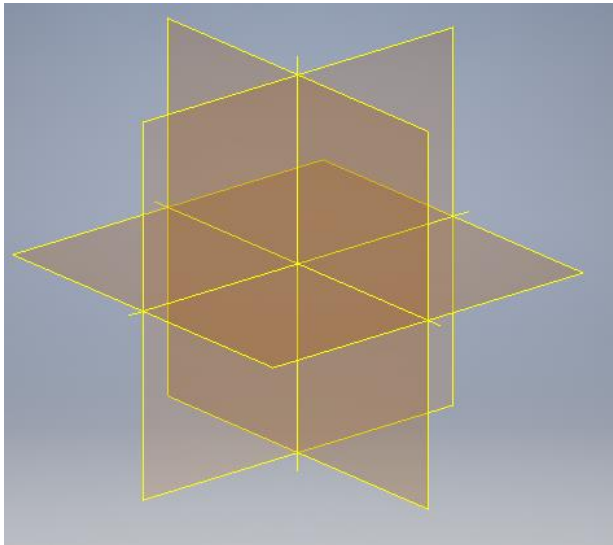


Inventor Project: Dice

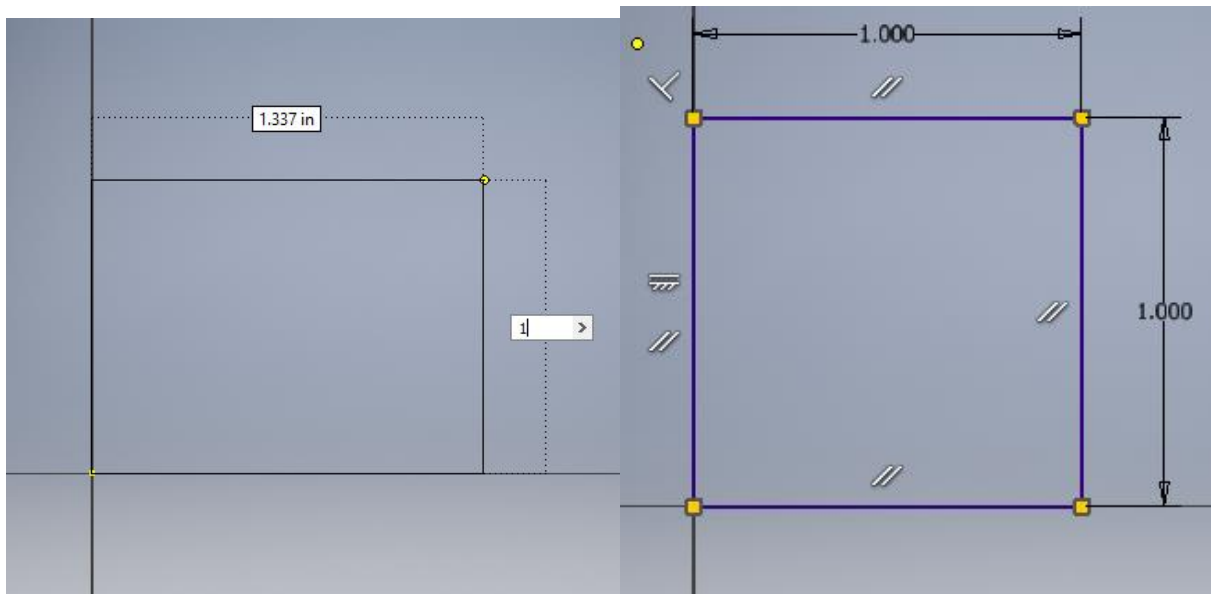
Part 1: Cube and Fillet

Begin this assignment by starting a new file in Inventor in the Standard format with the measurement in inches. (Standard.ipt)

