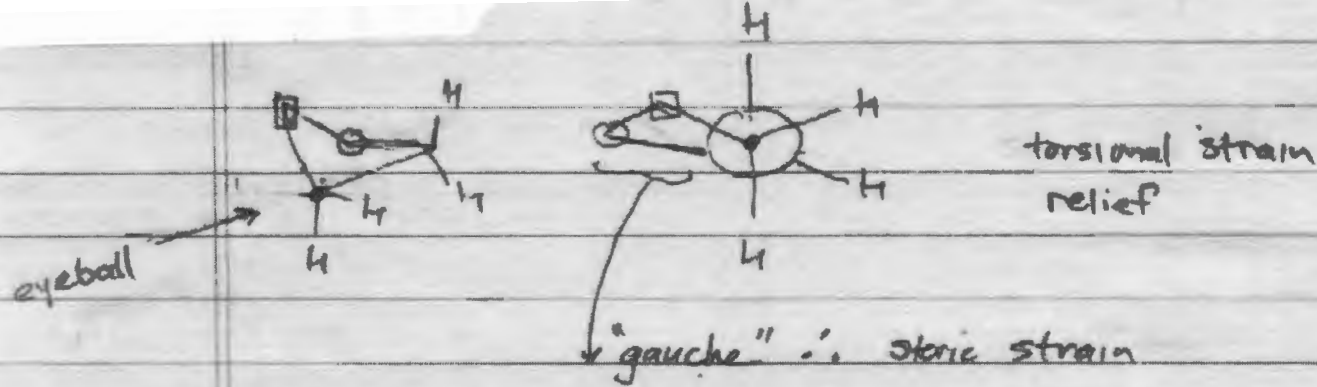
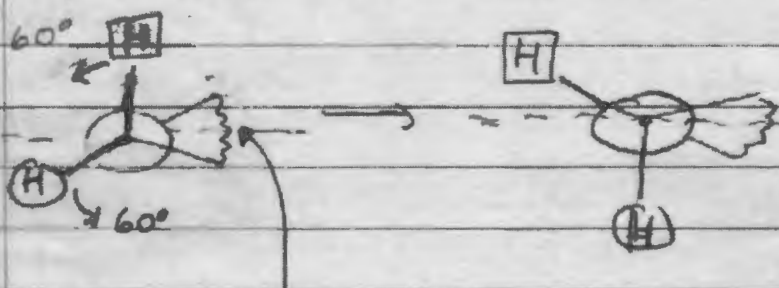




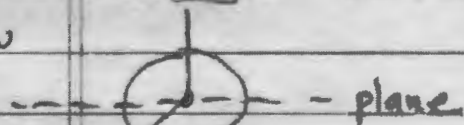
cyclohexane: These are the types of motions tracked



generate "ring" closure

is H is above the plane

redraw

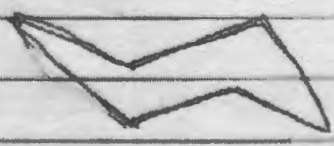
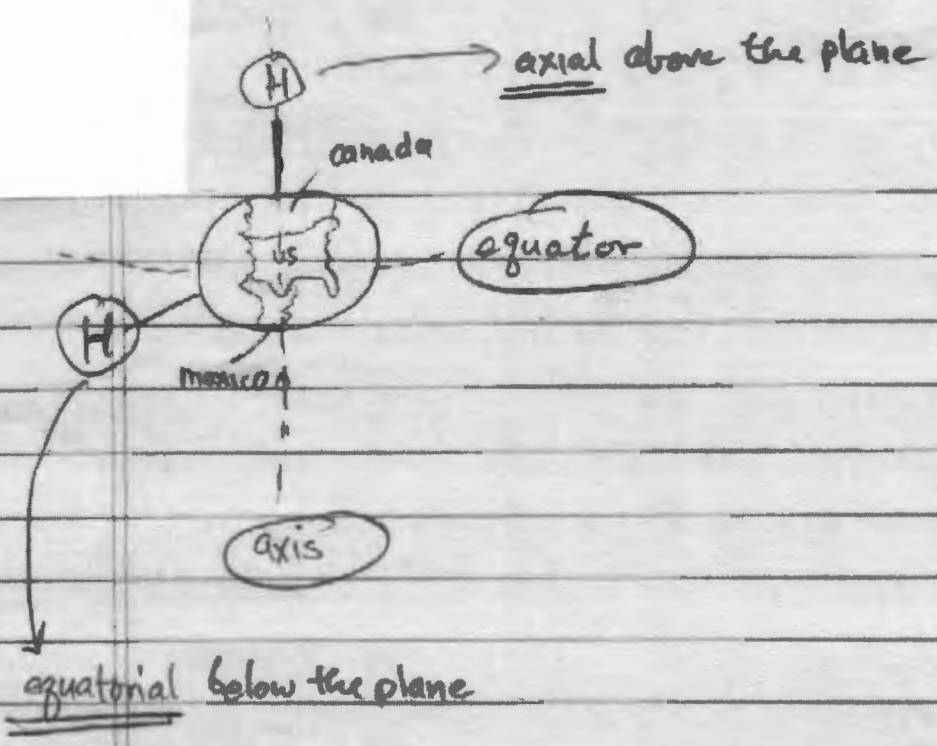


