9:09 AM Wed Oct 15 100%

pbs.org

iverson.cm.utexas.edu/courses/310N/Hando... (15) News Feed—Nextdoor Election Runner | Vote | Election Ballot Grizzly 399: Queen of the Teton | Meet the M...

PBS Live TV PBS Shows My Station My List Donate Austin PBS

NATURE

PROVIDING SUPPORT FOR PBS.ORG LEARN MORE

MENU EPISODES PODCAST ANIMALS NEWSLETTER TV SCHEDULE

S42E15: GRIZZLY 399: QUEEN OF THE TETONS | CLIP

Meet the Most Famous Grizzly in the World

0:00 / 2:37 1x

STREAM WITH PASSPORT

Grizzly 399: Queen of the Tetons

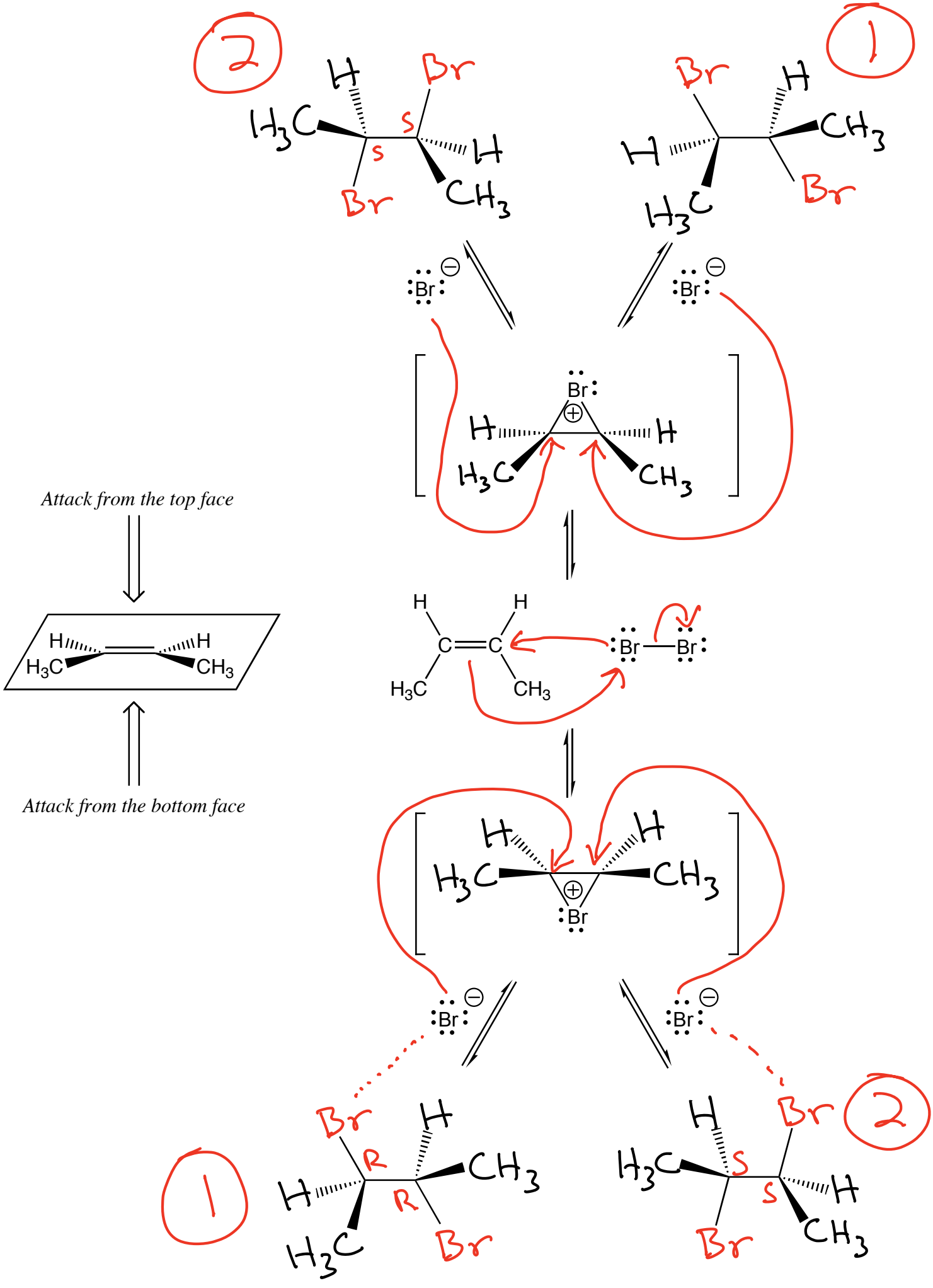
PROVIDING SUPPORT FOR PBS.ORG LEARN MORE