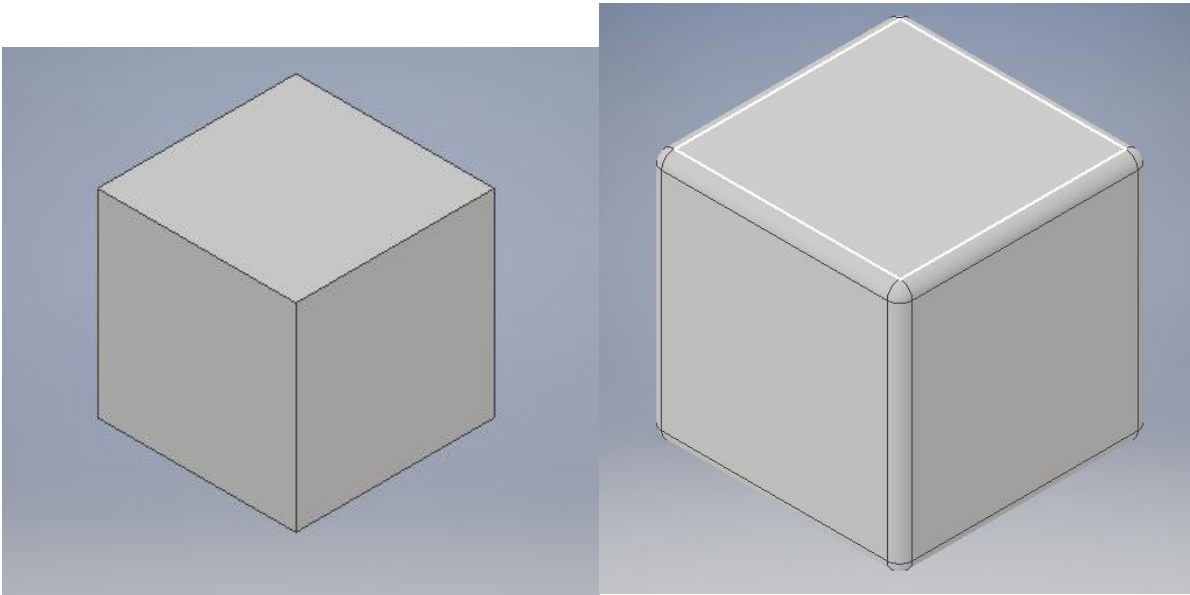
Create a 2D sketch on any of the planes by selecting “Start Create 2D sketch”, and clicking on one of the 2D planes.



Once the sketch is created, draw a square using the rectangle tool that is 1x1 inches. This can be done accurately by typing in the length boxes the exact length one wants.



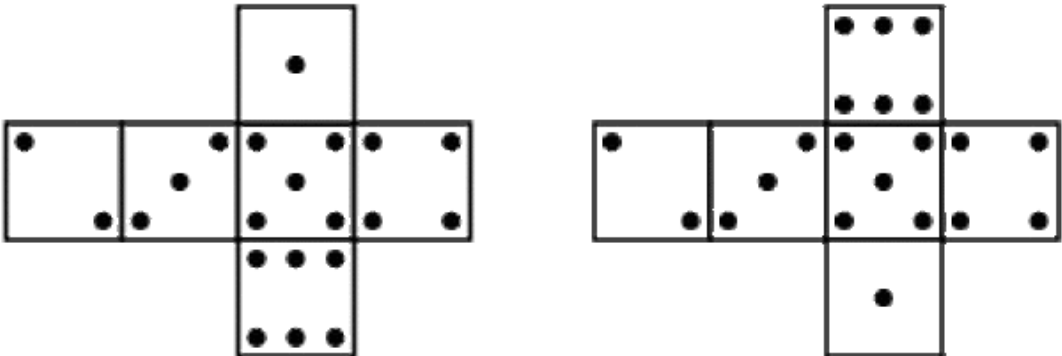
Finish the sketch and extrude the square to a height of 1 inch to make this into a 3D object. Next, use the fillet tool to make all the sides of the cube smooth by the default amount of 0.125 inches.



Part 2: Construction Lines and Placement of Circles

Remember that the die should have faces that oppose one another.

