

Organic Compounds

- **Organic Compounds** are compounds that contain carbon atoms bonded to other carbon atoms, hydrogen atoms, or to atoms of a few other specific elements (halogens/group 17 elements)

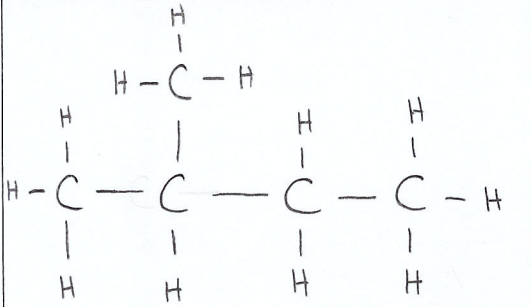
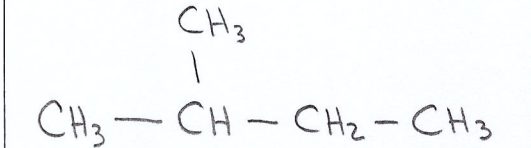

- Compounds that contain carbon atoms, but do not fit the definition of "organic" include carbonates (CO_3^{2-}), cyanides (CN^-), carbides (C^{2-}) and oxides (CO_2 , CO)
- These exceptions do not contain any carbon-carbon bonds or carbon-hydrogen bonds and are classified as **inorganic compounds**

- Carbon is a very unique element and has its own branch of chemistry due to three unique properties

- * ○ Carbon has 4 bonding electrons (one carbon can bond to 4 other atoms)
- Carbon can form strong single, double and triple bonds with itself
- Carbon atoms can bond together to form a variety of geometric structures

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important
to be
able to
identify!

- Through the unit, we will be drawing and naming organic molecules. There are 5 different ways to draw/model organic molecules/compounds

<p>EMPIRICAL MOLECULAR FORMULA</p> <p>C_5H_{12}</p>	<p>-only the number and the types of atoms are indicated</p> <p>-no structural information</p>
<p>EXPANDED MOLECULAR FORMULA</p> <p>$CH_3CH(CH_3)CH_2CH_3$</p>	<p>-shows grouping of atoms</p> <p>-brackets are used to indicate side/branching groups</p> <p>-bonds are assumed to exist between atoms</p>
<p>STRUCTURAL FORMULA</p> 	<p>-lines represent bonds between atoms</p> <p>-clear picture of all atoms and location of bonds</p>
<p>CONDENSED STRUCTURAL FORMULA</p> 	<p>-doesn't show carbon-hydrogen (C-H) bonds, but shows all other types of bonds</p>
<p>LINE STRUCTURAL FORMULA</p> 	<p>-lines are used to represent bonds</p> <p>-assume there is a carbon atom at the end of each line (unless indicated otherwise)</p> <p>-assume there are as many H atoms bonded to each carbon atom as possible</p>