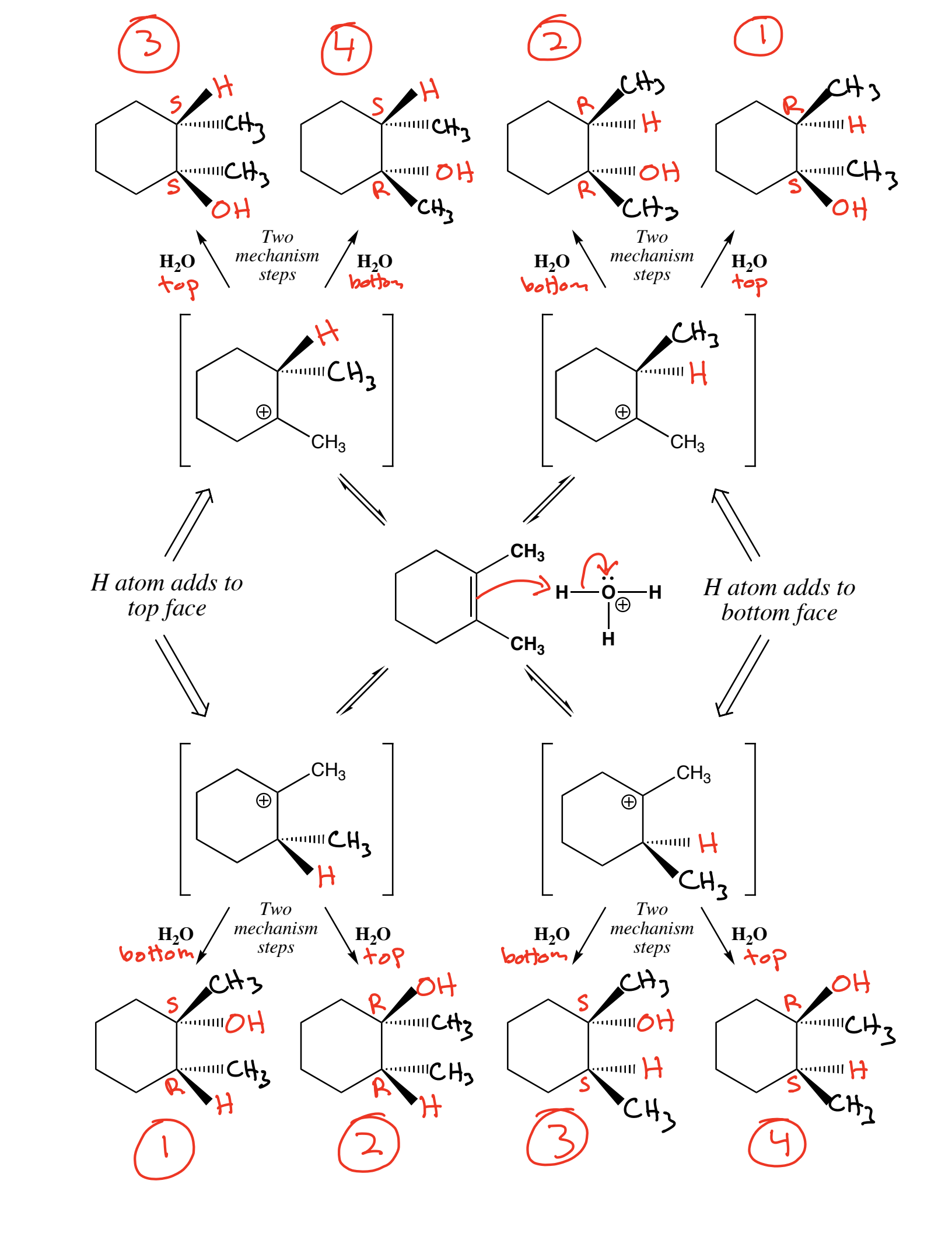
BIG CATS 24/7 NEW SEASON PBS STREAM NOW

Only carbocations rearrange!

