Chap 3: An Introduction to Organic Compounds
Nomenclature, Physical Properties, and Structures

3.1 Alkyl Groups
Describe the bonding (hybridization of the atoms) in alkanes
Identify primary, secondary, tertiary, and quaternary carbon atoms

3.2 The Nomenclature of Alkanes
3.3 The Nomenclature of Cycloalkanes
3.4 The Nomenclature of Alkyl Halides
3.5 The Nomenclature of Ethers
3.6 The Nomenclature of Alcohols
Be able to interconvert names and structures for alkanes, cycloalkanes, alkyl halides, ethers, and alcohols.

skipped 3.7 The Nomenclature of Amines
Be able to provide IUPAC names for alkanes, alkyl halides, and ethers.

3.8 The Structure of Alkyl Halides, Alcohols, Ethers, and Amines
Recognize the alkyl halide, alcohol, ether, and amine functional groups
Describe the bonding (hybridization of the atoms) in alkyl halides, alcohols, ethers, and amines
Compare with "gen chem" analogues (HX, H_2O, NH_3)

3.9 Noncovalent Interactions
Describe interactions of organic molecules (intermolecular forces) with other organic molecules and with water molecules.

3.10 The Solubility of Organic Compounds
Describe interactions of organic molecules (intermolecular forces) with other organic molecules and with water molecules.

3.11 Rotation about Carbon–Carbon Bonds
Recognize C to C bonds that can rotate.
Convert wedge and dash structures to Newman projections and vice versa.
Describe the energy of various rotamers using the language of Newman projections (staggered, anti, eclipsed, gauche)

3.12 Some Cycloalkanes have Angle Strain
Describe why bonds in cyclopropane (C_3H_6) and cyclobutane (C_4H_8) are strained/weaker than other C–C bonds.

3.13 Conformers of Cyclohexane
Draw chair and boat structures.
Explain relative energies/stabilities of chair, boat, twist boat, and planar cyclohexane conformations.

3.14 Conformers of Monosubstituted Cyclohexanes
Draw and compare ring flipped conformations of substituted cyclohexanes.
Explain relative energies/stability of different conformations.

3.15 Conformers of Disubstituted Cyclohexanes
Draw and compare ring flipped conformations of substituted cyclohexanes.
Explain relative energies/stability of different conformations.

skipped 3.16 Fused Cyclohexane Rings