Assignment 13

CAD Mechanical – Part 2

Hatching

Objectives

In this assignment you will learn to apply the **hatch and break commands** along with commands previously learned.

General Instructions

1. When AutoCAD's menu appears, scroll down and select the **Otto 2016.dwt** template file.

2. Insert the 8X10 Title Block.
3. From the **popup dialog box** type the information for the title block. You will name the twenty-first drawing assignment the same as previously drawn assignments.

 | | |
   |---|---|
   | Hatching Practice | C21 |
   | Widget | C22 |

4. Set the **Scale** to **1" = 1".**
5. **Dimension** the **drawing** and **save** the **file** into the **correct location** and **file name**.

Setting Up the Drawing

1. After completing the title block information, draw a circle and a square. Use the polyline command to draw the square and the array command to copy the other four squares and circles as illustrated below.
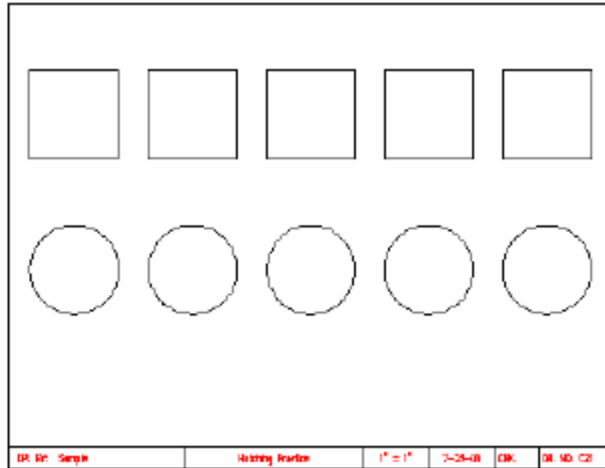

2. From the Draw menu select Hatch … You will leave the scale factor at 1 on the first hatch pattern. The hatch pattern in the pattern window is ANSI131. If you click the drop down arrow, more patterns are displayed.
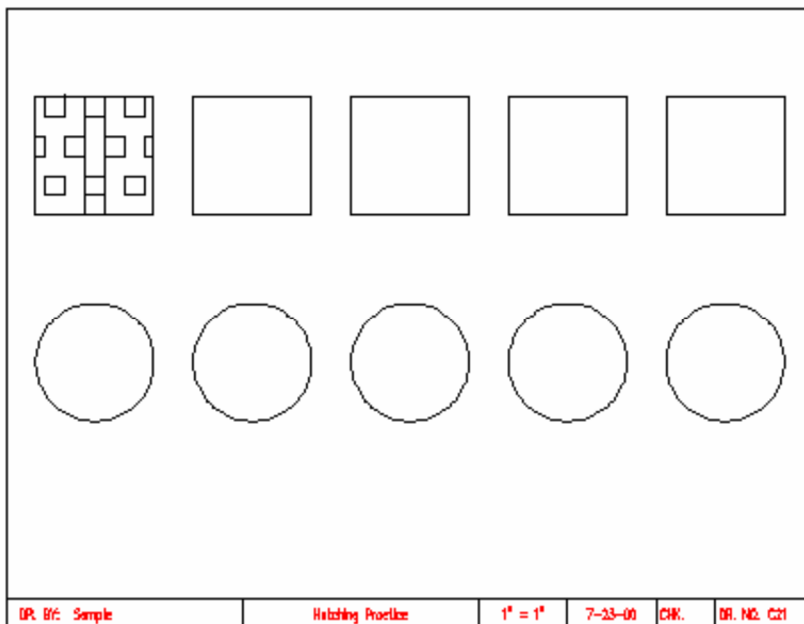

