Organic Nomenclature

Shorthand rules

1. R is always used to symbolize some carbon chain that is “not important”.
2. X is always used to symbolize a halogen
3. Most of the time shorthand notation is used to draw organic compounds. At any line “junction” there is a carbon atom surrounded by as many hydrogen atoms needed to make sure that there is 4 bonds off that carbon atom.

Basic idea

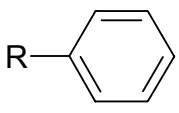
1. Determine the longest chain.
    a. Determine the type of hydrocarbon you are dealing with.
    b. Determine if there is(are) a “derivative” inside that chain
        i. The highest priority group gets the lowest carbon number.
2. Determine if there is(are) any substituent groups
    a. Make sure to note which carbon these groups are off of.

Hydrocarbons

1. Alkanes
    a. C-C, all single bond(s) in a carbon chain
    b. All C atoms are surrounded by four single bonds
2. Cycloalkanes
    a. C-C, single bond(s)
    b. All C atoms are surrounded by four single bonds
3. Alkenes
    a. C=C, one or more double bond(s) in a carbon chain
4. Alkynes
    a. C≡C, one or more triple bond(s) in a carbon chain
5. Aromatics
    a. Rings of C atoms with π bonding extending several c atoms.
    b. Conjugated system
    c.

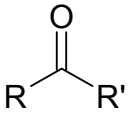
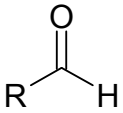
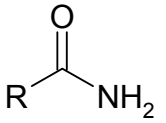
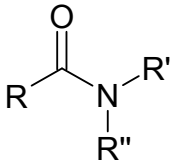
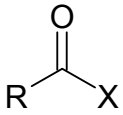
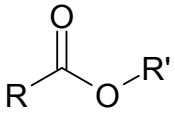
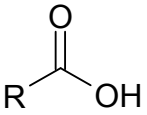
Methyl-	1	Hexyl-	6
Ethyl-	2	Heptyl-	7
Propyl-	3	Octyl-	8
Butyl-	4	Nonyl-	9
Pentyl-	5	Decyl-	10

Common substituent groups

Formula	Name	Formula	Name
R-CH_3	Methyl	R-NH_2	Amino
R-C_2H_5	Ethyl	R-D	Deuterio
R-$CH_2CH_2CH_3$	1-propyl (*n*-propyl)	R-Cl	Chloro
R-$CH(CH_3)_2$	2-propyl (isopropyl)	R-Br	Bromo
R-$CH=CH_2$	Ethenyl	R-F	Fluoro
	Phenyl	R-NO_2	Nitro

Derivative of Hydrocarbons

These derivatives will always want to be named on the lowest carbon. They have precedence over the substituent groups. If there is more than one in a compound the highest priority uses the suffix and the others use their prefix (where the final "-e" is dropped and the suffix is added).

Formula	Name (Type)	Suffix	Prefix	Priority
R—O—R'	Ether	-ether	alkoxy-	Lowest
$R–NH_2$	Amine	-amine	amino-	
R–SH	Thiol	-thiol	mercapto-	
R–OH	Alcohol	-ol	hydroxyl-	
	Ketone	-one	oxo-	
	Aldehyde	-al	oxo- or alkanoyl-	
R–C≡N	Nitrile	-nitrile	cyano-**	
 or 	Amide	-amide	carbamoyl-	
	Acidic halide or Acyl halide	-anoyl halide	haloalkanoyl-	
	Ester	-oate	alkoxycarbonyl- or carbalkoxy-	
	Carboxylic acid	-oic acid	carboxy-**	Highest