**How to Make and Name Carbon Compounds:**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Prefix | Meth | Eth | Prop | But | Pent | Hex | Hept | Oct | Non | Dec |
| # of carbons | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Classification** | **Bond Types** | **Prefix + Name Ending** | **Formula** | **Example** | **Zig zag (chain model)** |
| Alkane | All single | \_\_\_\_\_ane | CnH2n+2 | Propane C3H8 | Propane  |
| Alkene | At least one double | \_\_\_\_\_ene | CnH2n | Propene C3H6 | Propene |
| Alkyne | Al least one triple | \_\_\_\_\_yne | CnH2n-2 | Propyne C3H4 | Propyne |

|  |  |
| --- | --- |
| Cyclo Means “Circular” CnH2nExample: Cyclohexane  | -“ol” ending means alcohol CnH2n+2OExample: Ethano |

What about branching?

Example: 2-methyl butane Structural model:

Main chain of 4 carbons, single-bonded

Methyl (1 carbon) branch

Located on the second carbon

**Write the molecular formula, structural formula and diagram (zig zag) each:**

|  |  |  |
| --- | --- | --- |
| Pentane | 1-pentene | 1-pentyne |
| Cyclopentane | 2,2-dimethyl pentane | 1-pentanol |

1) Draw the chain model. Then 2) write the molecular formula.

|  |  |
| --- | --- |
| ethane1)2) | Hexane1)2) |
| Cyclo Heptane1)2) | 1-Hexene1)2) |
| 2-Methyl-3-Ethyl Hexane1)2) | 1-Hexanol1)2) |
| 1-hexyne1)2) | 1-Cyclo-hexene1)2) |

|  |  |  |
| --- | --- | --- |
| Cyclopentane (hint: 5 carbon ring) | 2-methyl pentane (hint: branch!) | 2-methyl, 4-ethyl hexane (hint: 2 branches!) |

Determine the molecular formula for the following. Use the formulas for –anes, -enes, and –ynes on the front of this handout to calculate the number of carbons and hydrogens. The first one is completed for you as an example:

|  |  |  |  |
| --- | --- | --- | --- |
| 1) 3-carbon alkane  | C3H8 | 4) 6-carbon alkene |  |
| 2) 8-carbon alkane |  | 5) 9-carbon alkyne |  |
| 3) 4-carbon alkene |  | 6) 26-carbon alkyne |  |

Determine the molecular formula and draw the structural formula for each. The first one is completed for you☺

|  |  |  |
| --- | --- | --- |
| Hydrocarbon name | Molecular formula | Structural formula |
| 1) Heptane | C7H16 |  |
| 2) Decene |  |  |
| 3) Octyne |  |  |
| 4) 2-methyl propane |  |  |