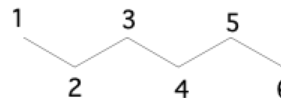


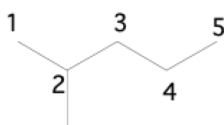
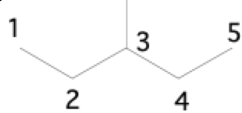
STEPS FOR DRAWING ISOMERS:

The following five steps will help you to draw the isomers once you are given a molecular formula. I am using the formula C_6H_{14} as an example.

1. Draw the main chain (i.e. the straight chain containing all the C atoms).

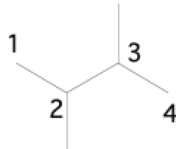
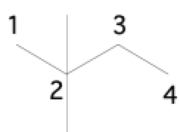


2. Draw the main chain minus 1 carbon, and add a methyl group to as many positions as possible; in other words, chop a C from one of the ends and attach it in as many places as you possibly can. Never add the methyl groups to the end of the chain, and watch not to repeat structures (it's okay if you accidentally repeat structures, for they will be caught and discarded when you do step 5).



(These are the only two options in this case)

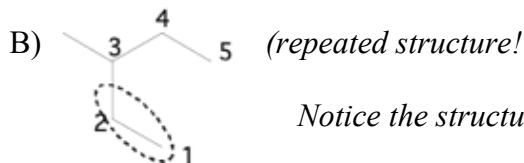
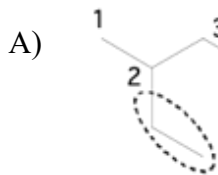
3. Draw the main chain minus 2 carbons, and add two one-carbon groups (two methyls) or one 2-carbon group (an ethyl) to as many positions possible, trying not to repeat structures.



(These are the only two options. We cannot add an ethyl group.)

Note: To add a particular alkyl group:

- Count the number of C's on the alkyl group. (The alkyl chain has ' k ' – Carbon atoms.)
- The carbon at which you add the alkyl group should be at least $k + 1$ counting from both ends of the main chain; otherwise, the only thing you are doing is repeating structures (i.e. increasing the size of the chain again.). Look at the following example and convince yourself that this is the case.



(repeated structure!)

Notice the structures on step 2.)

An ethyl group (with 2 C's) cannot be added to a carbon chain with 4 carbons. We need at least a $k + 1$ carbon (counting from both ends!) to attach this alkyl group; otherwise, we repeat structures.

4. Continue subtracting and adding groups in this fashion until you run out of carbons or doing so only results in repeated structures.

5. Give the IUPAC name to all the compounds you drew. If you accidentally drew the same one twice, they will have identical names, and you can cross one of them off.