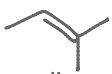
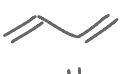
ACTIVITY #8 – ANSWERS TO SELECTED QUESTIONS & CHALLENGES

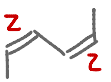
Q#31  &  are different

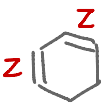
Q#32 E (trans) Z (cis)

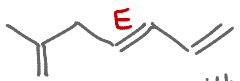
Q#34


neither


neither

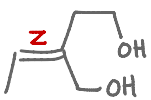


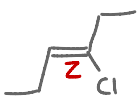


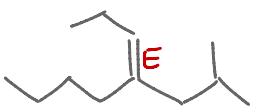


neither neither

Q#36







Q#37 ? = identical molecules seen from different perspectives
it is impossible to say if they are conformers

CONSTITUTIONAL	CONFORMERS	IDENTICAL
DIFFERENT FORMULAS	?	CONFORMERS
DIFFERENT FORMULAS	CONFIGURATION	?
CONSTITUTIONAL	CONFIGURATION	IDENTICAL

ACTIVITY #8 - ANSWERS cont'd (p.2)

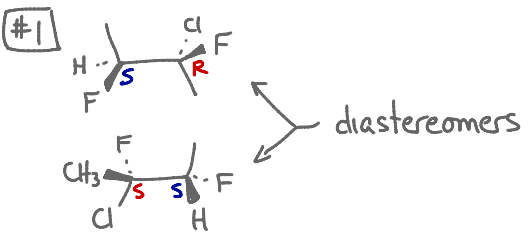
Q*2 No. Switching 2 atoms creates an isomer of CHClBrI that cannot be superimposed on the original.

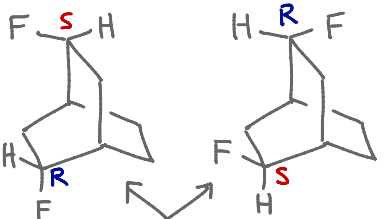
Q#3 b & d apply

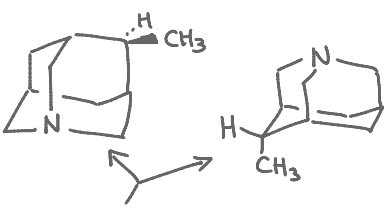
Q#11a A planar object always contains one internal mirror plane: the plane of the object itself

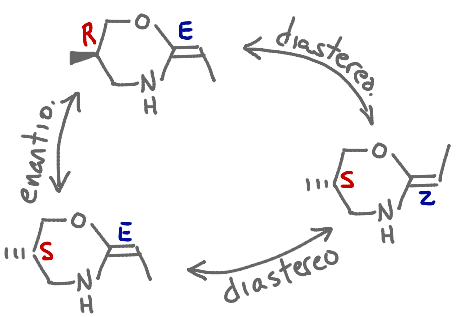
CHALLENGE PROBLEMS

#1





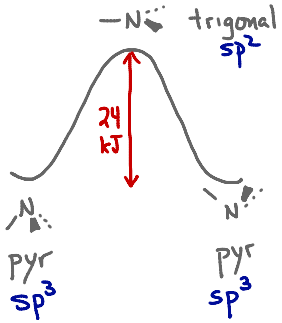




'c=c' keeps its configuration when you look at it in a mirror, C... does not, so E & Z alkenes are always diastereomers, never enantiomers

ACTIVITY #8 – ANSWERS cont'd (P.3)

#2



According to the table in Act. 6, a geometry that is "protected" by a 30 kJ/mol barrier has a ½-life of 10 nanosec at 25°C. NH_3's barrier is <30 so its ½-life is even shorter.

	start		middle		end
Bonding electrons	sp^3-1s	ΔPE<0 →	sp^2-1s	ΔPE>0 →	sp^3-1s
Lone pair electrons	sp^3	ΔPE>0 →	2p	ΔPE<0 →	sp^3

The energies of the lone pair electrons track with the molecule's energy, i.e., both rise & fall during inversion. This suggests that the 2 lone pair electrons go through a much larger ΔPE than the bonding electrons.

Quinine's N's **cannot invert**. Quinine contains **5** stereogenic atoms if we count the bridgehead N.