

# Definitions:

stereoselective rxns - the production of one stereoisomer is favored over others

\* enantioselective - one enantiomer is favored

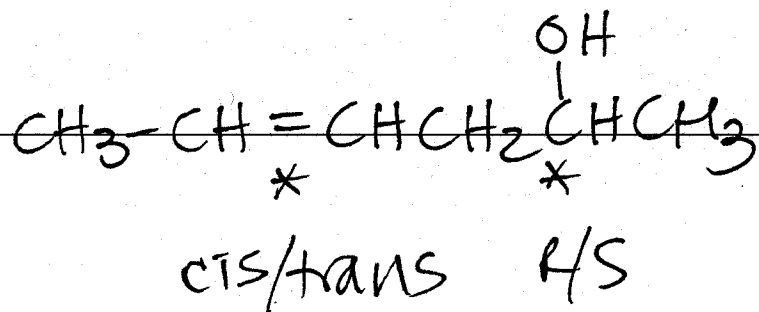
\* diastereoselective - one diastereomer is favored.

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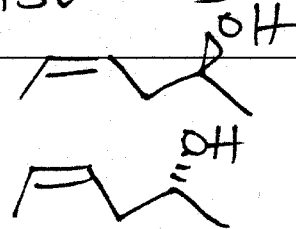
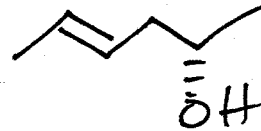
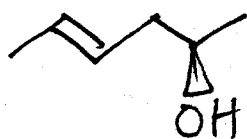
more than one stereogenic center -

total possible # of stereoisomers =  $2^n$

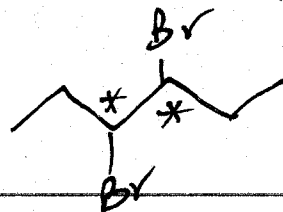
$n$  = # of stereogenic centers.



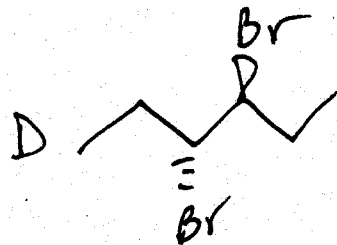
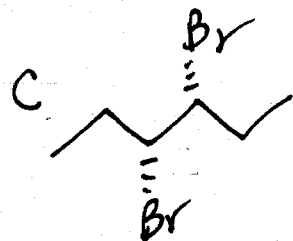
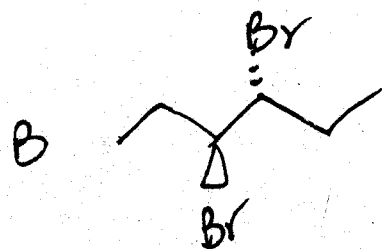
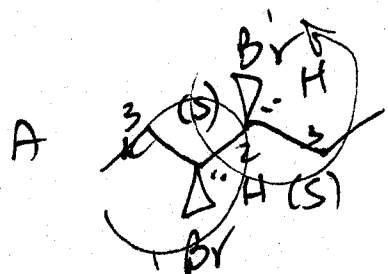
$2^2 = 4$  stereoisomers



consider ~~2,3~~ 3,4-dibromohexane.



$2^n = 2^2 = 4$  possible stereoisomers.



What are the relationships between pairs?

