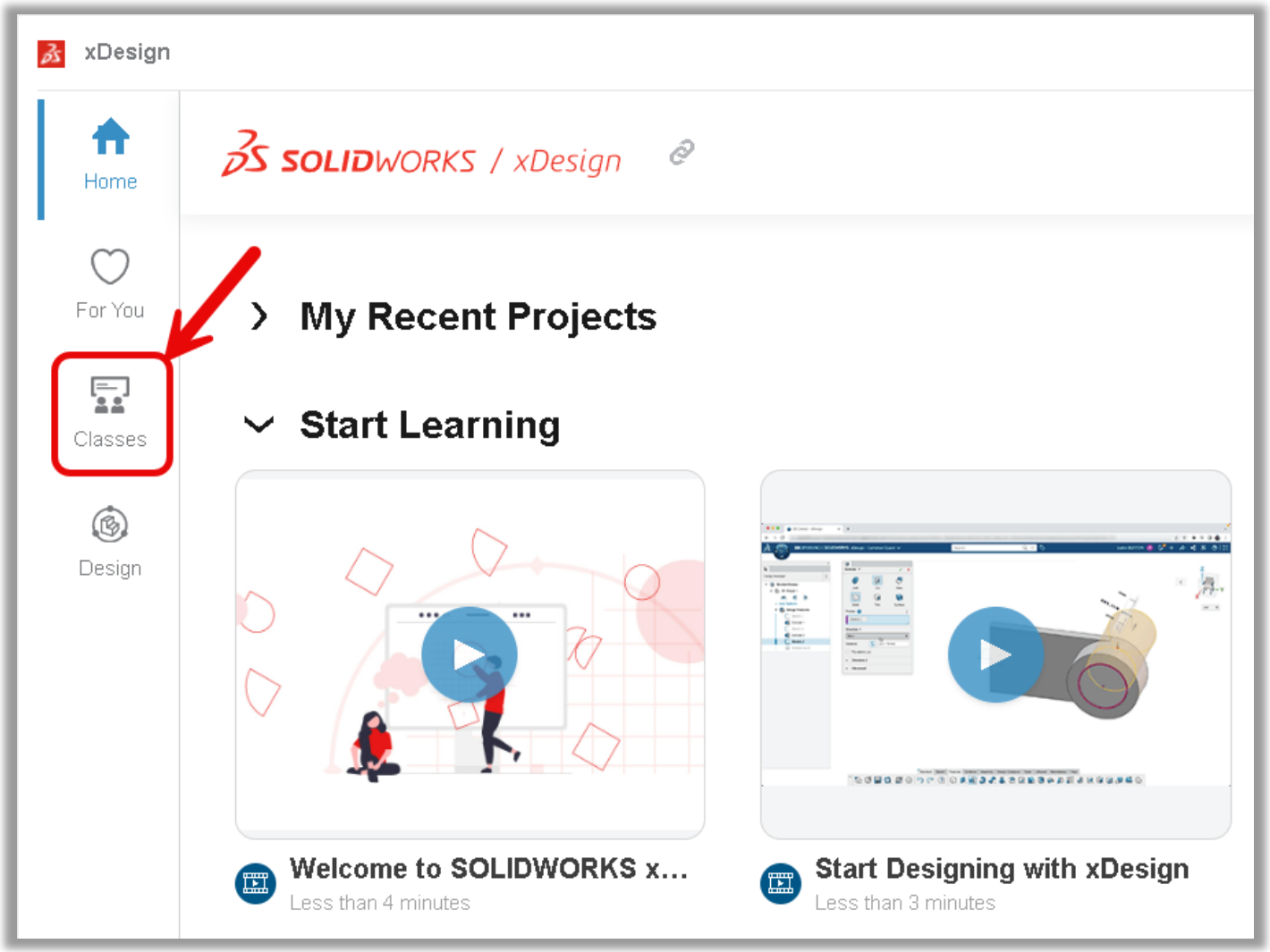
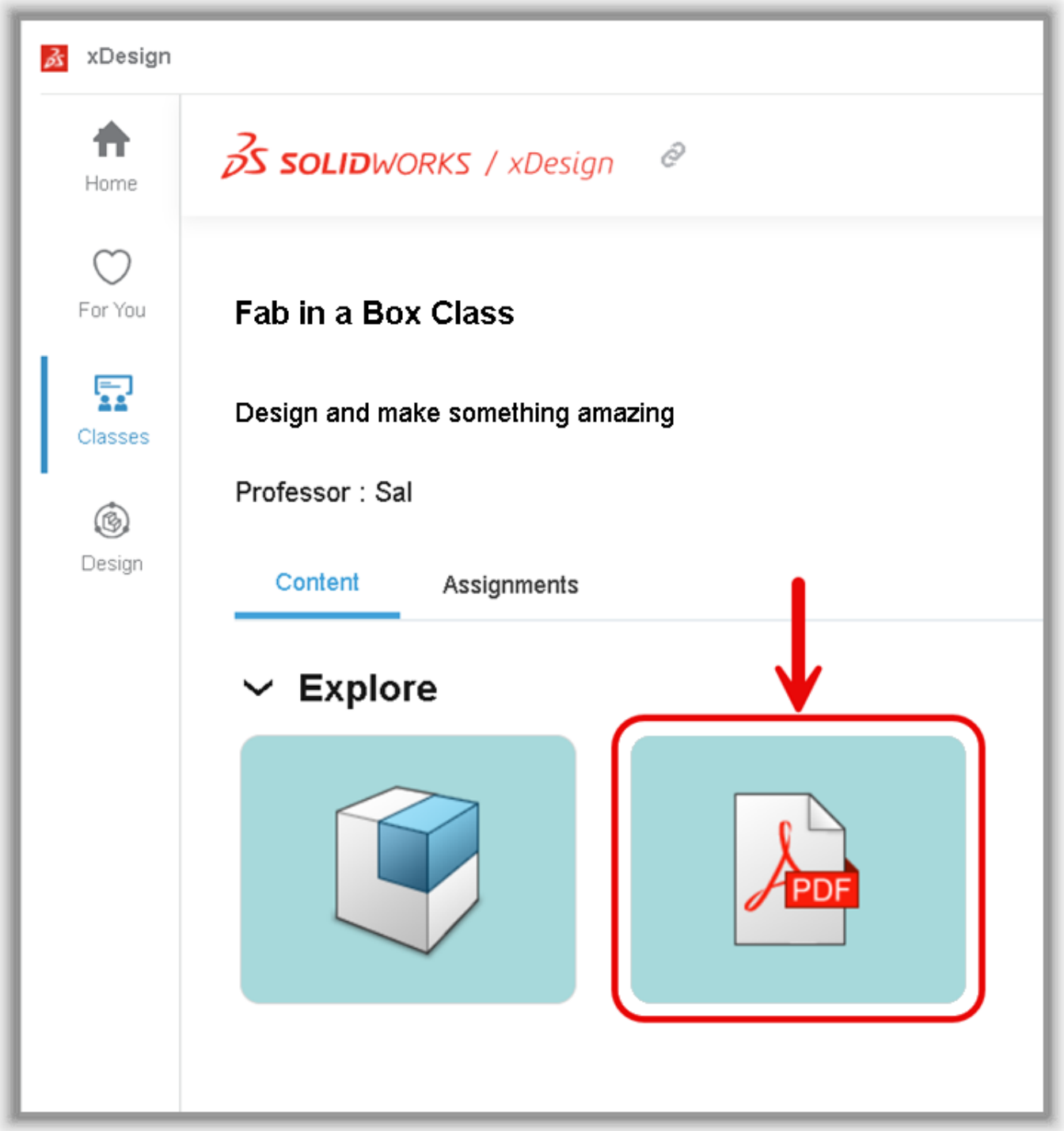
Design and fabricate your own custom dice.

