

Competition Corner: Isomer Evidence Bounds

g10_u07_w26

Use only supplied structural and property cards. Compare formulas before connectivity, calculate from listed values, and keep conclusions bounded to the stated examples and conditions.

1. Two cards both show C_5H_{12} : one straight and one branched. Explain what evidence is sufficient to call them constitutional isomers and what it does not establish.
2. A listed melting-point card gives $12.0\text{ }^\circ\text{C}$ for X and $-5.0\text{ }^\circ\text{C}$ for Y, under the same stated conditions. Calculate the difference and write a bounded comparison.
3. Compare the formulas $\text{C}_2\text{H}_6\text{O}$ and $\text{C}_3\text{H}_8\text{O}$. Why can neither formula alone determine one unique connectivity?
4. Critique: “A higher contact index proves exactly why the boiling point changes.” State a better evidence claim.
5. Name two additional kinds of data that would be needed before extending a classroom structure/property table to a real safety, health, pharmaceutical, or consumer-use claim.