## Practice problems: Stereochemical outcomes of organic reactions

**CHM 235** Dr. Minger

→ For each of the following reaction conditions, draw the organic products, showing stereochemistry. > Indicate the stereochemical relationship of the products (enantiomers or diastereomers). Then indicate whether the two products would be formed in equal amounts or unequal amounts.

## Keep in mind the following:

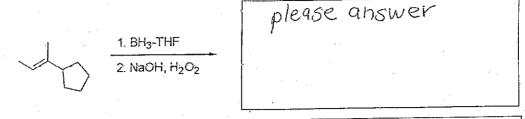
Optically inactive starting materials can only give optically inactive products, whether the product is a single achiral molecule or a racemic mixture of enantiomers.

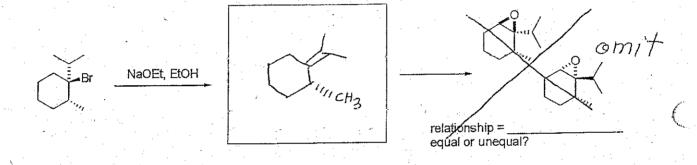
Optical activity in either the starting material or a catalyst/reagent will result in optical activity in the product, generally meaning an excess of one enantiomer or diastereomer over the other possible stereoisomeric products.

Cl<sub>2</sub>/H<sub>2</sub>O

Br<sub>2</sub>/H<sub>2</sub>O

For each of the following reactions or reaction sequences, provide the missing starting material, major organic product, or reagents. For reactions where more than one stereoisomer can form, draw them all, indicate their relationships to each other, and state whether they are formed in equal or unequal amounts.





1. O<sub>3</sub> 2. DMS

please answer

give please answer the starting naterial

1. Hg(OAc)<sub>2</sub>, H<sub>2</sub>O

2. NaBH<sub>4</sub>

OH (racemic)

1. BH<sub>3</sub>-THF

2. NaOH, H<sub>2</sub>O<sub>2</sub>

OH (racemic)

## Chapter 6 advanced Practice

Practice problems:
Stereochemical outcomes of organic

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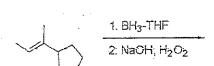
CHM 235

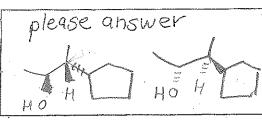
Dr. Minger

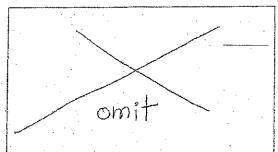
OHB

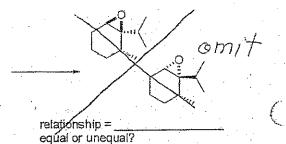
Stereochemical outcomes of organic reactions Dr. Minger For each of the following reaction conditions, draw the organic products, showing stereochemistry. Indicate the stereochemical relationship of the products (enantiomers or diastereomers). Then indicate whether the two products would be formed in equal amounts or unequal amounts. Keep in mind the following: Optically inactive starting materials can only give optically inactive products, whether the product is a single achiral molecule or a recemic mixture of enentionners. hill C/ Optical activity in either the starting material or a catalyst/reagent will result in optical eo. activity in the product, generally meaning an excess of one enantiomer or diastereomer over the other possible stereoisomeric products. this is in  $H_2$ Cb/H50 6, Pd/C 6 HOH CHZ OH Br<sub>2</sub>/H<sub>2</sub>O 1. BH3-THF 2 H<sub>2</sub>O<sub>2</sub>, NaOH BY H-O ise Oibd " CH2 CH 1. BH3-THF MCPBA 8. enant Z. H<sub>2</sub>O<sub>2</sub>, NaOH, H20 OH H HBr MCPBA 9: erant CHZ ("Br ÇH₃.  $\mathrm{Br}_2$ horne 1. Hg(OAc)<sub>2</sub> 2 NaBH<sub>4</sub>, OH dias OAC HgOAC HO EH3 6/17/10

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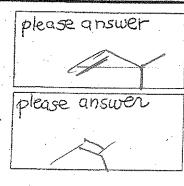




(racemic)

please answer /

give the starting naterial



1. Hg(OAc)<sub>2</sub>, H<sub>2</sub>O 2. NaBH<sub>4</sub>

"III CH3

1. O<sub>3</sub> 2. DMS

1. BH<sub>3</sub>-THF OH (racemic)
2. NaOH, H<sub>2</sub>O<sub>2</sub>