this H is below the plane

still above plane after rotation

plane

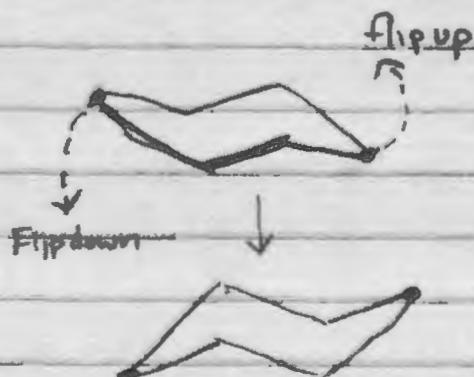
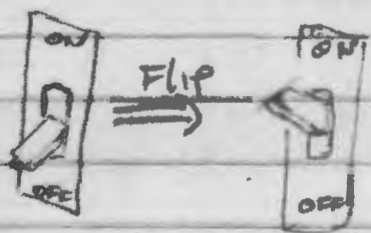
still below plane before rotation



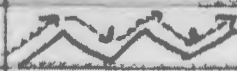
While I have drawn the two cyclohexane chair conformations on the chalkboard, I referenced that the chair structures will be provided

Ring "flip" = NOTHING is flip over like a pancake!

Instead the endpoints of the ring are flipped like a conventional light switch

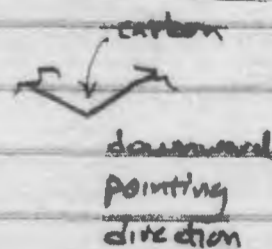
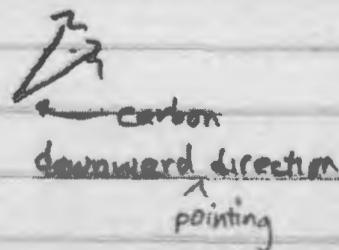
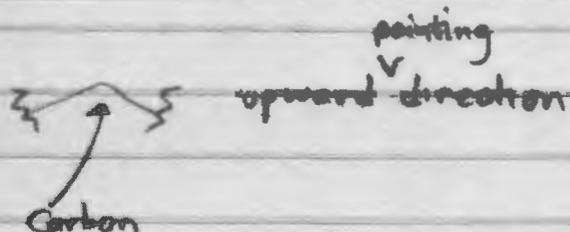


