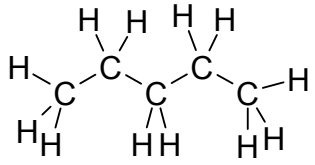
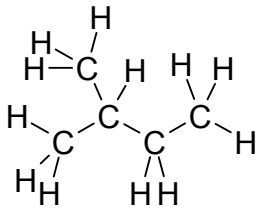
Unit XI: Nomenclature of Straight-Chain Alkanes

Hydrocarbons are molecules that contain only C and H. When the hydrocarbon has only single bonds, it is called an *alkane*. The term "straight-chain" refers to the molecules where the C atoms are linked in one chain without any branching. The examples below show the difference between a "straight-chain" and a "branched-chain" alkane. Both have the same molecular formula of C_5H_{12}.



Straight-chain 5-carbon hydrocarbon



Branched-chain 5-carbon hydrocarbon

In this nomenclature unit, we will concern ourselves only with the straight chain alkanes. They all have the formula C_nH_{2n+2}, where n is the number of C atoms in the molecule.

Memorize the names and formulas of the following alkanes (C_1 through C_{10}). You will notice that the prefixes for C_5 and up are the same as the ones you learned for naming molecular compounds.

Formula	Name
CH_4	methane
C_2H_6	ethane
C_3H_8	propane
C_4H_{10}	butane
C_5H_{12}	pentane

Formula	Name
C_6H_{14}	hexane
C_7H_{16}	heptane
C_8H_{18}	octane
C_9H_{20}	nonane
$C_{10}H_{22}$	decane

Drill R: Drill on Naming Straight-Chain Alkanes

Formula	Name	Name	Formula
C_8H_{18}		heptane	
C_4H_{10}		ethane	
C_6H_{14}		nonane	