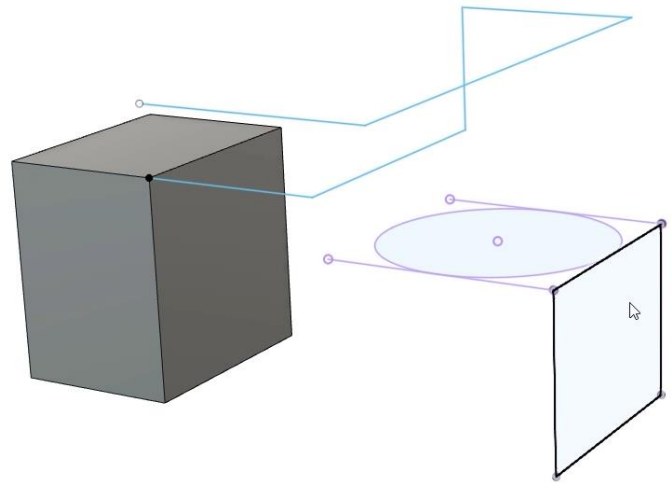


Create sketch intersections and projections

In this module, you'll create 2D and 3D sketch geometry using the Project and Intersect tools.

Learning objectives:

- Create a sketch projection onto a surface.
- Create a sketch intersection curve.
- Include 3D geometry in a sketch.