Select Hatch
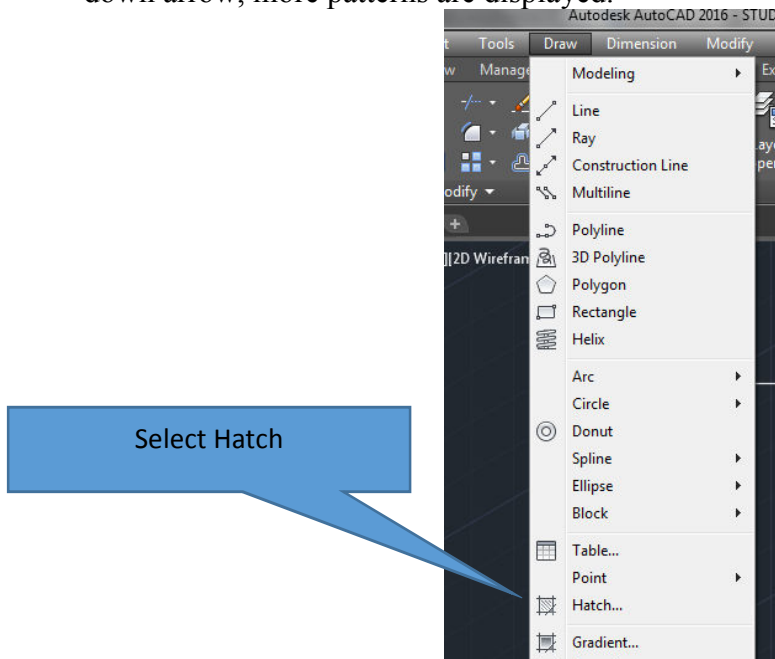
3. You will leave the scale factor at 1 on the first hatch pattern. Click on the drop down arrow, more patterns are displayed.
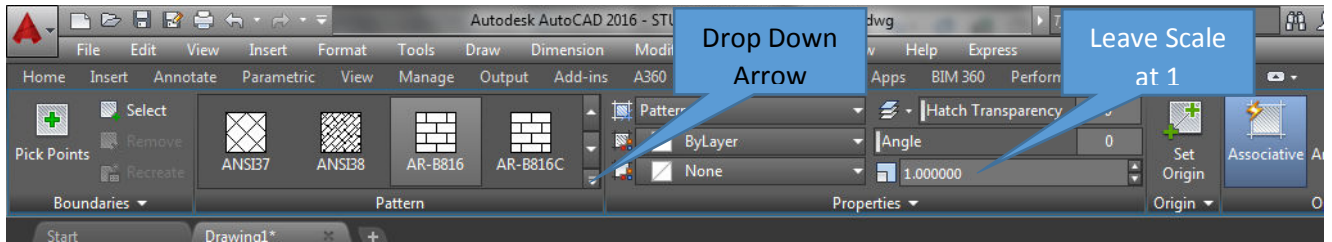
4. **All of the predefined hatch patterns that you need are in this menu.** Locate the pattern that is entitled "box" and click it. Press the Enter key. Notice that in the pattern window the box pattern is now displayed.
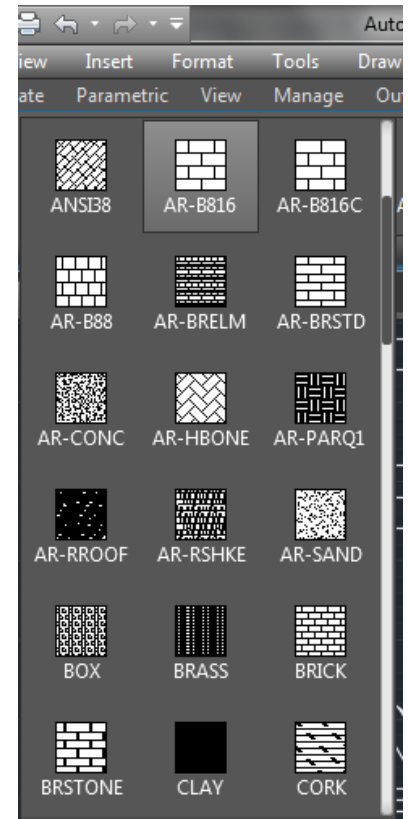
5. The next step is to select the area to insert the hatch pattern. Click inside the first square box on the left with the pick box. Press the Enter key.


6. Press Enter again and select the next hatch pattern.

7. The next hatch pattern will be inserted in the first circle on the lower left of the drawing. Locate the Escher pattern. Change the scale to ½" and insert the pattern into the circle as displayed.
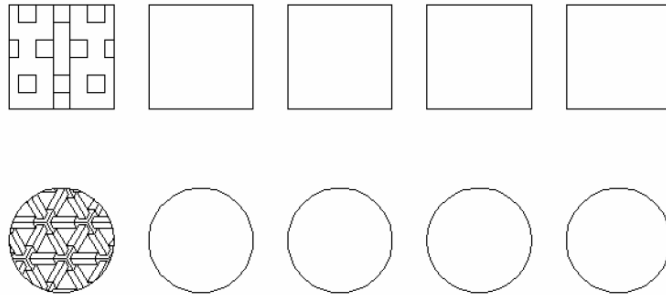
8. Complete the remaining squares using the following hatch patterns and scale factors.

Hatch Pattern Table for Squares

| Hatch Location	Hatch Pattern	Scale Factor
Square 1	Box	1
Square 2	Cork	1
Square 3	AR-B816	.025
Square 4	Cross	1
Square 5	Earth	1

9. The completed row of the squares should appear as illustrated.
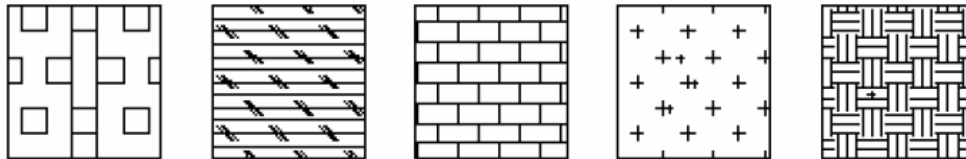
10. Use the table below to complete the hatch patterns for the circles.

