

Tutorial 3: Drawing Objects in AutoCAD 2010

Audience: Users new to AutoCAD

Prerequisites: None

Time to complete: 15 minutes

In This Tutorial

Please complete the lessons in this tutorial in order. The earlier lessons include information that is needed in the later lessons. In this tutorial, you learn how to do the following:

NOTE For more information on the topics covered in this tutorial, see the *AutoCAD User's Guide*.

- Specify drafting settings
- Draw a circle
- Draw a polygon inscribed in a circle
- Apply a hatch pattern to a closed boundary
- Draw an arc
- Draw a polyline

Tutorial Files

Download the tutorial files as follows:

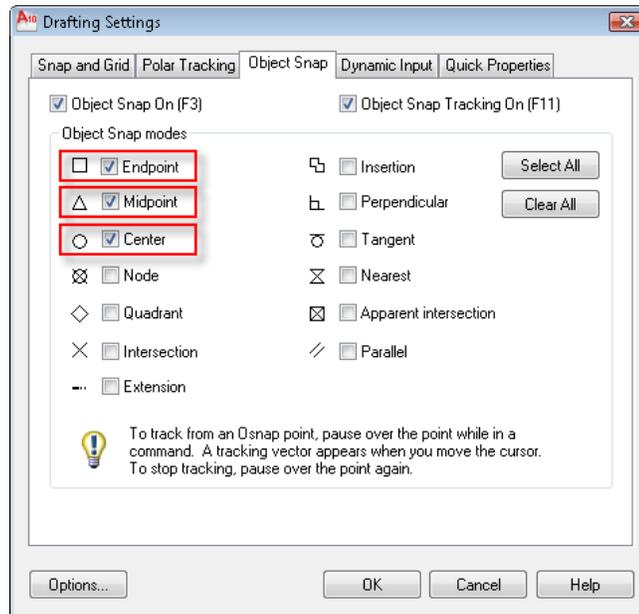
- 1 Download the *drawing_objects.zip* file from <http://www.autodesk.com/autocad-tutorials>.
- 2 Unzip *drawing_objects.zip* to *C:\My Documents\Tutorials*.

Lesson 1: Specify Drafting Settings

- 1 To open AutoCAD, click Start menu (Windows) ► (All) Programs ► Autodesk ► AutoCAD 2010 ► AutoCAD 2010- English. The AutoCAD window opens with an empty drawing file named *Drawing1.dwg*.
- 2 Check the status bar to make sure you are in the 2D Drafting & Annotation workspace.
- 3 To complete subsequent lessons in this tutorial, you must specify some drafting settings. Right-click the Object Snap icon in the status bar at the bottom of the window, and select Settings.



- 4 The Drafting Settings dialog box is displayed. In the Object Snap tab, make sure the Object Snap On option is selected. Also, select Endpoint, Midpoint, and Center for the Object Snap modes. Make sure the other options are not selected. Select OK.



Lesson 2: Draw a Circle

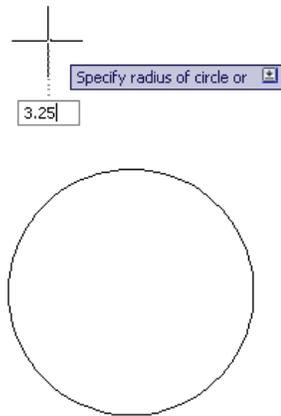
In this lesson, you learn how to draw a circle by specifying the center point and radius.

To draw a circle

- 1 With *Drawing1.dwg* open, on the ribbon, click Home tab ► Draw panel



- Circle drop-down menu ► Center, Radius
- 2 Drag the crosshairs cursor down to the drawing area.
- 3 Click the left mouse button to specify the center of the circle.
- 4 The dynamic input prompt asks you to “Specify radius of circle.” Enter **3.25** from the keyboard and press the Enter key to create a circle with a radius of 3.25.



- 5 Click  ➤ Save and save drawing as *circle.dwg* to your desktop. You will use this file in Lesson 3.

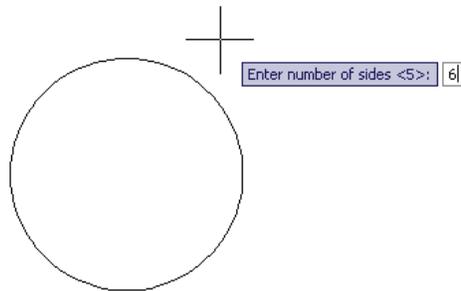
Lesson 3: Draw a Polygon

A polygon is an equilateral closed polyline with between 3 and 1024 sides. Creating polygons is a simple way to draw equilateral triangles, squares, pentagons, and hexagons.

In this lesson, you learn how to create a polygon inscribed in a circle.

