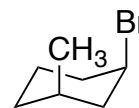
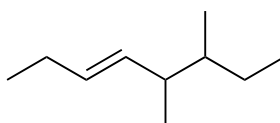
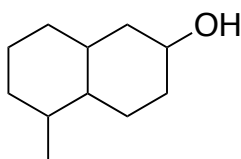
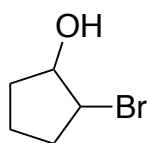
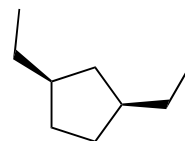
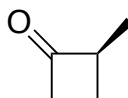
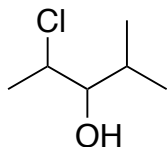
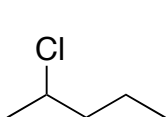


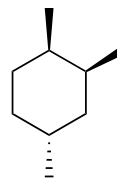
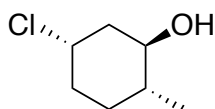
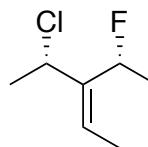
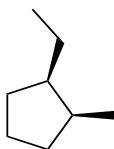
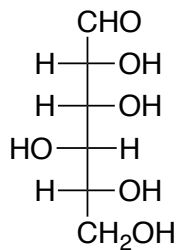
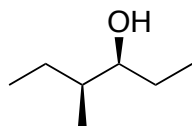
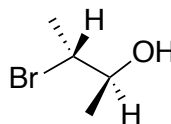
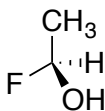
Chemistry 531
Stereochemistry Practice Problems

The majority of these problems are taken from sophomore organic chemistry. Some of the problems near the end of the set are a bit more advanced.

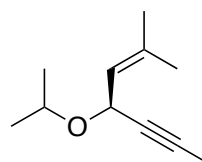
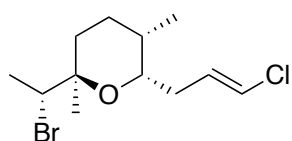
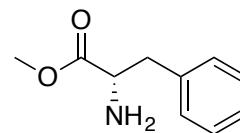
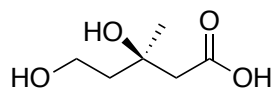
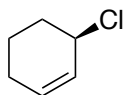
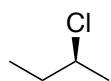
1) For each compound below, identify all chirality (asymmetric) centers with an asterisk (*).



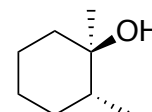
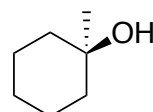
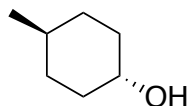
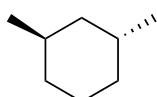
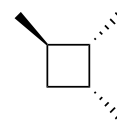
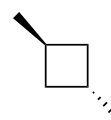
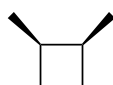
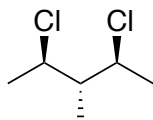
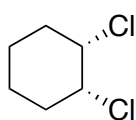
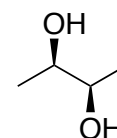
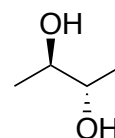
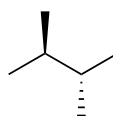
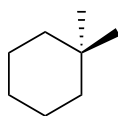
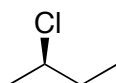
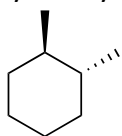
2) Draw the enantiomer of each compound below.



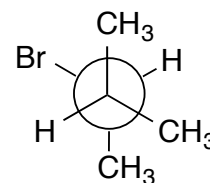
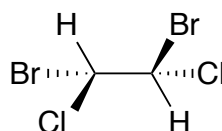
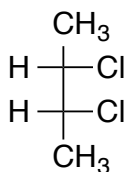
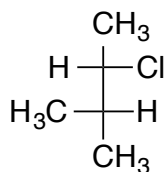
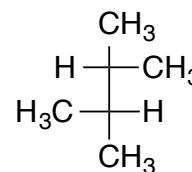
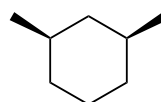
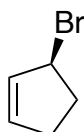
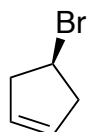
3) Assign an R/S configuration to each chiral center in the compounds below.



