Name _____ Answer Sheet O.Chem Packet #1 Per. ____

Problem 1. Give the **name and molecular formula for each compound** below. Use the formula C_nH_{2n+2} to determine the formula, and add the suffix "ane" to the prefixes to obtain the names.

	Prefix	*No. of Carbons*	*Name*	*Molecular Formula*
a.	meth-	1	methane	CH_4
b.	eth-	2		
c.	prop-	3		C_3H_8
d.	but-	4		
e.	pent-	5	pentane	
f.	hex-	6		
g.	hept-	7		
h.	oct-	8		
i.	non-	9		
j.	dec-	10		$C_{10}H_{22}$

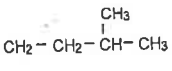
Problem 2. Complete the exercise below.

Compound Name	*Molecular Formula*	*Condensed Structural Formula*
a. methane	CH_4	CH_4
b. ethane		
c. propane		
d. butane	C_4H_{10}	CH_3-CH_2-CH_2-CH_3
e. pentane		
f. hexane		
g. heptane		
h. octane		
i. nonane		
j. decane		

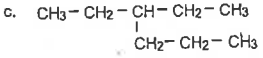
Problem 3. Complete the exercise below.

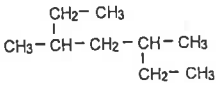
	Name of Alkyl group	Condensed Structural Formula
a.	methyl	$-CH_3$
b.		
c.		
d.	butyl	$-CH_2-CH_2-CH_2-CH_3$
e.		
f.		

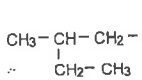
Problem 4. Draw a box around the longest continuous chain of carbon atoms in the structures below, and name the parent compound for each one.

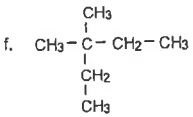
a. 

b.

c. 

d. 

e. 

f. 

a. parent: _____

b. parent: _____

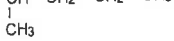
c. parent: _____

d. parent: _____

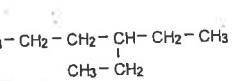
e. parent: _____

f. parent: _____

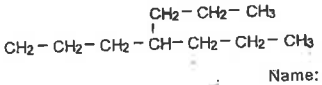
Problem 5. For the following compounds, draw a box around the longest continuous carbon chain and name each molecule. The name of the molecule in part "b" is given to help you.

a. 

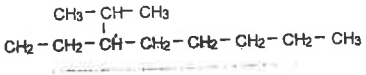
Name: _____

b. 

Name: 3-ethylhexane

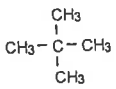
c. 

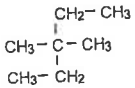
Name: _____

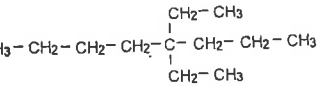
d. 

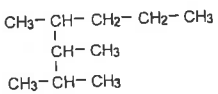
Name: _____

Problem 6. Name the four molecules whose structures are drawn below.

a. 

b. 

c. 

d. 

a. _____

b. _____

c. _____

d. _____

Problem 7. Name the four molecules drawn below.

a. $CH_3-CH_2-CH_2-\underset{\underset{CH_3}{|}}{CH}-CH_2-\underset{\underset{CH_2-CH_3}{|}}{CH}-CH_2-CH_2-CH_3$

_____

b. $CH_3-CH_2-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}-CH_2-CH_2-\overset{\overset{CH_2-CH_2-CH_3}{|}}{CH}-CH_2-CH_2-CH_3$

_____

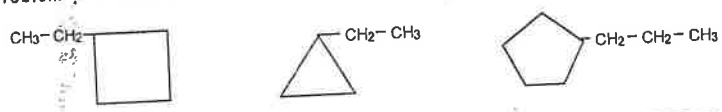
c. $CH_3-CH_2-\underset{\underset{CH_3-CH-CH_3}{|}}{CH}-\overset{\overset{CH_2-CH_3}{|}}{CH}-CH_2-\underset{\underset{CH_3}{|}}{CH}-CH_3$

_____

d. $CH_3-\overset{\overset{CH_3}{|}}{CH}=CH_2-\underset{\underset{CH_2-CH_3}{|}}{CH}-CH_2-CH_2-\overset{\overset{CH_3}{|}}{CH}-CH_3$

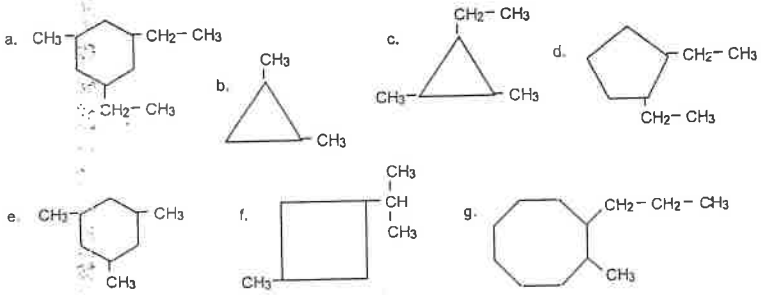
_____

Problem 8. Name the cyclic molecules below.