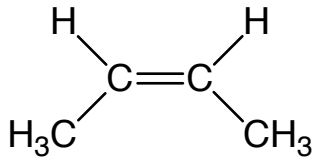
Halonium ions (3-membered ring) DO NOT

To get stereochemistry correct when predicting reaction products, you need to analyze each reaction on a <u>case by case</u> basis

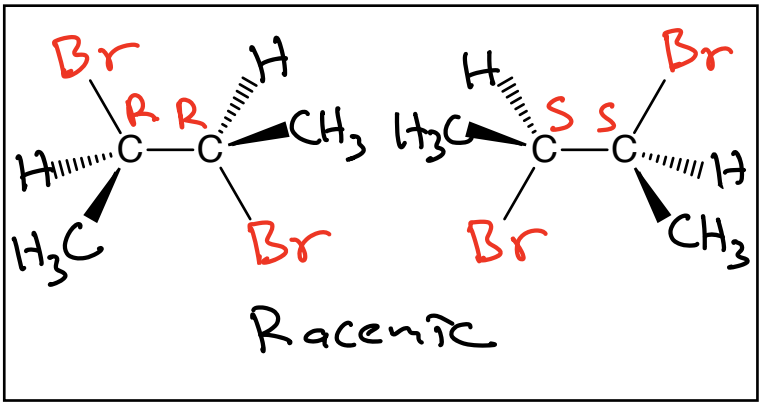

2
1
Attack from the top face
Attack from the bottom face
1
2


3
4
2
1
S
H
CH3
OH
R
Two mechanism steps
H2O top
H2O bottom
H2O bottom
H2O top
H atom adds to top face
H atom adds to bottom face
CH3
H
O
Two mechanism steps
H2O bottom
H2O top
H2O bottom
H2O top
1
2
3
4

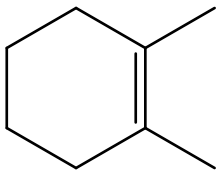
Examples

1) 

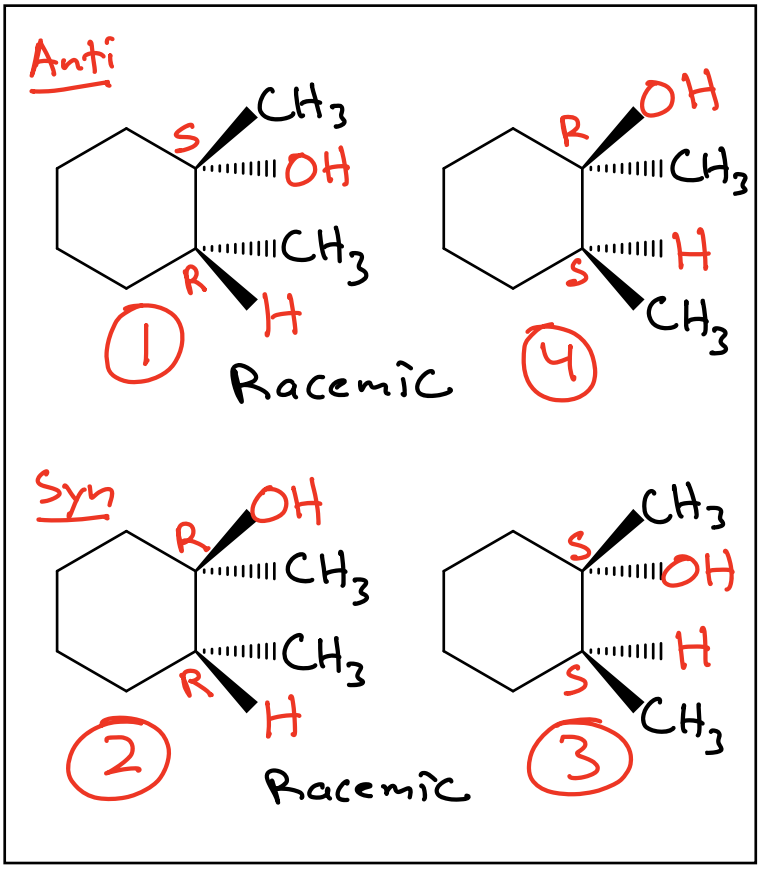
$\xrightarrow{Br_2}$



⇒ Anti

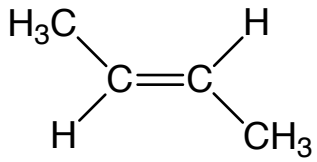
2) 