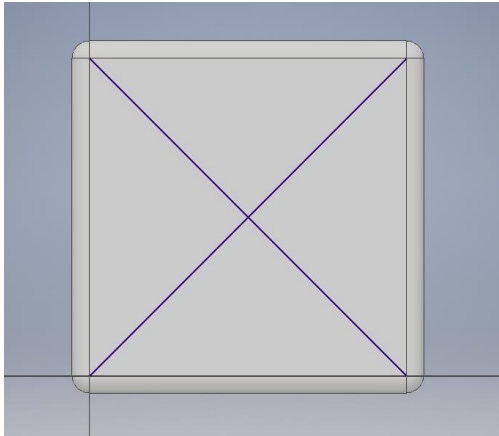
Ex: (1,6 faces should be on opposite sides)



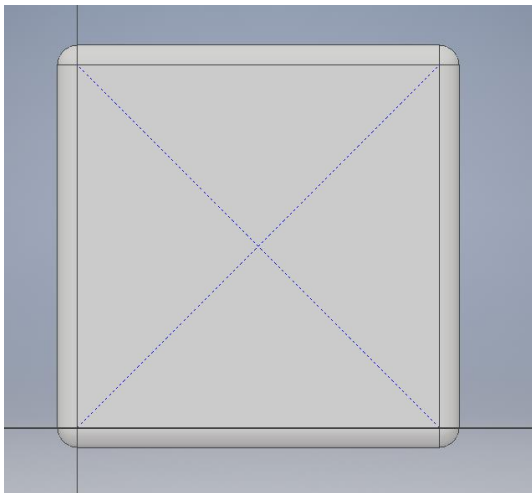
2 CONFIGURATIONS OF 6 SIDED DICE

When creating the sketches for the faces, keep in mind which face is used to make each side of the die as stated above.

1 Sided Face: Create a 2D sketch on one of the sides of the cube and draw lines as shown below.

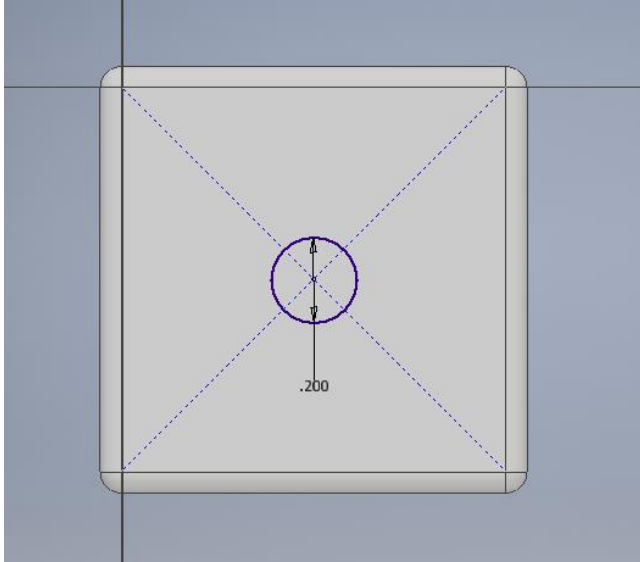


Next, change the lines you made to construction lines by right clicking the line and selecting “construction”. This will change the line to one that does not interfere with outside-sketch actions such as extrusion.



Note* All of the straight lines drawn on 2D sketches of the faces of the cube will be made out of construction lines.

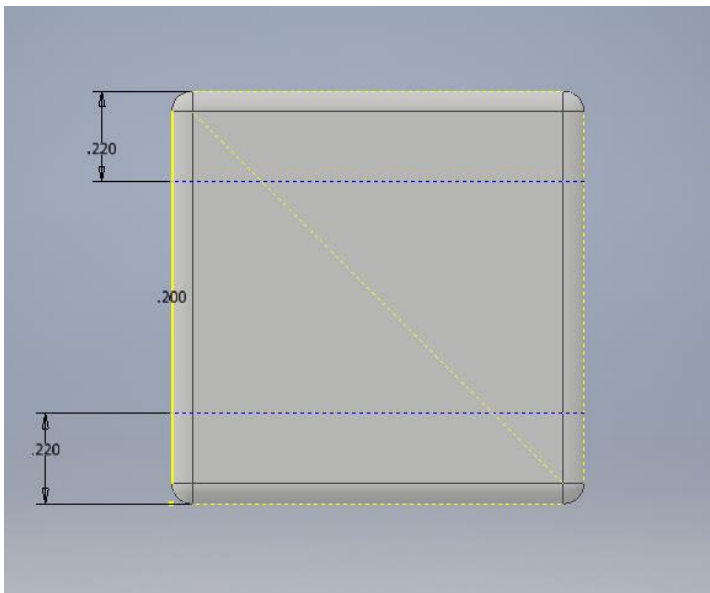
Once this is done, create a circle at the intersection point where the 2 lines meet that has a diameter of 0.2 inches.