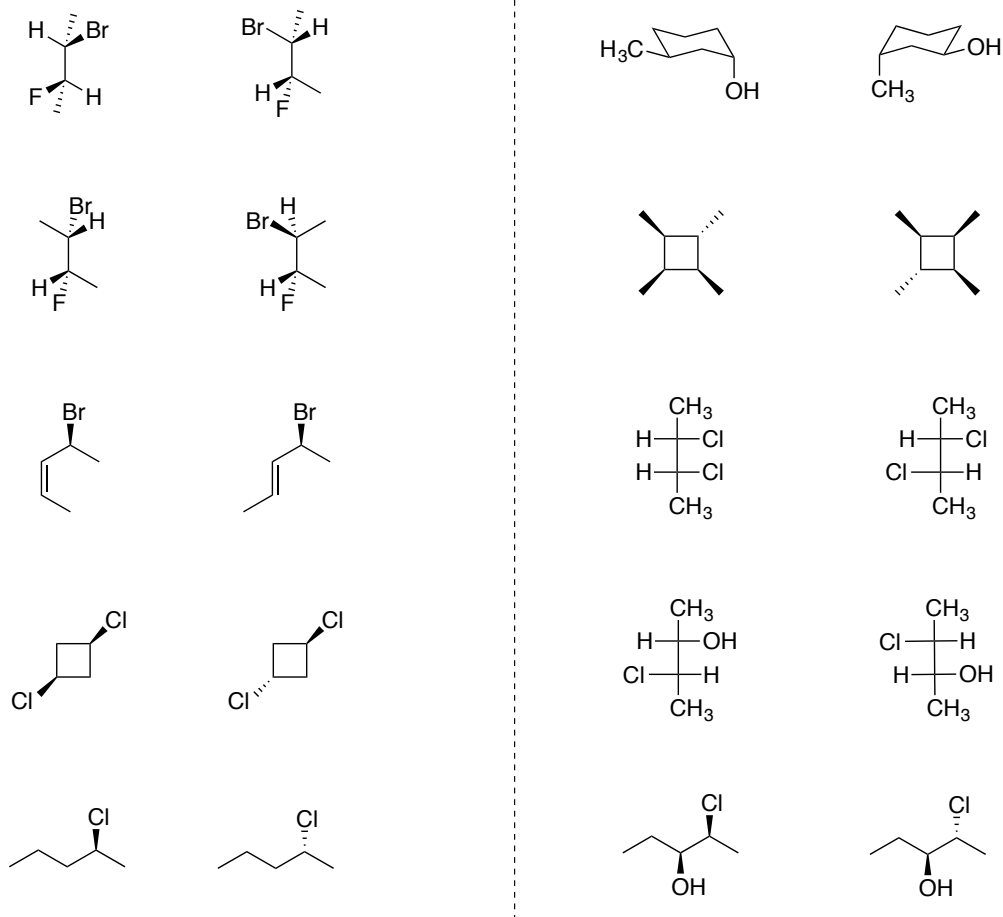
4) Identify all asymmetric centers in the molecules below and classify the molecule as chiral or achiral.



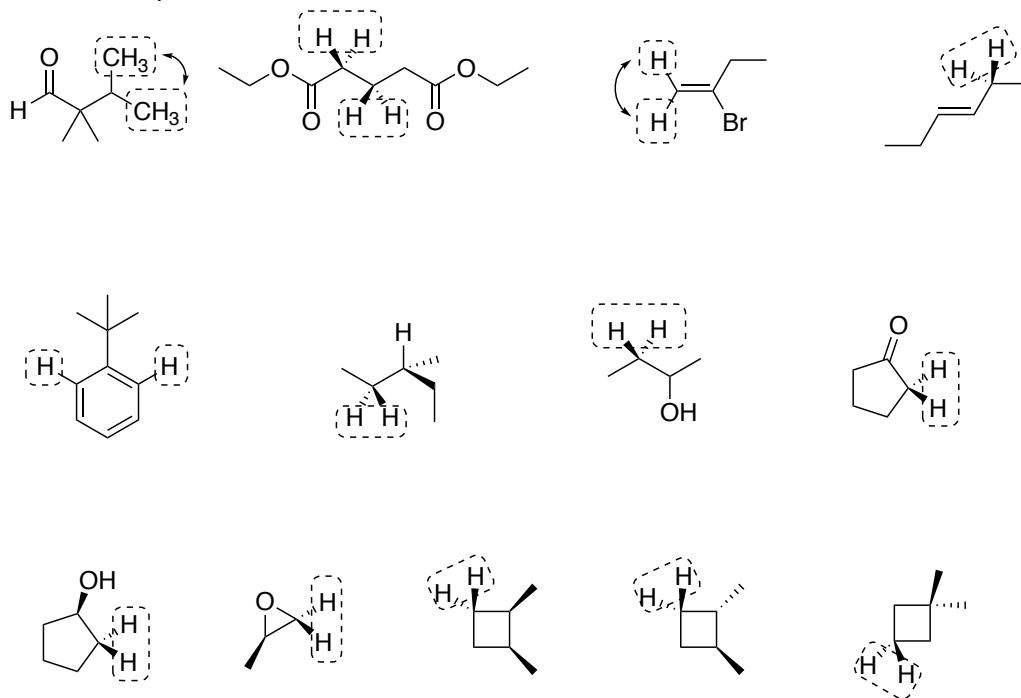
5) Label each of the following as chiral or achiral.



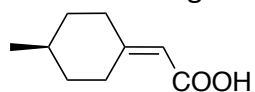
6) Indicate the relationship between each of the compound pairs below. Are they enantiomers, diastereomers, constitutional isomers, or identical compounds?



7) Identify the indicated protons or groups in each molecule as homotopic, enantiotopic, diastereotopic, or heterotopic.

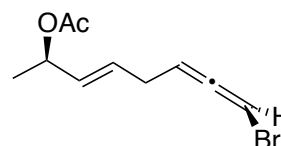
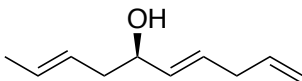
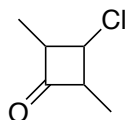


8) Is the following molecule chiral or achiral?



9) Pure taxol has a specific rotation of -120° . If a mixture of its two enantiomers has a specific rotation of $+24^\circ$, what percentage of each enantiomer is present.

10) In each compound below, identify the number of chiral centers, the number of stereocenters, and the number of stereogenic units.



11) Give each of the following R, S, M, or P designations as appropriate.

