

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.

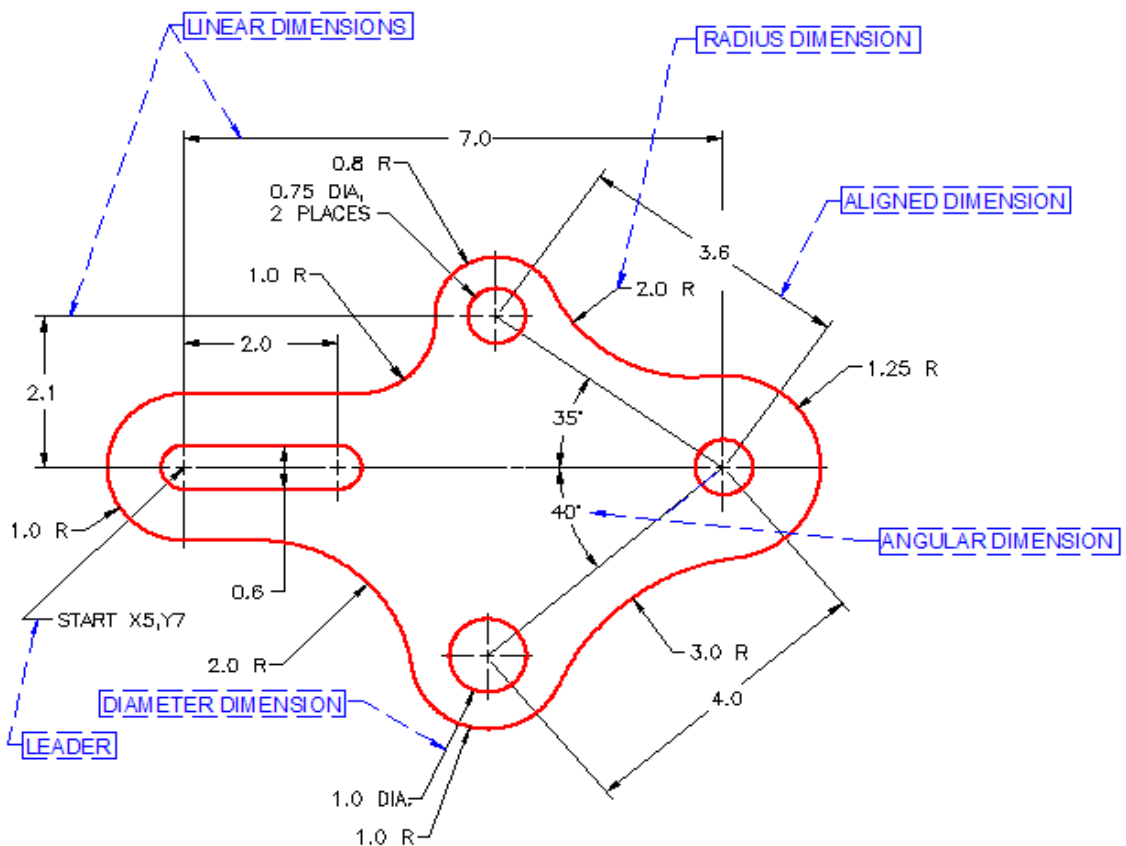


Figure 38-1
Basic Dimensioning Types

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

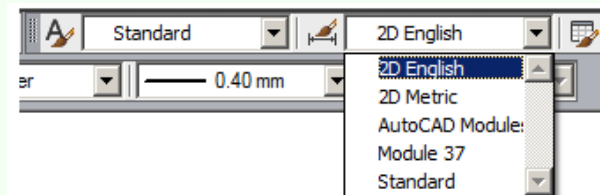
Before dimensioning a drawing, it is important to check the following settings:

1. The current layer. That is the layer that the inserted dimensions will reside on.
2. The current dimensioning style. The dimension 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 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 - 2007-2010



Dimension Toolbar - 2009-2010

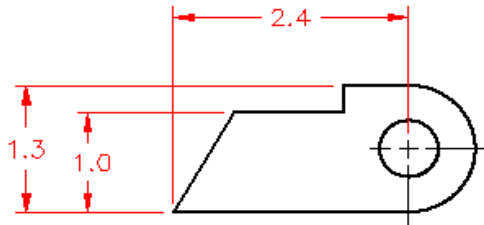


Dimension Toolbar - 2007-2008

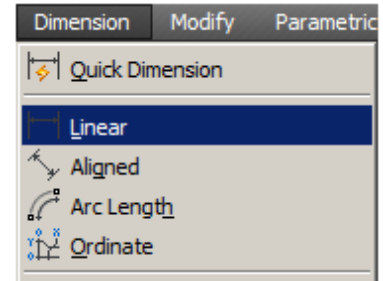
AutoCAD Command: **DIMLINEAR**

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



Linear
Creates linear dimensions: DIMLINEAR

2009-2010



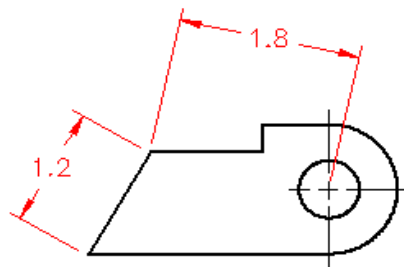
Linear

2007-2008

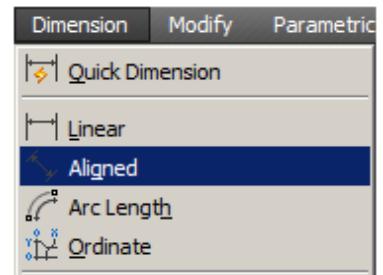
AutoCAD Command: **DIMALIGNED**

The DIMALIGNED command is used to insert an aligned dimension.

Shortcut: **DIMALI**



Aligned Dimension



Aligned
Creates an aligned linear dimension: DIMALIGNED

2009-2010



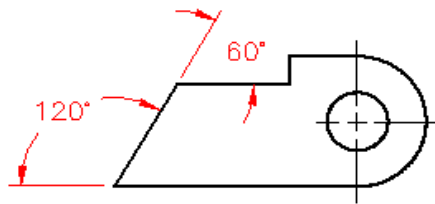
Aligned

2007-2008

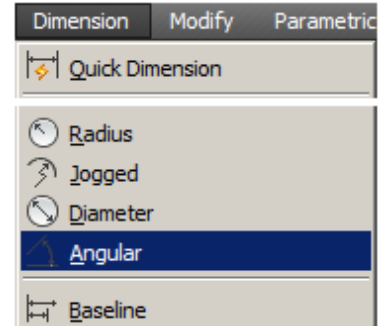
AutoCAD Command: **DIMANGULAR**

The DIMANGULAR command is used to insert an angular dimension.

Shortcut: **DIMANG**

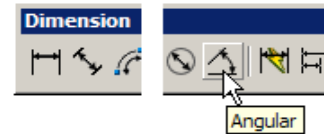


Angular Dimension



Angular
Creates an angular dimension: DIMANGULAR

2009-2010

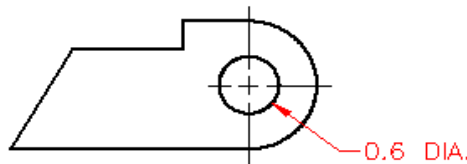


2007-2008

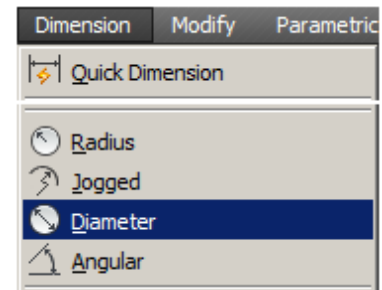
AutoCAD Command: **DIMDIAMETER**

The DIMDIAMETER command is used to insert a diameter dimension.

