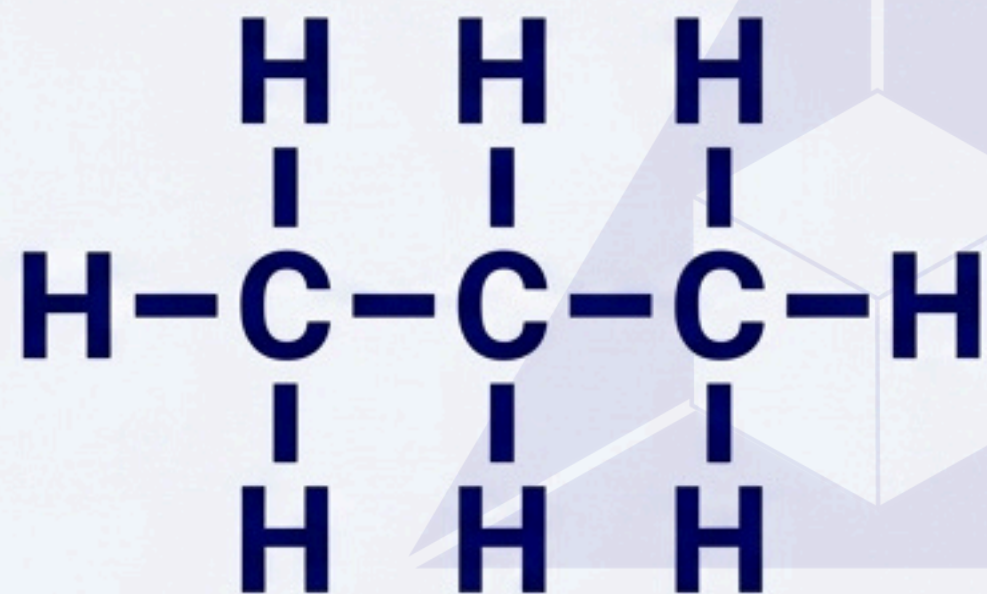


The Three Languages of Molecular Structure

Complete (Dash) Formula



Maximum detail. Every single bond is explicitly drawn.

Condensed Formula



Grouped for speed. C-H bonds are hidden; identical atoms are grouped with subscripts.

