

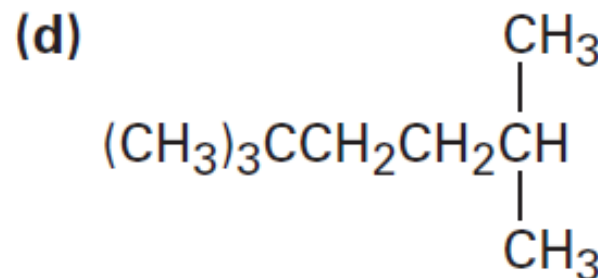
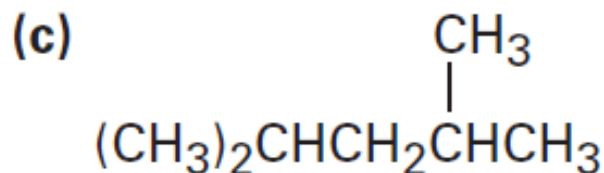
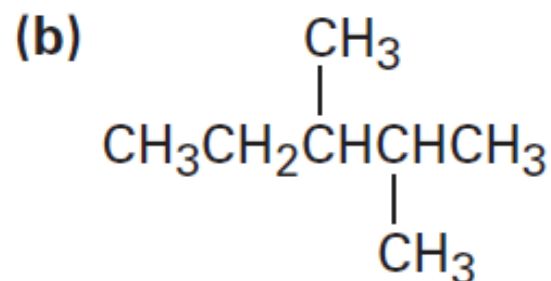
1. Problem

Hãy đọc tên IUPAC của chất
nêu ở câu (d)

PROBLEM 3-11

Give IUPAC names for the following compounds:

(a) The three isomers of C_5H_{12}



2.Problem

Vẽ công thức cấu tạo của
chất nêu ở câu **(b)** và **(d)**

PROBLEM 3-12

Draw structures corresponding to the following IUPAC names:

(a) 3,4-Dimethylnonane

(c) 2,2-Dimethyl-4-propyloctane

(b) 3-Ethyl-4,4-dimethylheptane

(d) 2,2,4-Trimethylpentane

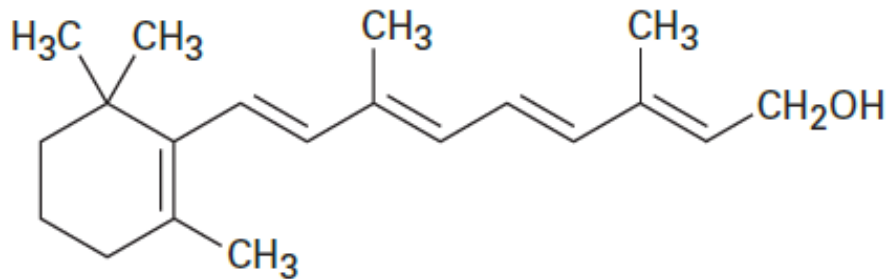
3: Số lượng đồng phân cấu tạo của C_6H_{14} là bao nhiêu?

4. Problem 2.19

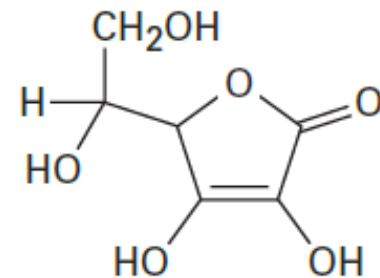
Cho hai vitamin A và C, chất nào tan trong nước, chất nào tan trong dầu? Và hãy chỉ ra các nhóm chức có mặt trong mỗi vitamin.

PROBLEM 2-19

Of the two vitamins A and C, one is hydrophilic and water-soluble while the other is hydrophobic and fat-soluble. Which is which?

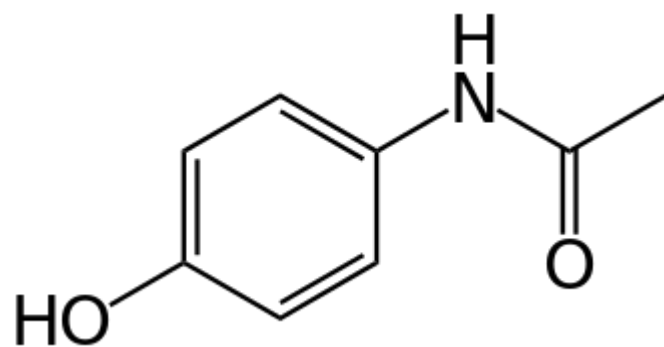


Vitamin A
(retinol)

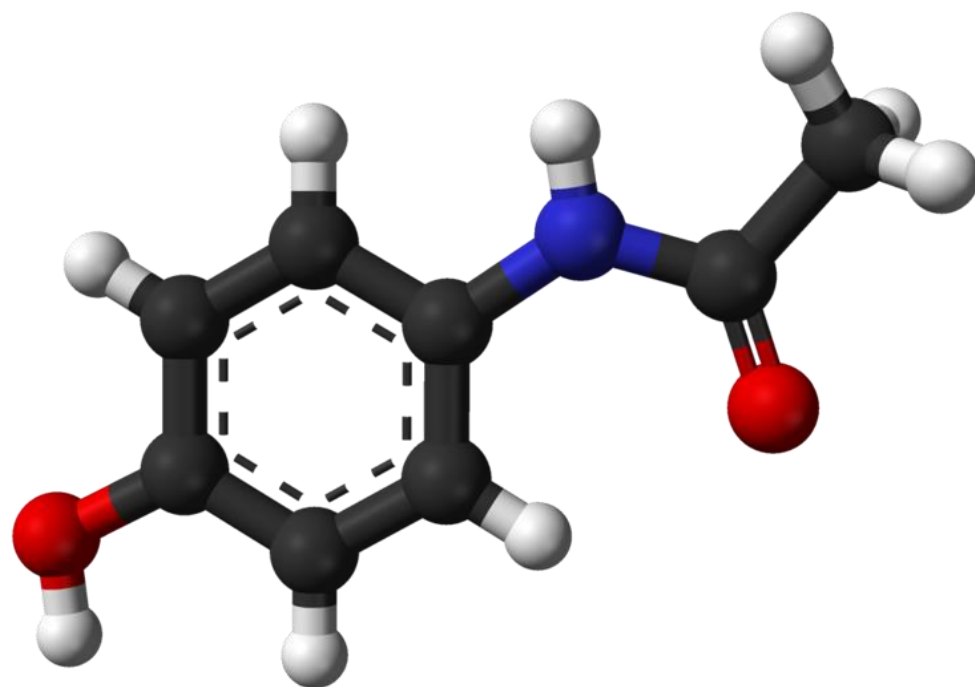


Vitamin C
(ascorbic acid)

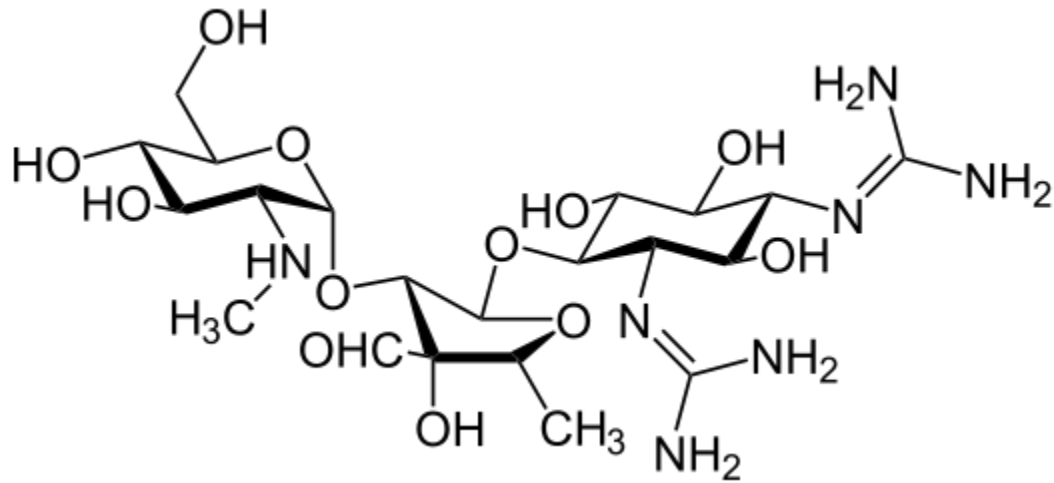
5. Hãy chỉ ra các nhóm chức trong paracetamol.



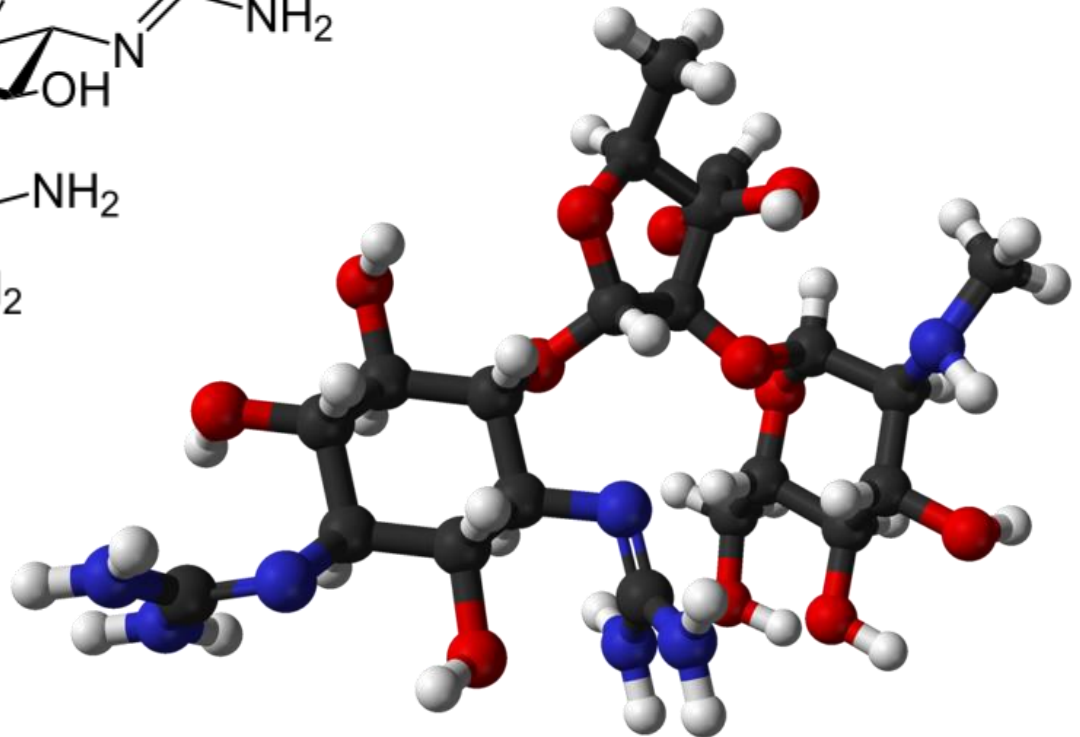
(treat pain and fever)



6. Hãy chỉ ra các nhóm chức trong Streptomycin.



(an antibiotic
to treat bacterial infections)



Bài tập về nhà: Bắt buộc

Làm cá nhân hoặc làm nhóm (không quá 3 SV/nhóm)

Mỗi lần làm ít nhất 1 chương.

Điền đáp án vào file excel và gửi mail đến địa chỉ:
lequocchon@gmail.com.

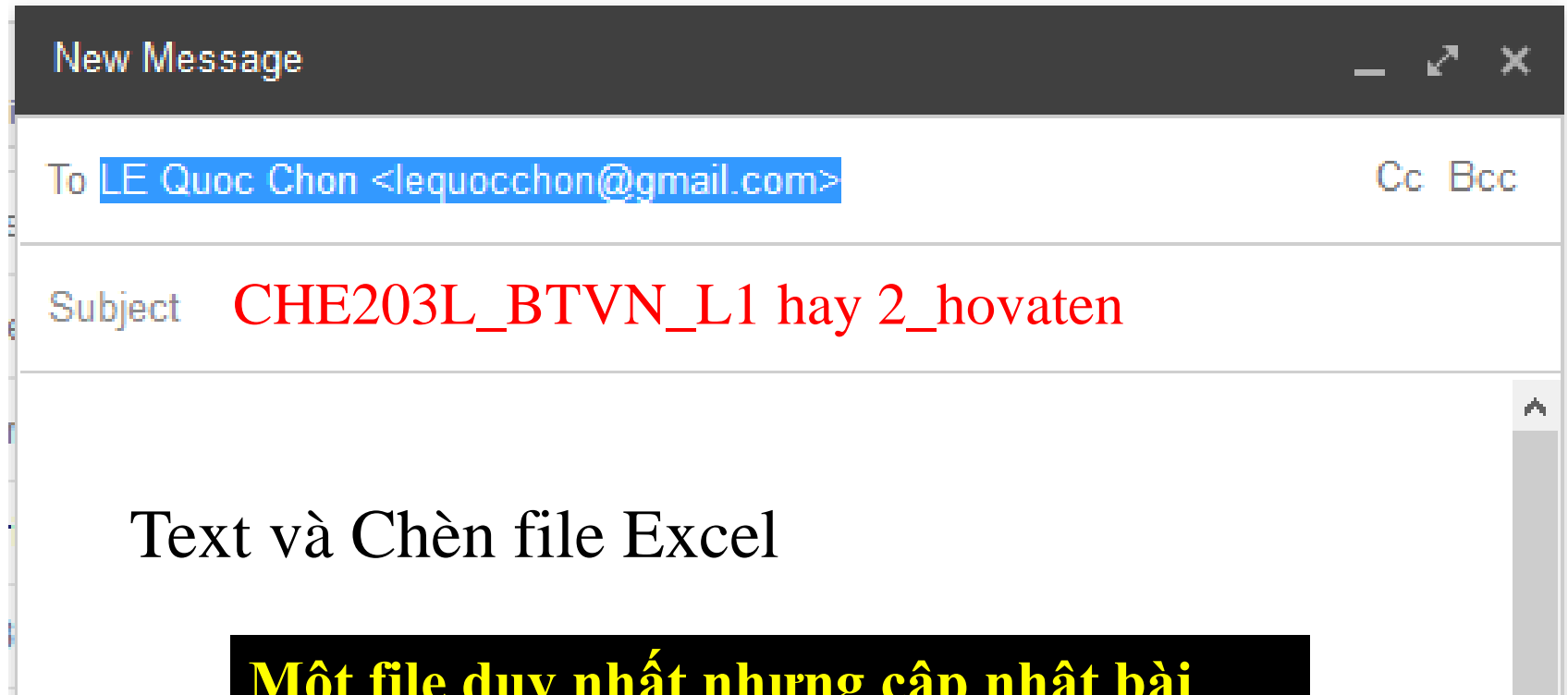
Nộp bài tập vào trước mỗi thứ Tư hàng tuần.

