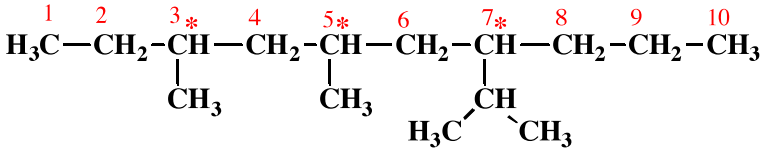
3. (4 pts each) Provide an acceptable IUPAC name for the following molecules. You can ignore R and S for this one.

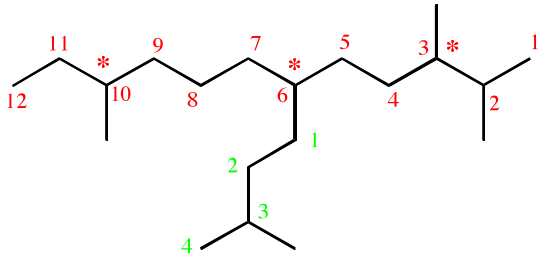
A)



(1 pt) How many stereoisomers are possible for this molecule? **2^3 =8**

7-isopropyl-3,5-dimethyldecane
3,5-dimethyl-7-(1-methylethyl)decane

B)

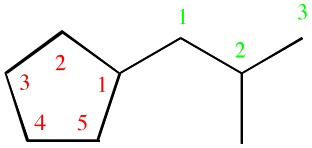


(1 pt) How many stereoisomers are possible for this molecule? **2^3 =8**

2,3,10-Trimethyl-6-(3-methylbutyl)dodecane
6-isopentyl-2,3,10-trimethyldodecane

C)

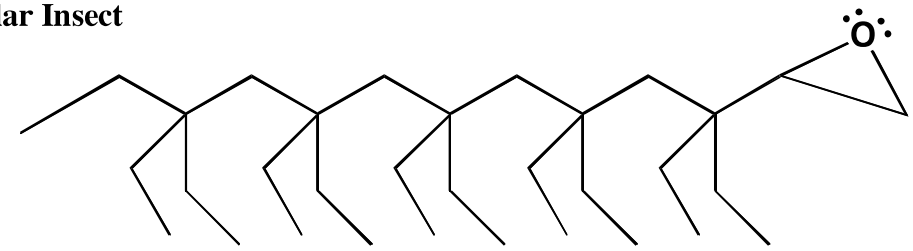
Note that when there is only one group on a cycloalkane you do not need to write the number 1.



(1 pt) How many stereoisomers are possible for this molecule? **1 (not chiral)**

(2-methylpropyl)cyclopentane
isobutylcyclopentane

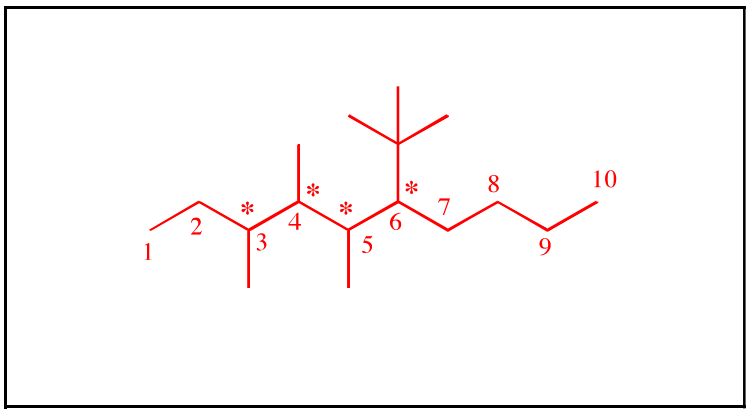
Molecular Insect



(You don't need to name this one!)

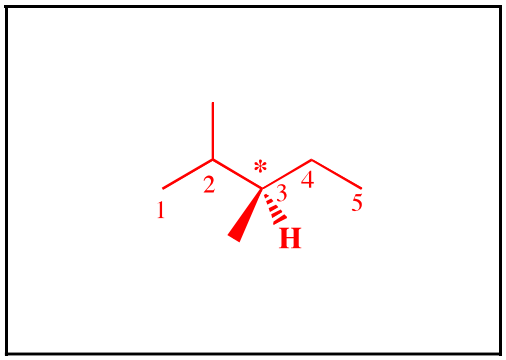
5. (3 or 6 pts each) For the following IUPAC names, draw the appropriate line angle drawing.

A) **6-*tert*-butyl-3,4,5-trimethyldecane** (you can ignore R and S for this one)

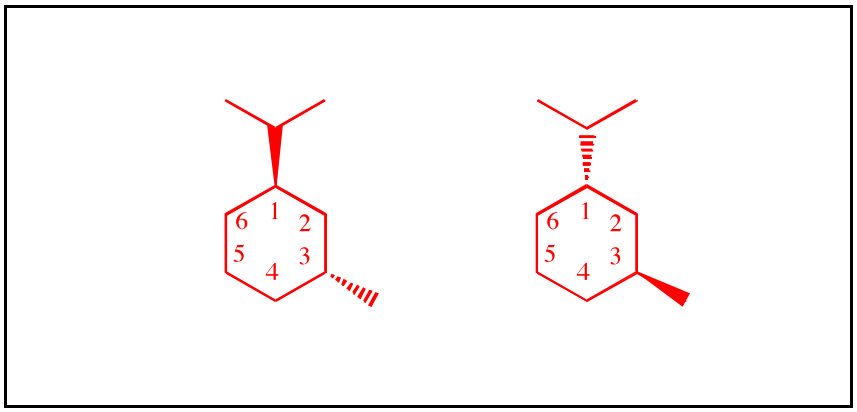


(1 pt) How many stereoisomers are possible for this molecule? **2^4 =16**

B) ***R*-2,3-dimethylpentane**

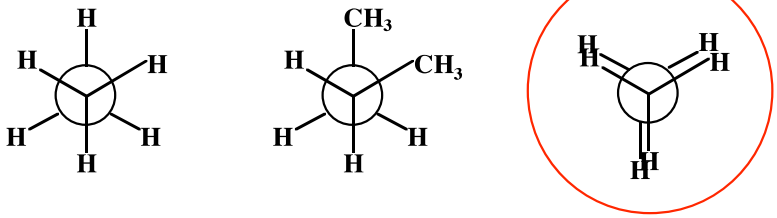


C) Draw all the different stereoisomers of ***trans*-1-isopropyl-3-methylcyclohexane**



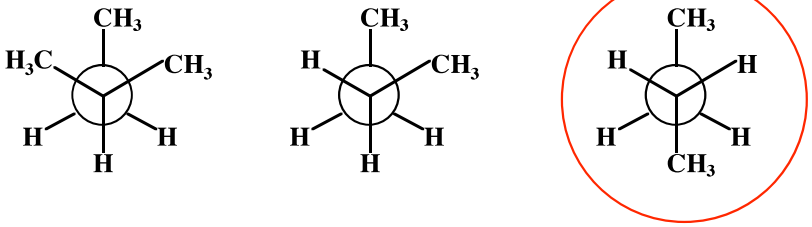
11. (13 pts) This page tests your understanding of important chemical terms. Make sure you read these carefully so that you do not make any silly mistakes.

A) Circle the structure with the MOST torsional strain.



The structure you circled is given the special name Eclipsed

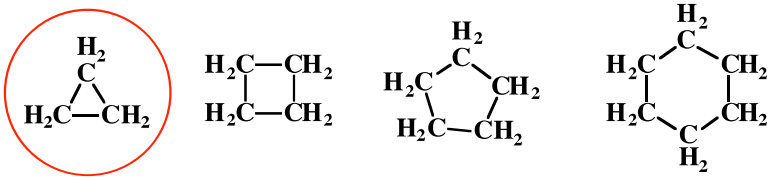
B) Circle the structure with the LEAST steric strain.



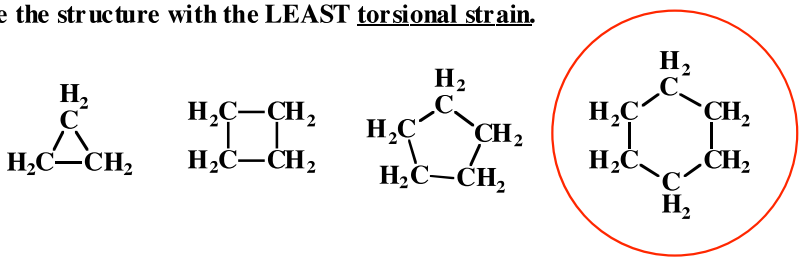
The structure you circled is given the two special names Staggered

and Anti .

C) Circle the structure with the MOST angle strain.