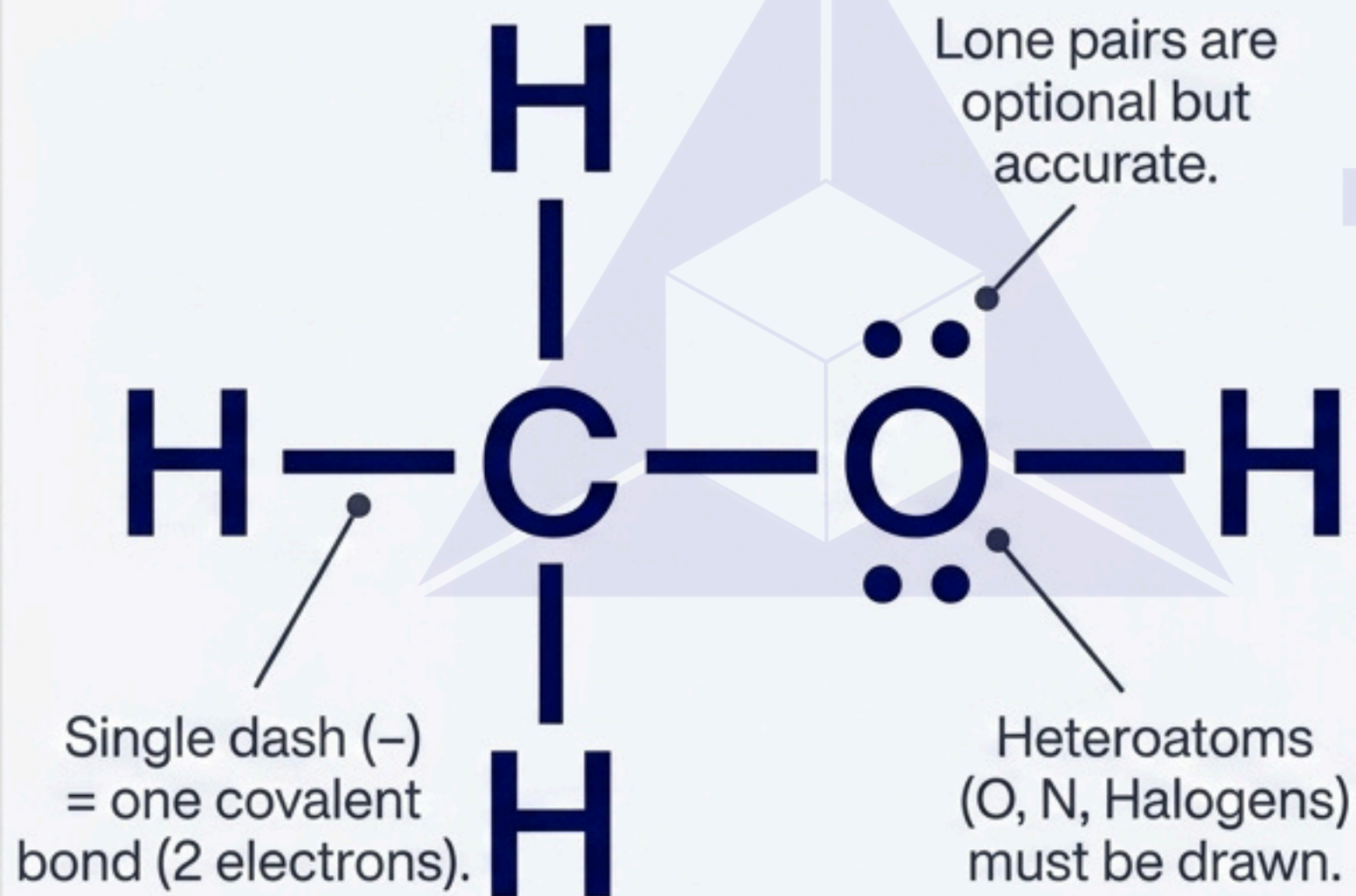
Bond-Line Formula



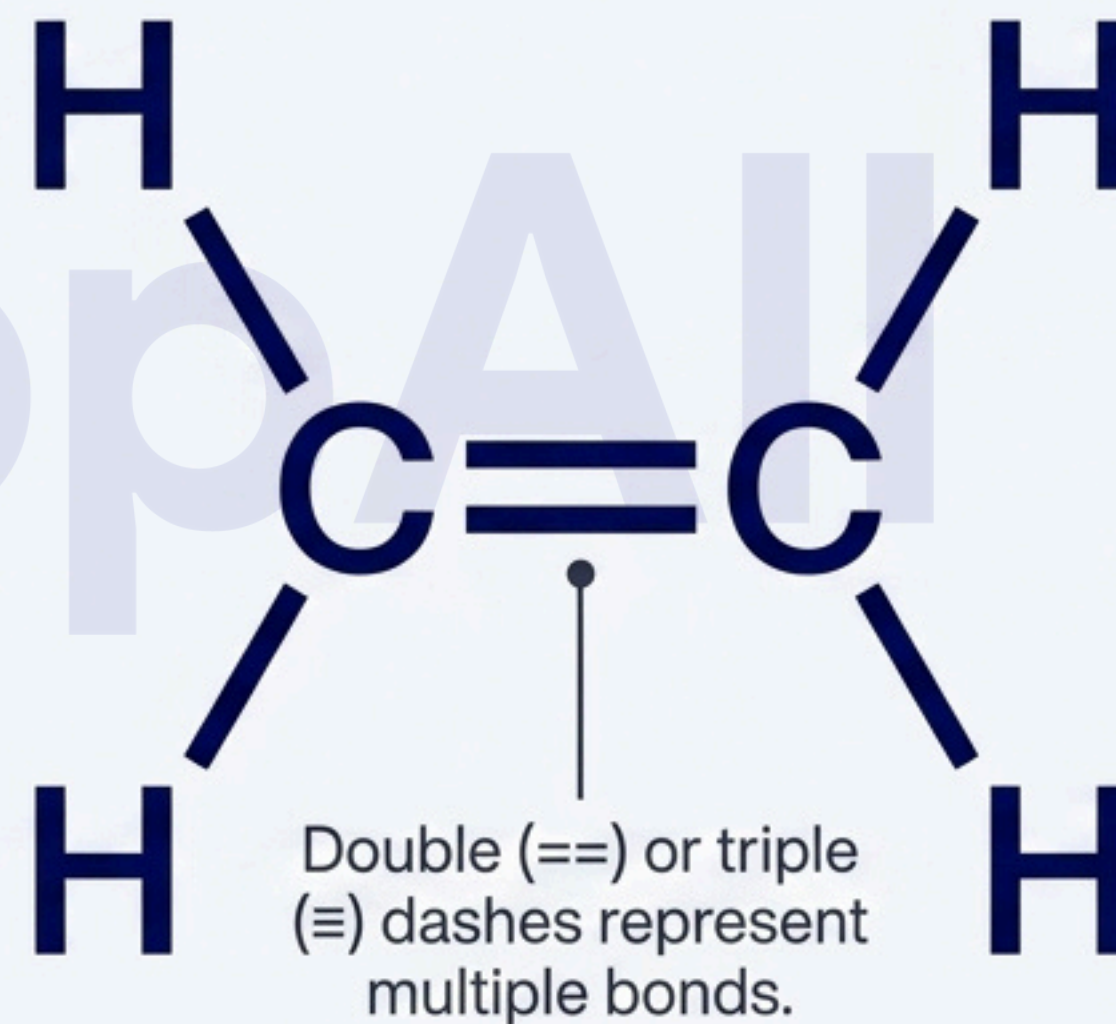
The professional standard. Carbon and hydrogen are entirely implied by geometry.

Dash Formulas: The Complete Picture

Methanol (CH_3OH)



Ethene ($\text{H}_2\text{C}=\text{CH}_2$)



Condensed Formulas: Grouping for Speed

Step 1:
The Full Structure



Step 2:
The Fade



Step 3:
The Collapse



Step 4:
The Result



The Rule: Omit some or all dashes (–) and use subscripts to indicate the number of identical atoms attached to a central atom.



