Organic Chemistry

- compounds containing carbon.

Hydrocarbons:

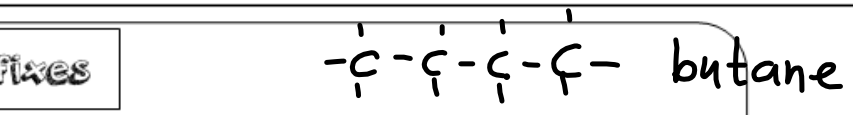
- compounds made of hydrogen & carbon.
- carbon can form 4 covalent bonds.

- carbons can bond together w. single, double & triple bonds.

ALKANES

- have single C-C bonds. (saturated)
- non-polar molecules.
- general formula C_nH_{2n+2} ex/ C_3H_8

* count # of carbon atoms in chain.
Use proper prefix, end in -ane.



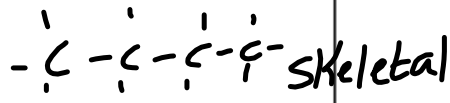
butane

Prefixes		
1C meth-	5C pent-	9C non-
2C eth-	6C hex-	10C dec-
3C prop-	7C hept-	
4C but-	8C oct-	

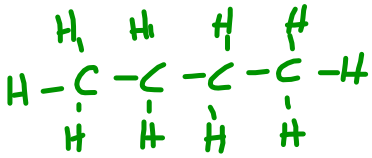
STRAIGHT CHAIN ALKANES:

There are a few ways to draw Molecules.

C_4H_{10} – chemical formula.



skeletal



structural formula

$CH_3-CH_2-CH_2-CH_3$ condensed

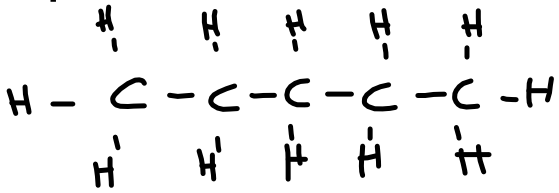
line diagram

Alkanes can be expressed several ways...Let's try pentane.

1. Molecular formula

C_5H_{12}

2. Complete structural formula



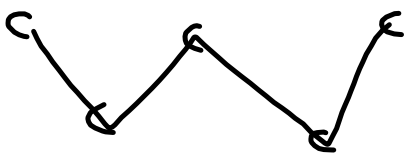
3. Condensed structural formula

$CH_3-CH_2-CH_2-CH_2-CH_3$

4. Condensed structural formula

$CH_3-(CH_2)_3-CH_3$

5. Line angle formula



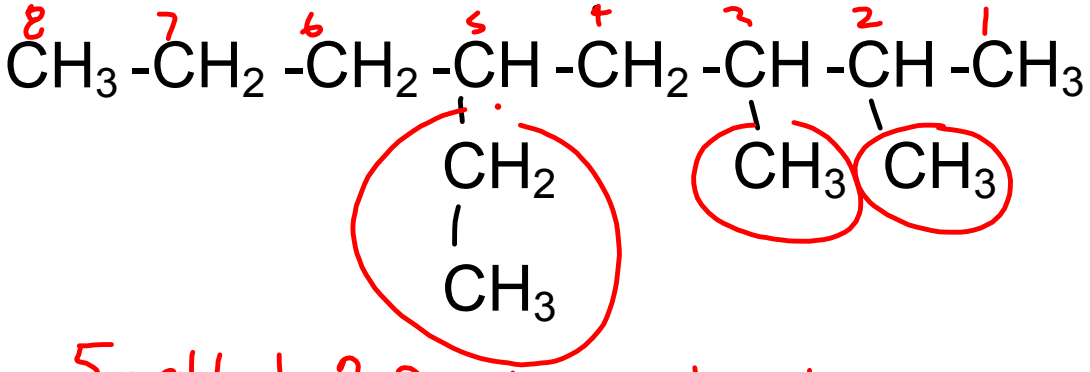
Naming Branched Alkanes

Step 1: Find the longest chain of carbons, this is the parent chain.

Step 2: Number the carbons in the chain start at the end that will give the branches the smallest number.

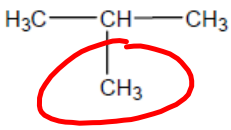
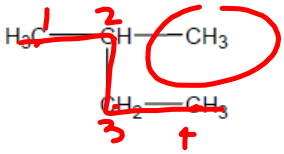
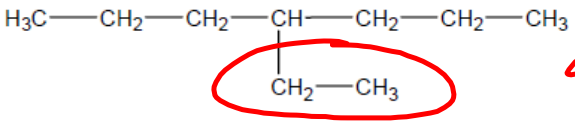
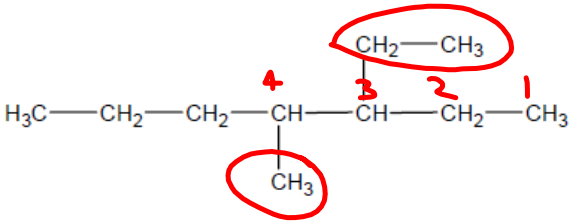
Step 3: Add numbers to the branches to identify their locations. These numbers are used before the branch name ex/ 2-methyl. If more than one of a functional group, use prefix to communicate how many. dimethyl

Step 4: List the names of the branches in alphabetical order(ignoring the prefixes di, tri etc) End with name of parent chain.



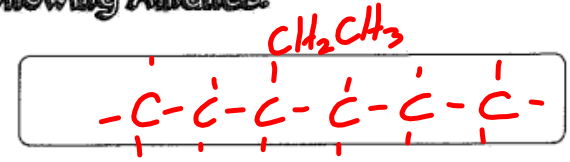
5-ethyl-2,3-dimethyl octane

Name the following branched alkanes:

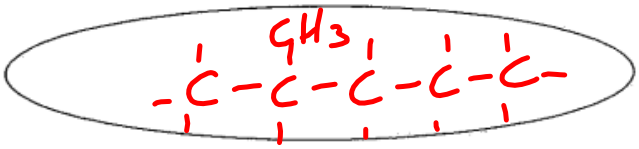
1.		2-methyl propane
2.		2-methyl butane
3.		4-ethyl heptane
4.		3-ethyl-4-methyl heptane

Draw the following Alkanes:

1. 3-ethyhexane



2. 2-methylpentane



3. 2,2,3-trimethylpentane

4. 3-ethyl-3-methylhexane

5. trimethylbutane

6. 2,2-dimethlyhexane

For each of the following names below identify the one that is named correctly If the name is incorrect fully identify and explain the problem

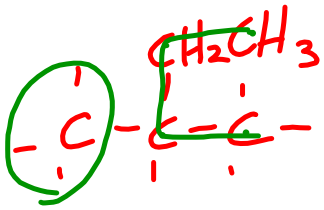
1. 2-ethylpropane

2. 3-methyl-3,4-diethylhexane

3. 2,2-dimethylhexane

4. 2-methyl-2-ethylbutane

5. 5-methylheptane



2-methylbutane

- ☐ finish naming 3
- ☐ finish drawing 3 4
- ☐ find the errors 4