Hatch Pattern Table for Circles

Hatch Location	Hatch Pattern	Scale Factor
Circle 1	Escher	.5
Circle 2	Hex	1
Circle 3	Grass	.25
Circle 4	Square	1
Circle 5	Stars	1

11. The completed hatch pattern in the circles should appear as illustrated.
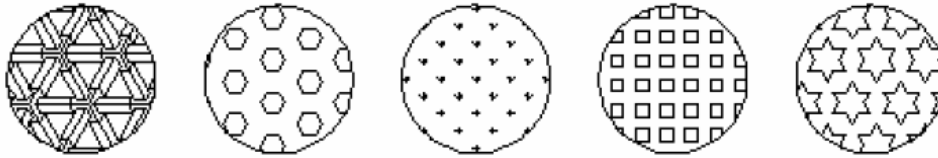
12. Complete the dimensioning on the drawing and the result should appear as illustrated.
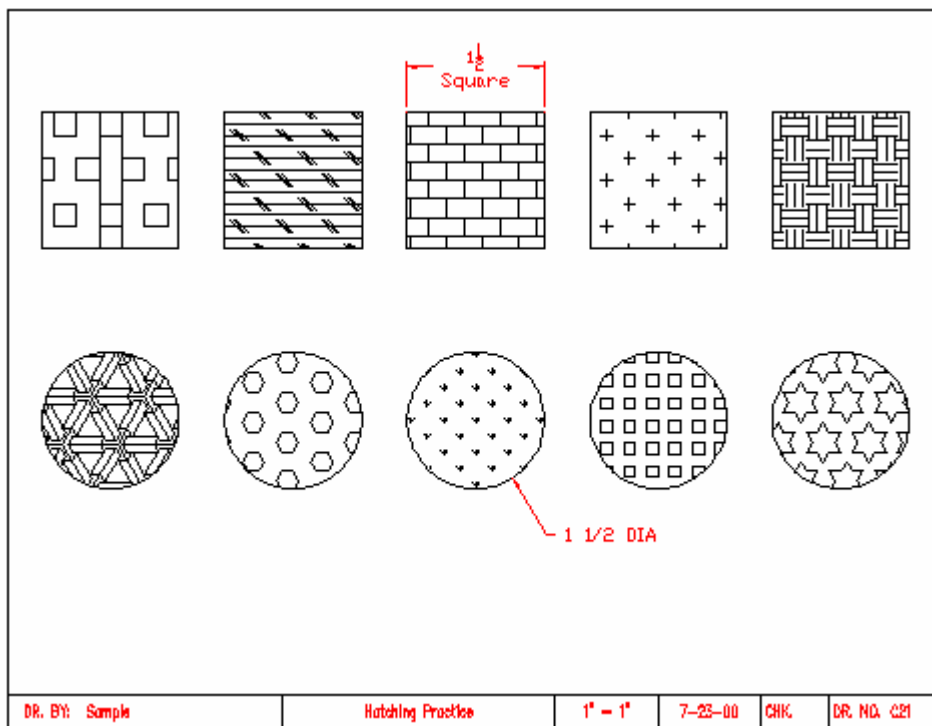
13. Save the drawing and begin working on drawing C22 Widget if time permits. Remember that you should finish C21 and C22 before you answer the questions at the end of the activity.

