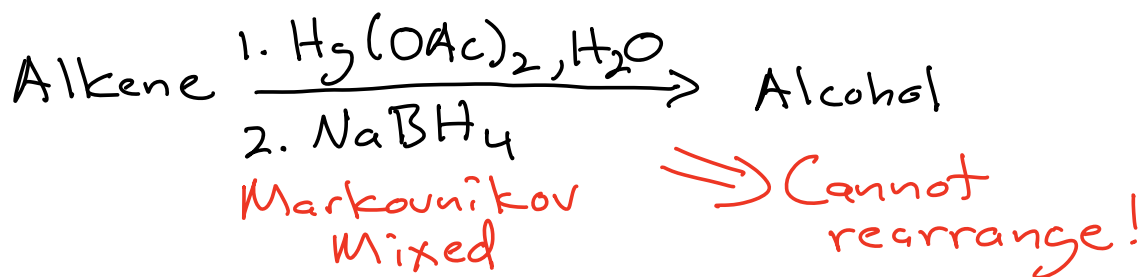
$\hookrightarrow$  A reaction involving an increase in bonds to H atoms and/or a decrease in the number of  $\pi$  bonds or bonds to O atoms



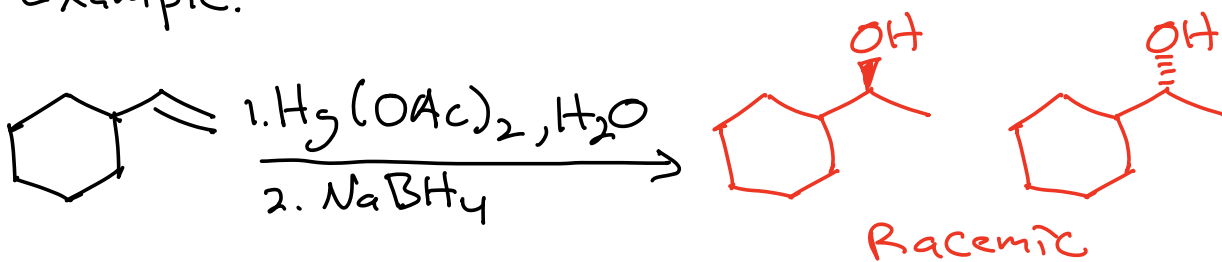
Exam 2 will not cover anything below the line

---

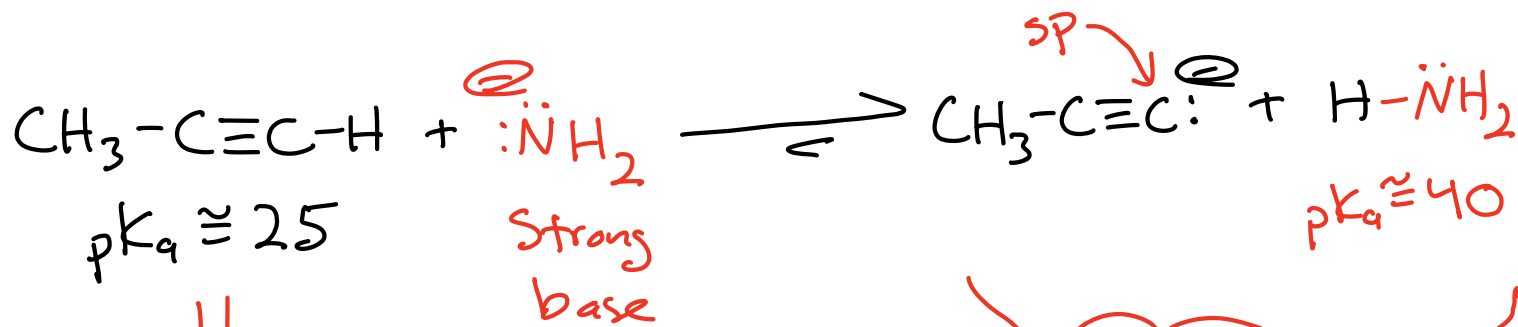
You do not need to know this next reaction, but I am going to show it to you for reference



