

Assignment: Naming Organic Compounds

1. Name the following alkanes:

a) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$	b) $\begin{array}{c} \text{CH}_3 - \text{CH}_2 - \text{CH}_2 \\ \\ \text{CH}_3 \end{array}$
c) $\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_3 \end{array}$	d) $\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{C} - \text{CH}_3 \\ \\ \text{CH}_3 \end{array}$
e) $\begin{array}{ccccccc} & & & & \text{CH}_2 - \text{CH}_3 & & \\ & & & & & & \\ \text{CH}_3 - & \text{CH} - & \text{CH} - & \text{CH} - & \text{CH} - & \text{CH} - & \text{CH}_3 \\ & & & & & & \\ & \text{CH}_3 & & & \text{CH}_3 & & \end{array}$	f) $\begin{array}{ccccccc} & & & & \text{CH}_2 - \text{CH}_3 & & \\ & & & & & & \\ \text{CH}_3 - & \text{CH} - & \text{CH}_2 - & \text{CH} - & \text{CH} - & \text{CH}_3 \\ & & & & & & \\ & \text{CH}_2 & & \text{CH}_3 & & & \\ & & & & & & \\ & \text{CH}_3 & & & & & \end{array}$
g) $\begin{array}{ccccccc} & \text{CH}_3 & & \text{CH}_3 & & & \\ & & & & & & \\ \text{CH}_3 - & \text{C} - & \text{CH}_2 - & \text{C} - & \text{CH}_2 - & \text{CH}_3 \\ & & & & & & \\ & \text{CH}_3 & & \text{CH}_3 & & & \end{array}$	h) $\begin{array}{ccccccc} & & & & \text{CH}_2 - \text{CH}_3 & & \\ & & & & & & \\ \text{CH}_3 - & \text{CH} - & \text{CH}_2 - & \text{CH} - & \text{CH}_2 - & \text{CH} - & \text{CH}_2 - \text{CH}_3 \\ & & & & & & \\ & \text{CH}_3 & & \text{CH}_2 - \text{CH}_2 - \text{CH}_3 & & & \end{array}$
i) $\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_2 - \text{CH}_2 - \text{CH}_2 \\ \\ \text{CH}_3 \end{array}$	j) $\begin{array}{ccccccc} & & & & \text{CH}_3 & & \text{CH}_3 \\ & & & & & & \\ & & & & \text{CH}_2 - \text{CH} - \text{CH}_3 & & \\ & & & & & & \\ \text{CH}_3 - & \text{CH}_3 - & \text{CH} - & \text{CH} - & \text{CH}_2 - & \text{CH}_2 - & \\ & & & & & & \\ & & \text{CH}_3 & & & & \end{array}$

2. Draw the condensed structural formulas (as in question #1) for the following alkanes.

2,3-dimethylpentane	3-ethyl hexane
4-ethyl-3,4-dimethyl hexane	butane
4-propyloctane	3-ethyl-2-methyl-5-propyl decane

3. Draw the condensed structural formulas for all of the isomers of heptane. Name each of the compounds you create.

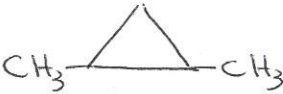
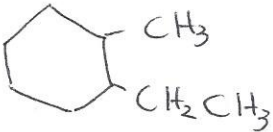
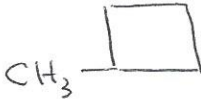
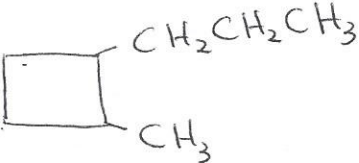
4. Name the following alkenes and alkynes.

