

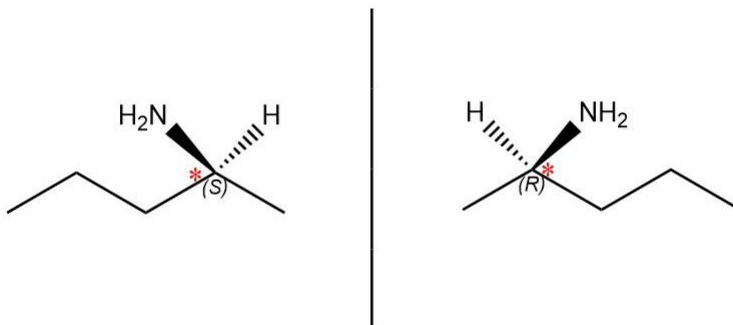
# Stereochemistry Assignment

Name  
Student Number  
Date

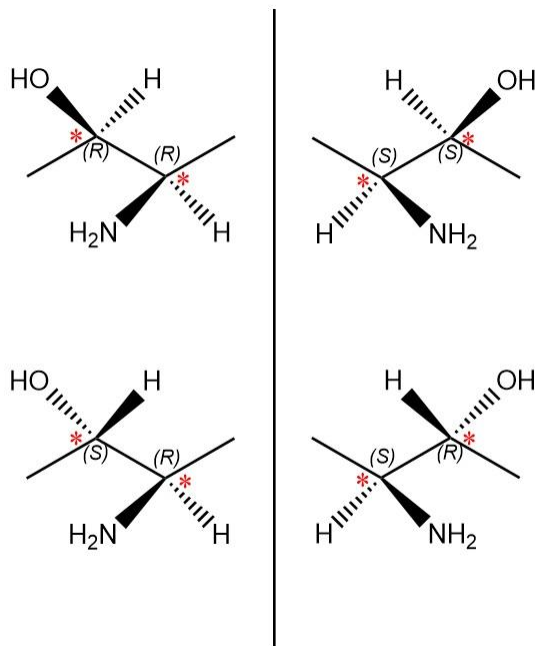
## Part 1 – Enantiomers and Diastereomers



- This molecule is a diastereomer because it cannot be superimposed onto its mirror image
- This molecule has 1 stereocenter, shown at \*

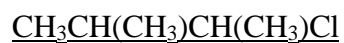
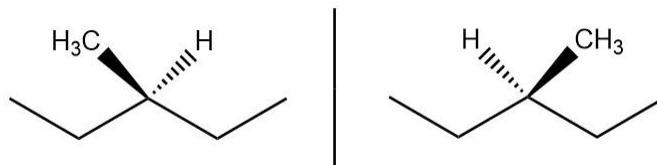


- This molecule is a diastereomer because it cannot be superimposed onto its mirror image
- This molecule has 2 stereocenters, shown at \*

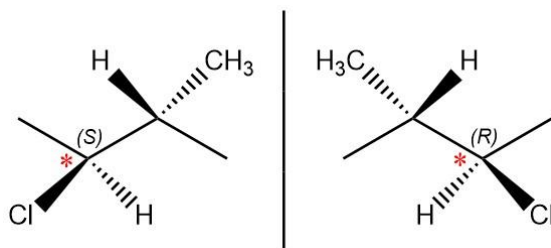




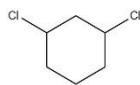
- This molecule is an enantiomer because it can be superimposed onto its mirror image
- This molecule has no stereocenters



