Carbon Chemistry

Carbon Chemistry

- 90% of all known molecules contain a carbon atom
- Almost all these molecules are found in living organisms
- Study of carbon containing compounds is called Organic Chemistry

Reasons Carbon Forms Large Number of Compounds

- Carbon atoms can form bonds with many other Carbon atoms
- Bonds between C atoms can be single, double or triple
- Molecules can be linear chains or have branches
- Same number of carbon atoms can form many different arrangements

Reasons Carbon Forms Large Number of Compounds

- Molecules can even be cyclic, especially if there are 6 carbon atoms to form a ring
- Carbon atoms can form bonds with most other atoms, including metals

Naming Organic Compounds

- The name is determined by the LONGEST chain of carbon atoms that it contains
- Can be difficult to find at times

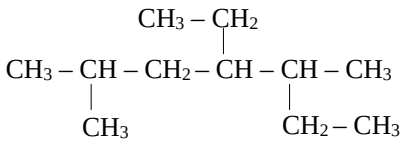
Basic Prefixes

- C_1 = meth
- C_2 = eth
- C_3 = prop
- C_4 = but
- C_5 = pent
- C_6 = hex
- C_7 = hept
- C_8 = oct
- C_9 = non
- C_{10} = dec

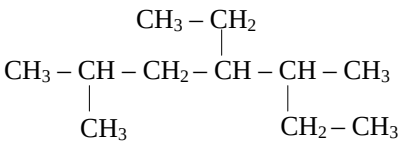
Side Chains

- C_1 = methyl
- C_2 = ethyl
- C_3 = propyl
- C_4 = butyl
- C_5 = pentyl
- C_6 = hexyl
- C_7 = heptyl
- C_8 = octyl
- C_9 = nonyl
- C_{10} = decyl

Name this molecule

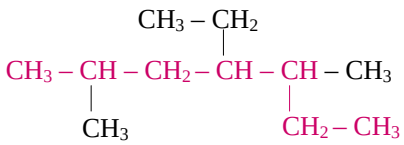


Name this molecule



We need to find the longest chain

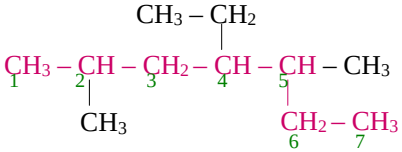
Name this molecule



The longest chain

Name this molecule

heptane

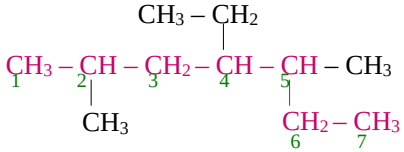


The longest chain

Number the carbon atoms

Name this molecule

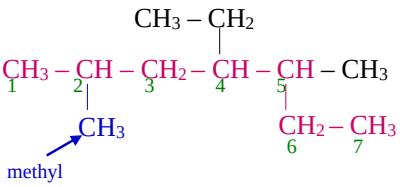
heptane



Find and name the side chains

Name this molecule

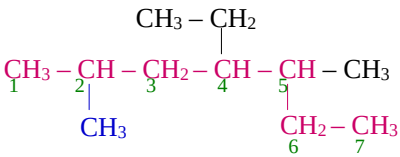
heptane



Find and name the side chains

Name this molecule

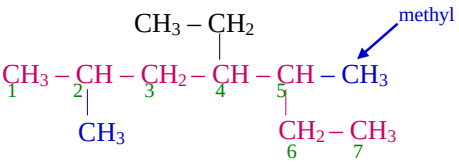
2 – methyl - heptane



Find and name the side chains

Name this molecule

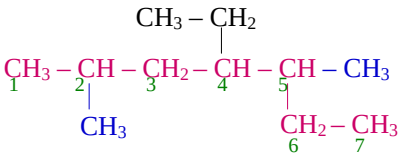
2 – methyl - heptane



Find and name the side chains

Name this molecule

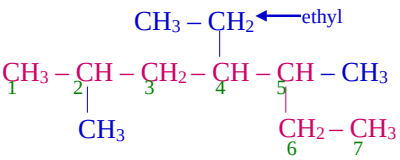
2,5 – dimethyl - heptane



Find and name the side chains

Name this molecule

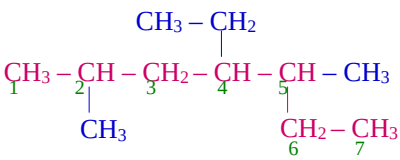
2,5 – dimethyl - heptane



Find and name the side chains

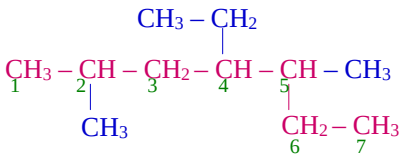
Name this molecule

2,5 – dimethyl – 4 – ethyl – heptane



Name this molecule

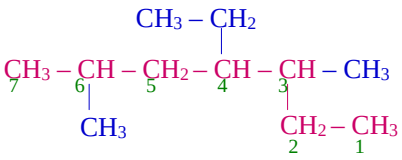
2,5 – dimethyl – 4 – ethyl – heptane



If the numbers on the C atoms are reversed

Name this molecule

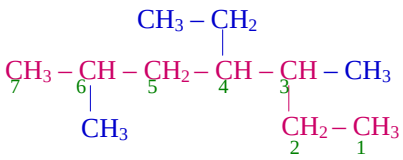
2,5 – dimethyl – 4 – ethyl – heptane



If the numbers on the C atoms are reversed

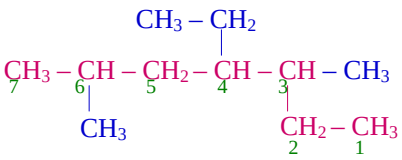
Name this molecule

3,6 – dimethyl – 4 – ethyl – heptane



The name becomes

Name this molecule



Both names are correct

2,5 – dimethyl – 4 – ethyl – heptane

3,6 – dimethyl – 4 – ethyl – heptane

Functional Groups

- When a hydrogen atom is replaced in an alkane by another atom
- The three to be considered this year are
- – Cl chloro
- – OH hydroxy or alcohols
- –COOH carboxy or carboxy acids