Tên file: CHE203L_BTVN_L**1**_Hovaten

Cập nhật đáp án vào một file duy nhất, nộp lần 1 thì ghi L1, lần 2 ghi L2, lần 3 ghi L3

Nộp bài tập về nhà qua mail

lequocchon@gmail.com



Bài tập về nhà **Bắt buộc**








Điền câu trả lời
vào file excel

Le Quoc Chon blog








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Sunday, January 14, 2018

Bài tập về nhà Organic Chemistry_Answersheet template

Posted by LE Quoc Chon at [7:21 PM](#) No comments:       

Bài tập về nhà Organic Chemistry_Problems

Posted by LE Quoc Chon at [5:04 PM](#) No comments:       

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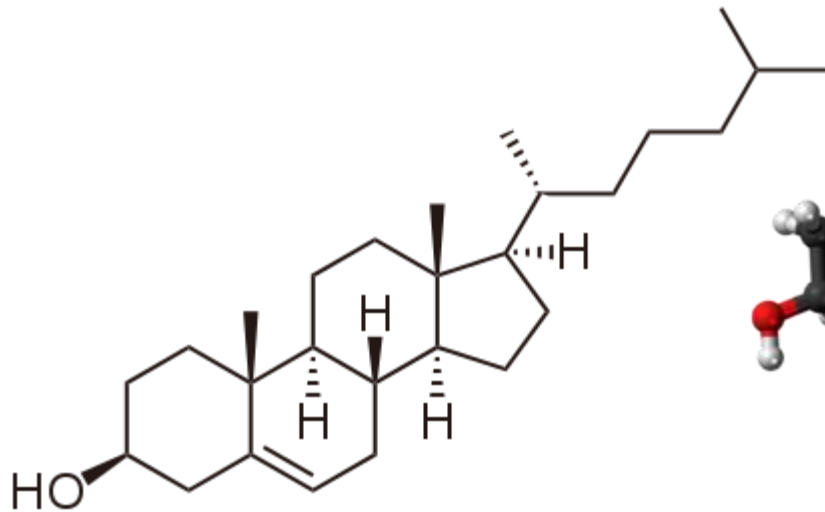
► 2017 (34)

LINK TO DOWNLOAD THE Problems
(link tải câu hỏi)

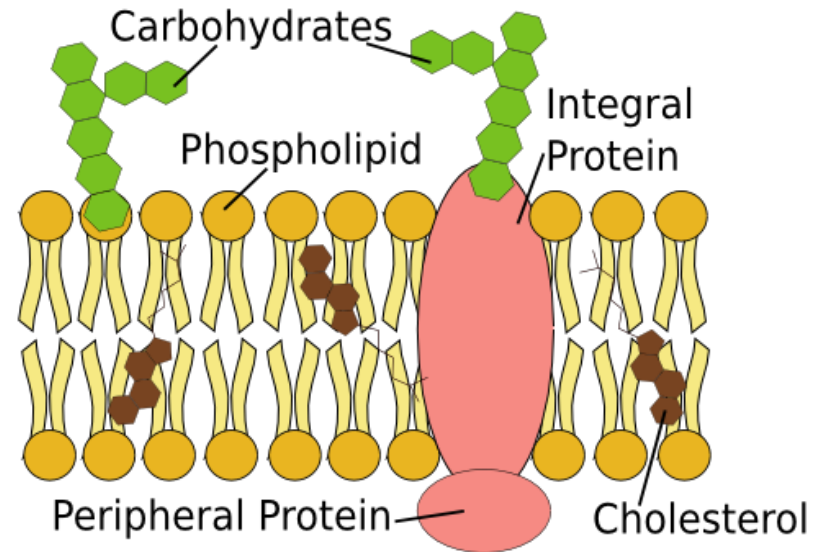
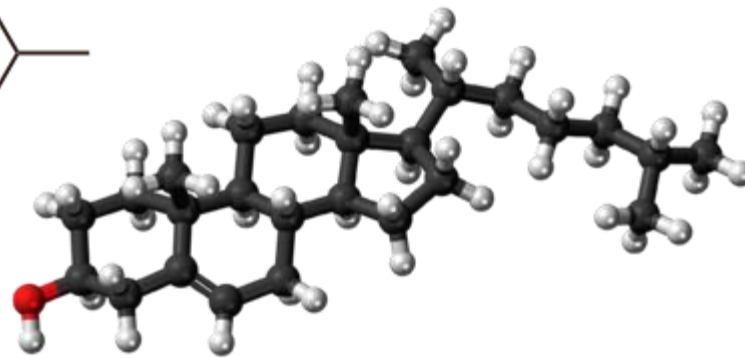
Why do we get sick?

Cyclic compounds

(hợp chất mạch vòng)



Cholesterol



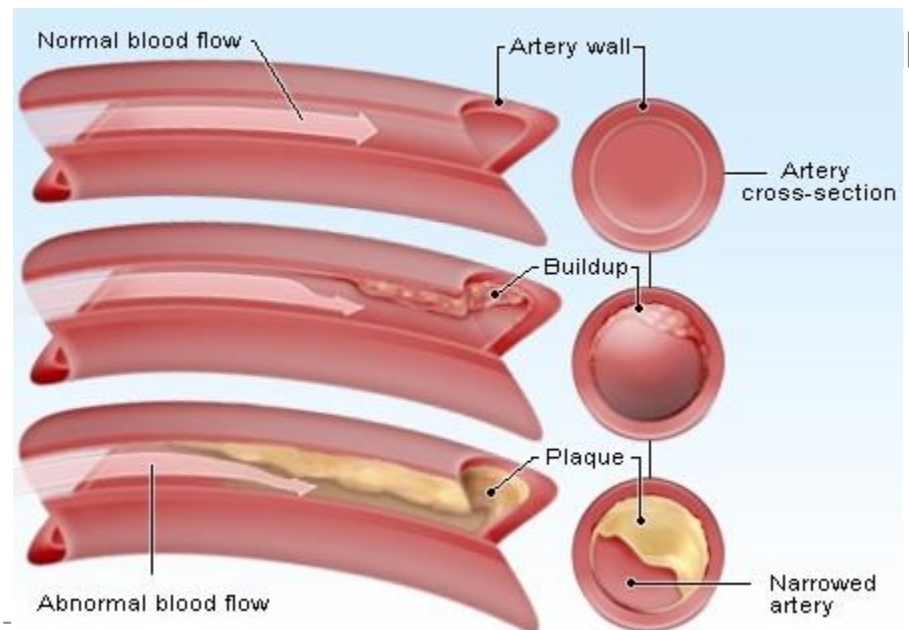
Trong màng tế bào

Cholesterol and Stroke

Every year, more than 795,000 Americans have a stroke, or brain attack. A stroke can occur when a blood clot blocks a blood vessel or artery, or when a blood vessel breaks, stopping blood flow to an area of the brain and cutting off vital supplies of oxygen. This lack of blood can cause damage to areas of the brain that control functions such as walking, thinking, talking and breathing.

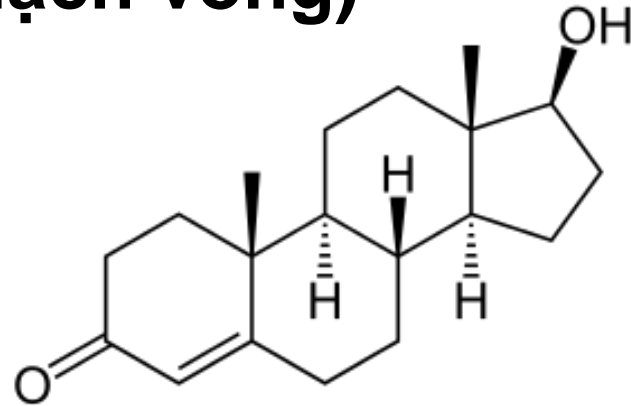
What is cholesterol?

Cholesterol is a soft, waxy fat (lipid)

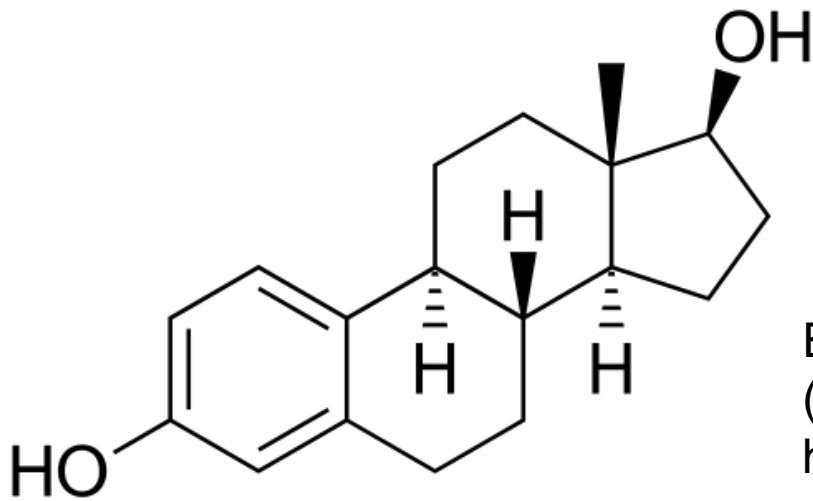


Cyclic compounds

(hợp chất mạch vòng)



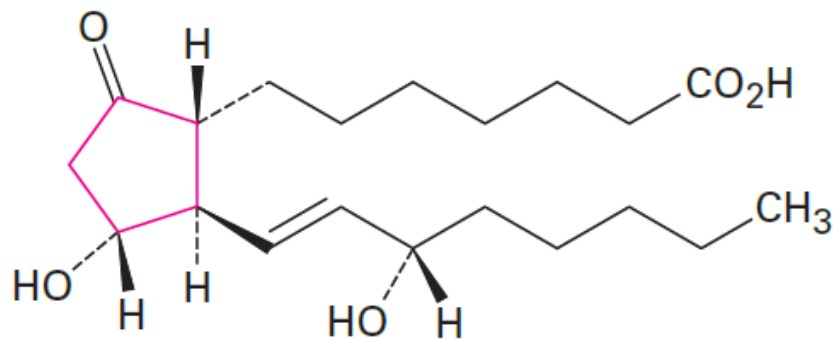
Testosterone
(male sex hormone)
hormone sinh dục nam



Estradiol
(female sex hormone)
hormone sinh dục nữ

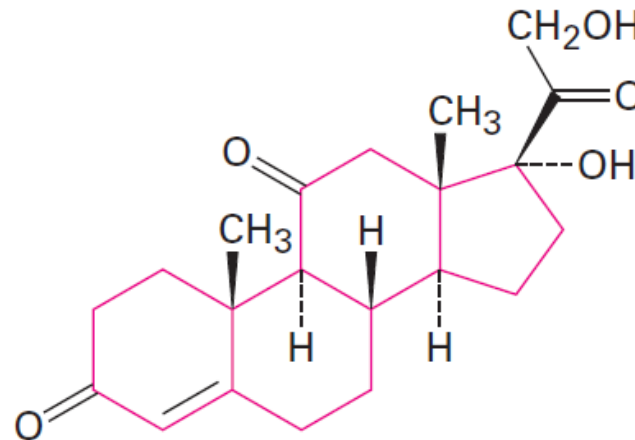
Cyclic compounds

(hợp chất mạch vòng)



(dùng trong phẫu thuật tim bẩm sinh, điều trị liệt dương)

Prostaglandin E₁



Cortisone

(hormone chữa sung, đau...)

