

note - all problems can also be found here (link)

Link to answer

<https://bit.ly/39Or4N7>

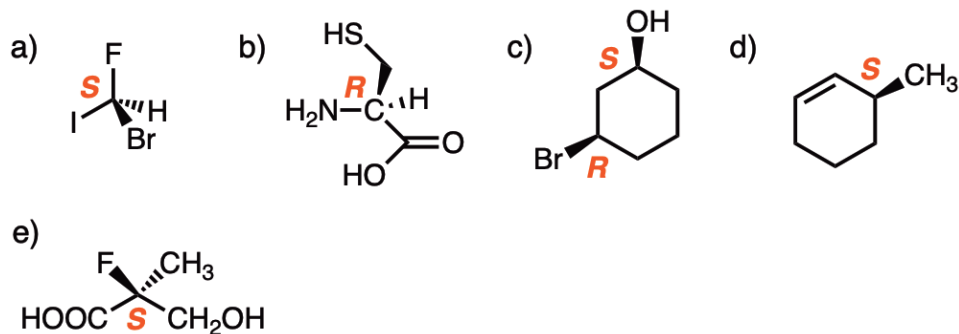


- <https://www.masterorganicchemistry.com>

Section B: Assigning R/S

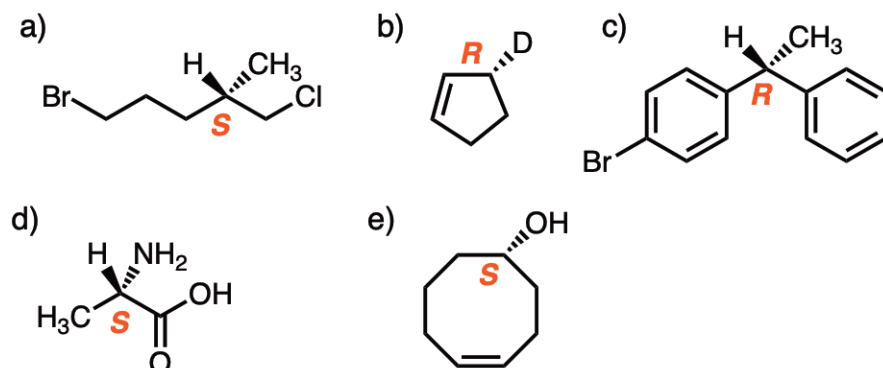
B-1 Assign all chiral centers as R or S

<https://bit.ly/3kNsSfq>



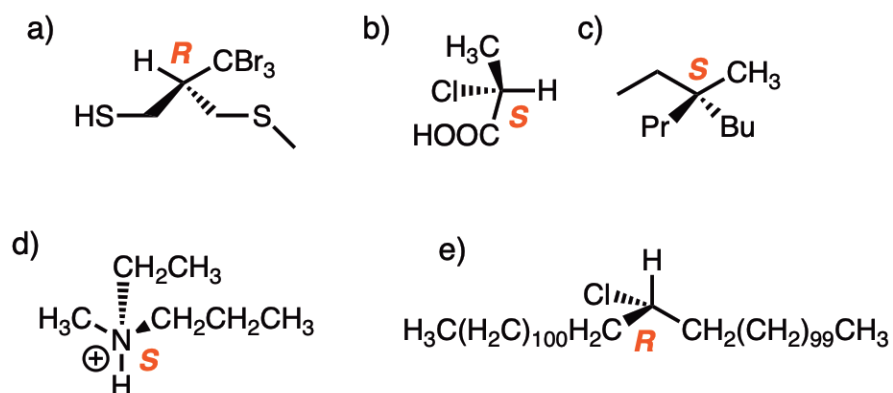
B-2 Assign all chiral centers as R or S

<https://bit.ly/3zTr9JU>

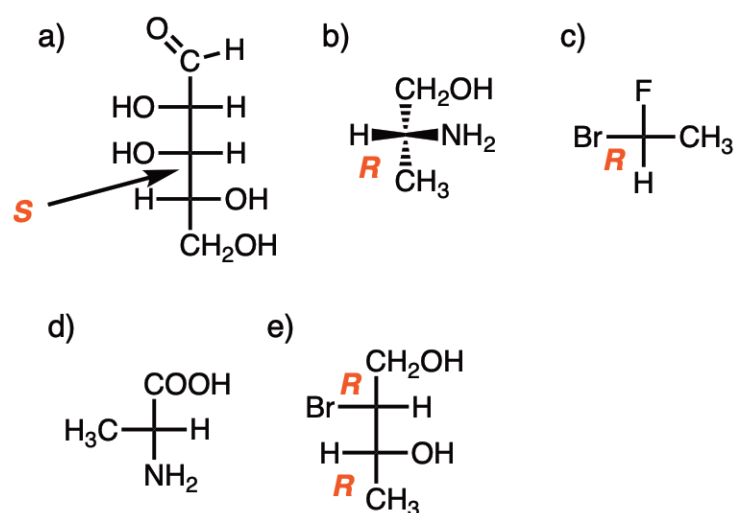