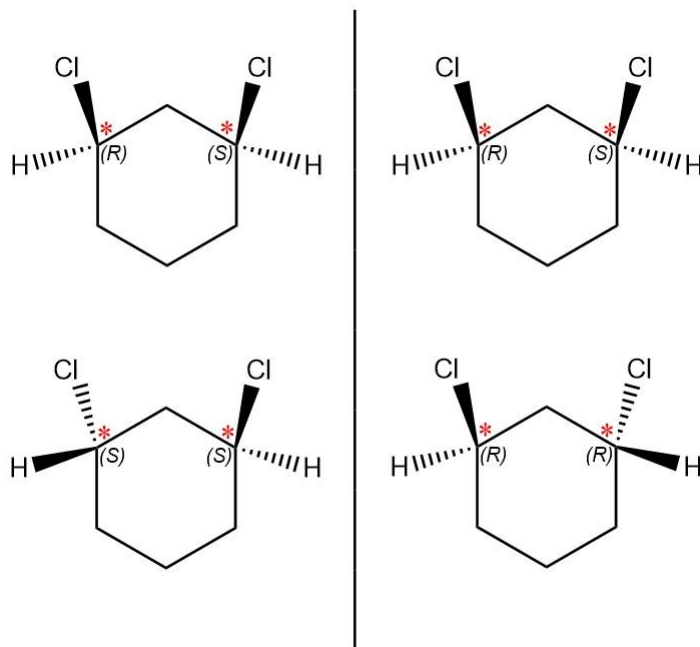
- This molecule is a diastereomer because it cannot be superimposed onto its mirror image
- This molecule has 1 stereocenter, shown at \*



### 1,3-dichlorocyclohexane

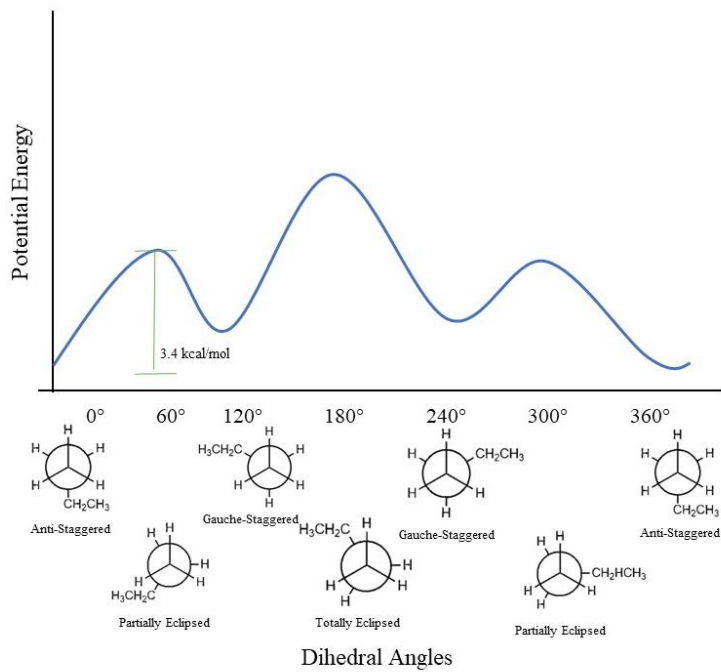


- This molecule is both a diastereomer and an enantiomer
  - o The top two show an enantiomer
  - o The bottom two show a diastereomer
- This molecule has 2 stereocenters, shown at \*



