

Organic Chemistry, 8e

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Chapter 3

Clickers

Structure and

Stereochemistry of

Alkanes

3.1 Give the general formula for an alkane.

- a) C_nH_{2n-4}
- b) C_nH_{2n-2}
- c) C_nH_{2n}
- d) C_nH_{2n+2}
- e) C_nH_{2n+4}

3.2 Give the common name for
 $(\text{CH}_3)_2\text{CHCH}_2\text{Cl}$.

- | | |
|--------------------------------|----------------------|
| a) <i>sec</i> -Butyl chloride | d) Isobutyl chloride |
| b) <i>tert</i> -Butyl chloride | e) Neobutyl chloride |
| c) <i>N</i> -butyl chloride | |

3.3 Give the IUPAC name for $(\text{CH}_3)_2\text{CHCH}_2\text{Cl}$.

- a) 1-Chloro-2-methylpropane
- b) 1-Chloropropane
- c) 1-Chlorobutane
- d) 1-Chloro-3-methylpropane
- e) 2-Chlorobutane

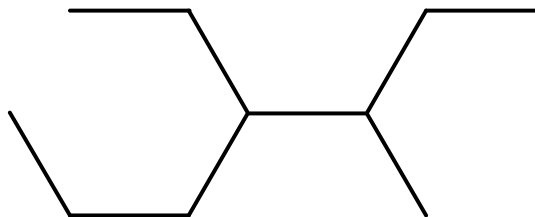
3.4 Give the IUPAC name for
 $(\text{CH}_3\text{CH}_2)_2\text{CHCH}_3$.

- a) 2-Methylbutane
- b) 2-Ethylbutane
- c) 2-Methylpentane
- d) 3-Methylpentane
- e) Hexane

3.5 Give the IUPAC name for
 $\text{CH}_3\text{CH}(\text{Cl})\text{C}(\text{Br})_2\text{CH}_3$.

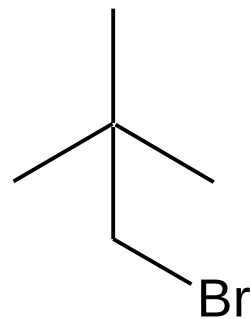
- a) 2-Chloro-3-bromobutane
- b) 2,2-Dibromopentane
- c) 3-Chloro-2-bromobutane
- d) 2,2-Dibromo-3-chlorobutane
- e) 2-Chloro-3,3-dibromobutane

3.6 Name



- a) 2,3-Diethylhexane
- b) 3-Methyl-4-propylhexane
- c) 4-Ethyl-3-methylheptane
- d) 2-Ethyl-3-propylpentane

3.7 Name



- a) Isobutyl bromide
- b) Neopentyl bromide
- c) *tert*-Butyl bromide
- d) *tert*-Pentyl bromide

3.8 Balance the equation



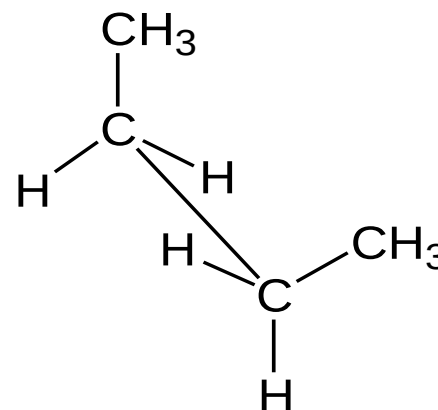
- a) 1, 6, 4, 4
- b) 2, 6, 4, 4
- c) 1, 4, 4, 4
- d) 2, 8, 8, 4

