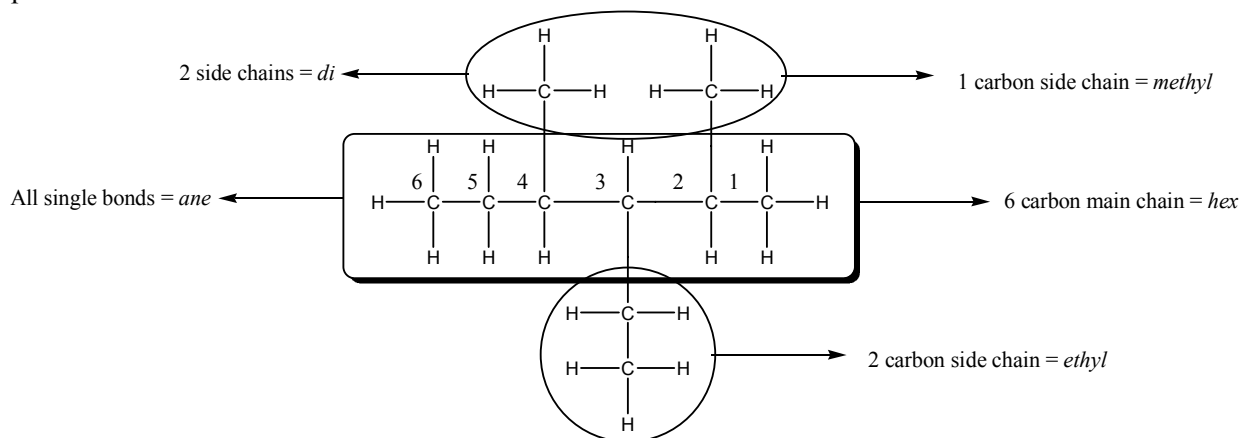


## Naming Hydrocarbons

Hydrocarbons are named based on the family they are in (alkane, alkene, or alkyne), the length of the longest or main chain, the length of any shorter or side chains, and the location and number of any side chains or points of unsaturation. The family is shown by the suffixes *ane*, *ene*, and *yne*. As shown in the table to the right, the number of carbons in a main chain or side chain is shown by prefixes such as *meth*, and *eth*, while the number of side chains or points of unsaturation are shown by prefixes such as *di*, and *tri*. The location of any of these is determined by numbering the carbons in such a way that the lowest possible numbers are used. For example,  $C=C-C-C$  and  $C-C-C=C$  (shown without the hydrogens) are both 1-butene, because the double bond is between the first and second carbon, while  $C-C=C-C$  is 2-butene. Numbering starts at the end closest to the double bond. Side chains are listed in alphabetical order by prefix. See the example below.

Number	Prefix			
	Carbons in Main Chain	Carbons in side chain	Number of side chains or groups	Location of side chains or groups
1	meth	methyl	-	1
2	eth	ethyl	di	2
3	prop	propyl	tri	3
4	but	butyl	tetra	4
5	pent	pentyl	penta	5
6	hex	hexyl	hexa	6
7	hept	heptyl	hepta	7
8	oct	octyl	octa	8
9	non	nonyl	nona	9
10	dec	decyl	deca	10