Organic Chemistry

CHE 203

Lecture 4: Cycloalkanes

Le Quoc Chon – Duy Tan University

Key concepts

Naming cycloalkanes

Cis-trans isomers cycloalkanes

Naming cycloalkanes

(đọc tên hợp chất mạch vòng no)



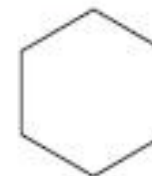
Cyclopropane



Cyclobutane



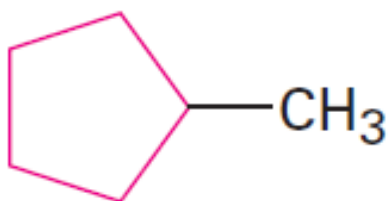
Cyclopentane



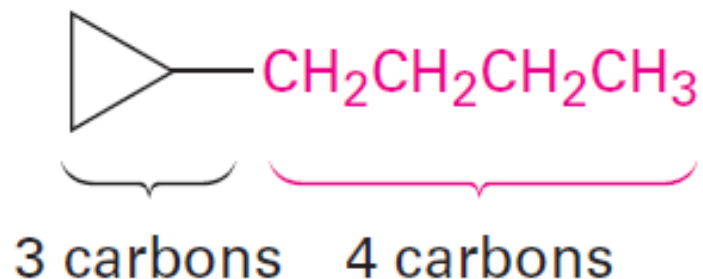
Cyclohexane

Naming cycloalkanes

Step 1: find the parent chain (tìm mạch chính)



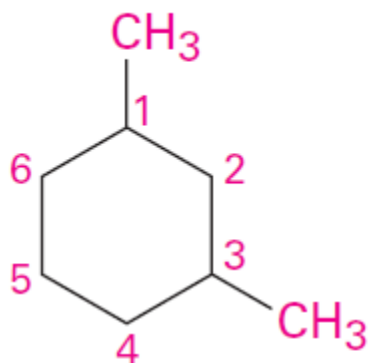
Methylcyclopentane



1-Cyclopropylbutane

Naming cycloalkanes

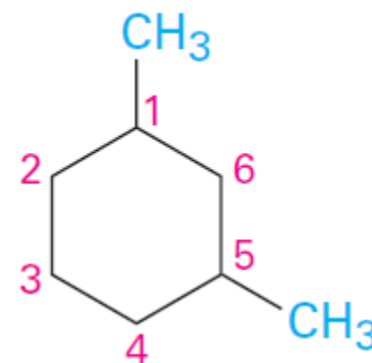
Step 2: number the substituents and name
(đánh số vị trí nhánh và đọc tên nhánh)



1,3-Dimethylcyclohexane

↑
Lower

NOT

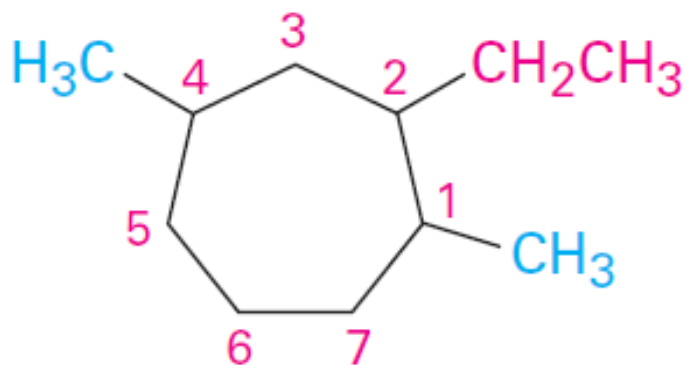


1,5-Dimethylcyclohexane

↑
Higher

Naming cycloalkanes

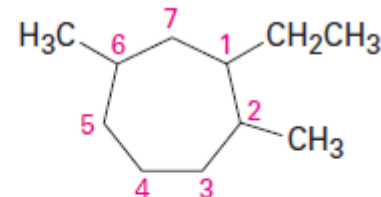
Attention: name branches with lowest number of order as possible (đánh số vị trí nhánh sao cho số định vị này nhỏ nhất có thể)



2-Ethyl-1,4-dimethylcycloheptane

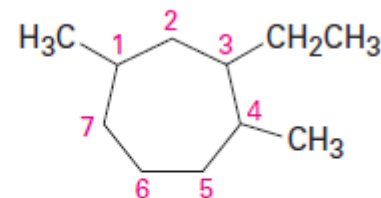
↑ Lower ↑ Lower

NOT



1-Ethyl-2,6-dimethylcycloheptane

↑ Higher

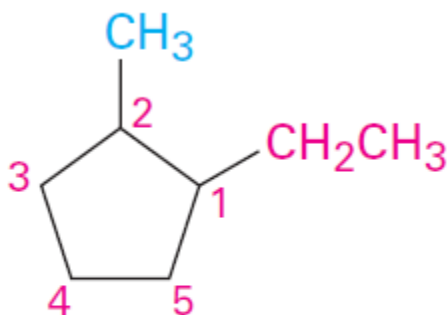


3-Ethyl-1,4-dimethylcycloheptane

↑ Higher

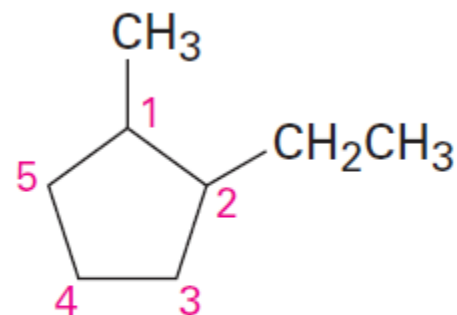
Naming cycloalkanes

Following alphabetical order for alkyl groups
(nhánh nào có chữ cái đầu tiên đứng trước trong bản chữ cái a, b, c ..., thì đọc trước)



1-Ethyl-2-methylcyclopentane

NOT

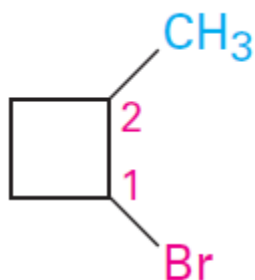


2-Ethyl-1-methylcyclopentane

Naming cycloalkanes

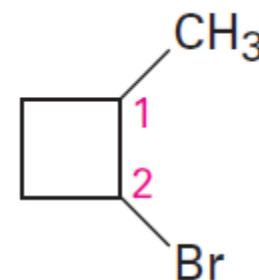
Consider halogens as alkyl groups

(xem các nhánh halogens tương tự nhóm alkyls)



