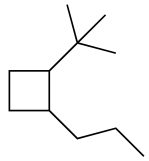
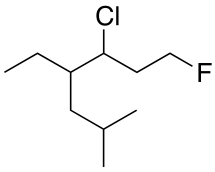
CEM 251, Problem Set 2: Chapter 2

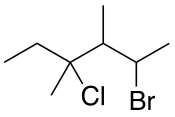
1. Provide IUPAC names for the following structures:



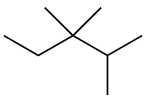
2-propyl-1-t-butylcyclobutane



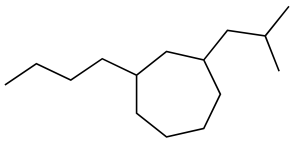
3-chloro-4-ethyl-1-fluoro-6-methylheptane



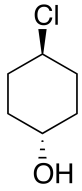
2-bromo-4-chloro-3,4-dimethylhexane



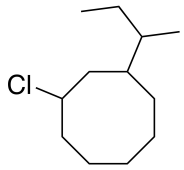
2,3,3-trimethylpentane



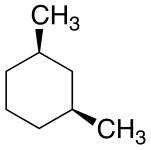
1-butyl-3-isobutyl-cycloheptane



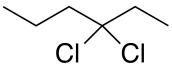
trans-1-chloro-4-hydroxy-cyclohexane



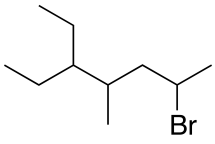
1-chloro-3-sec-butyl-cyclooctane



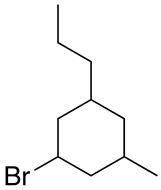
cis-1,3-dimethylcyclohexane



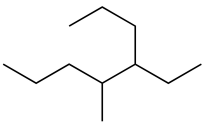
2,2-dichlorohexane



2-bromo-5-ethyl-4-methylheptane

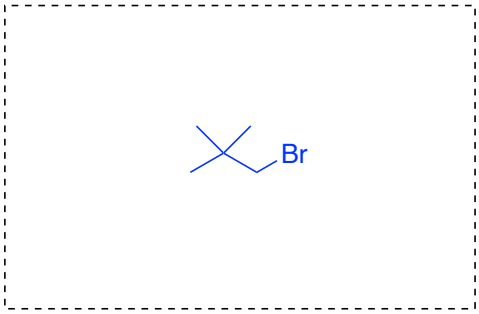


1-bromo-5-methyl-3-propylcyclohexane

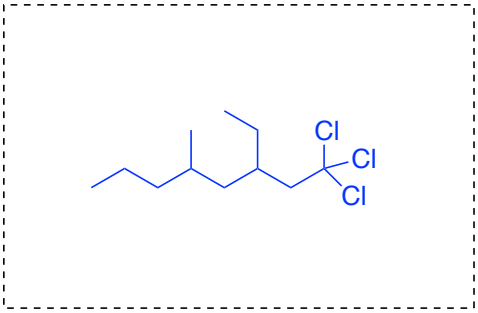


4-ethyl-5-methyloctane

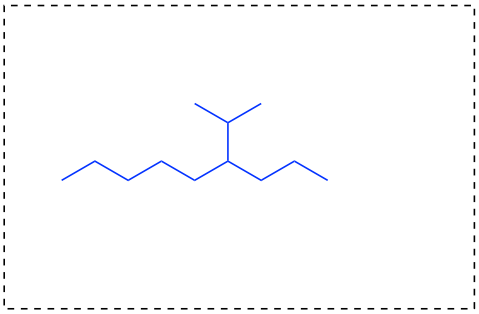
2. Provide the correct structures for the following names:



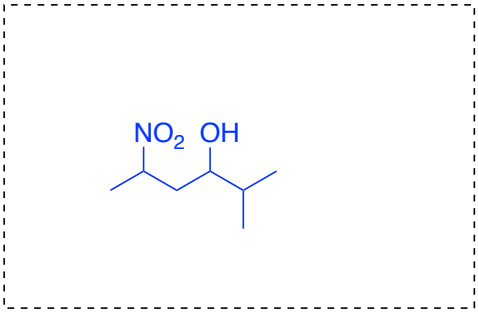
1-bromo-2,2-dimethylpropane



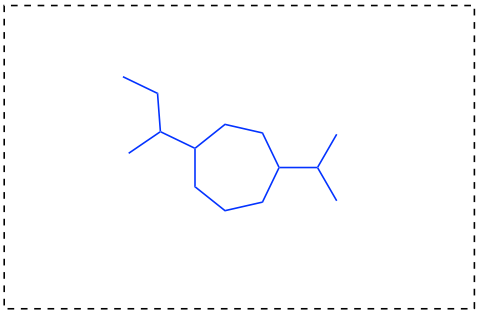
1,1,1-trichloro-3-ethyl-5-methyloctane



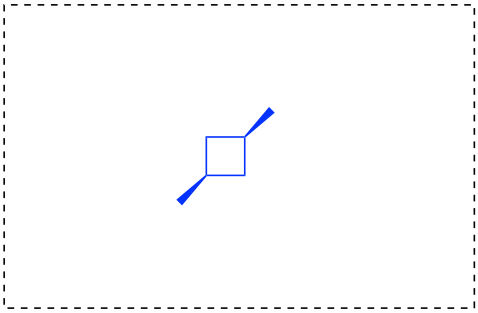
4-(1-methylethyl)nonane



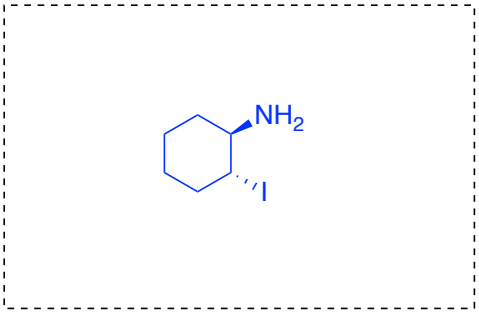
3-hydroxy-2-methyl-5-nitrohexane



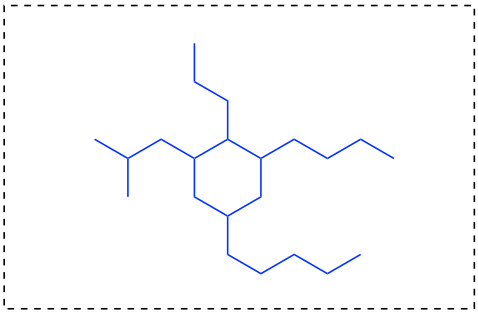
1-*sec*-butyl-4-isopropylcycloheptane



cis-1,3-dimethylcyclobutane

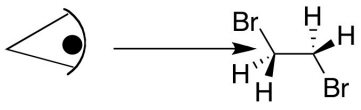


trans-1-amino-2-iodocyclohexane



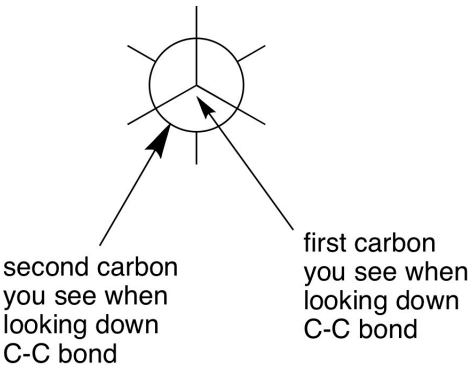
5-butyl-3-isobutyl-1-pentyl-4-propylcyclohexane

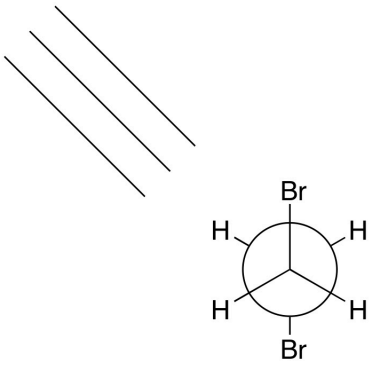
3. Draw the most stable Newman projection of 1,2-dibromoethane.



