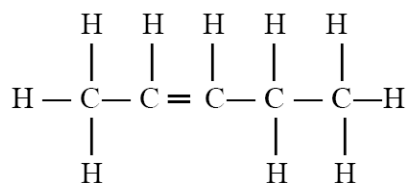


Naming and Drawing Alkenes Worksheet and Key

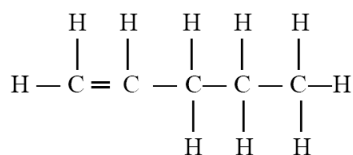
1) Draw and name the *cis* and *trans* condensed structure of:



| | |
|---------------------------------|-----------------------------------|
| <i>cis</i> condensed structure: | <i>trans</i> condensed structure: |
| | |
| name: | name: |

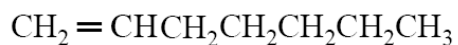
2. Name the following alkenes (include cis- or trans- for the alkenes that when appropriate)

a)



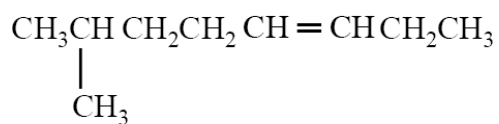
Name: _____

b)



Name: _____

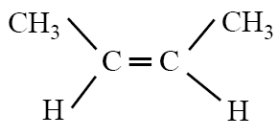
c)



Name: _____

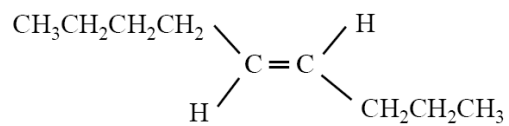
Be careful to correctly identify carbon #1.....

d)



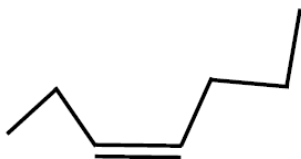
Name: _____

e)



Name: _____

f)



Name: _____

3. Draw the line bond, condensed, and skeletal structure of the following alkenes.

a) 1-hexene

| line-bond structure | condensed structure | skeletal structure |
|----------------------|---------------------|--------------------|
| | | |

b) 4-isopropyl-2-methyl-1-nonene

| line-bond structure | condensed structure | skeletal structure |
|----------------------|---------------------|--------------------|
| | | |

c) cis-2-hexene

| line-bond structure | condensed structure | skeletal structure |
|----------------------|---------------------|--------------------|
| | | |

d) trans-2-pentene

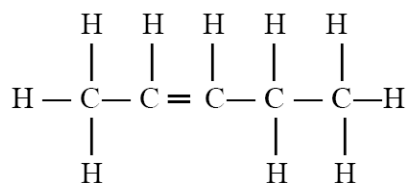
| line-bond structure | condensed structure | skeletal structure |
|---------------------|---------------------|--------------------|
| | | |

e) cis-2-methyl-3-hexene

| line-bond structure | condensed structure | skeletal structure |
|---------------------|---------------------|--------------------|
| | | |

Key

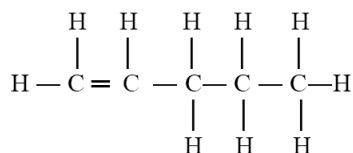
1) Draw and name the **cis** and **trans** condensed structure of:



| | |
|--|--|
| <p>cis condensed structure:</p> $ \begin{array}{ccc} \text{CH}_3 & & \text{CH}_2\text{CH}_3 \\ & \diagdown & / \\ & \text{C} = \text{C} & \\ & / & \diagdown \\ \text{H} & & \text{H} \end{array} $ | <p>trans condensed structure:</p> $ \begin{array}{ccc} \text{CH}_3 & & \text{H} \\ & \diagdown & / \\ & \text{C} = \text{C} & \\ & / & \diagdown \\ \text{H} & & \text{CH}_2\text{CH}_3 \end{array} $ |
| name: <i>cis</i> -2-pentene | name: <i>trans</i> -2-pentene |

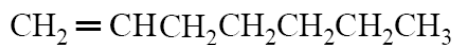
2. Name the following alkenes (include cis- or trans- for the alkenes that when appropriate)

a)



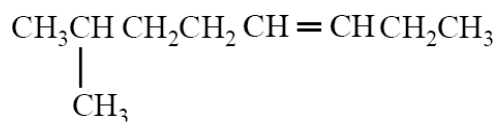
Name: 1-pentene

b)



Name: 1-heptene

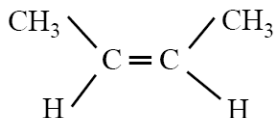
c)



Name: 7-methyl-3-octene

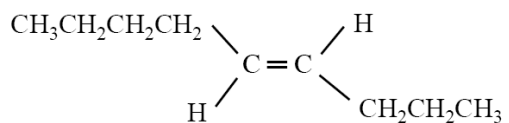
Note: Carbon #1 is the carbon nearest to the double bond

d)



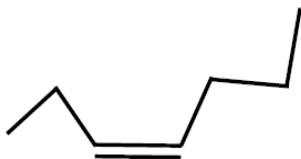
Name: cis-2-butene

e)



Name: trans-4-nonene

f)



Name: cis-3-heptene

3. Draw the line bond, condensed, and skeletal structure of the following alkenes.

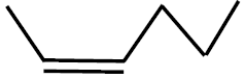
a) 1-hexene

| line-bond structure | condensed structure | skeletal structure |
|---|--|--------------------|
| $ \begin{array}{cccccc} \text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} \\ & & & & & \\ \text{H}-\text{C} & = & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{H} \\ & & & & & & & & & & & & & & \\ & & & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & & & \end{array} $ | $\text{CH}_2 = \text{CHCH}_2\text{CH}_2\text{CH}_2\text{CH}_3$ | |

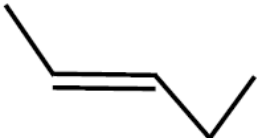
b) 4-isopropyl-2-methyl-1-nonene

| line-bond structure | condensed structure | skeletal structure |
|---|---|--|
| $ \begin{array}{cccccccccc} & & \text{H} & & & & & & & & & & & & & \\ & & & & & & & & & & & & & & & \\ \text{H} & - & \text{C} & - & \text{H} & & & & & & & & & & & \\ & & & & & & & & & & & & & & & \\ \text{H} & - & \text{C} & = & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{H} \\ & & & & & & & & & & & & & & & & & & & & \\ & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \\ & & & & & & & & & & & & & & & & & & & & \\ & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & \\ & & & & & & & & & & & & & & & & & & & & \\ \text{H} & - & \text{C} & - & \text{C} & - & \text{C} & - & \text{H} & & & & & & & & & & & & & \\ & & & & & & & & & & & & & & & & & & & & & \\ \text{H} & & \text{H} & & \text{H} & & \text{H} & & \text{H} & & & & & & & & & & & & & \end{array} $ | $ \begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_2 = \text{CCH}_2\text{CHCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3 \\ \\ \text{CH}_3\text{CHCH}_3 \end{array} $ | <p>Note: There are several correct ways to draw many of these skeletal structures.</p> |

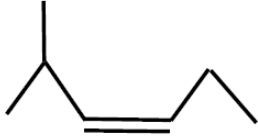
c) *cis*-2-hexene

| line-bond structure | condensed structure | skeletal structure |
|---|--|---|
| $ \begin{array}{cccccc} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} \\ & & & & & \\ \text{H} & - \text{C} & - \text{C} = & \text{C} & - \text{C} & - \text{C} - \text{H} \\ & & & & & \\ & \text{H} & & \text{H} & \text{H} & \text{H} \end{array} $ <p>Note: <i>cis/trans</i> is not displayed in line-bond structures (only displayed in condensed and skeletal structures).</p> | $ \begin{array}{c} \text{CH}_3 \quad \quad \quad \text{CH}_2\text{CH}_2\text{CH}_3 \\ \quad \quad \quad \diagdown \quad \diagup \\ \quad \quad \quad \text{C} = \text{C} \\ \quad \quad \quad \diagup \quad \diagdown \\ \text{H} \quad \quad \quad \text{H} \end{array} $ |  |

d) *trans*-2-pentene

| line-bond structure | condensed structure | skeletal structure |
|---|---|---|
| $ \begin{array}{cccccc} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} \\ & & & & & \\ \text{H} & - \text{C} & - \text{C} = & \text{C} & - \text{C} & - \text{C} - \text{H} \\ & & & & & \\ & \text{H} & & \text{H} & \text{H} & \text{H} \end{array} $ <p>Note: <i>cis/trans</i> is not displayed in line-bond structures (only displayed in condensed and skeletal structures).</p> | $ \begin{array}{c} \text{CH}_3 \quad \quad \quad \text{H} \\ \quad \quad \quad \diagdown \quad \diagup \\ \quad \quad \quad \text{C} = \text{C} \\ \quad \quad \quad \diagup \quad \diagdown \\ \text{H} \quad \quad \quad \text{CH}_2\text{CH}_3 \end{array} $ |  |

e) *cis*-2-methyl-3-hexene

| line-bond structure | condensed structure | skeletal structure |
|--|--|---|
| $ \begin{array}{cccccc} & & \text{H} & & & \\ & & & & & \\ & \text{H} & - \text{C} & - \text{H} & & \\ & & & & \text{H} & \text{H} \\ \text{H} & - \text{C} & - \text{C} & - \text{C} = & \text{C} & - \text{C} - \text{H} \\ & & & & & \\ & \text{H} & \text{H} & & \text{H} & \text{H} \end{array} $ | $ \begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3\text{CH} \quad \quad \quad \text{CH}_2\text{CH}_3 \\ \quad \quad \quad \diagdown \quad \diagup \\ \quad \quad \quad \text{C} = \text{C} \\ \quad \quad \quad \diagup \quad \diagdown \\ \text{H} \quad \quad \quad \text{H} \end{array} $ |  |