$\xrightarrow[H_2SO_4\ (catalytic)]{H_2O}$

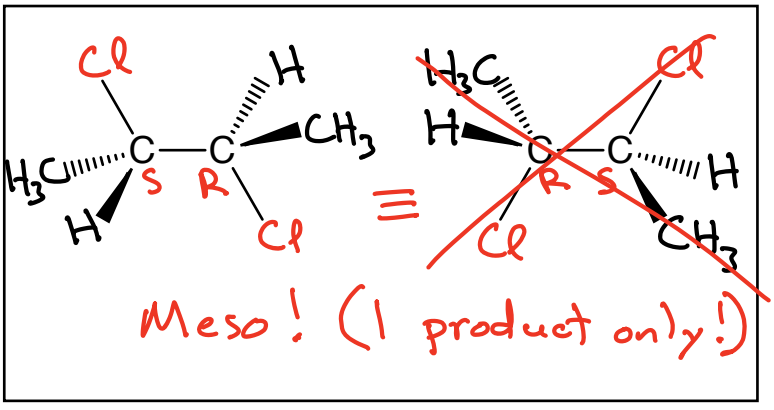


⇒ Mixed → Anti and Syn

⇒ Markovnikov

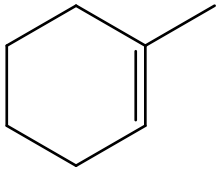
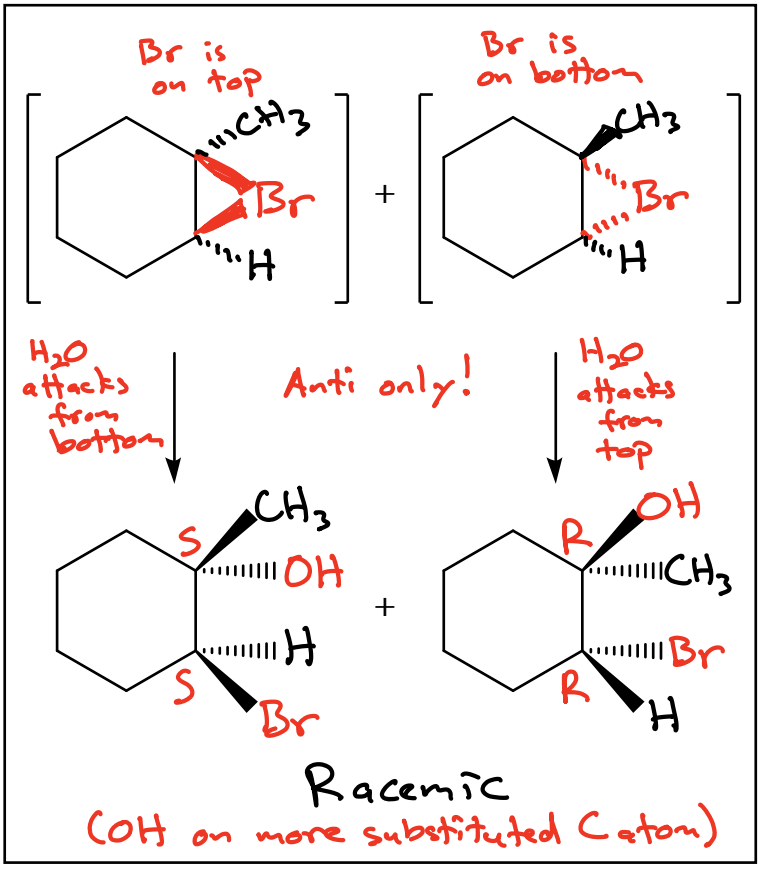
3) 

$\xrightarrow{Cl_2}$



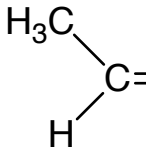
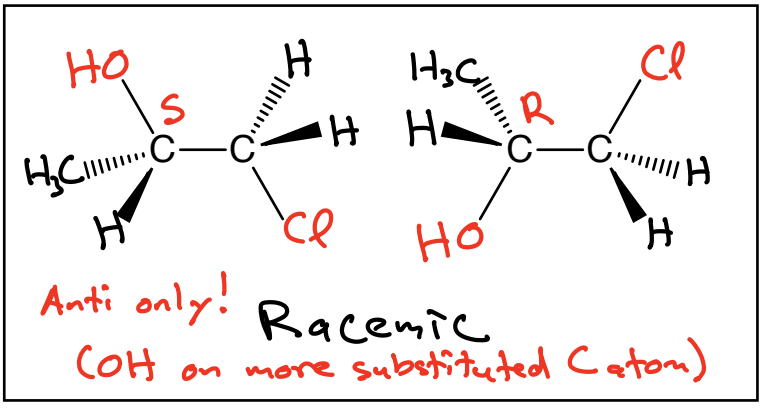
⇒ Anti

More Examples

4)  $\xrightarrow[H_2O]{Br_2}$ 

⇒ Anti

⇒ Markounikou

5)  $\xrightarrow[H_2O]{Cl_2}$ 

⇒ Anti

⇒ Markounikou

Who do you call when you need help?