The completed exercise

1. Upload and open the supplied *sketch projections.f3d* file.

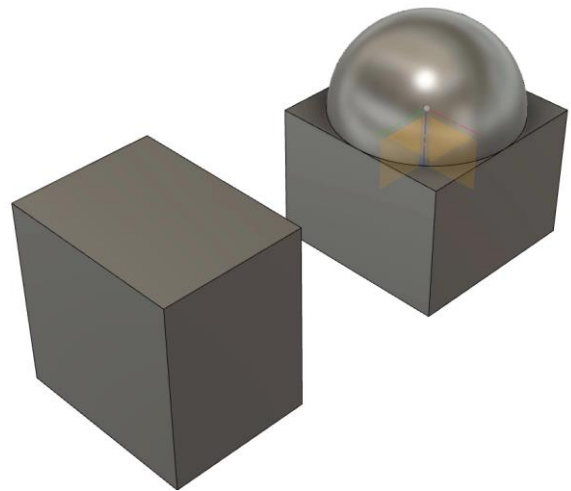


Figure 1. Open the supplied file

2. Create a sketch on the face shown in the image on the right.

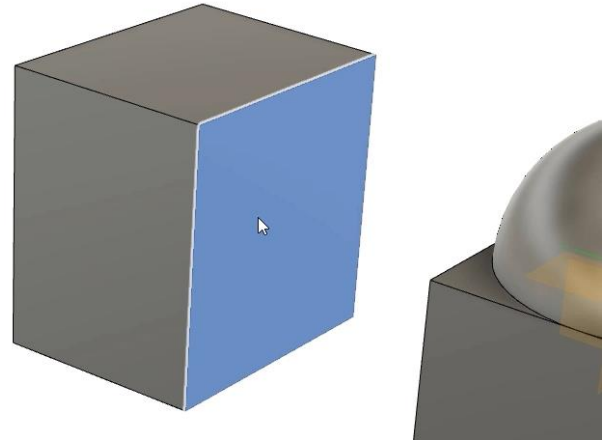


Figure 2. Create a new sketch

3. Click Create> Project/Include> Project.

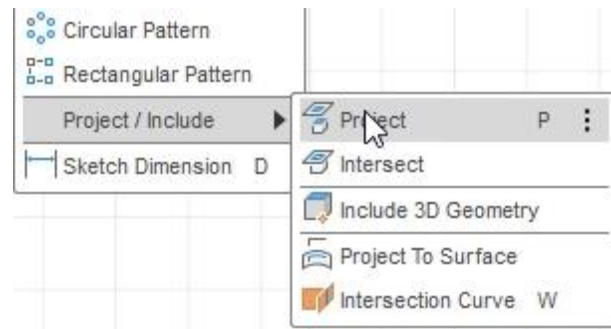


Figure 3. Open the Project tool

4. Make sure the Bodies option is selected in the dialog's Selection Filter section.

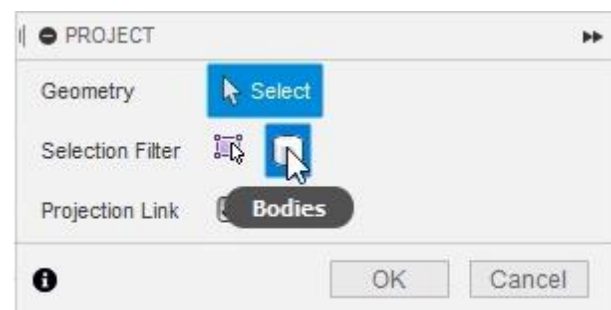


Figure 4. Choose the Bodies filter

5. Choose the body with the dome as the dialog's Geometry selection. OK the Project dialog.

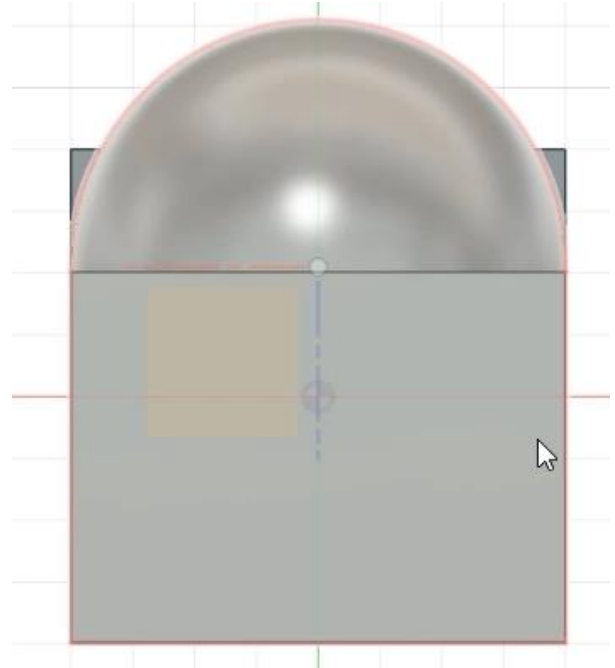


Figure 5. Choose the body

6. Rotate the body and notice that the geometry is projected onto the current sketch plane. Click Finish Sketch> Finish Sketch after you finish exploring the projected geometry. These projected sketch entities can be used for extrusions or other features.