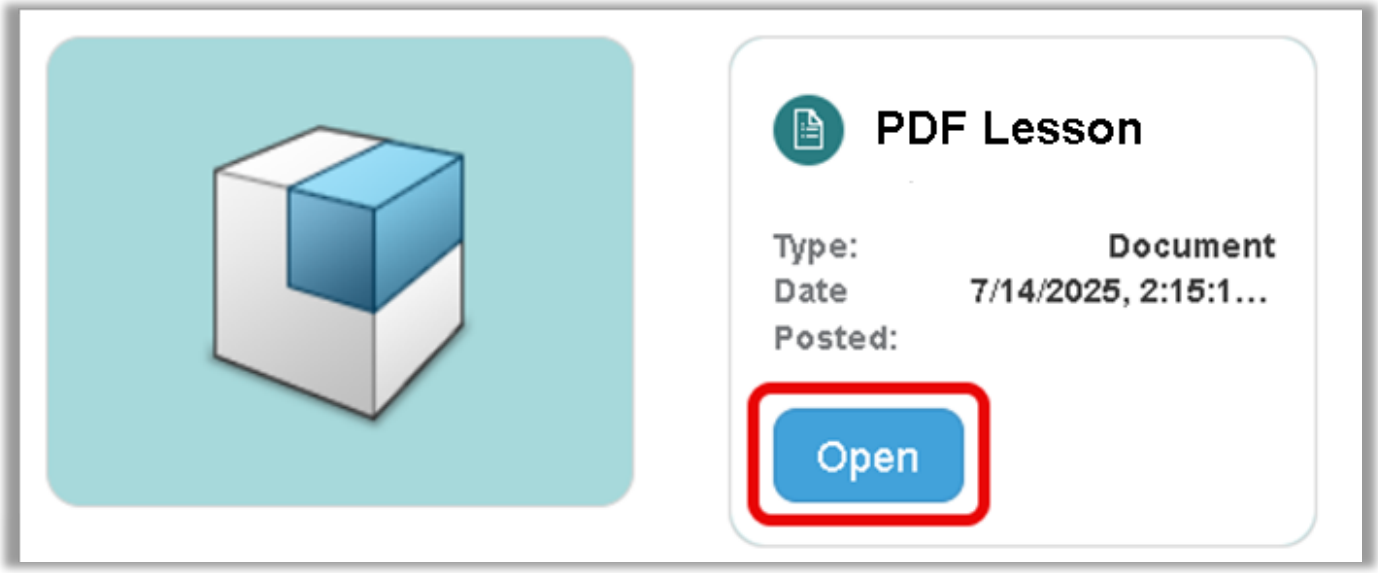
1. Click the **Classes** tab



2. Hover over the PDF tile

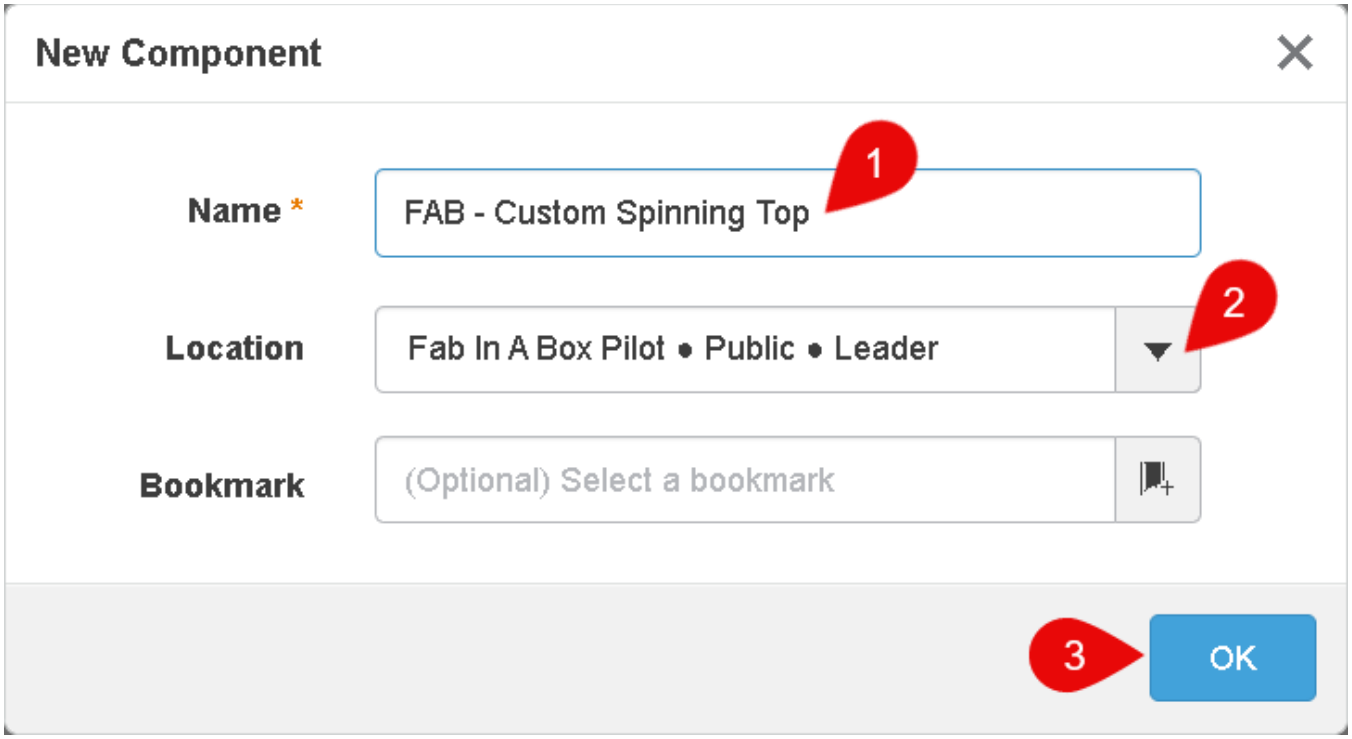


3. Click **OPEN**



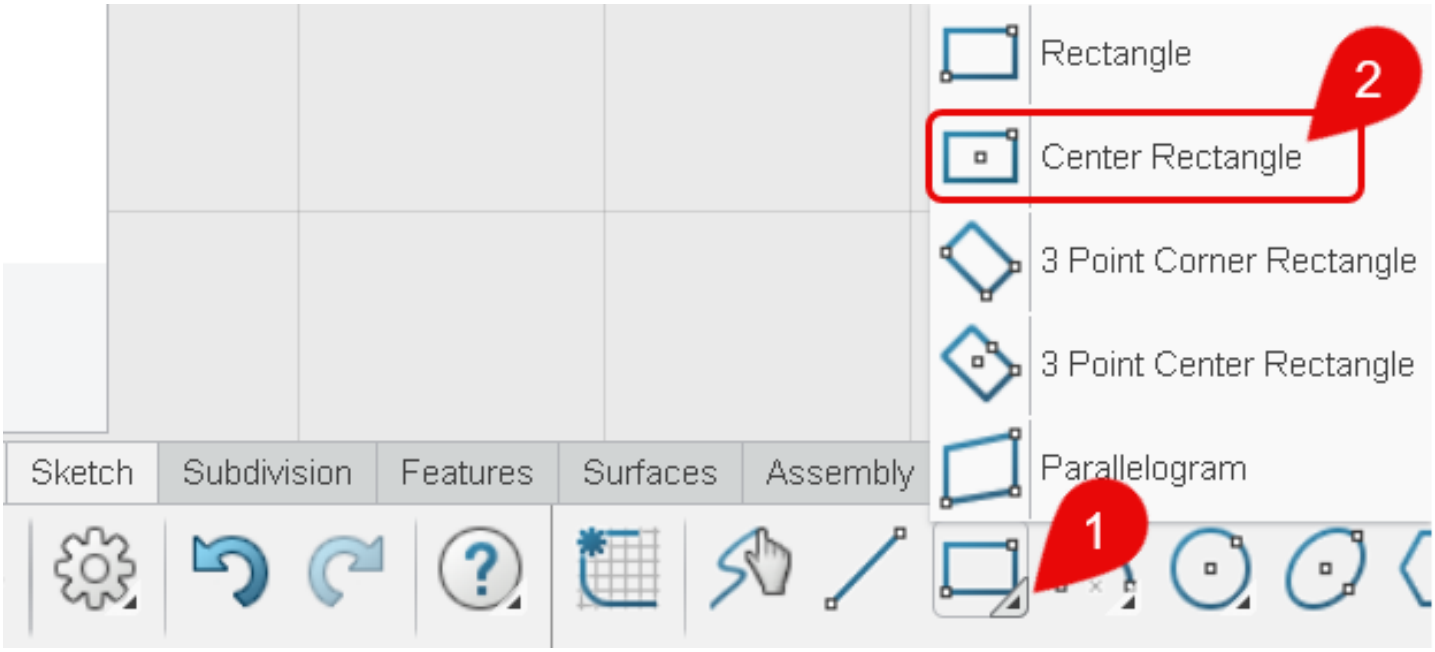
4. Click the **+Create** button at the top of the xDesign "Home" screen

5. [1] Give the design a unique name, [2] select your class's name as the location, and then [3] click **OK**

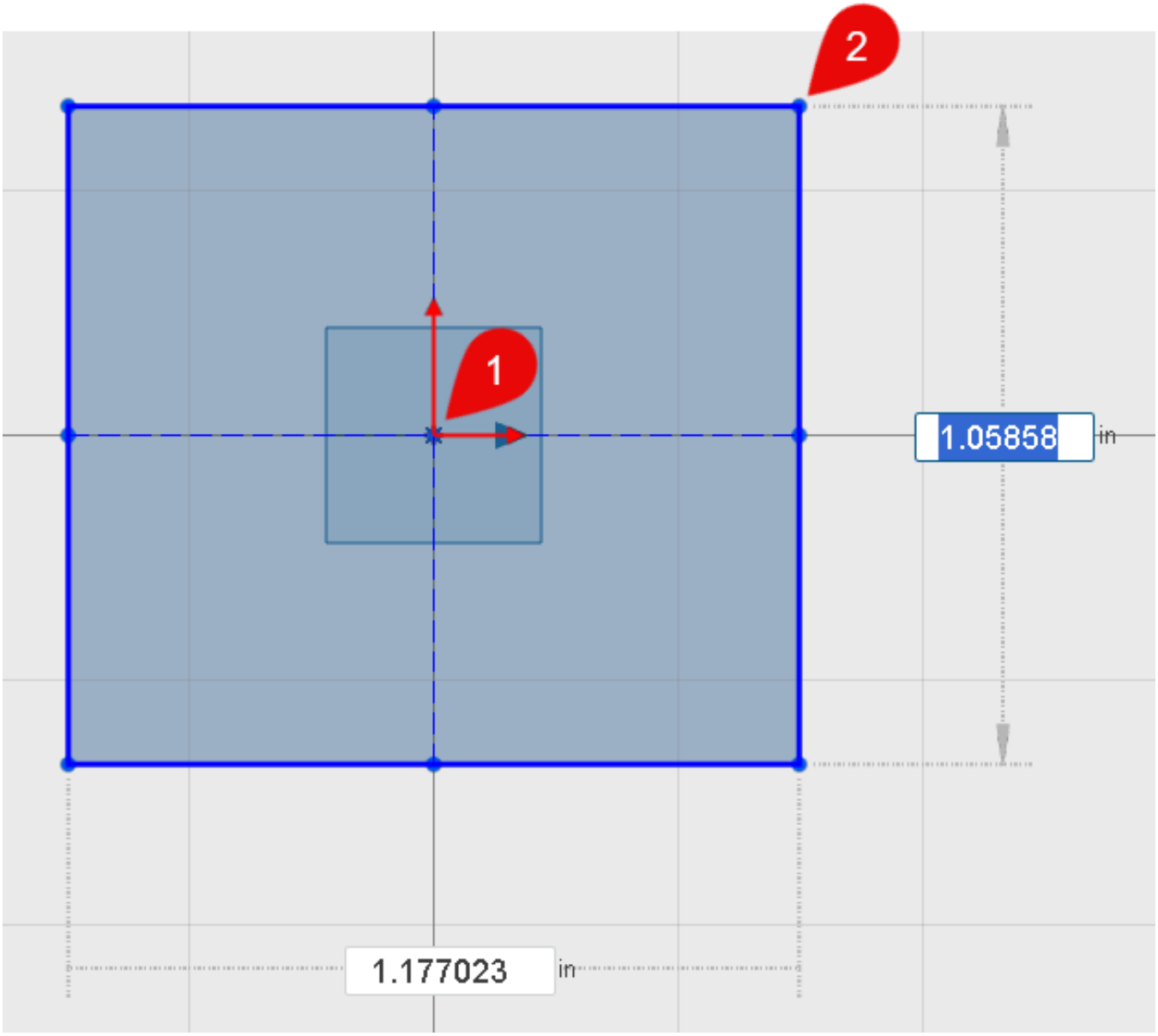


6. [1] Select the **YZ** plane in the Design Manager, and then [2] click the **Create Sketch** button

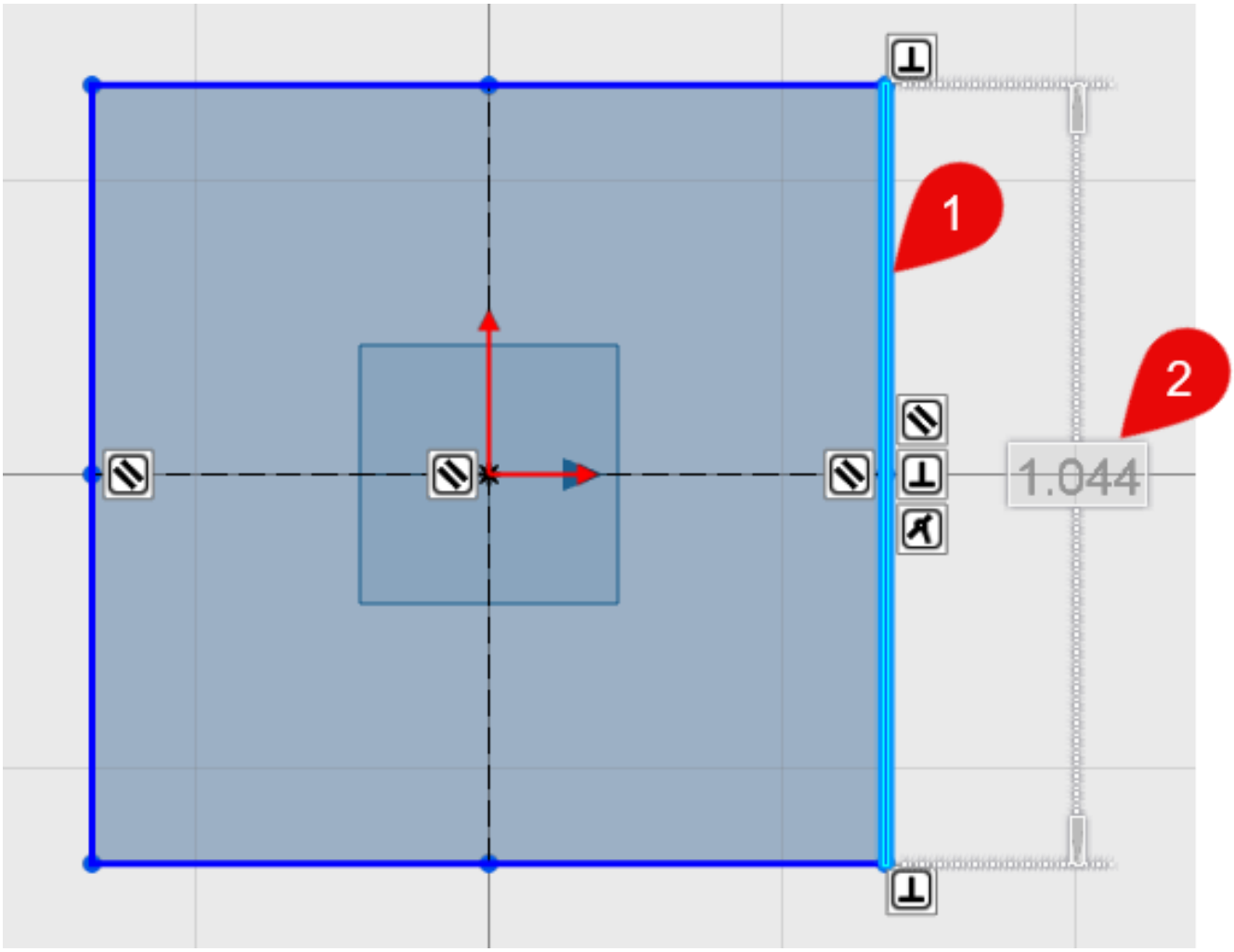
7. [1] Click the corner expander on the Rectangle tool, and then [2] click the **Center Rectangle**