When studying OChem → Call a NIRRS

Learn each of these things for every reaction → then you will be able to predict mechanisms and therefore products

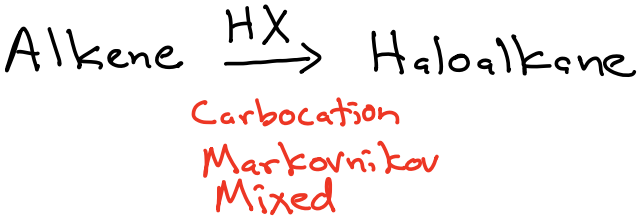
Nature of the reaction; what is the starting material/product? (i.e. alkene converted to an alcohol)

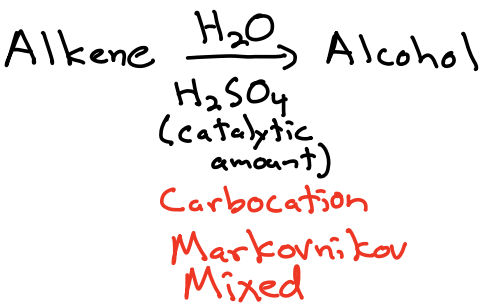
Intermediate (or "**I**mportant transition state" if applicable) of the reaction, the key to the mechanism (carbocation, halonium ion, etc.)

Reagents Learn the exact way to designate the reagents for each reaction

Regiochemistry What is the regiochemistry of addition? (Markovnikov, non-Markovinikov, etc.)

Stereochemistry of addition (anti, syn or mixed)

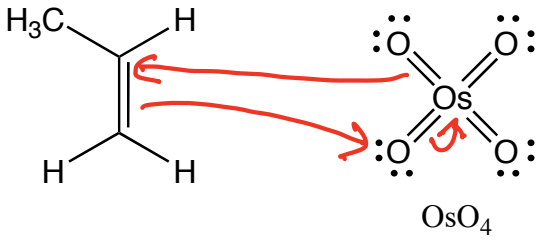


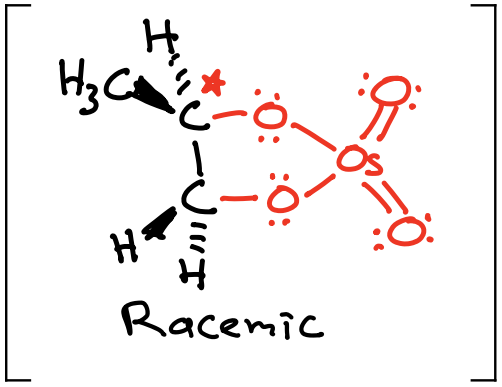


Ozzy Osborne

Ozzy Osborne Reaction → "Sin" ↳ (Syn)

OsO_4 Partial Mechanism

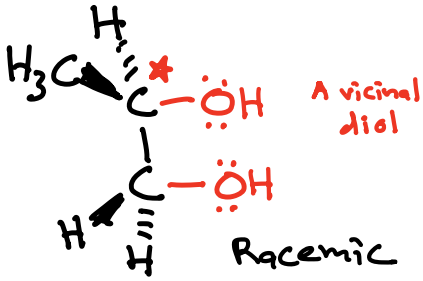




A cyclic osmate ester

2. $NaHSO_3$ / H_2O
(Chemist opens up flask)

Not responsible for mechanism



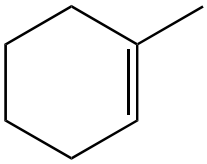
Product

Summary: The mechanism involves a cyclic osmate ester, explaining the syn (sin!) stereochemistry of addition.

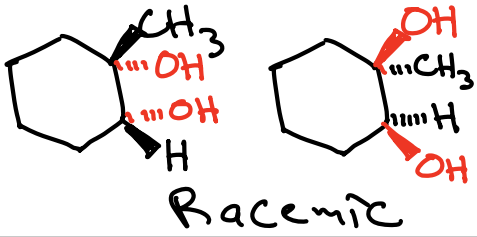
Regiochemistry: N/A

Stereochemistry: Syn (Sin!)