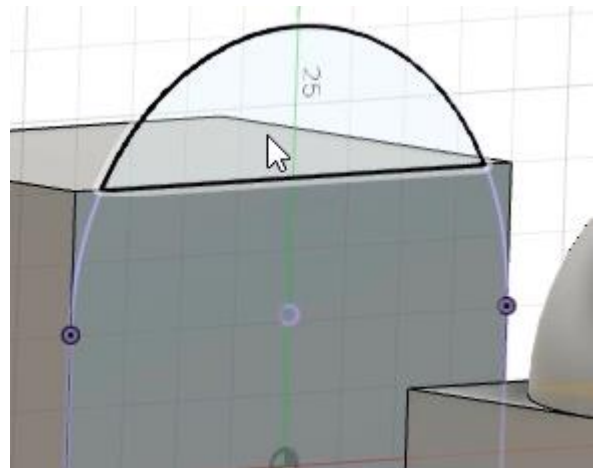


Figure 6. Inspect the projected geometry

7. Hide the sketch you just created.

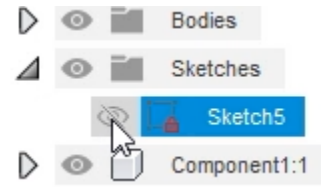


Figure 7. Use the Browser to hide the sketch

8. Create a new sketch on the face shown in the image on the right.

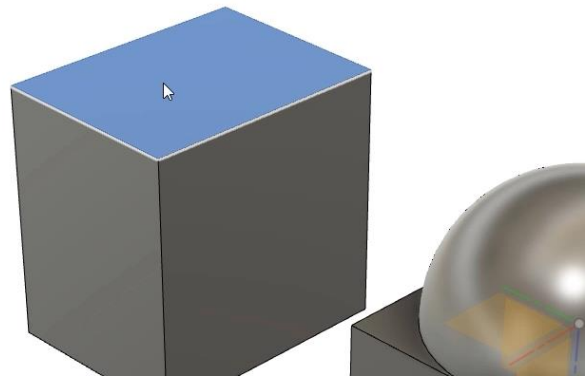


Figure 8. Create a new sketch

9. Click Create > Project/Include > Intersect.

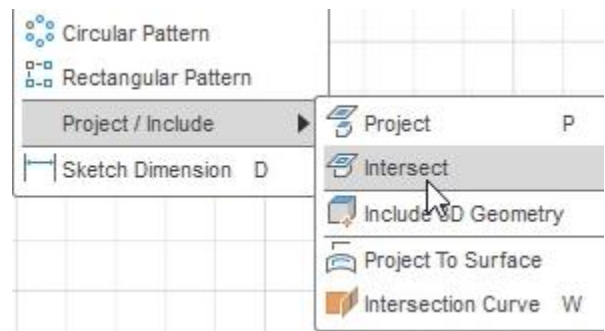


Figure 9. Open the Intersect tool

10. Choose the Body option from the dialog's Selection Filter section.



Figure 10. Choose the Body option

11. Choose the body with the dome as the Intersect dialog's Geometry selection. OK the Intersect dialog.

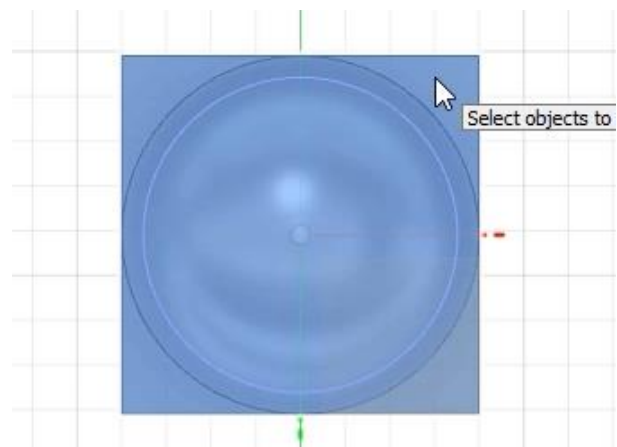


Figure 11. Choose the Geometry selection

12. Notice a purple line is created where the dome intersects the current sketch plane.

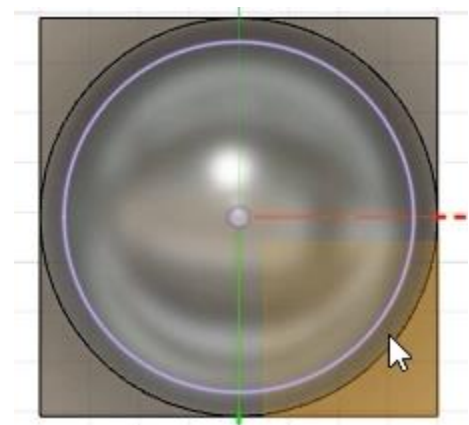


Figure 12. Inspect the intersection geometry

- 13.** Press C to open the Circle tool and draw a new circle concentric with the intersection geometry. Finish the sketch.

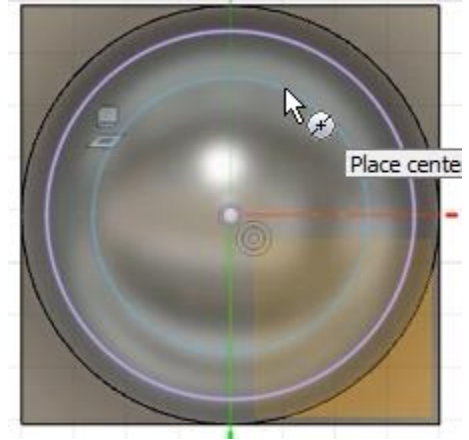


Figure 13. Draw a circle concentric with the intersection geometry

- 14.** Use the Browser to turn off the visibility for Component1 and notice that the area between the two circles can be selected as a closed profile.