## Part 2 – Newman Projections

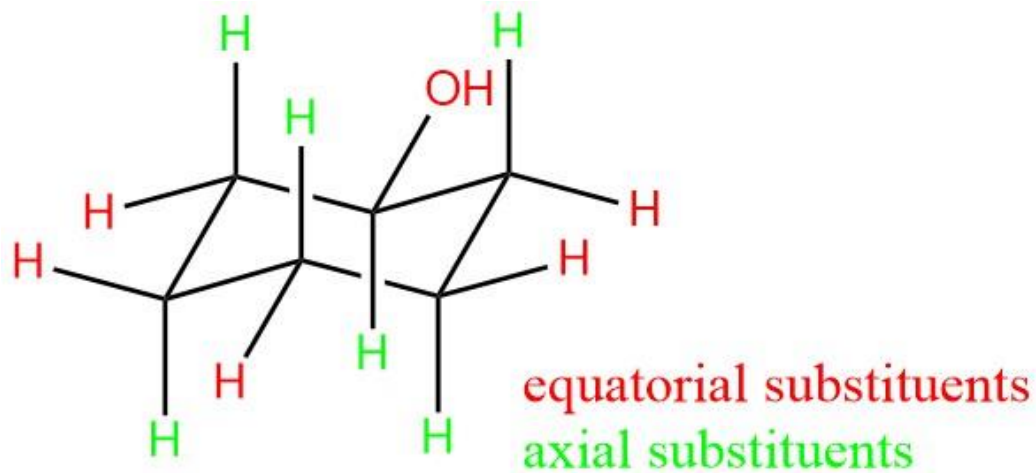
### Energy Diagram



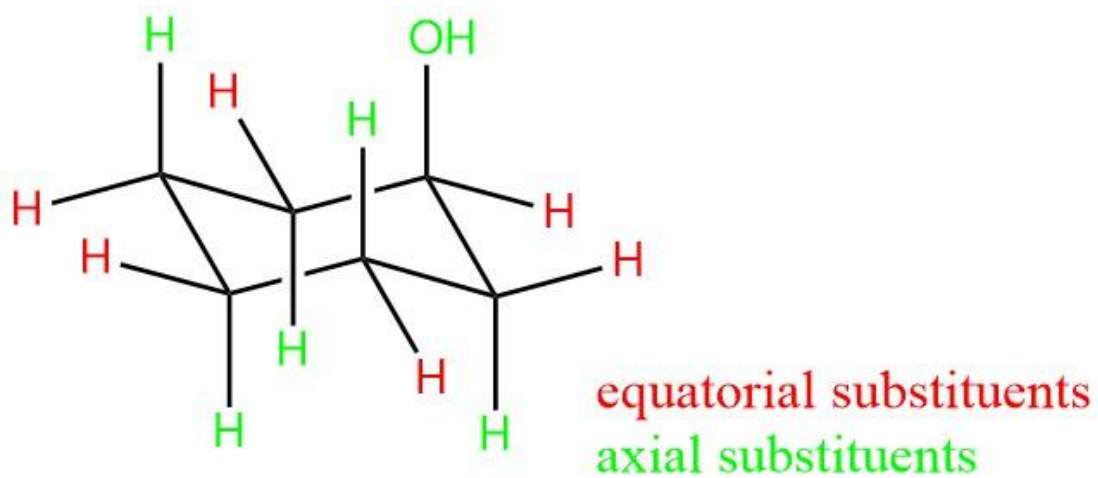
The change in energy between the two most stable conformations is  $0 \frac{\text{kcal}}{\text{mol}}$ , since the energy of both conformations is the same.

### Part 3 – Cyclohexanol

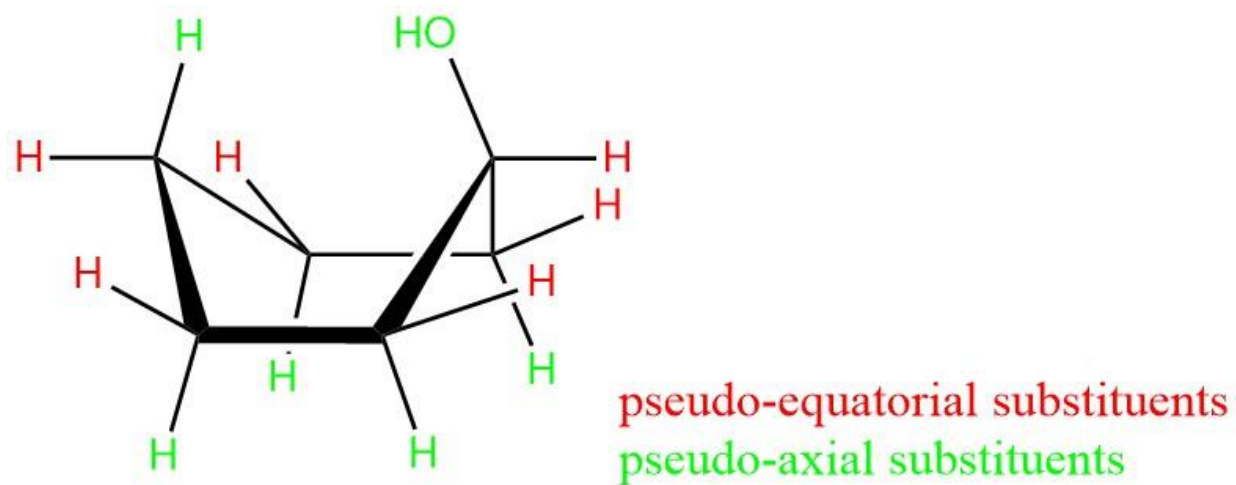
Equatorial Model of Cyclohexanol (most stable form)