Widget Drawing

1. When AutoCAD's menu appears, scroll down and select the **Otto 2016.dwt** template file.

2. Insert the 8X10 Title Block.
3. From the **popup dialog box** type the information for the title block. You will name the twenty-first drawing assignment the same as previously drawn assignments.
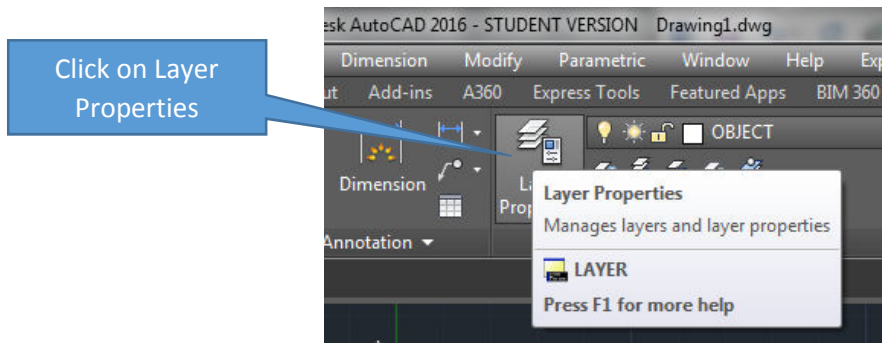
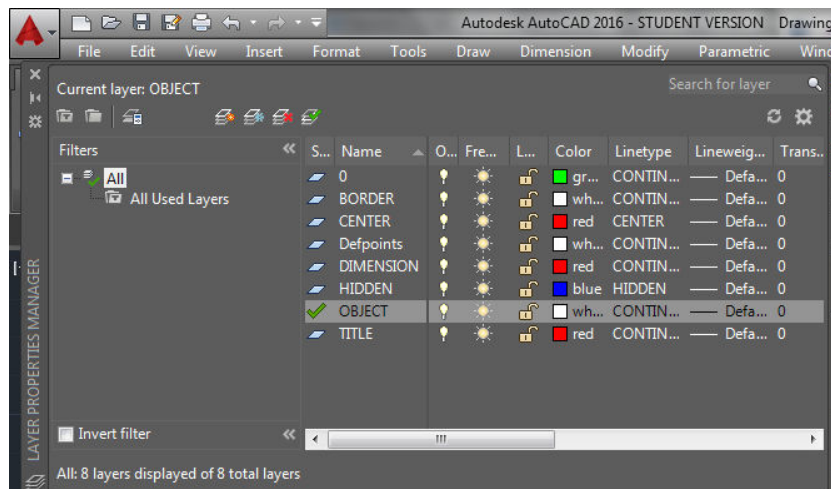   Widget   C22

4. Set the **Scale** to **1" = 1".**
5. **Dimension** the **drawing** and **save** the **file** into the **correct location** and **file name**.
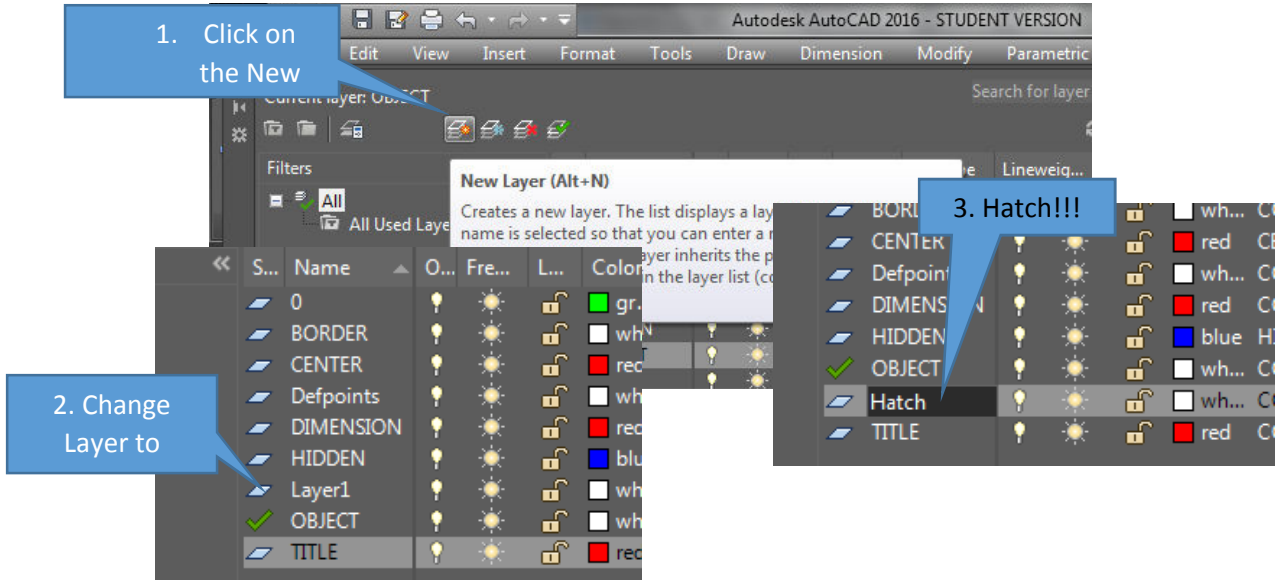
Creating a New Layer

