

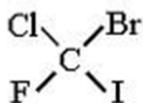
Procedure

In this lab you will make use of the molecular model kits help you visualize complicated organ molecules. You will use the 3-D structure of these models to help you classify the molecules and the chiral centers as well as draw the specified stereoisomers.

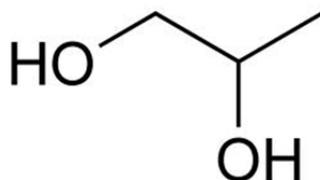
(NOTE: All molecules are drawn with 2-D shorthand. The 3-D structure of many of these is not easily derived based on 2-D drawings. We recommend the using molecular models when such is the case.)

Part 1: One Chiral Center Molecules. Determine if each molecule is chiral or achiral. Draw each enantiomer in 3-D and label each either R or S configuration. Hint: Use model kits to help.

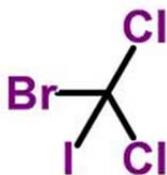
1.



2.



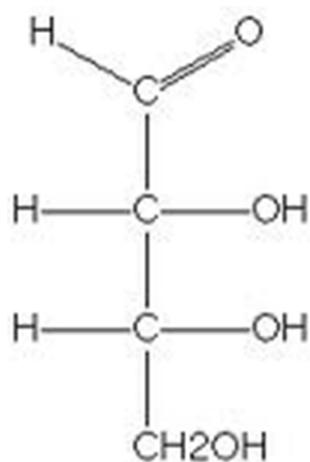
4.



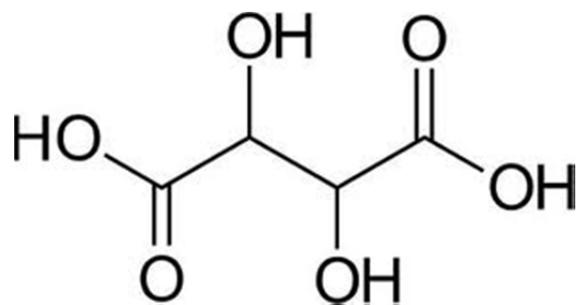
Part 2: 2 Chiral Center Molecules. Indicate chiral centers. Then draw every possible stereoisomer in 3-D and indicate whether each chiral center is R or S in each drawing. Then indicate which of the isomers are enantiomers by drawing a solid arrow between them. Finally,

indicate which stereoisomers are diastereomers by drawing dashed arrows between them. If the molecule is achiral and/or meso, indicate so.

6.

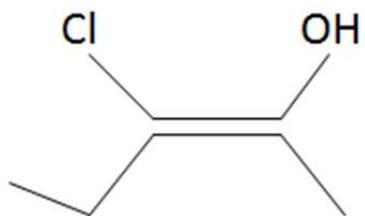


7.

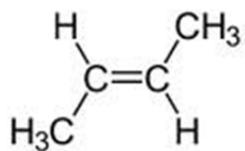


Part 3: Conformational Isomers. Identify whether each molecule is cis or trans. Draw its conformational isomer.

8.



9.

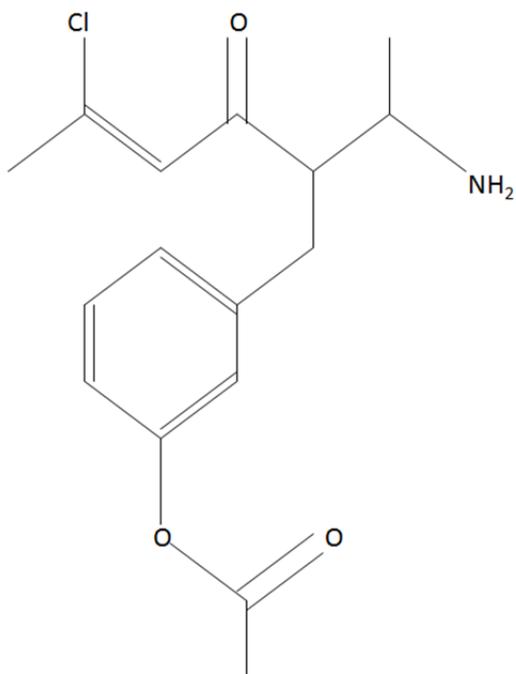


10.



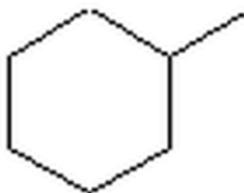
Challenge Problems:

1. Draw all stereoisomers of this molecule and label R, S chiral centers and cis or trans on any double bonds. (This would be best done without building the molecule)



Bonus problem:

2. Draw 4 3-D structures of this molecule. Two where it is chiral and two where it is achiral.



Post Lab Questions

1. What is Stereochemistry?

2. Draw and name an example of a stereoisomer? (not an example provided!)

3. What is Chirality?

4. What is Chiral center?

5. How do you determine Chirality in Molecules?

6. How are R and S stereocenters classified?