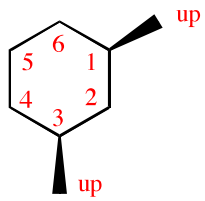


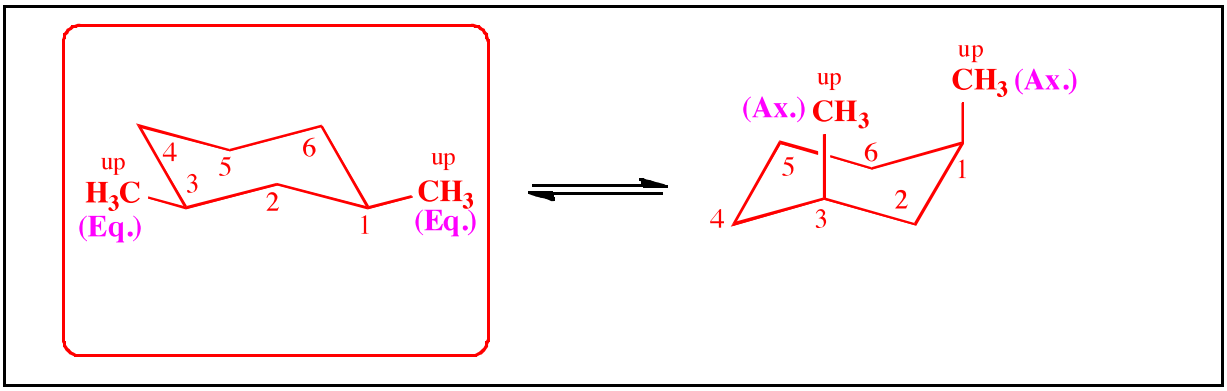
D) Circle the structure with the LEAST torsional strain.



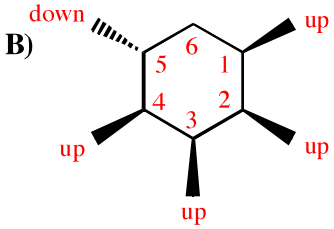
14. (7 pts each) For the following cyclohexane derivatives, draw the two alternative chair conformations. IF there is a difference in stability, draw a circle around the more stable conformation. If there is not difference in stability, do not circle either chair form.

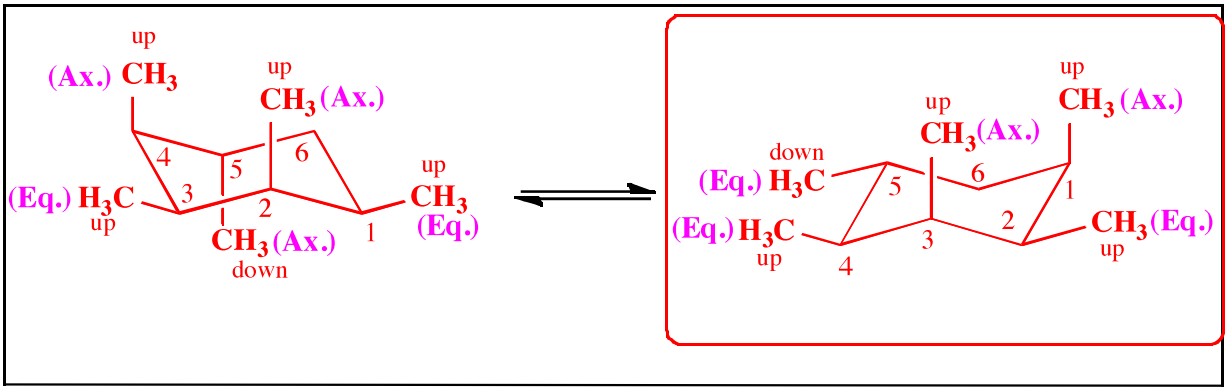
A)



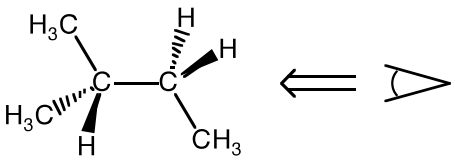


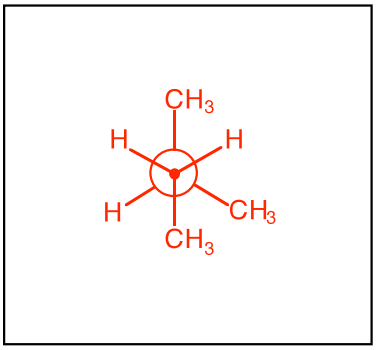
B)

