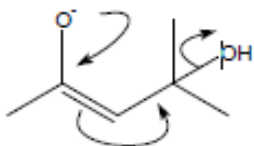# ChemDraw Tutorial 2

## Experiment 1 - Drawing an Intermediate

In this experiment you will draw the following intermediate structure starting from a ring and then add

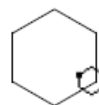arrows with customized shapes using the Pen tool.

Create a new ChemDraw document:

1. From the File menu, choose **New Document**.

2. From the File menu, choose **Save As**.

3. Type exp1.cdx in the appropriate text box.

4. Select a folder in which to save the file.
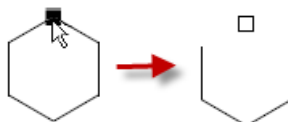
5. Click **Save**.

Draw a ring:

1. Click the Cyclohexane Ring tool .

2. Point in the document window. The Cyclohexane cursor appears.

3. Click to add a ring.

Delete an atom and its bonds from the ring:

1. Click the Eraser tool .

2. Point to the atom shown on the right.

3. Click the atom.


*NOTE: You can delete a bond individually by pointing at the center of the bond and clicking.*

*You can also drag the eraser to make multiple deletions.*
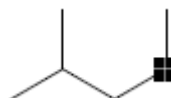
Add a bond:

1. Click the Solid Bond tool .

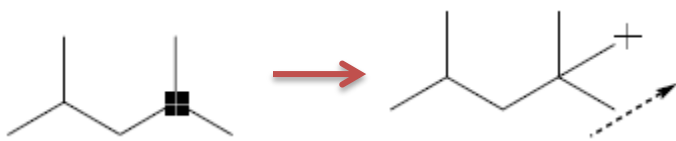2. Point to the atom shown on the right.

3. Click to add a bond.


Add second and third bonds:

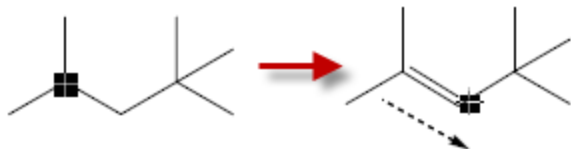1. Point to the atom shown below and click to add another bond.

2. Add a third bond by dragging to make sure it has the desired orientation:
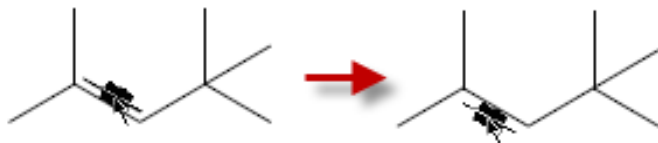


Create a double bond:

Point to the atom shown below and drag diagonally downward over the existing

bond to create a double bond.
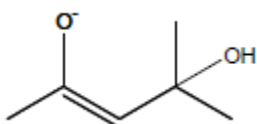


Change the orientation of the double bond:

Point to the center of the double bond. Click the bond twice to move the second line to the outside.

The bond moves to the inside on the first click and to the outside on the second click



Add an atom label:

Point to the atom and add the labels



Next you will add an arrow that is not included in the arrow palette to indicate electron flow.

1. Select the appropriate arrow option in the **Arrow Tools**.

2. Point near the double bond where you want to indicate the start of electron flow and drag towards the

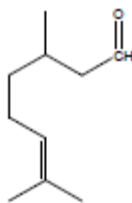destination as shown in the figure below. Add all necessary arrows.

# Experiment 2 - Using Rings

In this experiment you will draw more complex structures by using rings.

Open a new ChemDraw document:

1. From the File menu, choose **New Document**.

2. From the File menu, choose **Save As**.

3. Type exp2.cdx in the appropriate text box.

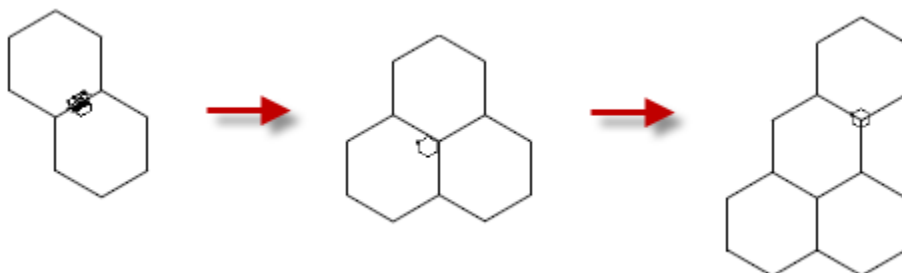4. Select a folder in which to save the file.

5. Click **Save**.

Create a ring:

1. Click the Cyclohexane Ring tool .

2. Point in an empty area of a document window.
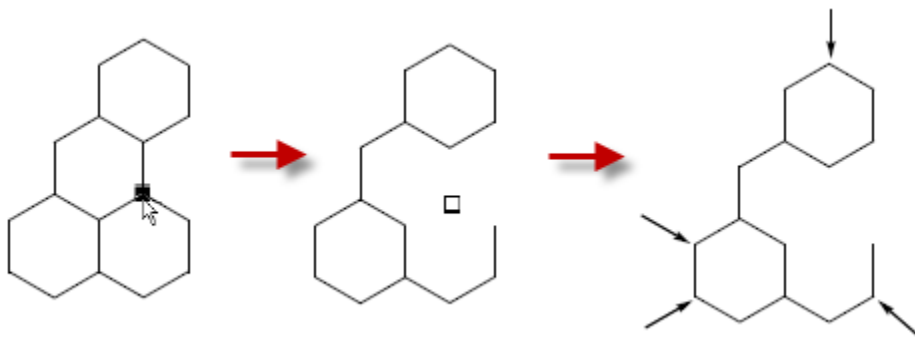
3. Click to add a ring.

Fuse a second ring to the first and Click to fuse another ring until you get the following structure:
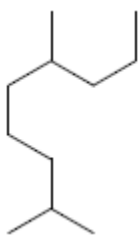
Remove atoms and their bonds from the ring using the Eraser tool:
1. Click the Eraser tool .
2. Point to the atom shown below. A highlight box appears on the atom to be removed.
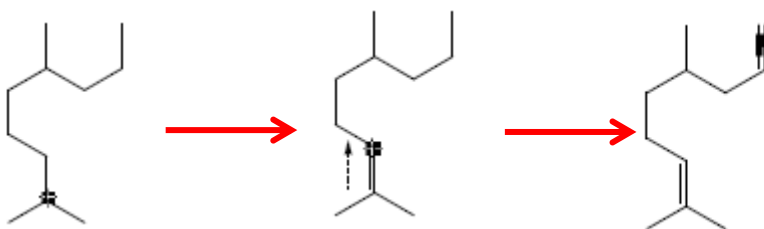3. Click to delete the atom and its bonds.

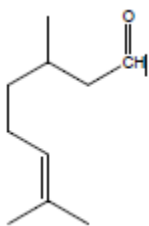The resulting structure is shown below.



Then add double bonds to the structure:

1. Click the Solid Bond tool
2. Point to the atom indicated below. You can simply drag upward to draw a double bond or double-click on the atom line until the requested double line style is created. Then add a centered double bond to the top rightmost atom as shown below.
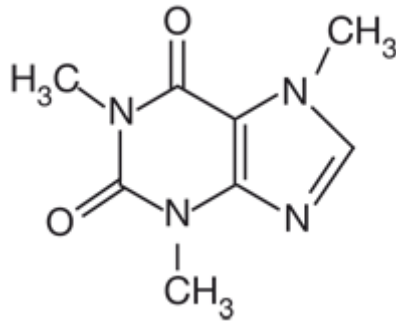


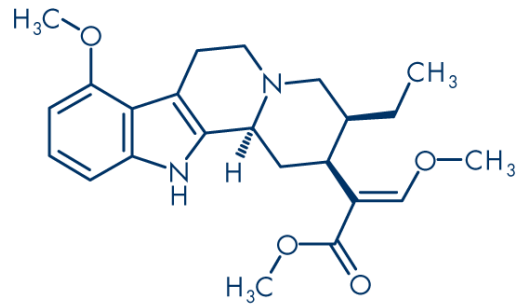Finally add a carbon and oxygen atom label to complete the structure:

# More Advanced Experiments

## Molecule Structure of Coffee



## Molecule Structure of Honey



## Molecule Structure of Chocolate