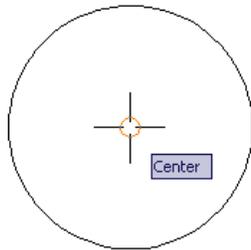
To draw a polygon

- 1 On the ribbon, click Home tab ➤ Draw panel ➤  ➤ Polygon. 
- 2 Drag the cursor down to the drawing area. In the dynamic prompt, use the keyboard to enter **6** to specify the number of sides of the polygon. Press Enter.

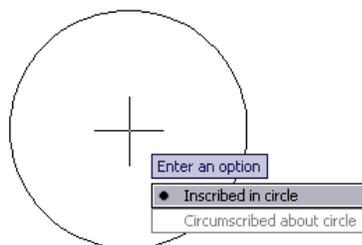


- 3 The dynamic prompt changes to “Specify center of polygon.” Move the cursor inside the circle to find its center point. Click when you see the orange circle and the dynamic cursor “center”, which indicates the center of the circle.

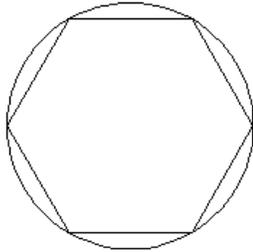
NOTE If the colored circle does not appear, make sure the drafting settings are set as described in Lesson 1.



- 4 The dynamic prompt changes to “Enter an option” and you have a choice of two options. Click the Inscribed in circle option.



- 5 The dynamic prompt changes to “Specify radius of circle.” Enter **3.25** and press the Enter key to specify the radius of the inscribed circle. You have created a six-sided polygon inscribed within a circle.



- 6 Click  Save. You will use this file in Lesson 4.

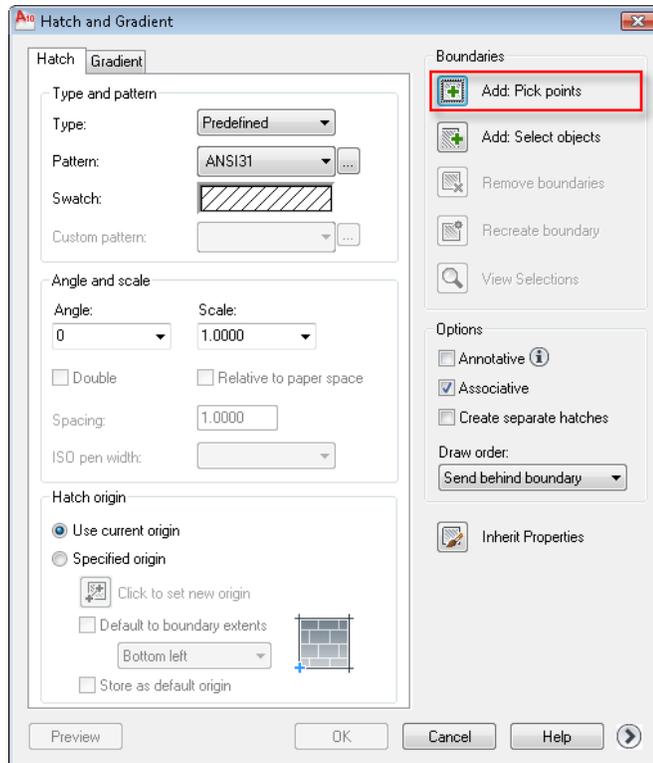
Lesson 4: Apply a Hatch Pattern

In this lesson, you learn how to apply a hatch pattern to a closed boundary.

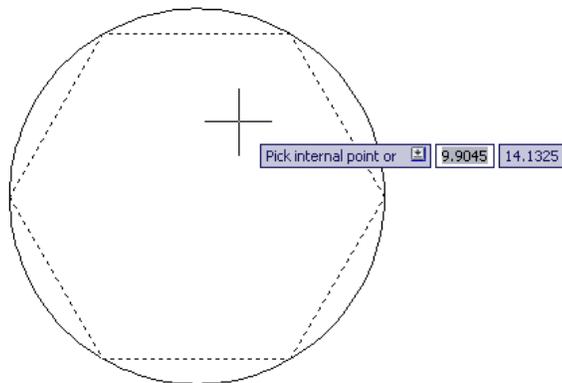
You can fill a closed boundary with a predefined hatch pattern; a simple line pattern using the current linetype; or a custom hatch pattern. One type of pattern is called solid, which fills an area with a solid color.

To use a predefined hatch pattern

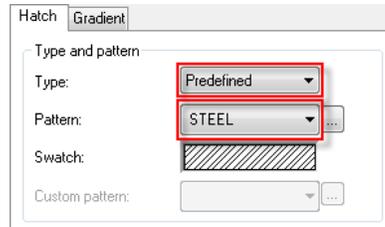
- 1 On the ribbon, click Home tab ➤ Draw panel ➤ Hatch. 
- 2 In the Hatch and Gradient dialog box, click Add: Pick Points.



