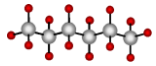
Organic Compounds

- It used to be thought that only living things could synthesize the complicated carbon compounds found in cells
- German chemists in the 1800's learned how to do this in the lab, showing that "organic" compounds can be created by non-organic means.
- Today, organic compounds are those that contain _____. (with a few exceptions such as carbon dioxide and diamonds)

Carbon's Bonding Pattern

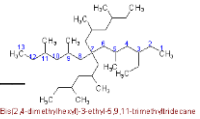
- Carbon has ____ electrons in its outer shell. To satisfy the octet rule, it needs to _____ _____. This means that each carbon atom forms _____.

- The 4 bonds are in the form of a _____, a triangular pyramid.



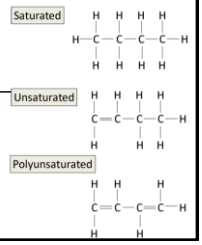
Carbon's Bonding Pattern

- Carbon can form _____, _____ and _____.
- Compounds with just _____ and _____ are "_____": non-polar compounds like fuels, oils and waxes.



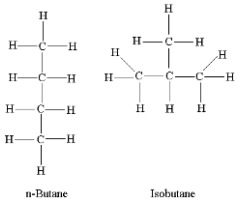
Saturated vs. Unsaturated

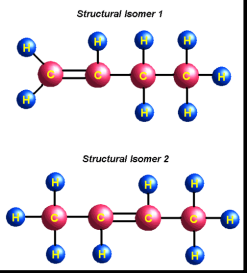
- **Single Bonds** -_____ Hydrocarbons contain only _____ bonds. (They are saturated with the _____ _____atoms.)
- **Multiple Bonds** -_____ Hydrocarbons contain at least one (or more) _____ _____bond.



Isomers

Isomers – compounds that have _____ but different _____ (shapes).





Organic Nomenclature

- **Prefix** indicates the number of _____ in the compound

1	meth
2	eth
3	prop
4	but
5	pent
6	hex
7	hept
8	oct
9	non
10	dec

Organic Nomenclature

- **Base word** indicates

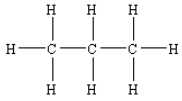
_____

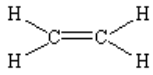
_____(s)

in the compound

-ane	_____bond
-ene	_____bond
-yne	_____bond

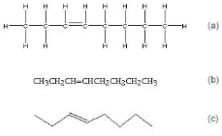
Practice



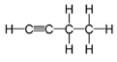


Draw hexane.

Organic Nomenclature



- Use a _____ to indicate where the double or triple bond is located in the compound. (Always use the smallest number possible.)
- Use a _____ between numbers and words



Organic Nomenclature

- **Alkanes - C_nH_{2n+2}** rule
- Alkenes - C_nH_{2n} rule
- Alkynes - C_nH_{2n-2} rule

Examples:

- but**ane** eth**ene**
- octane hex**yne**

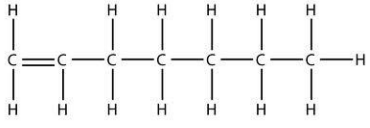
Practice

What is the chemical formula for

- methane?
- 2-pentene?
- 3-nonyne?

Practice

- What is the name for the structure below?
- What is the molecular formula for it?



Draw 1-butene