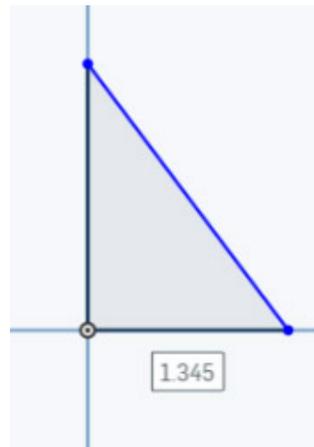
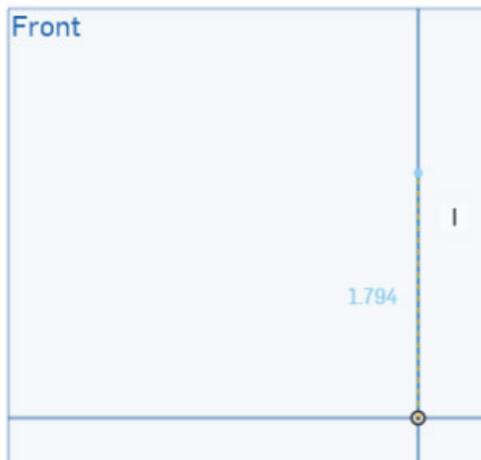


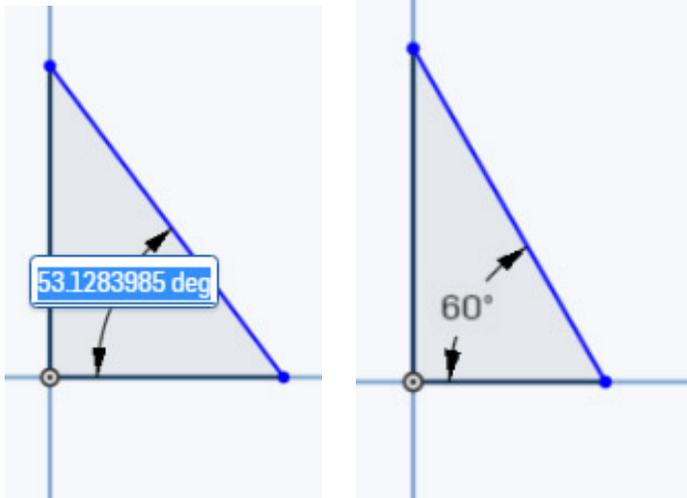
Onshape Lesson 3

In this lesson you will make a cone.

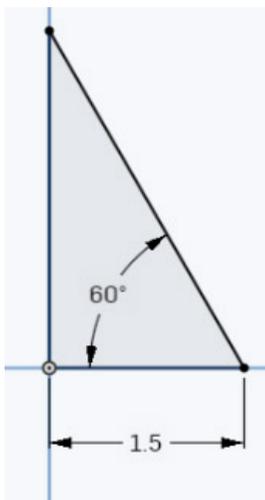
1. Create a new document and name it Lesson 3
2. Create a sketch on the front plane and set the view normal to the front plane
3. Use the Line tool  to draw a right triangle on the Front plane. The 90-degree angle of the triangle should be located at the center point of the Front plane. Place the mouse cursor over the center point of the Front plane and click to set the first corner of the triangle. Move the mouse cursor up and click on or near the vertical axis line to set the second point. Onshape has snap action, which will cause the line to fall perfectly on the vertical axis if you just click near it. Try moving the cursor horizontally back and forth over the vertical axis line. When near the vertical axis, a vertical icon (short vertical line) will appear. If you click while the icon appears, the line will be set perfectly vertical. After setting the second point of the triangle, move the mouse cursor down to the right and set a point on the horizontal axis line. Then move back to the starting point and click to complete the triangle.



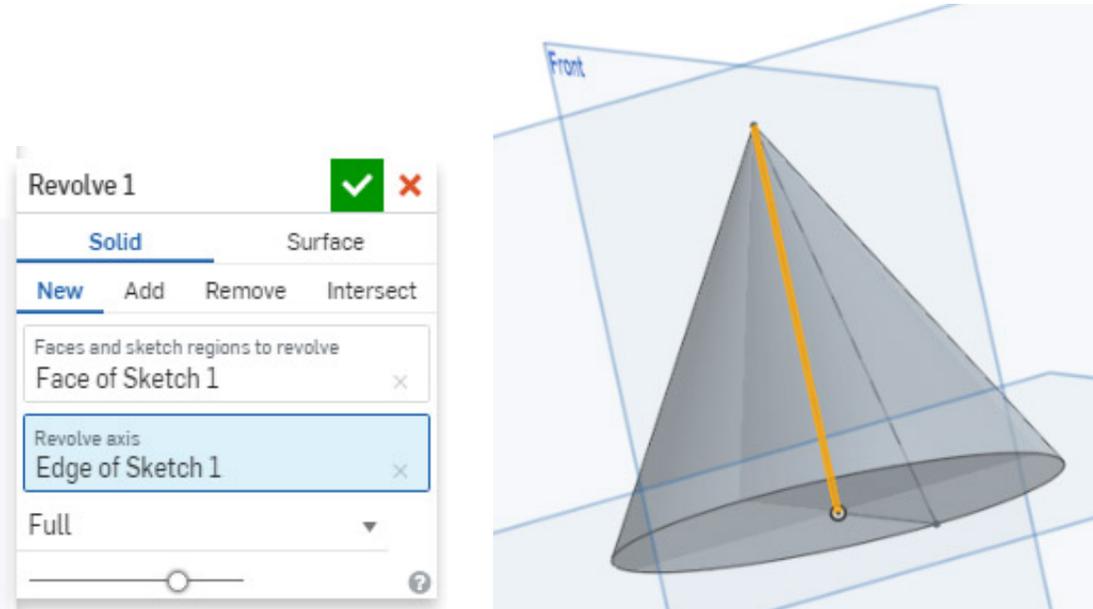
4. Set some dimensions for the triangle. Select the Dimension tool  Click on the horizontal line of the triangle and then the hypotenuse (the longest line). With both lines selected, move the mouse cursor between the lines (inside the angle) and click. In the text slot that opens, enter the number 60 and then press the Enter key.



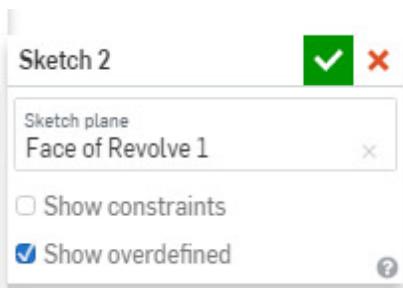
5. All three angles of the triangle are now set but not the size. By specifying the length of just one side, the triangle will become constrained. Select the Dimension tool  and click on both of the lower corners of the triangle. Move the mouse cursor down and a set of dimension lines will appear. Click the mouse and a text slot will appear. Enter the number 1.5 and press the Enter key to set the lower side of the triangle to 1.5 inches in length. Close the sketch.



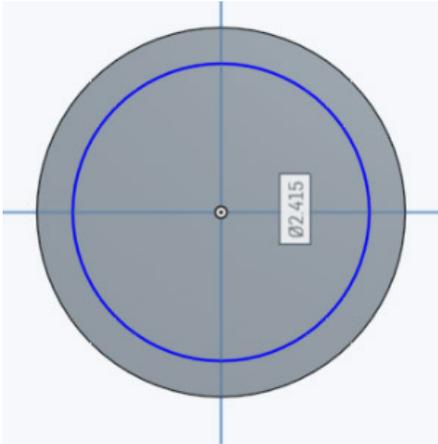
6. Select the Revolve tool  and then click on the triangle in the sketch to select it as the object to revolve. Click In the Revolve axis slot and then click on the vertical line of the triangle. You have just created a cone. Close the revolve.



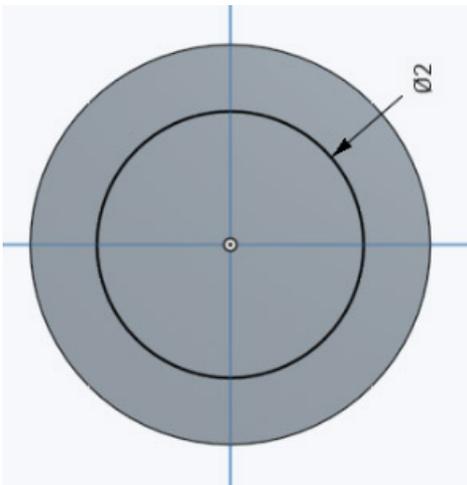
7. Now you will remove material from the interior of the cone in the shape of a dome. Create a new sketch and click on the bottom of the cone to set the plane of the sketch.



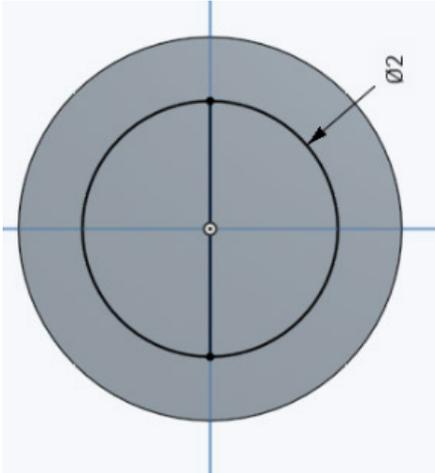
8. Select the Circle tool  and draw a circle centered on the bottom face of the cone.