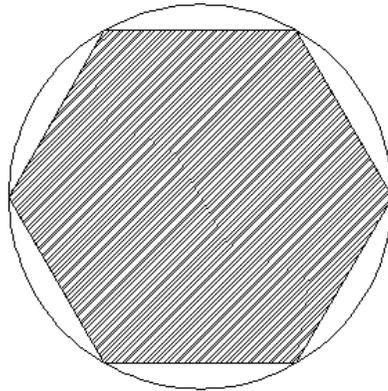
- 3 Click *inside* the polygon to select it. Do not select an edge of the polygon. Press the Enter key.



- 4 In the Hatch and Gradient dialog box, Hatch tab, under Type and Pattern group box, specify the following using the drop-down menu:
 - **Type:** Predefined
 - **Pattern:** Steel



- 5 Click OK. The selected hatch pattern is applied to the polygon.



- 6 Click  ► Save, and then close the drawing.

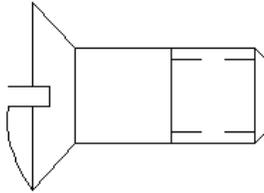
Lesson 5: Draw an Arc

In this lesson, you learn how to create a curved object called an *arc*.

To draw an arc

- 1 Click  ► Open.

- 2 In the Select File dialog box, browse to *C:\My Documents\Tutorials* and select the *bolt_add_arc.dwg* file.
- 3 Click Open. In this lesson, you will finish the side view drawing of a bolt by adding an arc.

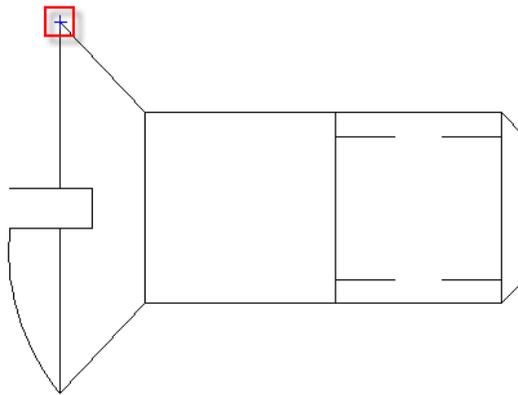


Side View

- 4 To make it easier to add the arc, zoom in on the bolt and pan to bring it into view.

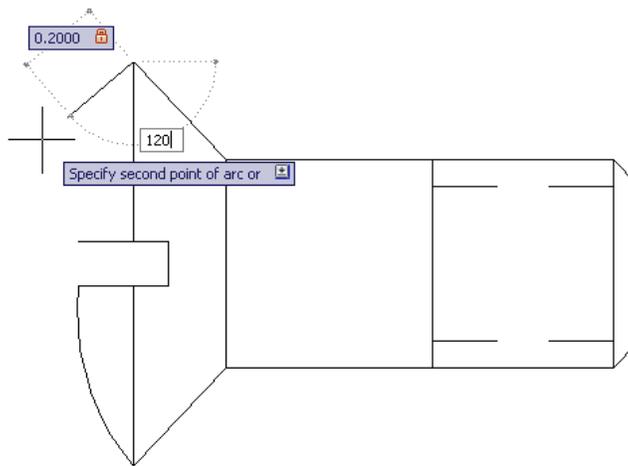
- 5 On the ribbon, click Home tab > Draw panel > 3-Point. 

- 6 Drag the cursor down to the bolt drawing and go to the location indicated by the colored square in the following figure. The word “endpoint” will appear in the dynamic input cursor.

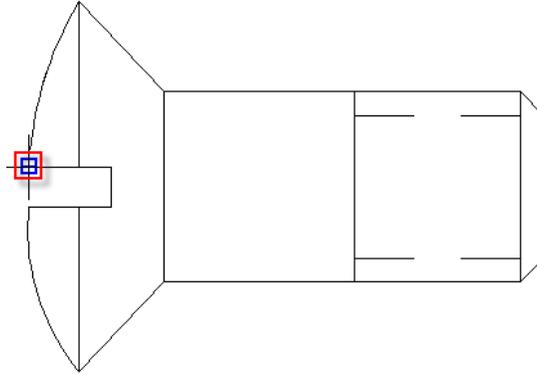


NOTE If the colored square does not appear, make sure the drafting settings are set as described in Lesson 1.

