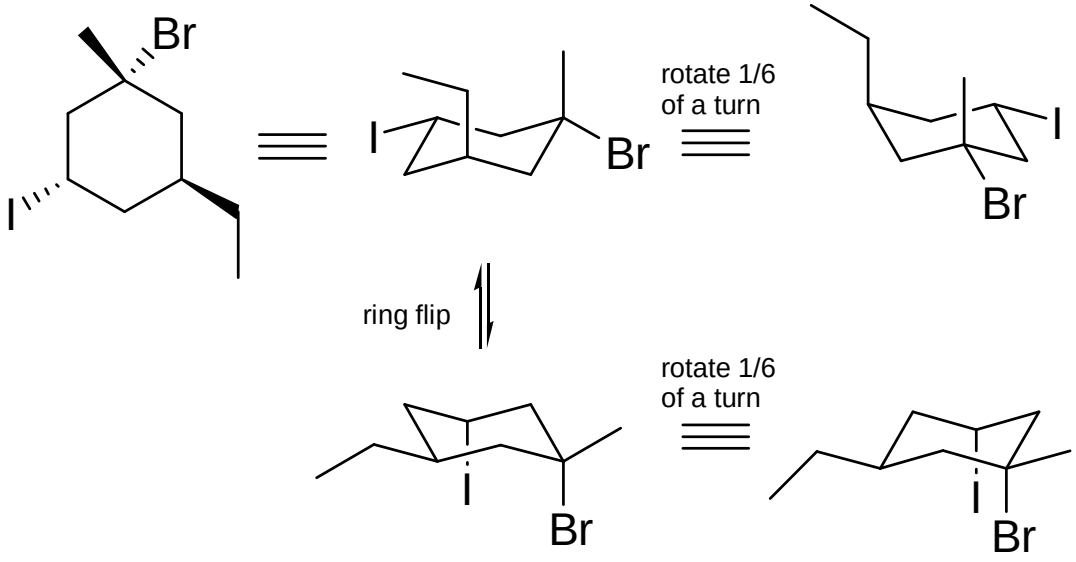
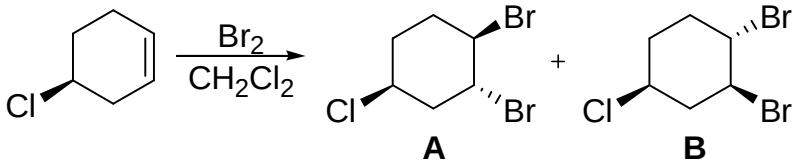
Organic Chemistry 1 – Spring 2010
Worksheet for Jacquie's recitation
Week of 3/8/10

1) Using the templates below, draw the flat, top-down view of (1R,3R,5S)-1-bromo-3-ethyl-5-iodo-1-methylcyclohexane. Convert this to one chair conformer, then the other. Show each ring-flip isomer in both chair styles.

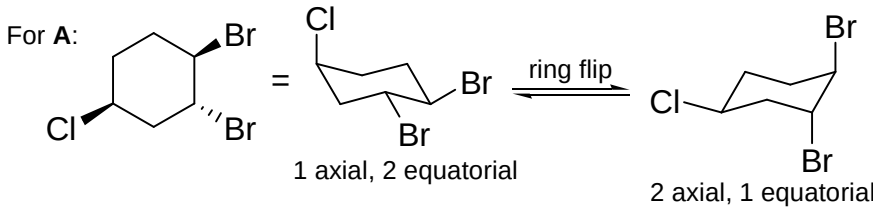


2) Reacting (S)-4-chlorocyclohex-1-ene with Br_2 and CH_2Cl_2 gives two products. Are these products enantiomers or diastereomers? Based on the two chair conformations of each of these molecules, which product has the most stable conformation possible?



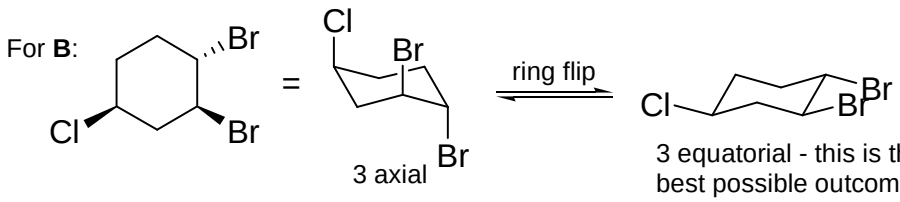
A **B**

These are diastereomers, since some chiral centers are the same and some are flipped.



1 axial, 2 equatorial

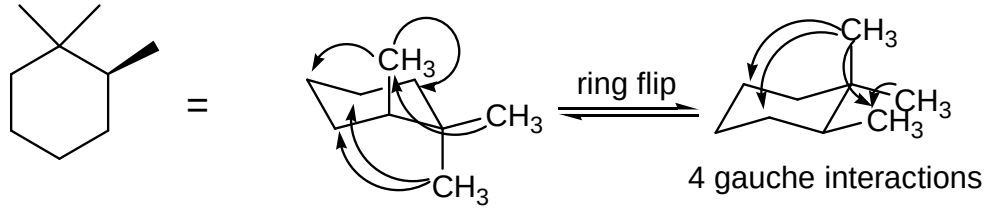
2 axial, 1 equatorial



3 axial

3 equatorial - this is the best possible outcome, which makes **B** the best product.

3) For the molecule (S)-1,1,2-trimethylcyclohexane, how many total gauche interactions exist in each of its two ring-flip forms?



Both of these forms have at least one gauche interaction between two groups that are on adjacent carbons. You can see this more clearly with a Newman projection. In the long run, it's still true that the form with more axial groups has more gauche interactions and is less stable. However, it's not by as big a margin as you might initially think.