a._____ b._____ c._____

Problem 9. Name the cyclic alkanes shown below:



a._____ e._____

b._____ f._____

c._____ g._____

d._____

Problem 10. Name the alkenes below. After you have located the longest chain containing the double bond, be sure to number the chain so that the double bond gets the lowest possible number.

a. $CH_3-CH_2-CH=CH_2$ _____

b. $CH_3-CH=CH-CH_3$ _____

c. $CH_3-CH_2-CH=CH-CH_3$ _____

d. $CH_3-CH_2-CH=CH-CH_2-CH_3$ _____

e. $CH_2=CH_2$ _____

f. $CH_3-CH=CH_2$ _____

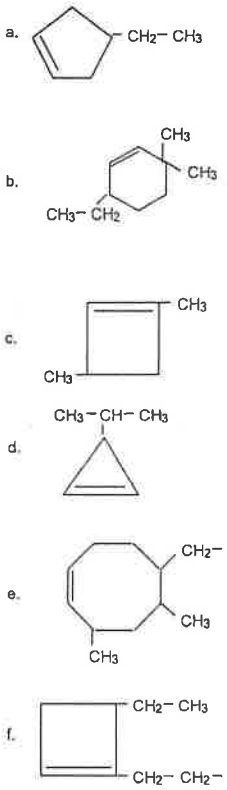
g. $CH_3-\underset{\underset{CH_3}{|}}{CH}-CH_2-\overset{\overset{CH_3}{|}}{CH}-CH=CH_2$ _____

h. $CH_3-\underset{\underset{CH_2-CH_3}{|}}{C}=CH-CH_3$ _____

i. $CH_3-\underset{\underset{CH_3}{|}}{CH}-CH=CH_2$ _____

j. $CH_3-CH=CH-\underset{\underset{CH_2-CH_3}{|}}{\overset{\overset{CH_2-CH_3}{|}}{C}}-CH_2-CH_3$ _____

Problem 11. Name the following cycloalkenes.



a._____

b._____

c._____

d._____

e._____

f._____

Problem 12. Name the alkynes drawn below. Be sure to number the parent chain so as to give the triple bond the lowest possible number.

a. $CH\equiv C-CH_2-CH_2-CH_3$ _____

b. $CH_3-CH_2-CH_2-C\equiv C-CH_3$ _____

c. $CH_3-CH_2-C\equiv C-CH_3$ _____

d. $CH_3-CH_2-CH_2-C\equiv CH$ _____

e. $CH_3-C\equiv C-CH_2-CH_2-CH_2-CH_3$ _____

f. $CH_3-\underset{\underset{CH_3}{|}}{CH}-C\equiv CH$ _____

g. $CH_3-CH_2-\underset{\underset{CH_2-CH_3}{|}}{CH}-\overset{\overset{CH_3}{|}}{CH}-C\equiv CH$ _____

h. $CH\equiv C-\underset{\underset{CH_2-CH_2-CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-CH_3$ _____

i. $CH_3-C\equiv C-\underset{\underset{CH_2-CH_2-CH_3}{|}}{CH}-CH_2-\overset{\overset{CH_3}{|}}{CH}-CH_3$ _____

Problem 13. The names of the compounds listed below are NOT correct. Using the incorrect name, draw the structural formula in the work area. Then write the correct name of each compound on the line provided.

Incorrect Name	*Correct Name*	*Work Area*
a. 4,4-dimethylhexane	_____	
b. 2-n-propylpentane	_____	
c. 1,1-diethylbutane	_____	
d. 1,4-dimethylcyclobutane	_____	
e. 3-methyl-2-butene	_____	
f. 5-ethylcyclopentene	_____	
g. 2-n-propyl-1-propene	_____	
h. 2-isopropyl-3-heptene	_____	
i. 2,2-dimethyl-3-butyne	_____	
j. 5-octyne	_____	

Problem 14. Write condensed structural formulas for the following:

Name	*Condensed Structural Formula*
a. 4-isopropyloctane	
b. 3,4-dimethyl-4-n-propylheptane	
c. 1,1-dimethylcyclobutane	
d. 3-ethyl-3-heptene	
e. 3-ethyl-2-methyl-1-hexene	
f. 3-octene	
g. 3,3-dimethyl-1-butyne	
h. 4,4-dimethyl-2-pentyne	
i. 3-n-butyl-2-ethylcyclohexene	
j. 3,4-diethyl-4,6-dimethylnonane	