

ALKENES & ALKYNES & ALCOHOLS

- **Alkenes** are aliphatic hydrocarbons that have at least one double bond between two carbon atoms
- **Alkynes** are aliphatic hydrocarbons that have at least one triple bond between two carbon atoms
- * Unlike alkanes, alkenes and alkynes are *not* bonded to the maximum number of hydrogen atoms due to the double or triple bond between carbon atoms, therefore they are **unsaturated hydrocarbons**
- **Alcohols** are *hydrocarbon derivatives* that contain an -OH, or **hydroxyl** functional group
 - A *hydrocarbon derivative* is a hydrocarbon that contains other atoms such as oxygen, nitrogen, etc.
- At a chemistry 30 level, you are only responsible for naming organic compounds that contain only 1 type of functional group (ie. a molecule will only be an alkane, alkyl halide, alkene, alkyne or alcohol and not a combination of them!)
- Naming Alkenes, Alkynes & Alcohols
 - Very similar process as naming alkanes, but with a few additions/modifications.

prefix

indicates the side branches/alkyl groups off the main carbon chain

+

root

indicates the number of carbon atoms in the longest, continuous chain
BUT needs to contain the double/triple bond or hydroxyl group

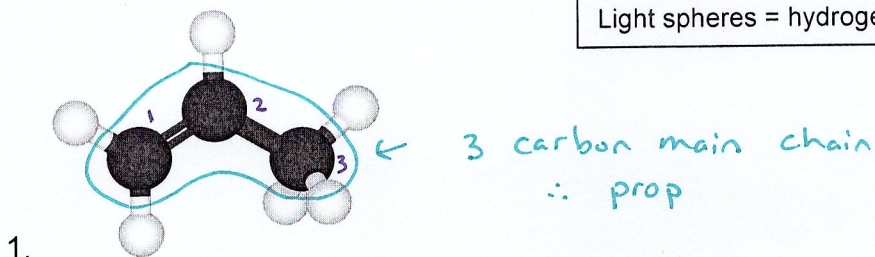
+

suffix

- all alkenes end with "...ene"
- all alkynes end with "...yne"
- all alcohols end with -ol (drop the -e on the end of "...ane" and add -ol)
- the location of the double/triple bond or hydroxyl group on the main carbon chain needs to be indicated
- **the double/triple bond or the hydroxyl group needs to be placed on lowest numbered carbon in the main chain**
- **if multiple hydroxyl groups are present, use di, tri, tetra, etc. to indicate the number of hydroxyl groups**

EXAMPLES: Name the following organic hydrocarbons.

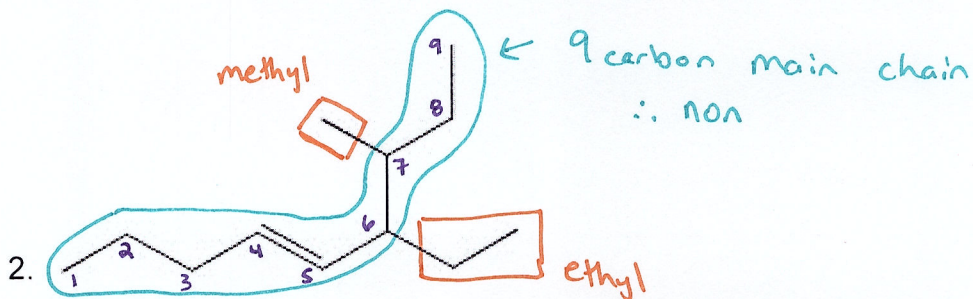
Dark spheres = carbon
Light spheres = hydrogen



propene

↳ double bond ∴ alkene

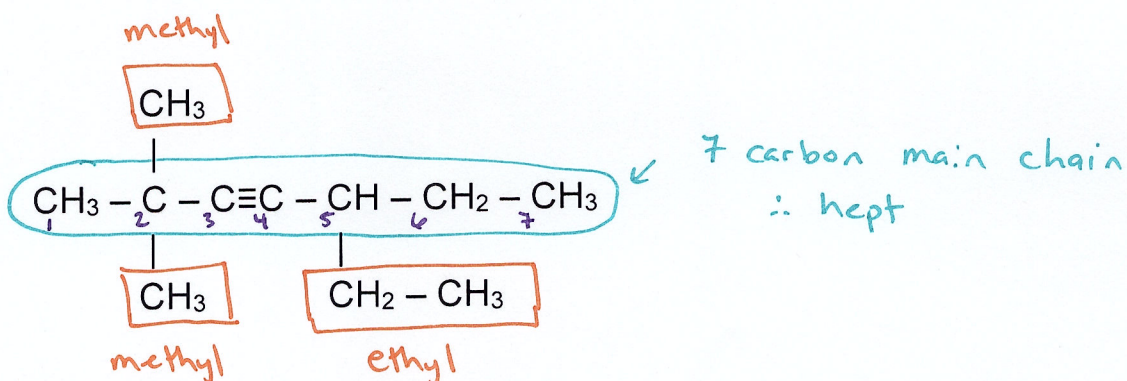
* don't necessarily need prop-1-ene b/c only 1 place the double bond can be located!



6-ethyl-7-methylnon-4-ene

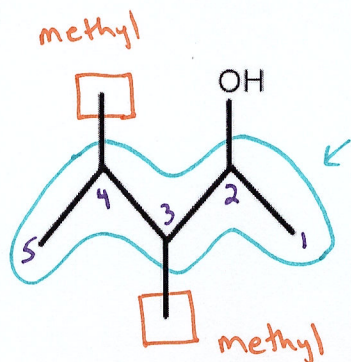
↳ double bond on carbon 4

3.



5-ethyl-2,2-dimethylhept-3-yne

↳ triple bond on carbon 3

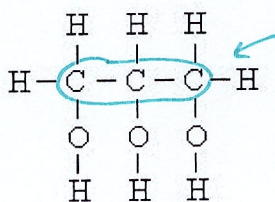


5 carbon main chain
∴ pentane

4.

3,4-dimethylpentan-2-ol

↳ hydroxyl group on carbon 2



3 carbon main chain
∴ propane

5.

propan-1,2,3-triol

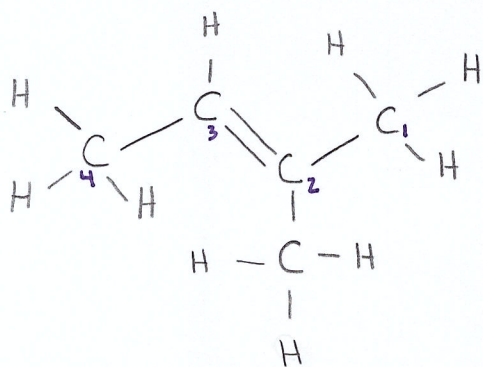
↳ hydroxyl groups on carbons 1, 2, & 3

EXAMPLES: Draw the following organic compounds.

1. 2-methylbut-2-ene

4 carbon main chain

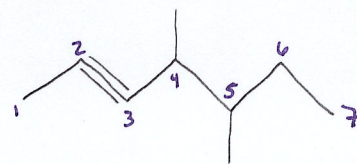
↳ double bond on carbon 2



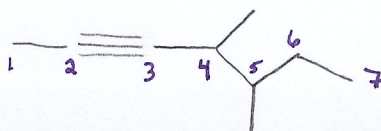
2. 4,5-dimethylhept-2-yne

7 carbon main chain

↳ triple bond on carbon 2



OR



Now try pg. 554 #10-13, pg. 555 #14, 15, pg. 556 #16,17 & 567 #28a,b,d,e, 29a-d, 30

alcohols