A + C - e    A + D - d  
 B + D - i    B + C - d  
 A + B - d    C + D - d

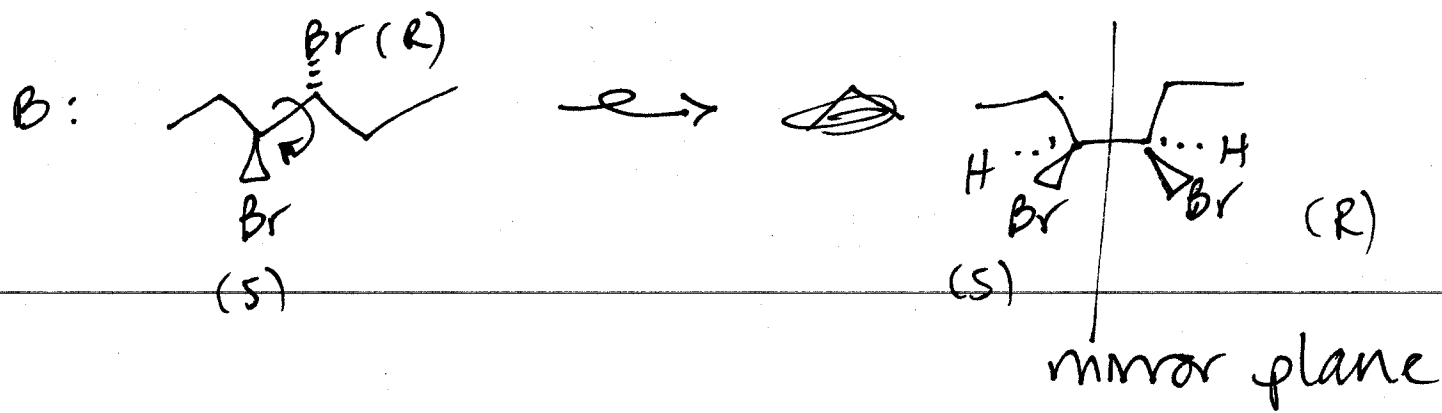
A: S, S

C: R, R

B: S, R

D: R, S

e = enantiomers  
 d = diastereomers  
 i = identical

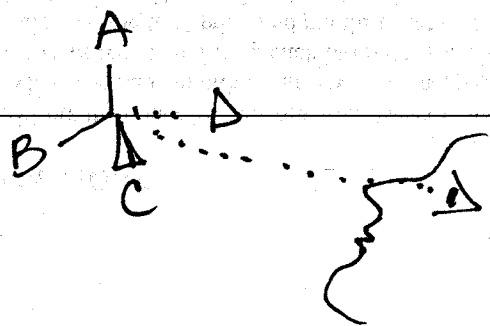


\* a molecule containing chirality centers can still be achiral!  $\Rightarrow$  meso compound

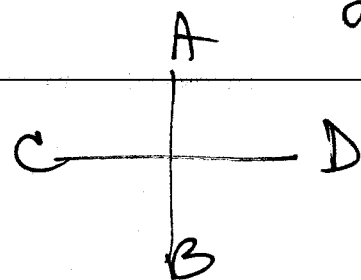
$\Rightarrow$  3,4-dibromohexane had 4 possible stereoisomers but only 3 actual stereoisomers -

a pair of enantiomers (R,R) + (S,S)  
and a meso compd. (R,S)

Fischer projections - mostly used in carbohydrates.



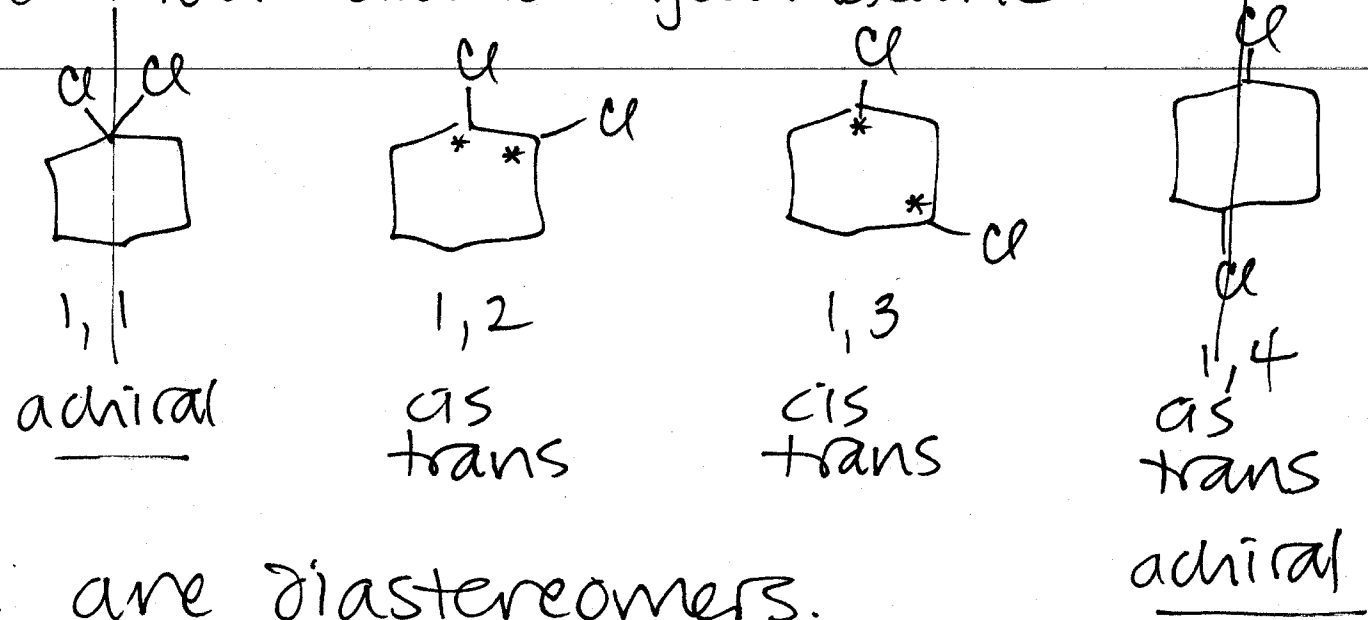
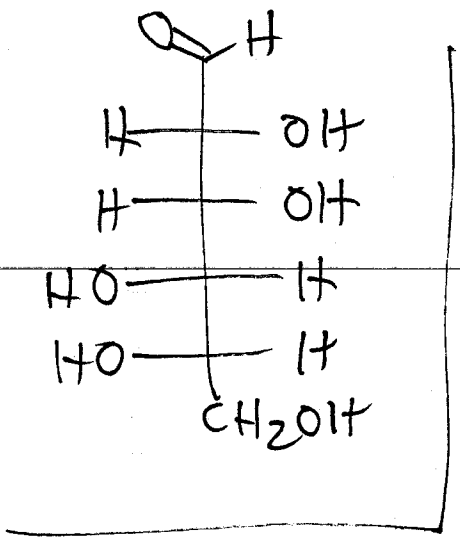
horizontals  $\equiv$   
are coming  
towards you



