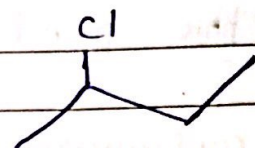
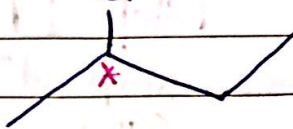


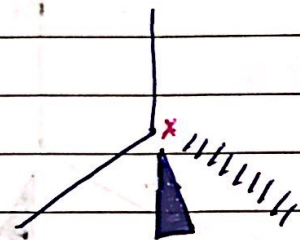
Example: Draw (S)-2-chlorobutane in 3-Dimension.

Step 1: Draw a molecule  (Not 3-Dimension)

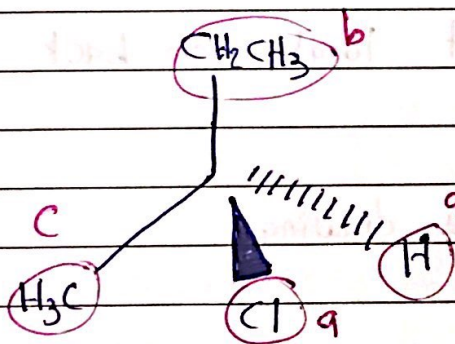
Step 2: Assign a chiral center in the above drawing.



Step 3: Draw

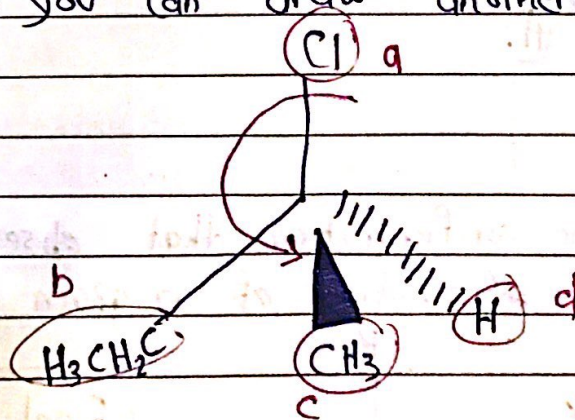


in 3-dimension and locate 4-groups (atoms) around a chiral center in which the configuration is "S".



Four groups are: H, Cl, CH₃, CH₂CH₃
*It is easier to put group "d" on the back bond, then put the three groups in which a final configuration is S.

of course, you can draw another correct structure



Note: (R) and (S) is written before the name, such as cis, trans.

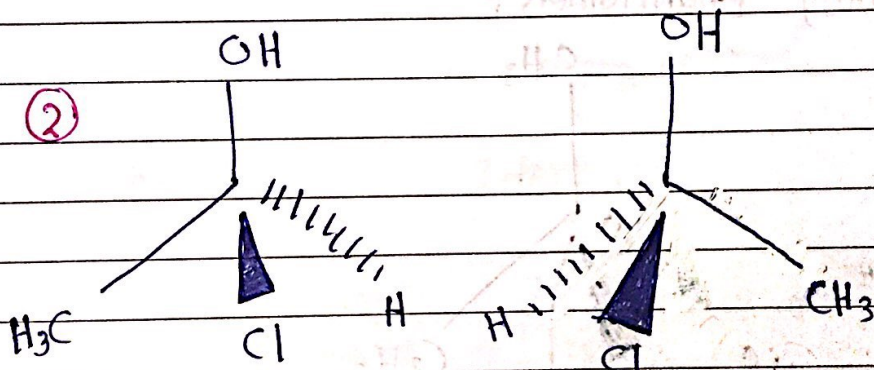
5.1: Enantiomers.

Pair of molecules which are mirror image to each other but not superimposable.

Example:

One Person : left - right hands

① اليد اليمنى واليسرى لشيء ليعتبروا امرأة ليعين ولكن لا تطبقوا على بعض عند وضع تلك اليمنى فوقه اليد اليسرى.

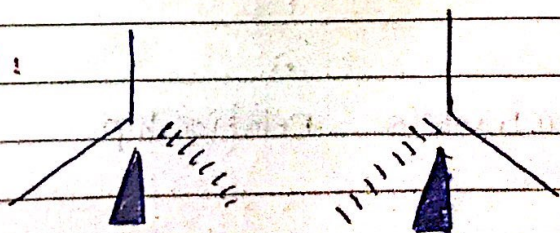


Relationship between these 2 structures is enantiomers.

