**Unit 8**

**Organic Chemistry**

O. Chemistry: deals with reactions and compounds that have carbon in them.

 Most Organic Chemistry organic compounds also contain hydrogen (carbon – hydrogen chains. A.K.A. “hydrocarbons”).

Each carbon atom can bond four times with different atoms to create a compound.

**Organic compounds are named and classified according to how many carbon atoms that there are and if they are bonded by a single, double or triple bond.**

**Organic compounds that are bonded by a single bond (are represented by one line) are in the Alkane series.**

 **Examples:**

 **H**

**H C H**

 **H**

 **Methane**

 **H H H H H**

 **H C C H H C C C H**

 **H H H H H**

 **Ethane Propane**

 **\*\*Remember each carbon can bond four times**

**Alkenes and Alkynes**

**Alkene series: are organic molecules that have at least one double bond.**

**Example: Ethene.**



**Alkyne series: are organic molecules that have at least one triple bond.**

**Example: Propyne.**



Prefixes are often used in organic naming to indicate the number of carbons on the longest consecutive carbon chain (parent chain).

You will need to know the following prefixes:

Meth: 1 carbon

Eth: 2 carbons

Prop: 3 carbons

But: 4 carbons

Pent: 5 carbons

Hex: 6 carbons

What would be a picture of Butane?



**What would be a picture of Butene?**



**What would be Hexyne?**



**Draw a picture of the following:**

1. **Ethane**
2. **Propene**
3. **Pentyne**
4. **Propane**
5. **Hexane**
6. **Methane**

**Isomers**

Isomers: are different forms of organic compounds that have different properties because they have a different structure (shaped different).

**Example:**

**C5H12**



**Pentane (Straight Chain)**



**2-Methyl Butane (Bent Chain)**

**Use the following steps when naming isomers:**

1. **Identify the longest carbon to carbon chain (parent chain) and figure out the ending (ane, ene or yne).**

**Example:**



**??-?? Propane**

1. **Number the carbons in the parent chain and identify the daughter chain (then work back**

**words).**

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 **2 – Methyl Propane**

**From the 2nd C. Daughter Chain Parent chain**

**Draw the following:**

1. **Pentyne**
2. **3 – Ethyll Hexane**
3. **1, 4 Di Methyl Hexane**
4. **Butene**
5. **2 – Propyl Hexane**

**Cyclo – Isomer and**

**Benzene**

**“Cyclo”: Prefix that means circular. If you see the name of an isomer with “Cyclo” in front it means that these are chains that make rings.**

**Example:**

**C5H10**

**Cyclo Pentane**

**C5H10**



**Pentene**

**Benzene: is a very common Cyclo isomer made of 6 carbons and alternating single and double bonds.**

**C6H6**



**Benzene**

**\*\*Since benzene is a very common Carbon chain there is a picture that is shorter than the original.**



**Benzene**

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**2 – Chloro Benzene**

When naming benzene chains you number the carbons by starting at the top and going clockwise. The daughter chains off of benzenes can be smaller carbon chains or single elements.

**Example:**

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**3, 6 – Chloro Bromo Benzene**

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**2 – Methyl Benzene**

**Draw the following:**

1. **Propyne**
2. **Cyclo Butene**
3. **1,3 - Ethyll Pentane**
4. **3 – Butyl Benzene**
5. **1, 2, 6 – Tri Methyl Benzene**
6. **Ethyne**