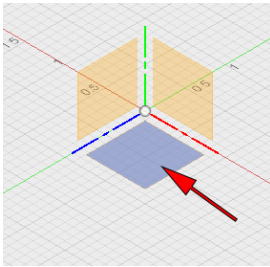
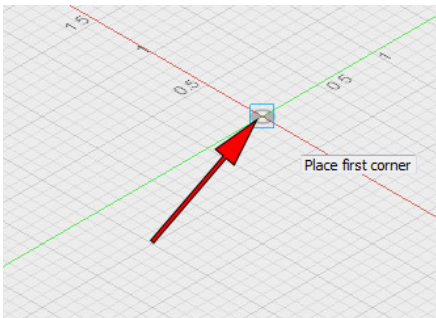


In this lesson you will create a square plate with dimensions 2.0 inches by 2.0 inches and 0.25 inches thick. The plate will contain four simple holes bored from the top surface through the bottom surface and of .25 inches diameter. The holes will be centered in the corners, 0.5 inches from each adjacent side.

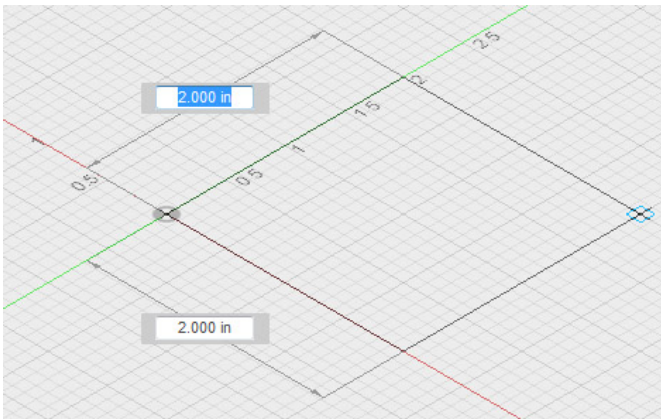
1. Open Fusion 360
2. You could create the plate by first drawing a square on a plane and then extruding it. There is a quicker way to do this. Select **Box** in the **Create** drop-down menu.
3. Click top plane to select it.



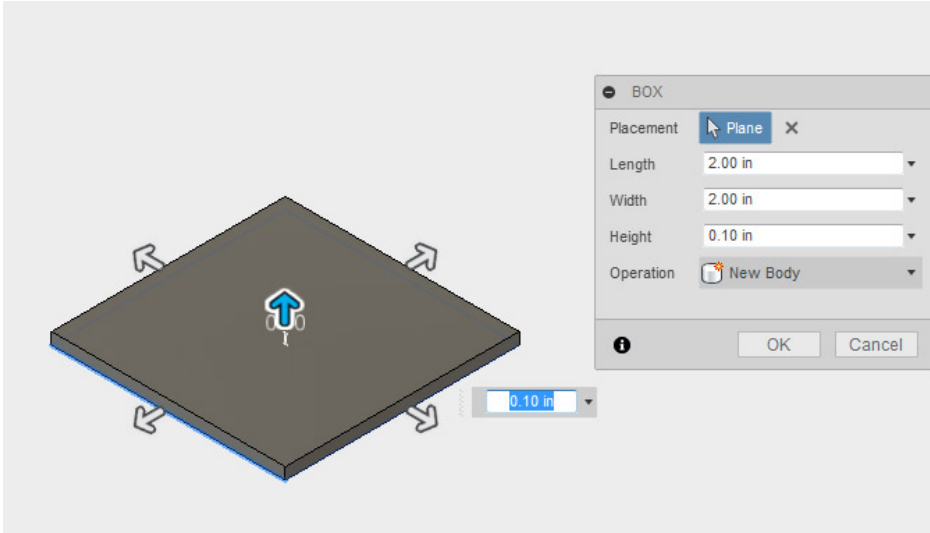
4. Click the center point of the top plane to set a corner of the box.