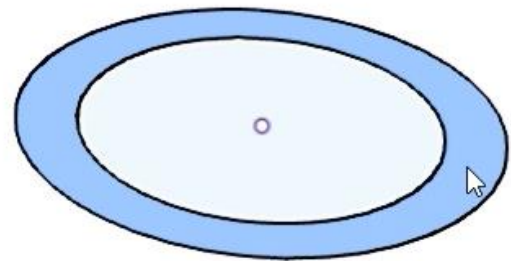


Figure 14. Select the area between the two circles

15. Use the Browser to turn off the visibility for Sketch6 and turn on the visibility for Component1. Create a new sketch on the face shown in the image on the right.

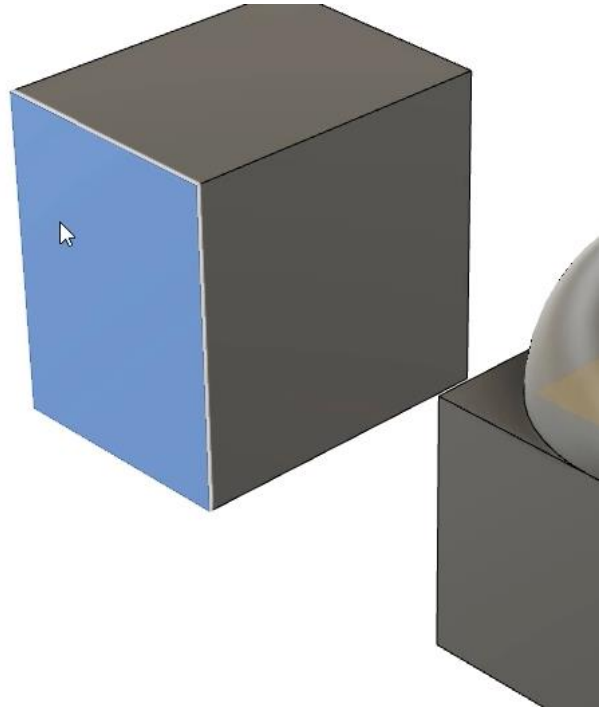


Figure 15. Create a new sketch

16. Click Create> Project/Include> Include 3D Geometry.

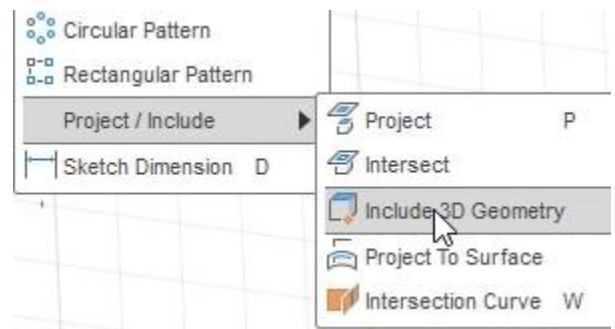


Figure 16. Open the Include 3D Geometry tool

17. Select various edges on Component1 to project them into the current sketch. Even though some of the selected edges might not be planar, they are included in the current sketch.

