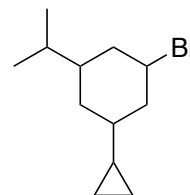
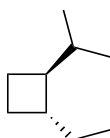
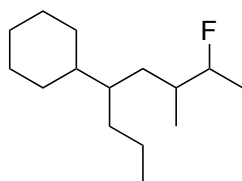
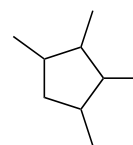
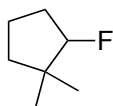
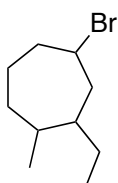
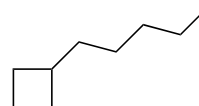
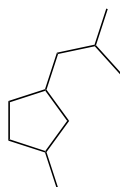
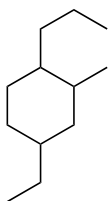


**Chemistry 233**  
**Chapter 4 Problem Set**

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1) Determine the systematic (IUPAC) name for each alkane compound below.



2) Draw the structure that corresponds to each name below.

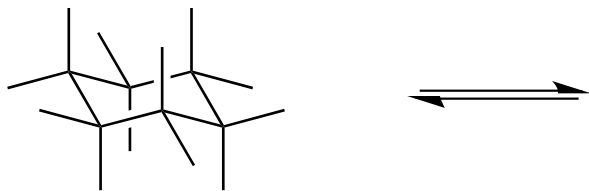
1-butyl-3-ethyl-2-isopropylcycloheptane

1,1,2,2-tetramethylcyclopropane

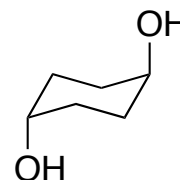
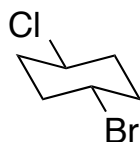
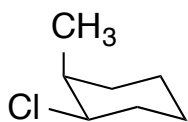
*cis*-1,3-diisopropylcyclohexane

*trans*-1-ethyl-2-methylcyclobutane

- 3) Draw the ring flipped conformation then label every axial and every equatorial position on both.



- 4) Label each of the following as *cis* or *trans*.



- 5) Draw both chair conformations for each of the following compounds. Circle the conformation that is more stable.

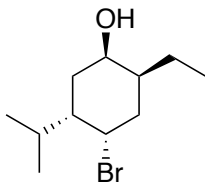
*cis*-1,2-dimethylcyclohexane

*trans*-1,2-dimethylcyclohexane

*cis*-1-bromo-3-methylcyclohexane

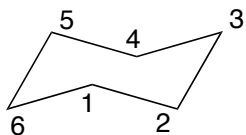
*trans*-1-isopropyl-3-methylcyclohexane

- 6) For the compound shown below: (a) draw both chair conformations, (b) determine which one is more stable, (c) determine the conformation that >95% of the molecules will be in at equilibrium.

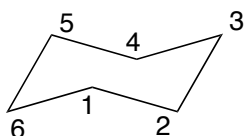


7) Using the chair below as a template, draw a structure that meets the following criteria.

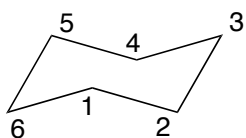
a) Axial methyl at C3, equatorial ethyl at C1



b) Equatorial methyl at C6 and axial OH at C4



c) Equatorial Cl groups at C1, C2, and C4



8) Identify the types of strain present (angle, torsional, or steric) in each of the following.

