Welcome to CHE 141
Honors Chemistry I

What does “Honors” mean?
I don’t know but you are it.

What do I need for the course?
Text  Clicker  Workshop / Quiz pages

Where do I get the info I need?
http://www.ic.sunysb.edu/Class/orgchem/che141/
Course web site

What grade do you think you will get in CHE 141?
A  B  C  D  F

What grade do you think the person sitting next to you will get in CHE 141?

Hydrocarbons
Hydrides of Carbon

CH\textsubscript{4}  Methane
C\textsubscript{2}H\textsubscript{6}  Ethane
C\textsubscript{3}H\textsubscript{8}  Propane

Hydrocarbons with only single bonds are alkanes

What is this?

a. The roof of a house
b. An upside down “V”
c. An “up” arrow
d. A drawing of propane
e. I have no idea, but I like it
f. I have no idea and I don’t like it
How many hydrogens in a C₁₂ alkane?

- C₂H₆ ethane
- C₃H₈ propane
- C₄H₁₀ butane
- C₅H₁₂ pentane
- C₆H₁₄ hexane
- C₇H₁₆ heptane
- C₈H₁₈ octane
- C₉H₂₀ nonane
- C₁₀H₂₂ decane

A. 20  B. 22  C. 24  D. 26  E. 30

Each carbon has 2 hydrogens except for the two ends which have 3.

\[ C_nH_{2n+2} \]

How many hydrogens in the C₂₀ alkane?

Icosane \( C_{20}H_{42} \)

Structural isomers

Same atoms, but different bonds

- n-pentane
- isopentane
- neopentane
- methylbutane
- dimethylpropane

What are the other isomers?

hexane

- 2-methylpentane
- 3-methylpentane
- 2,3-dimethylbutane
- 2,2-dimethylbutane
Draw all isomers of heptane, C\textsubscript{7}H\textsubscript{16}?

How many structural isomers are there?

A 6    B 7    C 9    D 10    E 11    F 12    G 14    H 16

9 Structural Isomers

Chiral Molecule: Mirror image is a different molecule

(S)-3-methylhexane

(R)-3-methylhexane

What other compound is chiral?

A B C D E

9 structural isomers plus two stereoisomers
Name this compound

Longest chain has seven carbons - it is a heptane
Number the atoms - But which way?
Name the substituents - alphabetical order
Add numbers for positions in order
4,3-ethylmethylheptane

Alkenes

Longest chain has six carbons - hexene
Double bond in 3rd position - 3-hexene
Methyl on 2nd and 4th carbon
2,4-dimethylhex-3-ene

(E)-2,4-dimethylhex-3-ene  (Z)-2,4-dimethylhex-3-ene

Draw the structure of
(E)-4-chlorohept-3-ene

E - heavy (high priority) on opposite side
Z - heavy (high priority) on same side

A. (E)-2-ethylhept-3-ene
B. (Z)-2-ethylhept-3-ene
C. (E)-3-methyloct-4-ene
D. (Z)-3-methyloct-4-ene

trans-3-methyloct-4-ene