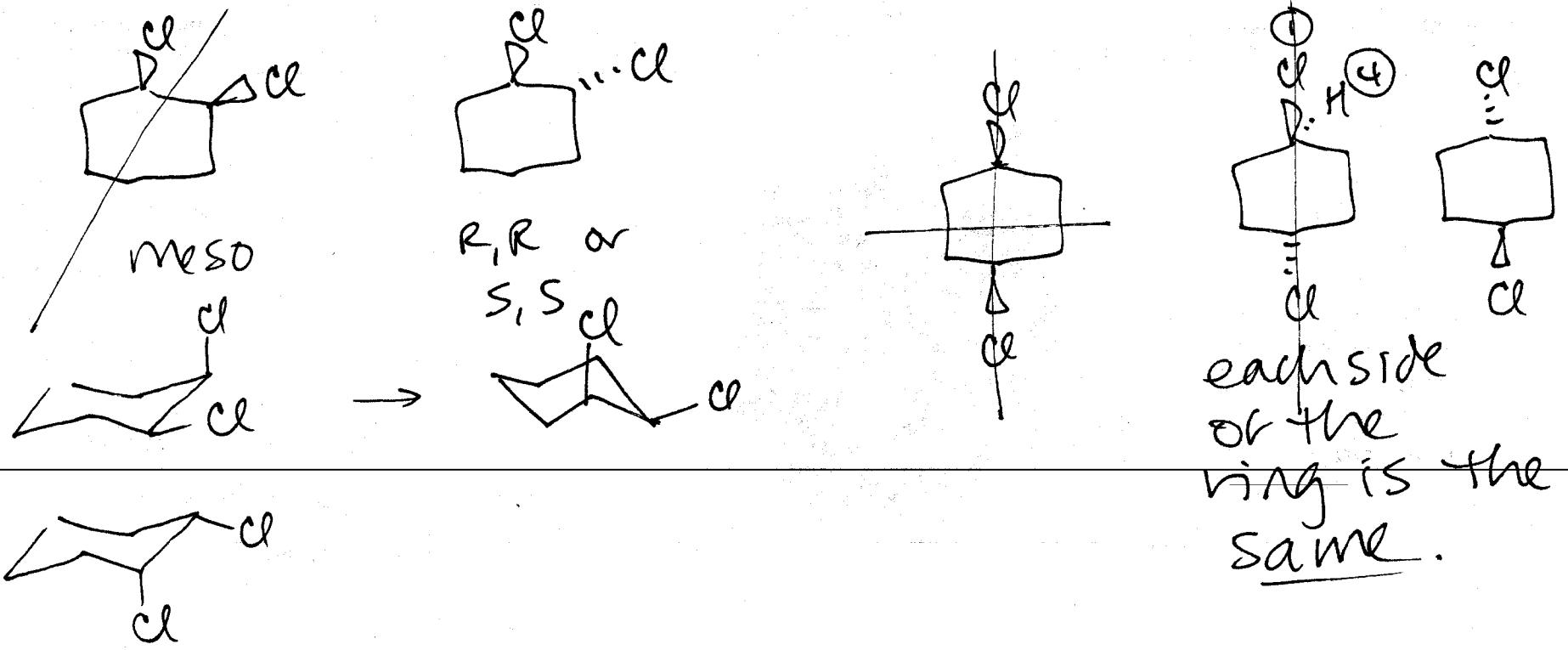
verticals  
are going  
away  
from  
you.

# Stereoisomerism in cyclic Compds.

Consider dichlorocyclohexane.



\* cis + trans are diastereomers.



Relative configurations - we know a ven went w/ retention (or w/ inversion) but we don't necessarily know what we started with.

Absolute config. - we know. (Before 1951, nobody knew absolute configs - all relative.)

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Resolution of enantiomers - separating them.

Pasteur's method: racemic tartaric acid crystallizes into mirror images!

\*proved the existence of enantiomers