Dwg #5 — ARRAY

T.E. Lab 347/547 - Computer Assisted Design and Drafting

INTRODUCTION:

The ARRAY command can be used to create either a Rectangular ARRAY (column and row) or a Polar ARRAY (items spaced uniformly around a circle or along an arc). In this exercise, you will construct a bolt circle with a number of holes evenly spaced around a flange using the polar array command.

OBJECTIVES:

Following the completion of this activity, the learner will be able to:

1. Recognize the Circle tool in the Draw toolbar.
2. Identify the Array tool in the Modify toolbar.
3. Construct a polar array using the Array command.
4. Identify the Angular Dimension tool in the Dimension toolbar.
5. Dimension the angle between two holes using the Angular Dimension tool.
6. Identify the Diameter Dimension tool in the Dimension toolbar.
7. Dimension the diameter of a hole using the Diameter Dimension tool.
8. Identify the Radius Dimension tool in the Dimension toolbar.
9. Dimension the radius of circle using the Radius Dimension tool.
10. Identify the List tool in the Inquiry toolbar.
11. Determine the area and perimeter of an object using the List command.
12. Identify the Area tool in the Inquiry toolbar.
13. Determine the combined area of multiple objects using the Area command.
14. Recognize the Distance tool in the Inquiry toolbar.
15. Determine the distance between objects using the Distance command.
16. Determine the angle formed between objects using the Distance command.






DIRECTIONS:

Read the specific information regarding this drawing. Attached to this tutorial is the drawing that you are to reproduce. Open a new drawing and save it to your storage media using the initials of your; last name, first name, and middle name, followed by -Dwg05 (i.e.; LFM-Dwg05). Set up the CADD program to the correct setting as indicated below.

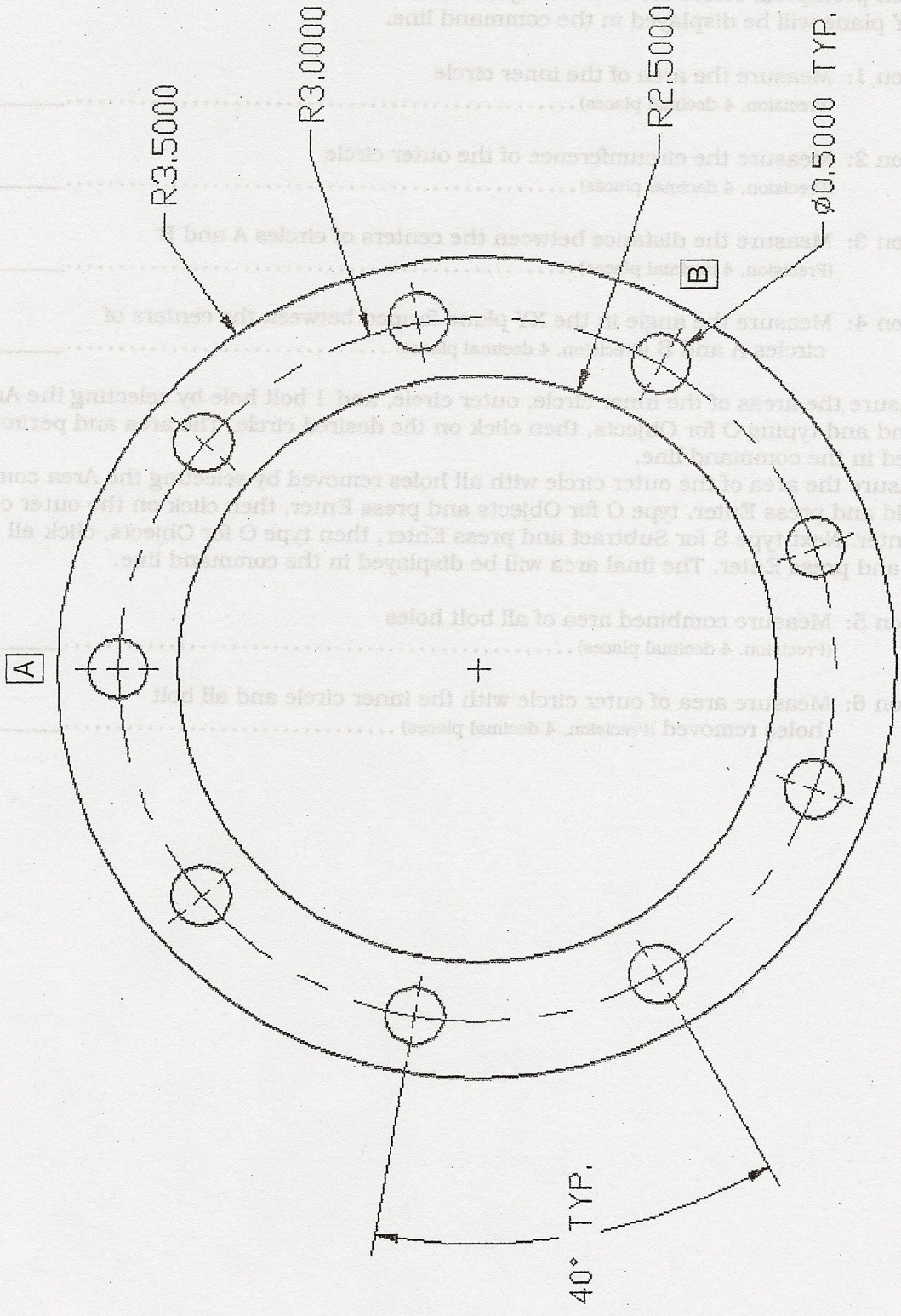
After drawing #5 is complete, save it to your storage media, answer the questions about the drawing in the question section of this tutorial, and complete the Drawing #5 section of the Drawings #1-#5 Evaluation sheet.