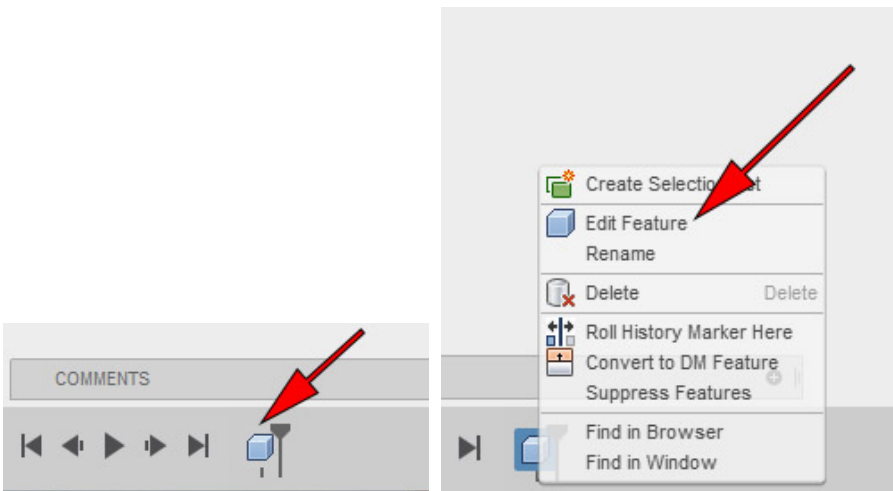
5. Move the mouse away from the center point until both sides of the square are 2.000 inches. Then click the mouse to set the dimensions.



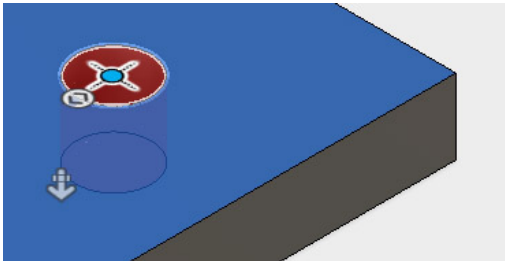
- A dialog will appear on screen and your object will appear as it would in an extrusion procedure. If you did not set the dimensions of Length and Width at 2.00 inches, then you can set those dimensions in the dialog box. Set the height of the box to 0.25 inches. When you have all three dimensions of the box properly set, click the OK button of the Box dialog.



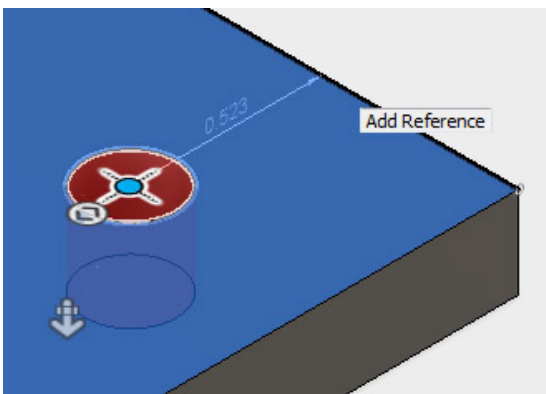
- When you enter values into the Box dialog, you should not press the Enter key to set a value because that will finish the operation. If you did this by accident before finishing with the dialog, you can open it back up by right-clicking on the feature in the timeline (image on left below). In the menu that opens, select **Edit Feature**.



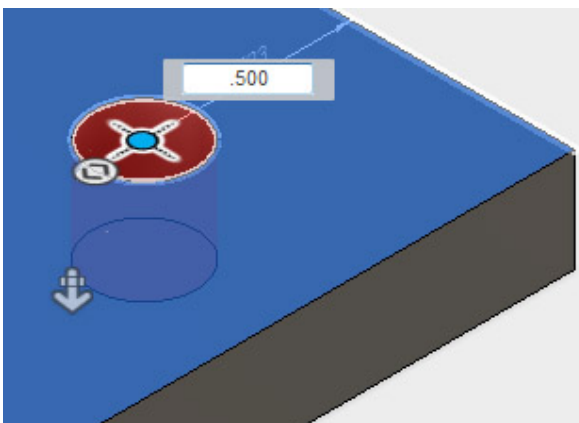
8. Select the **Hole** tool in the **Create** menu. Then click on the top face of the plate. An image of the hole should appear, as illustrated below. In Lesson 2 you created a point on a sketch to position the hole. In this lesson you will use a different method to position the hole.



