Chirality $\rightarrow$ Chiral object $\rightarrow$ Does not have a plane of symmetry $\rightarrow$ Is not superimposable upon its mirror image

How do you recognize a 'chiral' carbon?

A carbon that is attached to 4 different substituents

Chirality is a property of an object/molecule

A 'chiral' molecule can have (2 forms (versions) 'Left' & 'Right') or (2 forms) mirror stereoisomer

2 chiral centers $\rightarrow$ 4 possible forms

$2^n = 4$, Maximum

(L) (R)  (R) (L)
Naming Chiral Compounds

Rank substituents attached to the chiral carbon by atomic weight

Higher #1

Lowest #4 $\Rightarrow$ look down the C-$\text{[4]}$ Bond

Counter clockwise

(S) isomer

Top

2-butane $\Rightarrow$ 2 stereoisomers

clockwise (R)

(R) 2-butanol

(S) 2-butanol

$\#$ of isomers $2^3 = 8$ possible

Enantiomers $B_{(RS)}$ and $C_{(S)}$

Diastereomers A, B, C, D
Pair of enantiomers
- mp same
- bp same
- solubility same
- same physical properties

Number of stereoisomers

3 chiral center

$2^n$ = $2^3$ = 8 max same

Pair of diastereomers (RR) (RS)

mp all different

bp different properties

$3! = 6$ max same

$2^2 = 4$ max same

$C_3H_7CH=CH_2 + HBr \rightarrow$

Amino acid

R

CH - C = OH

NH$_2$

only (L)

cis/trans

B