more alkene nomenclature

1. cis vs. trans — worry about this when both ends of the double bond have two different substituents.

\[
\begin{align*}
\text{trans} & = \text{opposite} \\
\text{cis} & = \text{same}
\end{align*}
\]

consider the double bond as a fence—where are the two big groups? (one from each end of the double bond)
What about: \[
\begin{array}{c}
\text{Br} \\
\scriptsize \text{H}
\end{array}
\] (wait for Ch. 7)

2. Cyclic alkenes -

\[
\begin{array}{c}
\text{Br} \\
\text{Br}
\end{array}
\]

4-bromocyclododecene

(double bond defines #1)

Always as if <10 C's in ring, so don't need to specify.

3. What if there's both an OH and an alkene? OH wins.

\[
\begin{array}{c}
1-\text{bromo-5-methyl-4-hexen-2-ol} \\
\text{Br}
\end{array}
\]

\[
\text{nex-4-en-2-ol}
\]
Alicynes -

longest chain one becomes yne

\[ \begin{array}{c}
3 - \text{heptyne} \\
\text{trans-} \quad \text{hex-}4 \text{-ene-1-yn}-3 \text{-ol}
\end{array} \]

Double and triple - enyne

\[ \text{4-chloro-2-methyl-2-octen-5-yne} \]

Add in an OH - now the OH is highest priority enynol
**Common Names:**

- \( H\equiv CH \equiv H \) acetylene (ethyne)

**Common Fragments:**

- Vinyl
- Allyl
- Vinyl hydrogen
- Vinyl chloride
- Allylic (ic) hydrogen
- Allylic (ic) bromide
Back when we were discussing bonding models of ethane, ethene, ethyne

* sigma bonds (axially symmetrical)
* pi bonds (not symmetrical)

— bond line — added in wedges/hatches to simulate 3D.

Consider ethane.

\[
\begin{array}{c}
\text{CH}_3CH_3 \\
\end{array}
\]

\[
\text{two different conformations of the same molecule.}
\]
Learn to draw Newman projections. Rather than a side view of a molecule, we want to sight along a bond.

A Newman projection shows a molecule as if viewed along a bond. The large circle represents the atom at the far end of the bond in question, and the dot is the atom at the closer end of the bond in question.

In this example, the carbon atom (C) is shown with four substituents: two hydrogens (H) and two other atoms labeled 'green' and 'red'. The bond drawn in red (hedge/hatch) indicates the direction from the far end to the closer end of the bond.
eclipsed conformation
high energy

staggered conformation
low energy