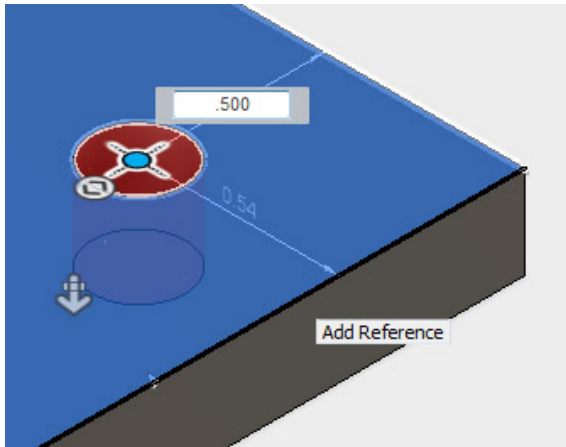
9. Place the mouse cursor over the center of the hole. Then move the mouse toward one of the edges of the plate. A dimension should appear as illustrated below. Click on the plate edge (it should have a heavy black line).



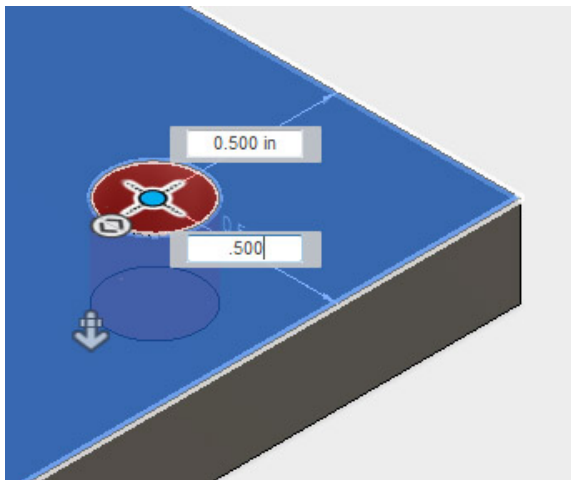
10. In the dimension slot that opens, enter the number .500 BUT DO NOT press the Enter key after entering the number in the slot.



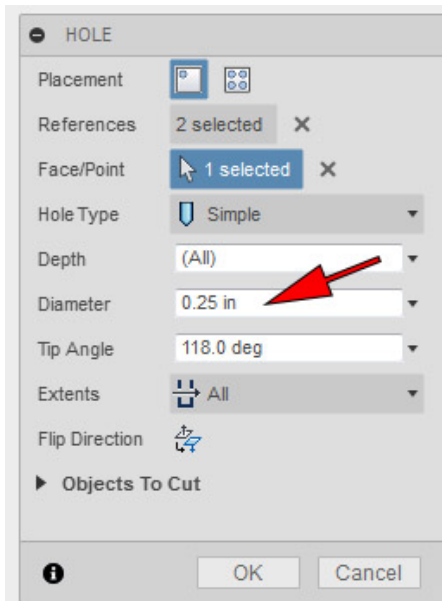
11. Click the mouse on the other edge close to the hole.



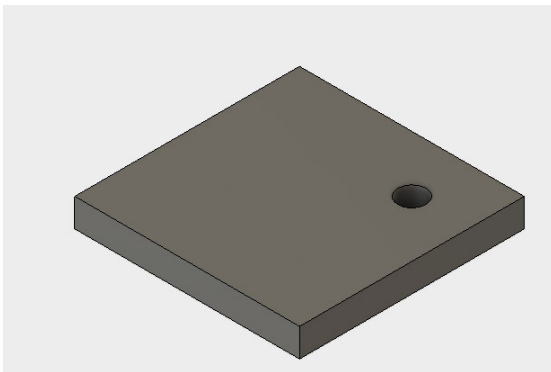
12. In the dimension slot enter the number .500, but do not press the Enter key afterward.



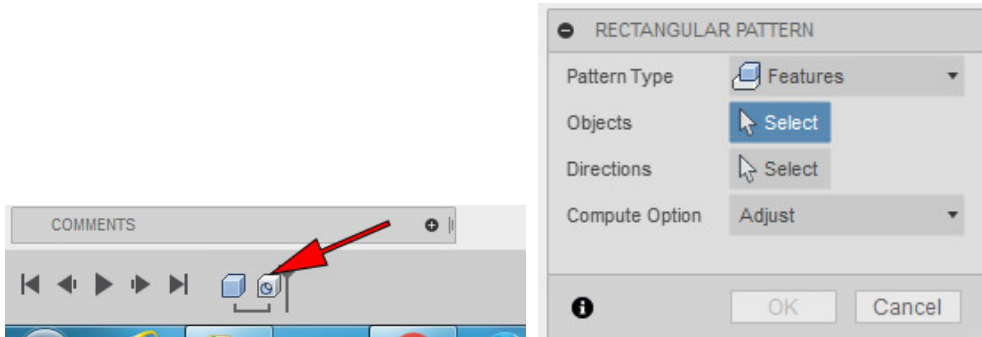
- In the Hole dialog, enter a value of 0.25 for the Diameter and in Extents, select All so that the hole will pass completely through the plate. Then click the OK button to finish the hole-boring procedure.