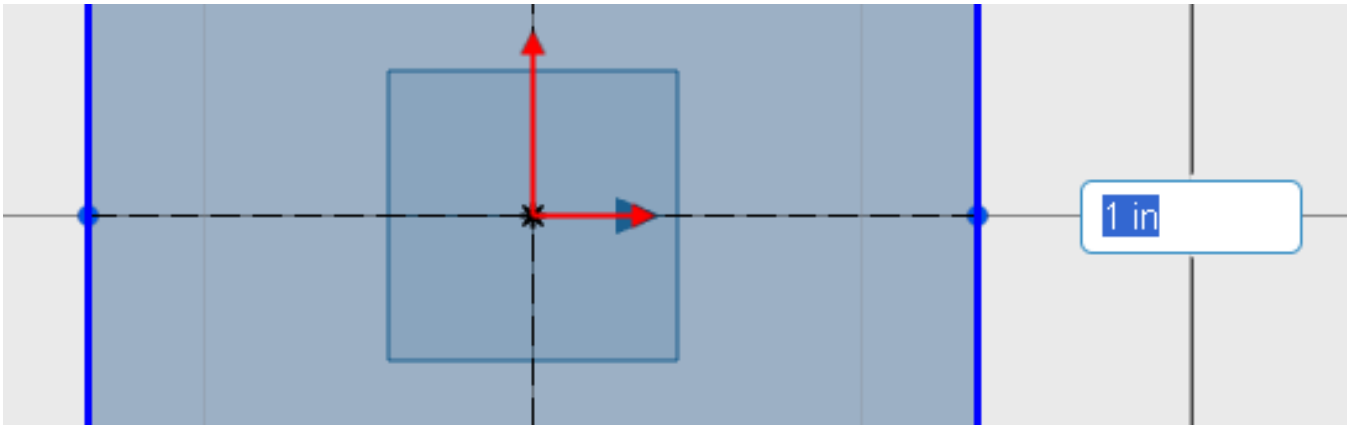
8. [1] Click the origin to place the center of the rectangle, then move your cursor up and to the right to roughly size the rectangle, finally [2] click to place the upper right-hand corner of the rectangle



9. [1] Select one of the vertical lines on the rectangle, then [2] click the preview dimension



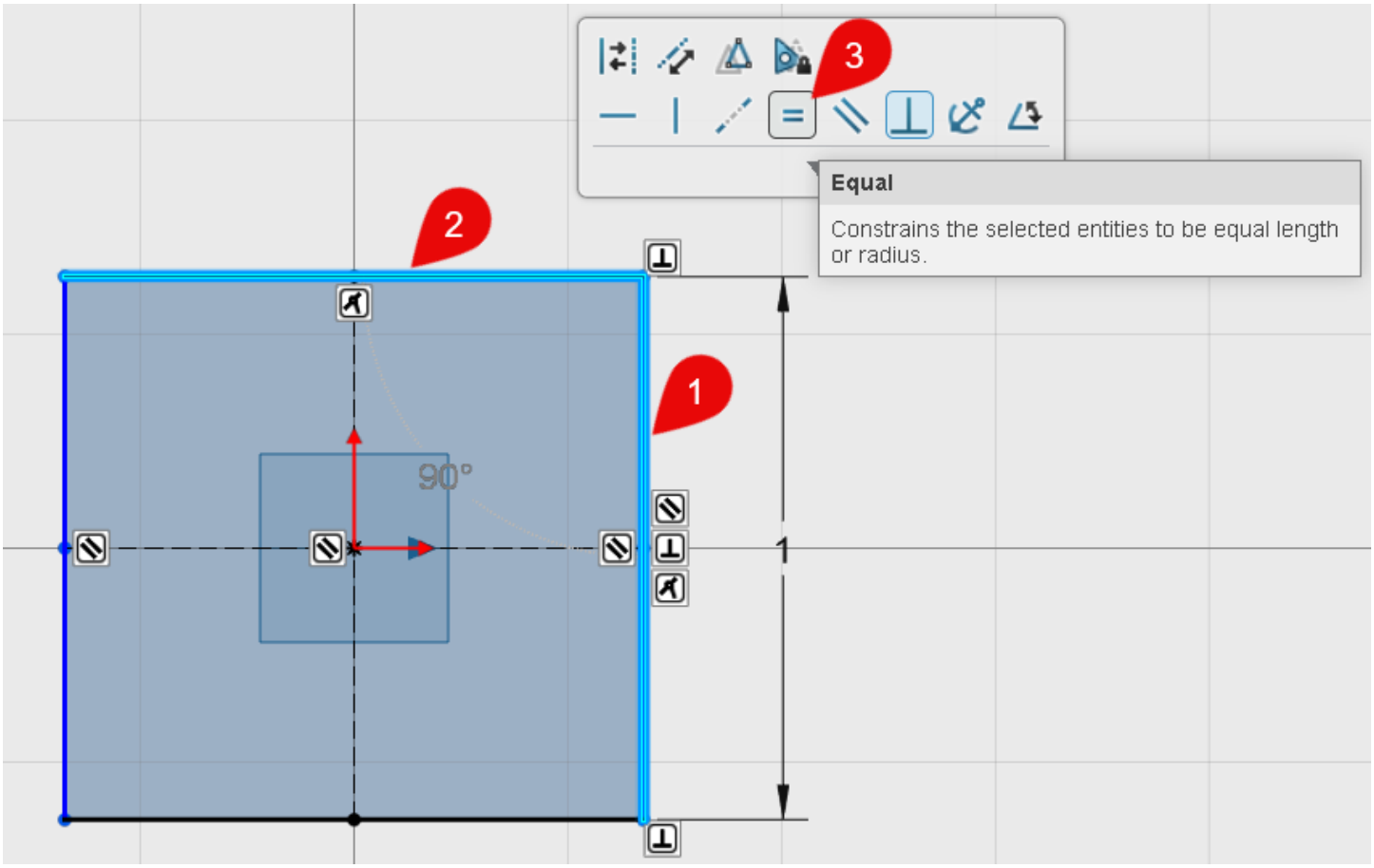
10. Type **1** and then press **Enter**



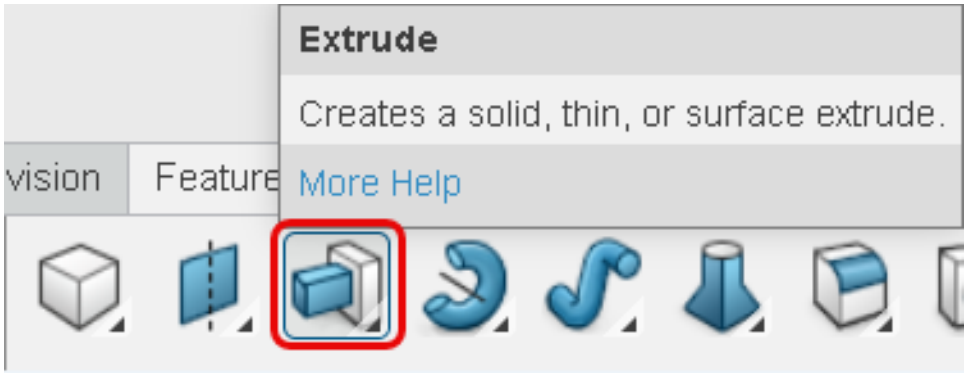
11. Hold down the **CTRL** key on the keyboard.

12. [1] Select one of the vertical lines on the rectangle, then [2] select one of the horizontal lines

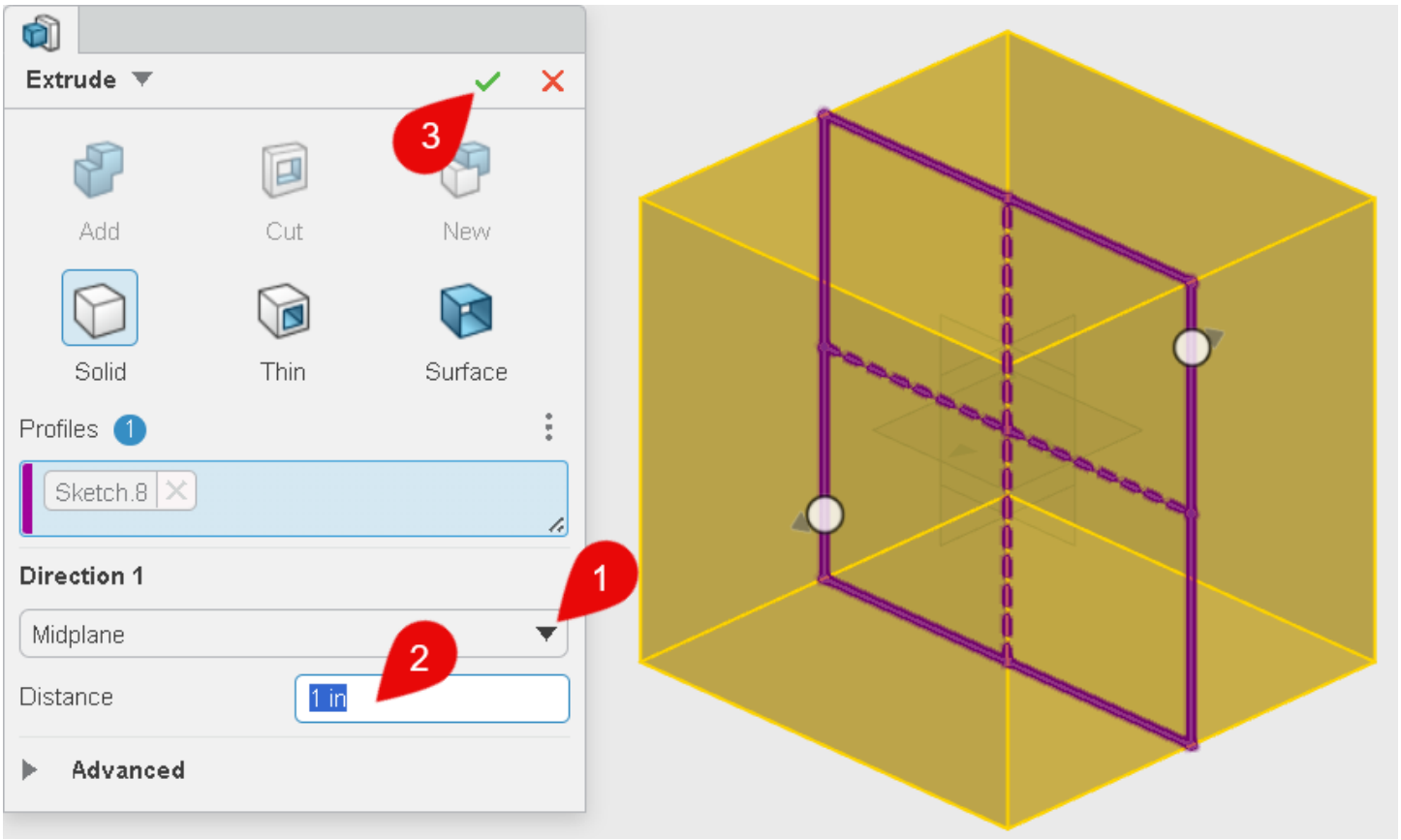
13. Release the CTRL key and then [3] click the **Equal** sketch constraint