1. Select the Layers Button from the Home Ribbon Menu Bar.
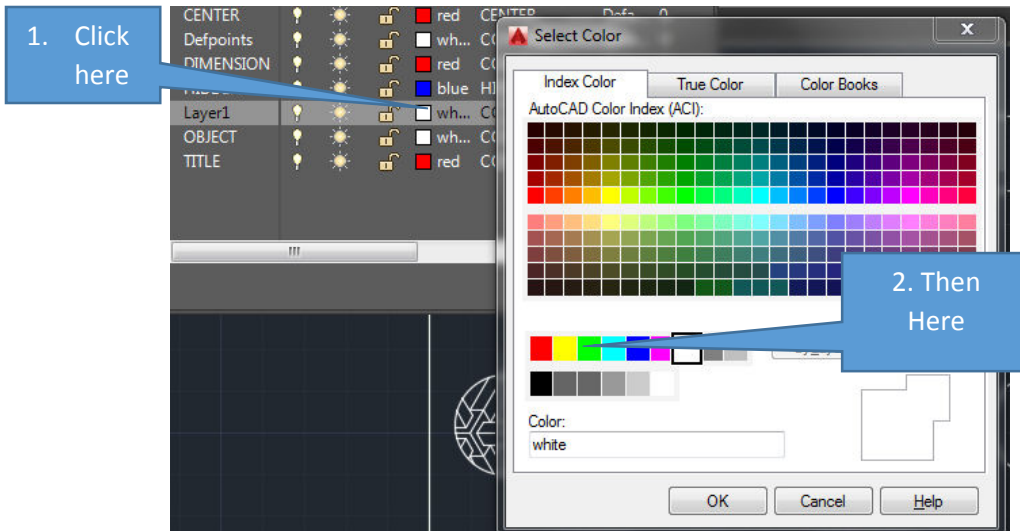

2. The Layers dialog box appears.

3. Click the New button. A new layer named Layer1 appears at the bottom of the list. Type HATCH for the name of the new layer and press the Enter key. You have now created a layer to use in the drawing.


4. In the color column, click the color for the Hatch layer. A color palette appears on the screen. Click the green square on the Standard Colors bar. Notice that the word green appears at the bottom color window. Click Ok to accept the color for the HATCH layer.

5. Before exiting the Layer menu, click the current button and then click OK.

Inserting the Hatch Pattern

1. From the Draw menu select the **Hatch** command. When the dialog box appears, select the **ANSI31** pattern and a scale of 1.

2. When the drawing reappears, pick the following areas. Press the enter key and the then select the preview button. If the section appears as illustrated, then select OK.
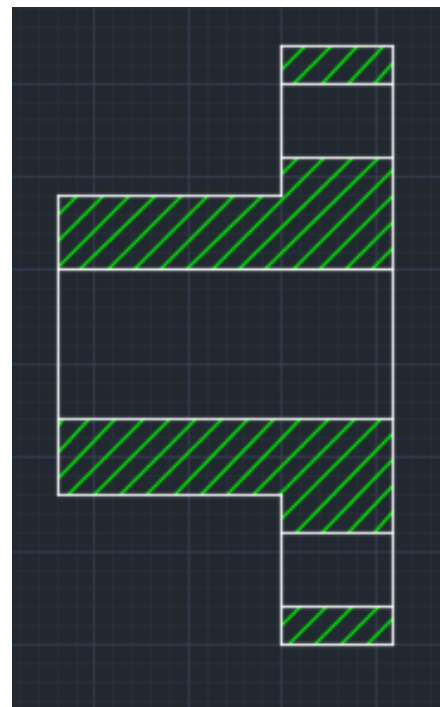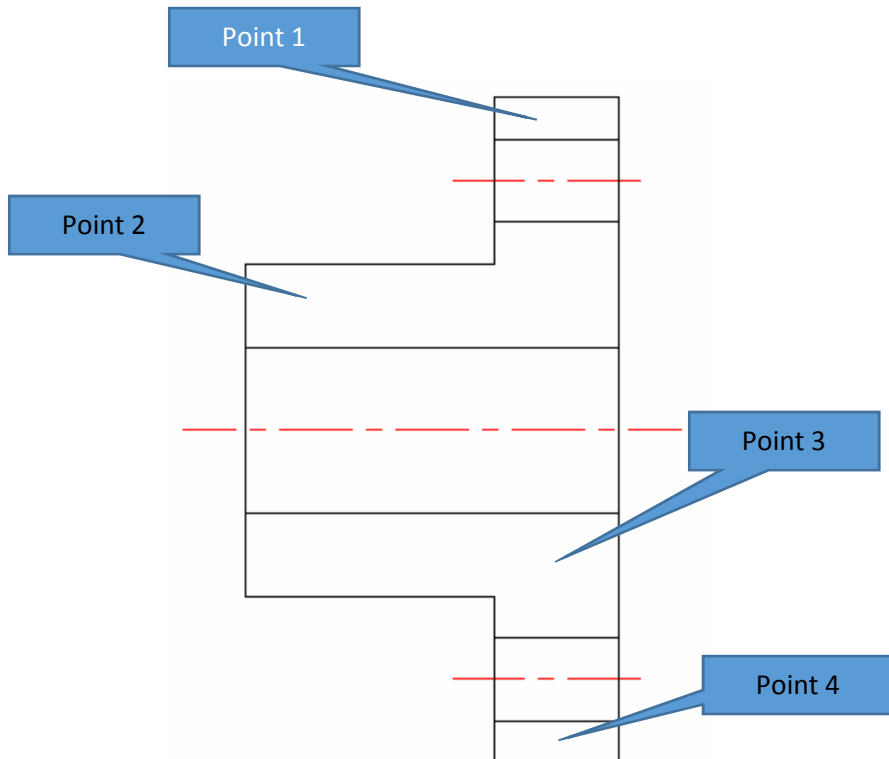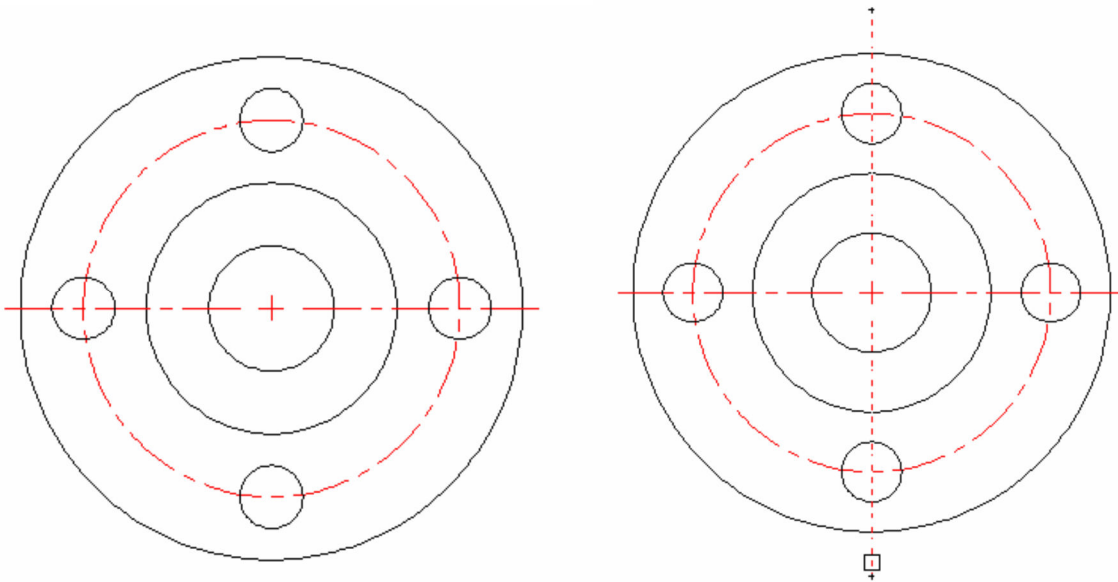
Creating the Cutting Plane Line