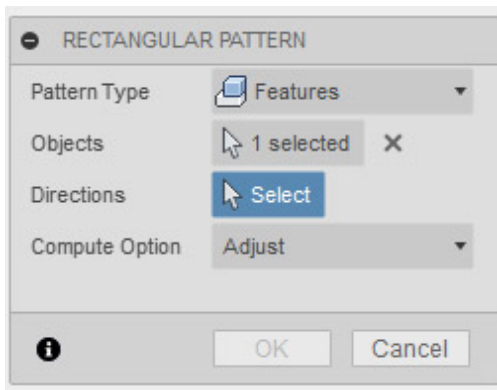
- Your plate should look similar to the illustration below. Change your view to the Top plane.



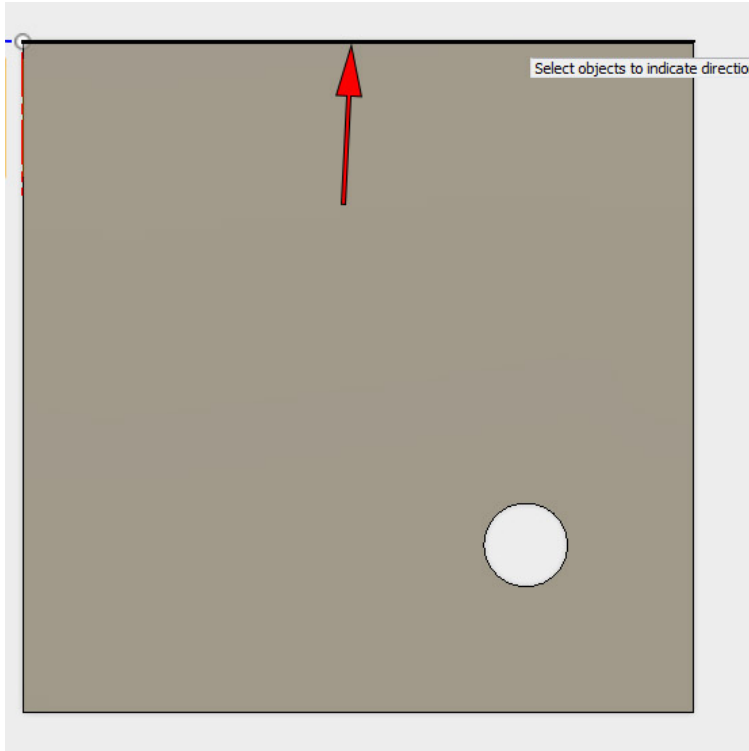
15. Three additional holes are needed to complete the object. You could make them as you did the first one, but there is a quicker method. Select **Pattern** in the **Create** menu. From the Pattern menu select **Rectangular pattern**. The Rectangular Pattern dialog will open as illustrated on the right below. Notice that the Objects button is blue, indicating that you should now specify which object should be used to make the pattern. To select the hole feature, find its icon at the lower left of the screen (red arrow in left image below). Click on the hole icon to set it as the Object to pattern.



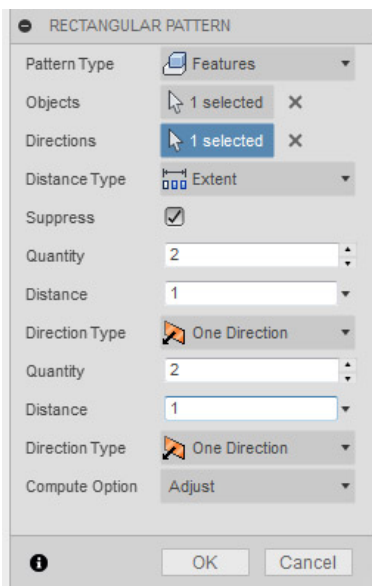
16. With the hole selected as the Object, now click on the Directions button to select it (as illustrated below).



