1. Draw a structural formula for:
   a) 4-ethyl-2,4-dimethylnonane
   b) 4-isopropyl nonane
   c) trans-1,3-dimethylcyclobutane
   d) 2,2,4,4-tetramethyloctane

![Structural formulas A, B, C, D]

2. Name the following compounds.
   Give the number of primary, secondary and tertiary carbons and units of unsaturation in each.

![Structural formulas](cis-1,3,5-trimethylcyclohexane and 6-tert-butyl-7-cyclohexyl-4-cyclopropyl-2-methyldecane)

*when alphabetizing substituents hyphenated prefixes (tert, n, sec...) don’t matter

3. Draw the 2 chair conformations for cis-1-isopropyl-3-methylcyclohexane and trans-1-isopropylcyclohexane, indicate which is more stable for each.
4. Draw Newman projections and sketch an approximate relative energy diagram for the conformers resulting from rotation about the C2-C3 bond in 2,3-dimethylbutane and in C2-C3 of the propane chain n-propylcyclohexane.
THIS IS HOW THE COMPUTER DRAWS ECLIPSED

worst-both methyl's eclipsed with other methyls

best-only 2 pairs of gauche methyls, not 3 in a row
WORST-methyl and cyclohexane eclipsed

IDENTICAL

best-anti