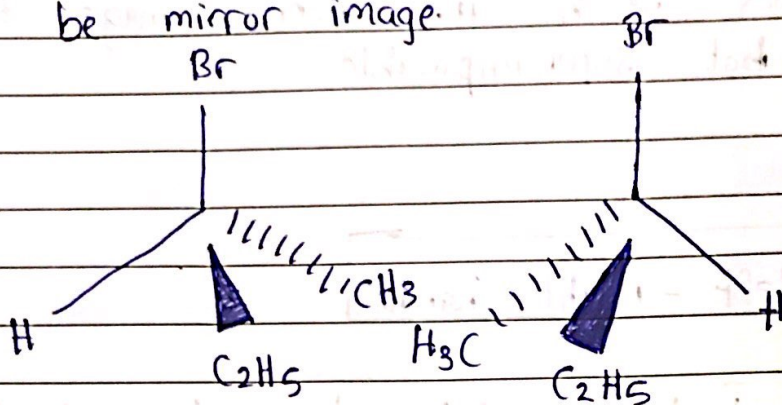
* Any chiral molecule with its mirror image are Enantiomers.

③ Draw enantiomers of 2-Bromobutane.

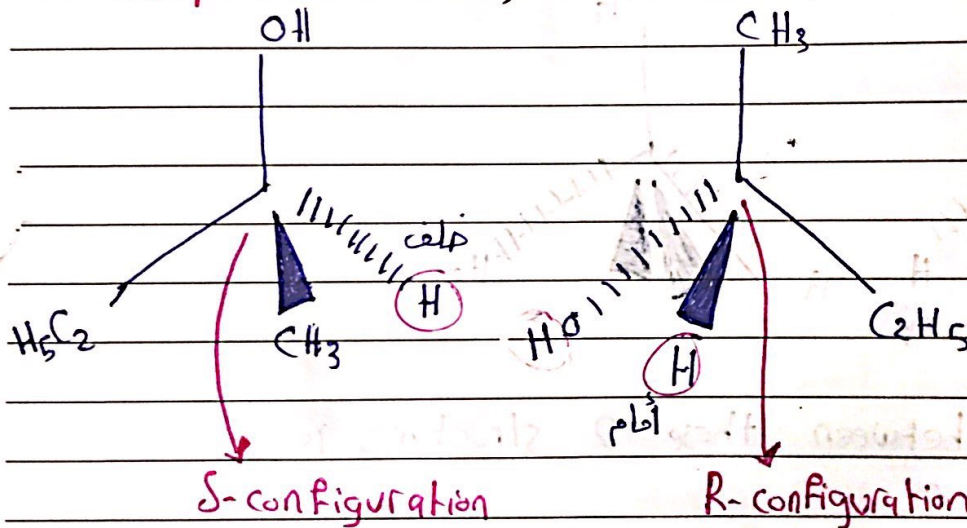
Step 1:



step 2: locate groups as you want but should be mirror image.



Examples: Are they Enantiomers?



* للوحدة الأولى يتغير الرسم، الثانية ليست مرآة للرسم الأولى، ولأنه في هذه الحالة، يجب أن يتركز الـ configuration من كل شكل.

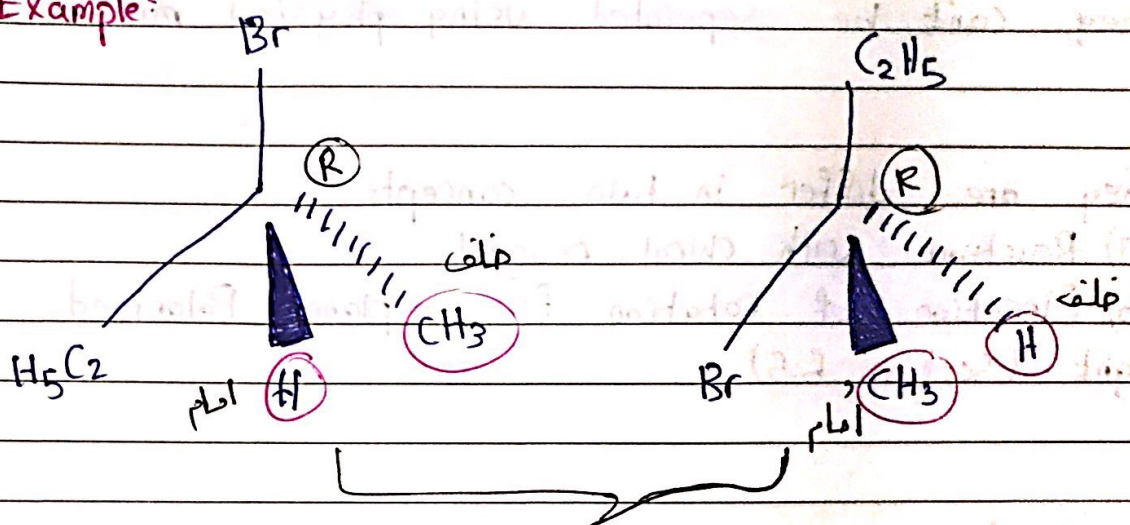
* IF the configuration is opposite to each other



We have enantiomers relationship.