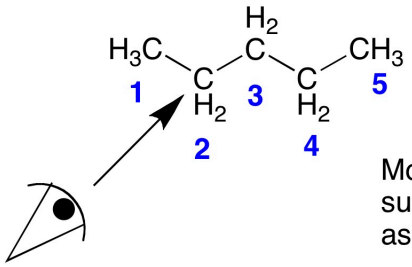
most stable conformer of the compound is staggered with the two largest atoms, bromine, as far apart as possible.

Remeber for Newman projections:

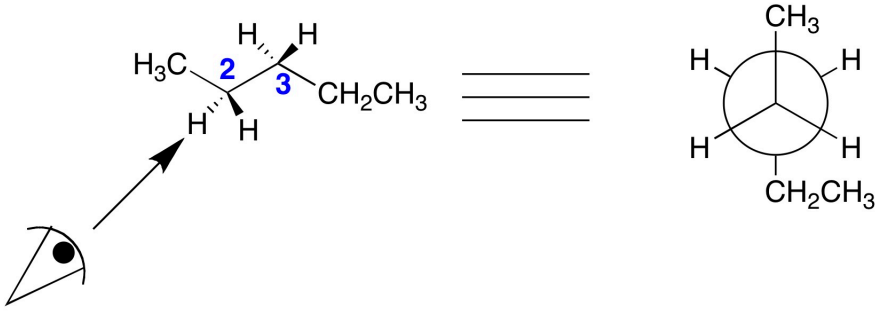




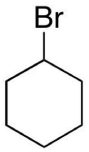
4. Draw the most stable Newman projection of pentane looking down the C2-C3 bond.

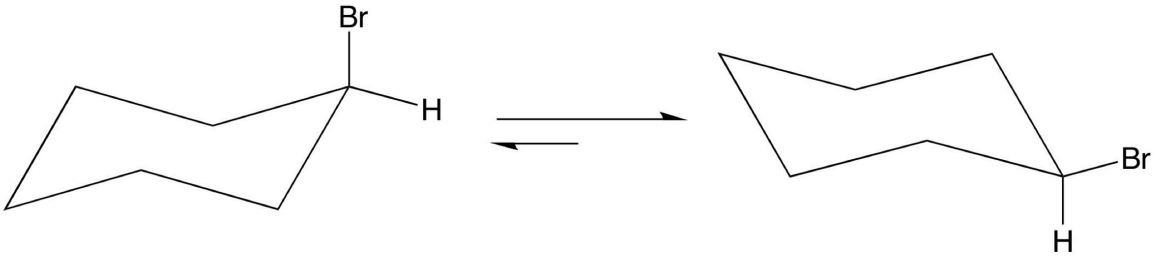


Most stable conformer is staggered, with the two alkyl substitutents (methyl on C_1 and Ethyl on C_2) as far apart as possible



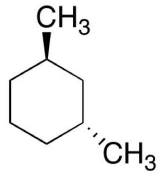
5. Draw the two chair conformers of 1-bromocyclohexane and indicate which one is more stable:

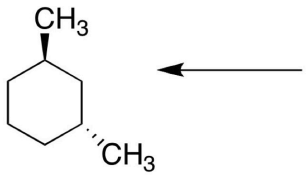




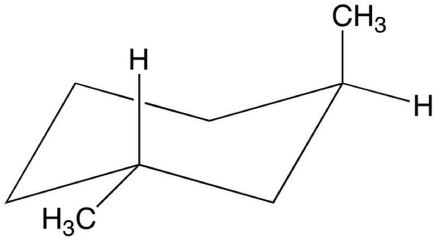
More stable; substituent is equatorial

6. Convert the following stick structure to the appropriate chair conformer(s).

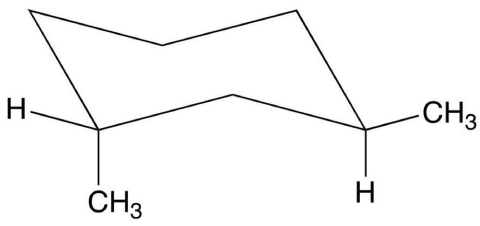




Methyls are trans!



OR



7. Draw the bond rotation energy diagram for 2-methylbutane (looking down the C2-C3 bond) with the Newman projections for each point