

The IUPAC name of alkenes has the same three basic parts: a prefix, a root, and a suffix.

prefix + root + suffix

Determining the prefix, root, and suffix for alkenes is very similar to the procedure for alkanes, with a few modifications as follows:

• **Identify the root:**

Find the longest continuous chain *that contains the double bond*. The root name for a given chain of carbon atoms is the same as the root name for alkanes.

• **Identify the suffix:**

The suffix for all alkenes is *-ene*. However, the suffix of an alkene must also indicate the location of the double bond.

• **Assign position numbers:**

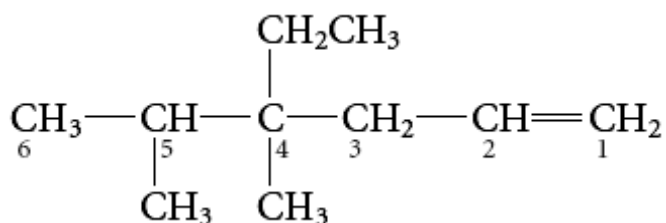
The numbering of the main chain must begin at the end of the chain nearest the double bond and continue through the double bond. The position of the double bond is indicated by the number of the carbon atom that *precedes* the double bond. The suffix consists of a hyphen, a number, a hyphen, and *-ene*.

• **Identify the prefix:**

The rules for naming alkyl groups as side groups on alkenes are the same as they are for alkanes.

Sample Problem

Name the following alkene:



Identify the root: The longest chain that contains the double bond has six carbon atoms. The root is *-hex-*.

Identify the suffix: The molecule has a double bond so the suffix ends with *-ene*.

Assign position numbers: Numbering must begin at the right end of the molecule because it is closest to the double bond. The position of the double bond is 1 so the suffix is *-1-ene*.

Identify the prefix: There is one methyl group on carbon atom number 4 and another on carbon atom number 5. There is also an ethyl group on carbon atom number 4. The prefix is *4-ethyl-4,5-dimethyl-*.

Solution: The full name of the compound is *4-ethyl-4,5-dimethylhex-1-ene*.