

STEREISOMERS**Experiment 14****Introduction:**

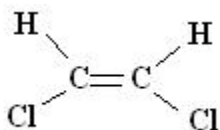
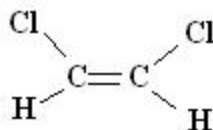
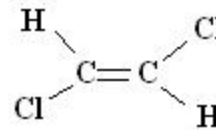
Work in pairs for this experiment. Check out a model set from my desk and build each molecule as directed below. Use the color chart below for each atom specified:

Black	carbon
Yellow	hydrogen
Green	chlorine
Orange	fluorine
Red	iodine

Use the long wooden sticks for C—C bonds and C—Cl bonds, and use the short sticks for C—H bonds. Use two springs for C—C double bonds.

A. Geometric Isomers:

1. Construct a model of $C_2H_4Cl_2$ corresponding to structures A, B and C as shown below:

**(A)****(B)****(C)**

2. Which of the models above are superimposable on one another and which are not?
3. Without removing or breaking any bonds, try and twist the superimposable structures so that they have the same arrangement as one another. What prevents this from occurring?

- How could the structures above be interconverted by breaking only one bond?
- What stereochemical term applies to the relationship between the two structures above?
- Name each structure with the correct IUPAC name:

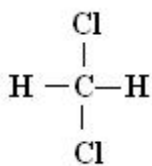
A) _____

B) _____

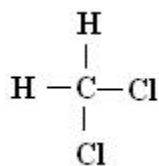
C) _____

B. Optical Isomers:

- Construct a model of CH_2Cl_2 corresponding to structures D and E as shown below:

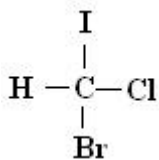


(D)

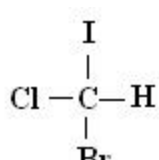


(E)

- Are the models above superimposable on one another? _____
- Construct a model of compounds corresponding to structures F and G as shown below:



(F)



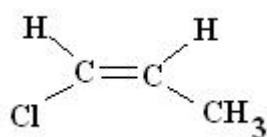
(G)

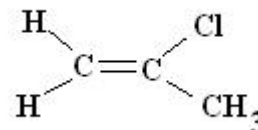
- Are the models above superimposable on one another? _____

5. What term describes the molecules in structures D and E? _____
6. What term describes the molecules in structures F and G? _____
7. What condition must exist for a compound to possess a non-superimposable mirror image?

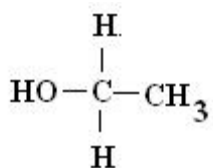
Questions:

1. Which of the following molecules have geometric isomers? Name each molecule shown below:

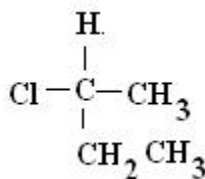




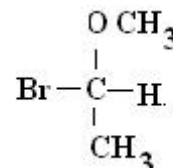
2. Determine if any of the following molecules shown below have non-superimposable mirror images?



Y N



Y N



Y N