B-3 Assign R or S to all chiral centers

<https://bit.ly/3CR2cAP>



B-4 Assign R or S to the indicated chiral center in these Fischer projections

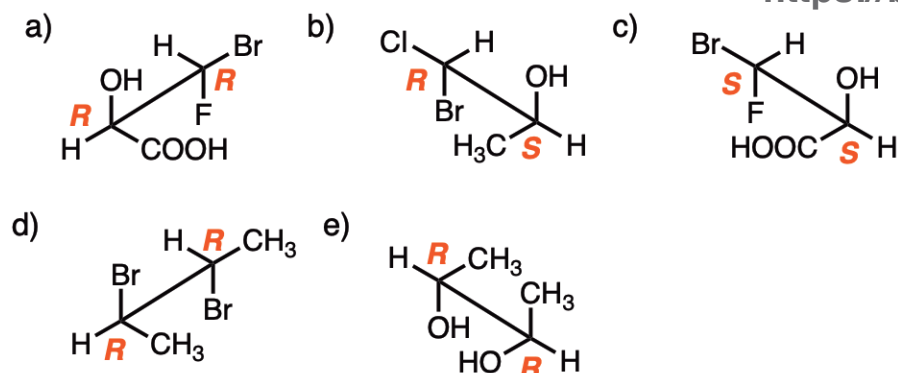


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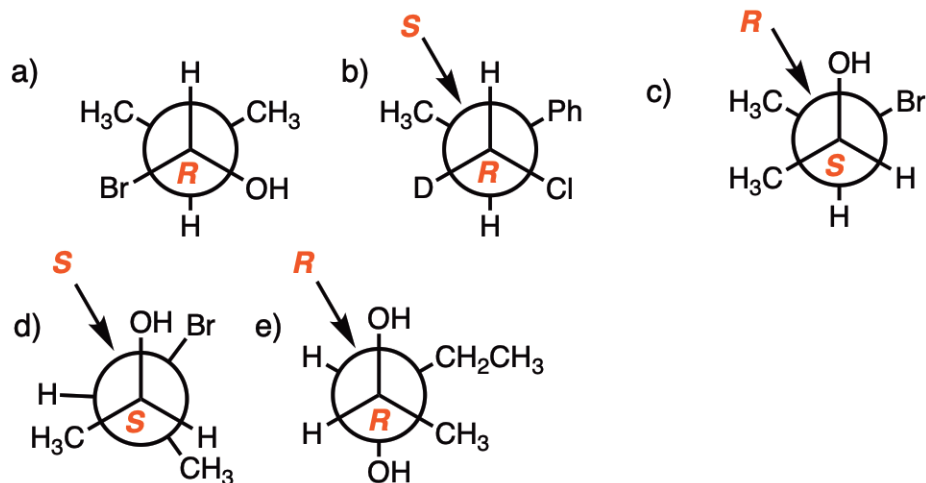
B-5 Assign R or S to the chiral centers in these Sawhorse projections

<https://bit.ly/3kOt1iV>



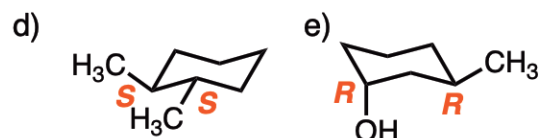
B-6 Assign R or S to the chiral centers in these Newman projections