1. To complete the drawing will need to add a new layer for cutting planes. The layer will be named CUTTING PLANE, the color will be red, and the line type will be divide. Double click on the items in layer control that need to be changed and select the appropriate option.
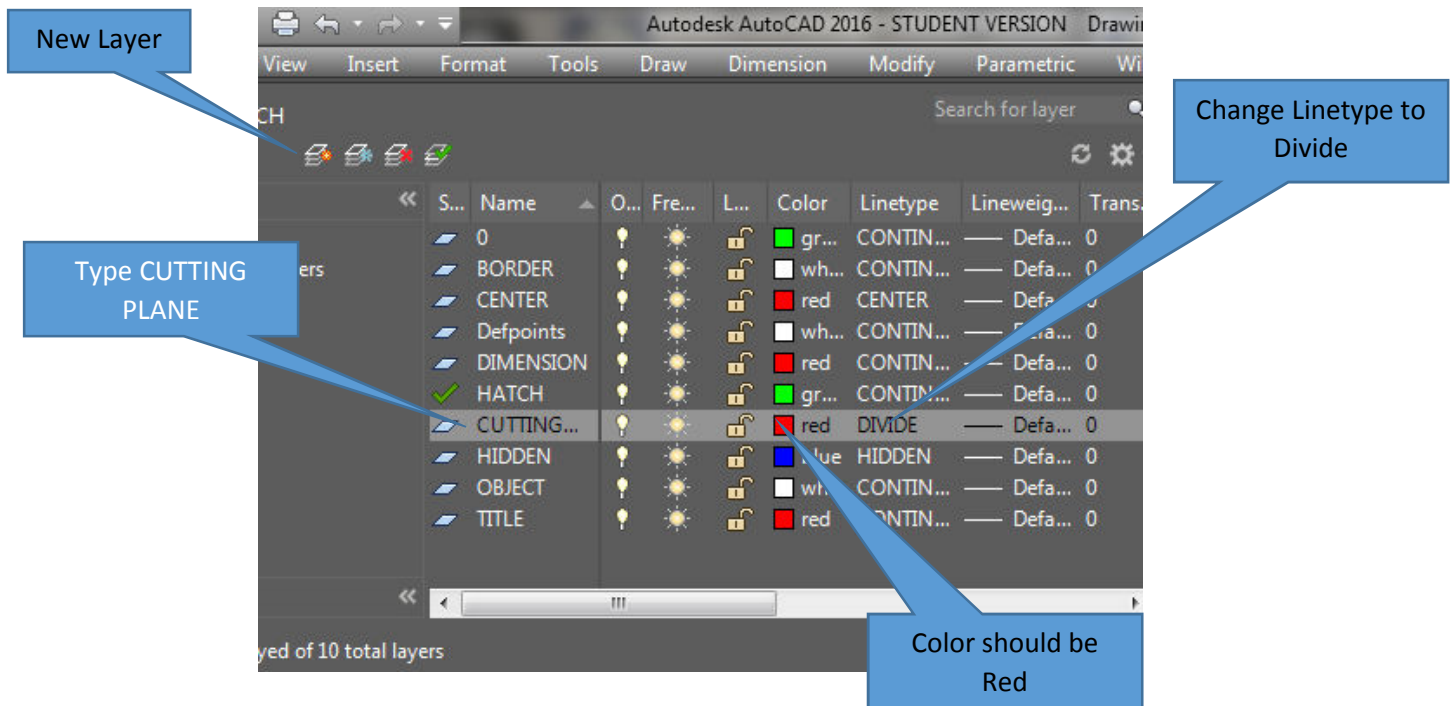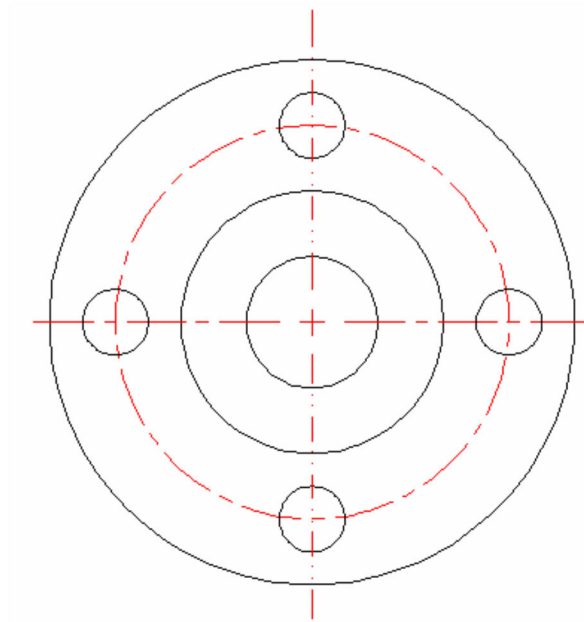

