

Key

Session 13 - Organic Functional Groups

- 1) What is the difference between saturated and unsaturated organic compounds?

alkanes



109.5°

bond angles

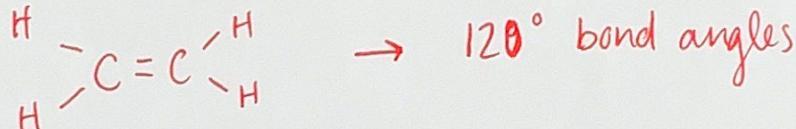
Saturated compounds have the most amount of H's possible & each Carbon will have 4 single bond.

Unsaturated compounds have at least one multiple bond (double or triple)

- 2) What would you call organic compounds with double bonds?

alkenes

- a) What bond angles are present in these compounds?



- 3) What would you call organic compounds with triple bonds?



- a) What bond angles are present in these compounds?

alkynes

- 4) What are the steps for naming alkenes and alkynes.

1) Find the longest continuous chain that contains the multiple bond.

2) # the carbons starting at the end closest to the multiple bond.

3) Name & # any other substituents

4) Throw it all together, including the Carbon # where the multiple bond is, & any cis or trans notation.

<https://haleyschulze.wixsite.com/chem2schultz>

* If it is an alkene, change the ending from -ane to -ene.
If it is an alkyne, change the ending from -ane to -yne.

<u>single</u>	<u>double</u>	<u>triple</u>
σ	σ	σ
π	π	π

- 5) What type of bonds can rotate freely?

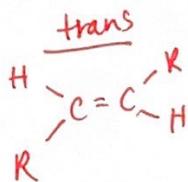
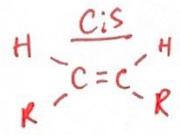
Only single bonds bc you would have to break the pi (π) bond(s) in order to rotate double or triple bonds

- 6) What is the difference between cis and trans?

Cis is when you have 2 non-Hydrogen substituents on the same side of the double bond. Trans is when they are on opposite sides.

- a) What kind of isomers are these?

geometric isomers



benzene



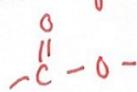
R = carbon compound

X = halogen

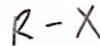
carbonyl =



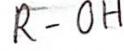
Carboxyl



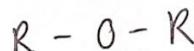
Halogens (alkyl halide)



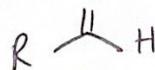
Alcohols



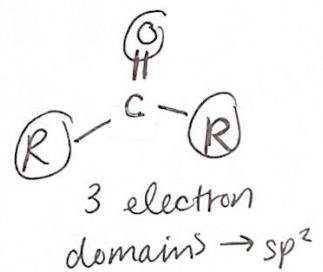
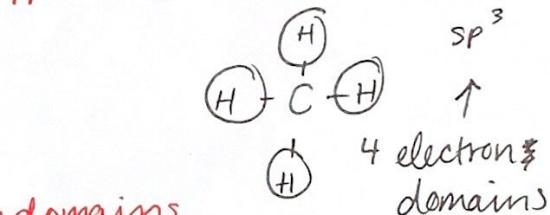
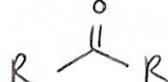
Ethers



Aldehyde (carbonyl)



Ketone



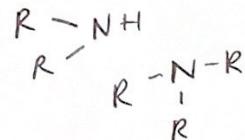
Carboxylic acid (carboxyl)



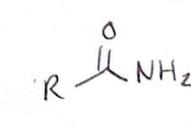
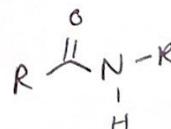
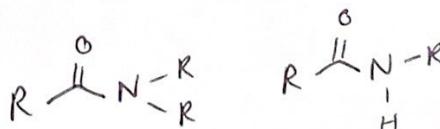
Ester (carboxyl)



Amine



Amid



10) What is a polymer?

A large molecule composed of repeating units
(ex: plastic)

11) What is a biopolymer?

Naturally-occurring polymers
like proteins, sugars & nucleic acids