<https://bit.ly/39JlueX>

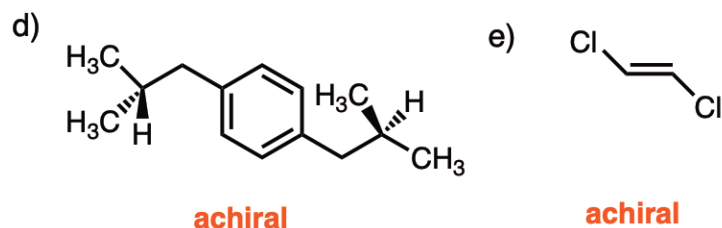
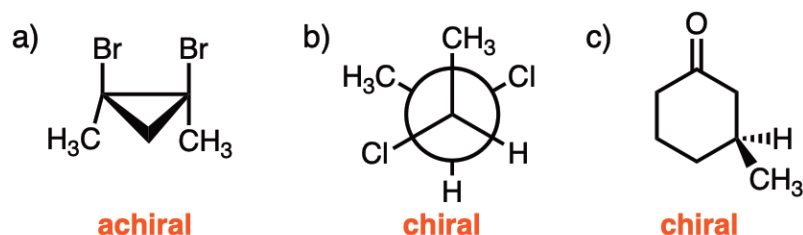


