|  |  |  |
| --- | --- | --- |
|  | **Organic Chemistry** | Name: Date: |
| Lewis Structure for Carbon:A carbon atom has \_\_\_\_\_ valence electrons. |

**Organic Compounds**

* Contain carbon atoms usually bonded to other carbon atoms and hydrogen atoms.
	+ Called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Organic compounds may also contain: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Examples of organic compounds:

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |

* *Scientists thought that organic compounds contained a “life force” or “vitality.*
* *Was proved incorrect in 1828 when an inorganic salt was heated to produce an organic compound.*



|  |
| --- |
| **Inorganic Carbon Compounds** |
| * Even if a compound contains carbon, it may not be classified as an organic compound.
 |

**Simple Hydrocarbons**

* Recall that a carbon has \_\_\_\_\_ valence electrons.
* Each carbon atom can form \_\_\_\_\_ covalent bonds.
* With so many different ways that a carbon can bond…
	+ There are ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***of known organic compounds
	+ There is an almost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of unknown organic compounds

|  |
| --- |
| **Alkanes** |

* Hydrocarbons containing only \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* They are saturated – there is no room for other atoms to bond to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* Chemical Formula:

|  |  |  |
| --- | --- | --- |
| **# of C Atoms** | **Prefix** | **Alkane** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |
| 10 |  |  |

**Problem Set:**

1. Write out the condensed structural formula for all 10 straight-chain alkanes.
2. Draw the carbon skeleton formula for all 10 straight-chain alkanes. (You cannot draw methane.)
3. Draw a structural formula, condensed structural formula, and carbon skeletal formula for C6H14.

1. Octane, a constituent of gasoline, has the molecular formula C8H18. Draw a structural formula, condensed structural formula and carbon skeleton formula for octane. Assume that the carbons are all bonded in a single chain to each other.
2. What would the formula be for a straight chain alkane that had the following number of carbon or hydrogen atoms?

|  |  |
| --- | --- |
| * 1. 6 carbon atoms
	2. 12 carbon atoms
	3. 14 carbon atoms
	4. 29 carbon atoms
	5. 98 carbon atoms
 | * 1. 102 hydrogen atoms
	2. 54 hydrogen atoms
	3. 84 hydrogen atoms
	4. 16 hydrogen atoms
	5. 4 hydrogen atoms
 |

|  |  |  |
| --- | --- | --- |
| **Screen shot 2011-12-27 at 2.06.48 PM.png** | **Naming****Simple** **Hydrocarbons** | Name: Date: |
|  |

**Steps to Naming Simple Alkanes:**

1. Find the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of carbon atoms. It does ***NOT*** have to be in a straight line. This is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ chain.

|  |  |
| --- | --- |
| **Screen shot 2011-12-27 at 2.29.33 PM.png** | *The longest continuous chain of carbon atoms contains \_\_\_\_\_ carbon atoms* |

State the number of catbon atoms using the appropriate prefix and the ending “ane.”

*The appropriate prefix would be \_\_\_\_\_\_\_\_\_\_\_\_\_ and with the ending “ane” would be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*

1. Branches are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ groups. Number the carbon atoms in the parent chain starting at the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

****

1. **Name each branch**.

Give a prefix according to the number of carbon atoms it contains. Branch names end in \_\_\_\_\_ instead of \_\_\_\_\_\_\_\_\_\_\_.

****

List the branches in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. If more than one branch has the same number of carbon atoms use the prefixes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. **Name each branch**.

State the name of the alkane by naming each branch, then naming the parent. Use commas between numbers and hyphens between numbers and branches.

