

CHEM 201 (092)
Organic Chemistry I
Chemistry, KFUPM

A. Nomenclature of Unbranched Alkyl Groups

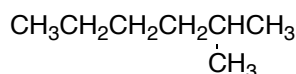
If we remove one hydrogen from an alkane, we obtain an **alkyl group**. These alkyl groups have names that end in **-yl**.

Alkane	Alkyl Group	Abbreviation
CH ₃ -H Methane	CH ₃ - Methyl	Me-
CH ₃ CH ₂ -H Ethane	CH ₃ CH ₂ - Ethyl	Et-
CH ₃ CH ₂ CH ₂ -H Propane	CH ₃ CH ₂ CH ₂ - Propyl	Pr-
CH ₃ CH ₂ CH ₂ CH ₂ -H Butane	CH ₃ CH ₂ CH ₂ CH ₂ - Butyl	Bu-

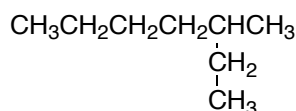
B. Nomenclature of Branched-Chain Alkanes

Branched-chain alkanes are named according to the following **rules**:

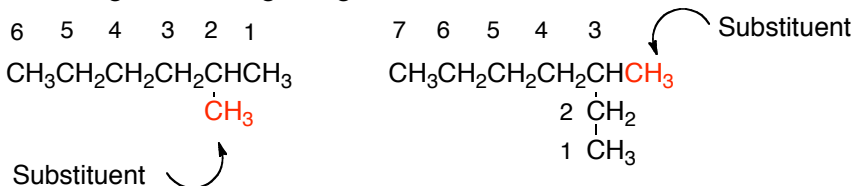
1. Locate the longest continuous chain of carbon atoms; this chain determines the parent name for the alkane. The following is considered as a *hexane*:



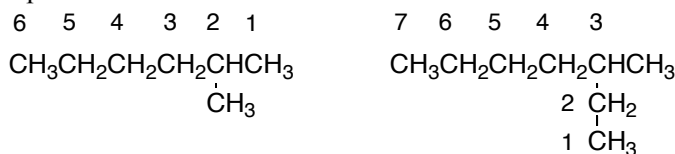
The following alkane is designated as a *heptane* because the longest chain contains seven carbon atoms:



2. Number the longest chain beginning with the end of the chain nearer the substituent.



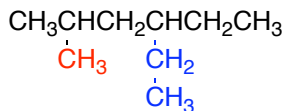
3. Use the numbers obtained by application of rule 2 to designate the location of the substituent group.



2-Methylhexane

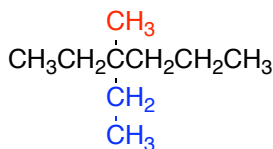
2-Methylheptane

4. When two or more substituents are present, give each substituent a number corresponding to its location on the longest chain. The substituent groups should be listed *alphabetically*.



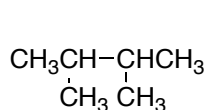
4-Ethyl-2-Methylhexane

5. When two substituents are present on the same carbon atom, use that number twice:

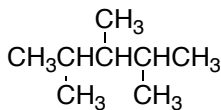


3-Ethyl-3-Methylhexane

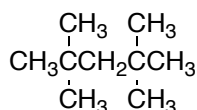
6. When two or more substituents are identical, indicate this by the use of the prefixes di-, tri-, tetra-, and so on.



2,3-Dimethylbutane

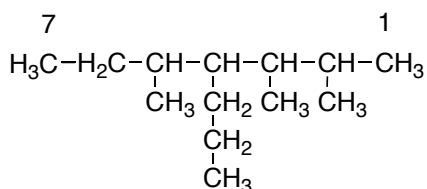


2,3,4-Trimethylpentane



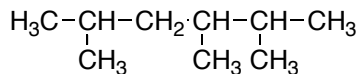
2,2,4,4-Tetramethylpentane

7. When two chains of equal length compete for selection as the parent chain, choose the chain with the greater number of substituents:



2,3,5-Trimethyl-4-propylheptane

8. When branching first occurs at an equal distance from either end of the longest chain, choose the name that gives the lower number at the first point of difference:



2,3,5-Trimethyl-hexane
(not 2,4,5-trimethyl hexane)

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March 8, 2010