You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



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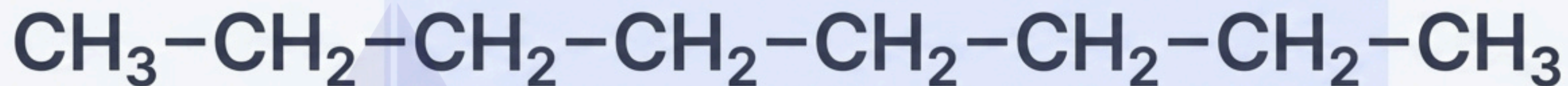
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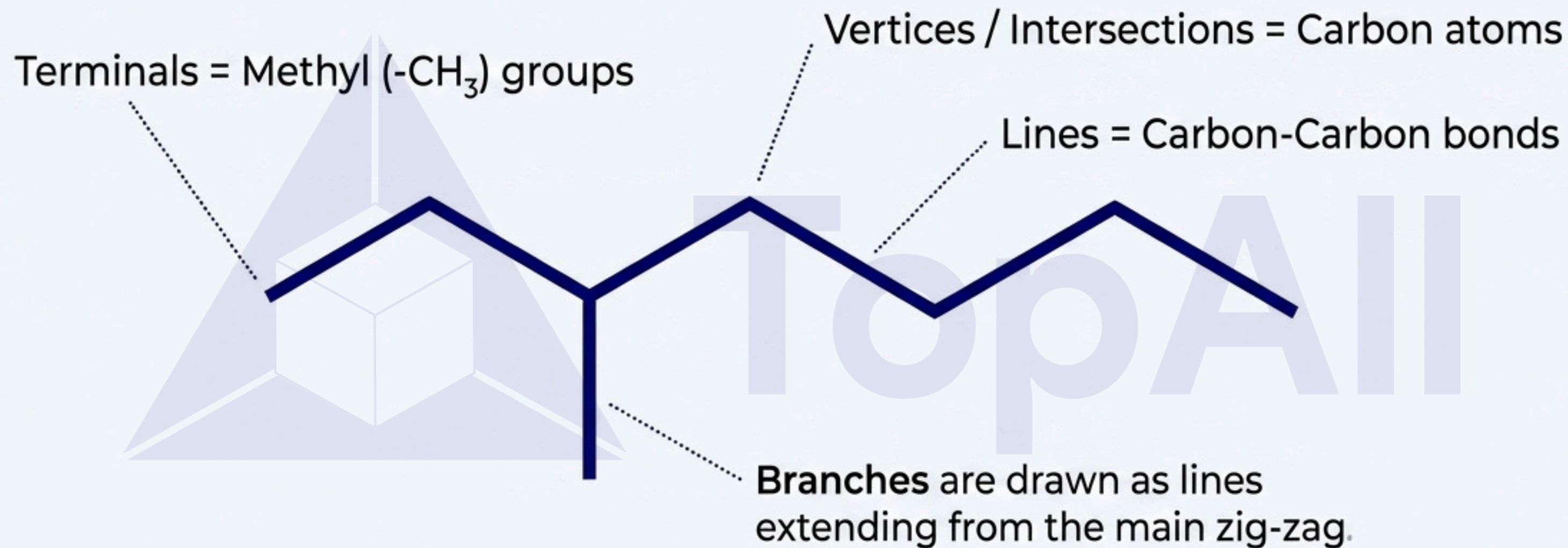


Extreme Condensation: The Accordion Fold



When a chain contains a repeating identical unit (like $-\text{CH}_2-$), wrap the unit in brackets and use a subscript to state how many times it repeats. This prevents visual clutter in long chains.

Bond-Line Rules: The Professional Standard



Rule: Carbon and Hydrogen are hidden. Heteroatoms (O, N, S, Halogens) and their attached Hydrogens **MUST** be explicitly drawn.