**Practice #1.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2011-12-27 at 2.38.09 PM.png |

**Practice #2.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2011-12-27 at 2.38.14 PM.png |

**Practice #3.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 |  |

**Practice #4.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 |  |
|  | **Alkenes and Alkynes** | Name: Date: |
|  |
| **Alkenes** |

* Hydrocarbons containing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonds.
* General Formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* They are unsaturated – the double bond is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for other atoms to bond to the carbon atom.

|  |  |  |
| --- | --- | --- |
| **# of C Atoms** | **Prefix** | **Alkene** |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |
| 10 |  |  |

**Steps to Naming Alkenes:**

1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ must contain the double bond. (*even if it is not the longest chain*)

|  |  |
| --- | --- |
| **Screen shot 2012-01-02 at 1.12.20 PM.png** | *The longest continuous chain of carbon atoms including the double bond contains \_\_\_\_\_ carbon atoms* |

1. The parent chain carbon atoms are numbered…..\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| **Screen shot 2012-01-02 at 1.12.20 PM.png** | *The double bond follows carbon #\_\_\_\_\_\_\_.**The parent chain is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.* |

1. The position of the double bond is indicated in the name by stating the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the carbon atom in the parent chain that the double bond follows.

****

Name the branches!

1. Name the compound.

**Practice #1.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-02 at 1.13.19 PM.png |

**Practice #2.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-02 at 1.13.56 PM.png |

|  |
| --- |
| **Alkynes** |

* Hydrocarbons containing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonds.
* General Formula: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* They are ***unsaturated*** – the double bond is a reactive site for other atoms to bond to the carbon atom.

**Steps to Naming Alkynes:**

* The same rules for naming an alkene apply; however the ending is “\_\_\_\_\_\_\_\_\_\_\_” instead of “\_\_\_\_\_\_\_\_\_\_\_\_.”

|  |  |  |
| --- | --- | --- |
| **# of C Atoms** | **Prefix** | **Alkyne** |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |
| 10 |  |  |

**Practice #1.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-02 at 1.16.55 PM.png |

**Practice #2.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-02 at 1.24.05 PM.png |

|  |  |  |
| --- | --- | --- |
| Screen shot 2012-01-04 at 3.53.05 PM.png | **Cyclic Structures** | Name: Date: |
|  |
|  |

* Carbon atoms may bond to each other and form a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
| Screen shot 2012-01-04 at 3.30.45 PM.png | Becomes… | Screen shot 2012-01-04 at 3.31.14 PM.png |

**Steps to Naming Cyclic Structures:**

* The ring that contains the greater number of carbon atoms is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* The prefix “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” is placed before the parent chain name.
* Parent Chain = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



* The carbon atoms are numbered either clockwise or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are used to identify the placement of the branches.



1. **Name the branches.**



1. **Name the compound.**



If the ring structure is not the longest continuous carbon chain, then it is named as a branch with prefix “cyclo” and ends in “yl.”



Parent: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Branch: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Compound:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Practice #1**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-04 at 3.41.21 PM.png |

**Practice #2**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-04 at 3.43.32 PM.png |

**Practice #3**

|  |  |
| --- | --- |
| 1. Parent Chain
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-04 at 3.45.08 PM.png |

**Aromatic Hydrocarbons**

* Benzene is a hydrocarbon with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atoms in a ring.
* It has the molecular formula \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* There is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than one way of drawing its Lewis structure.
* Equivalent Lewis structures are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ structures.



Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* Some organic compounds have benzene as a branch. In this case, the branch name is “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”

**Practice #4**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-04 at 3.53.30 PM.png |

**Practice #5**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-04 at 3.52.35 PM.png |

**Practice #6**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-04 at 3.53.05 PM.png |

|  |  |  |
| --- | --- | --- |
|  | **Functional Groups** | Name: Date: |
|  |
| **Isomers** |

Draw the structure for C5H12

|  |  |
| --- | --- |
|  |  |

* Structures that have the same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ but different chemical properties
* As the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ increases, the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ increases.
* *Pentane and 2-methylbutane are structural isomers. There is one more structural isomer. Can you find it?*

|  |
| --- |
|  |
|  |  |
| **Functional Groups** |

* An atom, group of atoms or type of bond in an organic molecule that react in a predictable manner.
* Symbol “R” is used to represent the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the organic molecule.

|  |
| --- |
| **Alkyl Halide** |

* X = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Organic compounds containing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are called alkyl halides
* The prefixes are:
* F= \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Cl = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Br = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ I = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Practice #1.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-07 at 5.57.02 PM.png |

**Practice #2.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-07 at 5.57.43 PM.png |

|  |
| --- |
| **Alcohols: R-Oh** |

Naming alcohols:

* 1. The parent chain ***must*** contain the atom attached to the –OH group. Number the carbon atoms in the parent chain so that the –OH group is given the lowest number.
	2. The name of the parent chain ends with “-ol” instead of “-e”.
	3. Name and identify positions of the branches.
	4. Name the compound.