NOTE: Zigzag drawing of ring is similar to acyclic alkane

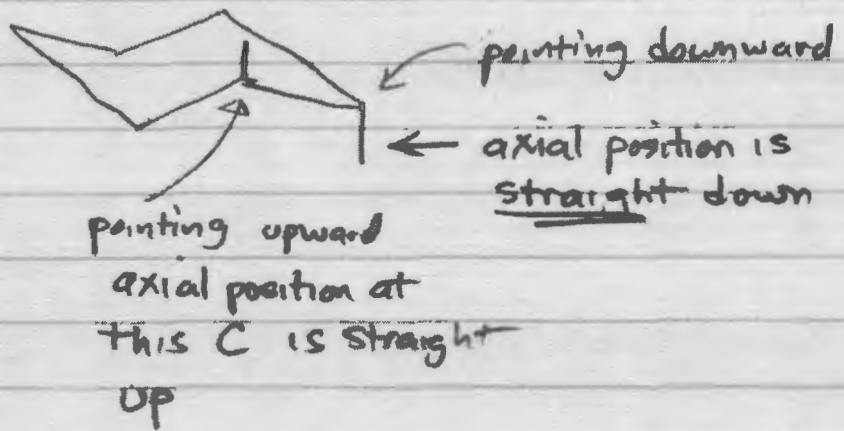


up/down/up/down...

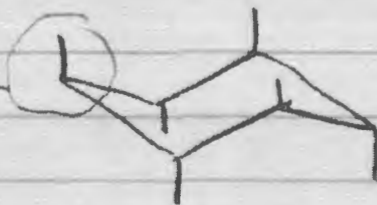
NOTE: the up/down in chair



These "pointing" directions indicate the direction of the AXIAL POSITIONS; depending on pointing direction, a line is drawn either straight up or straight down



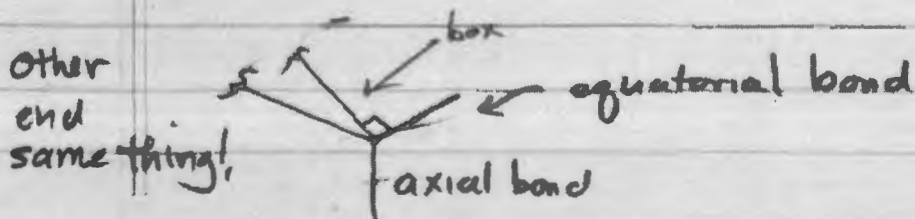
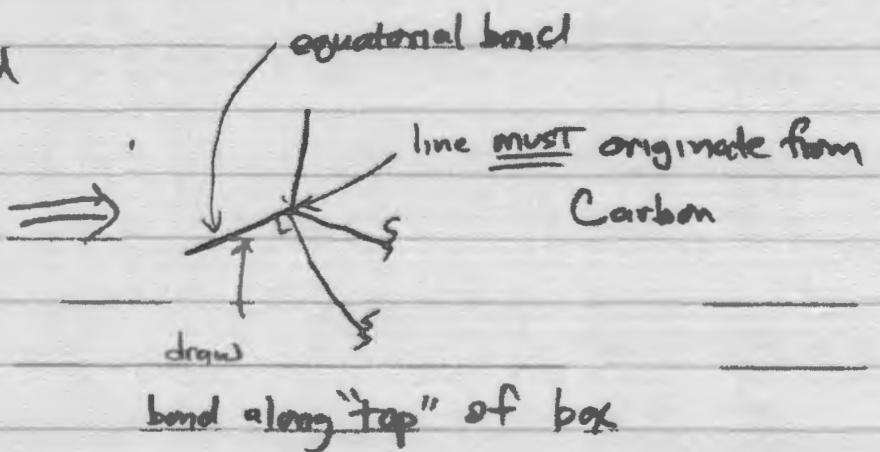
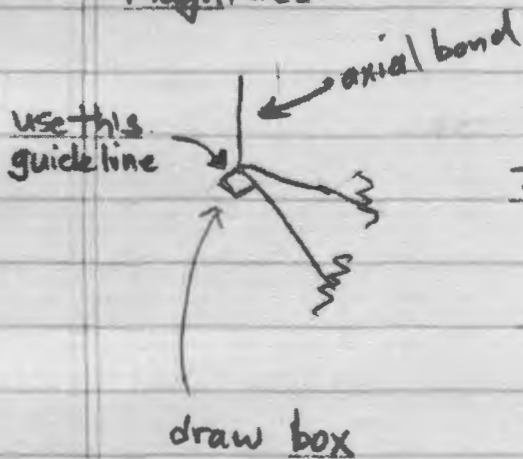
This trend continues for all of the other "pointing" positions



