

THESE ARE **STEREISOMERS**.

**DEFN** - ISOMERS WHICH DIFFER ONLY IN HOW THE ATOMS ARE ARRANGED IN SPACE (NOT WHERE THEY'RE CONNECTED)

a) **GEOMETRIC ISOMERS (CIS-TRANS ISOMERS)**

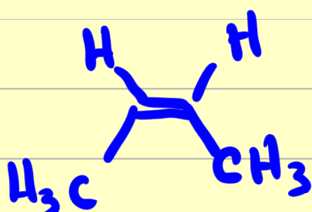
- ISOMERS DUE TO (VERY) RESTRICTED ROTATION OF A DOUBLE BOND
- THESE ARE DIFFERENT CONFIGURATIONS

(AS OPPOSED TO CONFORMATIONS, WHICH CAN INTERCONVERT)

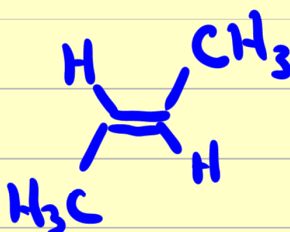
# How TO NAME THEM?

## - OLD NAMES

not IUPAC approved, but so common they can't be ignored



cis



trans

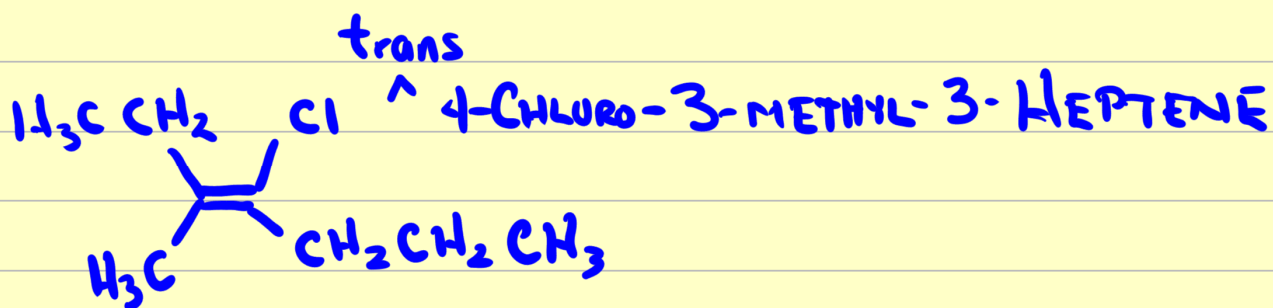
## How you ASSIGN cis/trans

1) FIND THE MAIN CARBON CHAIN AS IT RUNS THROUGH THE DOUBLE BOND.

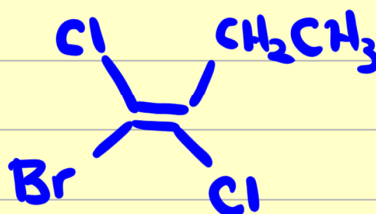
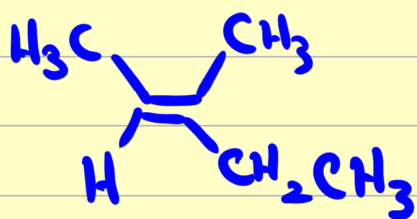
2) - IF CHAIN CONTINUES ON SAME SIDE (C SHAPE) - IT'S CIS

3) - IF IT CONTINUES ON OPPOSITE SIDES (S-SHAPE) - IT'S TRANS -

Note: normally written as lower case (trans-) in names



PROBLEM-



WHAT IS THIS?

- DOESN'T FIT CIS OR TRANS, SINCE THERE'S NOTHING THAT CAN BE CALLED "MAIN CHAIN"

The following is the IUPAC approved way to name alkenes

SOLUTION - Cahn-Ingold-Prelog  
SEQUENCE RULES FOR PRIORITY.

a) ASSIGN HIGHEST PRIORITY GROUP FOR ATOMS DIRECTLY ATTACHED TO  $sp^2$  HYBRIDIZED "C" ATOMS.

b) IF THE 2 HIGHEST PRIORITY GROUPS

ARE ON SAME SIDE  $\Rightarrow$  (Z)-

C) IF THEY'RE ARE ON OPPOSITE SIDES  $\Rightarrow$  (E)-

## ASSIGNING PRIORITIES.

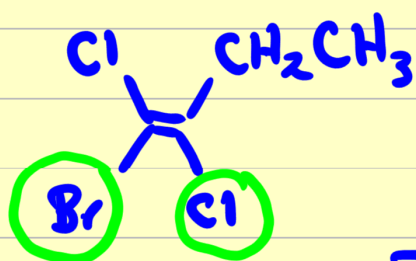
#1 - ATOM WITH HIGHER ATOMIC # HAS HIGHER PRIORITY.

\* - HIGHER ATOMIC MASS PRECEDES LOWER

\* - NON BONDED ELECTRONS (I.E. LONE PAIR) ARE LOWER THAN H.

#2 - IF 1<sup>ST</sup> SET OF ATOMS ARE TIED, MOVE DOWN CHAIN, ATOM BY ATOM, UNTIL 'YOU' FIND A DIFFERENCE

#3 - IF THERE'S A BRANCH POINT,  
CHOOSE THE PATH SUCH THAT THE  
EARLIEST POSSIBLE DISTINCTION IS  
MADE.

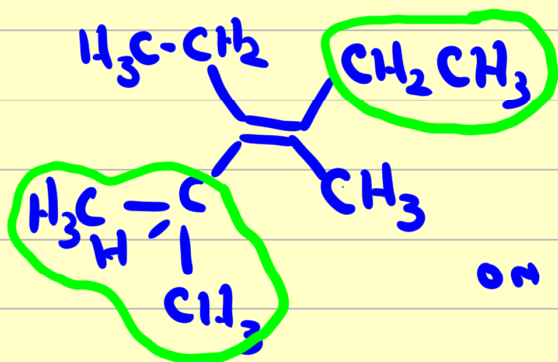


LEFT Br 'BEATS' Cl

RIGHT Cl 'BEATS' C

THIS IS (Z)-

here we do use the capital letter



RIGHT SIDE

C vs C TIE

ON IT... ↓

~~H, H, H~~

C, H, H

(E)-

LEFT SIDE

1ST ATOM C vs C TIE

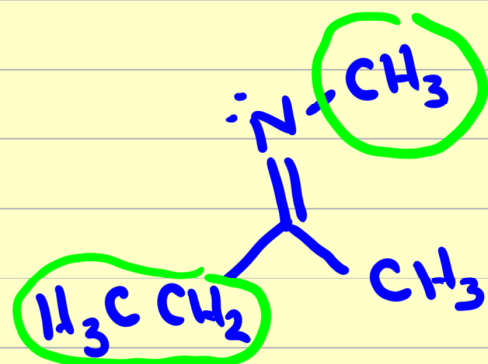
ON IT... ↓

C, C, H

~~C, H, H~~

again, capital E

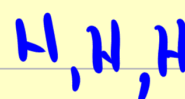
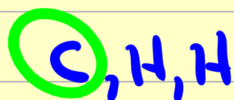
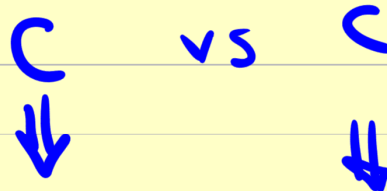
The (Z)- and (E)- naming is not just for C=C double bonds.....



IMINE

(E)-

Bottom



TOP