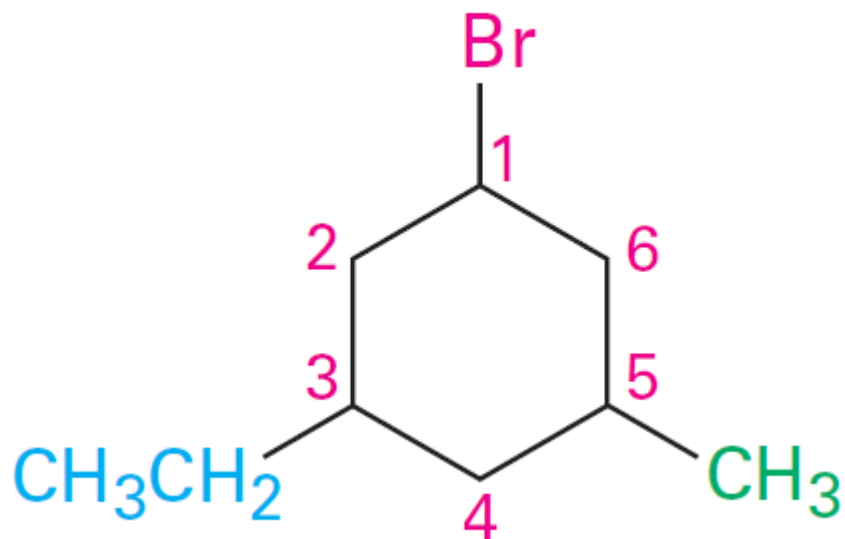
1-Bromo-2-methylcyclobutane

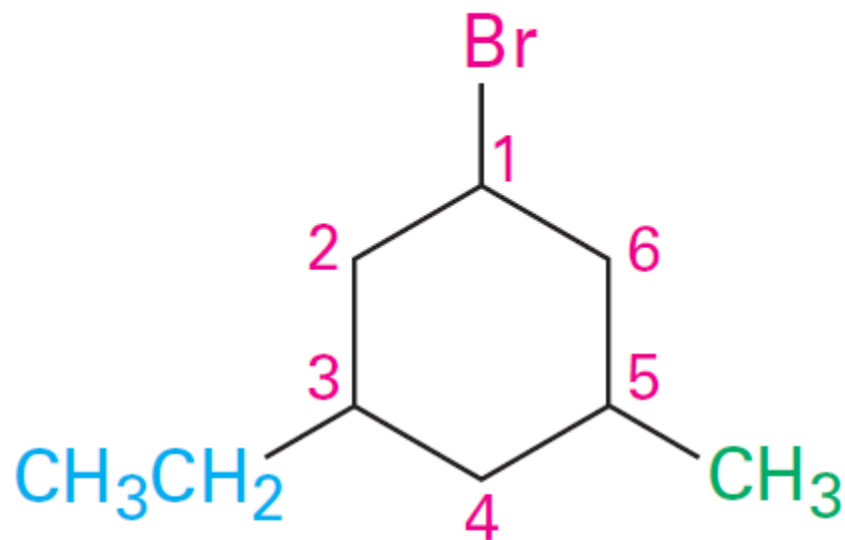
NOT



2-Bromo-1-methylcyclobutane

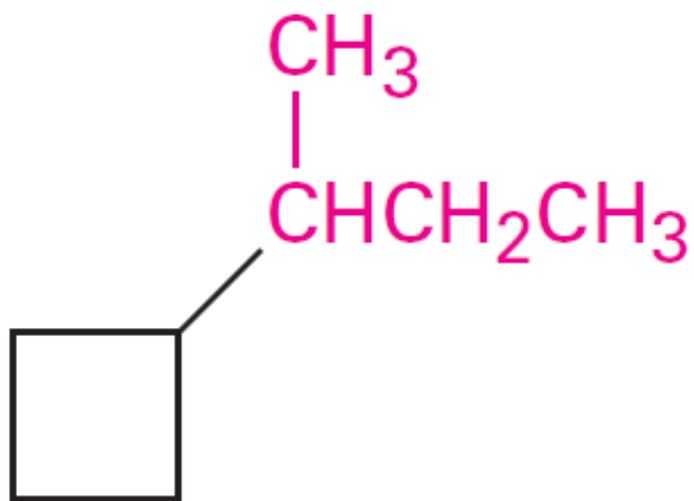
Naming cycloalkanes

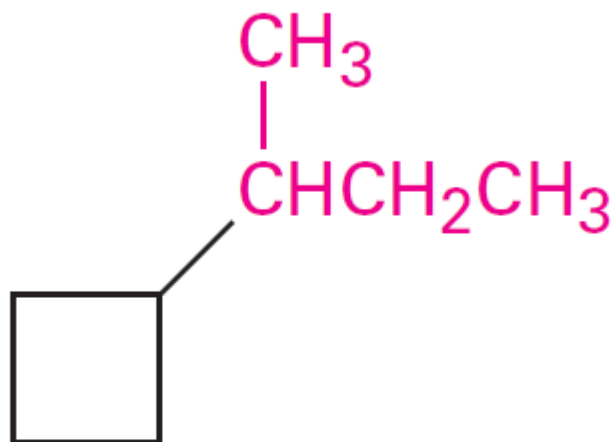




1-Bromo-3-ethyl-5-methyl-
cyclohexane

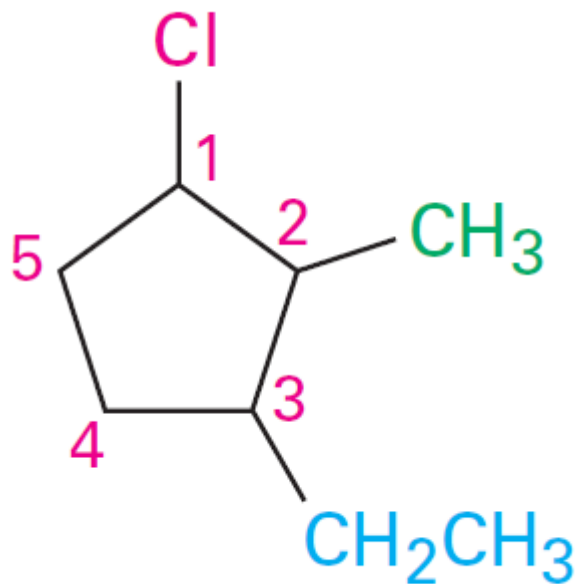
Naming cycloalkanes

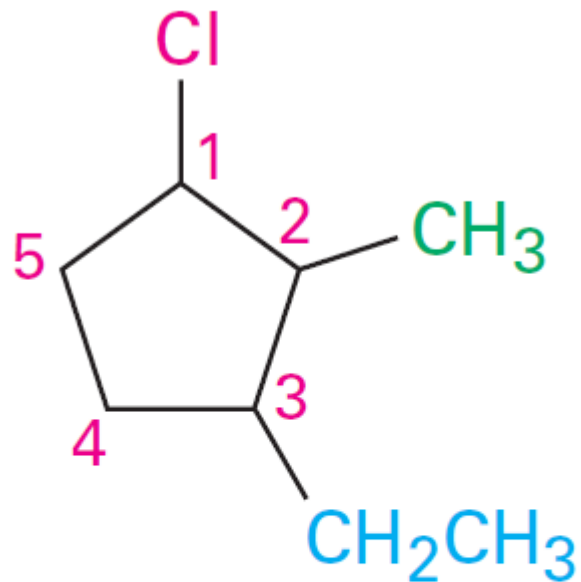




(1-Methylpropyl)cyclobutane
or *sec-butyl*cyclobutane

Naming cycloalkanes



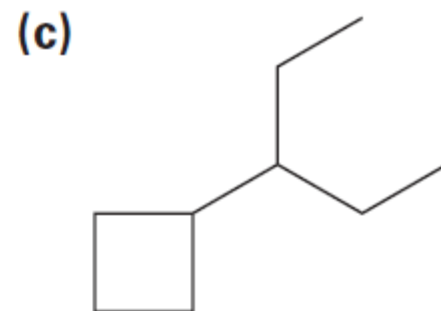
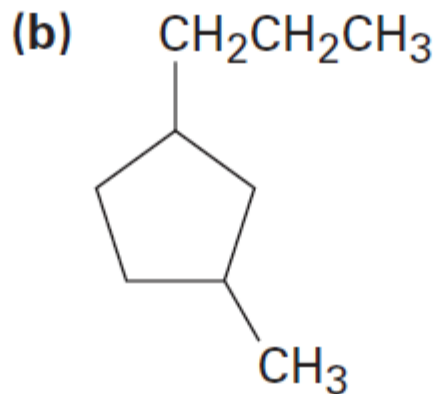
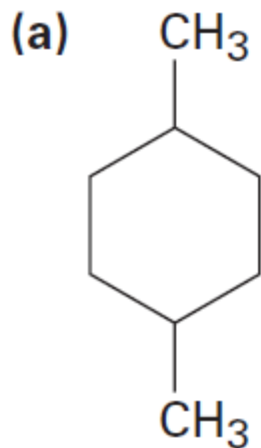


**1-Chloro-3-ethyl-2-methyl-
cyclopentane**

Problems

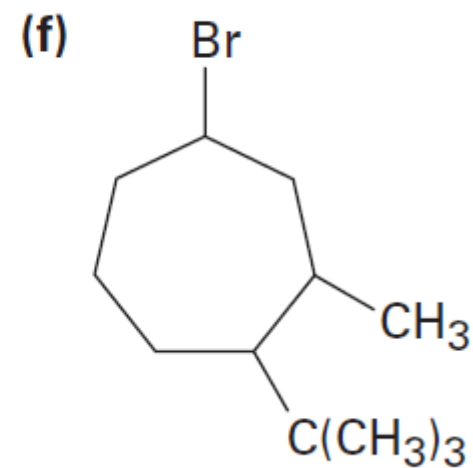
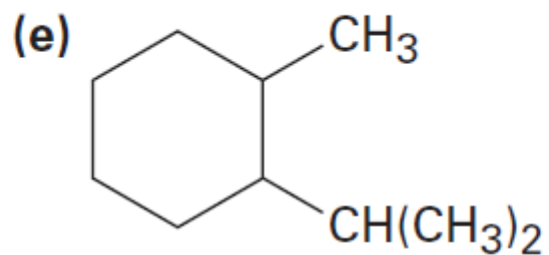
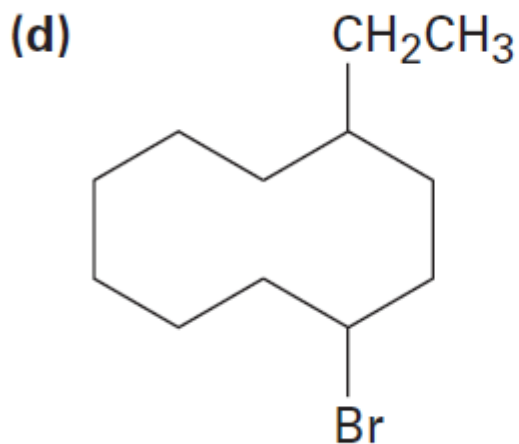
PROBLEM 4-1 (đọc tên IUPAC các chất sau)

Give IUPAC names for the following cycloalkanes:



Problems

(đọc tên IUPAC các chất sau)



Problems

PROBLEM 4-2 (vẽ công thức cấu tạo các chất sau)

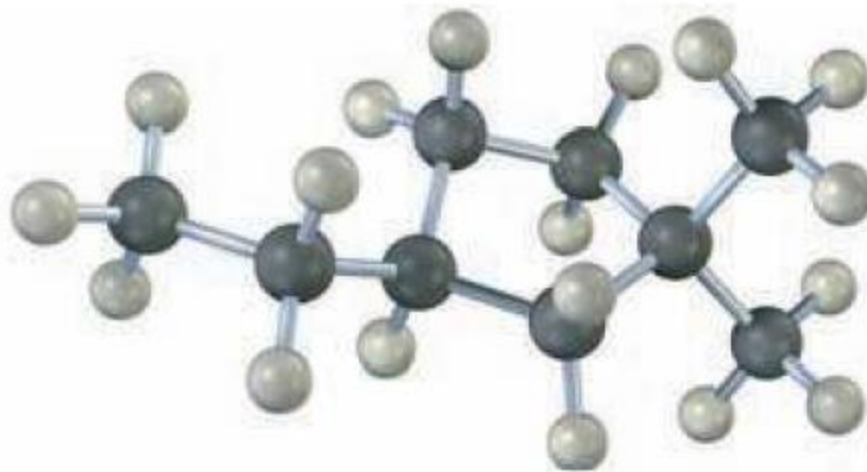
Draw structures corresponding to the following IUPAC names:

- (a) 1,1-Dimethylcyclooctane (b) 3-Cyclobutylhexane
(c) 1,2-Dichlorocyclopentane (d) 1,3-Dibromo-5-methylcyclohexane

Problems

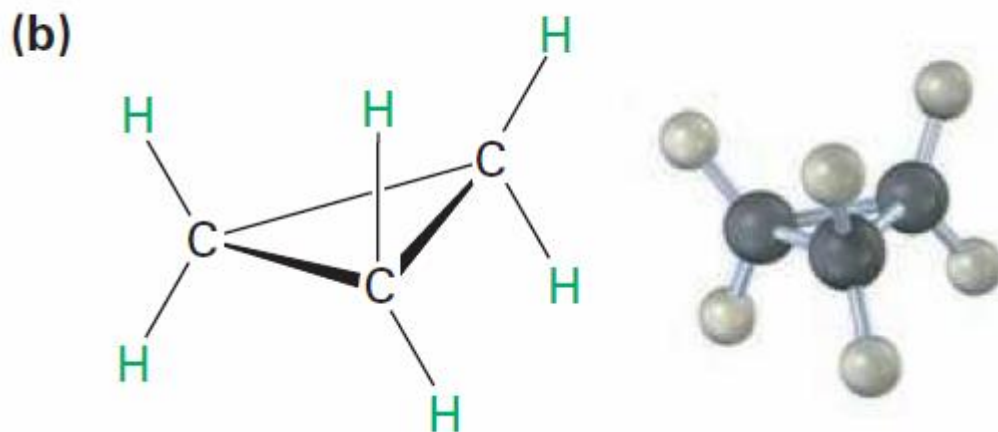
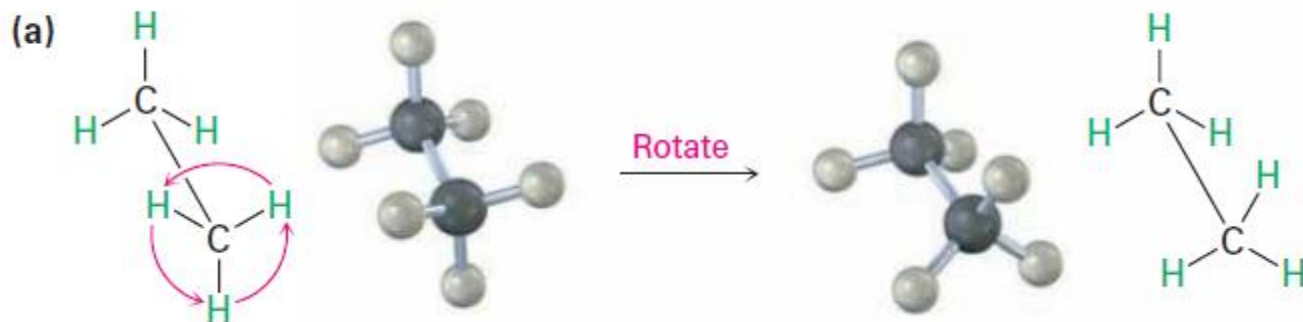
PROBLEM 4-3 (đọc tên chất sau)

Name the following cycloalkane:



Cis-trans isomerism: cycloalkanes

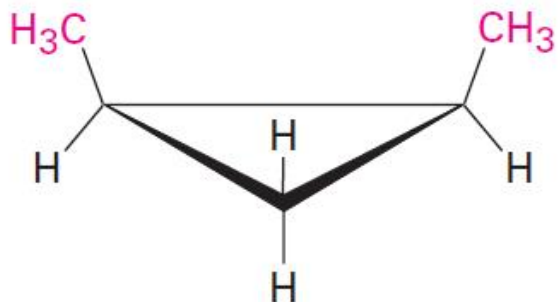
(đồng phân cis-trans của chất vòng no)



No rotation

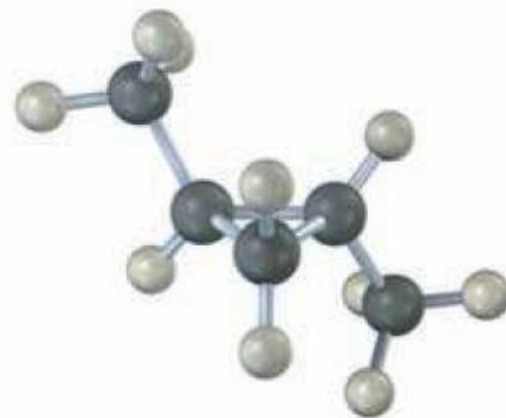
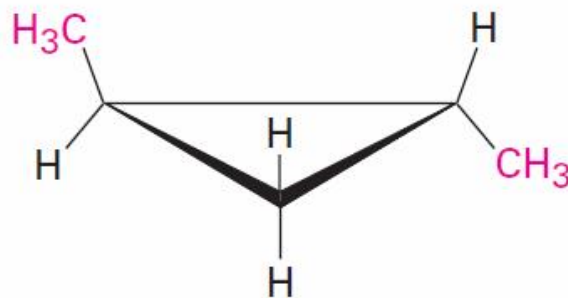
Cis-trans isomerism

(đồng phân cis-trans)



cis-1,2-Dimethylcyclopropane

Rotation &
breaking bond



trans-1,2-Dimethylcyclopropane

Stereoisomers

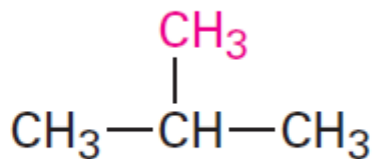
(đồng phân lập thể)

Stereochemistry: 3D aspects of molecules

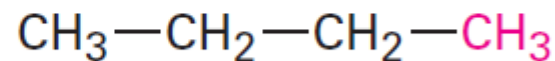
(lĩnh vực nghiên cứu sự phân bố trong không gian ba chiều của các nguyên tử trong phân tử hợp chất)

Các đồng phân có cùng công thức phân tử nhưng khác nhau về công thức cấu tạo.