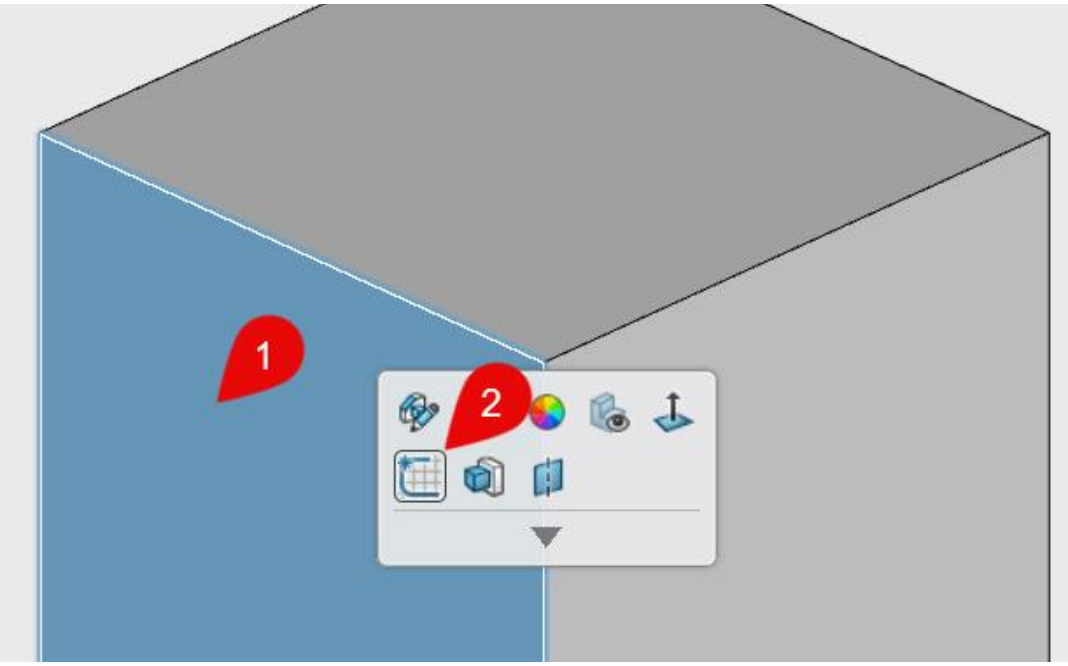
14. Click the **Extrude** command on the Features tab of the Action Bar



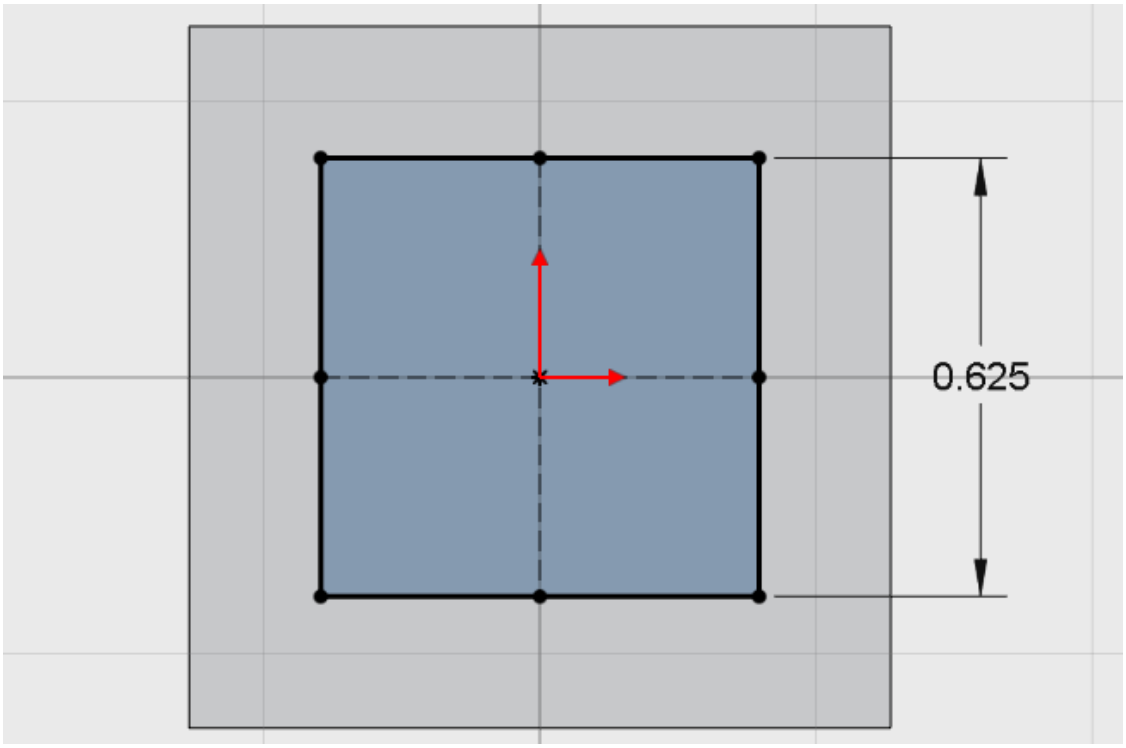
15. [1] Change the “Direction 1” end condition to **Midplane**, [2] type **1 in** into the “Distance” field, and then [3] click **OK**



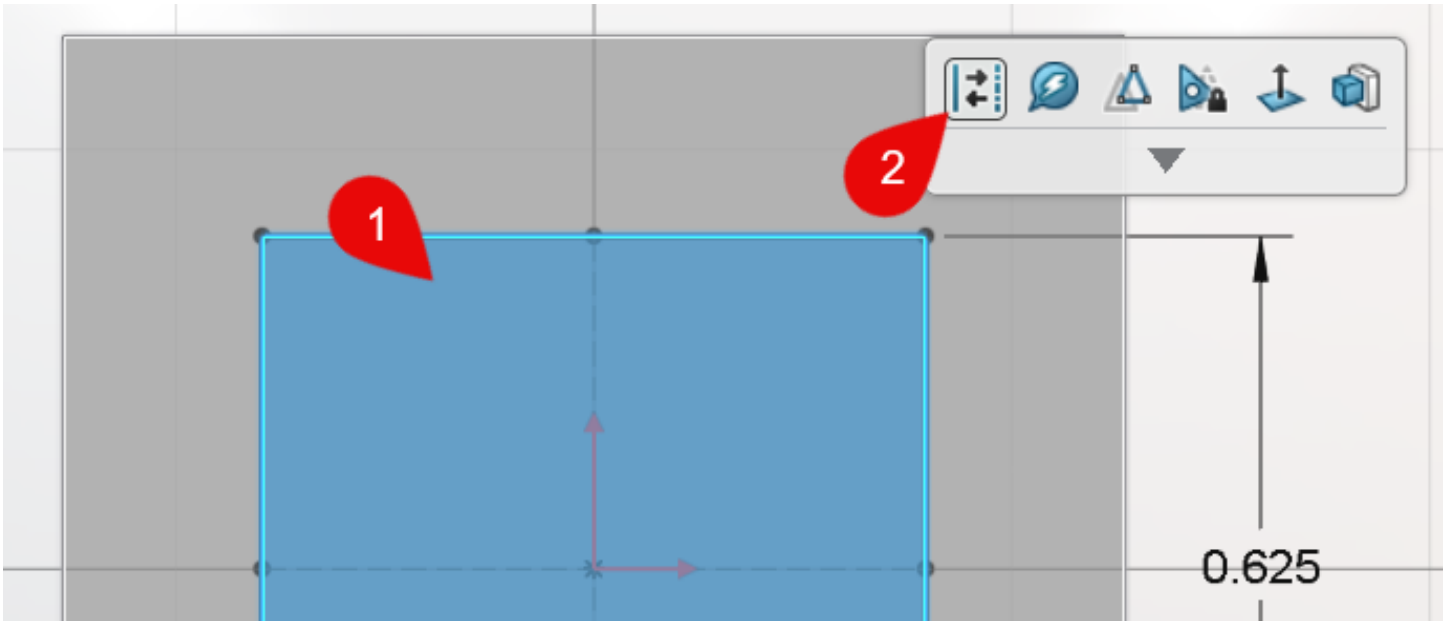
16. [1] Click the front face of the cube, and then [2] click the **Create Sketch** button



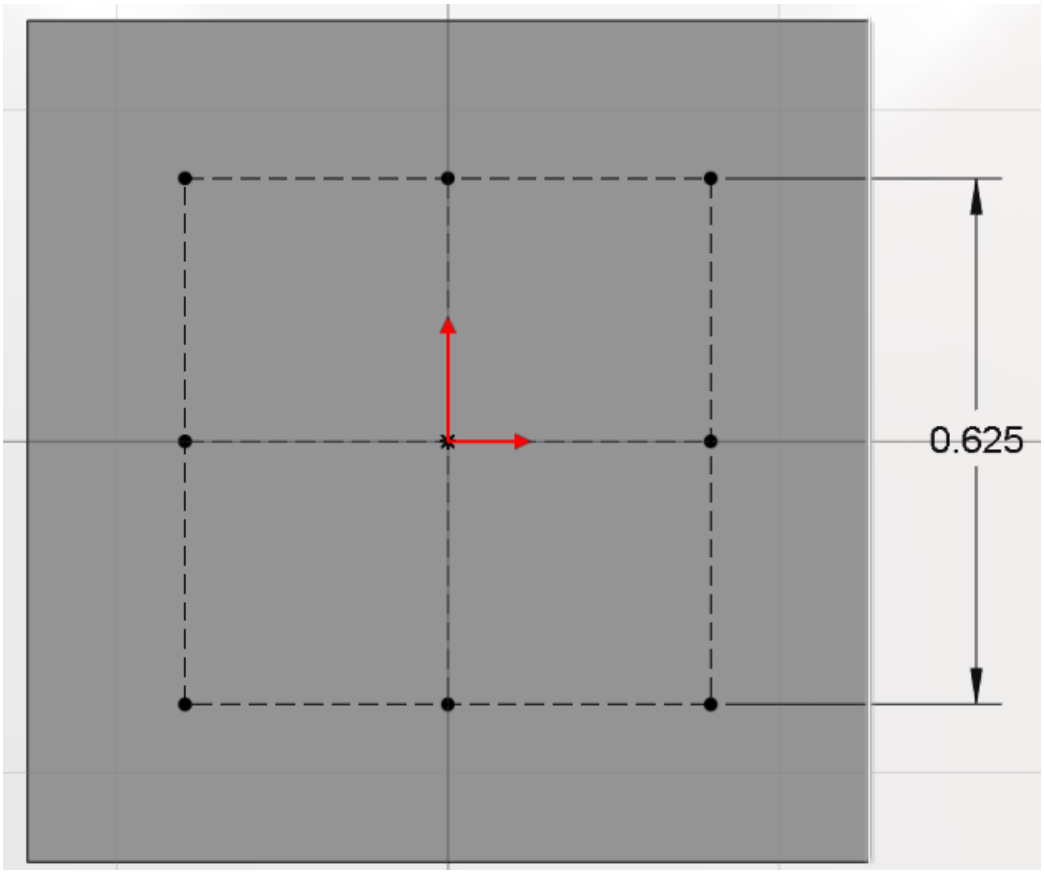
17. Using steps similar to those in 8 through 13, sketch a 0.625 in. square centered at the origin