B-7 Assign R or S to the chiral centers in these cyclohexane chairs

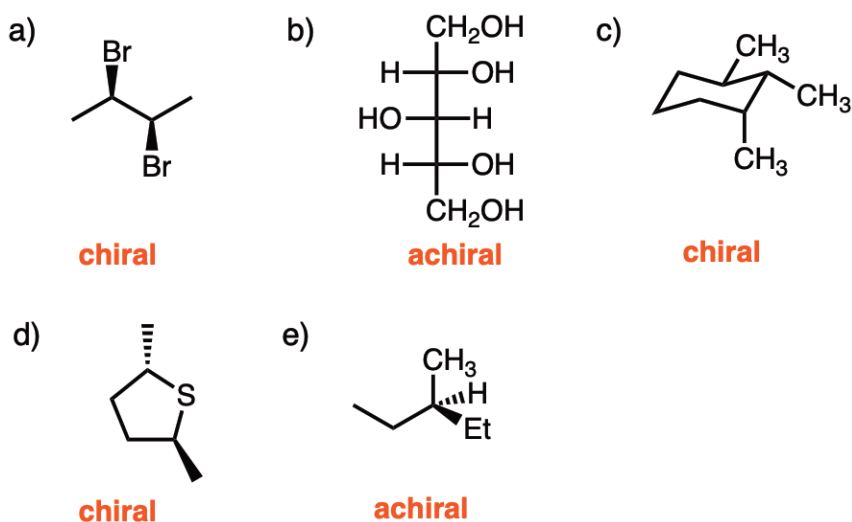
a)  b)  c)  <https://bit.ly/2XZQhSx>



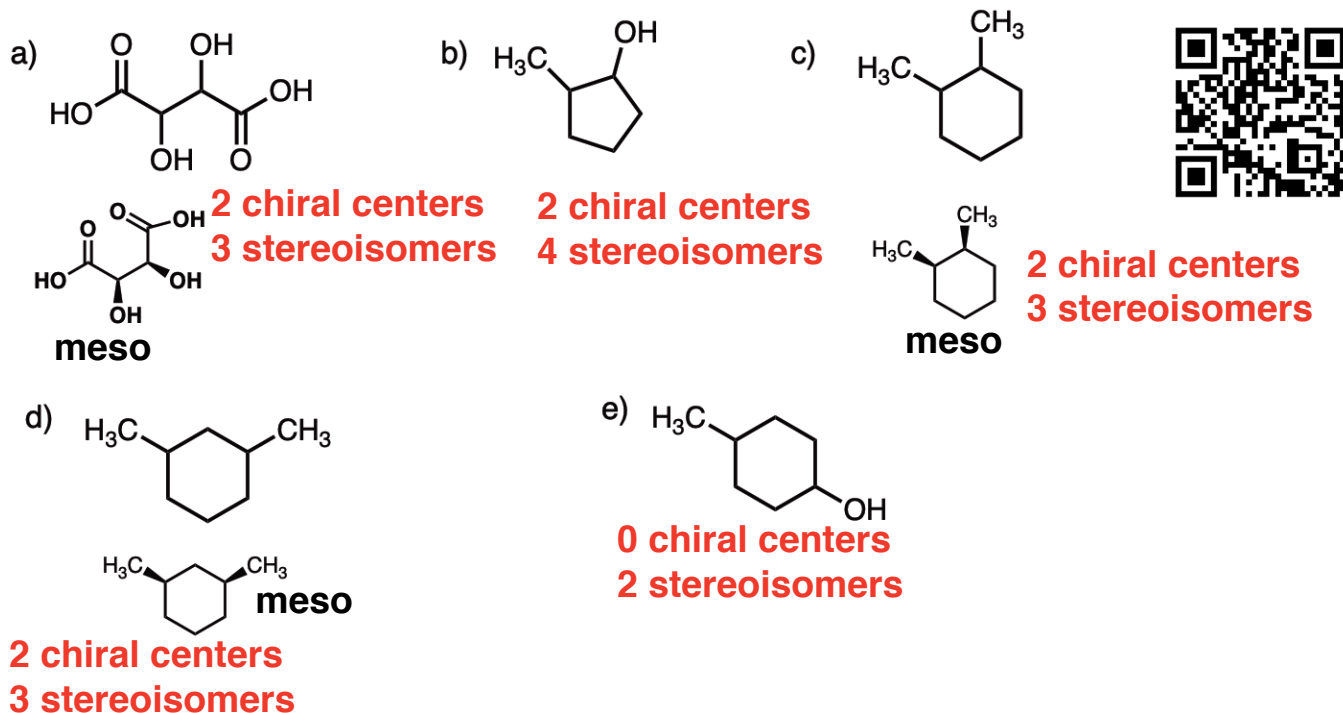
C-1 Are these chiral or achiral molecules? <https://bit.ly/3kQEZIA>



C-2 Another set. Chiral or achiral molecules? <https://bit.ly/39Ltigk>

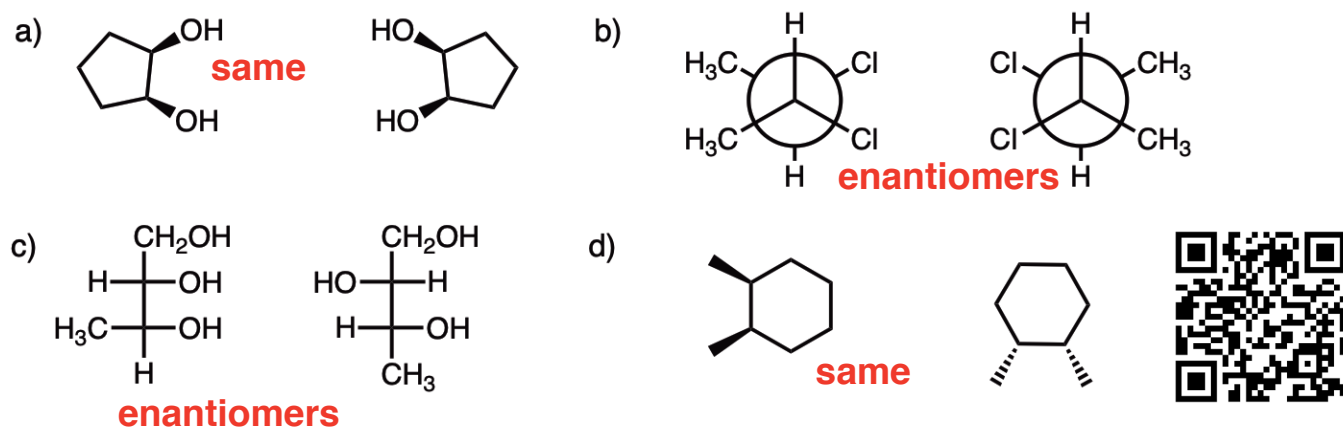


D-1 Decide if a molecule has chiral centers and if so, how many stereoisomers each has. If there is a meso compound, draw the structure using wedge/dash
<https://bit.ly/2WiLk6e>



