

Prefix	Number of Carbon Atoms
meth-	1
eth-	2
prop-	3
but-	4
pent-	5
hex-	6
hept-	7
oct-	8
non-	9
dec-	10

**Overview:**

Organic chemistry is the study of carbon compounds. Carbon has the ability to not only form bonds with other elements but also bond indefinitely with other carbon atoms. Therefore, there are an enormous number of organic compounds. To help with the study of organic compounds, a systematic means of naming these compounds has been developed. One of these rules is the use of prefixes indicating the number of carbon atoms in the molecule.

**The Table:**

This table gives the prefixes used to indicate the number of carbon atoms in the longest continuous chain of carbon atoms in the molecule. The prefixes for 5 through 10 carbon atoms are Greek numerical prefixes for that number of carbon atoms.

**Additional Information:**

- Methane ( $\text{CH}_4$ ) is also known as natural gas.
- Propane ( $\text{C}_3\text{H}_8$ ) is used as a fuel for gas grills.
- Butane ( $\text{C}_4\text{H}_{10}$ ) is used in lighters for gas grills.
- Octane ( $\text{C}_8\text{H}_{18}$ ) is used in the anti-knock rating of gasoline.

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## Organic Prefixes

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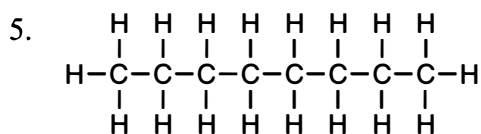
### — Set 1 —

1. Which element must be present in an organic compound?
- (1) hydrogen  
(2) oxygen  
(3) carbon  
(4) nitrogen
- 1 \_\_\_\_\_

2. What is the total number of carbon atoms in a molecule of ethanoic acid?
- (1) 1                      (3) 3  
(2) 2                      (4) 4
- 2 \_\_\_\_\_

3. A molecule of butane and a molecule of 2-butene both have the same total number of
- (1) carbon atoms  
(2) hydrogen atoms  
(3) single bonds  
(4) double bonds
- 3 \_\_\_\_\_

4. A molecule of octane has how many more carbon atoms than a molecule of methane?
- (1) 1                      (3) 5  
(2) 3                      (4) 7
- 4 \_\_\_\_\_



The above hydrocarbon molecule would have a prefix of

- (1) meth-                      (3) oct-  
(2) but-                      (4) non-
- 5 \_\_\_\_\_

### — Set 2 —

6. Which would be the proper prefix of the following hydrocarbon
- $$\text{CH}_3\text{CH}_2\text{CHCH}_2$$
- (1) eth-                      (3) but-  
(2) prop-                      (4) penti-
- 6 \_\_\_\_\_

7. The more carbon atoms a compound has, the more isomers it will have. Which prefix would indicate the greatest number of isomers?
- (1) hept-                      (3) meth-  
(2) but-                      (4) dec-
- 7 \_\_\_\_\_

8. A molecule of a compound contains a total of 10 hydrogen atoms and has the general formula  $\text{C}_n\text{H}_{2n+2}$ . Which prefix is used in the name of this compound?
- (1) but-                      (3) oct-  
(2) dec-                      (4) pent-
- 8 \_\_\_\_\_

9. What is the correct formula for pentene?
- (1)  $\text{C}_4\text{H}_8$                       (3)  $\text{C}_7\text{H}_{14}$   
(2)  $\text{C}_4\text{H}_{12}$                       (4)  $\text{C}_5\text{H}_{10}$
- 9 \_\_\_\_\_

10. Which hydrocarbon is unsaturated, containing a triple bond and has 8 carbon atoms?
- (1) butane                      (3) octyne  
(2) butyne                      (4) decyne
- 10 \_\_\_\_\_