Create Circles from now on at all intersections where construction lines meet.

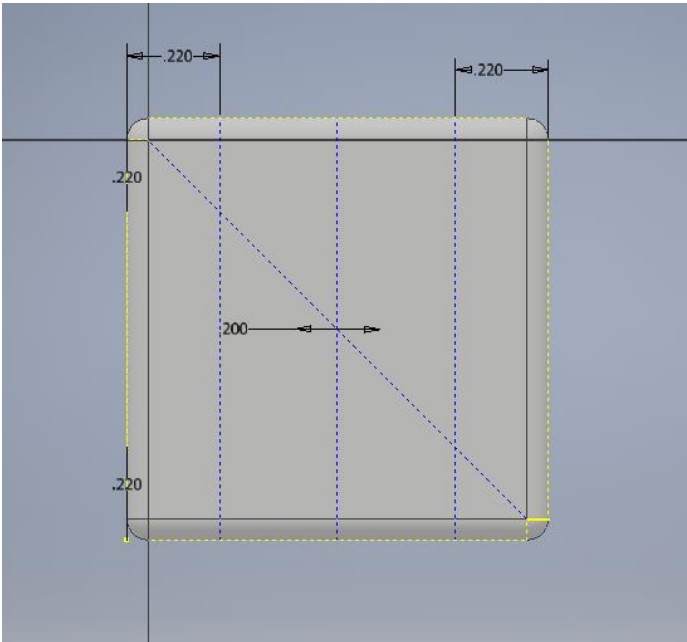
2 Sided Face:

This has the same process as the one sided face, except now, we are going to use the dimension tool under the “Constrain” tab to type in dimensions for the intersecting lines.

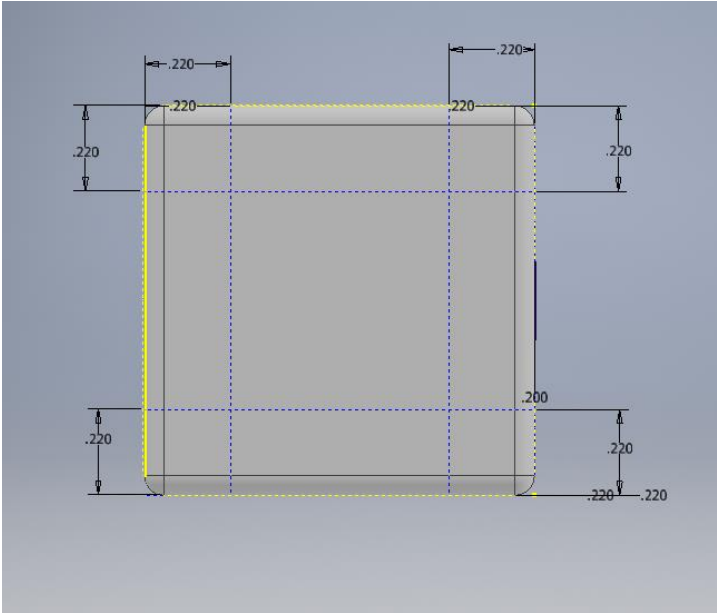


These are all the skills required to mark the locations of the holes on each side of the die. The next few images will show the dimensions and orientation of the construction lines for each side of the die. Remember to also draw circles where lines intersect.

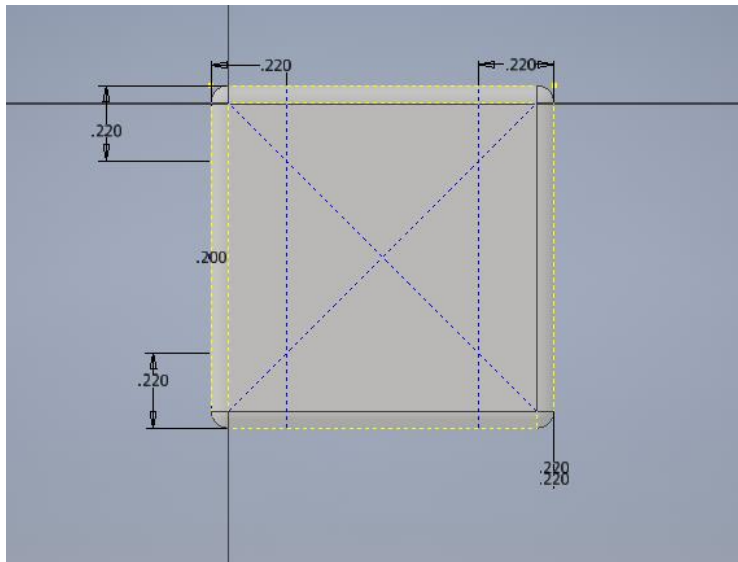
3 Sided Face:



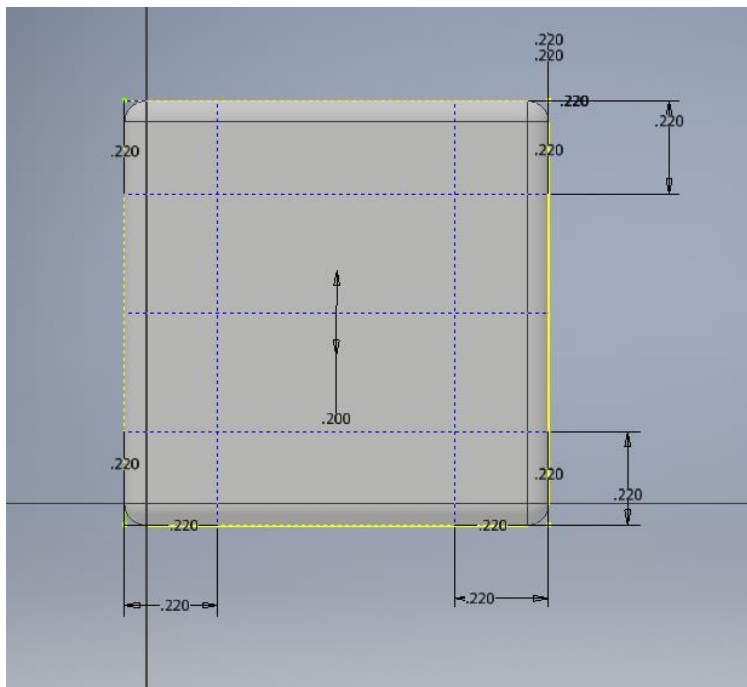
4 Sided Face:



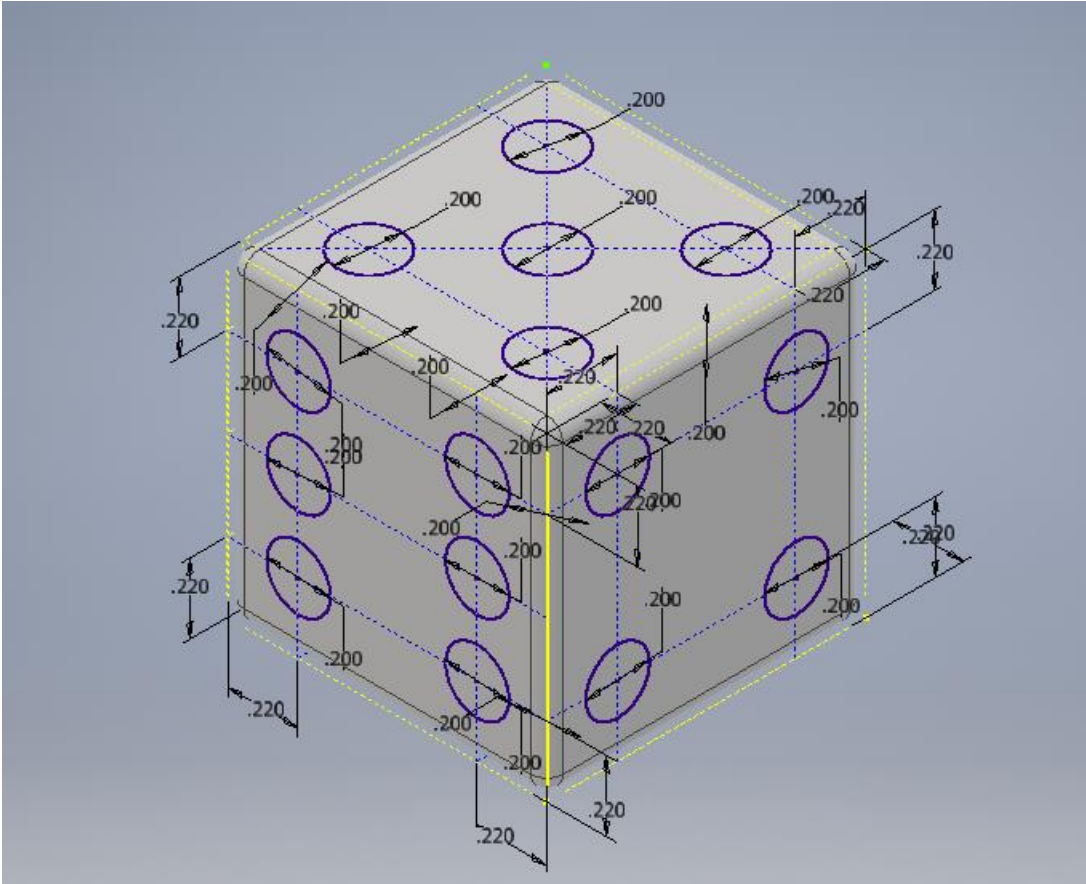
5 Sided Face:



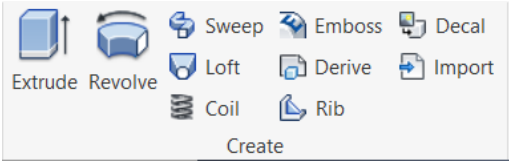
6 Sided Face:

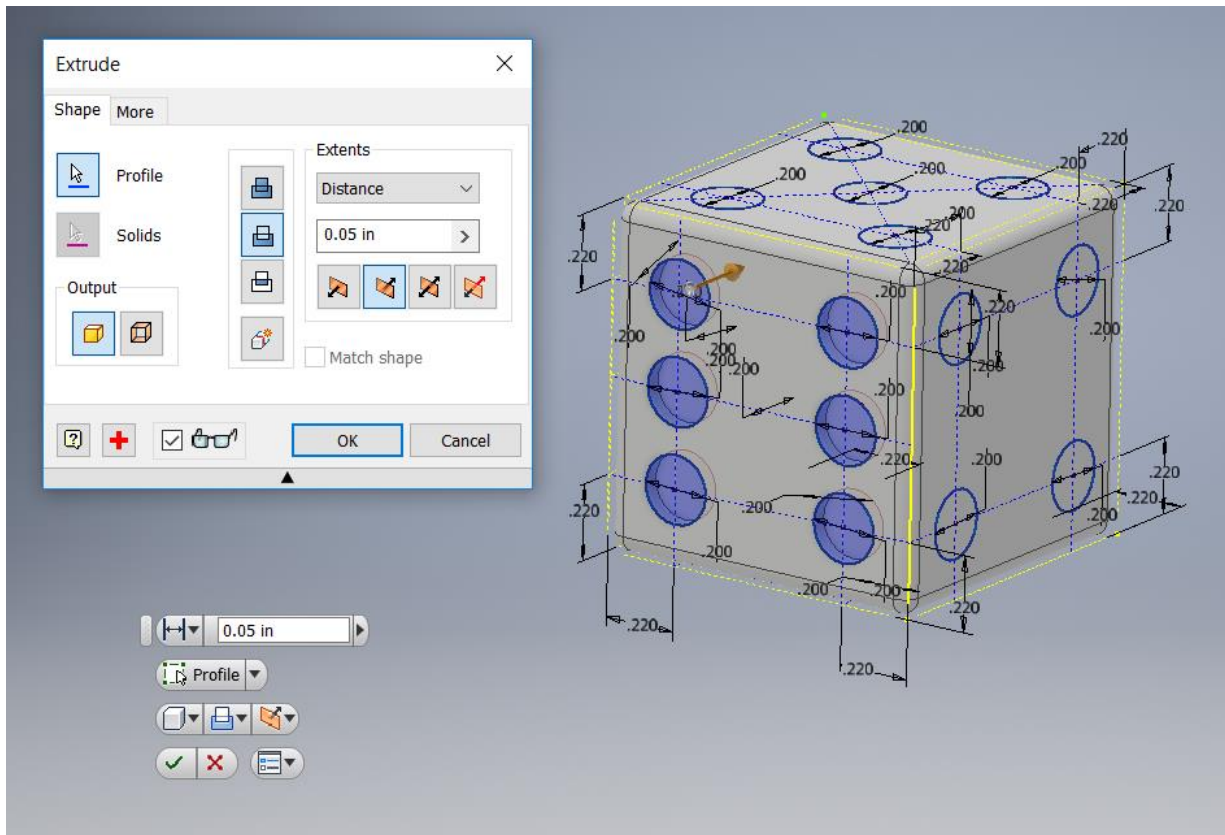


Once all of the circles are created at intersection points, and the orientation of the faces of the die are correct, your die should look something like this.