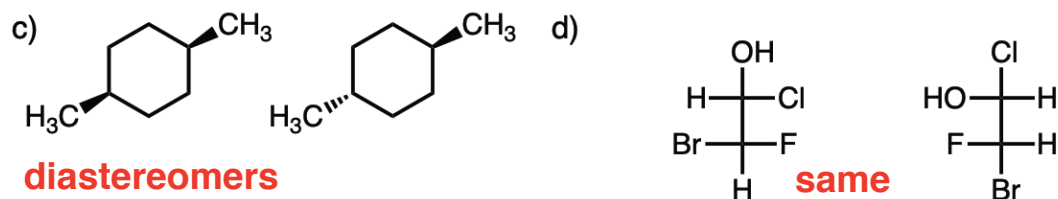
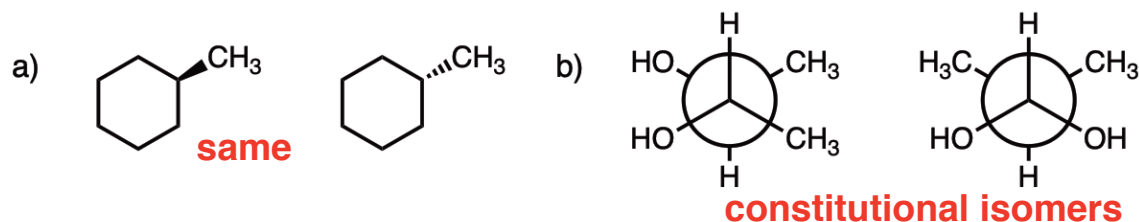
E-1 Decide if these molecules are enantiomers, diastereomers, the same, or constitutional isomers [*pssst - this is a very common class of exam problem!*]

<https://bit.ly/3uh7JO0>



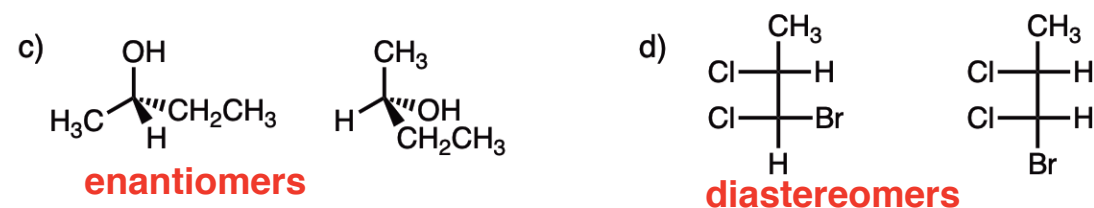
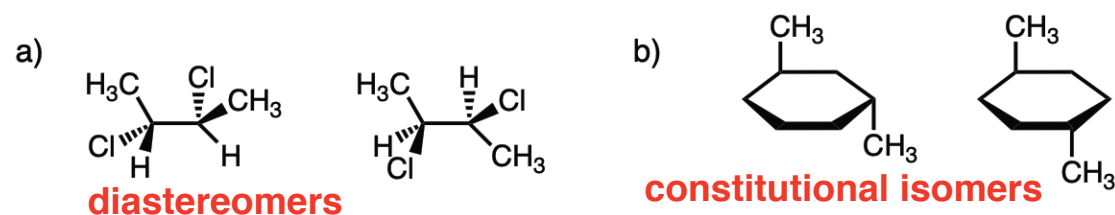
E-2 Enantiomers, diastereomers, the same, or constitutional isomers?

<https://bit.ly/3kMNggF>



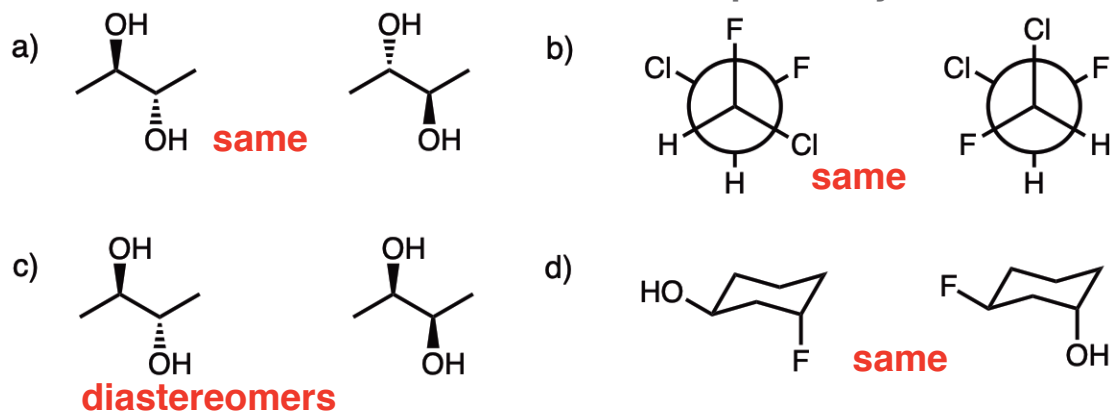
E-3 Enantiomers, diastereomers, the same, or constitutional isomers?