Axial Model of Cyclohexanol

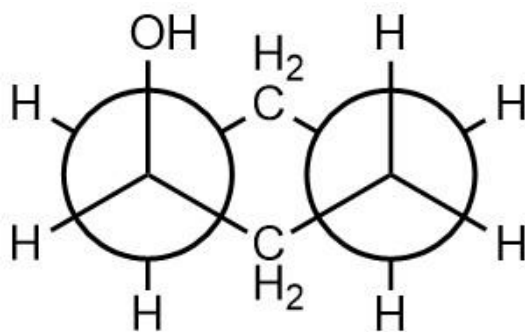


### Boat Form

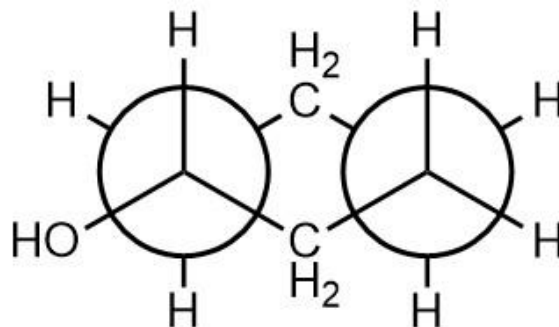


This model can be converted to another boat form, where the hydroxyl group is considered a pseudo-equatorial substituent.

### Newman Projection

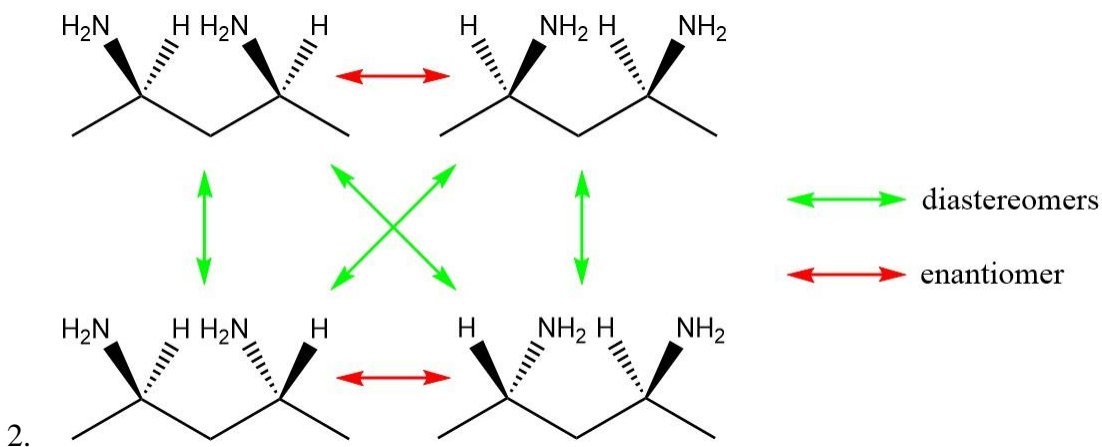
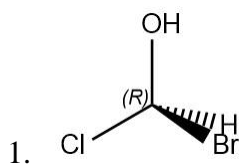


### Flipped Newman Projection

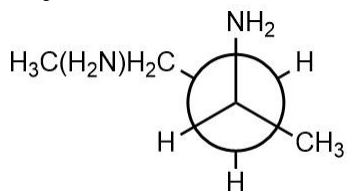


The Newman projections are identical, except for the placement of the hydroxyl functional group.

## Part 4 – Questions



Major conformer



3. There are 8 stereoisomers:

