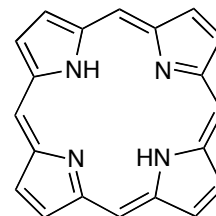
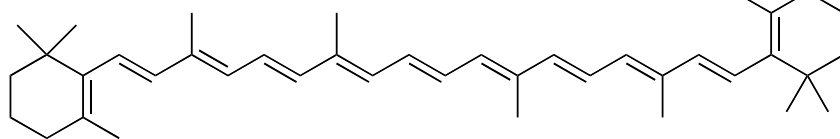
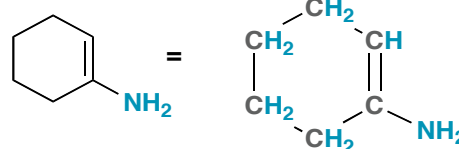
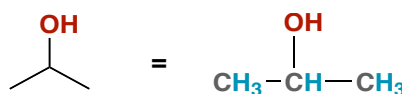
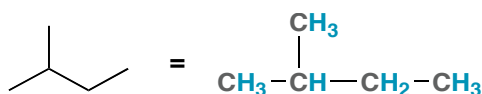


Chapter 2 - Polar Covalent Bonds; Acids and Bases

Structure Representation

More examples of skeletal line structures. Can you imagine having to draw all these out in Kekulé form?

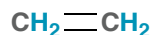


Functional Groups

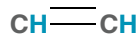
Structural features in a molecule that have characteristic reactivity. They dictate the chemistry of organic molecules. A functional group has similar behavior in every molecule that contains it. Below are several different kinds of functional groups. We will discuss them in detail as we move along in the chapters. You should become familiar with the differences and similarities of the functional groups in organic molecules

Carbon-Carbon Multiple Bonds

Alkenes - double bonds



Alkynes - triple bonds

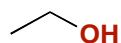


Arenes - aromatic rings

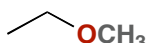


Carbon-Other atom Single Bonds

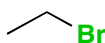
Alcohols



Ethers



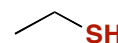
Halogides



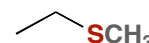
Amines



Thiols

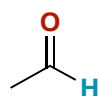


Sulfides



Carbon-Oxygen Double Bonds (Carbonyls)

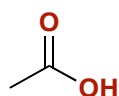
Aldehyde



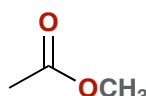
Ketone



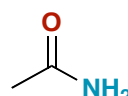
Acid



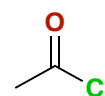
Ester



Amide



Acid Halide



Alkanes

Saturated hydrocarbons - Compounds made up of Carbon and Hydrogen and all single bonds.

Alkanes C_nH_{2n+2}

Name	MF	Condensed	Line
Methane	CH ₄	CH ₄	
Ethane	C ₂ H ₆	CH ₃ CH ₃	—
Propane	C ₃ H ₈	CH ₃ CH ₂ CH ₃	
Butane	C ₄ H ₁₀	CH ₃ CH ₂ CH ₂ CH ₃	
Pentane			
Hexane			
Heptane			
Octane			
Nonane			
Decane	C ₁₀ H ₂₂	CH ₃ CH ₂ CH ₂ CH ₂ CH ₂ CH ₂ CH ₂ CH ₂ CH ₂ CH ₂ CH ₃	

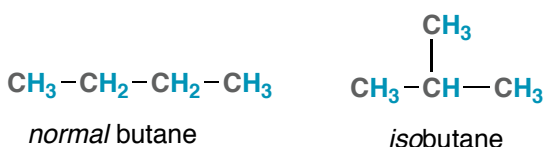
Linear Alkanes - Also referred to as 'normal' alkanes are carbons linked in a straight chain.

Branched Alkanes - some carbons are attached as a branch off of the main chain.

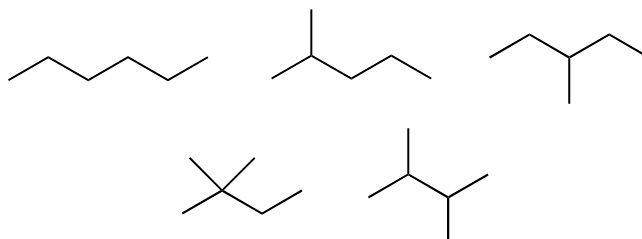
Isomers - Compounds that have the same number and kind of atoms, but are different in the way they are arranged. There are many kinds of isomerism that we will discuss this semester.

Constitutional Isomers - isomers that differ in how atoms are connected (bonded) to each other.

Constitutional Isomers of Butane C₄H₁₀



Constitutional Isomers of Hexane C₆H₁₄



Changes in other functional groups can result in constitutional isomerism - either by rearrangement of the carbon skeleton or by simply changing the position of the group.

