|  |  |  |  |
| --- | --- | --- | --- |
|  | | Carbon—The Backbone of Life  Although cells are 70–95% water, the rest consists of mostly \_\_\_\_\_\_\_\_-based compounds.  Where does carbon come from?  Proteins, DNA, carbohydrates, and other molecules that distinguish living matter from inorganic material are all composed of \_\_\_\_\_\_\_\_\_\_\_ atoms bonded to each other and to atoms of other elements.  These other elements commonly include: | |
| \_\_\_\_\_\_\_\_\_\_\_\_\_ chemistry is the study of carbon compounds  Most organic compounds contain \_\_\_\_\_\_\_\_\_\_ atoms as well as carbon.  Ex. Cyclohexane  Titin  What was the Urey-Miller Experiment? | |
|  | | | |
|  | | Carbon atoms can form diverse molecules by bonding to \_\_\_\_\_\_\_\_ other atoms  Draw the Lewis Dot Structure of Carbon:  When a carbon atom forms covalent bonds with four other atoms, they are arranged at the corners of an imaginary \_\_\_\_\_\_\_\_\_\_\_\_\_\_ with bond angles of 109.5°.  In molecules with multiple carbon atoms, every carbon atom bonded to four other atoms has what shape?  When two carbon atoms are joined by a double bond, all bonds around those carbons are in the same plane as the carbons – what shape?  The electron configuration of carbon enables it to form covalent bonds with many different elements.  Drawing Organic Compounds: | |
|  | | | |
|  | | Carbon chains form the skeletons of most organic molecules.    a) Length  b) Branching  c) Double Bonds  d) Rings | |
|  | | | |
|  | | ***Isomers* are compounds that have the same \_\_\_\_\_\_\_\_\_\_\_\_\_ formula but different \_\_\_\_\_\_\_\_\_\_ and, therefore, different chemical properties.**  Structural isomers:  Cis-trans isomers:    Enantiomers: | |
| The Seven Functional Groups  Seven chemical groups are most important to the chemistry of life:  1. Hydroxyl: | |
|  | | | |
|  | | 2) Carbonyl:  3) Carboxyl:  4) Amino  5) Sulfhydryl group  6) Phosphate  7) Methyl | |
|  | | | |