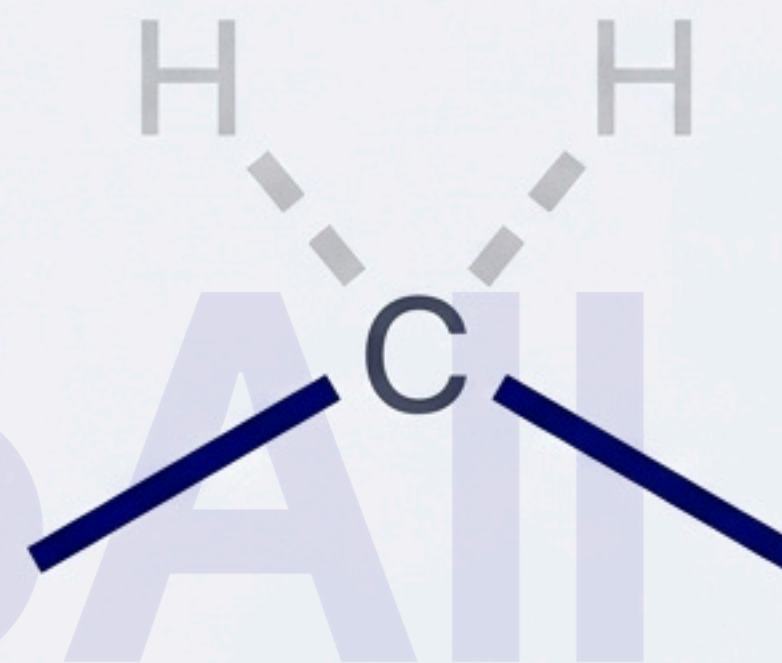
X-Ray Vision: Seeing the Hidden Atoms



What you see

Carbon Valency = 4
Visible Bonds (Lines) = 2

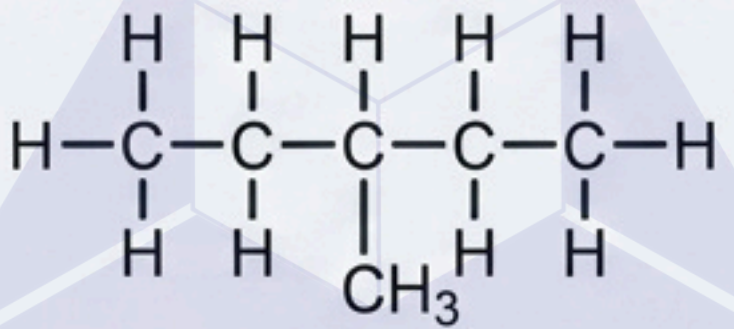
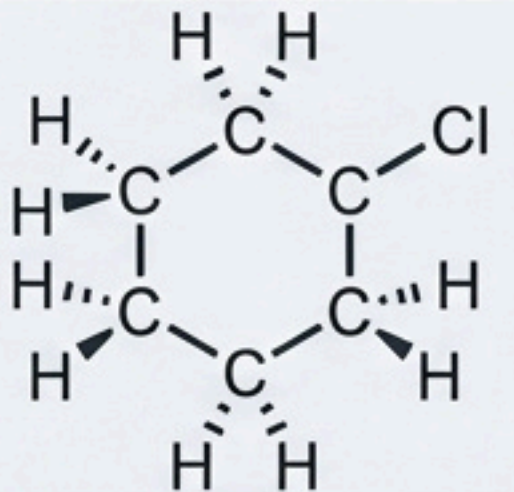
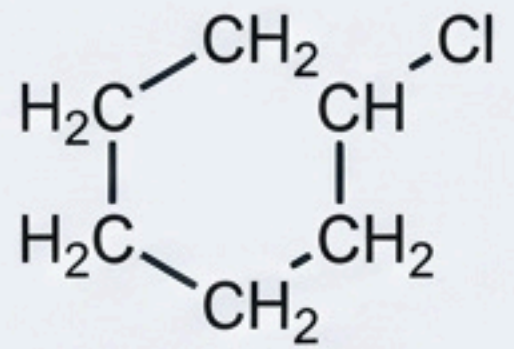
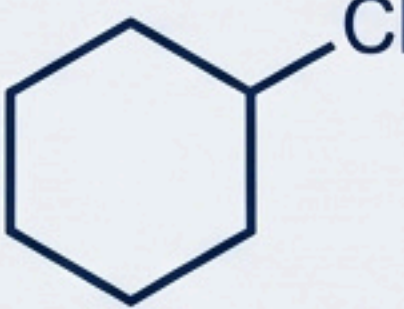
Hidden Hydrogens = 2



What it means

To read a bond-line structure, simply subtract the number of visible lines connected to a vertex from 4. The result is the number of hidden Hydrogen atoms.

The Chemist's Blueprint: Representation Matrix

	Dash Formula	Condensed Formula	Bond-Line Formula
Straight Chain	$\text{H}_3\text{C}-\text{C}\dots\text{C}-\text{CH}_3$ (Too expansive to draw fully)	$\text{CH}_3(\text{CH}_2)_6\text{CH}_3$	
Branched Chain		$\text{CH}_3\text{CH}_2\text{CH}(\text{CH}_3)\text{CH}_2\text{CH}_3$	
Cyclic Compound			



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