Shortcut: **DIMDIA**



Diameter Dimension



Diameter
Creates diameter dimensions for circles and arcs: DIMDIAMETER

2009-2010

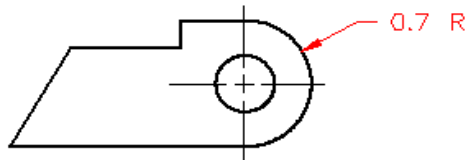


2007-2008

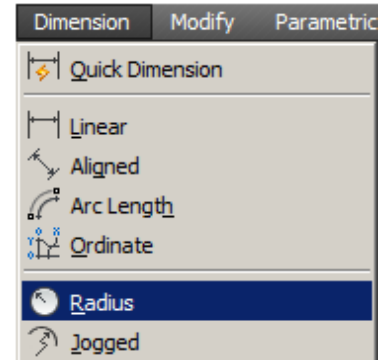
AutoCAD Command: **DIMRADIUS**

The DIMRADIUS command is used to insert a radius dimension.

Shortcut: **DIMRAD**

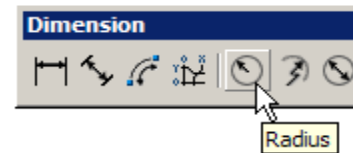


Radius Dimension



Radius
Creates radius dimensions for circles and arcs: DIMRADIUS

2009-2010



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)

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

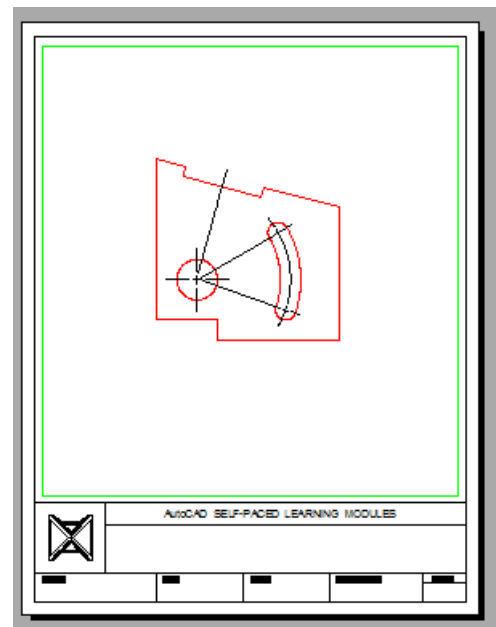


Figure Step 1

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



2009-2010



2007-2008

Figure Step 3

Step 4 Enter the DIMASSOC system variable, as shown below, and set it to 2 to enable associative dimensions.

Command: **DIMASSOC**

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

Command:

Step 5 Set layer Dimension as the current layer. Insert all dimension 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**

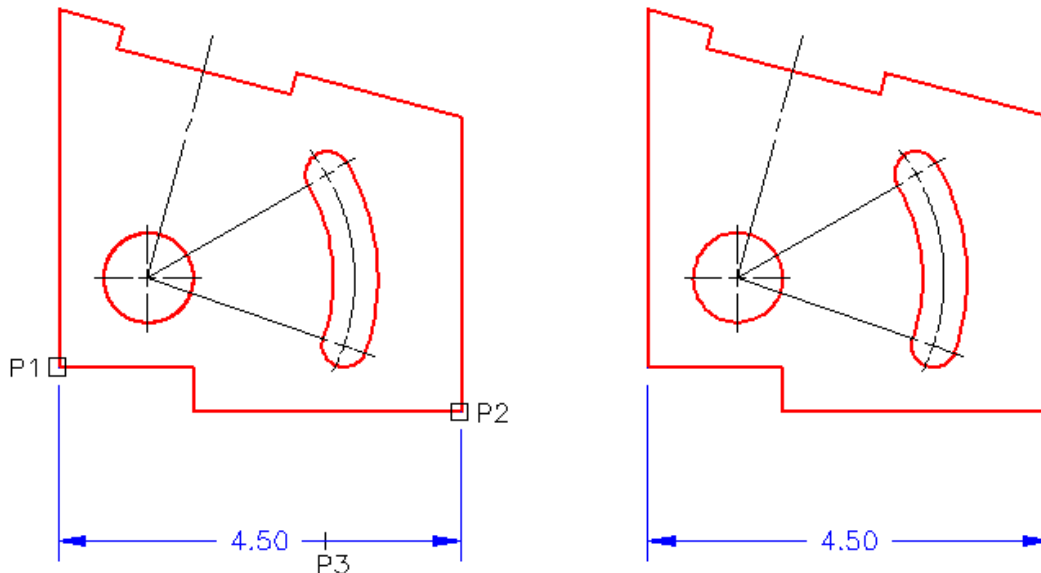
(Ensure to snap to the ends of the lines.)

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

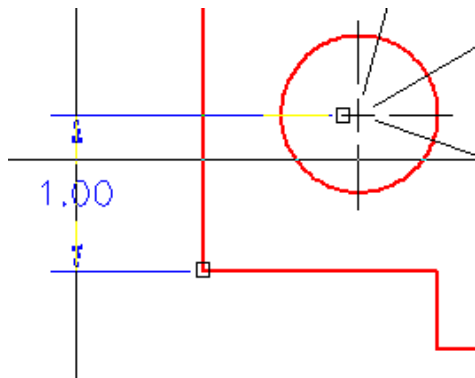
(You can place the location of P3 by eye. Try to match the figure the best you can.)

Dimension text = 4.50

Command:

**Figure Step 6**

Step 7 Using what you just learned, add the linear dimensions to match the figure. (Figure Step 7)



Hint: Snap to the end of the center mark

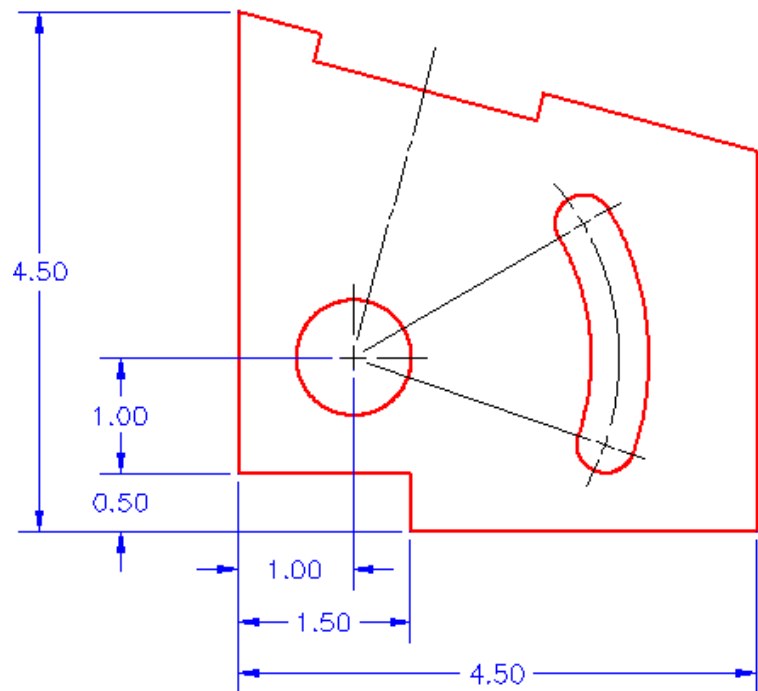


Figure Step 7

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:

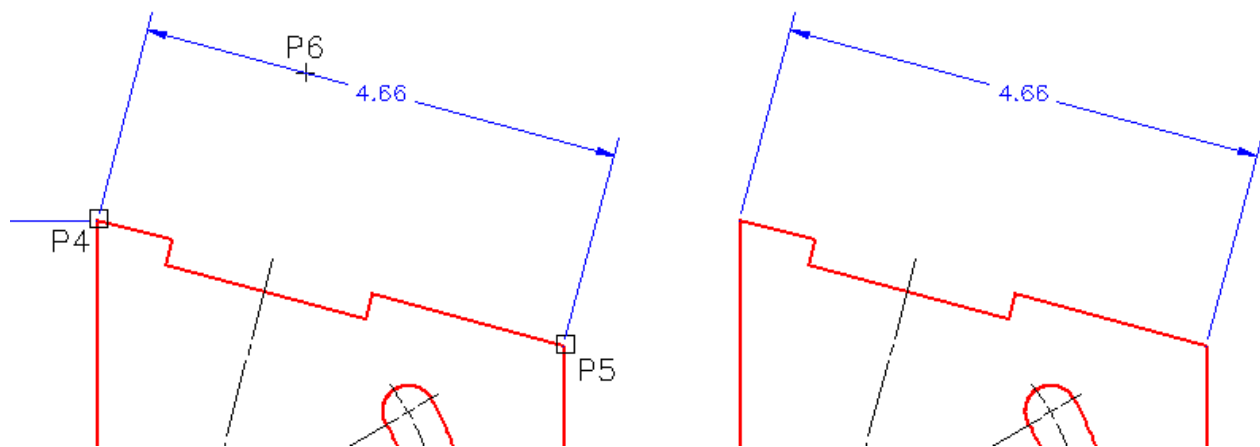


Figure Step 6

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

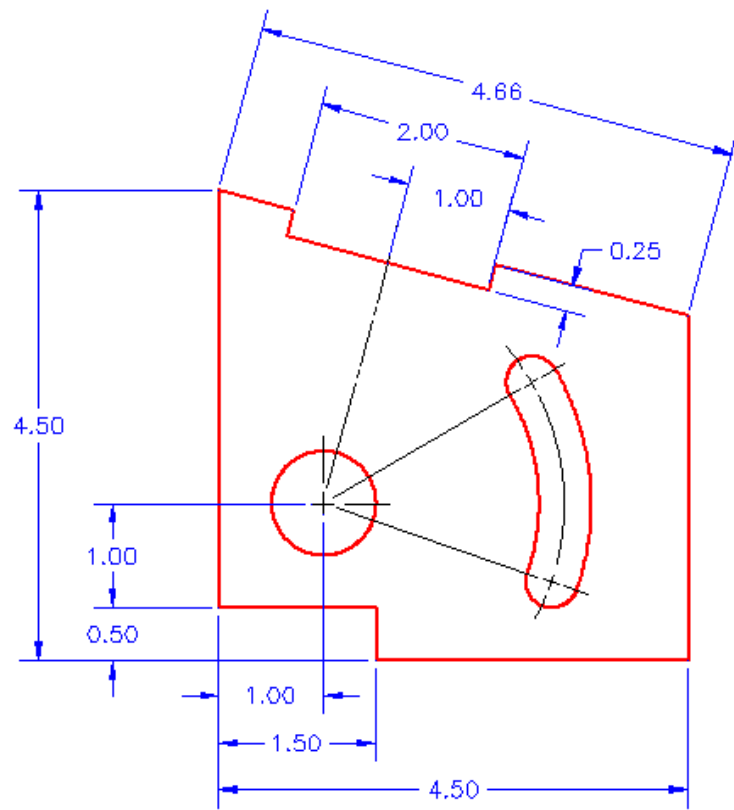


Figure Step 9

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:

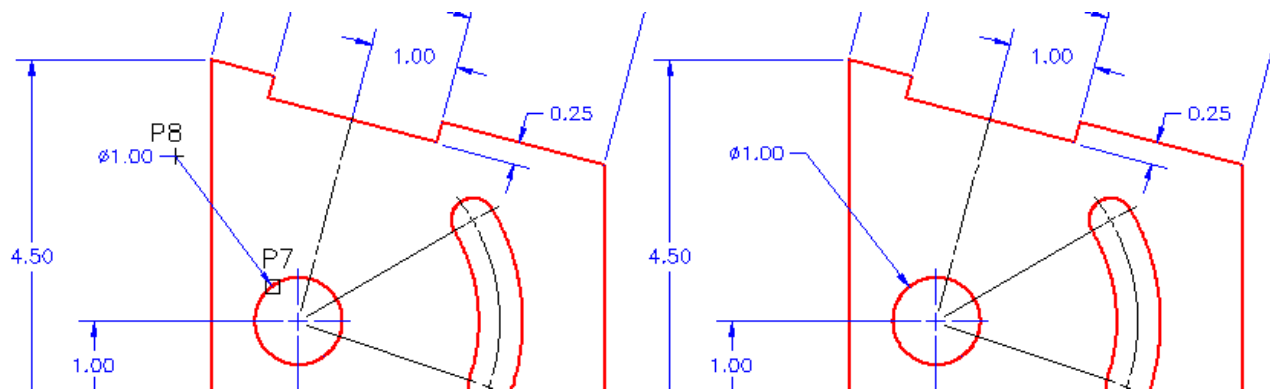


Figure Step 10

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:

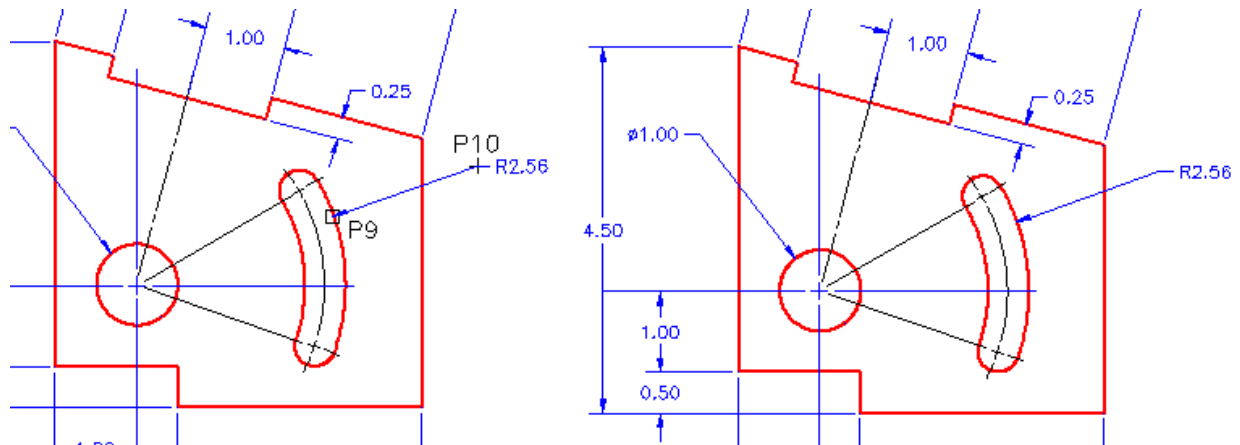


Figure Step 11

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

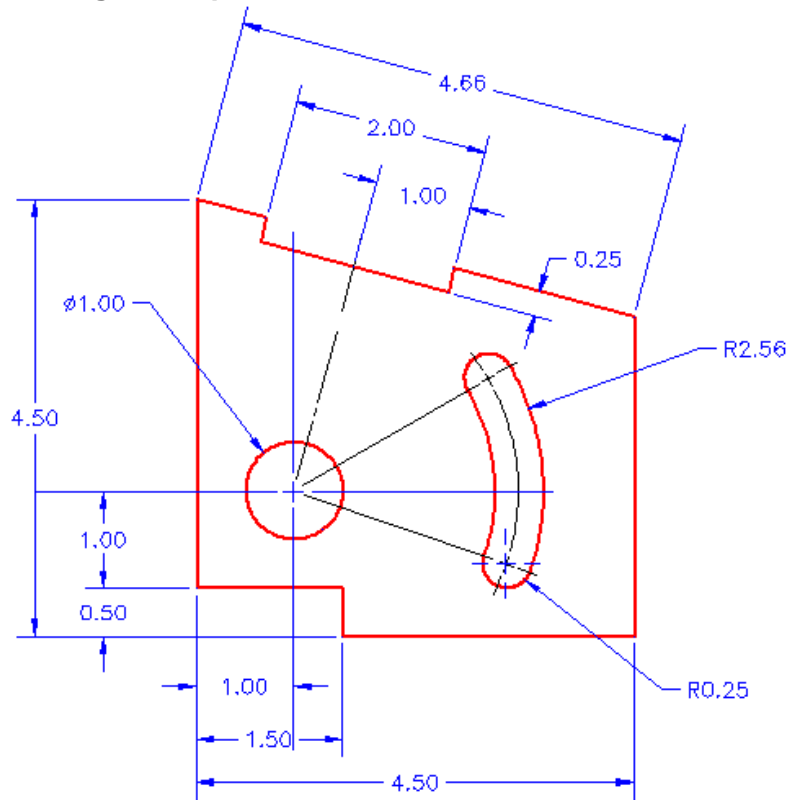


Figure Step 12

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:

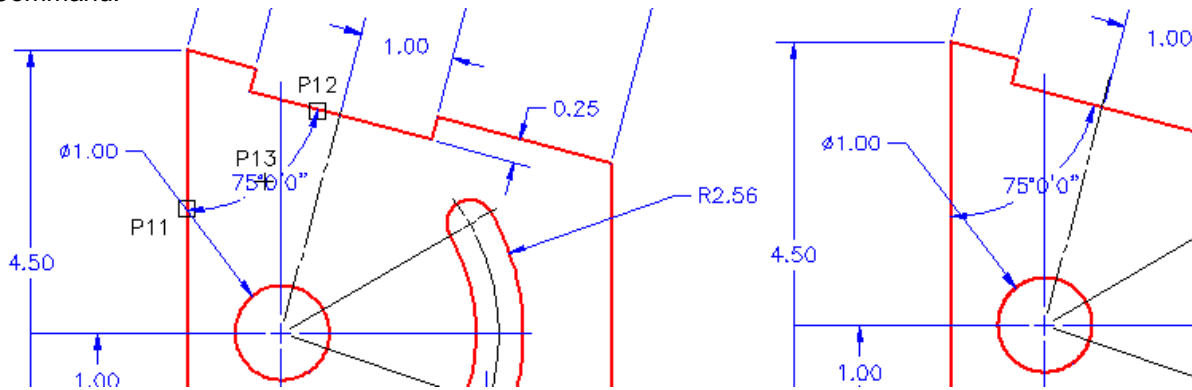


Figure Step 13

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

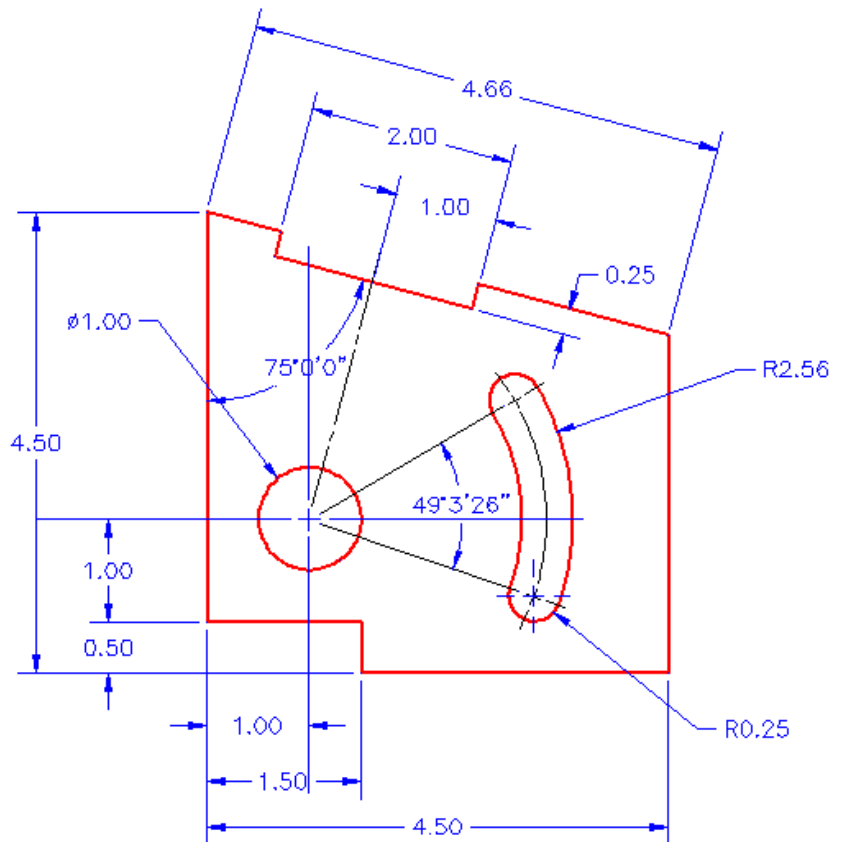


Figure Step 14

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

Step 15 Open the Properties window and select the aligned dimension shown in the figure. In the Text override property, enter <> REF. (Figure Step 15)

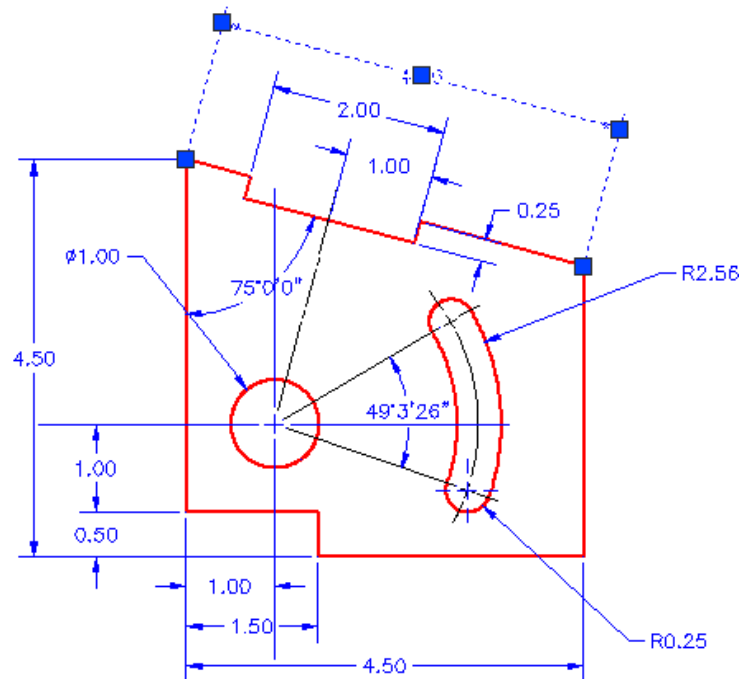
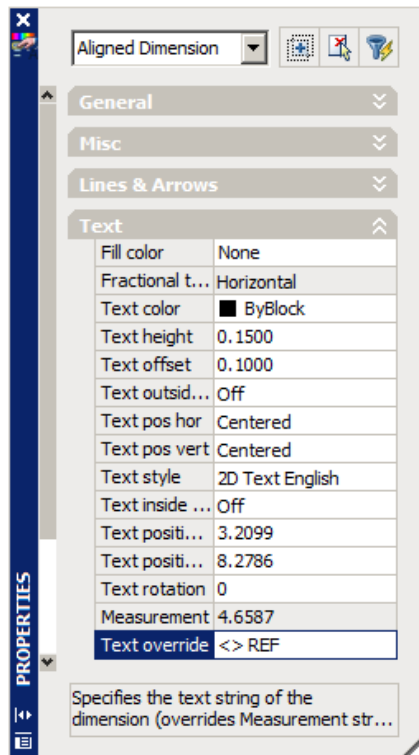


Figure Step 15

Authors Comments: The <> is the actual dimension which AutoCAD will insert followed by REF.

MUST KNOW

When AutoCAD finds the dimension or measures the object in a dimensioning command, it does not display the actual number. The symbol <> 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 : <> REF.

USER TIP

The fastest way to dimension an object is to dimension it very quickly, inserting all the dimensions required. 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 16 Select the aligned dimension shown in Figure Step 16. Change the property Ext Line 2, to Off. This will turn off the display of one of the extension lines since the extension line is on an object line. Depending on the order you used when inserting the dimension, you may have to change Ext Line 1.

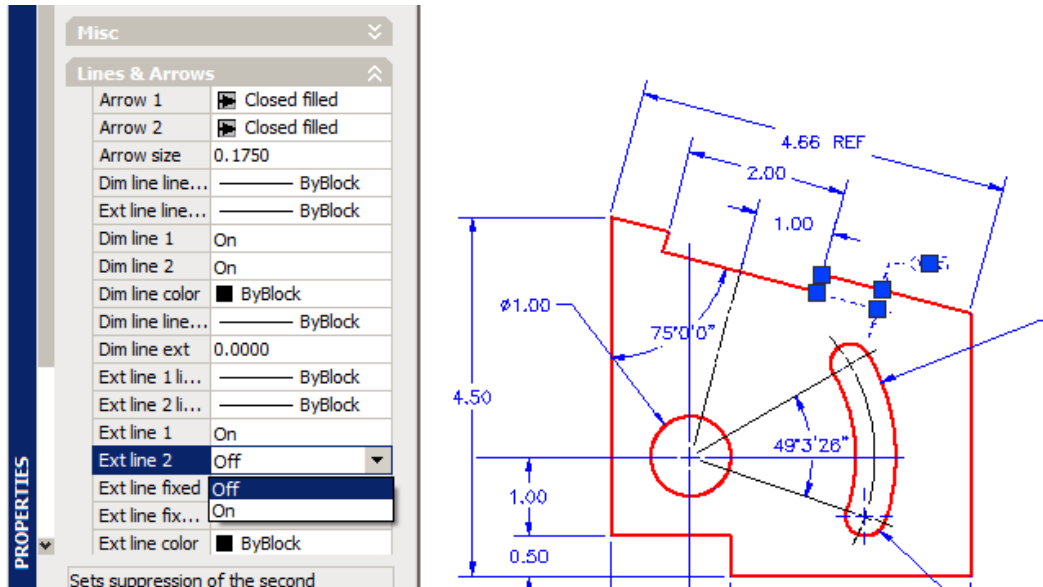


Figure Step 16

Step 17 Select the radius dimension shown in Figure Step 17. In the Center mark property, set it to None.

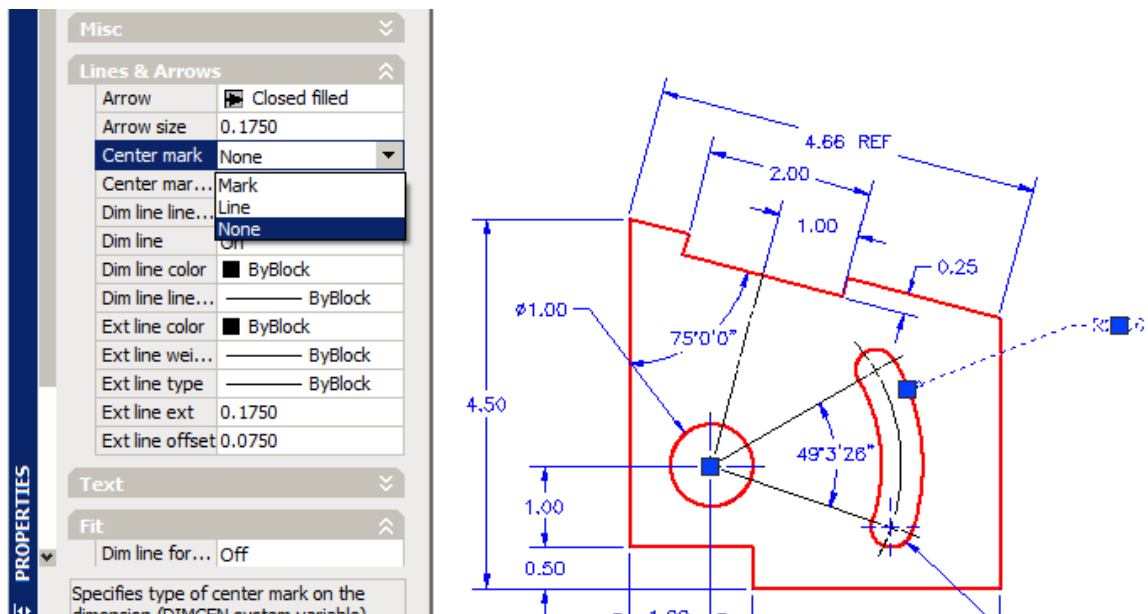


Figure Step 17

Step 18 Select the radius dimension shown in Figure Step 18. In the Text override property, enter 2.56 R.

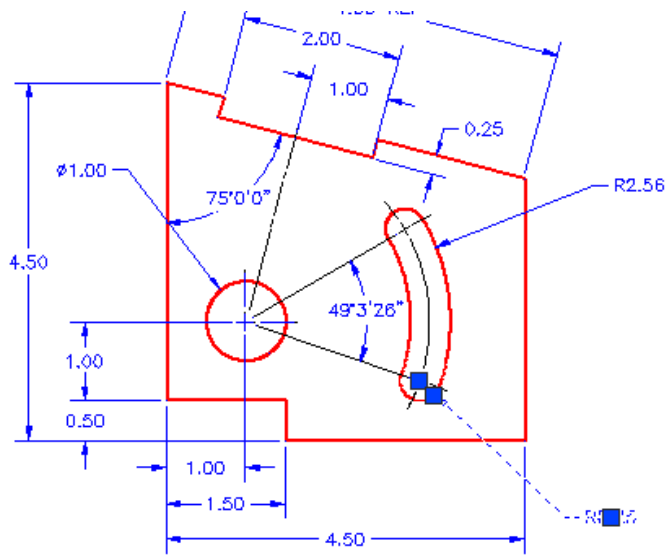
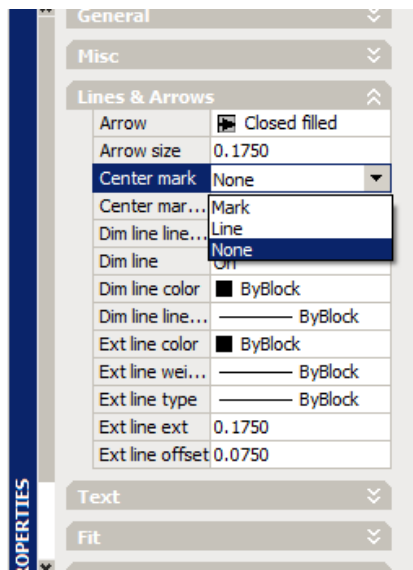


Figure Step 18

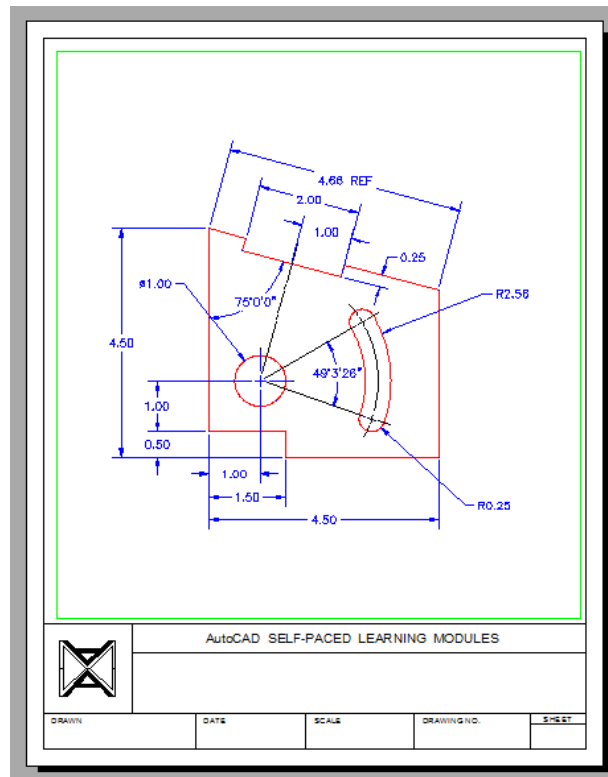


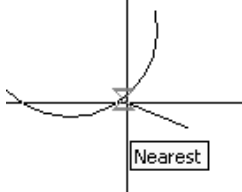


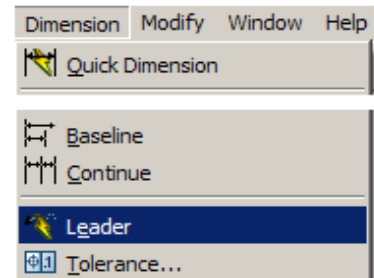
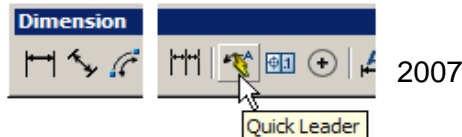
Figure Step 19

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

AutoCAD Command: **QLEADER**

The QLEADER command is used to a leader dimension.

Shortcut: none



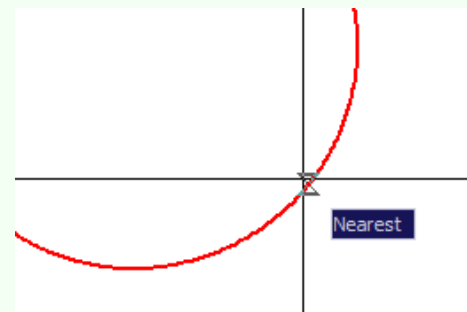
For AutoCAD 2008-2010, this command must be enter at Command: prompt.

USER TIP

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 in as needed.

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

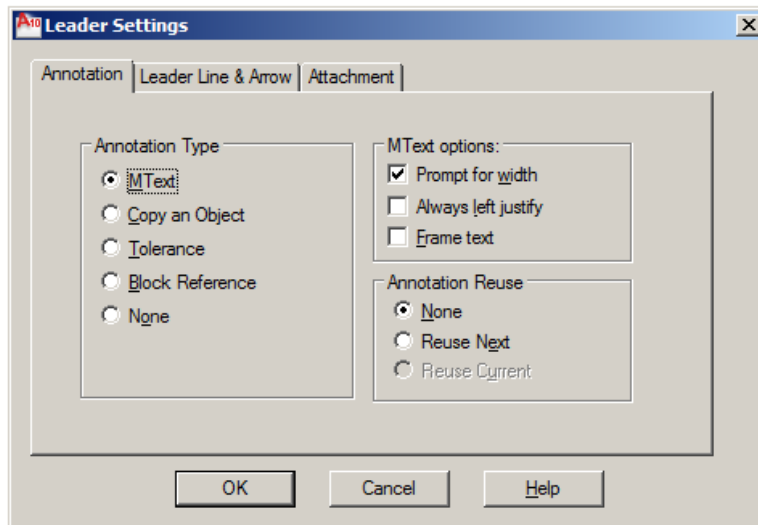
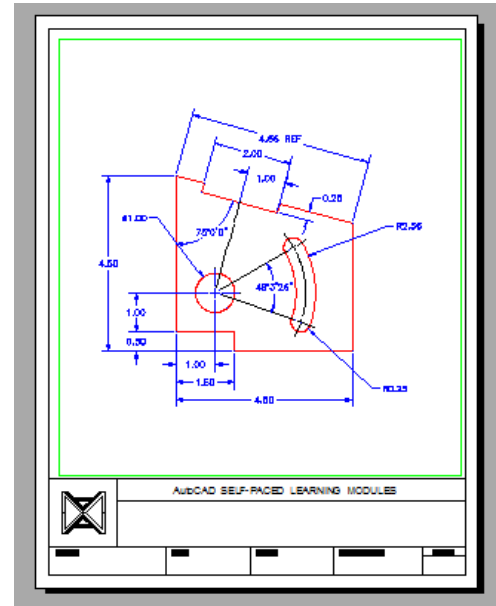


**WORK
ALONG**

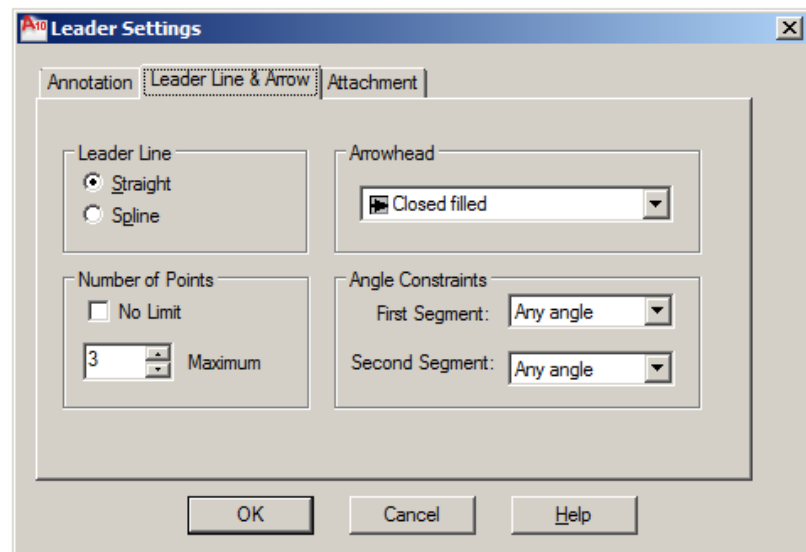
Inserting Leaders

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

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

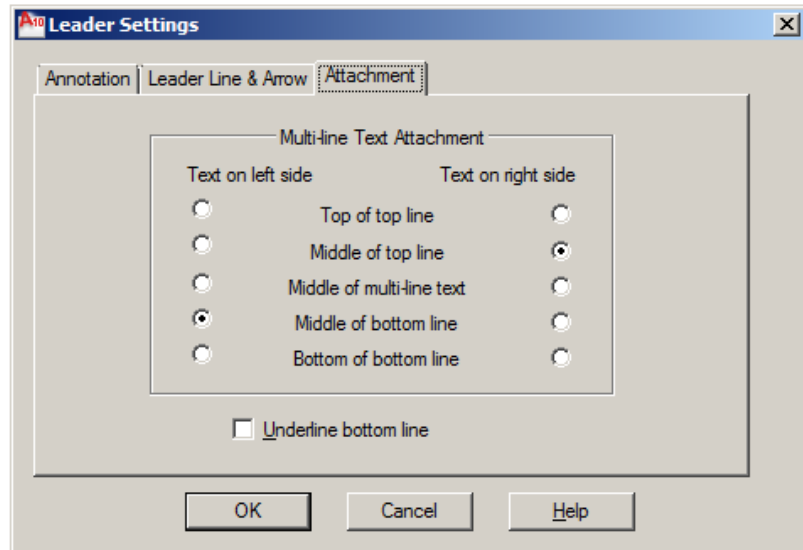


Step 21 Enter the QLEADER command shown below and select the Setting option. It will open the Leader Setting dialogue box. Figure Step 21 shows the Annotation tab. Ensure your dialogue box matches the settings in the figure.



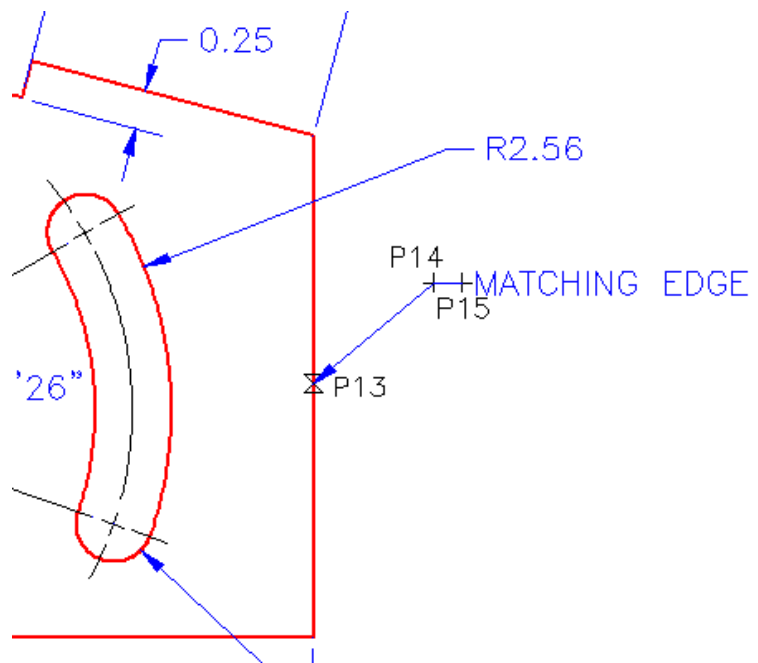
Step 22 Select the Leader Line and Arrow tab as shown in Figure Step 22. Ensure your dialogue box matches the settings in the figure.

Step 23 Select the Attachment tab as shown in Figure Step 23. Ensure your dialogue box matches the settings in the figure.



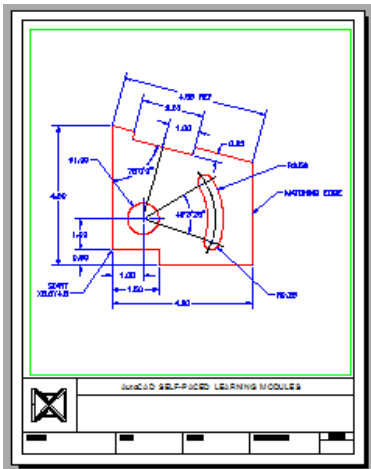
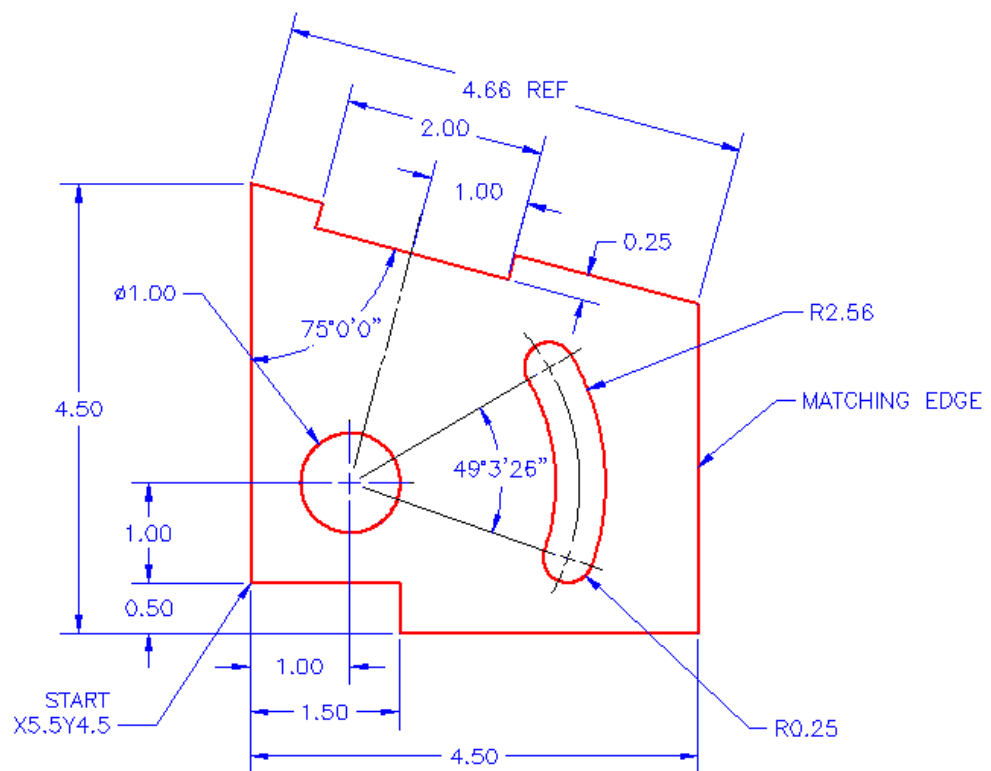
Step 24 Enter the QLEADER command shown to insert the leader shown in Figure Step 24.

Command: **QLEADER**
 Specify first leader point, or [Settings]
 <Settings>: (near) **(nea) P13**
(Using the Near osnap mode. see page 35-12.)
 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:



Step 25 Using what you just learned, add the leader Circle A and START X5.5Y4.5 as shown in Figure Step 25.

Step 26 Your drawing shown now appear similar to Figure Step 26. 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 or non-associative dimensions, change the properties of the dimension using the Properties window.

Lab Exercise 38-1**Time Allowed: 40 Min.**

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

Instructions:

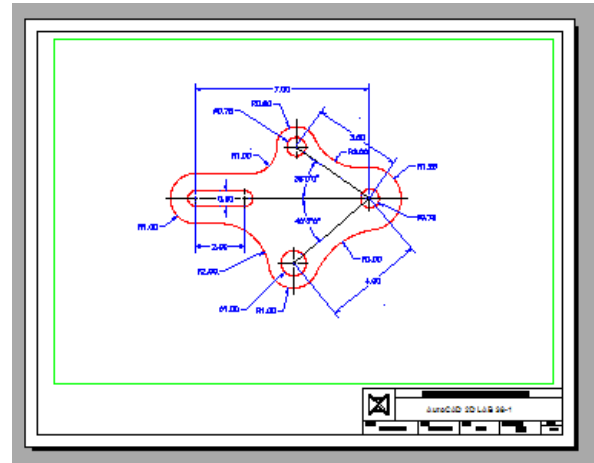
Step 1 Open the drawing AutoCAD 2D Lab 37-1. Using the SAVEAS command, save and name it AutoCAD 2D Lab 38-1.

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

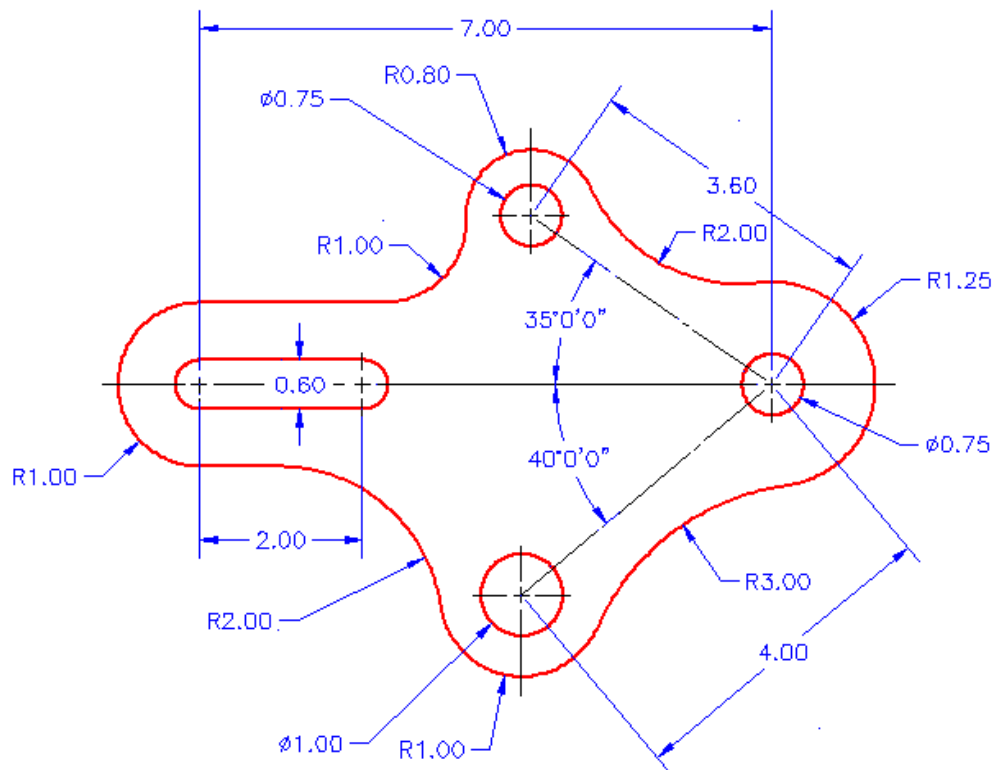
Step 3 Ensure that associate dimensioning is enabled by checking that the DIMASSOC system variable is set to 2.

Step 4 In paper space, on layer Dimension, insert the dimensions as shown below. Match the figure the best you can. (Figure step 4)

Step 5 Using the standards in Module 20, complete the titleblock.



Completed Drawing

**Figure Step 4**

Lab Exercise 38-2**Time Allowed: 40 Min.**

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

Instructions:

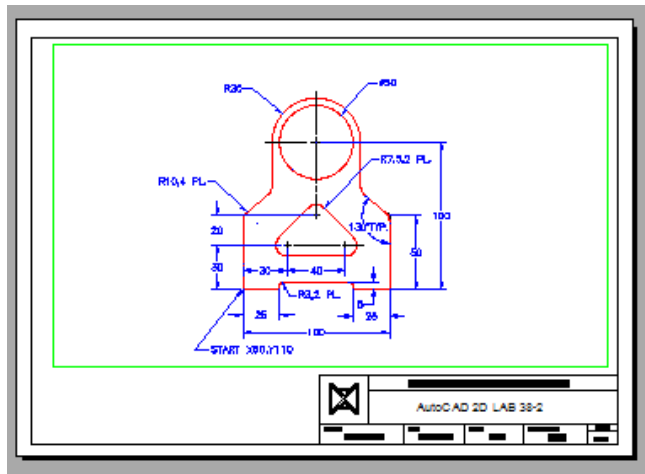
Step 1 Open the drawing AutoCAD 2D Lab 37-2. Using the SAVEAS command, save and name it AutoCAD 2D Lab 38-2.

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

Step 3 Ensure that associate dimensioning is enabled by checking that the DIMASSOC system variable is set to 2.

Step 4 In paper space, on layer Dimension, insert the dimensions as shown below. Match the figure the best you can. (Figure step 4)

Step 5 Using the standards in Module 20, complete the titleblock.



Completed Drawing

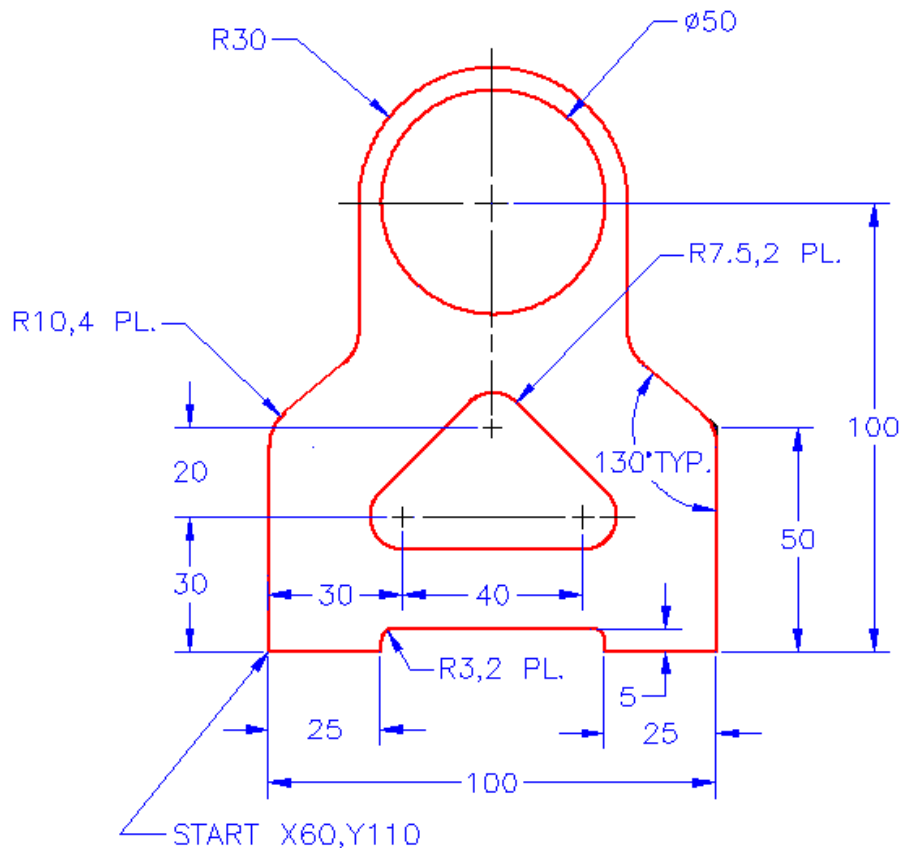


Figure Step 4

Lab Exercise 38-3**Time Allowed: 30 Min.**

Name	Template	Units
AutoCAD 2D Lab 38-3	N/A	Inches

Instructions:

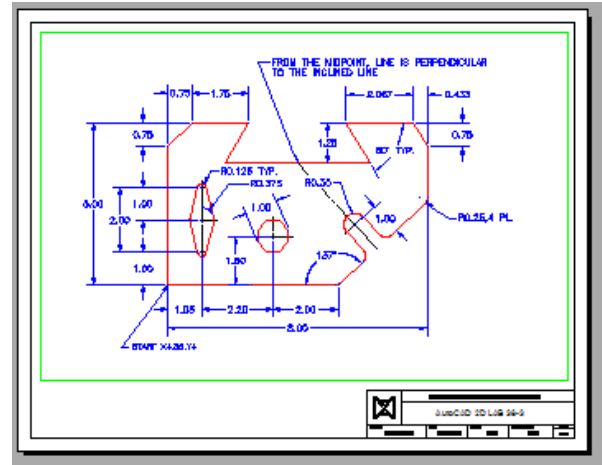
Step 1 Open the drawing AutoCAD 2D Lab 37-3. Using the SAVEAS command, save and name it AutoCAD 2D Lab 38-3.

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

Step 3 Ensure that associate dimensioning is enabled by checking that the DIMASSOC system variable is set to 2.

Step 4 In paper space, on layer Dimension, insert the dimensions as shown below. Match the figure the best you can. (Figure step 4)

Step 5 Using the standards in Module 20, complete the titleblock.



Completed Drawing

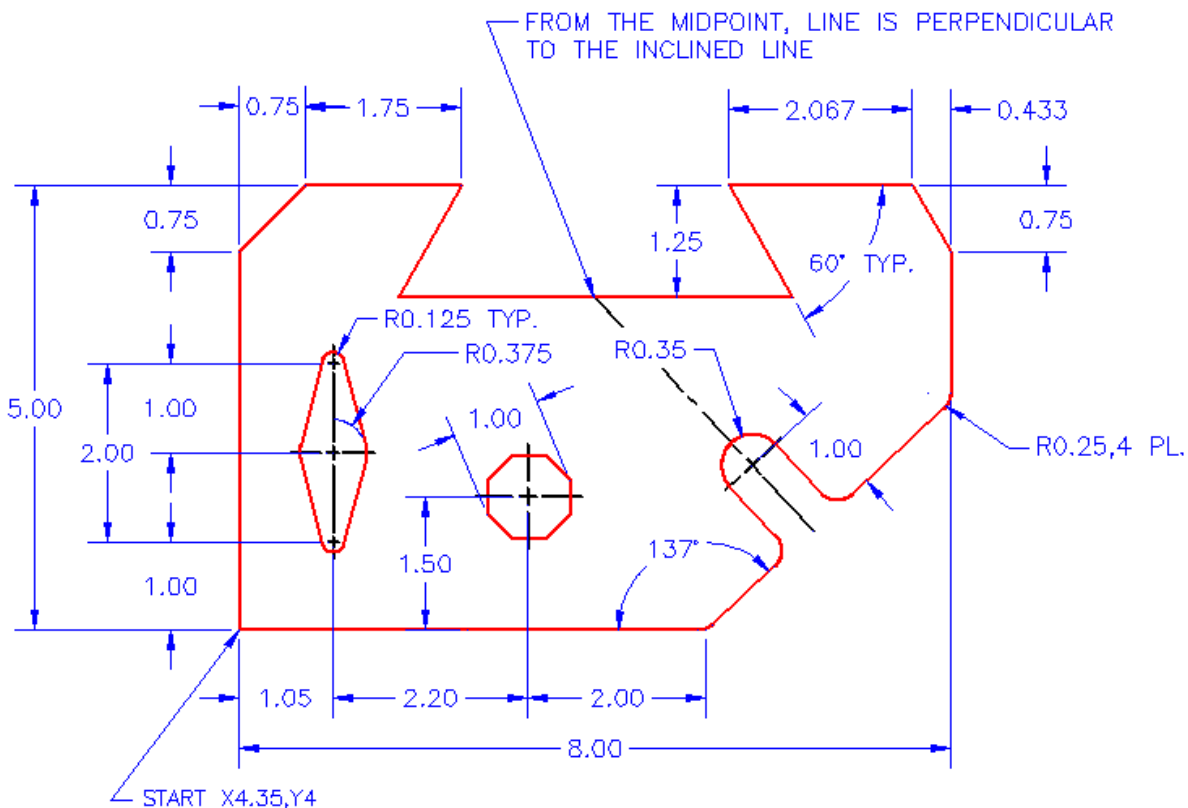


Figure Step 4