

LEARNING OBJECTIVES

After completing this lesson, you will be able to:

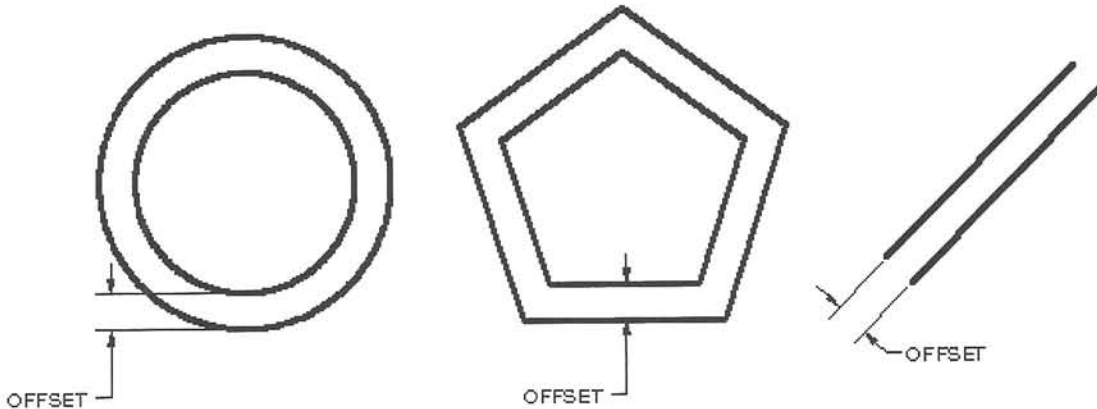
1. Duplicate an object at a specified distance away
2. Make changes to an objects properties
3. Use the Quick Properties Panel

LESSON 12

OFFSET

The **OFFSET** command duplicates an object parallel to the original object at a specified distance. You can offset Lines, Arcs, Circles, Ellipses, 2D Polylines and Splines. You may duplicate the original object or assign the offset copy to another layer.

Examples of Offset objects.




HOW TO USE THE OFFSET COMMAND:

METHOD 1

(Duplicate the Original Object)

1. Select the **OFFSET** command using one of the following:

Ribbon = Home tab / Modify panel / 
or
Keyboard = Offset <enter>

2. Command: `_offset`
Current settings: Erase source=No Layer=Source OFFSETGAPTYPE=0
Specify offset distance or [Through/Erase/Layer] <Through>: **type the offset distance or select Erase or Layer. (see options on the next page)**
3. Select object to offset or <Exit/Undo>: **select the object to offset.**
4. Specify point on side to offset or [Exit/Multiple/Undo]<Exit>: **Select which side of the original you want the duplicate to appear by placing your cursor and clicking. (See options on the next page)**
5. Select object to offset or [Exit/Undo]<Exit>: **Press <enter> to stop.**

OFFSET....continued

METHOD 2

(Duplicate original object but assign the Offset copy to a different layer)

To automatically place the offset copy on a different layer than the original you must first change the “current” layer to the layer you want the offset copy to be placed on.

1. Select the layer that you want the offset copy placed on from the list of layers.
2. Select the OFFSET command (refer to previous page)
3. Command: `_offset`
Current settings: Erase source=No Layer=Source OFFSETGAPTYPE=0
Specify offset distance or [Through/Erase/Layer] <Through>: **type L <enter>**
4. Enter layer option for offset objects [Current/Source] <Source>: **select C <enter>**
5. Specify offset distance or [Through/Erase/Layer] <Through>: **type the offset dist <enter>**
6. Select object to offset or [Exit/Undo] <Exit>: **select the object to offset.**
7. Specify point on side to offset or [Exit/Multiple/Undo]<Exit>: **Select which side of the object you want the duplicate to appear by placing your cursor and clicking. (See options below)**
8. Select object to offset or [Exit/Undo]<Exit>: **Press <enter> to stop.**

OPTIONS:

Through: Creates an object passing through a specified point.

Erase: Erases the source object after it is offset.

Layer: Determines whether offset objects are created on the current layer or on the layer of the source object. Select Layer and then select current or source.
(Source is the default)

Multiple: Turns on the multiple offset mode, which allows you to continue creating duplicates of the original without re-selecting the original.


Exit: Exits the Offset command.

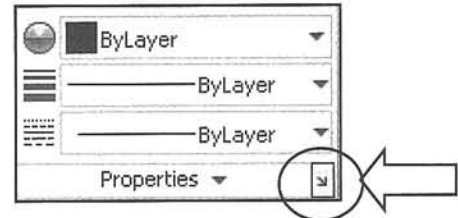
Undo: Removes the previous offset copy.

PROPERTIES PALETTE

The **Properties Palette**, shown below, makes it possible to change an object's properties. You simply open the Properties Palette, select an object and you can change any of the properties that are listed.

How to open the Properties Palette:

Ribbon = Home tab / Properties panel / 
 or
 Keyboard = Ctrl + 1



(An example of how to use the Properties Palette is on the next page.)

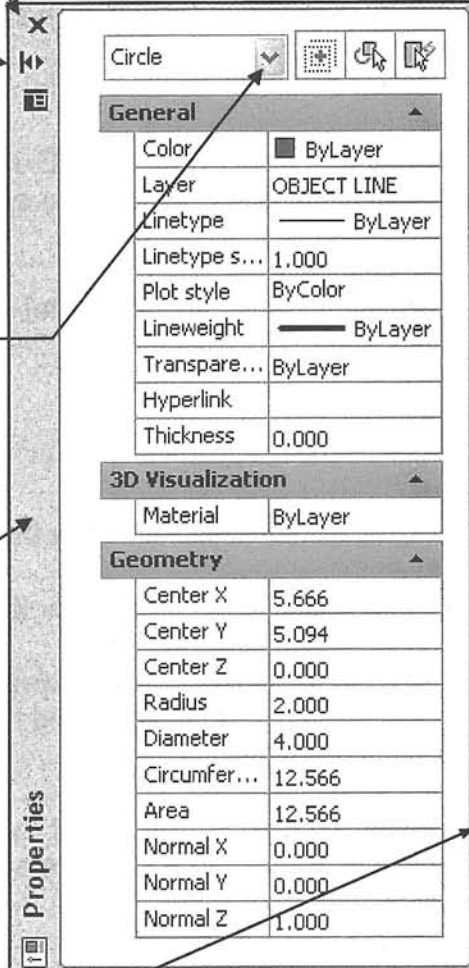
Close Palette
To close the Palette click on the "X" or press Ctrl + 1

Auto-Hide feature
(Click On and Off here)
The Palette will collapse into a vertical bar if ON. It will reactivate if you pass the cursor over the gray bar.

Multiple selected objects list
If you have selected multiple objects, select individually from this drop down list.

Move
To move, click and drag the gray title bar to a new location.

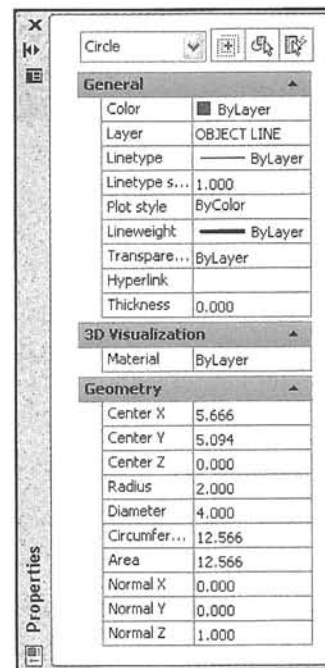
Resize
To resize, click and drag an edge.

A detailed screenshot of the Properties palette for a 'Circle' object. The palette is divided into several sections: 'General' (Color: ByLayer, Layer: OBJECT LINE, Linetype: ByLayer, Linetype s...: 1.000, Plot style: ByColor, Lineweight: ByLayer, Transpare...: ByLayer, Hyperlink, Thickness: 0.000), '3D Visualization' (Material: ByLayer), and 'Geometry' (Center X: 5.666, Center Y: 5.094, Center Z: 0.000, Radius: 2.000, Diameter: 4.000, Circumfer...: 12.566, Area: 12.566, Normal X: 0.000, Normal Y: 0.000, Normal Z: 1.000). The palette has a gray title bar at the top with an 'X' icon, and a vertical gray bar on the left with a 'Properties' label and a small square icon. Arrows from the text labels point to these features: 'Close Palette' points to the 'X' icon, 'Auto-Hide feature' points to the vertical gray bar, 'Multiple selected objects list' points to a dropdown menu at the top left of the palette, 'Move' points to the title bar, and 'Resize' points to the bottom edge of the palette.

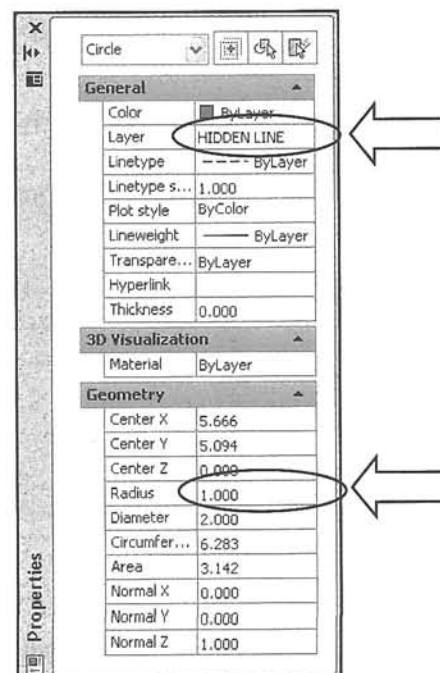
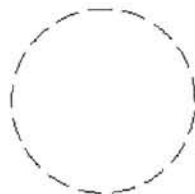
PROPERTIES PALETTE....continued

Example of editing an object using the Properties Palette

1. Draw a 2.00 Radius circle.
2. Open the Properties Palette and select the Circle. (*The Properties for the Circle should appear. You may change any of the properties listed in the Properties Palette for this object. When you press <enter> the circle will change.*)



3. Highlight and change the “Radius” to 1.00 and the “Layer” to HIDDEN LINE <enter>. *The Circle got smaller and the Layer changed as shown below.*



QUICK PROPERTIES PANEL

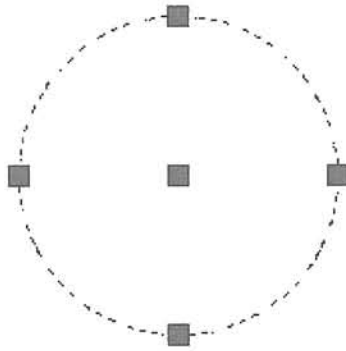
The Quick Properties Panel, shown below, will only appear if you have it set to ON. The Quick Properties Panel displays fewer properties and appears when you click once on an object. You may make changes to the objects properties using Quick Properties just as you would using the Properties Palette. (AutoCAD is just giving you another option)

How to turn Quick Properties Panel On or OFF.

Select the **QP** button on the status bar.

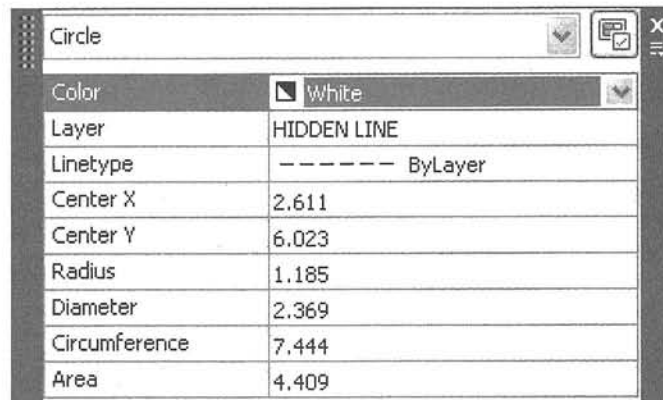


1. Select an object



2. The Quick Properties box appears.

Note: The list depends on the type of object you have selected, such as; Circle, Line, Rectangle, etc.

A screenshot of the Quick Properties panel for a circle. The panel shows the following properties:

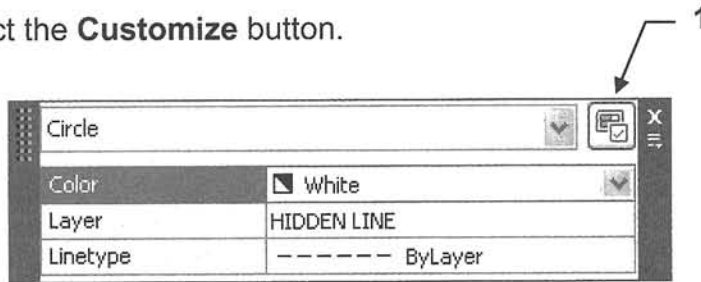
Circle	
Color	White
Layer	HIDDEN LINE
Linetype	----- ByLayer
Center X	2.611
Center Y	6.023
Radius	1.185
Diameter	2.369
Circumference	7.444
Area	4.409

Refer to the next page to “Customize” the Quick Properties Panel.

CUSTOMIZING THE QUICK PROPERTIES PANEL

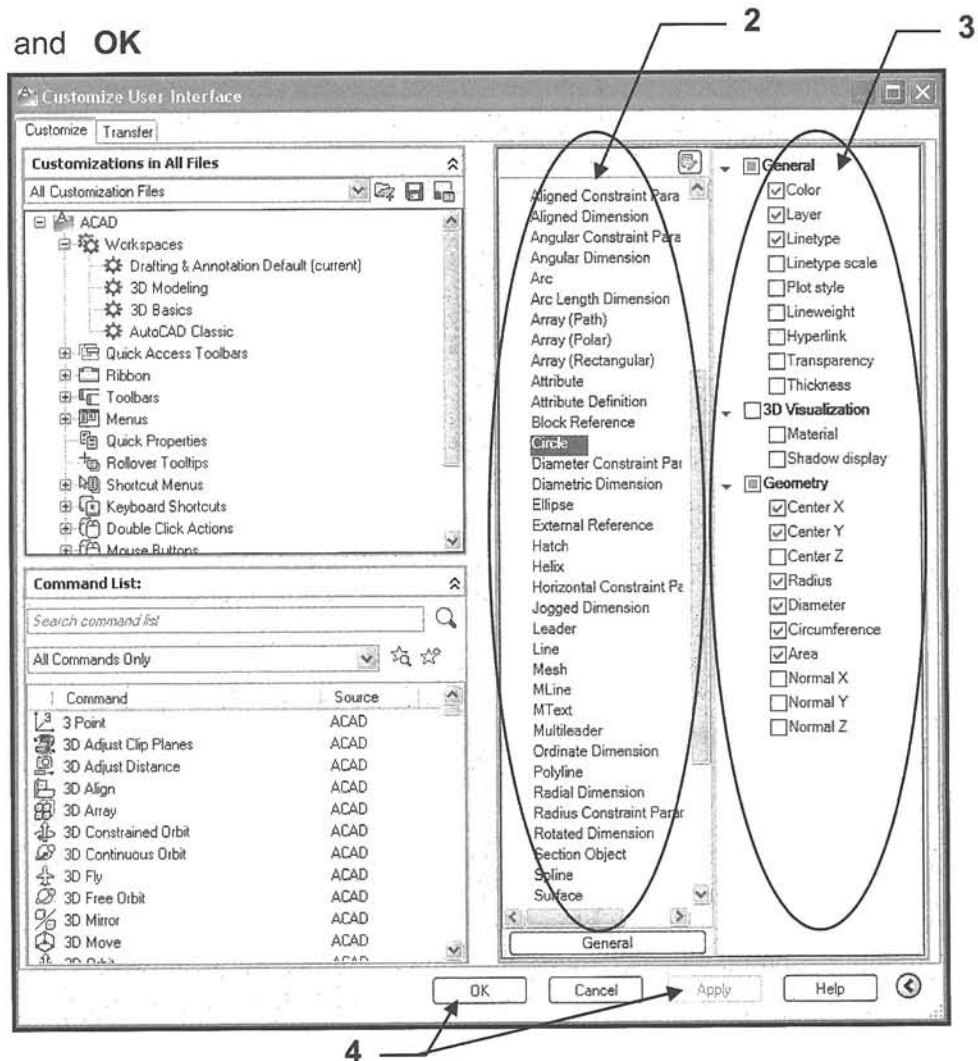
You may add or remove properties from the Quick Properties Panel. And it is easy.

1. Select the **Customize** button.



2. Select the Object, from the list, that you would like to customize.
3. Check the boxes for the properties that you want to appear.
Uncheck the boxes that you do not want to appear.

4. Select **Apply** and **OK**



Note: The customizing is saved to the computer not the drawing file.

OFFSETGAPTYPE

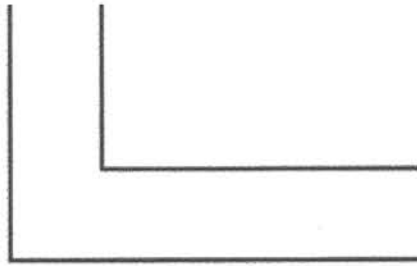
When you offset a closed 2D object, such as a rectangle, to create a **larger** object it results in potential gaps between the segments. The **offsetgaptype** system variable controls how these gaps are closed.

To set the offsetgaptype:

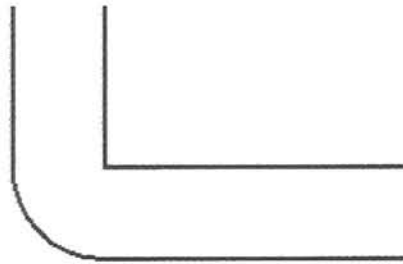
Type: **offsetgaptype** <enter>

Enter one of the following:

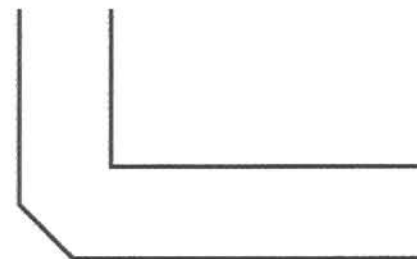
0 = Fills the gap by extending the polyline segments. (default setting)



1 = Fills the gap with filleted arc segments. The radius of each arc segment is equal to the offset distance.



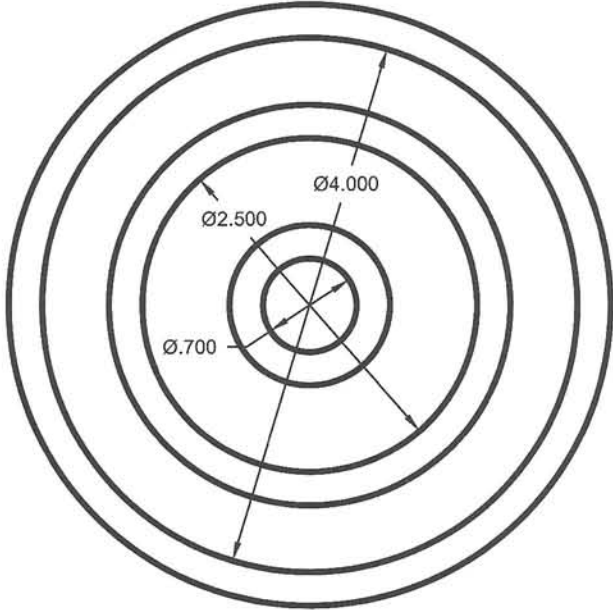
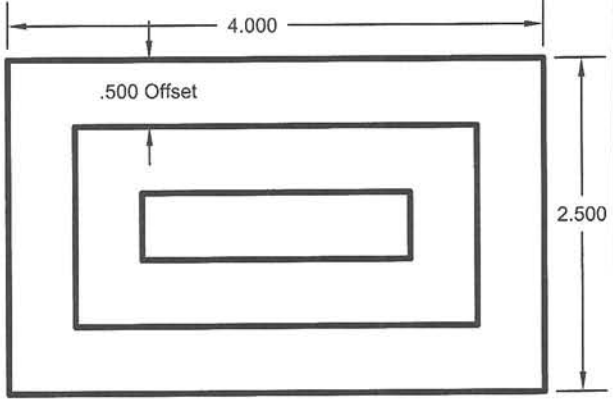
2 = Fills the gap with chamfered line segments. The perpendicular distance to each chamfer is equal to the offset distance.

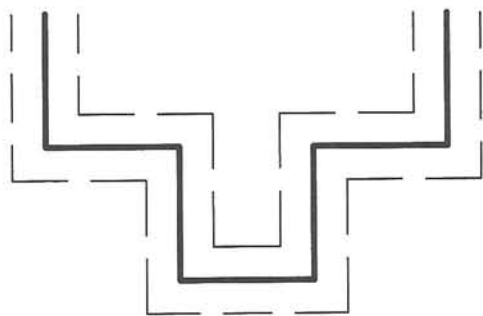


EXERCISE 12A

INSTRUCTIONS:

1. Start a **New** file using **Border A-2013.dwt**
2. Draw the Objects below using Circles, Rectangles and Lines.
3. Use the Offset command to offset the objects.
4. Use Layers = Object line and Hidden line.
5. Edit the Title and Ex-XX by double clicking on the text. Do not erase and replace.
6. Do not dimension
7. Save as **EX12A**
8. Plot using Page Setup **Class Model A**

<p>Offset distance .250</p>  <p>Ø2.500 Ø4.000 Ø7.000</p>	 <p>4.000 .500 Offset 2.500</p>	
<p>Your Name Here</p>	<p>Offset Exercise</p>	<p>Ex-12A</p>



The solid lines are on layer Object line and 1.00 in length.
(Remember Polar Snap from Lesson 11?)
The dashed lines are on Layer Hiddenline
The Offset is .250. Use Trim and Extend after Offsetting.

EXERCISE 12B

INSTRUCTIONS:

1. Start a **New** file using **Border A-2013.dwt**
2. Follow the steps shown on the next page to draw the Window Schedule shown below.
3. Use Layers = Object line and Text.
4. Edit the Title and Ex-XX by double clicking on the text. Do not erase and replace.
5. Do not dimension
6. Save as **EX12B**
7. Plot using Page Setup **Class Model A**

Follow instructions on the next page.

WINDOW SCHEDULE		
SYM	SIZE	TYPE
(A)	5'-0" X 4'-0"	WOOD FIXED
(B)	3'-0" X 4'-0"	WOOD FIXED
(C)	3'-0" X 3'-0"	WOOD FIXED
(D)	2'-0" X 3'-0"	ALUMINUM SLIDER

Your Name Here

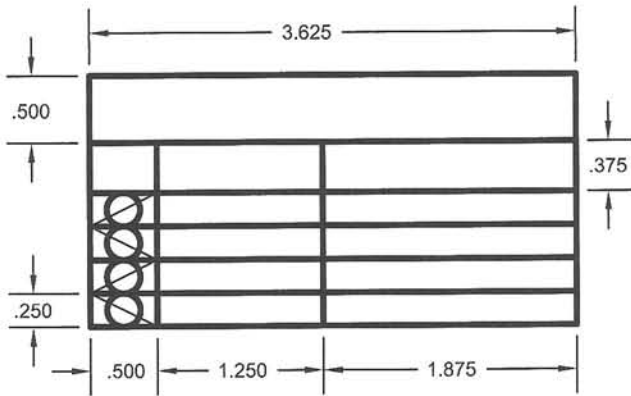
Window Schedule

Ex-12B

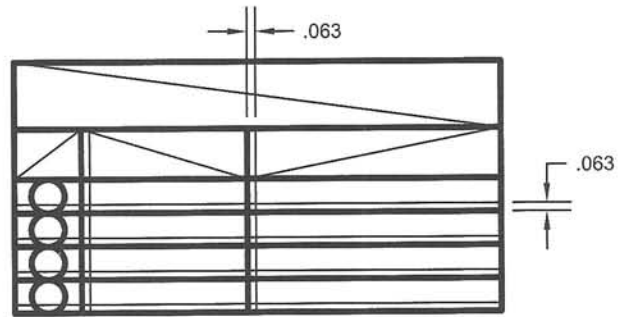
EXERCISE 12B

HELPER

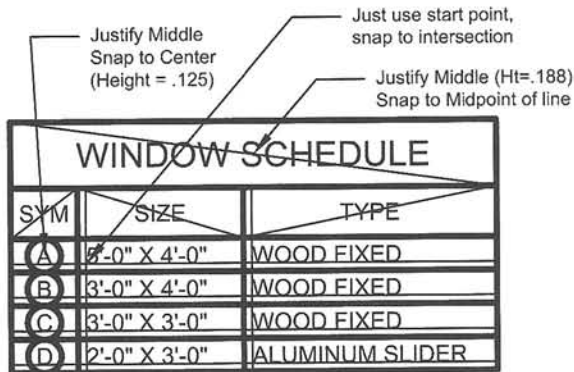
Step 1. Draw the window schedule using the offset command.



Step 2. Draw the guidelines as shown using object snap "intersection" for the diagonal lines and the offset command for the horizontal and vertical lines.



Step 3. Using "Single Line Text" place text as shown. All text height .125 except title. Title height is .188.





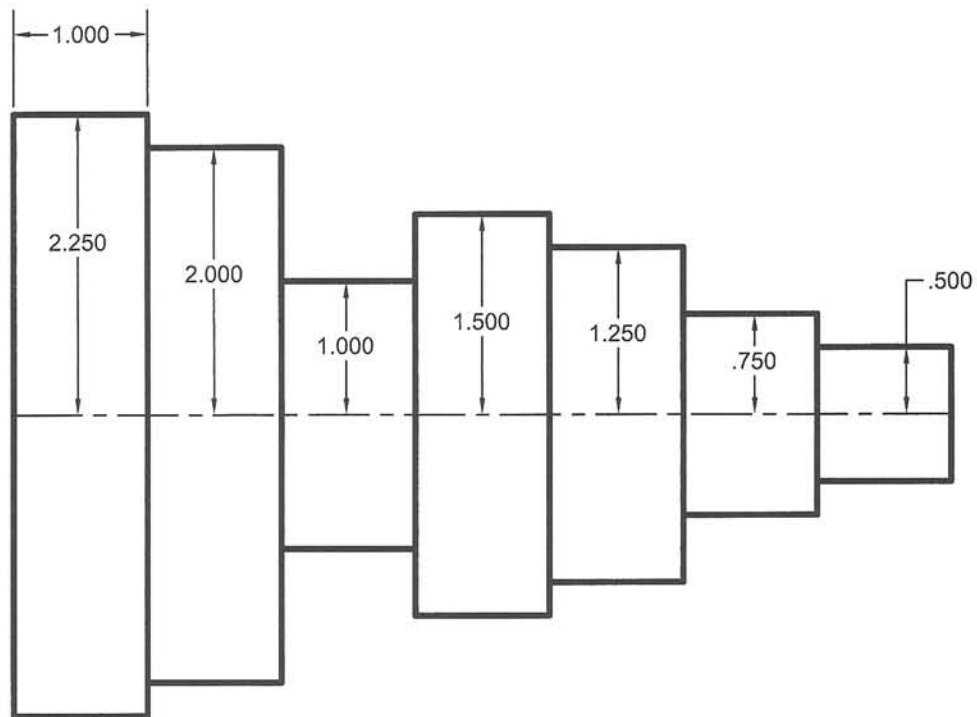
Step 4. Erase the guidelines

WINDOW SCHEDULE		
SYM	SIZE	TYPE
(A)	5'-0" X 4'-0"	WOOD FIXED
(B)	3'-0" X 4'-0"	WOOD FIXED
(C)	3'-0" X 3'-0"	WOOD FIXED
(D)	2'-0" X 3'-0"	ALUMINUM SLIDER

EXERCISE 12C

INSTRUCTIONS:

1. Start a **New** file using **Border A-2013.dwt**
2. Draw a horizontal and vertical line on Layer Object line. 
3. Draw the upper half using the Offset command. 
4. MIRROR the upper half. (Do not include the horizontal centerline)
5. Change the horizontal line to layer Center line using Properties Palette or QP.
6. Edit the Title and Ex-XX by double clicking on the text. Do not erase and replace.
7. Do not dimension
8. Save as **EX12C**
9. Plot using Page Setup **Class Model A**



Your Name Here

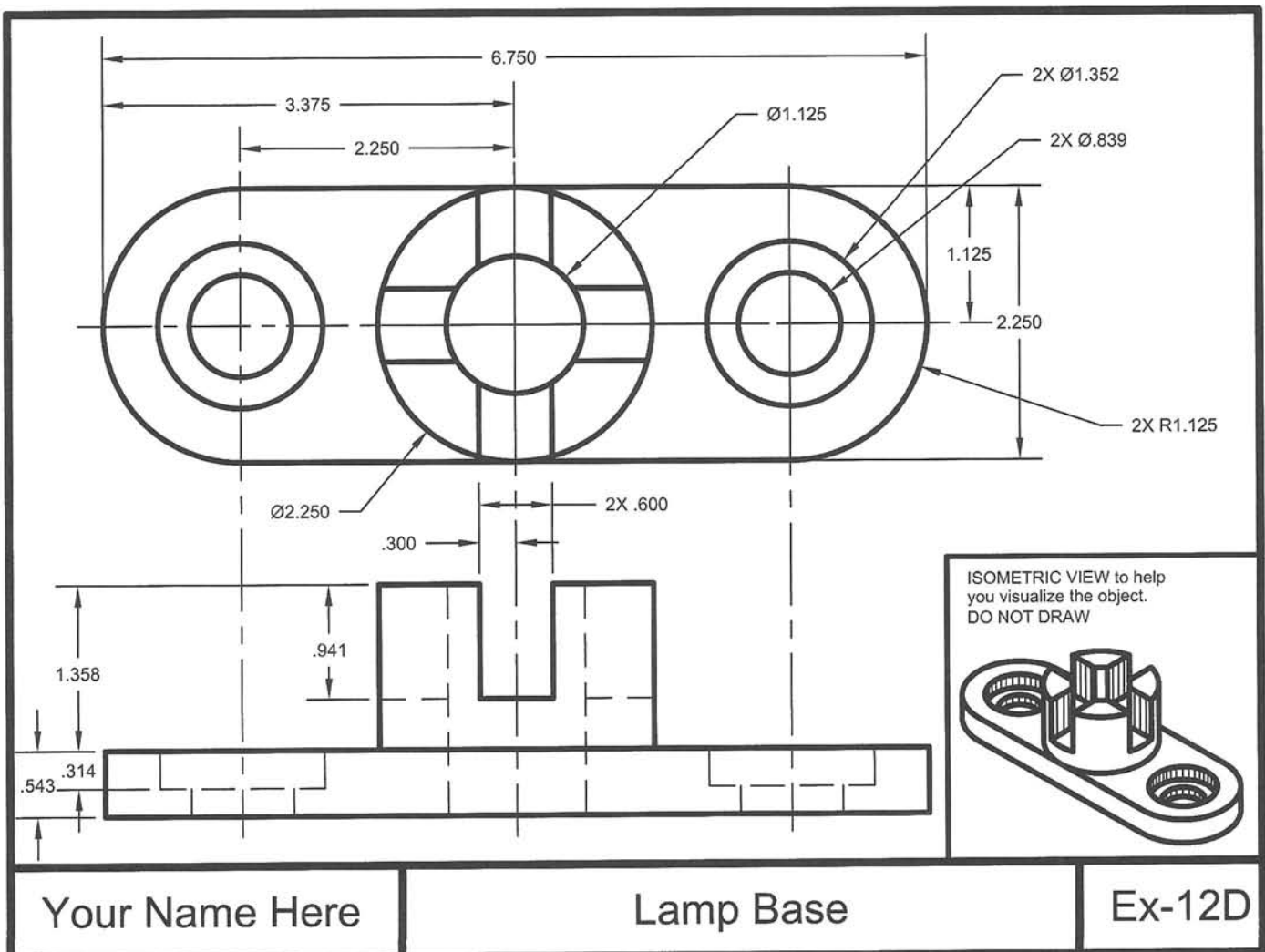
Offset and Mirror Exercise

Ex-12C

EXERCISE 12D

INSTRUCTIONS:

1. Start a **New** file using **Border A-2013.dwt**
2. Draw the lamp base below.
3. Practice using the "Layer method" when offsetting the hidden lines. Or use the Properties Palette or Quick Properties.
4. Notice that the part is symmetrical. Consider the Mirror command.
5. Use Layers, Object line, Hidden line and Centerline.
6. Edit the Title and Ex-XX by double clicking on the text. Do not erase and replace.
7. Do not dimension
8. Save as **EX12D**
9. Plot using Page Setup **Class Model A**



Notes: