1. Assign cis/trans or E/Z configuration to the following isomers:
   a. 
   ![Image](image1)
   b. 
   ![Image](image2)
   c. 
   ![Image](image3)
   d. 
   ![Image](image4)

2. Identify each of the following as either chiral or chiral:
   a. 
   ![Image](image5)
   b. 
   ![Image](image6)
   c. 
   ![Image](image7)

3. Assign R/S configuration and draw the enantiomer for each of the following isomers:
   a. 
   ![Image](image8)
   b. 
   ![Image](image9)
   c. 
   ![Image](image10)
   d. 
   ![Image](image11)
   e. 
   ![Image](image12)
   f. 
   ![Image](image13)

4. Draw the following isomers:
   a. (S)-2-pentanol
   b. (2R,4S)-4-bromo-2-hexanamine

5. Are the following pairs identical, constitutional isomers, enantiomers or diastereomers?
   a. 

6. True or False
   a. Enantiomers can be separated by fractional distillation
   b. Diastereomers have opposite specific rotation
   c. Meso molecules are chiral with an internal plane of symmetry
   d. A racemic mixture is achiral

7. Which of the following are meso?
   a. 
   b. 
   c. 
   d. 

8. It has been observed that (R)-2-hexanol has a specific rotation of -60.0. Determine the specific rotation for the following:
   a. (S)-2-hexanol
   b. 50% (S)-2-hexanol and 50% (R)-2-hexanol
   c. 70% (S)-2-hexanol and 30% (R)-2-hexanol
   d. What is the composition of a mixture if the specific rotation is -48?