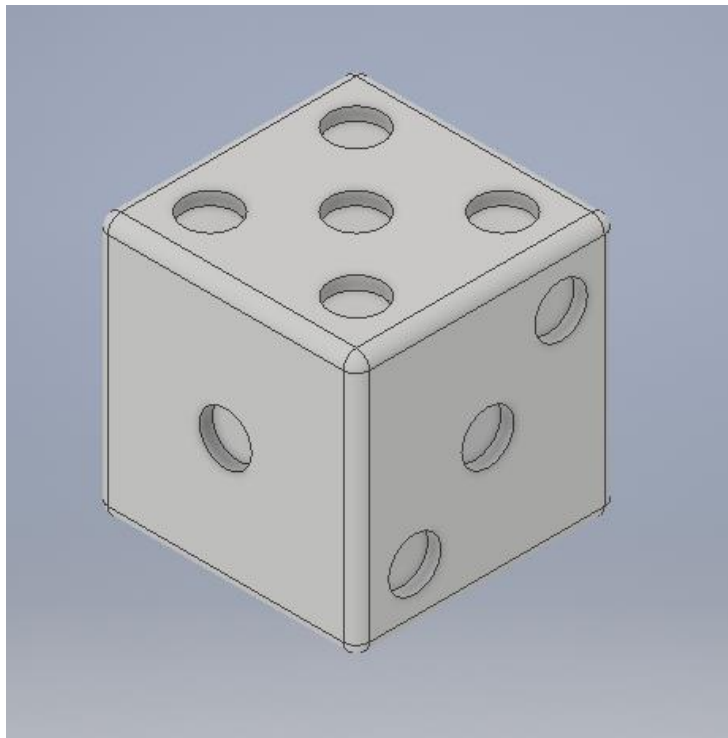


Next, use the extrude tool (under the create tab), and extrude all of the circles inward by a length of 0.05 inches.

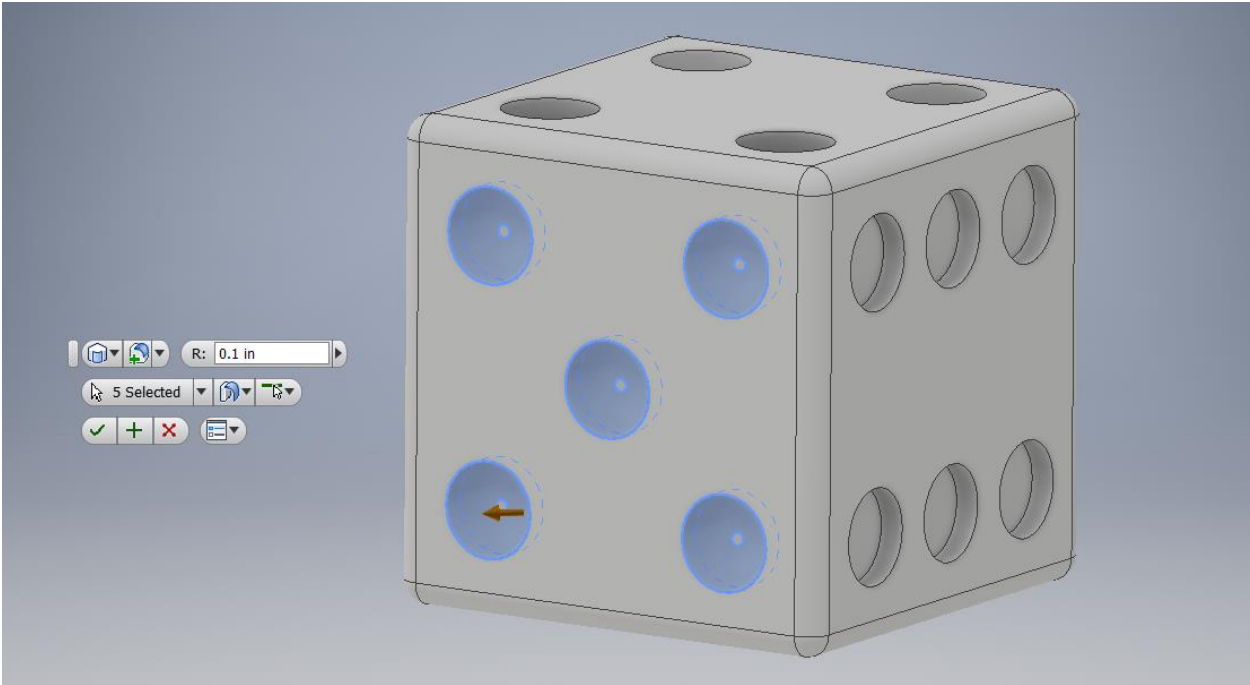
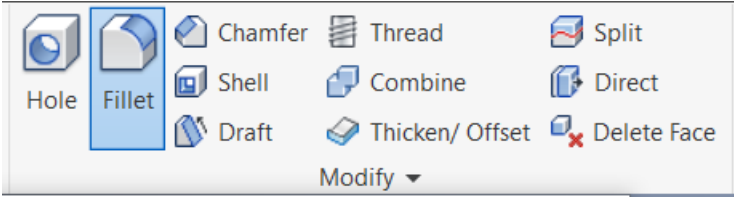