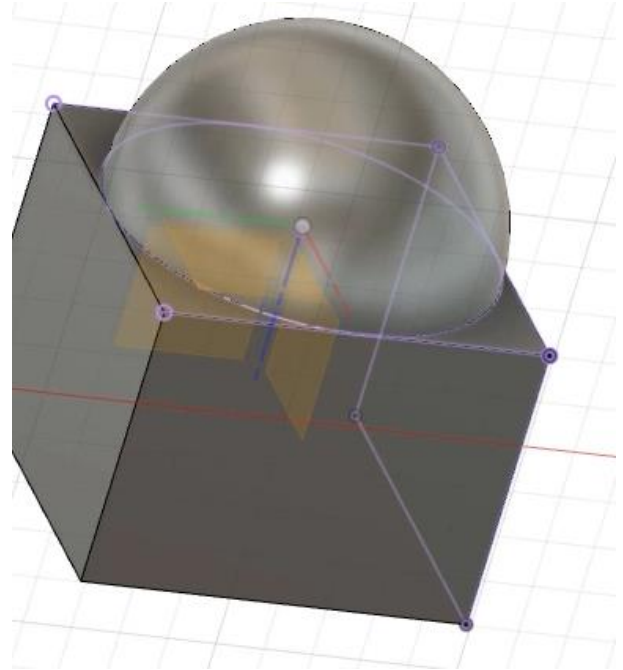


Figure 17. Project edges into the sketch

18. Activate the Sketch Palette dialog's 3D Sketch option.

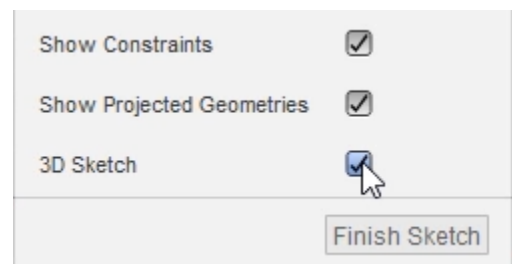


Figure 18. Activate the 3D Sketch option

- 19.** Press L to open the Line tool.
Beginning at one of the box's corners,
draw a line on the XY plane.

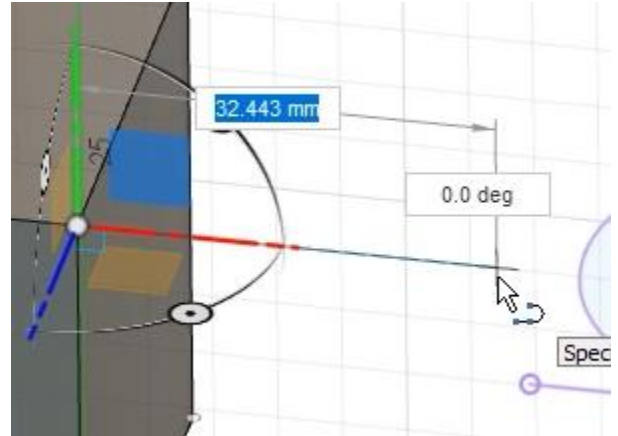


Figure 19. Draw a line

- 20.** Change the plane that you're drawing
on by clicking one of the WCS's other
plane icons.

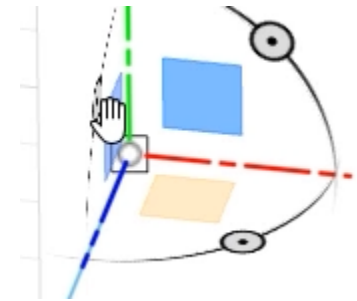


Figure 20. Change the plane you're drawing
on

- 21.** Continue to draw lines and change the
plane that you're drawing on. Rotate
the model and notice that the sketch is
a 3D sketch.

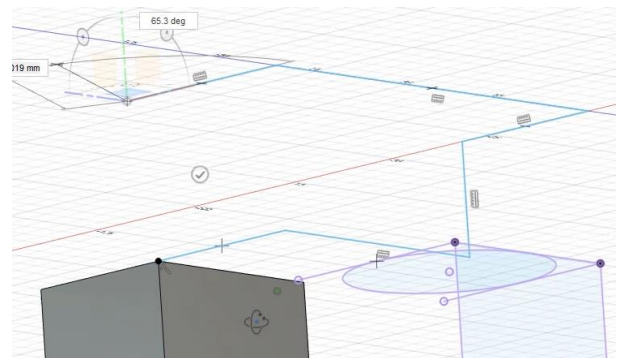


Figure 21. Continue to sketch in 3D

22. The sketch planes can be rotated by using the WCS's rotation handle shown in the image on the right. Finish the sketch. Save the file and continue to the next module.

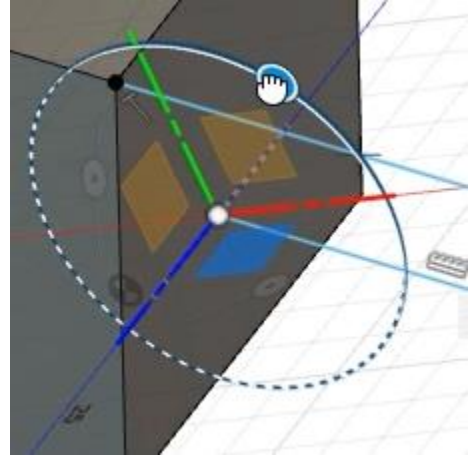


Figure 22. Adjust the sketch planes' angle