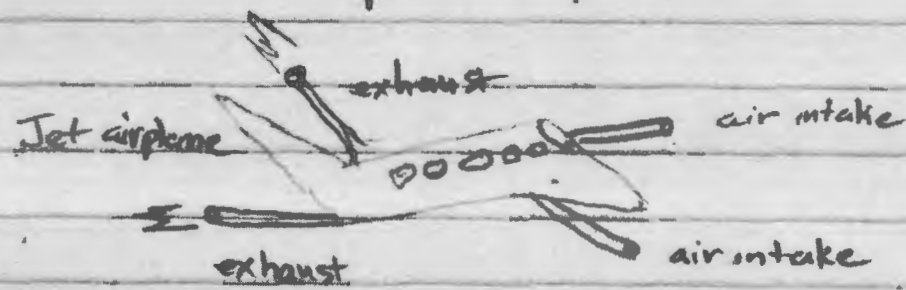
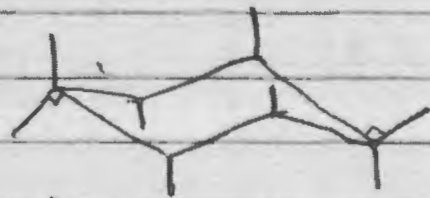
all six axial positions are drawn

How to draw equatorial positions for the end most C's.

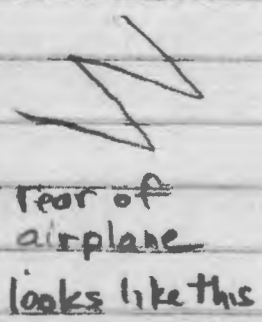
Magnified



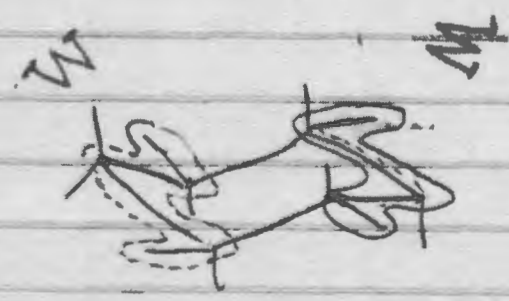
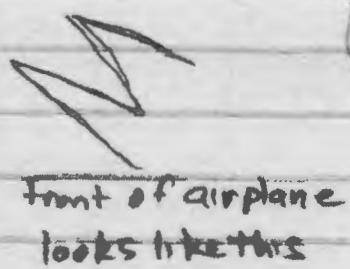
two of the six equatorial bonds are done



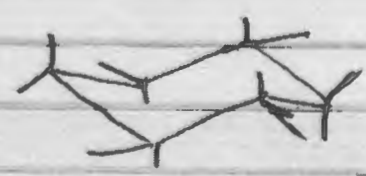
W



M



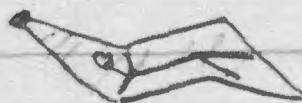
classified



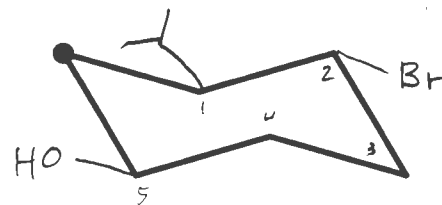
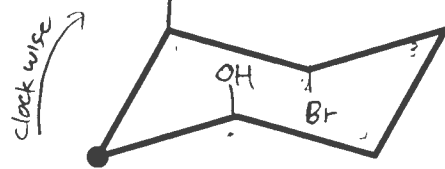
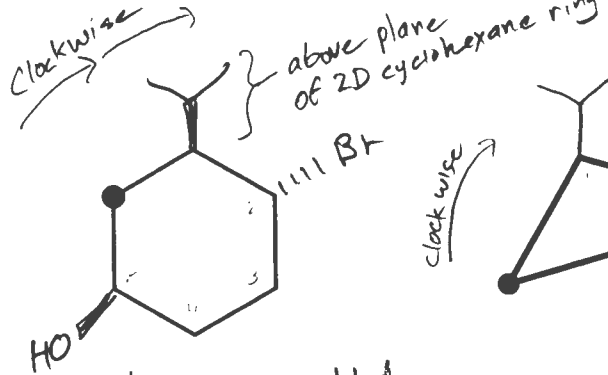
all 12 positions
 6 - axial
 (3 above plane of ring)
 (3 below " " ")
 6 equatorial
 (3 above plane of ring)
 (3 below plane of ring)