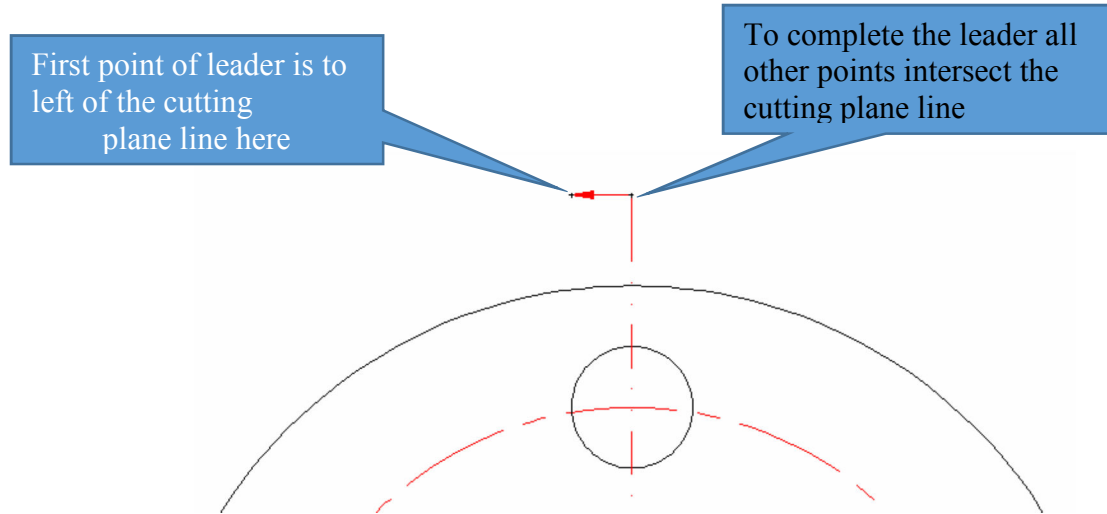Make the new layer the current layer.