- 7 Click near the center of the colored square. This is the first point of the arc. The square is a visual cue that helps you “snap” to the exact endpoint of the existing line. This feature allows you to create precise drawings.
- 8 Move the cursor away from the first point. Next, you will enter the location for the second point, as well as the arc angle. Both of these are entered using the dynamic input prompt.
- 9 First, use your keyboard to enter **0.2000** for the second point of the arc. Notice that this value appears in the dynamic input box. Do not press Enter. Instead, press the Tab key on your keyboard.
- 10 The tab key takes you to the dynamic input prompt for the arc angle. Enter **120**. Press Enter to complete the second point of the arc.



- 11 Move the cursor down to the location shown in the following figure. When the colored square appears and “endpoint” appears in the dynamic input cursor, click in the center of the square to complete the arc.



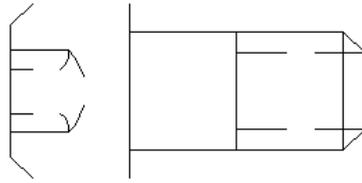
- 12 Click  ► Save, and then close the drawing.

Lesson 6: Draw a Polyline

In this lesson, you learn how to create an object called a *polyline*. A *polyline* is a sequence of segments created as a single object. Polyline can contain both straight and curved segments. In this lesson, you learn how to draw a *polyline* with straight segments.

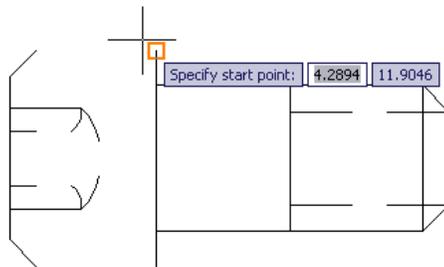
To draw a polyline

- 1 Click  ► Open.
- 2 In the Select File dialog box, browse to *C:\My Documents\Tutorials* and select the *bolt_add_polyline.dwg* file.
- 3 In this lesson, you will finish the side view drawing of a bolt by adding polylines.



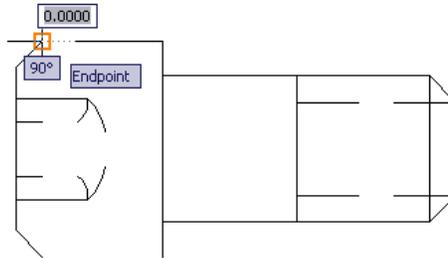
Side View

- 4 On the ribbon, click Home tab ► Draw panel ► Polyline. 
- 5 Drag the cursor down to the bolt drawing and go to the location indicated by the colored square in the following figure:



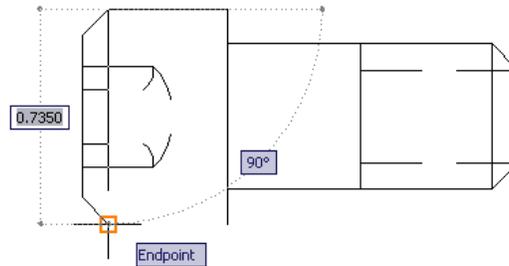
NOTE If the colored square does not appear, make sure the drafting settings are set as described in Lesson 1.

- 6 Click near the center of the colored square. This is the first point of the polyline.
- 7 Drag the cursor to the location indicated by the colored square in the following figure:



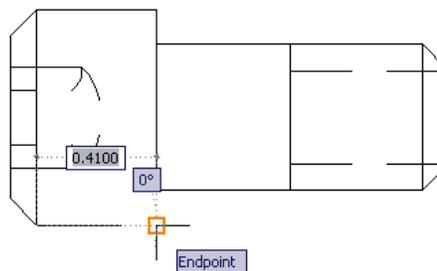
8 Click near the center of the colored square. You have drawn the first line in the polyline.

9 Drag the cursor to the location indicated by the colored square in the following figure:

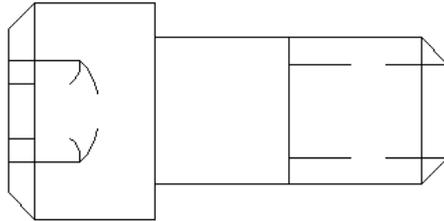


10 Click near the center of the colored square. You have drawn the second line in the polyline.

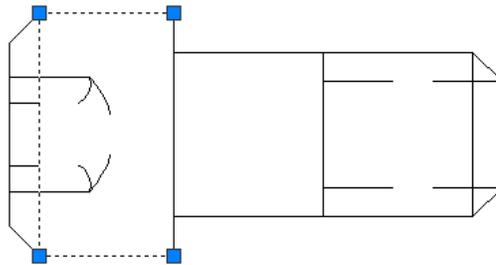
11 Drag the cursor to the location indicated by the colored square in the following figure:



- 12 Click near the center of the colored square. You have drawn the third line in the polyline.
- 13 Press the Enter key to end the polyline.



- 14 Click on one of the line segments of the polyline to select it. Notice that when you select one line segment, the entire polyline is selected.



- 15 Click  Save, and then close the drawing.