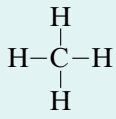
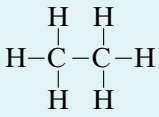
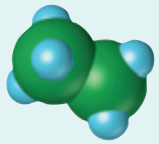
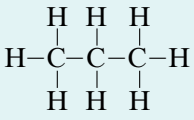
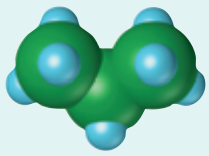
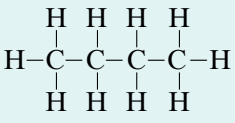
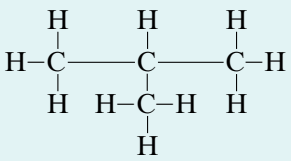
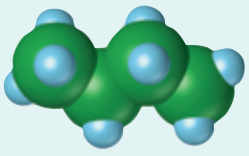
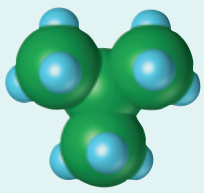
TABLE 2 *Alkanes with One to Four Carbon Atoms*

Molecular formulas	Structural formulas	Space-filling models
CH_4	 methane	
C_2H_6	 ethane	
C_3H_8	 propane	
C_4H_{10}	 butane  methylpropane	 

Notice that for alkanes with three or fewer carbon atoms, only one molecular structure is possible. However, in alkanes with more than three carbon atoms, the chains can be straight or branched. Thus, alkanes with four or more carbon atoms have structural isomers. There are two possible structural isomers for alkanes with four carbon atoms, butane and 2-methylpropane.

The number of structural isomers increases greatly as the number of carbon atoms in alkanes increases. There are three isomeric C_5H_{12} alkanes, five isomeric C_6H_{14} alkanes, and nine isomeric C_7H_{16} alkanes. There are nearly 37 million possible isomers of $C_{25}H_{52}$, though most have never been prepared or isolated.