Constitutional isomers
(different connections between atoms)

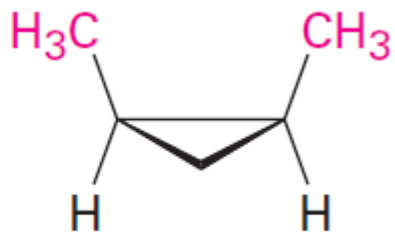


and

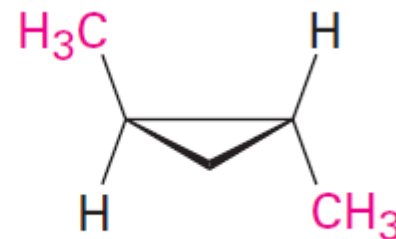


Stereoisomers
(same connections but different three-dimensional geometry)

(các đồng phân có cùng công thức phân tử, cùng công thức cấu tạo nhưng khác nhau về sự phân bố trong không gian 3D)



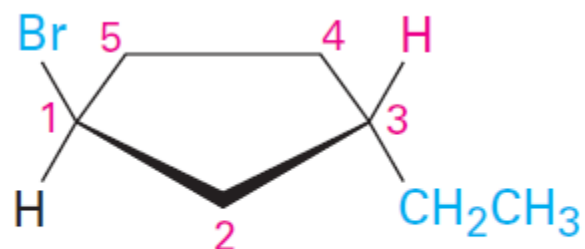
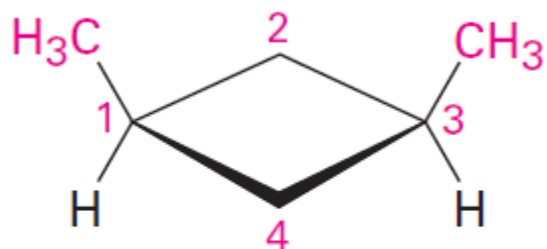
and



Stereoisomers

(đồng phân lập thể)

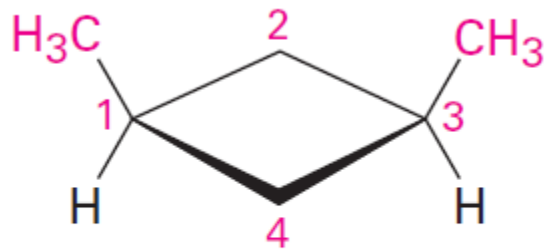
Đọc tên đồng phân với cis, trans cho các chất sau:



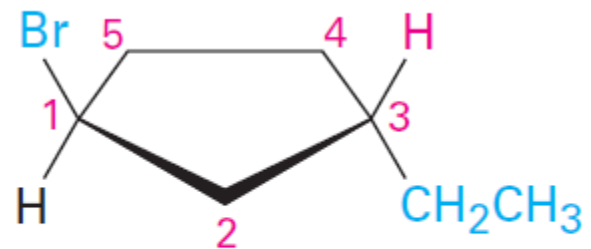
Stereoisomers

(đồng phân lập thể)

Đọc tên đồng phân với cis, trans cho các chất sau:



cis-1,3-Dimethylcyclobutane

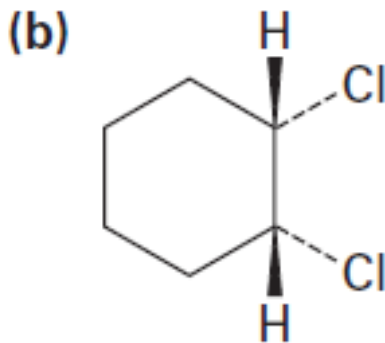
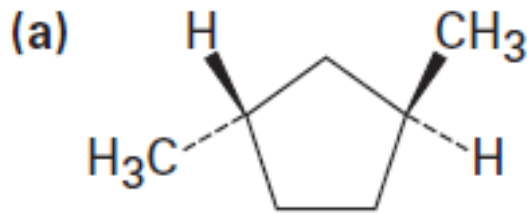


trans-1-Bromo-3-ethylcyclopentane

Cis-trans isomers

Đọc tên đồng phân với cis, trans cho các chất sau:

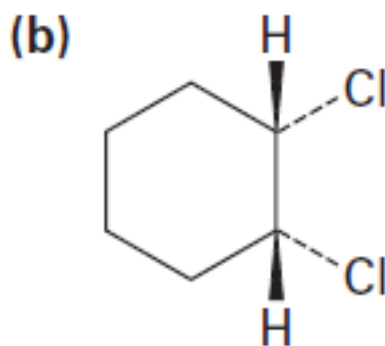
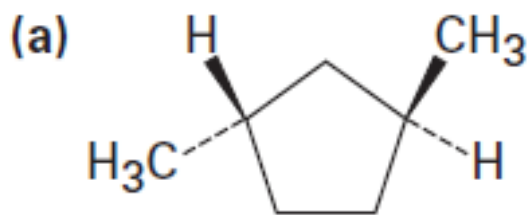
Name the following substances, including the *cis*- or *trans*- prefix:



Cis-trans isomers

Đọc tên đồng phân với cis, trans cho các chất sau:

Name the following substances, including the *cis*- or *trans*- prefix:



cis-1,2-Dichlorocyclohexane

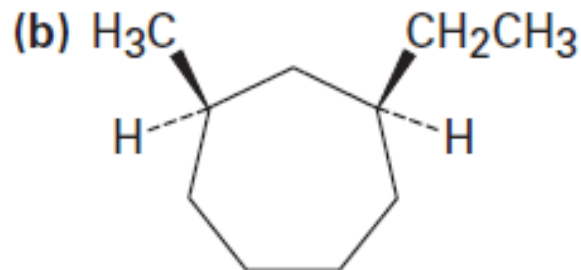
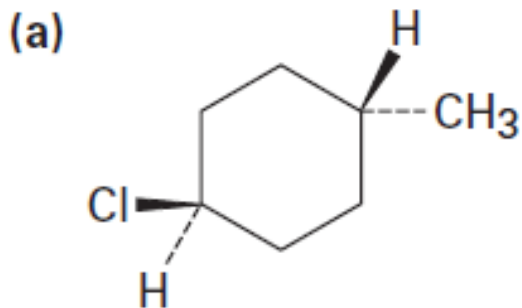
trans-1,3-Dimethylcyclopentane

Problems

Đọc tên đồng phân với cis, trans cho các chất sau:

PROBLEM 4-4

Name the following substances, including the *cis*- or *trans*- prefix:



Problems

Vẽ công thức cấu tạo cho các chất sau:

PROBLEM 4-5

Draw the structures of the following molecules:

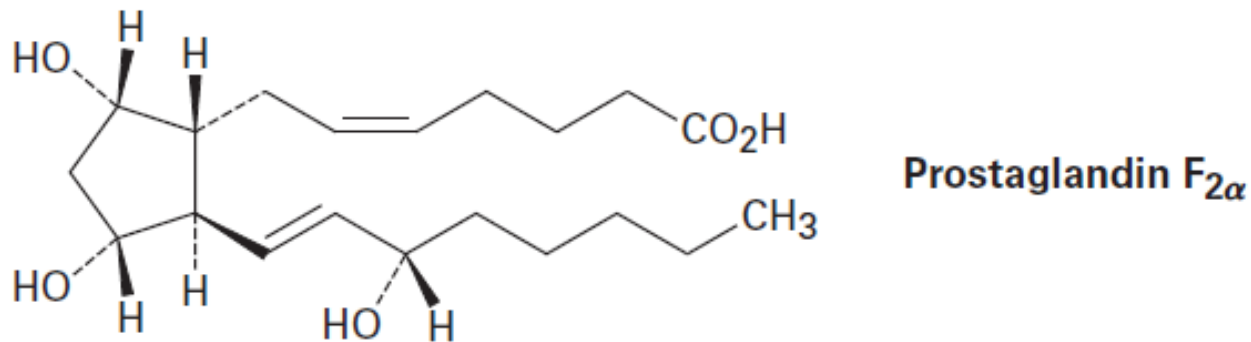
- (a) *trans*-1-Bromo-3-methylcyclohexane (b) *cis*-1,2-Dimethylcyclobutane
(c) *trans*-1-*tert*-Butyl-2-ethylcyclohexane

Problems

Prostaglandin $F_{2\alpha}$ là một hormone gây co thắt tử cung trong quá trình sinh em bé. Hãy xem trong công thức cấu tạo của Prostaglandin hai nhóm hydroxyl (-OH) gắn trên vòng cyclopentane ở vị trí cis hay trans với nhau. Làm tương tự đối với hai mạch carbon.

PROBLEM 4-6

Prostaglandin $F_{2\alpha}$, a hormone that causes uterine contraction during childbirth, has the following structure. Are the two hydroxyl groups (—OH) on the cyclopentane ring cis or trans to each other? What about the two carbon chains attached to the ring?



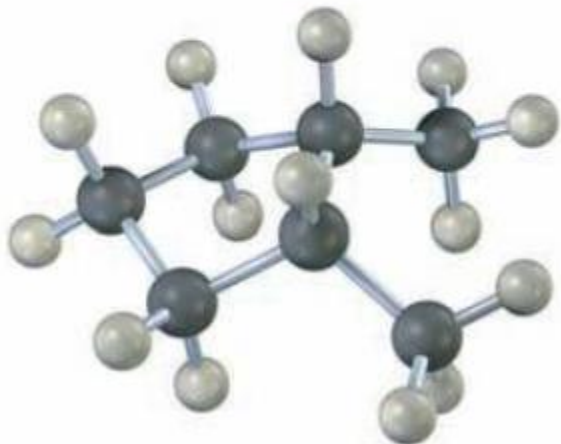
Problems

Đọc tên đồng phân với *cis*, *trans* cho các chất sau:

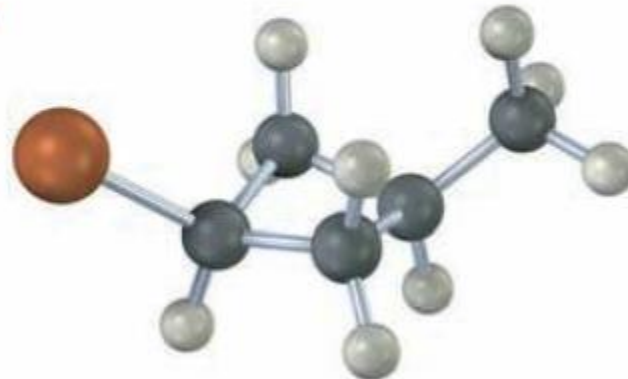
PROBLEM 4-7

Name the following substances, including the *cis*- or *trans*- prefix (red-brown = Br):

(a)

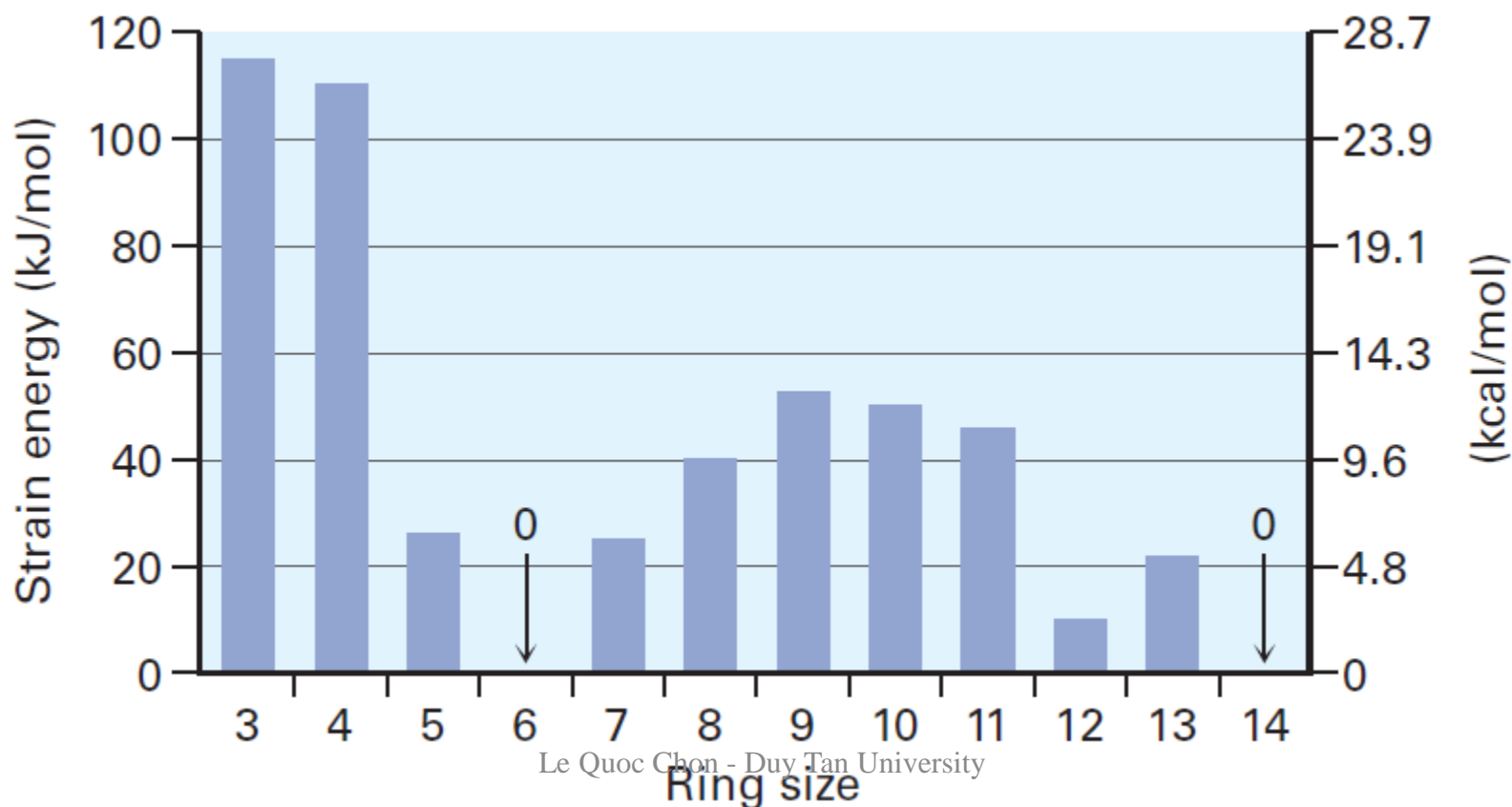


(b)