When due, submit drawings #1-#5 with a title page, hard copy of drawings #1, #3, #4, and #5 on A size paper, hard copy of drawing #2 on B size paper (in numeric order), and the Drawings #1-#5 Evaluation sheet stapled together with your storage media containing the finished drawing files.

Note: Drawings #3, #4, and #5 should be printed using the A title block template.

AutoCAD SETUP:

1. Open the appropriate title block template file (i.e.; A Title Block.dwt).
2. Click the Model tab to open the model workspace.
3. Choose Format➤Drawing Limits, set lower left corner = 0.0000,0.0000, set upper right corner = 12.0000,9.0000, then Zoom All (shortcut, type Z <ENTER>, A <ENTER>).
4. Under Format➤Text Style..., set Style Name = Standard, Height = 0.0000.
5. Under Format➤Dimension Style..., click the Modify... button:
   A. Click the Lines and Arrows Tab, under Arrowheads, set Arrow Size: 0.1800, under Extension Lines, set Extend beyond dim lines: 0.0900, and under Center Marks for Circles, choose Mark from the pop-up button. This setting will be changed during the completion of this drawing.
   B. Click the Text tab, under Text Appearance, set Text Height: 0.1800.
   C. Click the Fit tab, set Fit Options = Both text and arrows.
   D. Click the Primary Units tab, under Linear Dimensions, set Unit Format: Decimal, Precision = 0.0000, under Angular Dimensions, set Precision = 0.
6. Select the Layer Properties Manager tool in the Layers toolbar, verify or create:
   A. The 0 Layer; Color = White, Linetype = Continuous.
   B. The Center Layer; Color = Red, Linetype = CENTER.
   C. The Dimension Layer; Color = Blue, Linetype = Continuous.
   D. The Viewport Layer; Color = Cyan, Linetype = Continuous.
7. Draw the 2.5000 radius circle at X = 7, Y = 7.
8. Draw the 3.5000 radius circle at X = 7, Y = 7.
9. Change to the Center layer.
10. Draw the 3.0000 radius circle at X = 7, Y = 7.
11. Choose the Center Mark tool in the Dimension toolbar, then pick the outer circle to place a center mark.
12. Change to the 0 layer.
13. Draw a 0.2500 radius circle at the top quadrant of the bolt circle (centerline).
14. Change to the Dimension layer.
15. Under Format➤Dimension Style...:
    A. Click the Modify... button.
    B. Click the Lines and Arrows tab, under Center Marks for Circles, choose Line from the pop-up button. This setting will be changed during the completion of this drawing.
    C. Click the OK button.
    D. Click the Close button.
16. Choose the Center Mark tool in the Dimension toolbar and click on the R0.2500 circle, then remove the 3 horizontal lines of the center line.
17. Change to the 0 layer.
18. Under Modify➤Array:
    A. Click the Pick Objects button and select the bolt hole just drawn with its vertical center line and press <ENTER> to confirm.
    B. Click the center point button and using the Snap to Center snap pick one of the large circles in the drawing (they all have the same center so it does not matter which one you pick).
    C. Enter the number of items, type 9 and the number of degrees through which the array will span, type 360.
    D. Type <ENTER> as a response to Y (yes) to have the object rotated as it is placed around the bolt circle. This will rotate the holes and their center marks so that the center marks radiate from the center of the bolt circle origin. You may enter dimensions if you wish.
19. Change to the Dimension layer.
20. Under Format➤Dimension Style...:
    A. Click the Modify... button.
    B. Click the Lines and Arrows tab, under Center Marks for Circles, choose None from the pop-up button. This setting will not draw centerlines when the dimensions are inserted).
    C. Click the OK button.
    D. Click the Close button.


R3.5000
R3.0000
R2.5000
Ø0.5000 TYP.
A
B
40° TYP.