18. [1] Select the shaded area of the rectangle, then [2] click the “Construction” icon

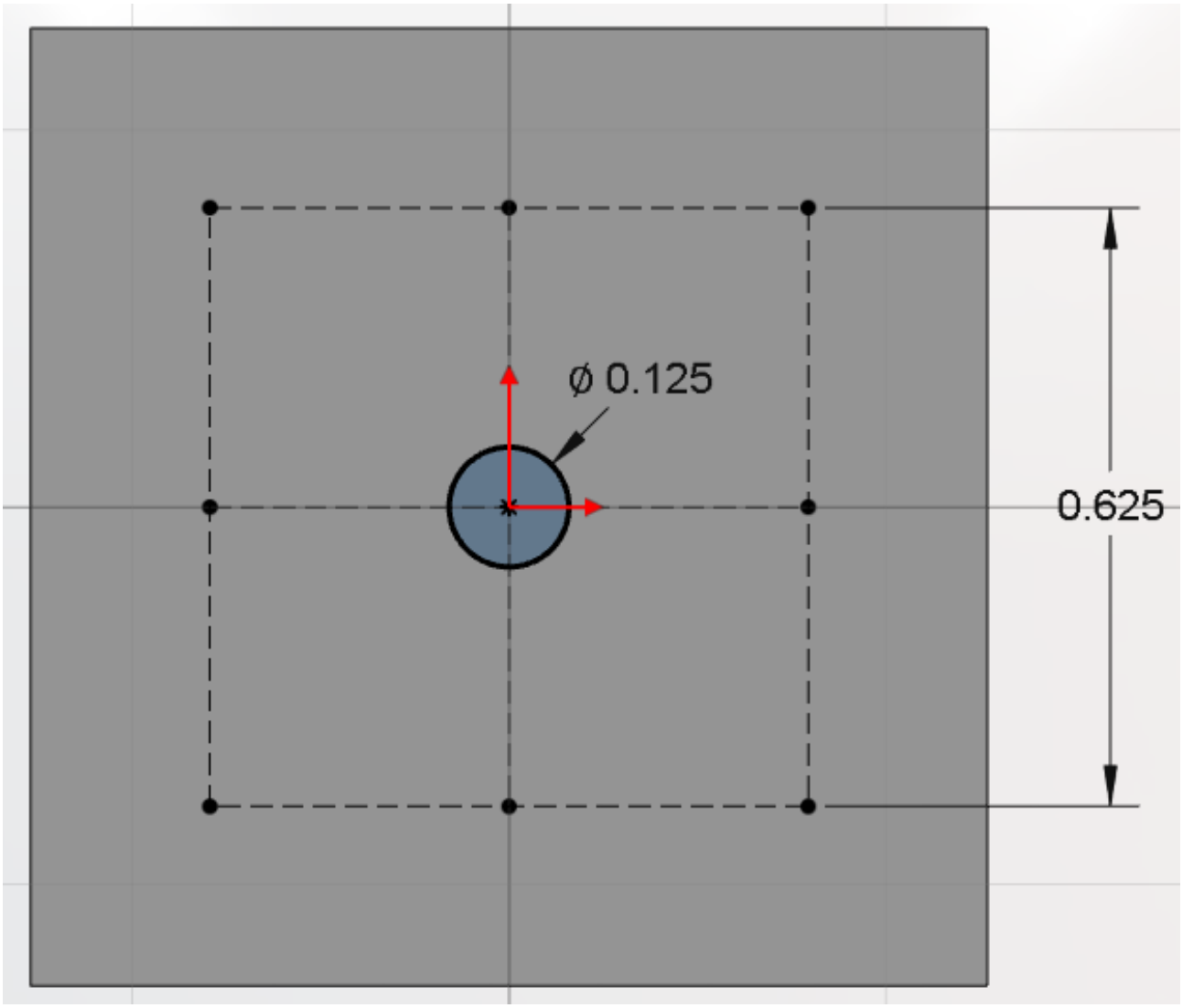


Your sketch will now look like this:

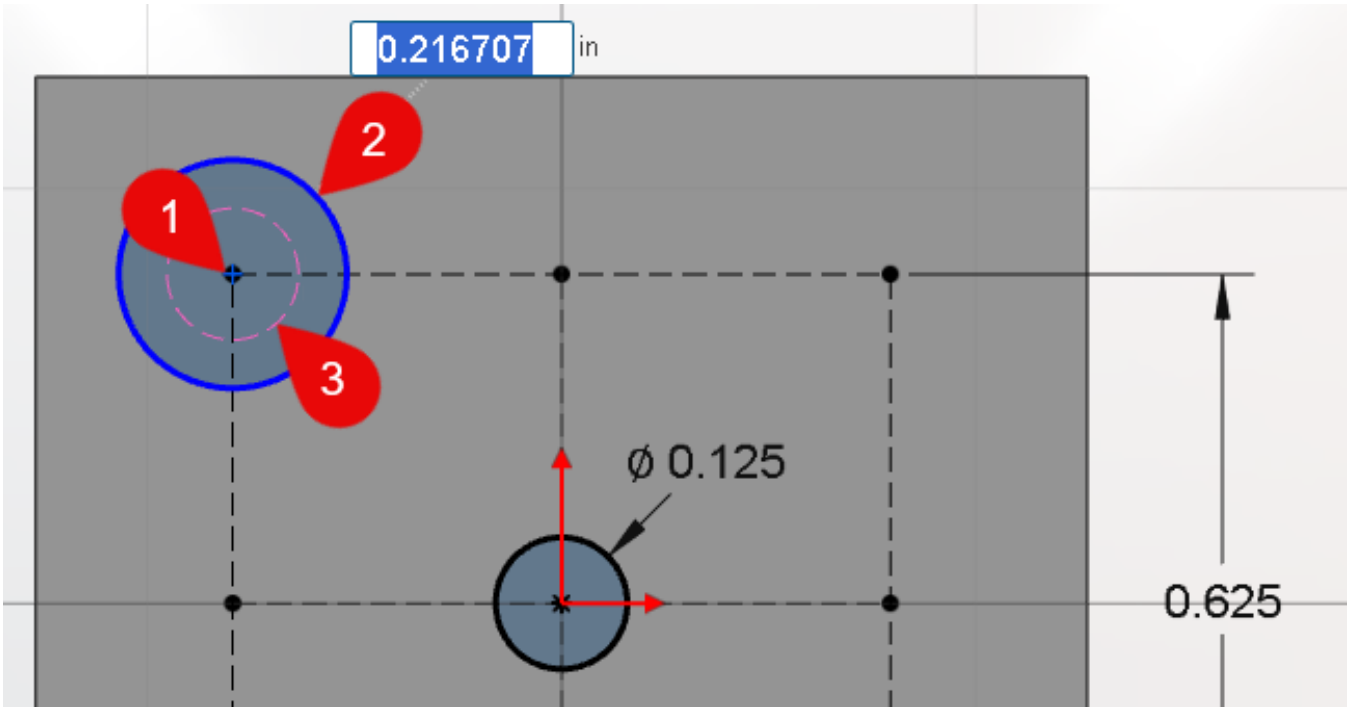


19. Press the letter “**C**” on the keyboard to start the circle command (alternatively, you can click the Circle command on the Action Bar)

20. Click the origin to place the center of the circle, move your cursor up and to the right, type **0.125**, and press **Enter**

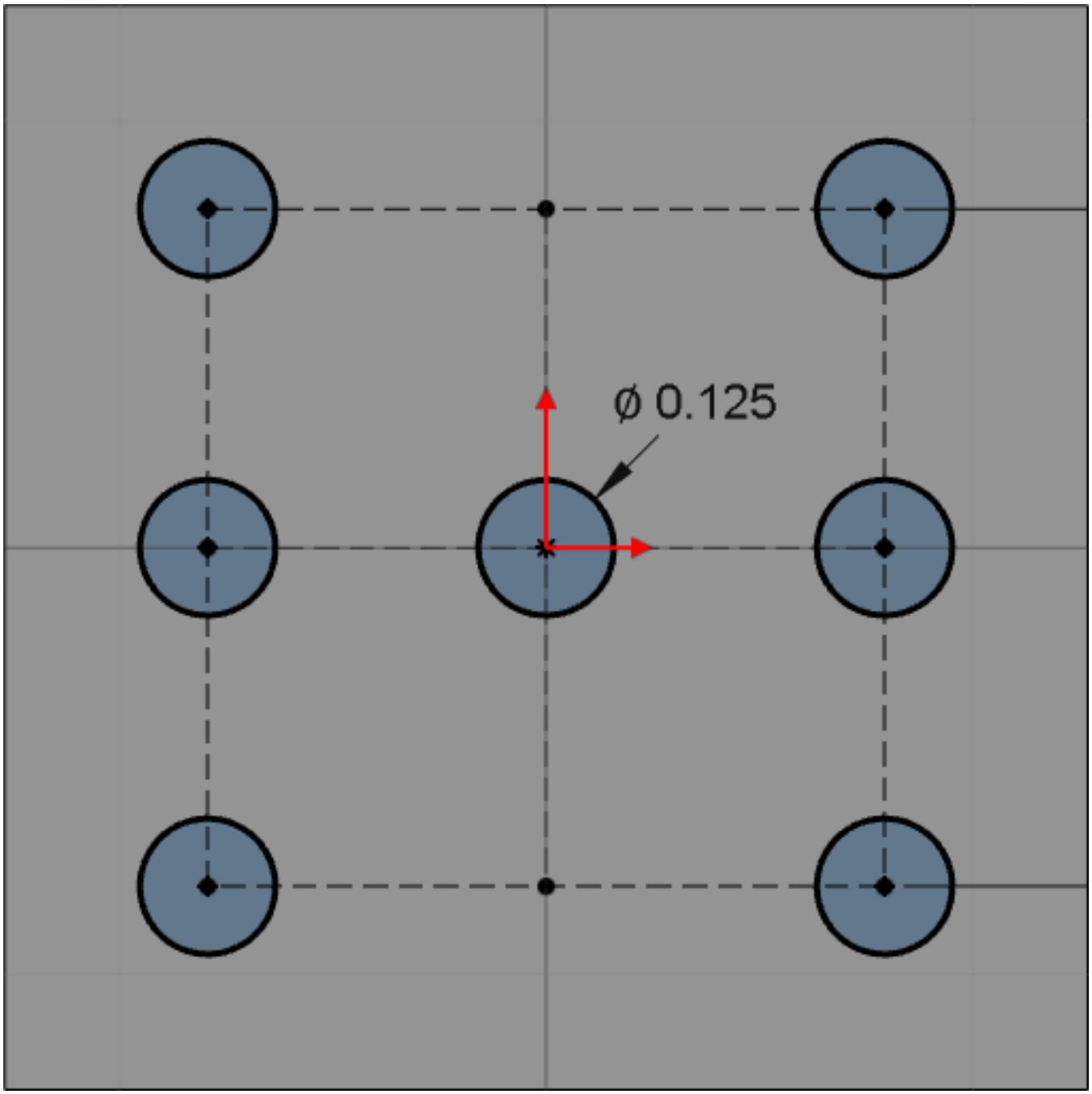


21. Click the point at the upper left-hand corner of the sketch to place the center of another circle, move your cursor up and to the left, snap it to the pink, dashed circle and then click to finish drawing the circle.