<https://bit.ly/3ul99a3>

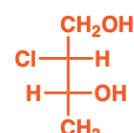
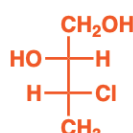
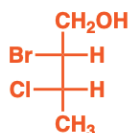
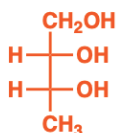
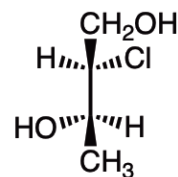
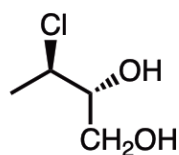
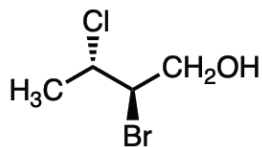
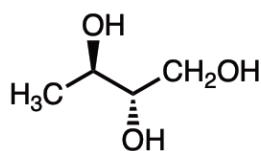


E-4 Enantiomers, diastereomers, the same, or constitutional isomers?

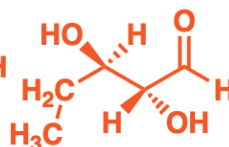
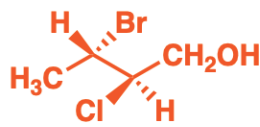
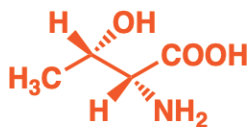
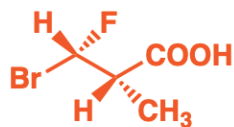
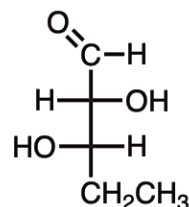
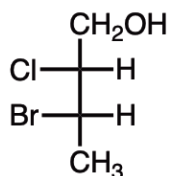
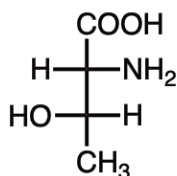
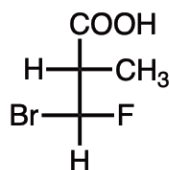
<https://bit.ly/3kLGZ58>



F-1 Convert each of these line drawings (“perspective” drawings) to a Fischer projection.
<https://bit.ly/39lOaoe>

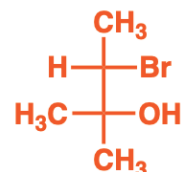
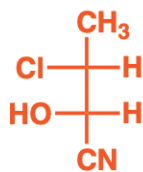
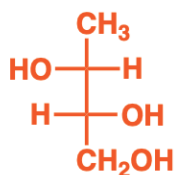
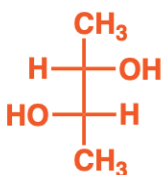
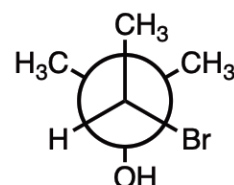
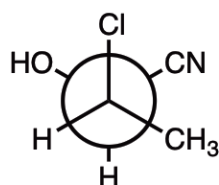
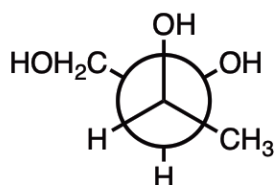
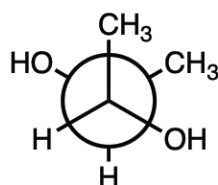


G-1 Convert each of these Fischer projections to line drawings (use the template below)
<https://bit.ly/3m0tEol>



H-1 Convert each of these Newman projections to a Fischer projection.