### 3-ethyl 2,4-dimethylhexane

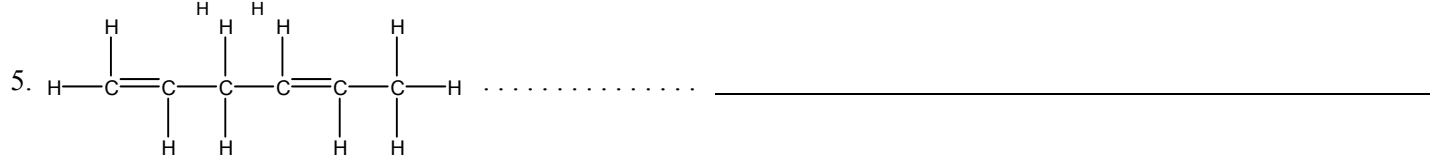
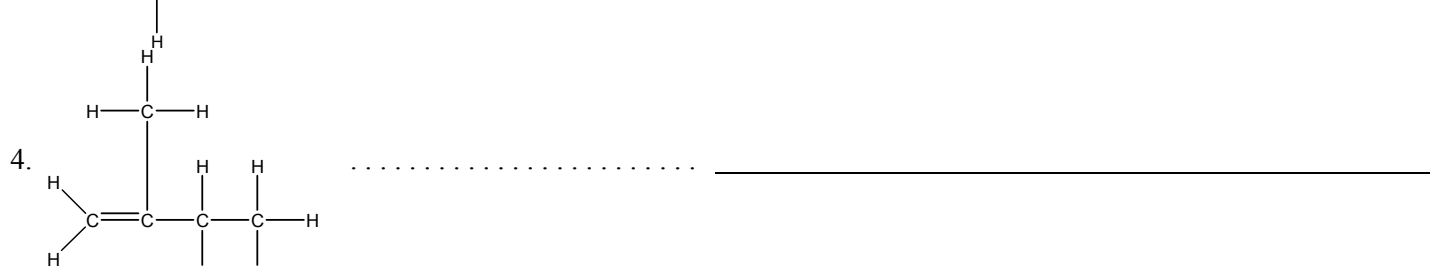
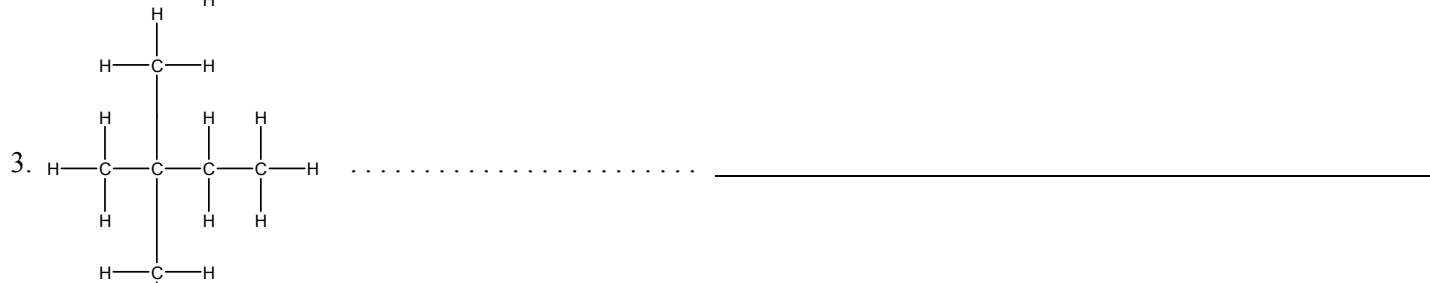
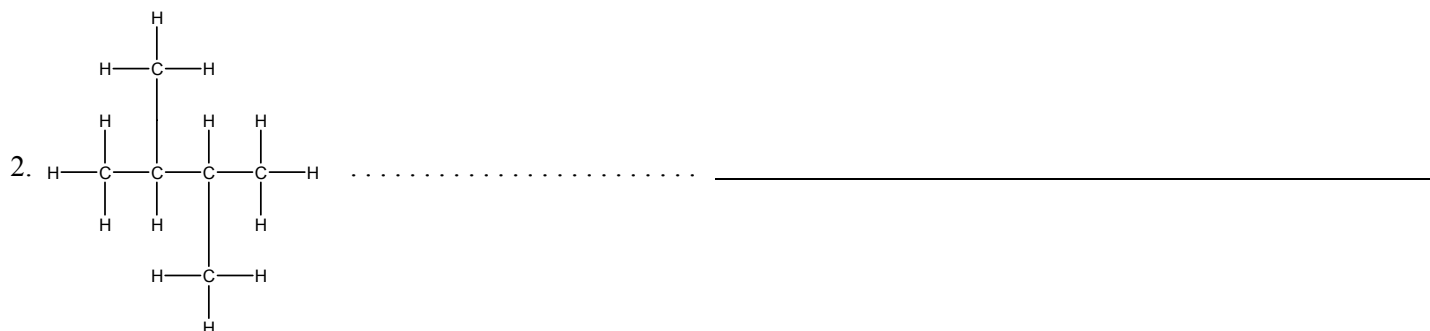
- side chains in alphabetical order
- numbering from left for smallest total

Following these rules, the compound  $CH_2CHCHCH_2$  would be named 1,3-butadiene. The “a” is added just to make it pronounceable. Draw the picture to check. You will see there are 4 carbons (*but*) and two (*di*) double bonds (*ene*). The double bonds are located between the first and second carbon (*1*) and between the third and fourth carbon (*3*).

$CH_3CH_2C(CH_3)_2CH_3$  is called 2,2-dimethyl propane. The longest chain is three carbons long (*prop*). There are two (*di*) one carbon (*methyl*) side chains. Both side chains are attached to the middle or second carbon (*2*). Because there is no place else to attach these side chains, the compound can simply be called dimethylpropane. Draw the picture! Check it out!!

Name the hydrocarbons below based on your reading and on your knowledge of chemistry.

1.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$  ..... \_\_\_\_\_



6.  $\text{CHCCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$  ..... \_\_\_\_\_

7.  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{C}(\text{CH}_3)_2\text{CH}_3$  ..... \_\_\_\_\_

8.  $\text{C}_2\text{H}_2$  ..... \_\_\_\_\_

9.  $\text{C}_3\text{H}_8$  ..... \_\_\_\_\_

10.  $\text{CHCCCH}_3$  ..... \_\_\_\_\_