2. Delete the center lines here.

3. Redraw the lines using the line tool. Be sure that you are in the new layer. CUTTING
   PLANE.

4. You will now add arrows on the ends of the drawings. From the Dimension pull down menu select the Leader command. Align to the left of the top cutting plane line as illustrated:

> First point of leader is to left of the cutting plane line here

> To complete the leader all other points intersect the cutting plane line

Note: The cutting plane arrow points to the left representing the direction for the cut to expose the section:

5. Complete the bottom arrow for the cutting plane line the same way. Both arrows should point to the left as illustrated:
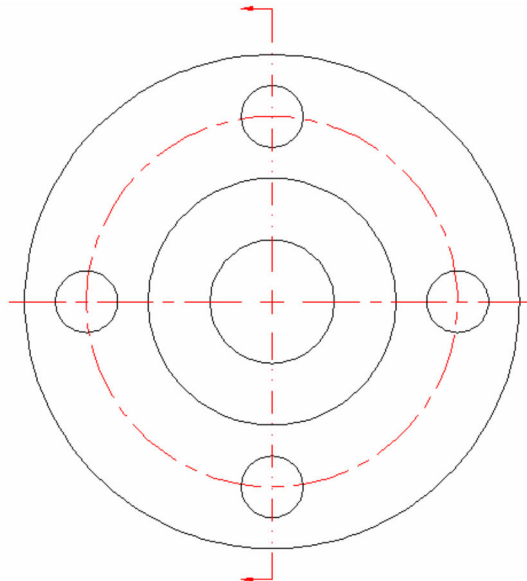
6. Complete the drawing's dimensions and check your work with the goldenrod drawing.
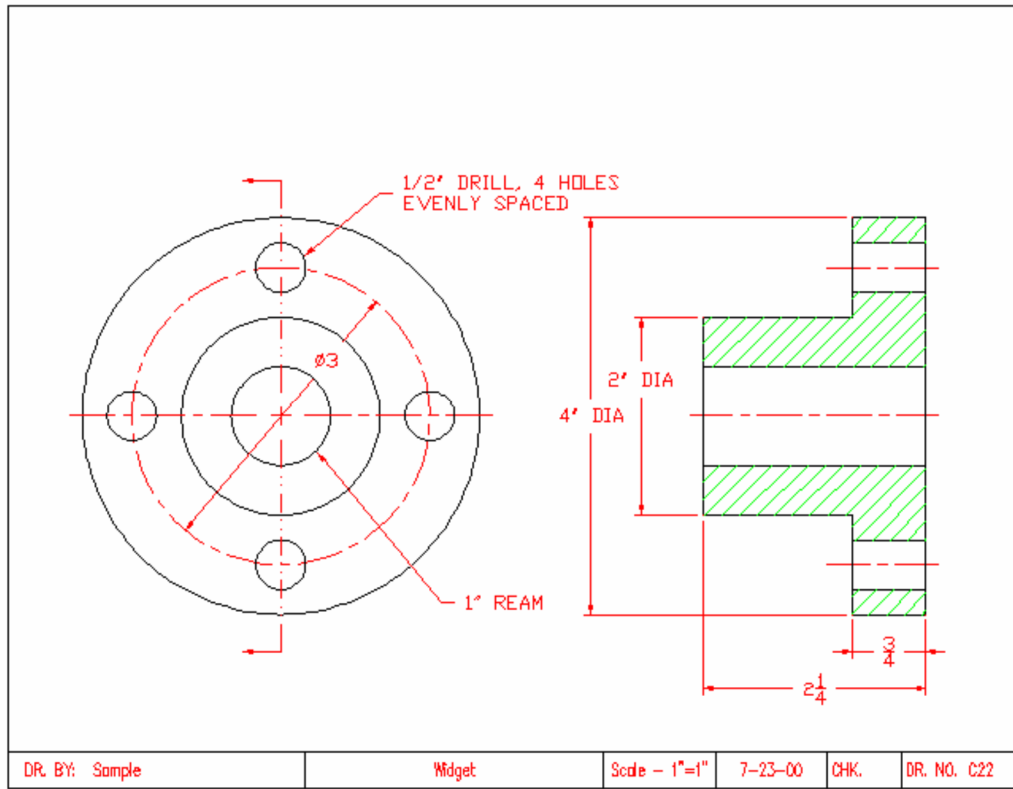
Terms to Know

Break - Command breaks the selected object between two points or divides a single entity into two separate entities.

Hatch Patterns - Many drafting applications use a process called hatching to fill an area with a pattern. The pattern is used to differentiate components of a project or to signify the material composing an object. You can use a predefined hatch pattern, define a simple line pattern using the current linetype, or create more complex hatch patterns.

Hatching - Also called crosshatching, filling a defined drawing area with a pattern of lines that show a solid surface that has been cut by a cutting plane in a sectional view.

Layer Control - Layers are the equivalent of the overlays used in paperbased drafting. They are the primary organizational tool in AutoCAD, and you use them to group information by function and to enforce linetype, color, and other standards. By creating layers, you can associate similar types of objects by assigning them to the same layer. For example, you can put construction lines, text, dimensions, and title blocks on separate layers. You can then control:

- Whether objects on a layer are visible in any viewports
- Whether and how objects are plotted
- What color is assigned to all objects on a layer
- What default linetype and line weight are assigned to all objects on a layer
- Whether objects on a layer can be modified