3.9 Identify the most stable conformation for ethane.

- a) Eclipsed
- b) Staggered
- c) Skew
- d) Anti

3.10 Identify this conformation of butane.

- a) Gauche
- b) Totally eclipsed
- c) Eclipsed
- d) Anti



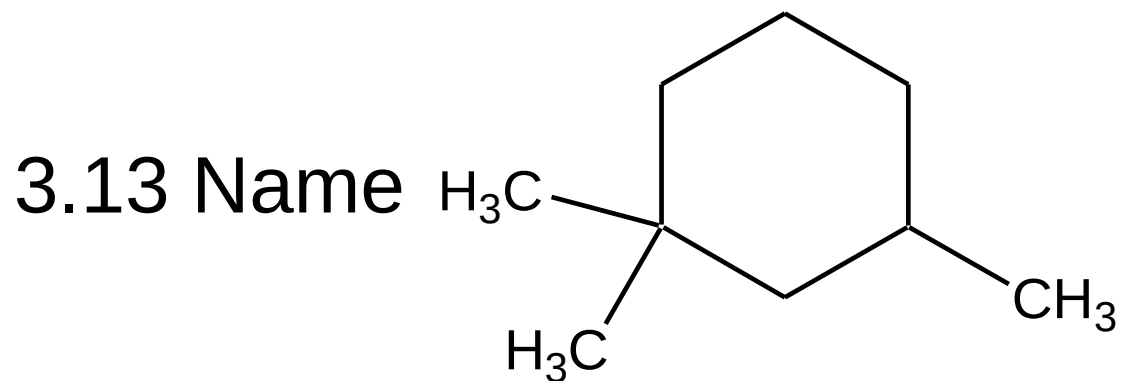
3.11 Identify the least stable conformation for butane.

- a) Gauche
- b) Totally eclipsed
- c) Eclipsed
- d) Anti

3.12 Give the general formula
for a cycloalkane.

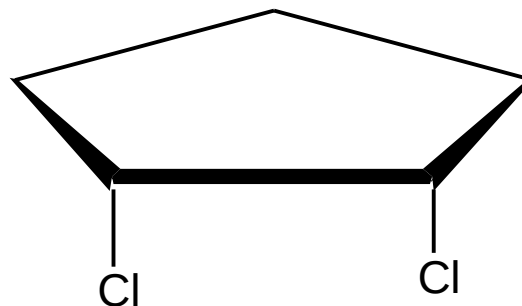


3.13 Name



- a) 3,3,5-Trimethylcyclohexane
- b) 3,5,5-Trimethylcyclohexane
- c) 1,3,3-Trimethylcyclohexane
- d) 1,1,3-Trimethylcyclohexane

3.14 Name



- a) 3,4-Dichloropentane
- b) 3,4-Dichlorocyclopentane
- c) *trans*-1,2-Dichlorocyclopentane
- d) *cis*-1,2-Dichlorocyclopentane

3.15 Give the carbon–carbon bond angle for cyclopropane.

a) 45°

d) 120°

b) 60°

e) 150°

c) 90°

3.16 Give the carbon–carbon bond angle for cyclopentane.

a) 45°

d) 108°

b) 60°

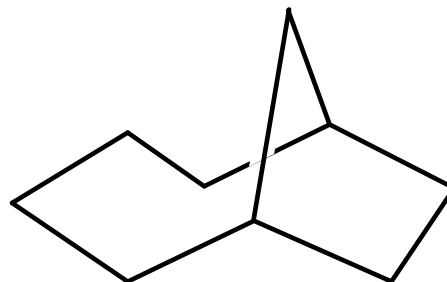
e) 109.5°

c) 90°

3.17 Identify the most stable conformation.

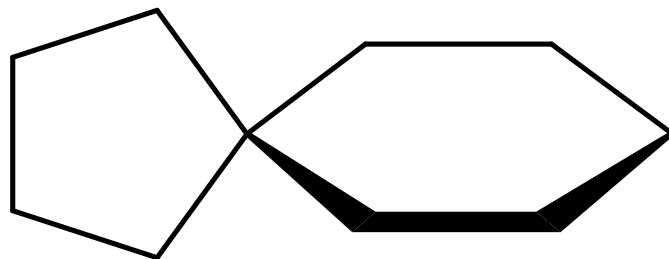
- a) *cis*-1,3-Dimethylcyclohexane, both methyls axial
- b) *cis*-1,3-Dimethylcyclohexane, both methyls equatorial
- c) *trans*-1,3-Dimethylcyclohexane, one methyl axial and one methyl equatorial

3.18 Name



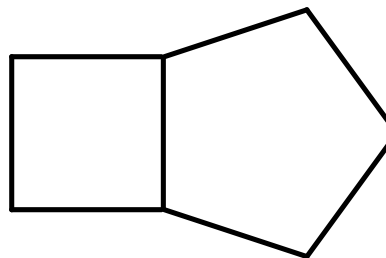
- a) Bicyclo[6.4.3]nonane
- b) [4.2.0]Cyclononane
- c) Bicyclo[4.2.2]decane
- d) Bicyclo[4.2.1]nonane

3.19 Name



- a) Bicyclo[5.4]decane
- b) Spiro[5.4]decane
- c) Cyclo[5.4]decane
- d) Bicyclo[6.5]decane

3.20 Name



- a) Bicyclo[3.2.0]heptane
- b) Bicyclo[3.2]heptane
- c) Spiro[3.2]heptane
- d) Bicyclo[5.4]heptane