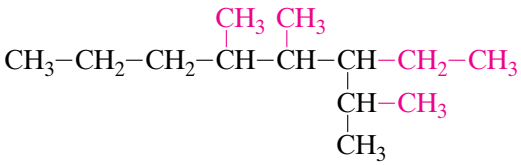
To name the parent hydrocarbon, add the suffix *-ane* to the prefix *oct-* (for a carbon-atom chain with eight carbon atoms) to form *octane.* Now identify and name the alkyl groups.



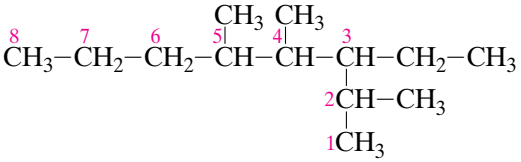
The three $-CH_3$ groups are methyl groups. The $-CH_2-CH_3$ group is an ethyl group. Arrange the names in alphabetical order in front of the name of the parent hydrocarbon.

ethyl methyloctane

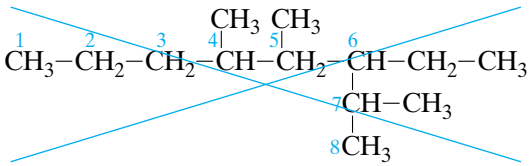
To show that there are three methyl groups present, attach the prefix *tri-* to the name *methyl* to form *trimethyl*.

ethyl **tri**methyloctane

Now we need to show the locations of the alkyl groups on the parent hydrocarbon. Number the octane chain so that the alkyl groups have the lowest numbers possible.



NOT



Place the location numbers of *each* of the alkyl groups in front of its name. Separate the numbers from the names of the alkyl groups with hyphens. The ethyl group is on carbon *3*.

3-ethyl trimethyloctane

Because there are three methyl groups, there will be three numbers, separated by commas, in front of *trimethyl*.

3-ethyl**-2,4,5-**trimethyloctane

The full name is 3-ethyl-2,4,5-trimethyloctane.

The procedure for naming simple branched-chain alkanes can be summarized as shown in the list on the next page.

CAREERS in Chemistry

Petroleum Engineer

Petroleum engineers search for underground reservoirs of oil or natural gas. They then work with other scientists and engineers to develop and oversee drilling and production operations. Petroleum engineers are also responsible for developing technology and methods to increase the amount of oil or gas obtained and to lower the cost of drilling and production operations. In addition to possessing a broad range of engineering expertise (chemical, mechanical, or electrical) a petroleum engineer must also apply the basic sciences of chemistry, geology, physics, and mathematics.