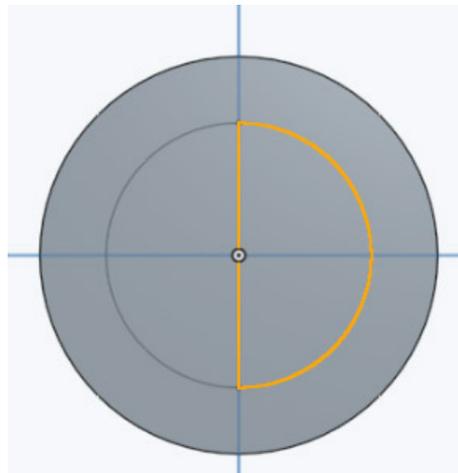
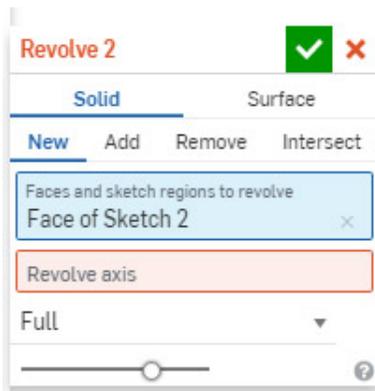
9. Select the Dimension tool  and set the diameter of the circle to 2 inches.



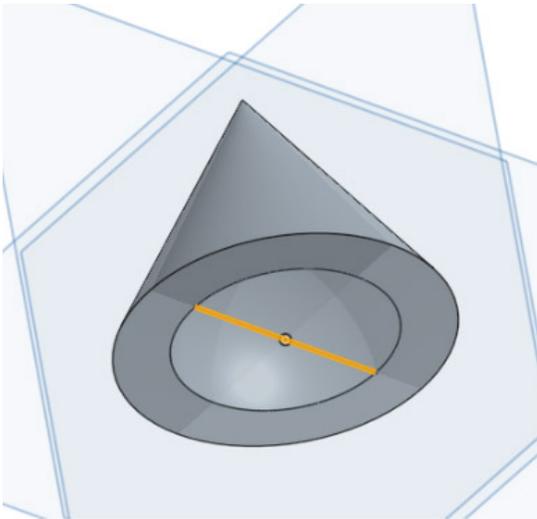
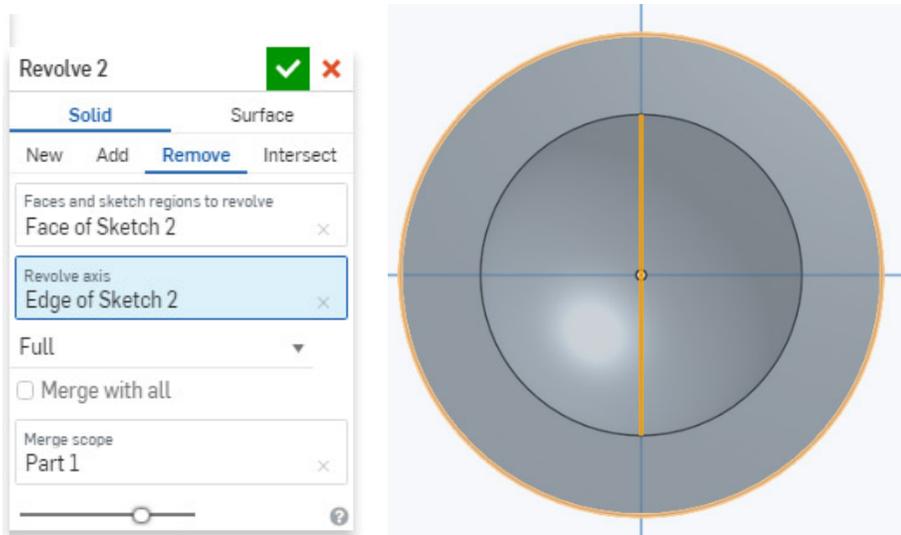
10. Select the Line tool  and draw a line to divide the circle in half. To do this, click on the circumference of the circle where it intersects the upper end of the vertical axis line. Then click on the circumference of the circle where it intersects the lower end of the vertical axis line. Now press the Esc key on the keyboard to exit the line drawing mode. Close the sketch.



11. Select the Revolve tool  and click on one half of the circle just drawn. Select Solid, Remove as the type of revolve.



- Click in the Revolve axis slot and then click on vertical line dividing circle. This line will be the axis of revolution. Close the revolve by clicking on green square with check mark. The object is now a cone with a hemispherical hollow space.



You have completed lesson 3.