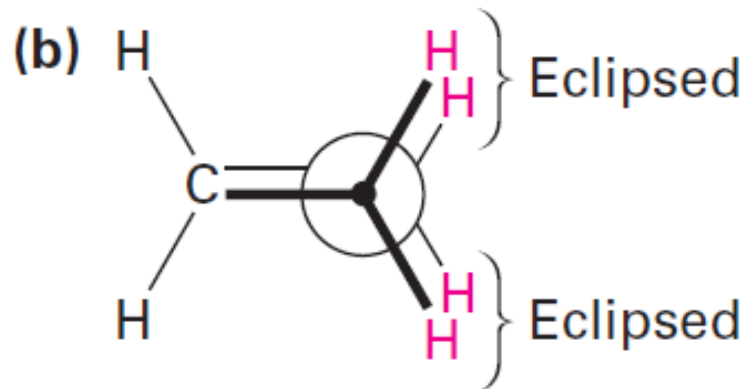
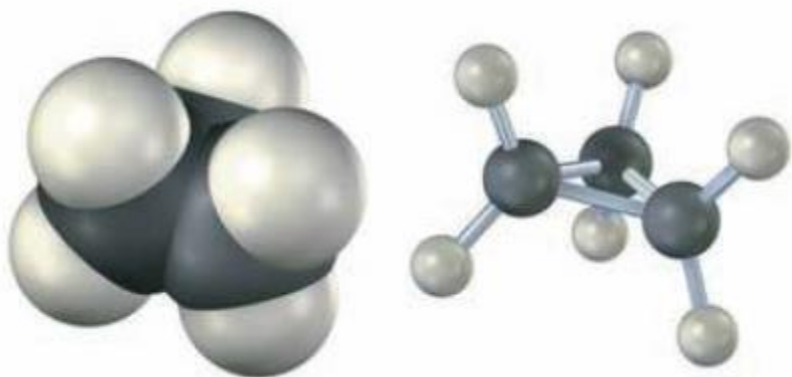
Stability of cycloalkanes

- **Angle strain**—the strain due to expansion or compression of bond angles
- **Torsional strain**—the strain due to eclipsing of bonds between neighboring atoms
- **Steric strain**—the strain due to repulsive interactions when atoms approach each other too closely



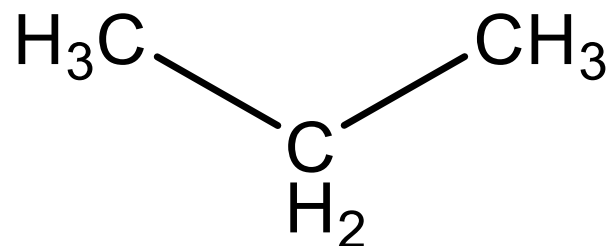
Cyclopropane

(a)



C-C bond: 255 kJ/mol in cyclopropane

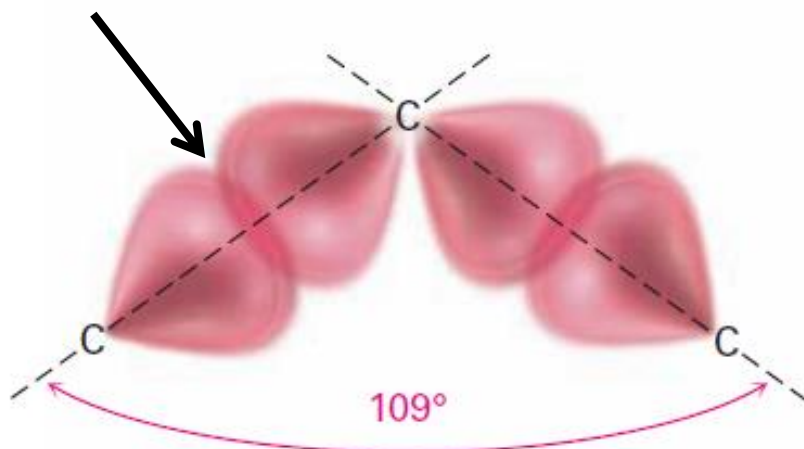
C-C bond: 370 kJ/mol in open-chain propane



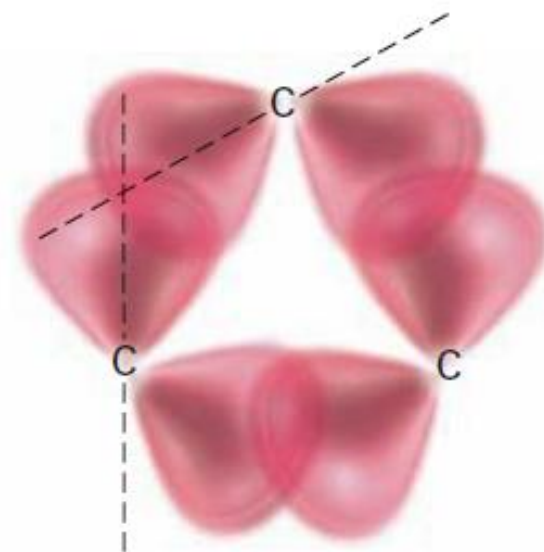
Cyclopropane

(xem kẻ kiểu này mạnh hơn)

This overlapping is stronger



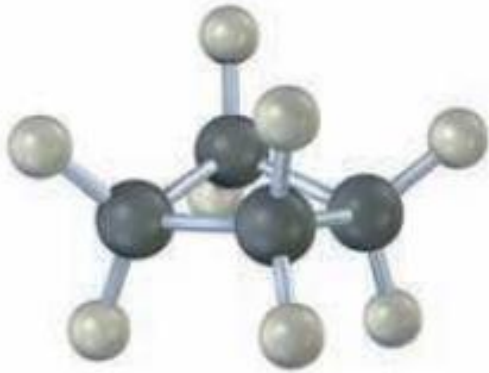
Typical alkane C-C bonds



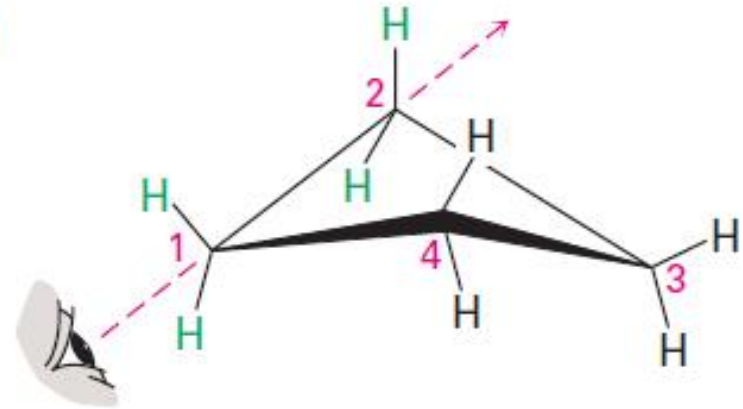
Typical bent cyclopropane C-C bonds

Cyclobutane

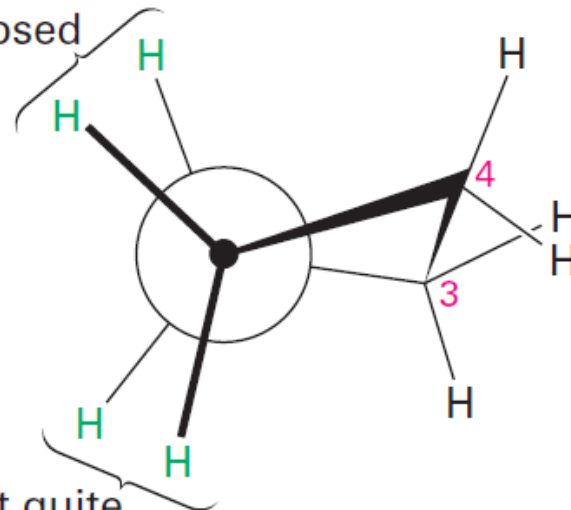
(a)



(b)

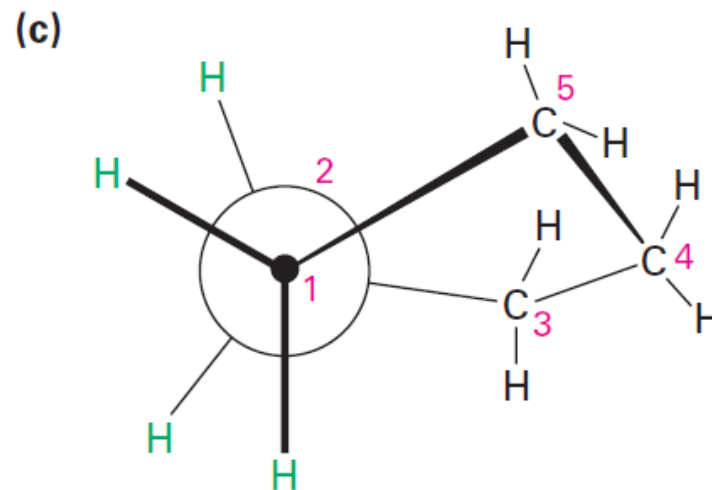
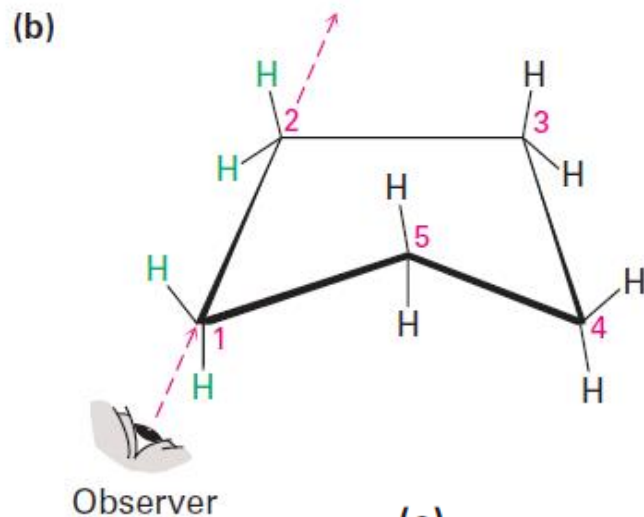


(c) Not quite eclipsed



Not quite eclipsed

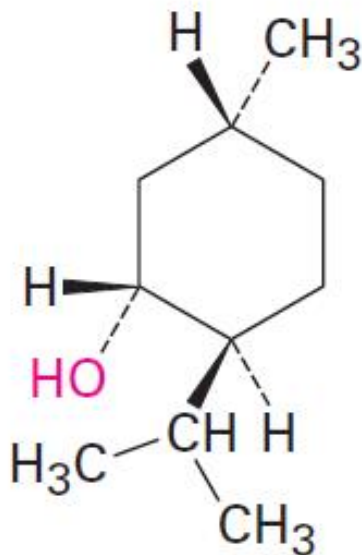
Cyclopentane



They are the same

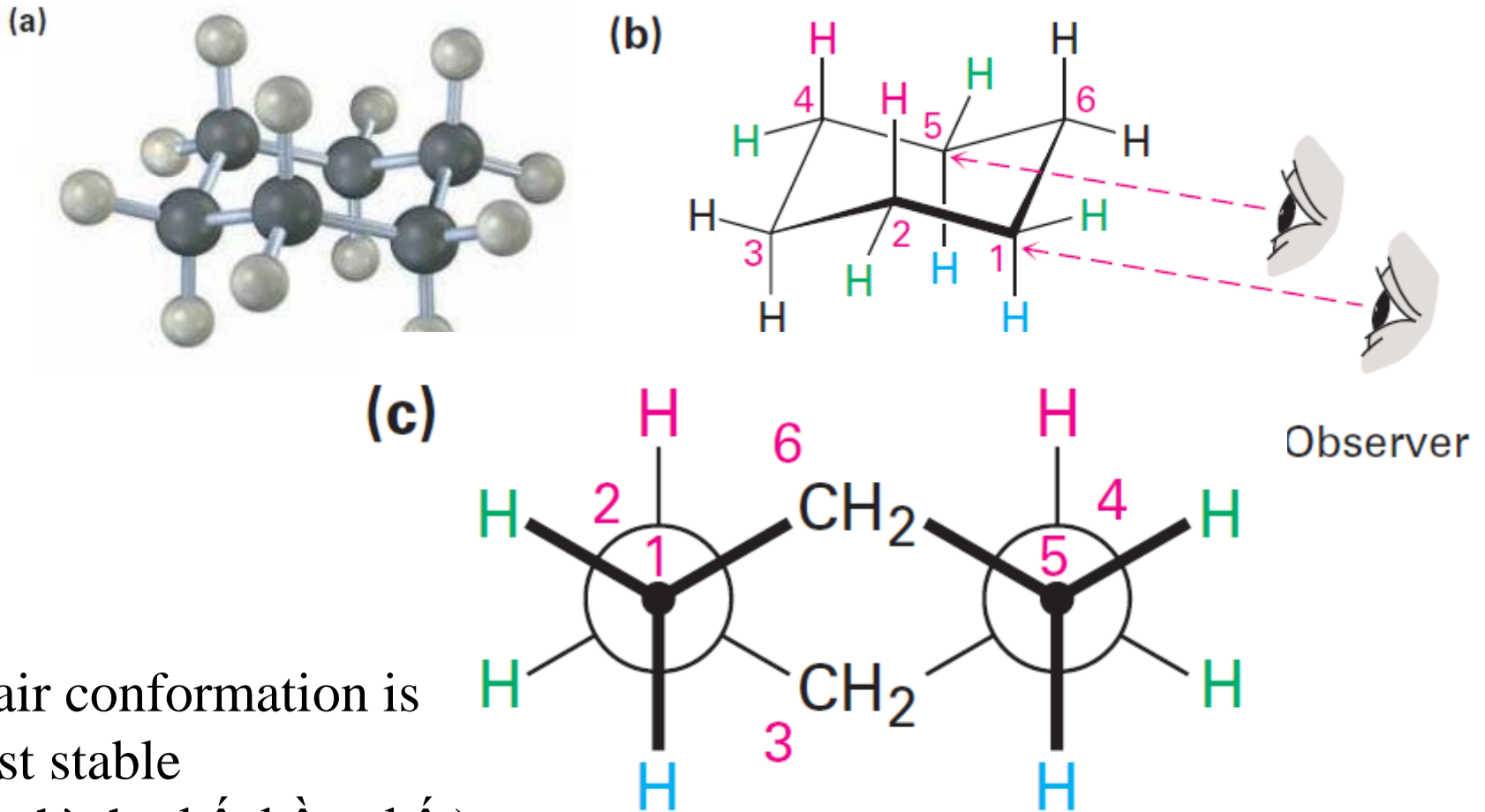
Cyclohexane

Look at six-membered ring in menthol
(**synthetic** or from corn mint, peppermint)
widely use to relieve minor throat irritation
(tổng hợp hoặc tách từ bạc hà, dùng trị đau cổ)