Example:





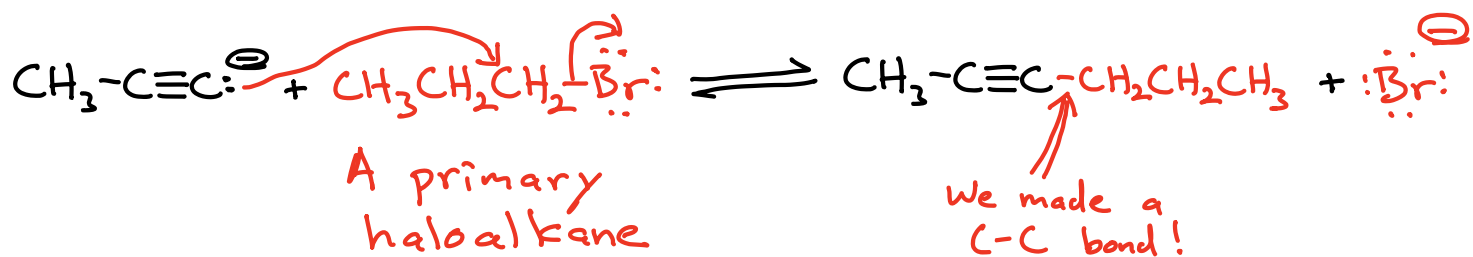


Alkynes are relatively acidic

This side is highly favored at equilibrium



# Epic New Reaction

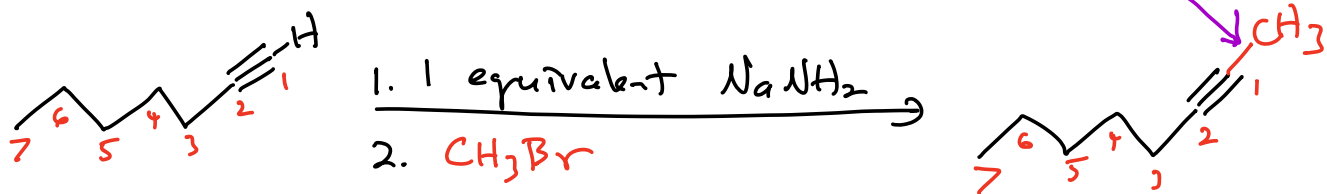
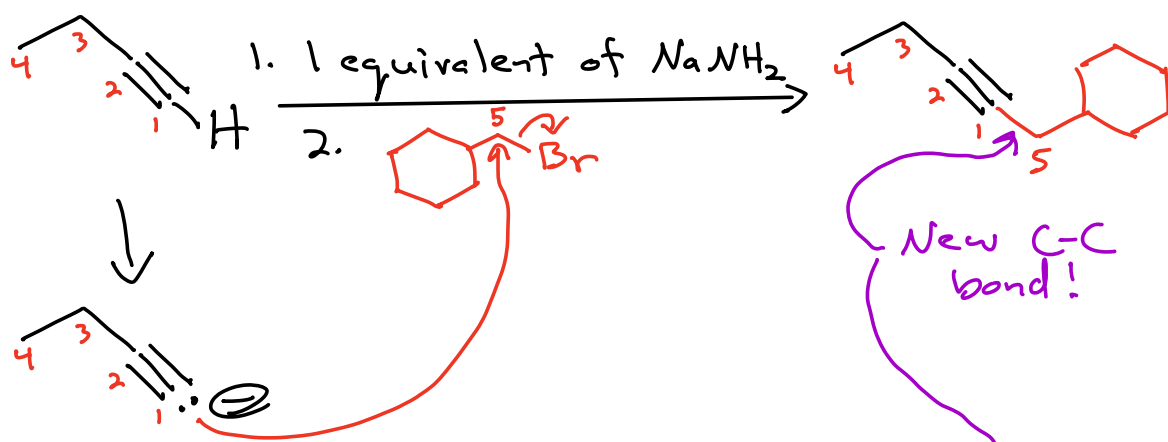


Time capsule: This is an  $\text{S}_{\text{N}}2$  reaction. The haloalkane must be primary to avoid an  $\text{E}2$  reaction.

