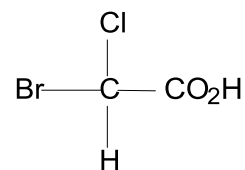


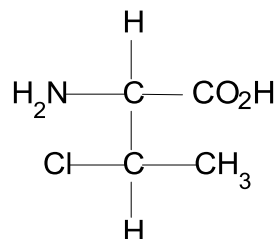
CHM 2210 - Ch 5 Homework - Use a molecular modeling kit if at all possible!

Draw all stereoisomers for each of the following molecules. Label each chirality center, and include R and S configurations with 3D detail. Include dashes and wedges, using dashes for H's on chiral centers where possible. Label each stereoisomer as enantiomeric, meso, or achiral. Show planes of symmetry where applicable.

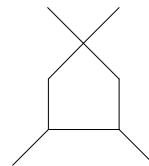
1. Bromochloroacetic acid (1 pt.)
Review lactic acid in Section 5.1 and alanine in Figure 5.9b.



2. 2-amino-3-chlorobutanoic acid (2 pts.)
Review Figure 5.10 in McMurry.



3. 1,1,3,4-tetramethylcyclopentane (3 pts.)
Review Example 5-5, but include trans isomers as well.



4. 5-ethyl-3,3-dimethylheptane (1 pt.)
Draw line bond structure and determine if there are chiral centers.

5. For prochiral molecule chloroacetone ($\text{CH}_3\text{COCH}_2\text{Cl}$), draw and label both faces separately (“re and si” are same as “top and bottom” faces). Also, draw (in 3D detail) the product of hydrogenation created from each face, and include R and S configurations. Review the prochirality section in the chapter 5 notes. (2 pts)

6. Suppose a racemic mixture of lactic acid (Figures 5.12 and 5.13) reacts with (R)-2-butanol to form sec-butyl lactates (as below), similar to the products in Example 5-6 and Problem 5.19. Two geometric isomers will be created. Draw both with 3D detail at their chiral centers (use dashes for H's on chiral centers). Are they enantiomers or diastereomers? Why? Also, what are the relative proportions of the two products? (1 pt)