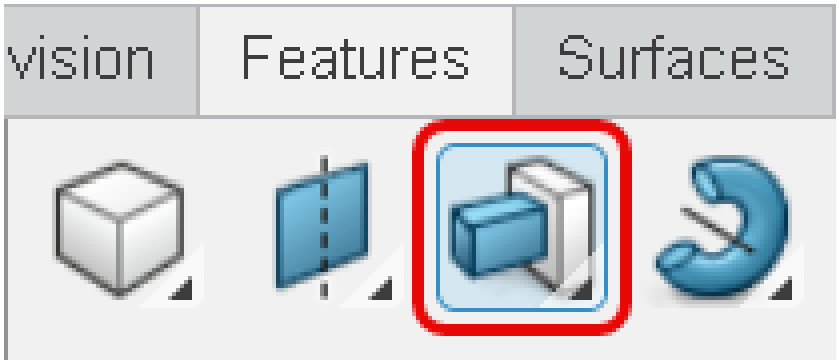


NOTE: snapping to the pink, dashed circle creates an equal constraint to the diameter of the first circle.

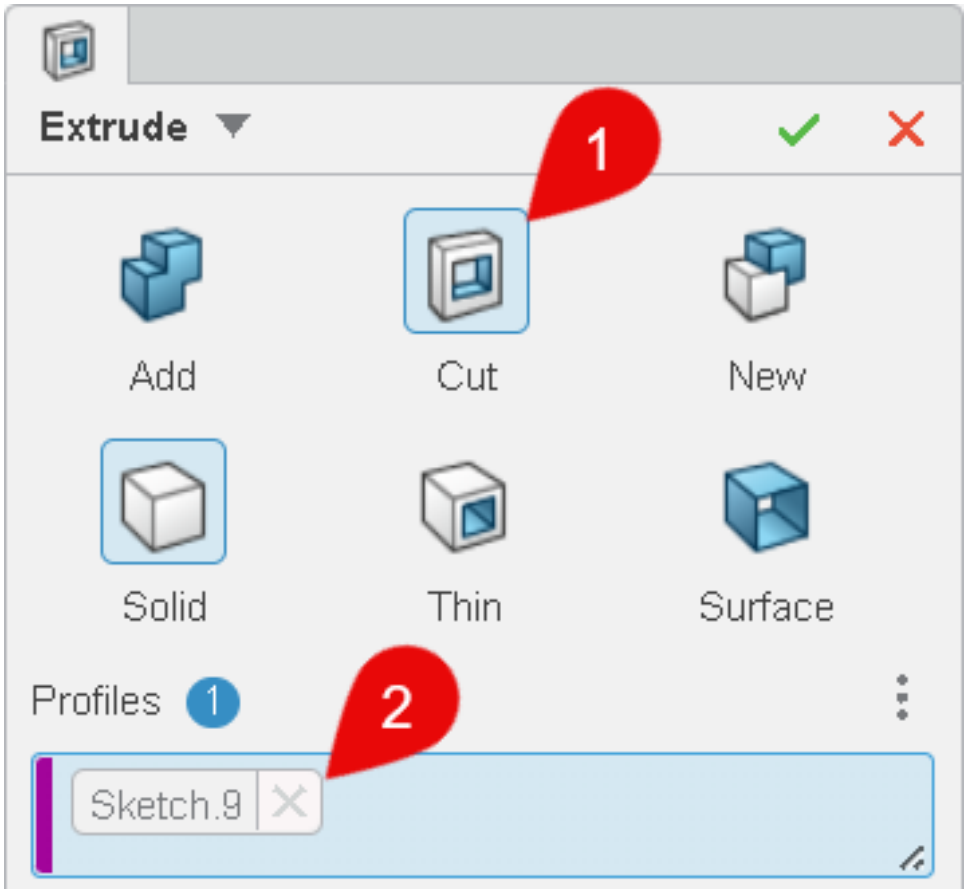
22. Repeat the process of sketching a circle and snapping it to the pink, dashed circle until your sketch looks like this:



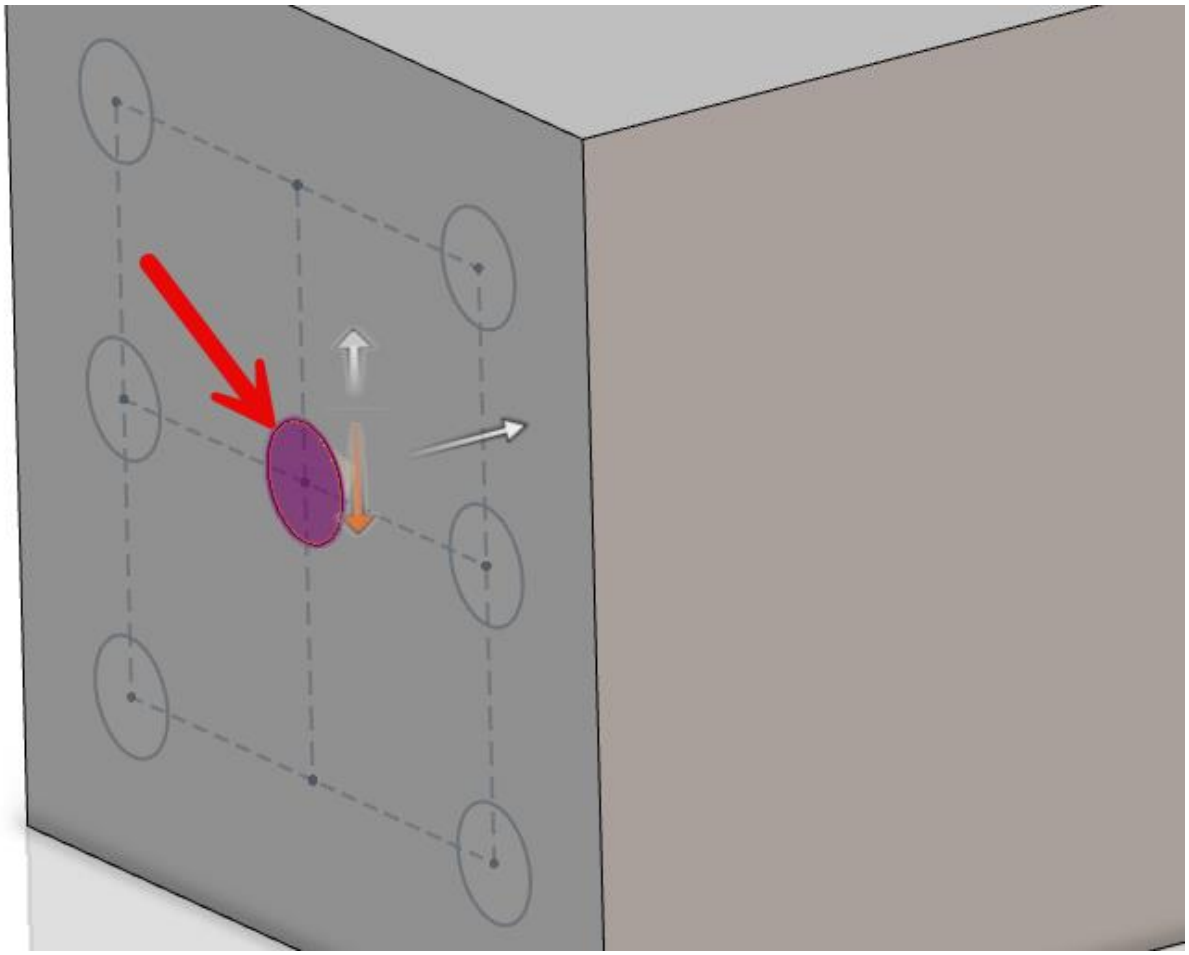
23. Click the **Extrude** command on the Features tab of the Action Bar



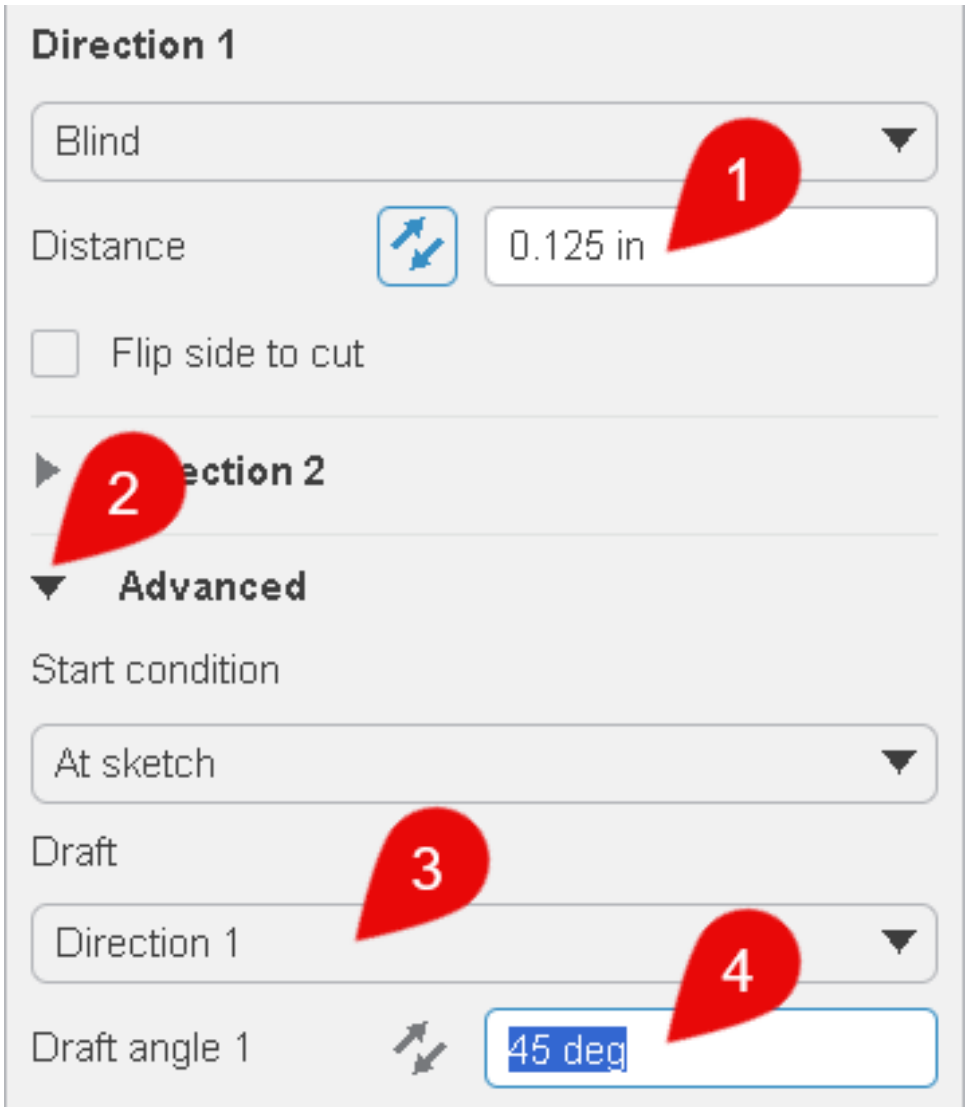
24. [1] Click **Cut**, and then [2] click the "**X**" next to the sketch in the profiles selection box to remove it from the list