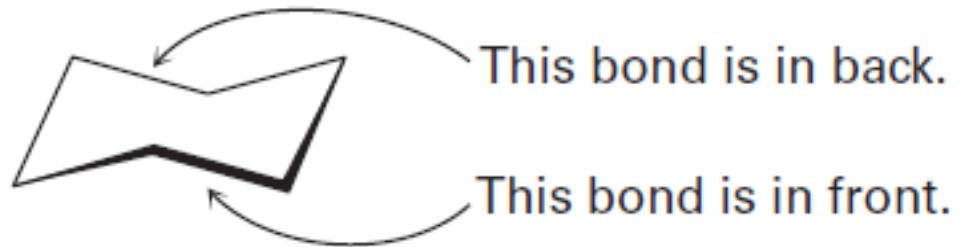
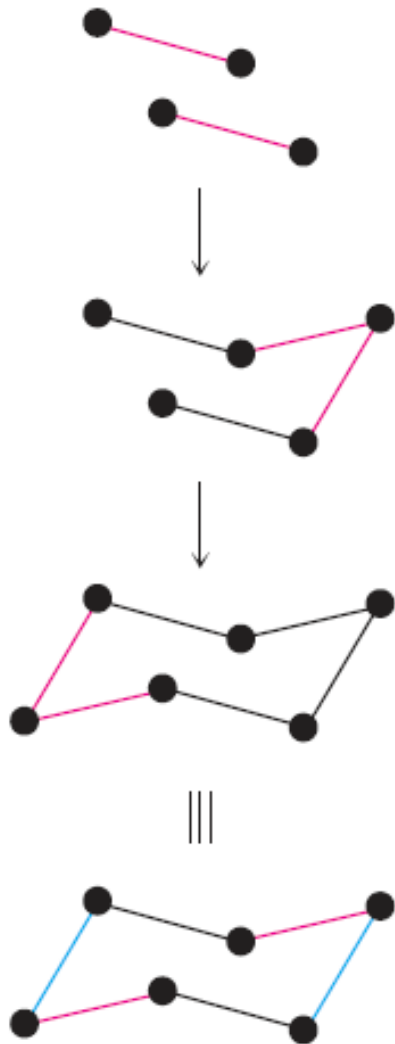
Menthol

Cyclohexane



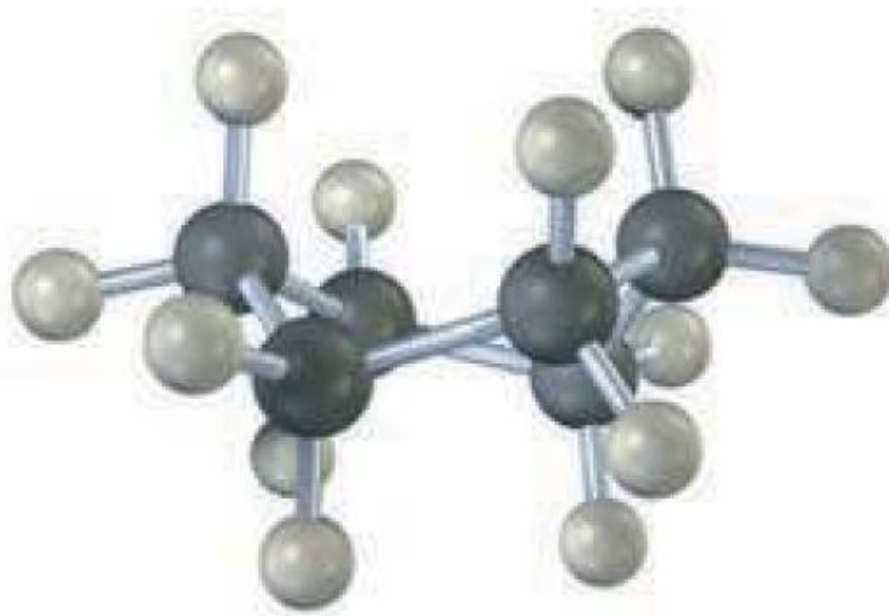
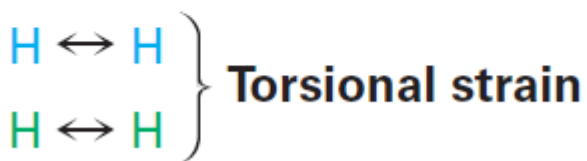
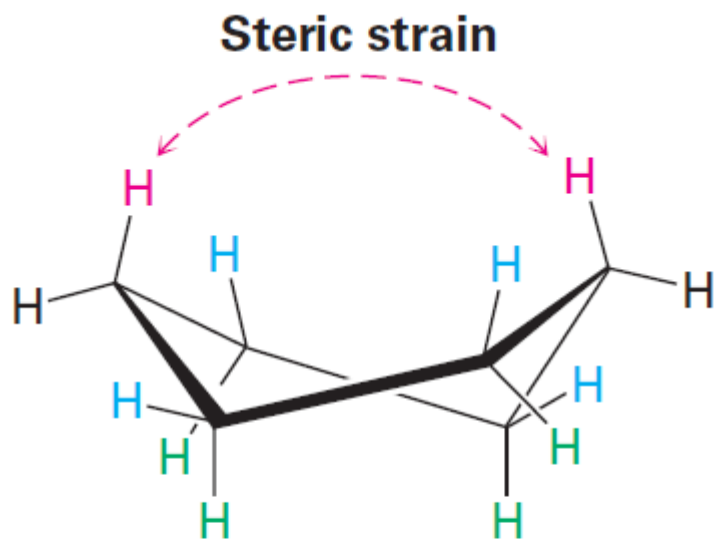
Chair conformation is most stable
(cấu hình ghế, bền nhất)

Chair conformation of cyclohexane



Boat conformation

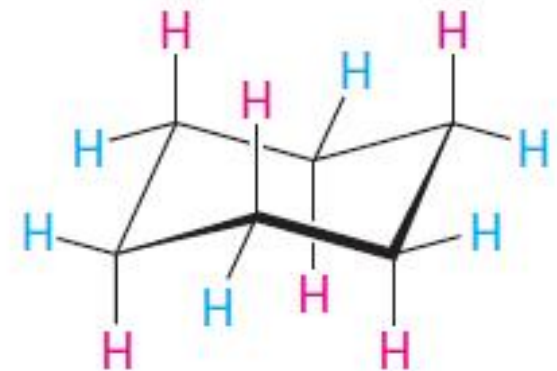
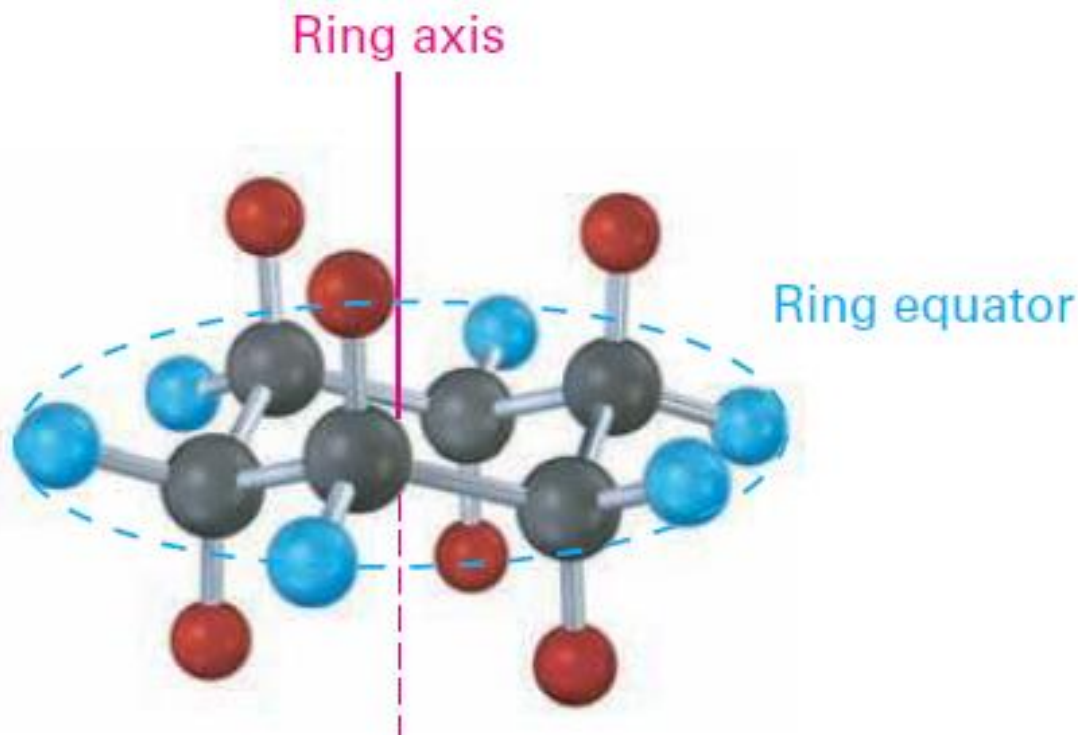
Cấu hình thuyền



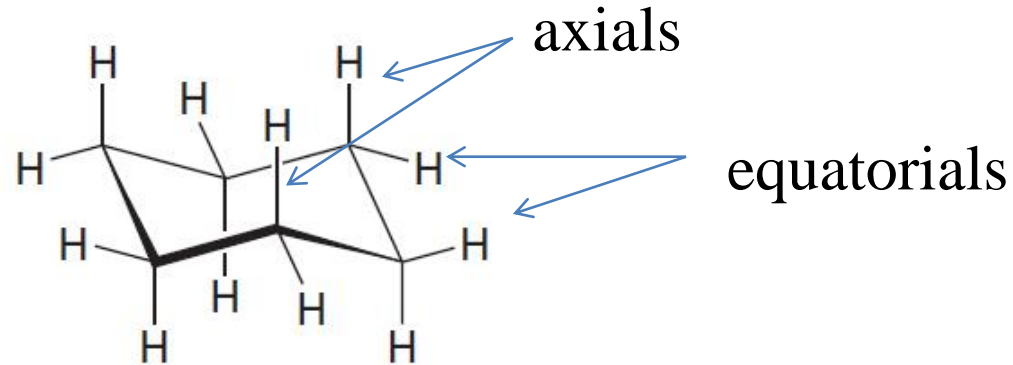
Twist-boat cyclohexane
(23 kJ/mol strain)

Axial & equatorial bonds

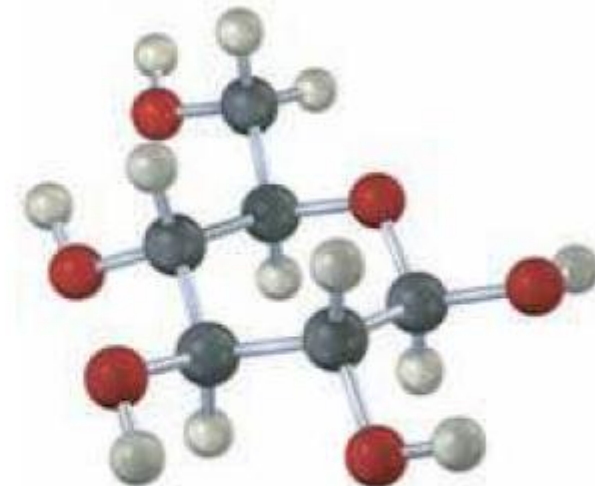
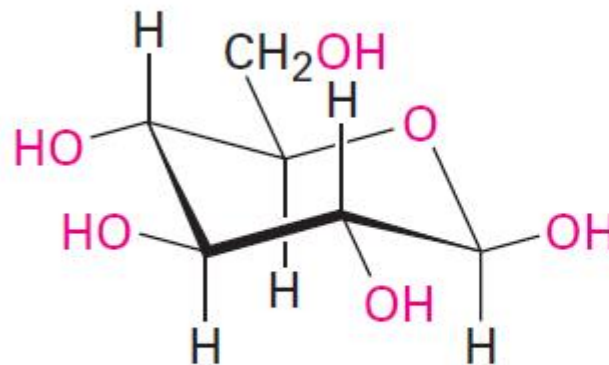
Liên kết trục hay phẳng



