

# AutoCAD 2D

## Module 38

### Dimensioning - Part 2

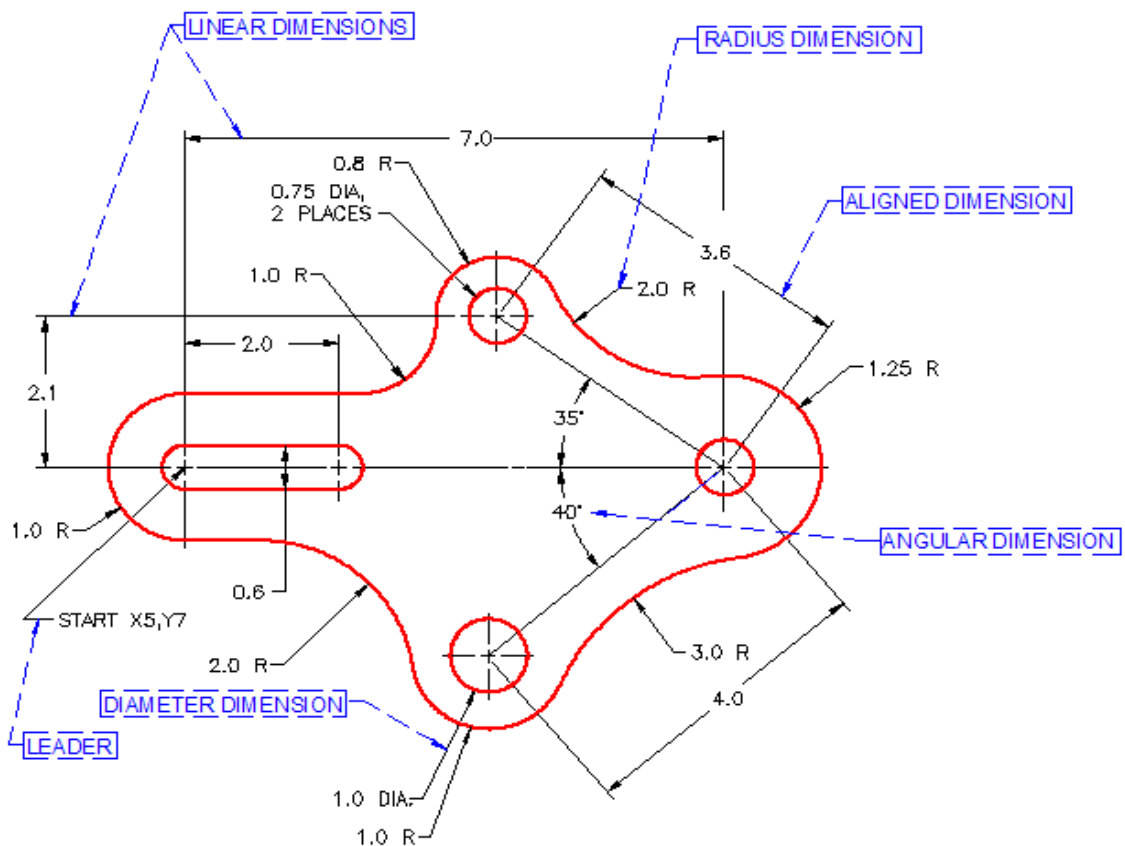
#### Learning Outcomes

When you have completed this module, you will be able to:

- 1 Describe the six basic dimensioning types.
- 2 Apply the DIMLINEAR, DIMALIGNED, DIMANGULAR, DIMDIAMETER, DIMRADIUS and QLEADER commands to dimension a drawing.

#### Drafting Lesson Basic Dimension Types

Figure 38-1 shows the six basic dimensioning types that will be taught in this module. They are the linear, aligned, angular, diameter, radius and leader dimensions.



**Figure 38-1**  
Basic Dimensioning Types

## Inserting Dimensions

In this module, inserting and editing *linear, aligned, angular, radius, diameter* and *leader* dimensions will be taught. When a dimension is inserted, it resides on the current layer and assumes the color of that layer.

### MUST KNOW

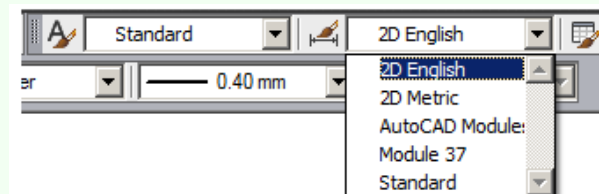
Before dimensioning a drawing, it is important to check the following settings:

- 1 The current layer. That is the layer that the inserted dimensions will reside on.
- 2 The current dimensioning style. The dimensions you insert, with any dimensioning command, will use the properties of the current dimensioning style.
- 3 The DIMASSOC setting. This setting controls whether the inserted dimensions will be inserted as associative dimensions or exploded dimensions.

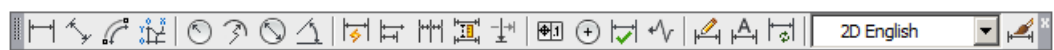
### USER TIP

The current dimensioning style will appear in the Dimensioning toolbar and the Styles toolbar. A quick way to check or change the current dimensioning style is with one of these drop-down menus.

Try to get into the habit of using the Dimensioning toolbar to insert your dimensions. It will speed your drawing productivity.



Style Toolbar - 2007-2011



Dimension Toolbar - 2009-2011

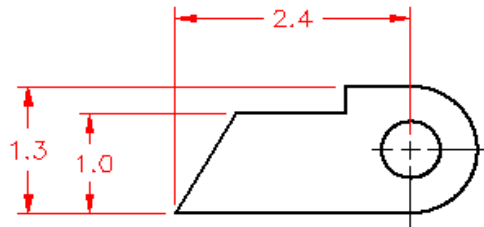


Dimension Toolbar - 2007-2008

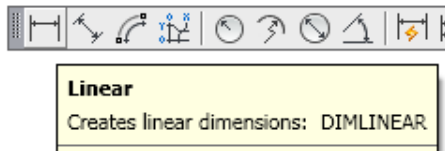
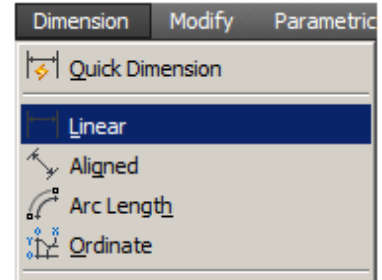
### AutoCAD Command: **DIMLINEAR**

The DIMLINEAR command is used to insert a linear dimension. A linear dimension is a dimension that is either horizontal or vertical.

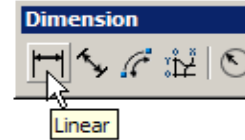
Shortcut: **DIMLIN**



Linear Dimension



2009-2011

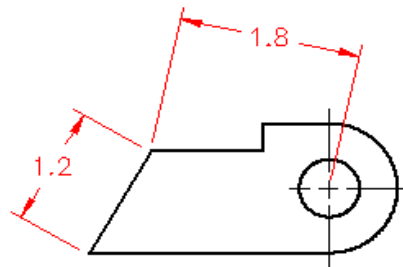


2007-2008

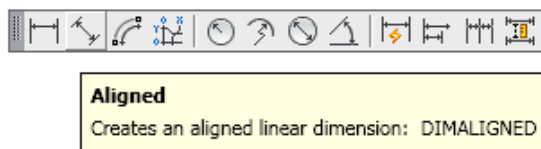
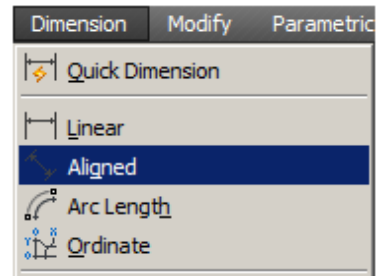
### AutoCAD Command: **DIMALIGNED**

The DIMALIGNED command is used to insert an aligned dimension.

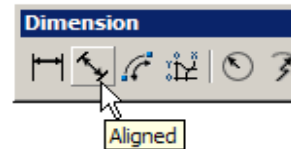
Shortcut: **DIMALI**



Aligned Dimension



2009-2011

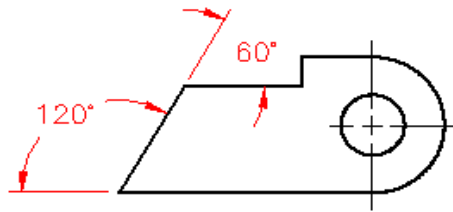


2007-2008

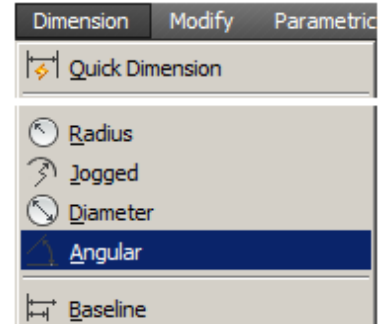
### AutoCAD Command: **DIMANGULAR**

The DIMANGULAR command is used to insert an angular dimension.

Shortcut: **DIMANG**

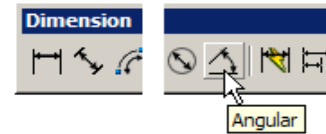


Angular Dimension



**Angular**  
Creates an angular dimension: DIMANGULAR.

2009-2011

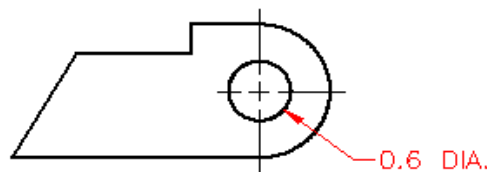


2007-2008

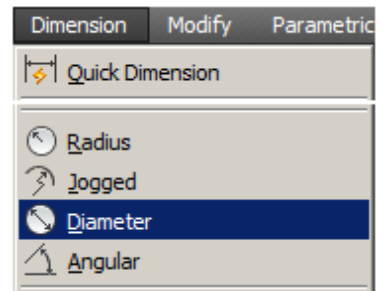
### AutoCAD Command: **DIMDIAMETER**

The DIMDIAMETER command is used to insert a diameter dimension.

Shortcut: **DIMDIA**



Diameter Dimension



**Diameter**  
Creates diameter dimensions for circles and arcs: DIMDIAMETER.

2009-2011

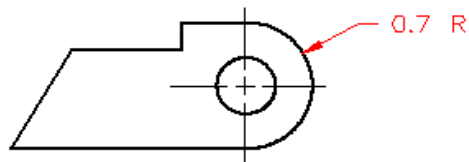


2007-2008

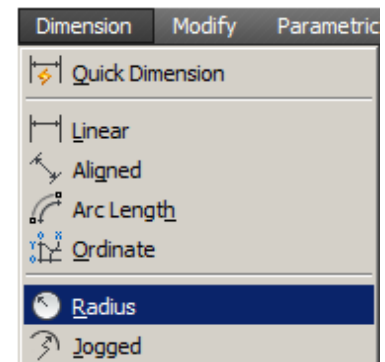
**AutoCAD Command: DIMRADIUS**

The DIMRADIUS command is used to insert a radius dimension.

Shortcut: **DIMRAD**

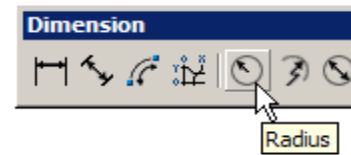


Radius Dimension



**Radius**  
Creates radius dimensions for circles and arcs: DIMRADIUS

2009-2011



2007-2008

**WORK  
ALONG**

### Inserting Linear, Aligned, Angular, Diameter and Radius Dimensions

**Step 1** Open the drawing AutoCAD 2D Workalong 37-1. (Figure Step 1)

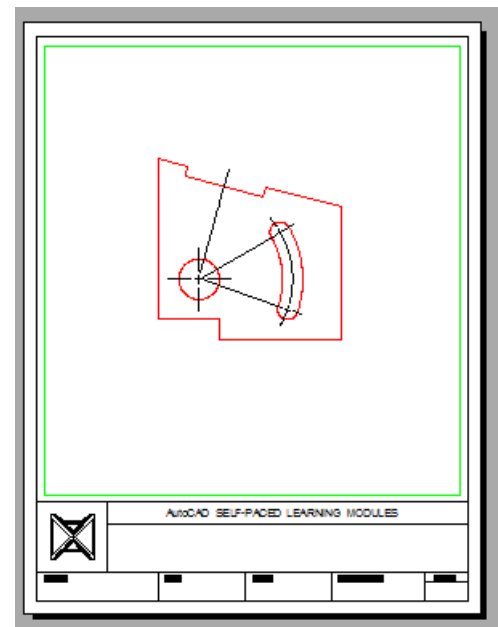


Figure Step 1

**Step 2** Using the SAVEAS command, save and name the drawing AutoCAD 2D Workalong 38-1.

**Step 3** Enable the display of the Dimension toolbar. Set the current dimensioning style to Module 37. (Figure Step 3)



2009-2011



2007-2008

**Figure Step 3**

**Step 4** Enter the DIMASSOC system variable, as shown below, and ensure that it is set to 2. This will enable associative dimensions.

Command: **DIMASSOC**

Enter new value for DIMASSOC <1>: **2**

Command:

**Step 5** Set layer Dimensions as the current layer. Insert all dimensions in paper space.

**Step 6** Enter the DIMLIN command, as shown below, to insert a linear dimension. (Figure Step 6)

Command: **DIMLIN**

Specify first extension line origin or <select object>: (end) **P1**

Specify second extension line origin: (end) **P2**

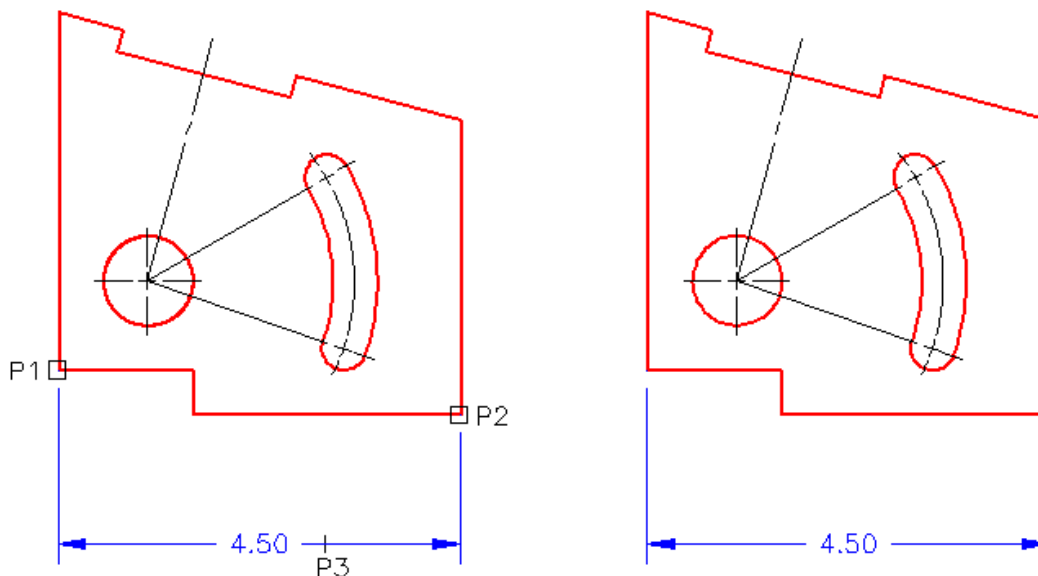
*(Ensure to snap to the ends of the lines.)*

Specify dimension line location or [Mtext/Text/Angle/Horizontal/Vertical/Rotated]: **P3**

*(You can place the location of P3 by eye. Try to match the figure the best you can.)*

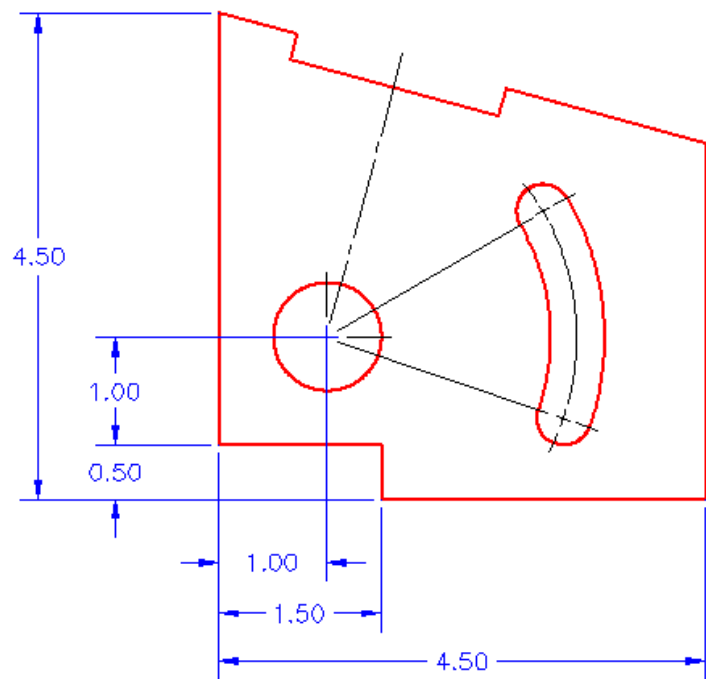
Dimension text = 4.50

Command:



**Figure Step 6**

**Step 7** Using what you just learned, add the linear dimensions to match the figure. Snap to the center of the circle for one endpoint of the dimension. (Figure Step 7)



**Figure Step 7**

**Step 8** Enter the DIMALI command, as shown below, to insert an aligned dimension. (Figure Step 8)

Command: **DIMALI**

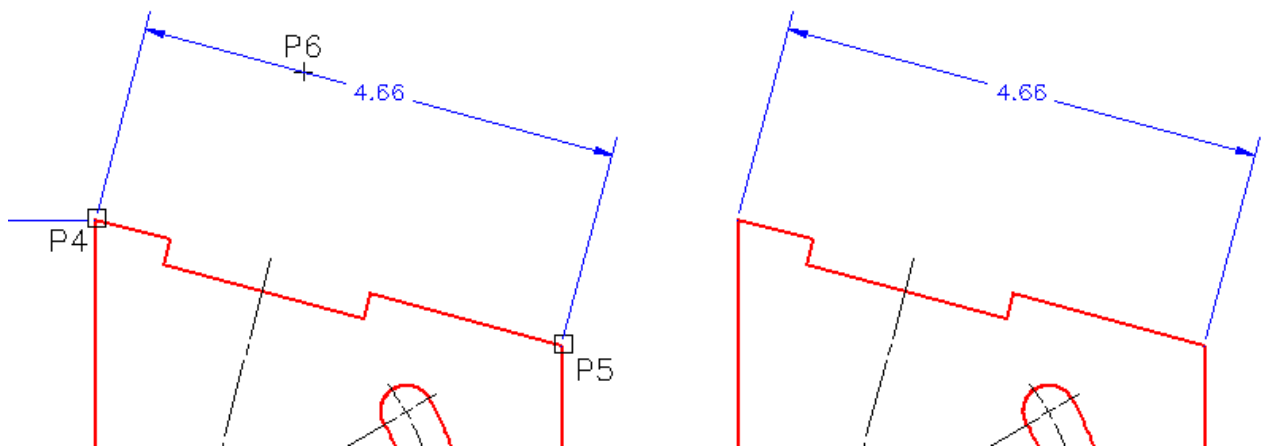
Specify first extension line origin or <select object>: (end) **P3**

Specify second extension line origin: (end) **P4**

Specify dimension line location or [Mtext/Text/Angle]: **P5**

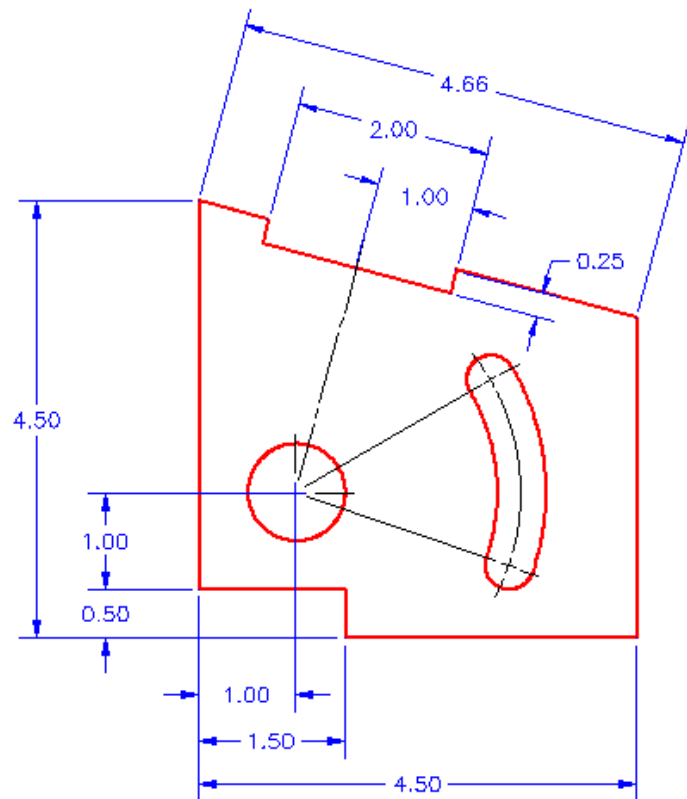
Dimension text = 4.66

Command:



**Figure Step 8**

**Step 9** Using what you just learned, add the aligned dimensions to match the figure. (Figure Step 9).



**Figure Step 9**

**Step 10** Enter the DIMDIA command, as shown below, to insert a diameter dimension as shown in the figure. (Figure Step 10)

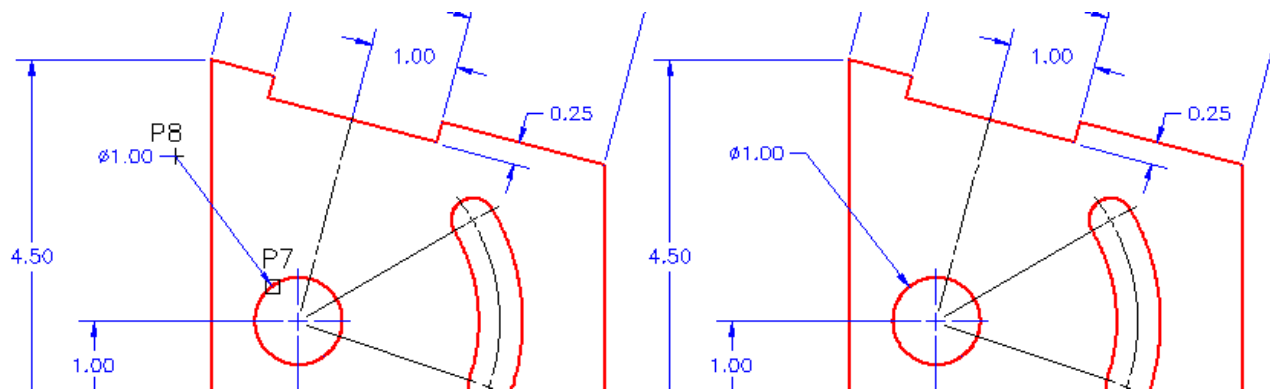
Command: **DIMDIA**

Select arc or circle: **P7**

Dimension text = 1.00

Specify dimension line location or [Mtext/Text/Angle]: **P8**

Command:



**Figure Step 10**

**Step 11** Enter the DIMRAD command, as shown below, to insert a radius dimension. (Figure Step 11)

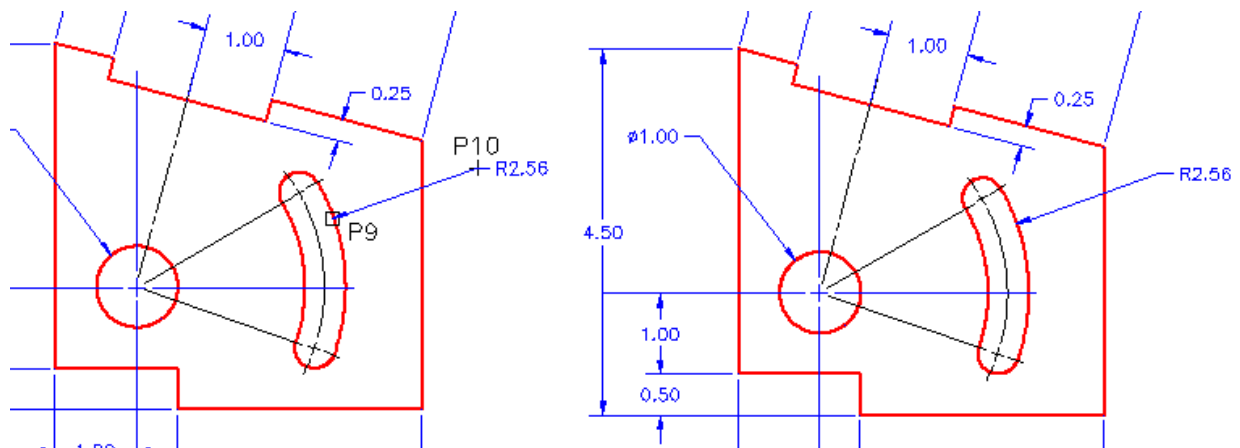
Command: **DIMRAD**

Select arc or circle: **P9**

Dimension text = 2.56

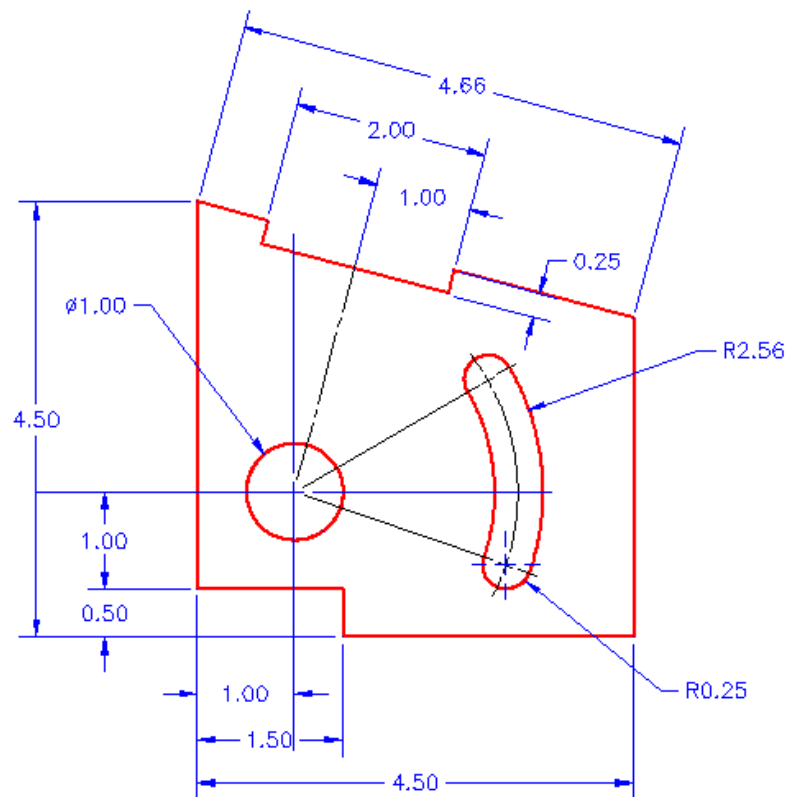
Specify dimension line location or [Mtext/Text/Angle]: **P10**

Command:



**Figure Step 11**

**Step 12** Using what you just learned, add a second radius dimension to match the figure. (Figure Step 12)



**Figure Step 12**

**Step 13** Enter the DIMANG command, as shown below, to insert an angular dimension. (Figure Step 13)

Command: **DIMANG**

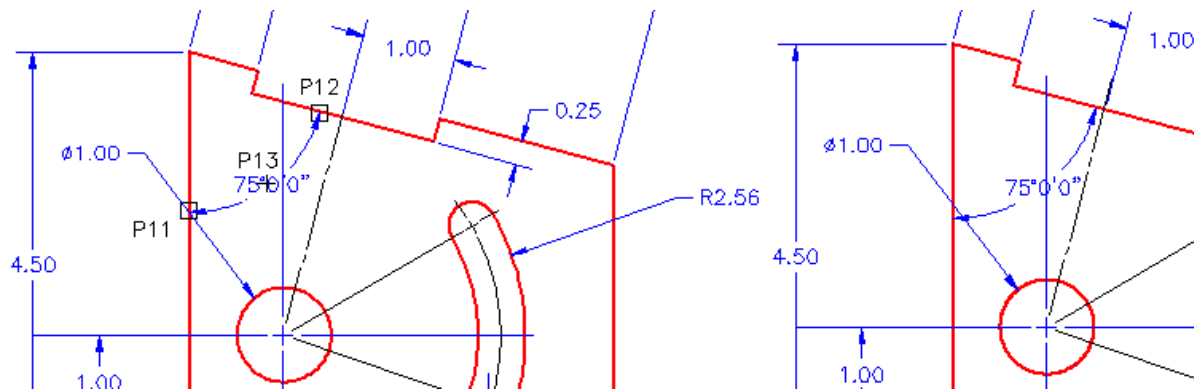
Select arc, circle, line, or <specify vertex>: **P11**

Select second line: **P12**

Specify dimension arc line location or [Mtext/Text/Angle]: **P13**

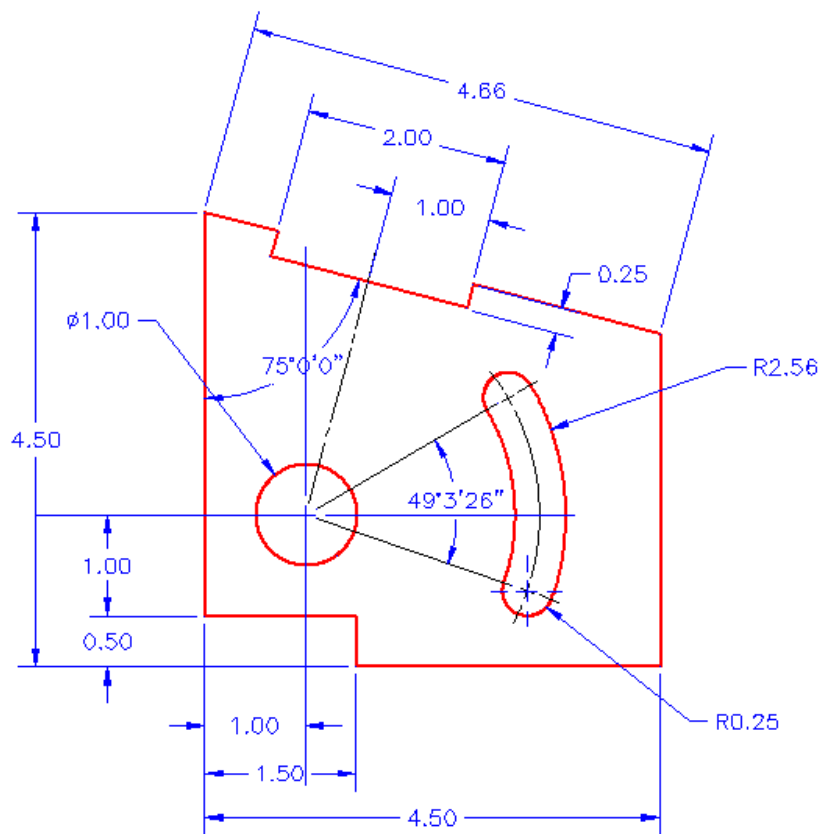
Dimension text = 75d0'0"

Command:



**Figure Step 13**

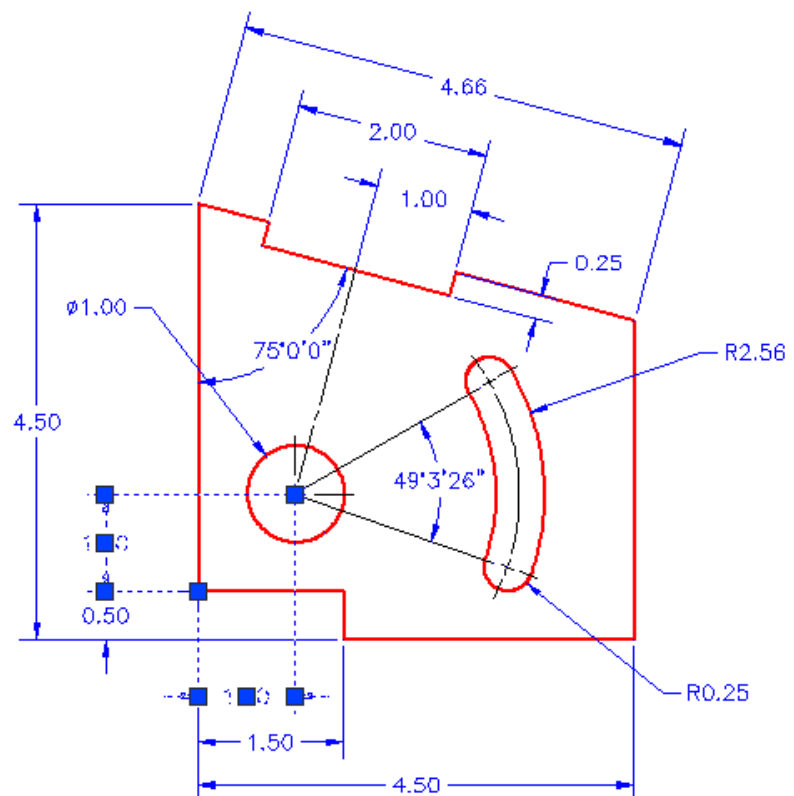
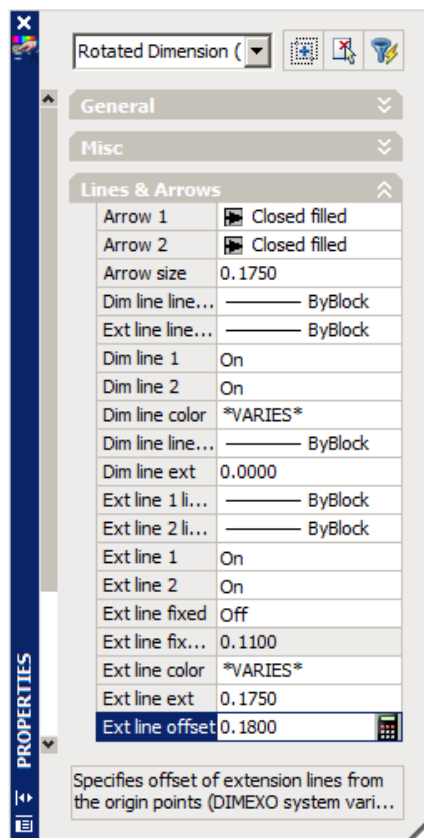
**Step 14** Using what you just learned, add the angular dimension to match the figure. (Figure Step 14)



**Figure Step 14**

**Authors Comments:** After you have inserted all the dimensions required, make corrections to the associative dimensions by changing the properties of the dimensions that need correcting using the Properties window.

**Step 15** Open the Properties window and select the two linear dimensions shown in the figure. Set the Ext line offset property to 0.1800. (Figure Step 15)

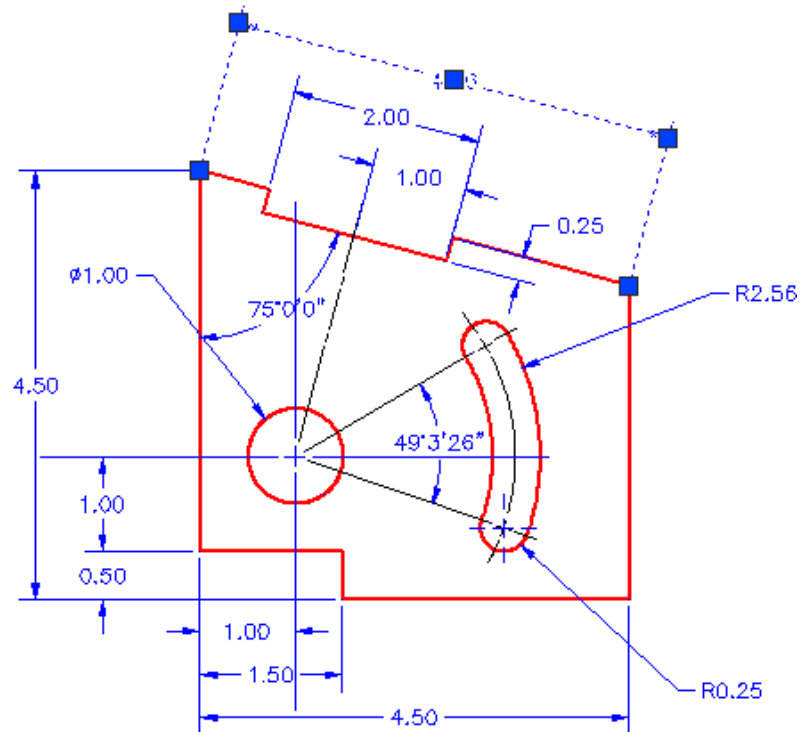
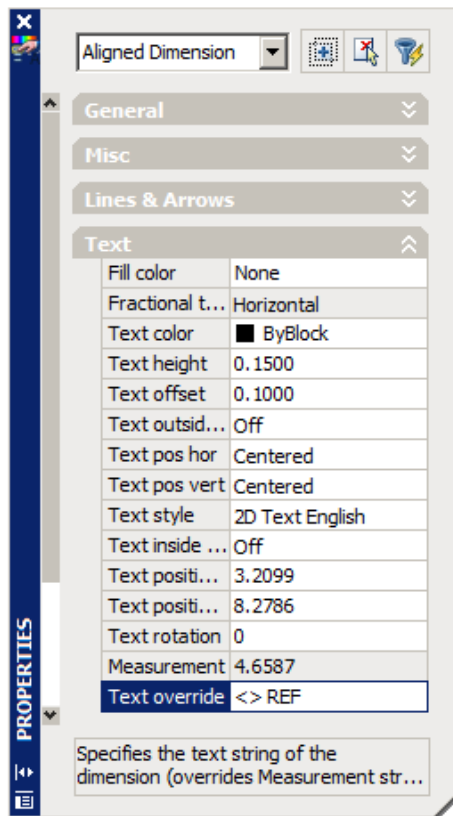


**Figure Step 15**

**MUST KNOW**

When AutoCAD finds the dimension or measures the object in a dimensioning command, it does not display the actual number. The symbol  $\llcorner$  is displayed. This symbol means default or the actual measurement. If you want to add the text REF after the real measurement, enter it as :  $\llcorner$  REF.

**Step 16** Select the aligned dimension shown in the figure. Set the Text override property to <> REF. (Figure Step 16)



**Figure Step 16**

**Authors Comments:** The <> means default or the actual dimension that AutoCAD measured. If sometime in the future the size changes, the dimension will also change.

### USER TIP

The fastest way to dimension an object is to dimension it very quickly, inserting all the required dimensions. When all the dimensions are inserted, change them using the Properties window. This is much faster than fixing the dimensions as they are inserted.

**Step 17** Select the aligned dimension shown in the figure. Change the property Ext Line 2, to Off. This will turn off the display of one of the extension lines since it is on object line. Depending on the order that you used when inserting the dimension, you may have to set Ext Line 1 instead. (Figure Step 17)

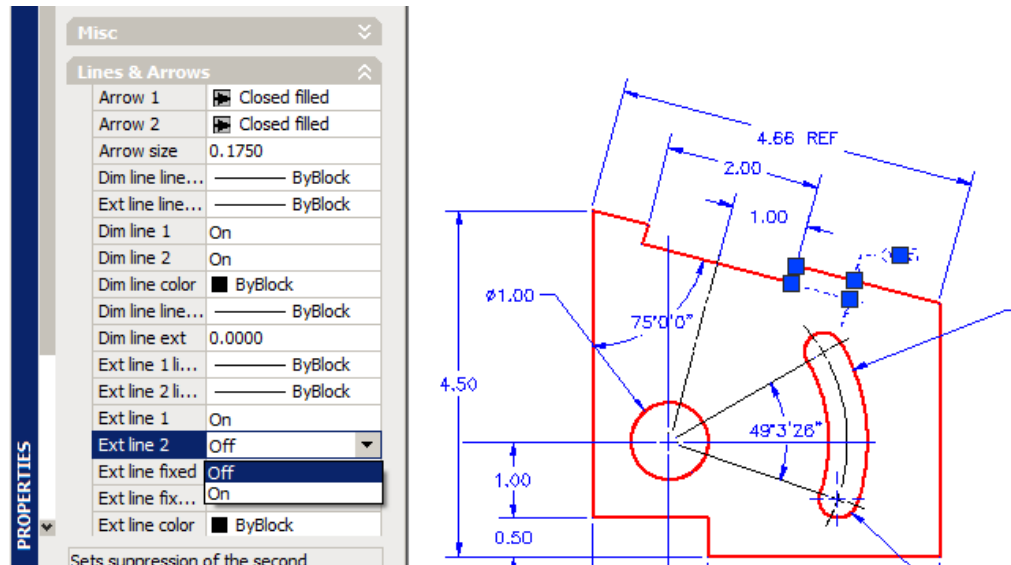


Figure Step 17

**Step 18** Select the two radius and the diameter dimension shown in the figure. Set the Center mark property to None. (Figure Step 18)

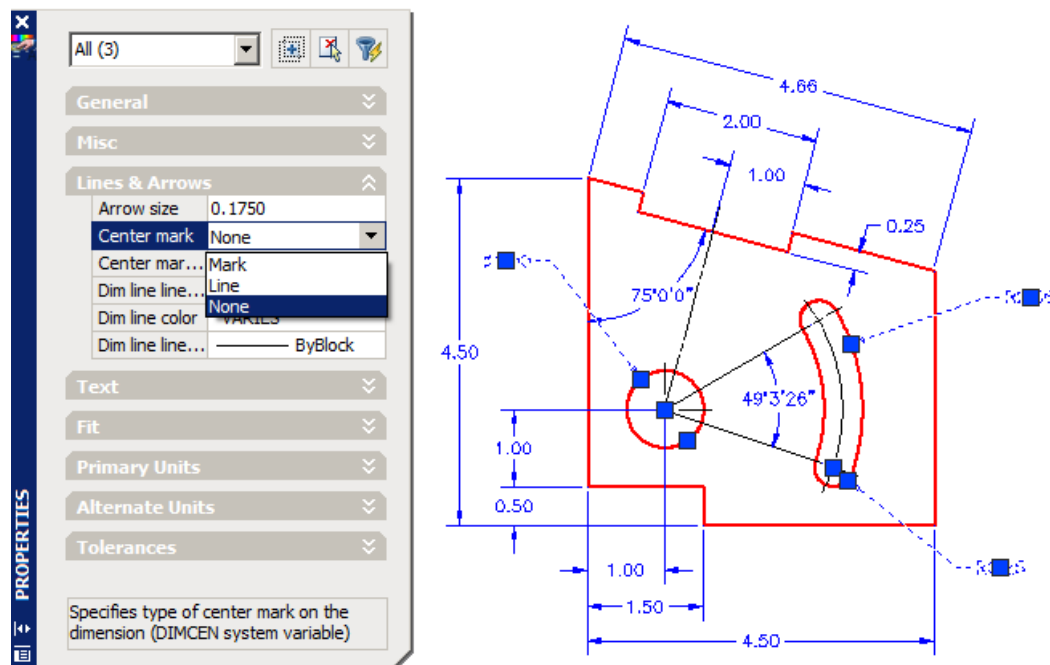
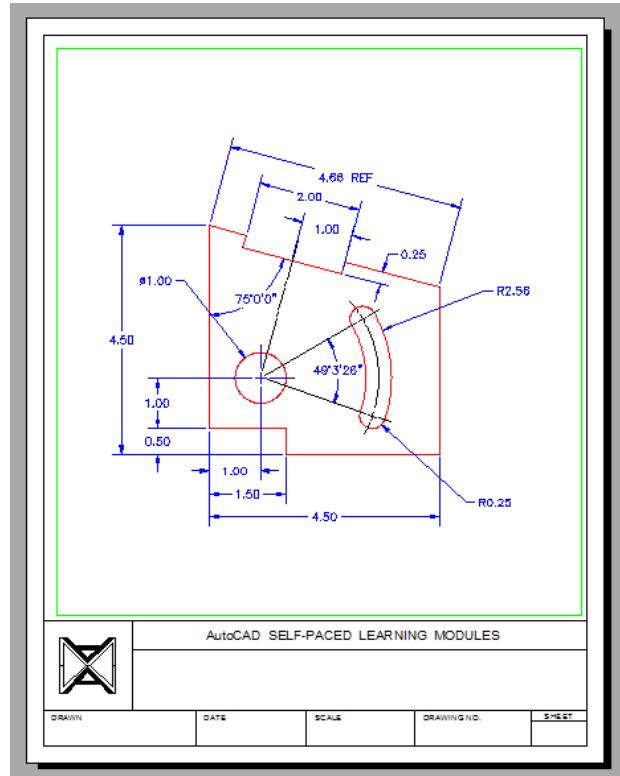


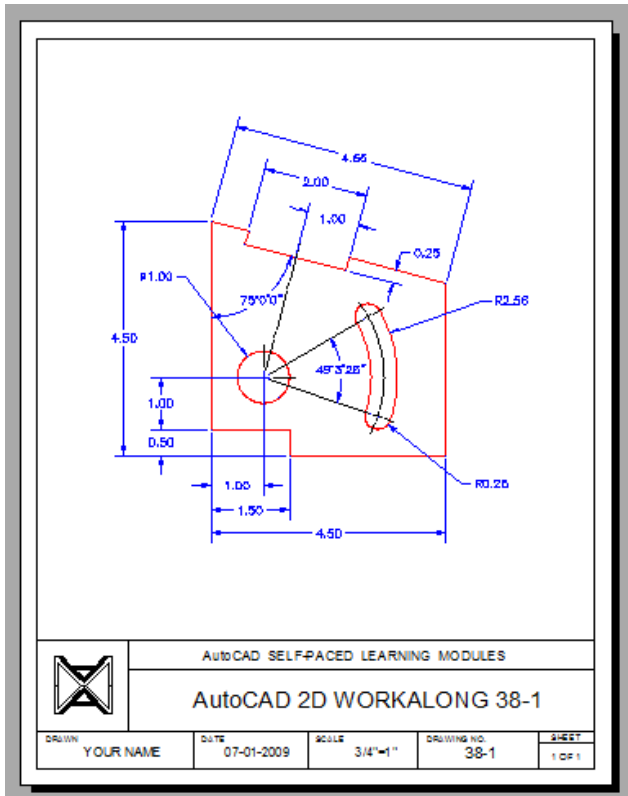
Figure Step 18

**Step 19** Your dimensioned drawing should be similar to the figure. (Figure Step 19)





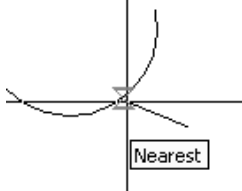
**Figure Step 19**

**Step 20** Turn layer Viewport off. Fill in the titleblock. (Figure Step 20)



**Figure Step 20**

**Step 21** Save and close the drawing.

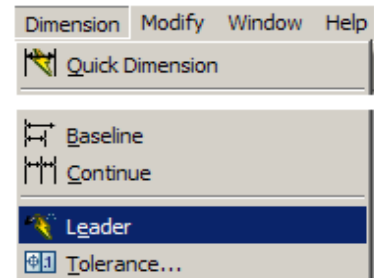
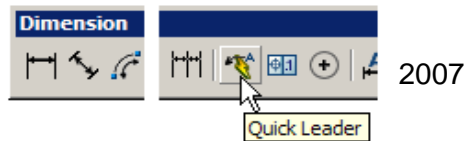
Object Snap Modes - Near				
Modes	Abbreviations	Icon	Marker	The AutoCAD Object
Nearest	Nea			

**Figure 38-2**  
Object Snap Mode - Near

**AutoCAD Command: QLEADER**

The QLEADER command is used to a leader dimension.

Shortcut: none



For AutoCAD 2008-2011, this command must be entered at Command: prompt.

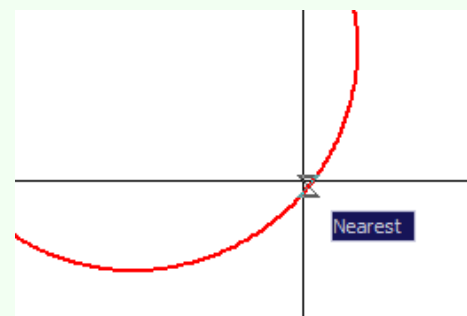
Command: **QLEADER**



The snap mode nearest can be used for many purposes while drawing in AutoCAD. If you want to snap to an object, but not any particular location on that object, use this snap mode.

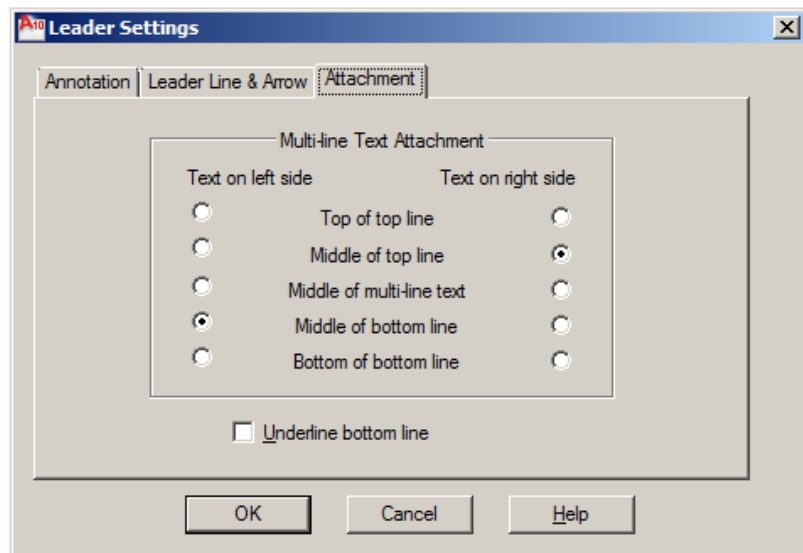
It is best to type the near snap mode, when required, on the keyboard rather than including it in the Autosnap settings.

Command: **LINE**  
Specify first point: **near** to





**Step 4** Enable the Attachment tab. Ensure that your dialogue box matches the settings in the figure. (Figure Step 4)



**Figure Step 4**

**Step 5** Enter the QLEADER command, as shown below, to insert the leader. (Figure Step 5)

Command: **QLEADER**

Specify first leader point, or [Settings] <Settings>: (near) **P13**  
(Use the Near osnap mode. see page 38-15.)

Specify next point: **P14**

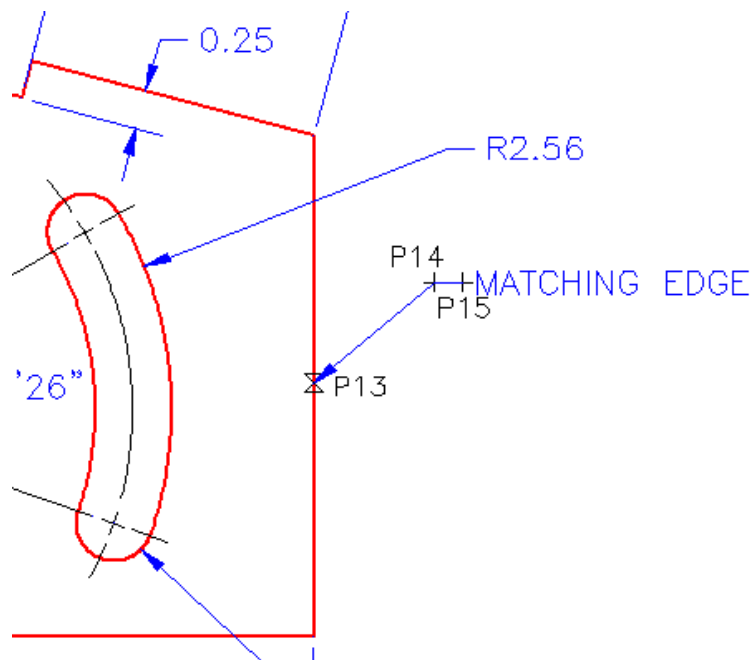
Specify next point: <Ortho on> **P15**

Specify text width <0.0000>:

Enter first line of annotation text <Mtext>: **MATCHING EDGE**

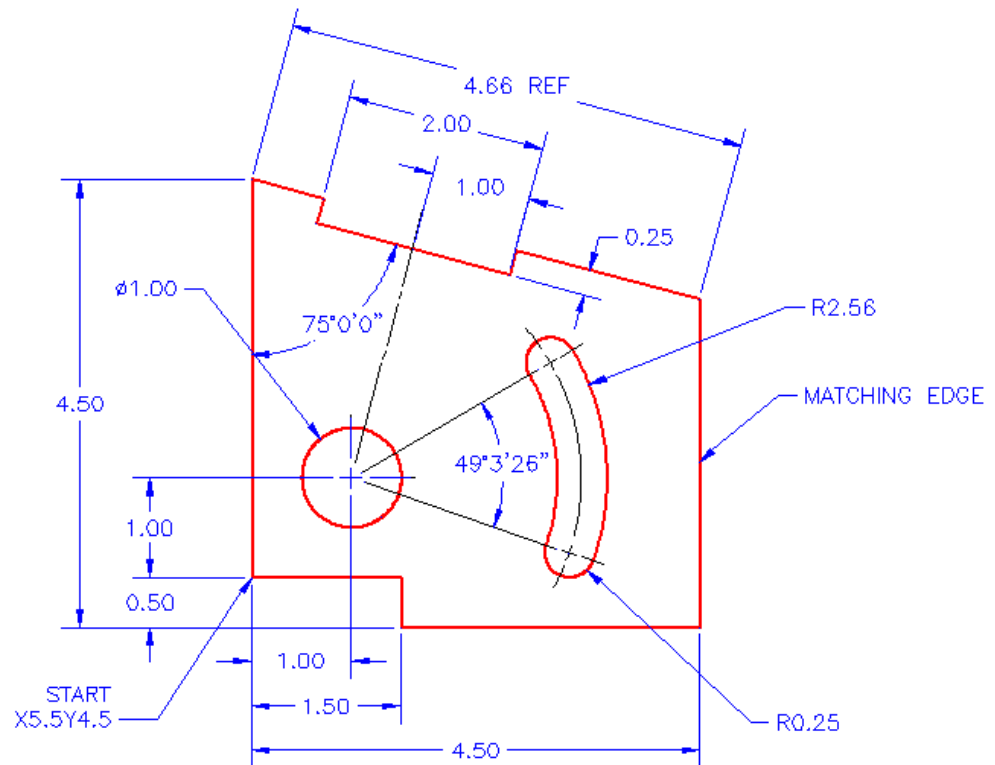
Enter next line of annotation text:

Command:

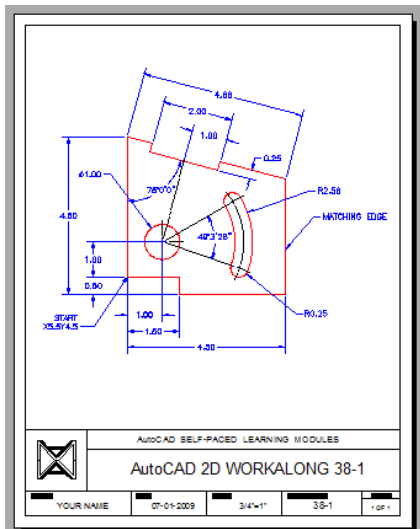


**Figure Step 5**

**Step 6** Using what you just learned, add the leader START X5.5Y4.5 as shown in the figure. (Figure Step 6).



**Figure Step 6**



**Figure Step 7**

**Step 7** Your completed drawing shown now appear similar to the figure. (Figure Step 7)

**Step 8** Save and close the drawing.

### The Key Principles in Module 38

- 1** When AutoCAD finds the dimension or measures the object in a dimensioning command, it does not display the actual number. The symbol  $\lessgtr$  is displayed. This symbol means default or the actual measurement.
- 2** To make corrections to inserted associative dimensions, change the properties of the dimension using the Properties window.

**Lab Exercise 38-1****Time Allowed: 30 Min.**

Name	Template	Units
AutoCAD 2D Lab 38-1	N/A	Inches

**Instructions:**

**Step 1** Open the drawing AutoCAD 2D Lab 37-1. Using the SAVEAS command, save and name it AutoCAD 2D Lab 38-1.

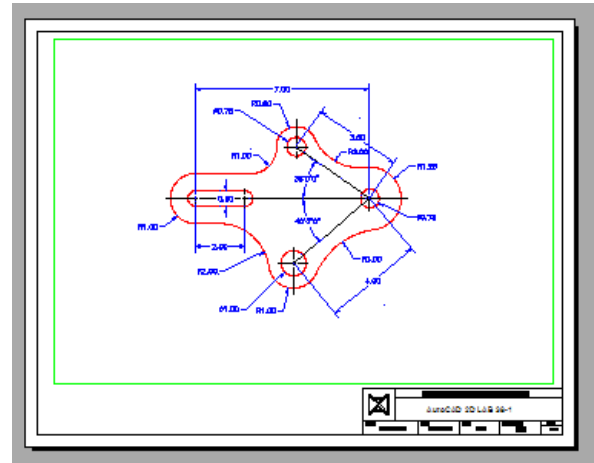
**Step 2** Set the current dimension style to 2D English.

**Step 3** Ensure that associate dimensioning is enabled by checking the setting of the DIMASSOC system variable.

**Step 4** In paper space, on layer Dimensions, insert the dimensions shown in the figure. Match the figure the best you can. (Figure step 4)

**Step 5** Turn layer Viewport off.

**Step 6** Using the standards in Module 20, complete the titleblock.



Completed Drawing

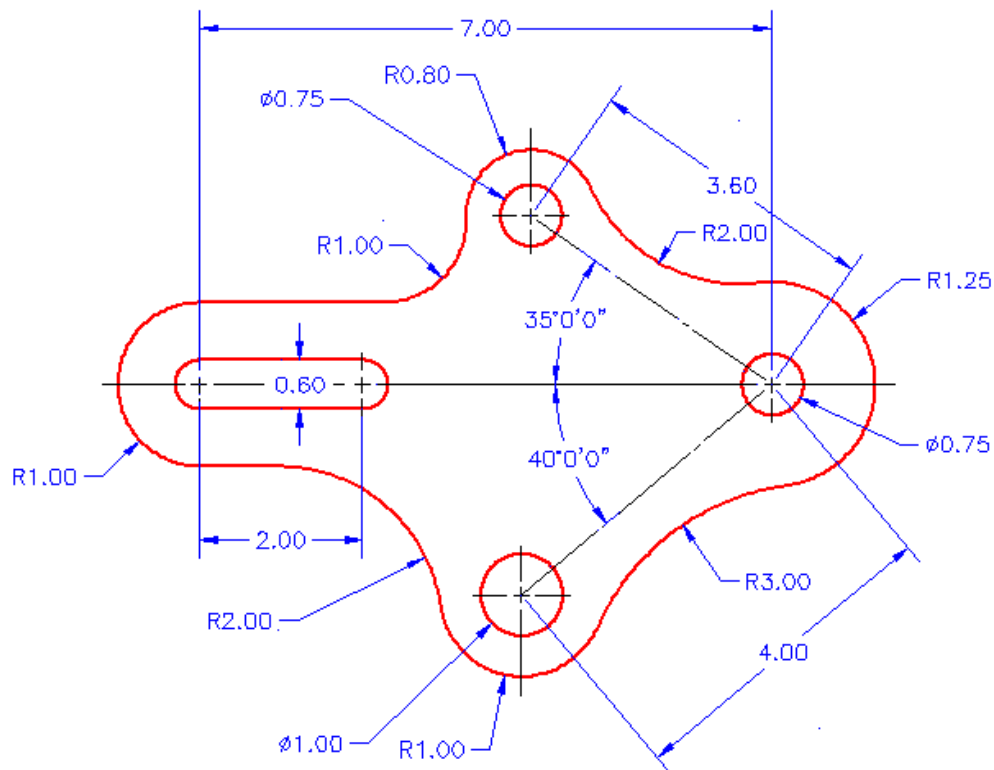


Figure Step 4

**Lab Exercise 38-2****Time Allowed: 30 Min.**

Name	Template	Units
AutoCAD 2D Lab 38-2	N/A	Millimeters

**Instructions:**

**Step 1** Open the drawing AutoCAD 2D Lab 37-2. Using the SAVEAS command, save and name it AutoCAD 2D Lab 38-2.

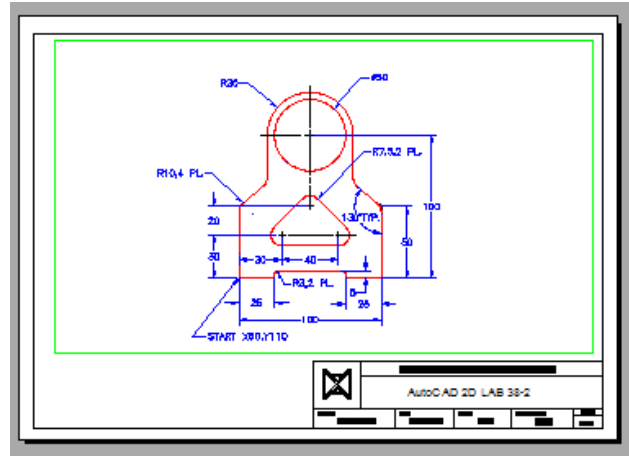
**Step 2** Set the current dimension style to 2D Metric.

**Step 3** Ensure that associate dimensioning is enabled by checking the setting of the DIMASSOC system variable.

**Step 4** In paper space, on layer Dimensions, insert the dimensions shown in the figure. Match the figure the best you can.  
(Figure step 4)

**Step 5** Turn layer Viewport off.

**Step 6** Using the standards in Module 20, complete the titleblock.



Completed Drawing

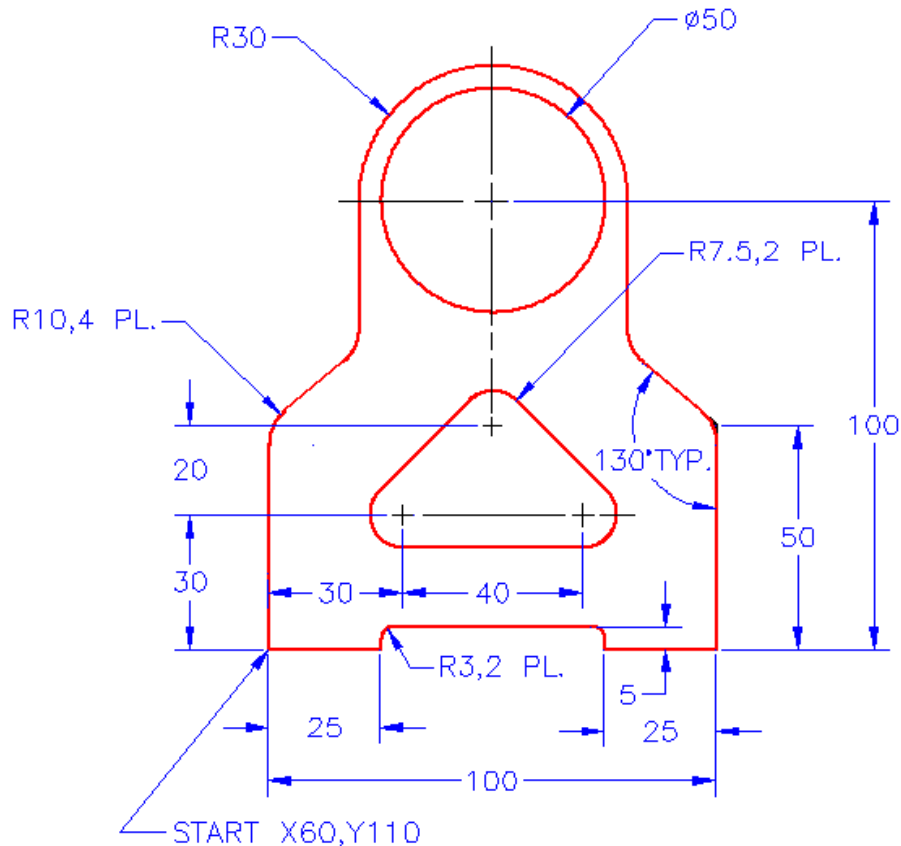


Figure Step 4