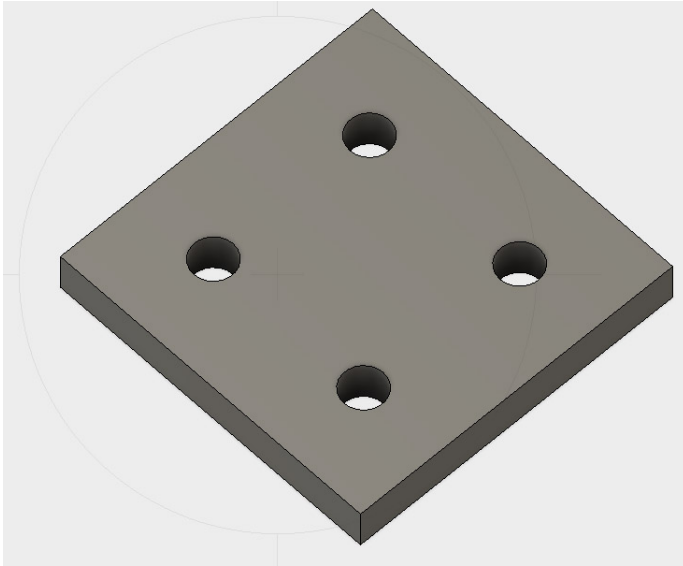
17. Move the mouse cursor over an edge distant from the hole (red arrow in illustration below). When the line becomes heavy as seen below, click the mouse to set that edge as a direction for the pattern.



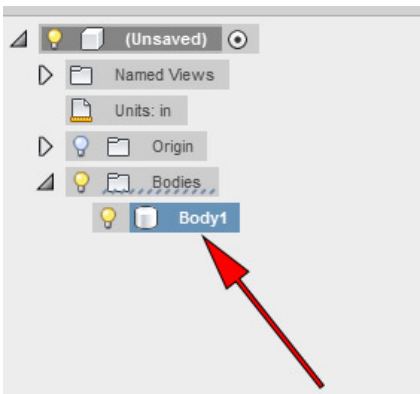
18. In the **Rectangular Pattern** dialog set the quantity for both directions as 2 and each distance as 1 inch. The plate is 2 inches square and if the holes are spaced by one inch, then each hole will be positioned properly ( $0.5 + 1.0 + 0.5 = 2.0$  inches). Click the **OK** button to finish the rectangular pattern feature.



19. Change your view to the “Home” position and orbit the view so that you can see through the holes. Your view should be similar to the one below. Congratulations, you have completed the object. To simplify this lesson, chamfers and fillets were not added to edges. Normally that should be done to finish the piece properly. Otherwise you might cut yourself on the sharp edges!

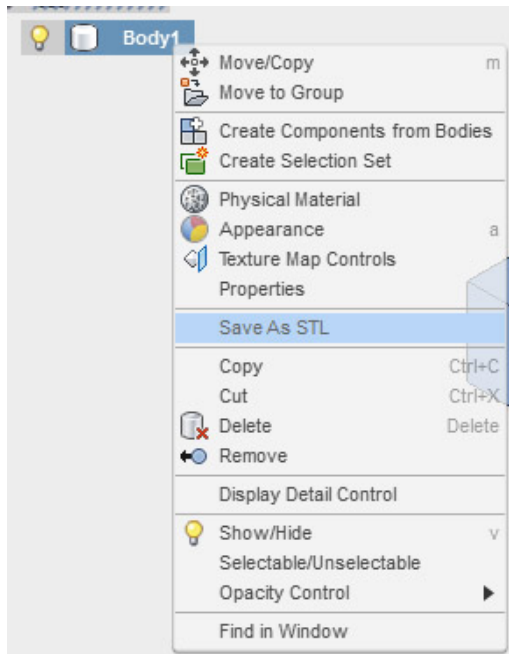


20. Suppose you wanted to use the club 3-D printer to print a copy of this object. To do that, you must export the 3-D model in STL format. Here are the directions for exporting. Right click your mouse on the body part in the menu list on the left side of the screen.





21. In the menu that opens, select **Save As STL**



22. The **SAVE AS STL** dialog will appear as illustrated below. Unless you have the 3D Print Utility software for Fusion 360 installed on your computer, do not place a check in the check box. The resolution of the print file can be adjusted in the Refinement drop-down. When you have finished making any changes in the dialog, click the OK button. Then a Save dialog will appear, allowing you to name the file and select a location for saving.