Making C-C bonds allows us to construct larger molecules from smaller ones!

A major goal of organic synthesis

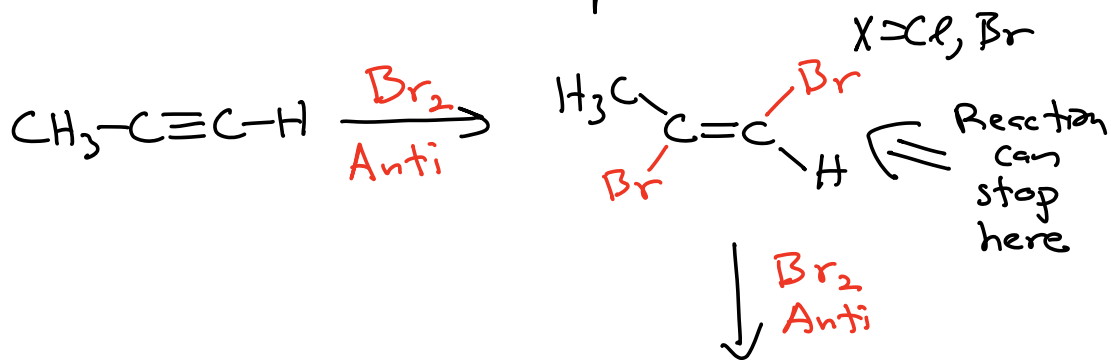
Example:



Alkynes  $\rightarrow$  The two orthogonal pi bonds define alkyne reactions

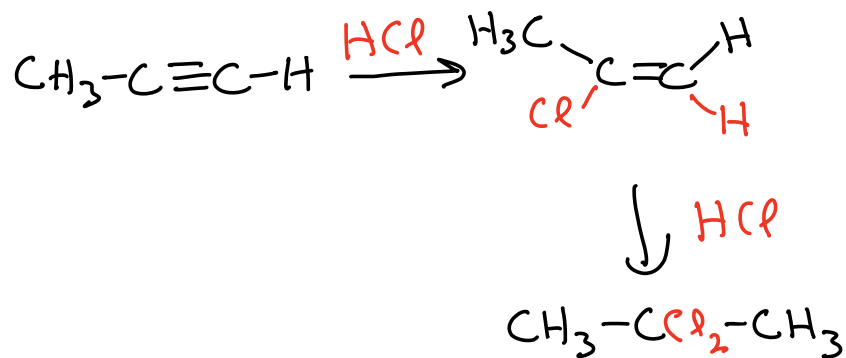
$R-C\equiv C-R \rightarrow$  Same overall personality as alkenes

A) Reaction with 2 equivalents of  $X_2$



$CH_3-CBr_2-CHBr_2$   
Vicinal tetrahalide  
"on adjacent carbon atoms"

B) Reaction with 2 equivalents of H-X  
X = Cl, Br



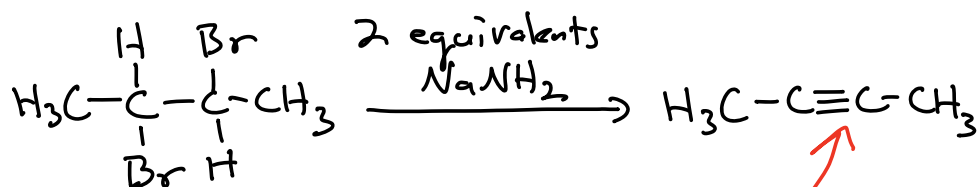
Mechanism involves a cation intermediate

⇒ Markovnikov's rule followed

However, the two X atoms always  
end up on the same carbon



c) Conversion of a vicinal dihalide into an alkyne



Vicinal dihalide

Note this alkyne is not terminal  
(it is not on the end)



Time capsule → This is a double E2 reaction