***Alkanes Worksheet***

1. Answer the following.

 a. What is the general formula for an alkane? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. If a saturated alkane had 15 carbon atoms in it, how many hydrogens would there be? \_\_\_\_\_\_

2. Draw all of the possible structure of following types of hydrocarbons using 4 carbon atoms:

 a. alkane

 b. cycloalkane

3. Give the molecular formula, the structural formula, the condensed structural formula, and the skeletal formula (line drawing) for pentane.

|  |  |
| --- | --- |
| *Molecular formula:*  |  |
| *Structural formula:*  |  |
| *Condensed structural formula:*  |  |
| *Skeletal formula (line diagram):* |  |

5. Give the molecular formula, the structural formula, the condensed structural formula, and the skeletal formula for 4-ethyl-2,3-dimethylheptane.

|  |  |
| --- | --- |
| *Molecular formula:*  |  |
| *Structural formula:*  |  |
| *Condensed structural formula:*  |  |
| *Skeletal formula (line diagram):* |  |

6. Give the molecular formula, the structural formula, the condensed structural formula, and the skeletal formula for 3,3-diethyloctane.

|  |  |
| --- | --- |
| *Molecular formula:*  |  |
| *Structural formula:*  |  |
| *Condensed structural formula:*  |  |
| *Skeletal formula (line diagram):* |  |

7. What is the IUPAC name for the following structure?



8. What is the IUPAC name for the following structure?



9. Draw and name four isomers of octane.

***Solutions:***

1. a) b)
2. a)  b)
3.  
4.    
5.   
6.    
7. 
8. 

|  |  |  |  |
| --- | --- | --- | --- |
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