Axial & equatorial bonds



Cyclohexane
(chair conformation)

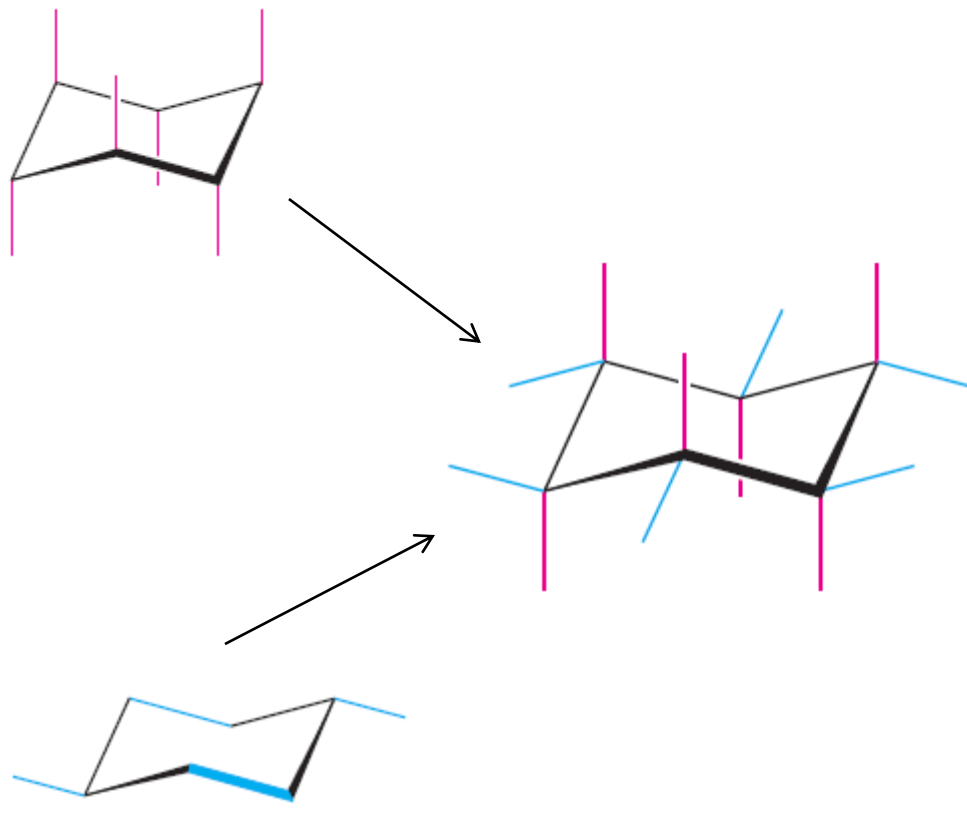


Glucose
(chair conformation)

Axial & equatorial bonds

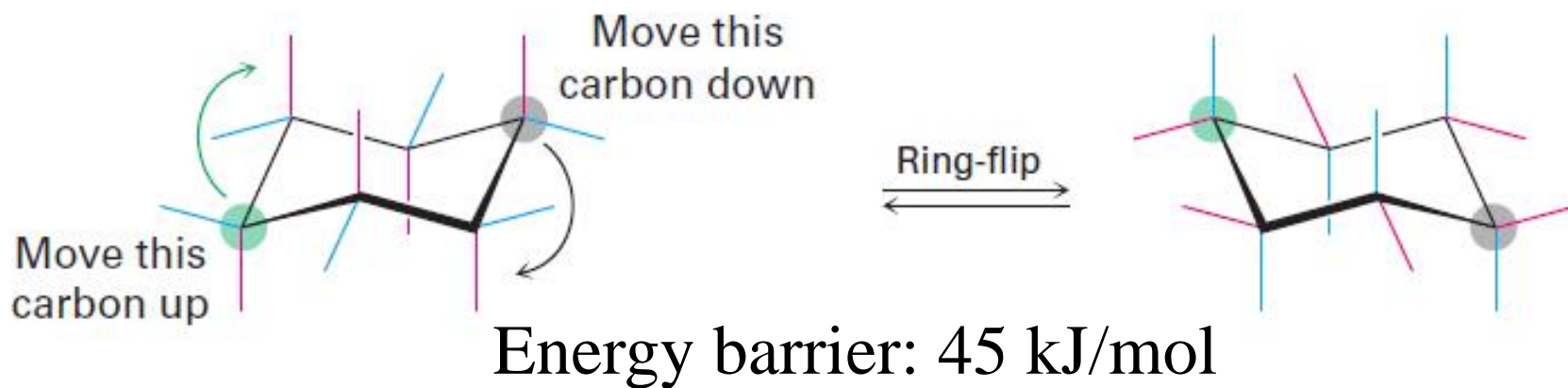
Axial bonds: The six axial bonds, one on each carbon, are parallel and alternate up-down.

Equatorial bonds: The six equatorial bonds, one on each carbon, come in three sets of two parallel lines. Each set is also parallel to two ring bonds. Equatorial bonds alternate between sides around the ring.



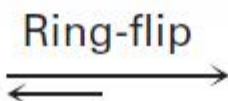
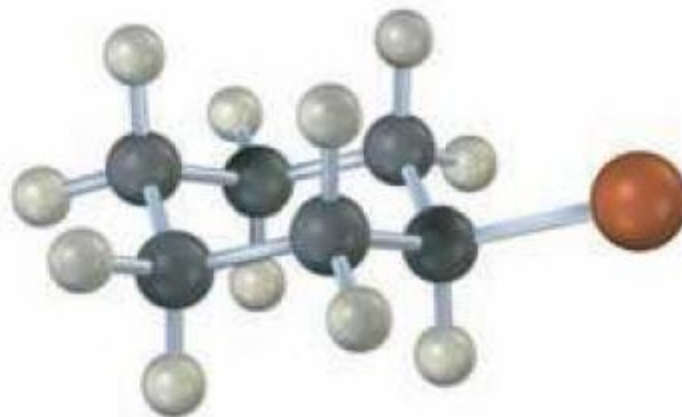
Interconversion: ring flip

Sự chuyển đổi giữa các cấu hình



Interconversion: ring flip

Sự chuyển đổi giữa các cấu hình

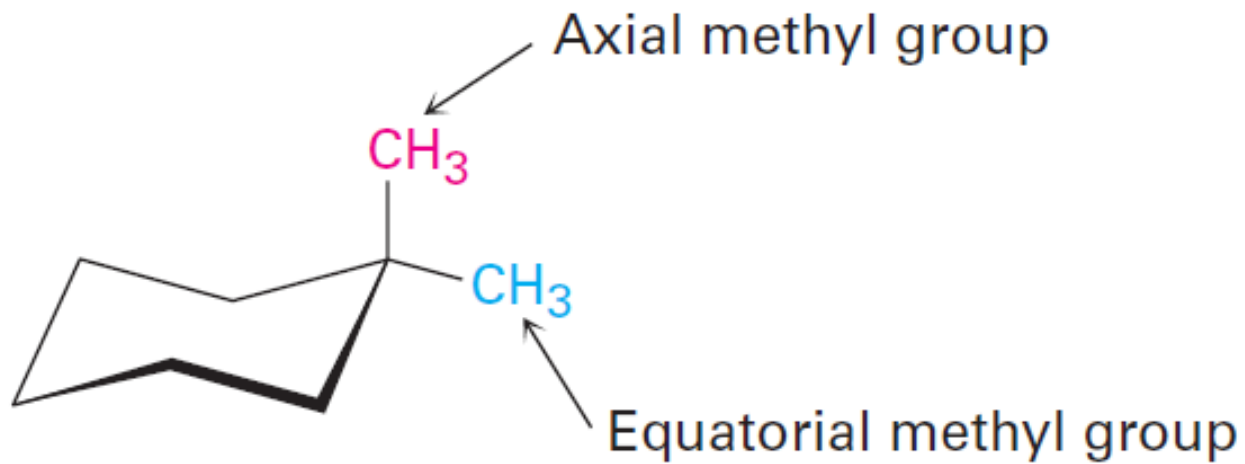


Axial bromocyclohexane

Equatorial bromocyclohexane

Problem

Draw 1,1-dimethylcyclohexane in a chair conformation. Mention which methyl group is axial and equatorial.

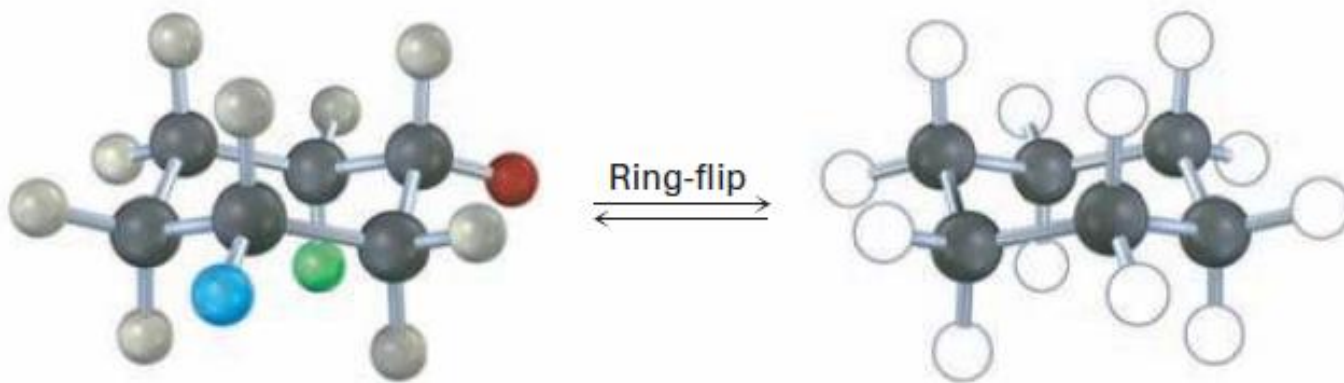


Problem

Xác định các nguyên tử ở vị trí màu đỏ, xanh đậm, xanh nhạt tương ứng với liên kết nằm trên trục đứng hay đường biên)

PROBLEM 4-14

Identify each of the colored positions—red, blue, and green—as axial or equatorial. Then carry out a ring-flip, and show the new positions occupied by each color.



Why Do I Have to Learn This Stuff?

"One day a chemistry professor was discussing a particularly complicated concept. A pre-med student rudely interrupted to ask 'Why do we have to learn this stuff?' 'To save lives,' the professor responded quickly and continued the lecture. A few minutes later the same student spoke up again. 'So how does organic chemistry save lives?' he persisted. 'It keeps idiots out of medical school.' replied the professor." --Modified from Frank Gorga, Bridgewater State College

"It is not so very important for a person to learn facts, for that he doesn't really need a college education, for he can learn them from books. The value of an education in a liberal arts college is not the learning of many facts but **the training of the mind to think** - something that cannot be learned from books." --Albert Einstein

"One purpose of a liberal arts education is to make your head a more interesting place to live inside of for the rest of your life." --Mary Patterson McPherson, President, Bryn Mawr College

Synthetic Cannabimimetics

2/3 of the novel psychoactives are “synthetic cannabimimetics” — literally “mimics” of cannabis, or marijuana.

The manufacture of these drugs, most recently K2 and the like, dates back about 10 years when sold as alternatives to marijuana.

The actual NPS are chemicals cooked up in fly by night labs, sprayed onto herbs, dried and packaged for sale.

A good deal of their production is going on in China and Russia.

Unlike marijuana, they are far more potent and last longer in the body, cheaper.

Especially vulnerable are people living in poverty, those with mental and addictive disorders, and youth

he NPS marketing, including trendy names, colorful packages, and ostensible low risk of criminal prosecution, make them truly dangerous to the public health.

Synthetic Cathinones

The illegally synthesized cathinones are a great variety of amphetamine-like drugs. Some of their early versions, also dating back almost 10 years, were sold as alternatives to pharmaceutical psychostimulants (like Ritalin, Dexedrine and Adderall). MDMA (Ecstasy or Molly) and [Bath Salts](#) add to the list of synthetic cathinones - as have other drugs more recently with street names such as Ocean Breath, Fire Ball, Sextasy, which are sold to replace or pretend to be Ecstasy.

These compounds act primarily on the noradrenaline and dopamine brain receptors (with some effect as well on serotonin). This mode of action explains their euphoric and excitatory effects, as well as their capacity to raise blood pressure and heart rate (including palpitations), sweating, insomnia, muscle twitching, dizziness, grinding of teeth, and nausea and vomiting. Paranoia, hallucinations, and agitation have been reported, and can result in emergency room visits and hospital stays. Cathinones are known to be toxic to the liver as well.

Ethanol metabolism?