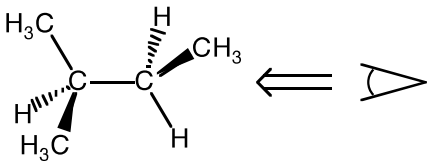


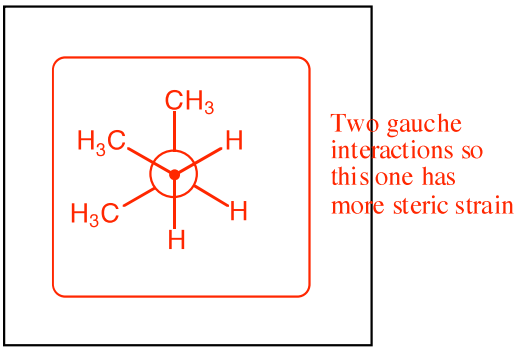


12. (14 pts) Draw a Newman projection for each alkane viewed down the bond as indicated. Circle the Newman projection you drew that represents a conformation with the MOST STERIC STRAIN.



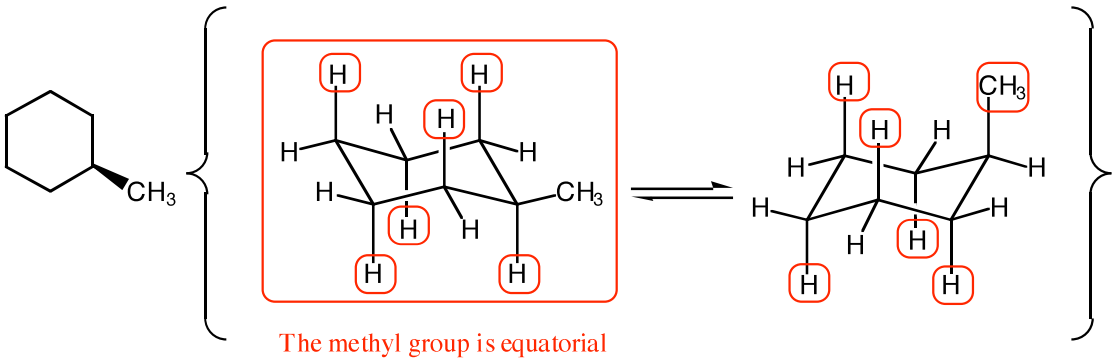






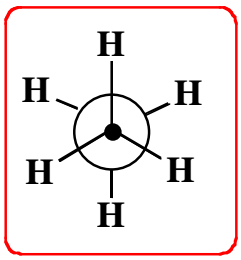
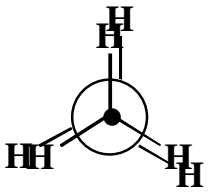
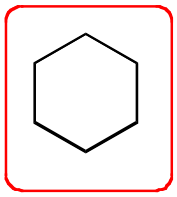
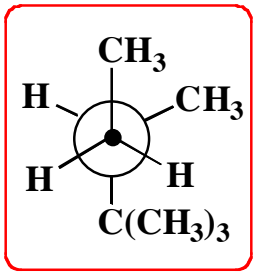
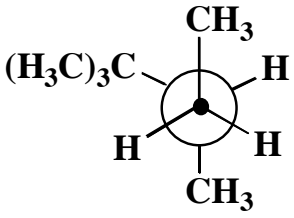
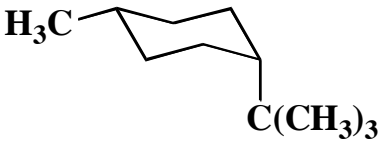
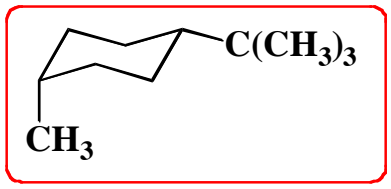
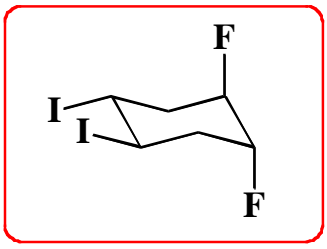
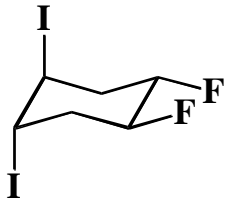
Two gauche interactions so this one has more steric strain

13. (6 pts) On the following chair structures: 1) **CIRCLE all of the AXIAL atoms or groups**. 2) **DRAW A BOX AROUND the more stable chair conformation**.



The methyl group is equatorial

13. (4 pts each) For each pair of molecules, circle the one that has LESS STRAIN, then put an "X" in the box under all the types of strain that explain(s) your answer:

		Angle strain	Torsional strain	Steric strain
	vs. 	☐	X	☐
	vs. 	X	X	☐
	vs. 	☐	☐	X
	vs. 	☐	☐	X
	vs. 	☐	☐	X