

# ALKANS

8

- General formula  $C_n H_{2n+2}$

الصيغة العامة

- Nomenclature التسمية

- formicae (ants) → formic acid

- International Union of Pure and Applied Chemistry (IUPAC) الجمعية الدولية للكيمياء (جنيف)

## Rules

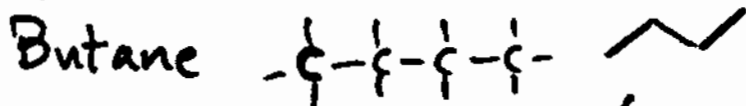
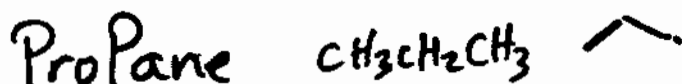
① Prefix

10 \* → 50,000 Compounds

Prefix	* Carbon (n)	Prefix	* Carbon (n)
Meth	1	Undec	21
Eth	2	Dodec	12
Prop	3	tridec	13
But	4	tetradec	14
Pent	5	Pentadec	15
hex	6	↓ ↓ ↓ ↓	↓
hept	7	Eicos	20
oct	8	Heneicos	21
Non	9	↓ ↓ ↓ ↓	↓
Dec	10	Tricicos	30
		Tetraeicos	40
		↓ ↓ ↓ ↓	↓
		Hect	100

Prefix + ane

19

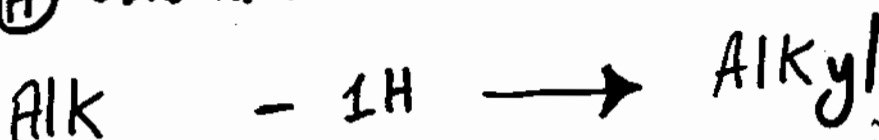


② Alkyl groups

تسمية المجموع الألكيلية

Ⓐ Unbranched

غير متفرعة



Alkane	Alkyl group	Abbreviation
Methane $\text{CH}_4$	Methyl $\text{CH}_3$	Me
Ethane $\text{CH}_3\text{CH}_3$	Ethyl $\text{CH}_3\text{CH}_2$	Et
Propane $\text{CH}_3\text{CH}_2\text{CH}_3$	Propyl $\text{CH}_3\text{CH}_2\text{CH}_2$	Pr
Butane $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$	Butyl $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2$	Bu
Pentane $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$	Pentyl $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2$	—

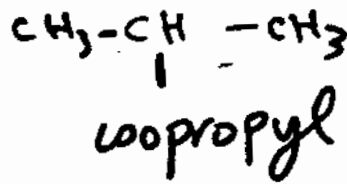
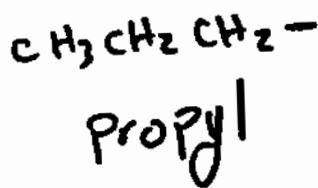
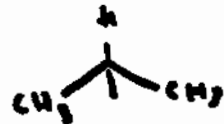
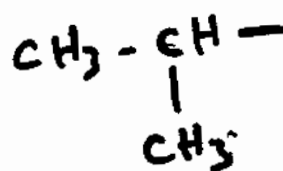
⑧ Branched  
 - more carbon ( $>2$ ) more possibility Isomers <sup>(10)</sup>

- Structural Isomers التشابه (التماثل) التركيبي

Same molecular formula but different structure  
 المركبات التي لاتفق لغيرها في التركيب ولكنها لها الصيغة البنائية

① Iso structure

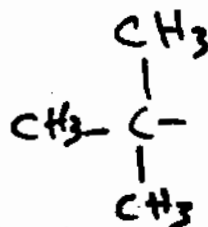
$n=3$  to  $n=6$



Structure	name	Alkane
	isopropyl	$\text{CH}_3\text{CH}_2\text{CH}_3$ Propane
	isobutyl	$\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2$ iso butane
	iso-pentyl	$\text{CH}_3\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_2$ iso-pentane
	isohexyl	$\text{CH}_3\text{CH}(\text{CH}_3)(\text{CH}_2)_2\text{CH}_2$ iso-hexane

② Neo Structure

n = 5 to n = 7



Structure	Name	Alkane
$\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{C} - \text{CH}_2 - \\   \\ \text{CH}_3 \end{array}$	Neopentyl	$\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{C} - \text{CH}_3 \\   \\ \text{CH}_3 \end{array}$ Neopentane
$\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{C} - \text{CH}_2 - \text{CH}_2 - \\   \\ \text{CH}_3 \end{array}$	Neohexyl	$\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{C} - \text{CH}_2\text{CH}_3 \\   \\ \text{CH}_3 \end{array}$ Neohexane
$\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{C} - (\text{CH}_2)_2 \text{CH}_2 \\   \\ \text{CH}_3 \end{array}$	Neoheptyl	$\begin{array}{c} \text{CH}_3 \\   \\ \text{CH}_3 - \text{C} - (\text{CH}_2)_2 \text{CH}_3 \\   \\ \text{CH}_3 \end{array}$ Neoheptane

③ Carbon type

- Secondary Carbon  
 کربون ثانوی  

$$\begin{array}{c} \text{CH}_3 \text{CH}_2 \text{CH} \\ | \\ \text{CH}_3 \end{array}$$
 sec-butyl  
 or s-butyl

- Tertiary Carbon  
 کربون ثالثی  

$$\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3 - \text{C} - \\ | \\ \text{CH}_3 \end{array}$$
 tert-butyl  
 t-butyl