**Practice #1.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-07 at 6.05.54 PM.png |

**Practice #2.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-07 at 6.07.36 PM.png |

**Practice #3.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen shot 2012-01-07 at 6.07.41 PM.png |

|  |  |  |
| --- | --- | --- |
|  | **Functional Groups II** | Name: Date: |
|  |
| **Cis - Trans Isomerism** |
| Draw the structure for **2-butene** | Is there any other way to show this structure? |

The double bond “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_” the molecule in place and changes the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the compound.

Naming Cis-Trans Alkene’s:

* 1. The parent chain must contain the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
	2. The name of the parent chain ends with “\_\_\_\_\_\_\_\_\_” instead of “\_\_\_\_\_\_\_\_\_\_\_\_”.
	3. Determine if the molecule is “cis” (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) or “trans” (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) *AT* the double bond and include it at the front of the parent chain
	4. Include the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ where the double bond starts before the parent chain

And as always…

* 1. Name and identify positions of the branches.
	2. Name the compound.

**Practice #1.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen Shot 2015-09-24 at 11.51.15 AM.png |

**Practice #2.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound.
 | Screen Shot 2015-09-24 at 11.53.08 AM.png |

|  |
| --- |
| **Aldehydes** |

Naming aldehydes:

1. Organic compounds containing an oxygen at the *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* of a parent chain double bonded to a carbon.
2. To name aldehydes remove the “*\_\_\_\_\_\_\_\_\_\_\_\_*” from the end of the parent chain and replace it with “*\_\_\_\_\_\_\_\_\_\_\_\_\_\_*”

**Practice #3.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 |  |

**Practice #4.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen Shot 2015-09-24 at 12.06.40 PM.png |

|  |
| --- |
| **Ketones** |

Naming Ketones:

1. Organic compounds containing an oxygen in the *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*of a parent chain double bonded to a carbon.
2. To name ketones remove the “\_\_\_\_\_\_\_\_\_\_\_\_” from the end of the parent chain and replace it with “*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*”

**Practice #5.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen Shot 2015-09-24 at 12.10.16 PM.png |

**Practice #6.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 | Screen Shot 2015-09-24 at 12.10.21 PM.png |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|

|  |
| --- |
| **Ethers** |

Naming Ethers:1. Recognise that the molecule is an ether because it has the general form:

http://www.ivyroses.com/Chemistry/Organic/molecules/ethers/ether.gif1. Identify the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ labelled "R1" and "R2". ***Standard system of labelling carbon chains as used for alkanes***.
2. The shorter of the two chains "R1" and "R2" becomes the ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***of the name **with the “\_\_\_\_\_\_\_\_\_\_\_\_\_\_" suffix**, and the name of the longer alkane chain forming the suffix of the name of the ether.

**Practice #8.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 |  |

**Practice #9.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 |  |

 | Screen Shot 2015-09-24 at 12.12.57 PM.png |

**Practice #10.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|

|  |
| --- |
| **Esters** |

Naming Esters:1. First, identify the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that is part of the continuous chain and bonded to carbon on both sides. (***On one side of this \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ there will be a carbonyl present but on the other side there won't be***.)

1. Second, begin numbering the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on either side of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ identified in step 1.

1. Next, use this format: [alkyl on side \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the carbonyl] (space) [alkane on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with the carbonyl] - (In this case: [methyl] [methane])
2. Finally, change the ending of the alkane on the same side as the carbonyl from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(In this case: methyl methanoate)**Practice #11.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 |  |

**Practice #12.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 |  |

 | Screen Shot 2015-09-24 at 12.12.57 PM.png |

**Practice #13.**

|  |  |
| --- | --- |
| 1. Parent Chain.
2. Number the parent chain.
3. Name the branches.
4. Name the compound
 |  |