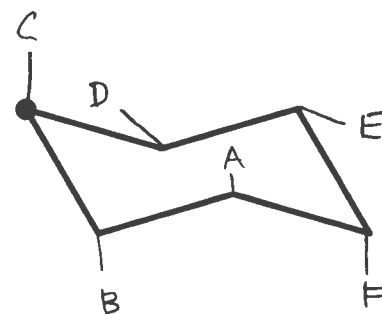
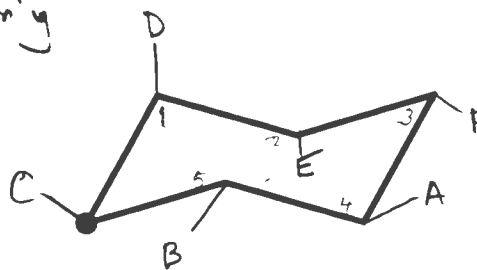
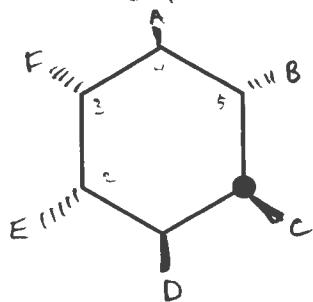
lying on
top plane
of ring



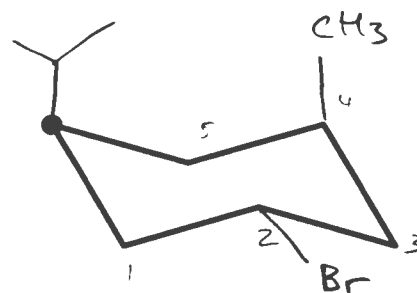
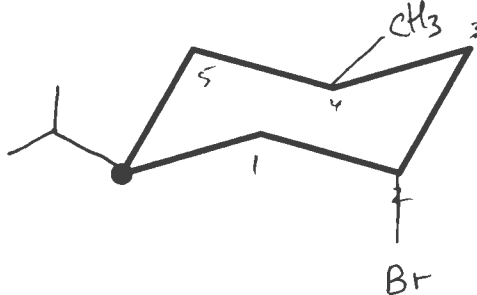
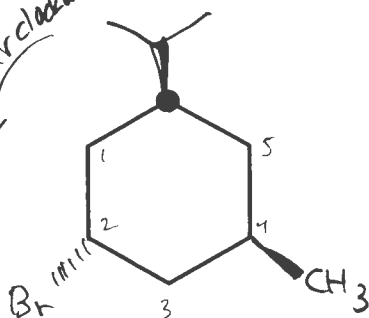
lying on top
plane of ring
in cyclohexane
chair conformation



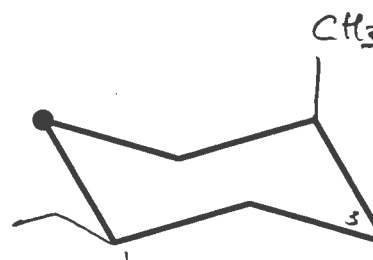
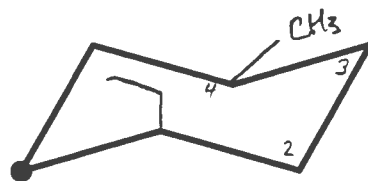
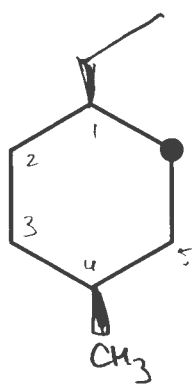
The numbers added to this structure are for reference only



counterclockwise



ccw



cis-1-ethyl-4-methylcyclohexane