$\text{CH}_3 - \text{CH}_2 - \text{CH} = \text{CH} - \text{CH}_2 - \text{CH}_3$	3-propyl-2-heptene oops! Draw.
$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH} = \text{CH}_2 \\ \\ \text{CH}_3 \end{array}$	$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{C} \equiv \text{C} - \text{CH}_3 \\ \\ \text{CH}_2 \\ \\ \text{CH}_3 \end{array}$
$\text{CH}_2 = \text{CH} - \text{CH} = \text{CH}_2$	$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{CH} - \text{CH} - \text{C} - \text{CH}_2 - \text{CH}_3 \\ \quad \quad \quad \\ \text{CH}_3 \quad \quad \quad \text{CH} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3 \end{array}$
$\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{C} \equiv \text{C} - \text{CH}_3 \end{array}$	$\text{CH}_2 - \text{C} \equiv \text{C} - \begin{array}{c} \text{CH} \\ \\ \text{CH}_3 \end{array} \text{CH}_3$

5. Draw condensed structural diagrams for the following alkenes and alkynes.

2,4-dimethyl-3-hexene	5-ethyl-4-propyl-2-heptyne
2-methyl-1,3-butadiene	3-ethyl-1-hexyne

6. Name the following cycloalkanes.

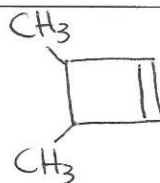
	
	
	

7. Draw the condensed structural formula for the following cycloalkanes.

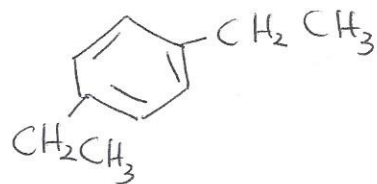
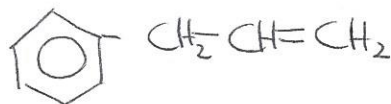
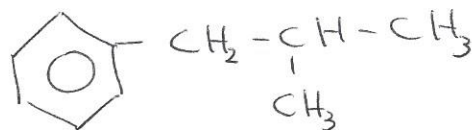
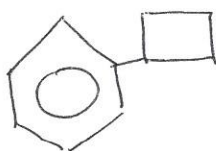
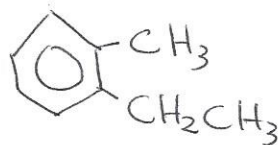
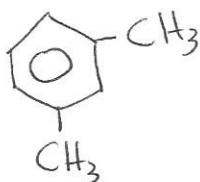
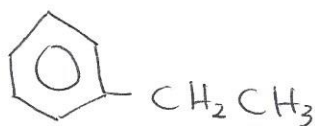
1,2,4-cyclotrimethylcyclohexane	propylcyclopropane
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8. Draw all of the isomers of cyclopentane. Name each of the isomers.

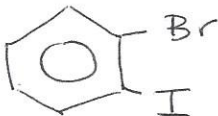
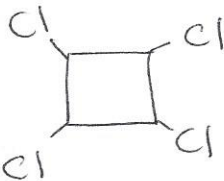
9. Names the following cycloalkenes.



10. Name the following aromatic hydrocarbons.

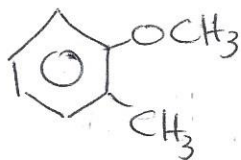


11. Name the following alkyl halides.

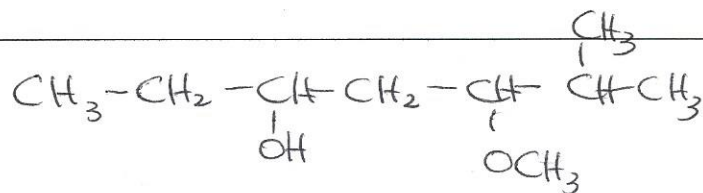
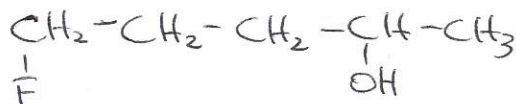
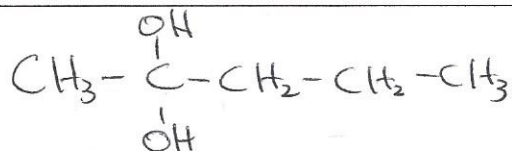
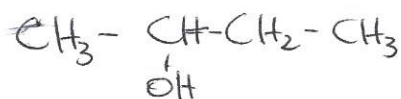
$\begin{array}{c} \text{Br} \\ \\ \text{CH}_3 - \text{CH} - \text{CH} - \text{CH}_3 \\ \\ \text{Br} \end{array}$	$\text{C} - \text{C} = \text{C} - \text{C} - \text{C}$
	