But, if the configurations are the same, the relationship is identical

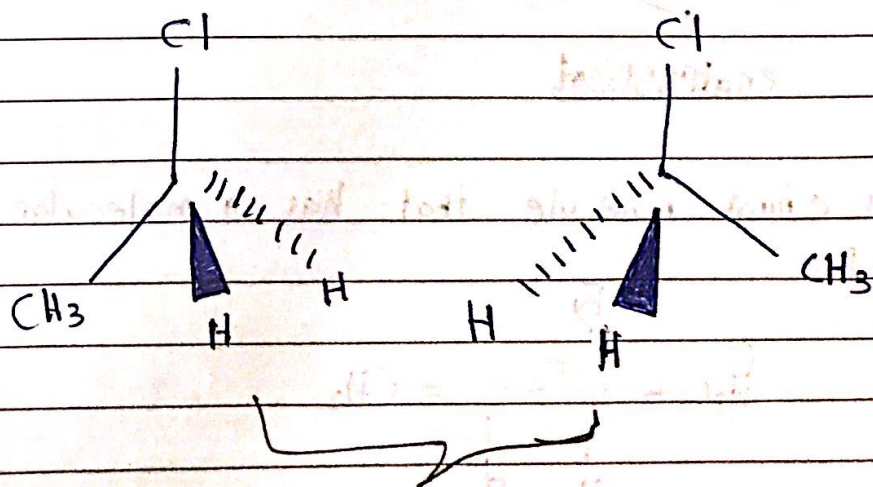
Example:



Identical

Note: ① Enantiomers should have the same molecular formula (isomer) and same arrangements of atoms (not constitutional isomers)

② Any achiral molecule with its mirror image are identical.



identical

5.6: Properties of Enantiomers:

* They have identical physical properties such as, melting point, boiling point, ... they can't be separated using physical methods.

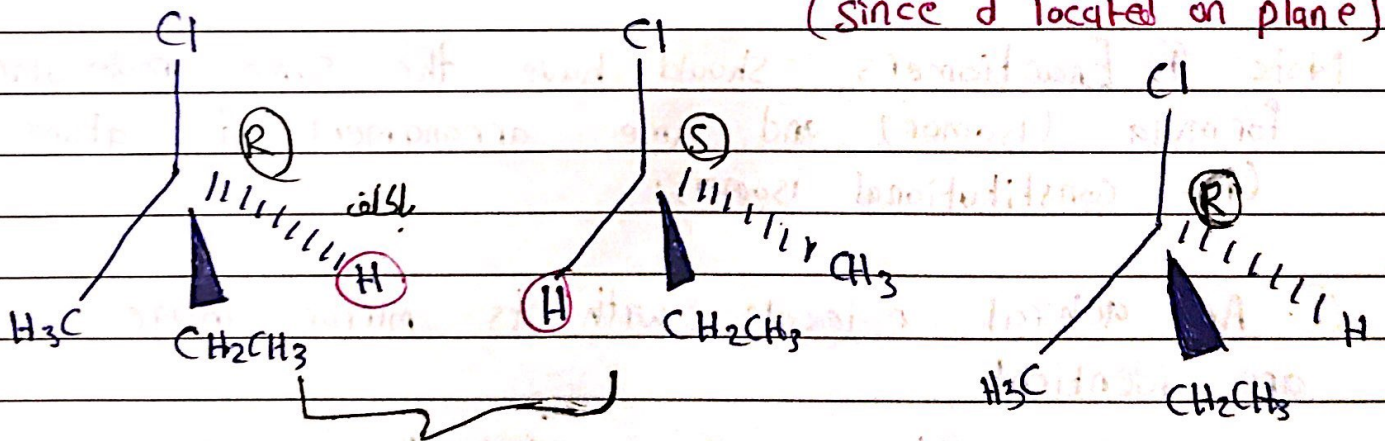
* They differ in two concepts

a) Reaction with chiral reagent.

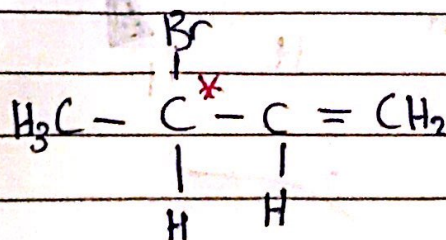
b) Direction of rotation for a plane polarized light (Section 5.5)

General Examples:

Q₁: Are the following structures, identical or enantiomers? (since d located on plane)



Q₂: Draw a chiral molecule that has a molecular formula C_4H_7Br



Q3: Assign the configuration