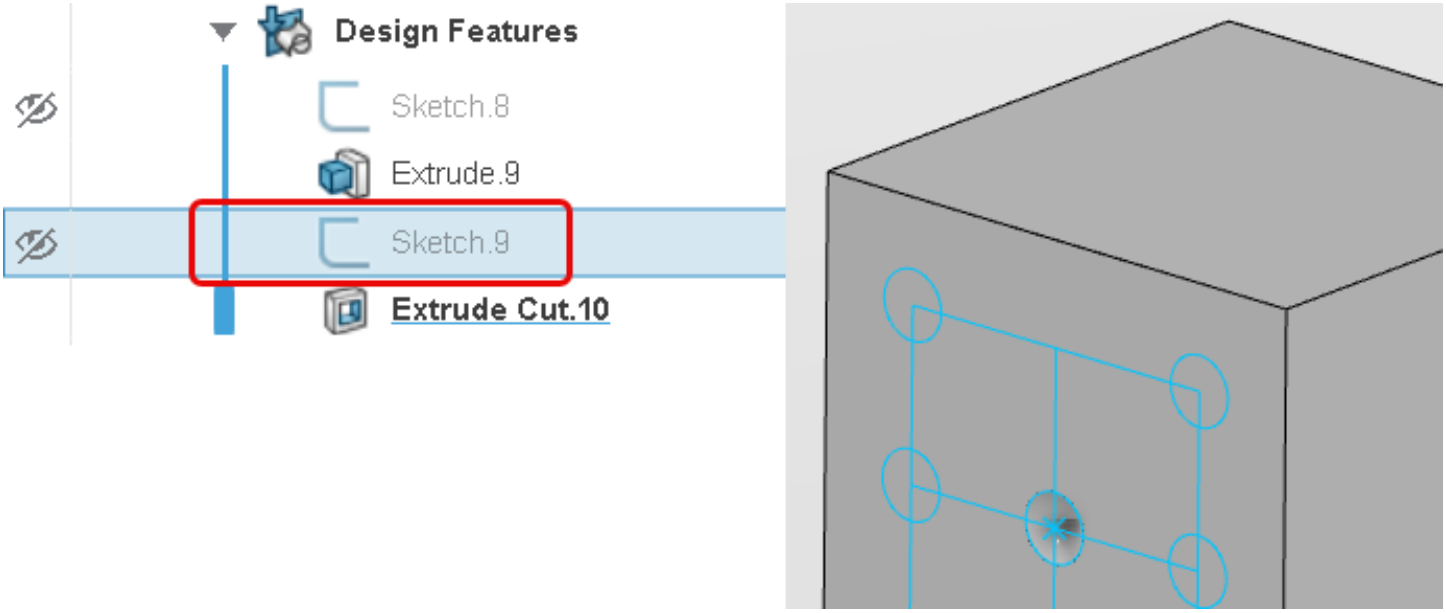
25. Select the circle at the center of the die



26. [1] Set the extrude distance to **0.125 in**, [2] expand the Advanced section, [3] turn on draft in **Direction 1**, [4] set the draft angle to **45 deg**, and then click **OK**

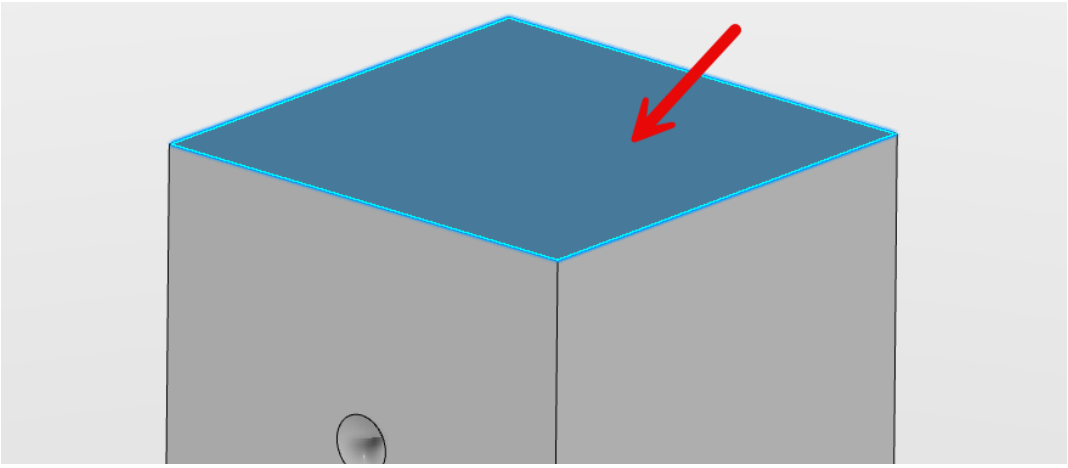


27. Select the sketch in the Design Manager that contains all the circles



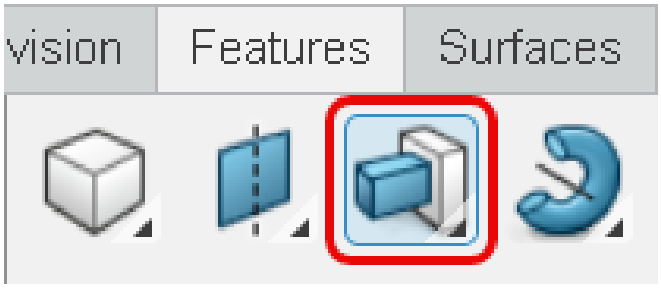
28. Press **CTRL+C** on the keyboard to copy the sketch

29. Select the top face of the die

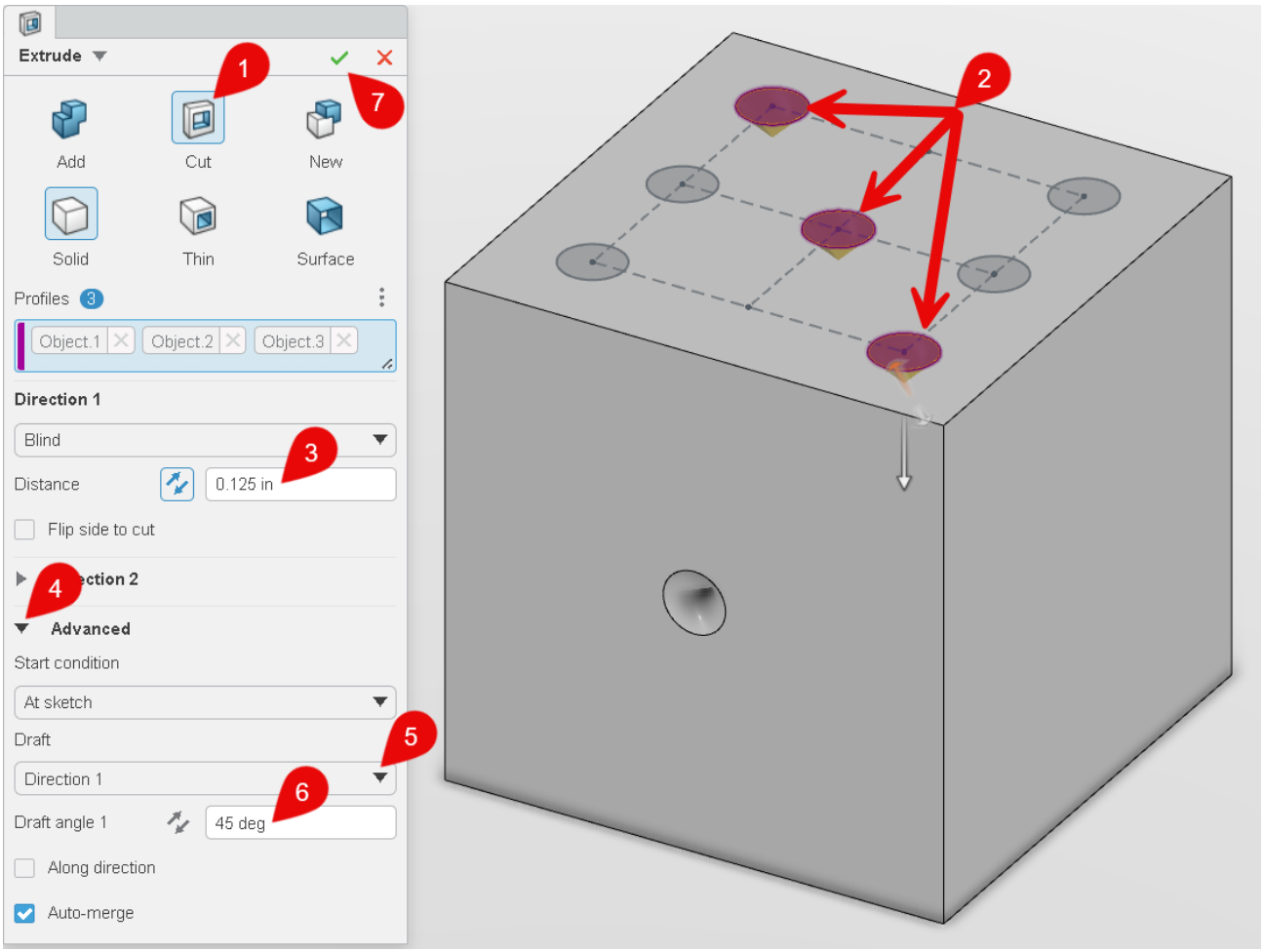


30. Press **CTRL+V** on the keyboard to paste the sketch

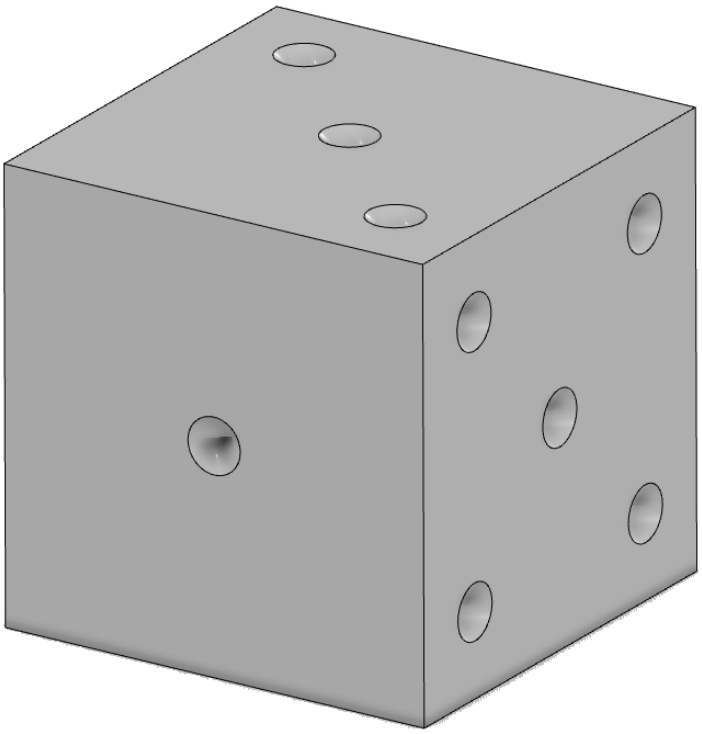
31. Click the **Extrude** command



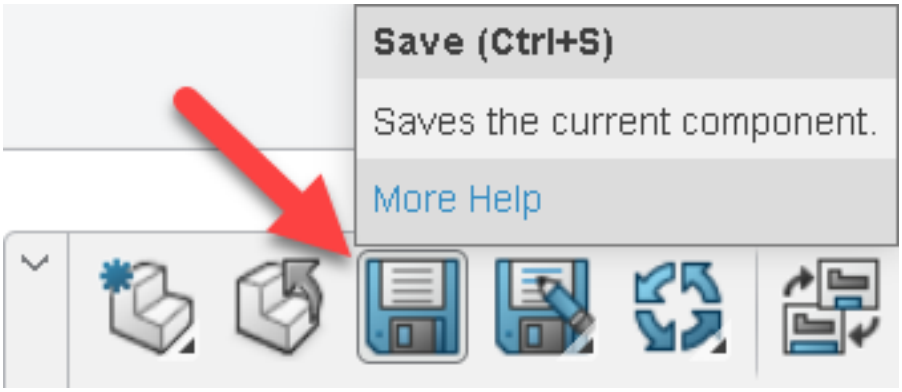
32. [1] Click **Cut**, [2] select the three circles shown below, [3] Set the extrude distance to **0.125 in**, [4] expand the Advanced section, [5] turn on draft in **Direction 1**, [6] set the draft angle to **45 deg**, and then [7] click **OK**



33. Repeat steps 27 through 32 four more times to paste the circle sketch onto the remaining faces of the die and create cuts for the dots. Each time, select a different quantity and position of circles to create the classic 1 through 7 numbered dot patterns.