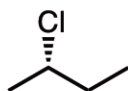
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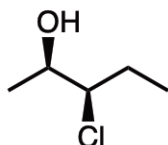
I-1 Given these names, draw the following molecules:

- (S)-2-Chlorobutane
- (2R,3R)-3-Chloropentan-2-ol
- (1R,2S)-2-Amino-1-phenylpropan-1-ol

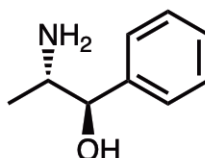
<https://bit.ly/3kM1Ox8>



(S)-2-Chlorobutane



(2R,3R)-3-Chloropentan-2-ol



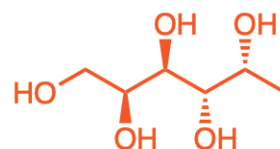
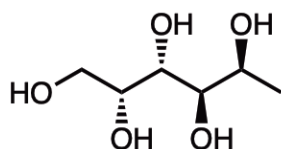
(1R, 2S)-2-amino-1-phenylpropan-1-ol



J-1 The structure below is one enantiomer of the molecule Fucitol.

Draw the enantiomer of this molecule, which also goes by the name D-Fuc-ol.

<https://bit.ly/3uxJw6l>

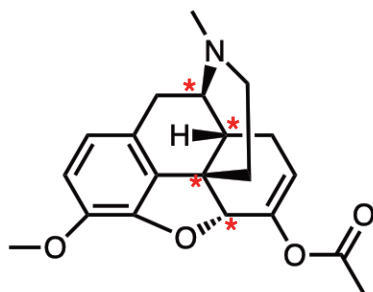


enantiomer

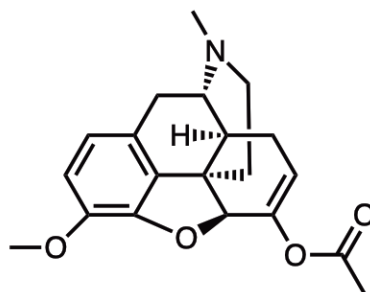


J-2 The structure below goes by the name Thebacon. How many chiral centers does Thebacon have? For bonus points draw the enantiomer using the template on the right.

<https://bit.ly/3ukz5CJ>



4 chiral centers

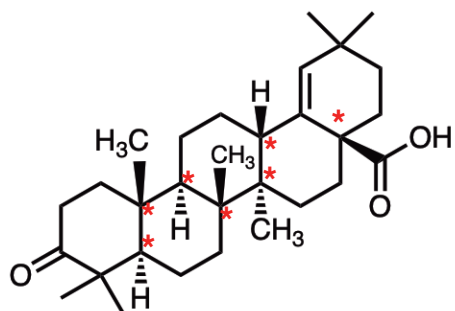


enantiomer

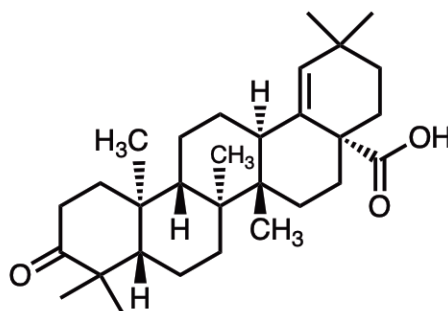


J-3 The molecule below is known as Moronic acid. How many chiral centers does it have? Try drawing the enantiomer using the template on the right.

<https://bit.ly/3zTtu7E>



6 chiral centers



enantiomer



K-1 Optical rotation questions.

<https://bit.ly/3ohsqbl>

a) If the specific rotation of (+)-Fucitol is $+50^\circ$, and the rotation of a sample of Fucitol is measured to be -10° , what is the per-cent composition of (+)-Fucitol and (–)-Fucitol in the sample?

60% (–)-Fucitol, 40% (+)-Fucitol



b) A 5.0 mg sample of Thebacon is dissolved in 1.0 mL of methanol and the solution placed in a cell with a 2.0 cm path length. The observed rotation was $+0.105^\circ$.

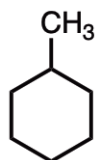
What is the $[\alpha]_D$ for Thebacon?

$+105^\circ$

L-1 [Assumes you have covered free-radical reactions of alkanes]

How many different monochlorinated isomers (including stereoisomers) are possible for each of these molecules?

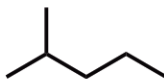
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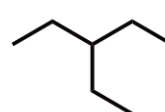
12



4



7



4