The image below shows how your die should look after the extrusion step.



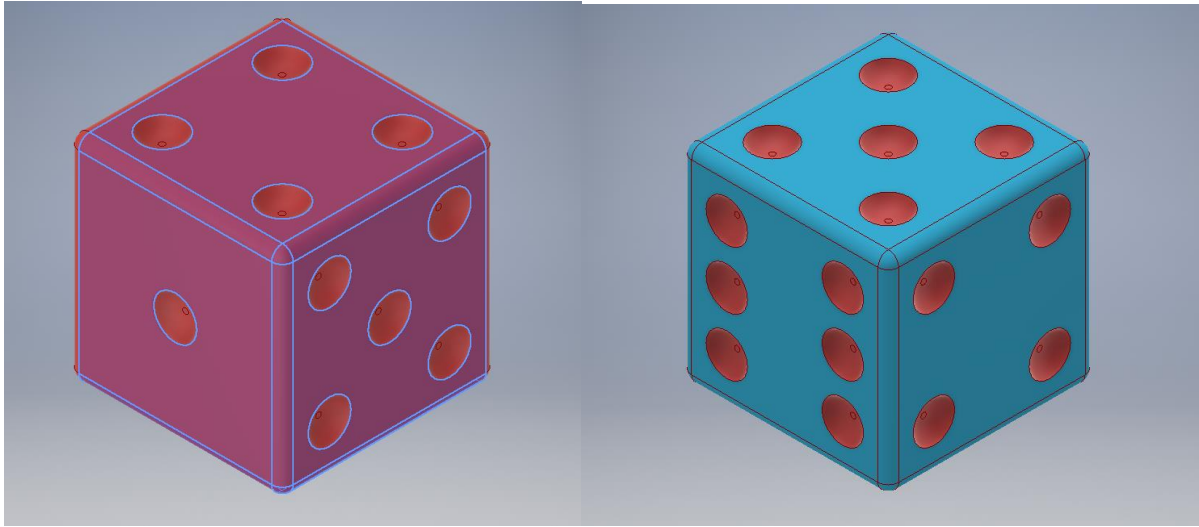
Next step is to fillet the inside edge of the circle extrusion. This can be done by selecting the fillet tool (under the Modify tab), and then selecting the **inside edge** of the circle extrusion. The inside edge will be filleted by a factor of 0.1 inches.



Once all of the edges of your die are filleted, the project can be finished off with a color design for your die. You can do this by going to the top of the inventor browser and clicking on one of the drop down menus for color/texture.



You can also hold shift and select multiple surfaces at once to be colored differently than the rest of your die.



Congratulations, you are now finished your dice project!