$\begin{array}{c} \text{CH}_2 - \text{C} \equiv \text{CH} \\ \\ \text{Br} \end{array}$	$\begin{array}{c} \text{Cl} \\ \\ \text{CH}_2 = \text{CH} - \text{C} - \text{CH} = \text{CH}_2 \\ \\ \text{Cl} \end{array}$
	$\begin{array}{c} \text{F} \\ \\ \text{CH}_3 - \text{C} - \text{CH} - \text{CH}_3 \\ \quad \\ \text{F} \quad \text{CH}_3 \end{array}$

12. Name the following ethers.

$\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{O} - \text{CH}_2 - \text{CH}_3$	$\begin{array}{c} \text{CH}_3 - \text{CH}_2 - \text{O} - \text{CH}_2 - \text{CH} - \text{CH}_2 - \text{CH}_3 \\ \\ \text{Br} \end{array}$
	$\text{CH}_3 - \text{CH}_2 = \text{CH} - \text{O} - \text{CH}_3$



13. Name the following alcohols.



14. Name the following aldehydes and ketones.

$\text{CH}_3-\text{CH}_2-\underset{\text{Br}}{\text{CH}}-\overset{\text{O}}{\underset{\text{ }}{\text{CH}}}$	$\text{CH}_3-\text{CH}_2-\underset{\text{O}}{\underset{\text{ }}{\text{C}}}-\underset{\text{CH}_3}{\underset{ }{\text{CH}}}-\text{CH}_2-\text{CH}_3$
$\overset{\text{O}}{\underset{\text{ }}{\text{CH}}}-\text{CH}_2-\underset{\text{CH}_3}{\underset{ }{\underset{\text{CH}_3}{ }{\text{C}}}}-\text{CH}_2-\text{CH}_3$	$\text{CH}_3-\overset{\text{O}}{\underset{\text{ }}{\text{C}}}-\text{CH}_3$
$\text{CH}_3-\overset{\text{O}}{\underset{\text{ }}{\text{C}}}-\text{CH}_2-\text{CH}_3$	$\text{CH}_3-\underset{\text{OCH}_3}{\underset{ }{\underset{\text{Cl}}{ }{\text{C}}}}-\text{CH}_2-\overset{\text{O}}{\underset{\text{ }}{\text{C}}}-\text{CH}_3$

15. Name the following carboxylic acids.

$\text{CH}_3-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\underset{\text{ }}{\text{C}}}-\text{OH}$	$\overset{\text{O}}{\underset{\text{ }}{\text{C}}}-\text{CH}_2-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\underset{\text{ }}{\text{C}}}-\text{OH}$
$\text{CH}_3-\underset{\text{CH}_3}{\underset{ }{\underset{\text{CH}_3}{ }{\text{C}}}}-\text{CH}_2-\overset{\text{O}}{\underset{\text{ }}{\text{C}}}-\text{OH}$	$\overset{\text{O}}{\underset{\text{ }}{\text{C}}}-\text{CH}_2-\text{CH}_2-\underset{\text{OCH}_2\text{CH}_3}{\underset{ }{\text{CH}}}-\text{CH}_2-\text{CH}_2-\text{CH}_3$

16. Create the ester that forms when the following carboxylic acids and alcohols react. Name the ester.

Propanoic acid + methanol

Butanoic acid + ethanol

Methanoic acid + ethanol

Ethanoic acid + ethanol

3-methyl butanoic acid + methanol

Propanoic acid + 1-butanol