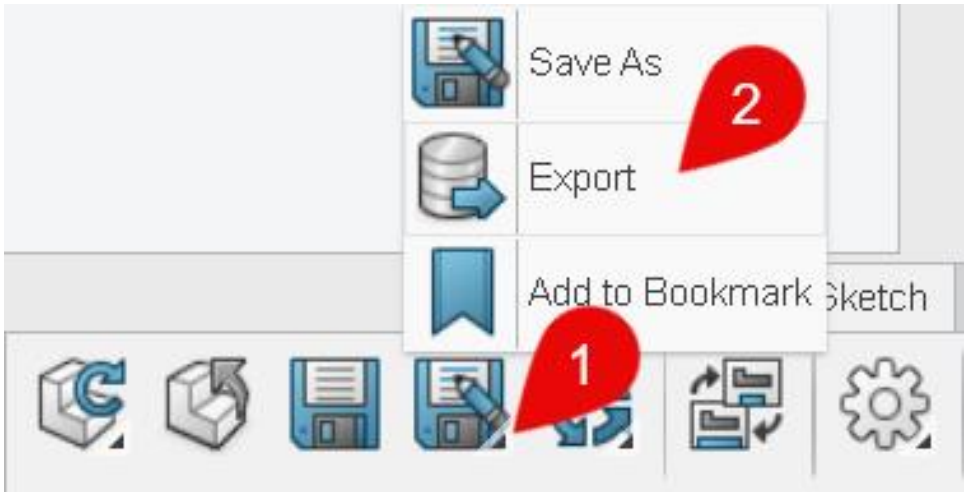


34. Click “Save” on the Action Bar to save your die

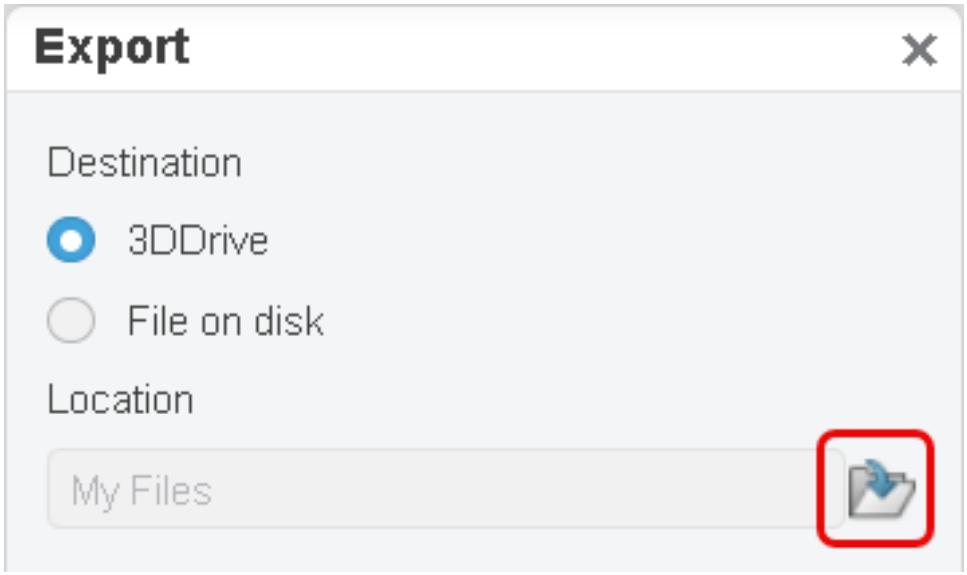


FABRICATE YOUR CUSTOM DIE

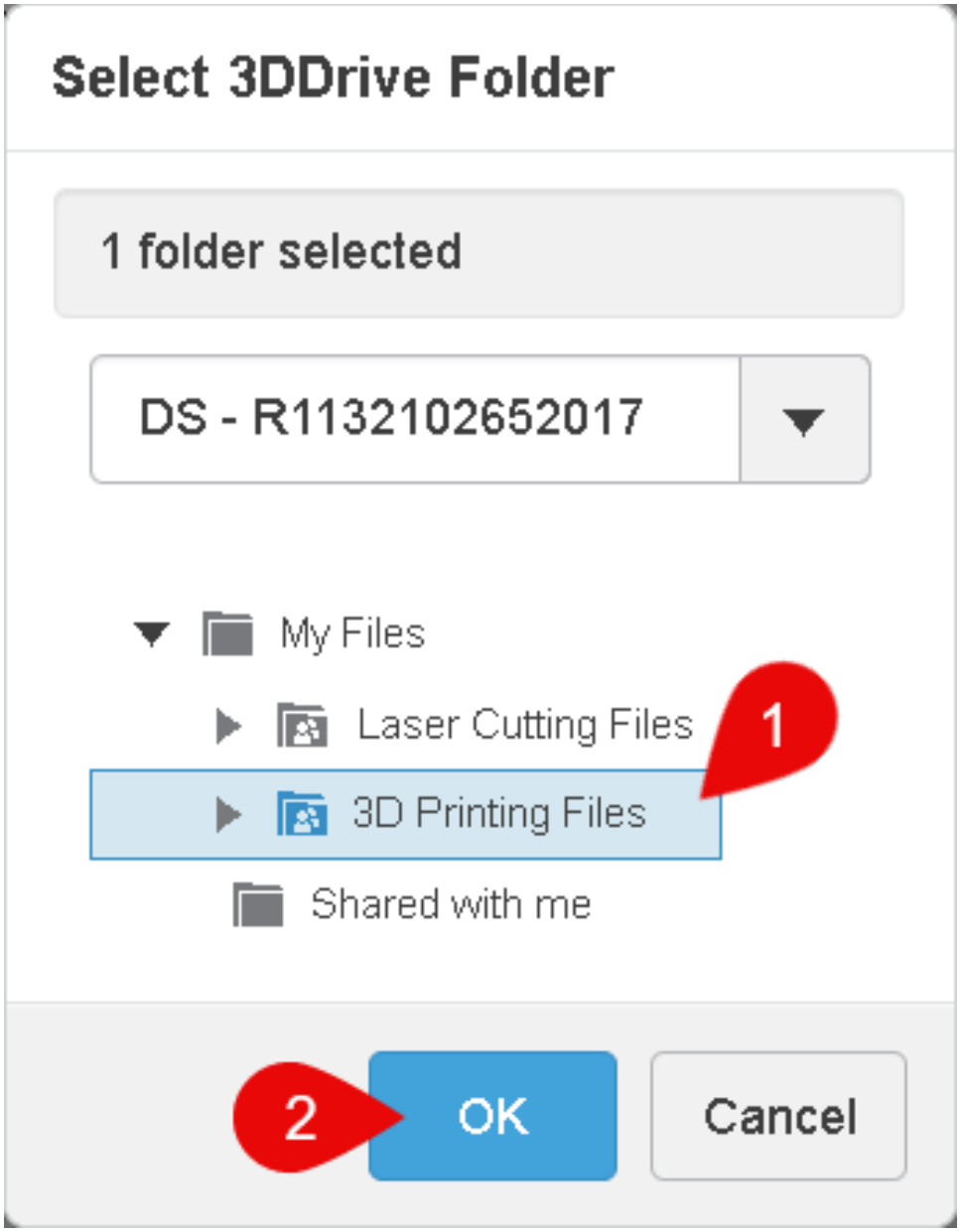
35. [1] Click the flyout corner under the Save As command on the Standard tab of the Action Bar, and then [2] click the **Export** command



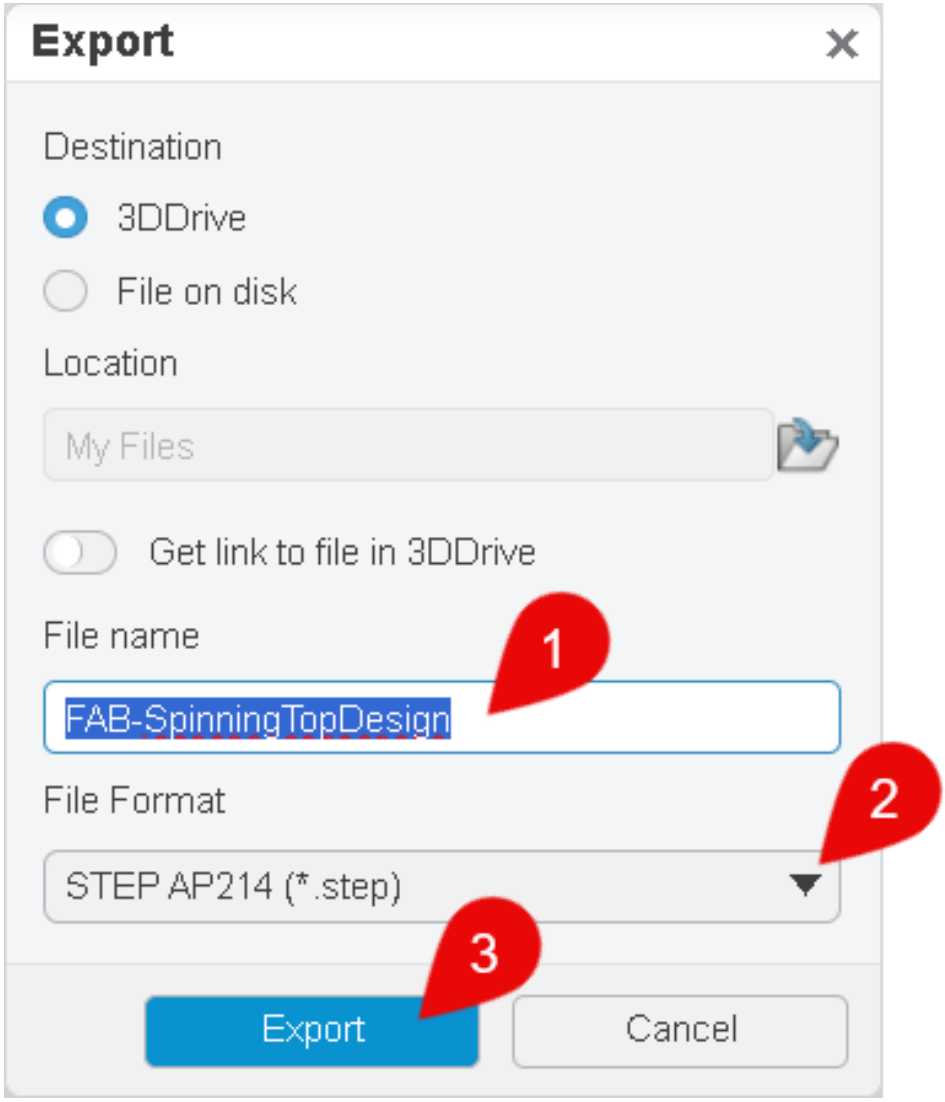
36. Click the Location folder button



37. [1] Select the folder your instructor told you to use to save your files, then [2] click **OK**



38. [1] Give the file a unique name, [2] change the format to “**STEP AP214**”, and then [3] click **Export**



Congratulations!

You’re ready to 3D print your custom die!

See your teacher for further instruction!