

Chapter 4

Understanding How to Integrate the Principles of Nomenclature

Key Concepts

In IUPAC nomenclature, a branched hydrocarbon substituent can be described either by its common name, or by a name derived through application of additional IUPAC rules. The additional rules used to name a branched substituent are very similar to those used to name an entire molecule. However, there are a few differences, which are highlighted in red below.

1. WITHIN THE BRANCHED SUBSTITUENT, **IDENTIFY** the longest continuous carbon chain **THAT STARTS WITH THE CARBON DIRECTLY ATTACHED TO THE PARENT HYDROCARBON**. (This carbon chain will be referred to as the substituent backbone.)
2. **WRITE** the name for the complex substituent as:

Groups Attached to Substituent Backbone	Name of the Substituent Backbone
(in Alphabetical Order)	
3. For identical groups attached to the substituent backbone, add modifiers such as di-, tri-, etc. to describe **HOW MANY** of that specific group.
4. Say **WHERE** groups are attached to the substituent backbone. Number the substituent backbone so that **THE CARBON DIRECTLY ATTACHED TO THE PARENT HYDROCARBON IS ASSIGNED THE NUMBER 1**.
5. **TO DESIGNATE THAT THE ENTIRE GROUP IS A SUBSTITUENT, ADD A -YL ENDING TO THE NAME OF THE SUBSTITUENT BACKBONE. THEN ENCLOSE THE ENTIRE NAME IN PARENTHESIS.**

Alphabetize this name with the names of all other substituents as part of the IUPAC name for the molecule.

What You Need to Learn, Understand, and Apply

1. The two options for naming a branched hydrocarbon substituent according to IUPAC rules.
2. The ability and confidence to integrate and apply all of the skills learned up to this point.