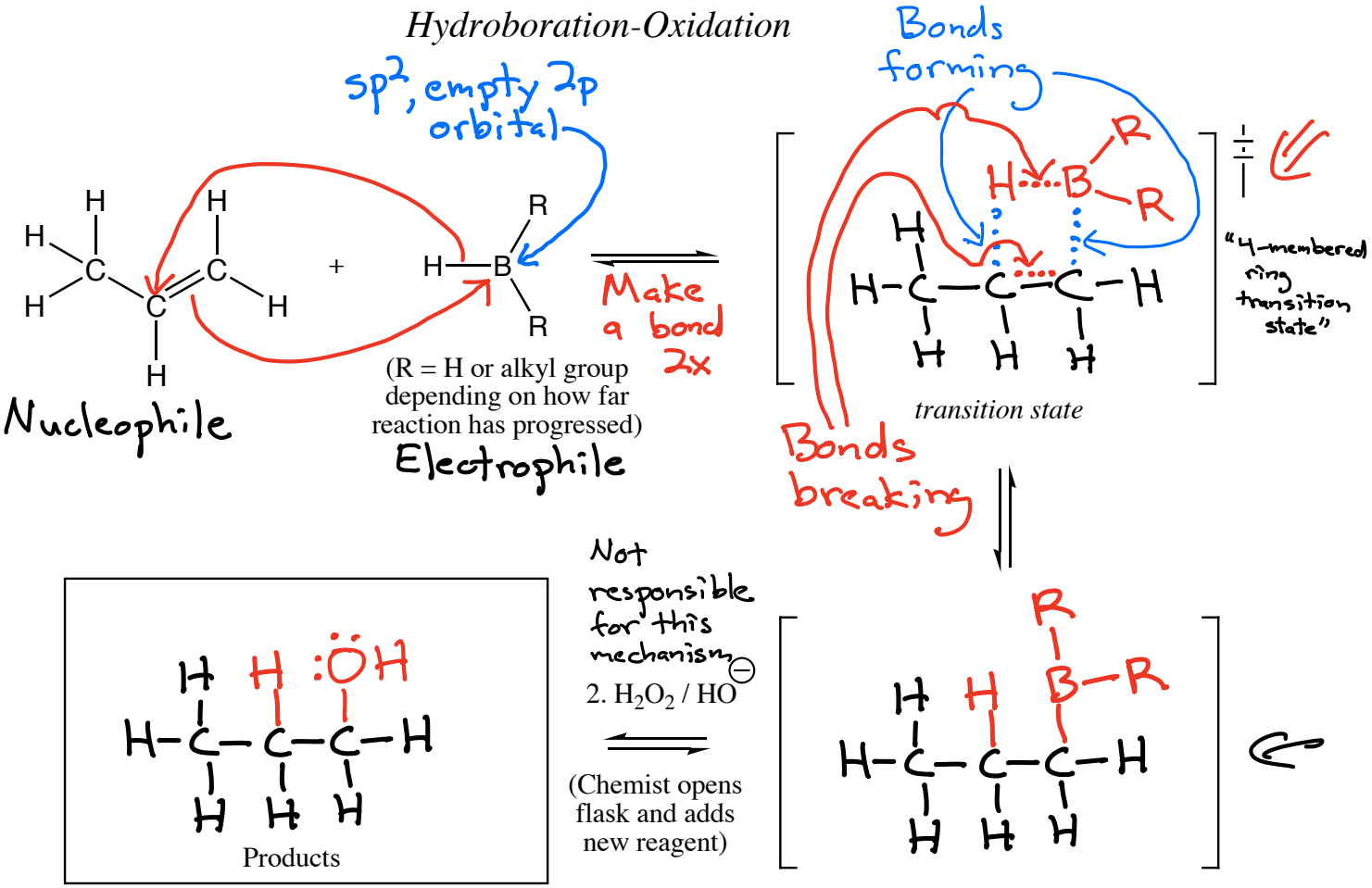
Example:



1. OsO_4
2. $NaHSO_3$ / H_2O



Hydroboration-Oxidation



H → More substituted C atom
OH → Less substituted C atom
} Steric strain in the first transition state

H and OH are syn

Summary: The pi bond of the alkene attacks the Lewis acid (electrophile) B atom at the same time a new bond forms between C and H. In 2nd step OH replaces B(R)2. "4-membered ring transition state"

Regiochemistry: Non-Markovnikov

Stereochemistry: Syn

Example: