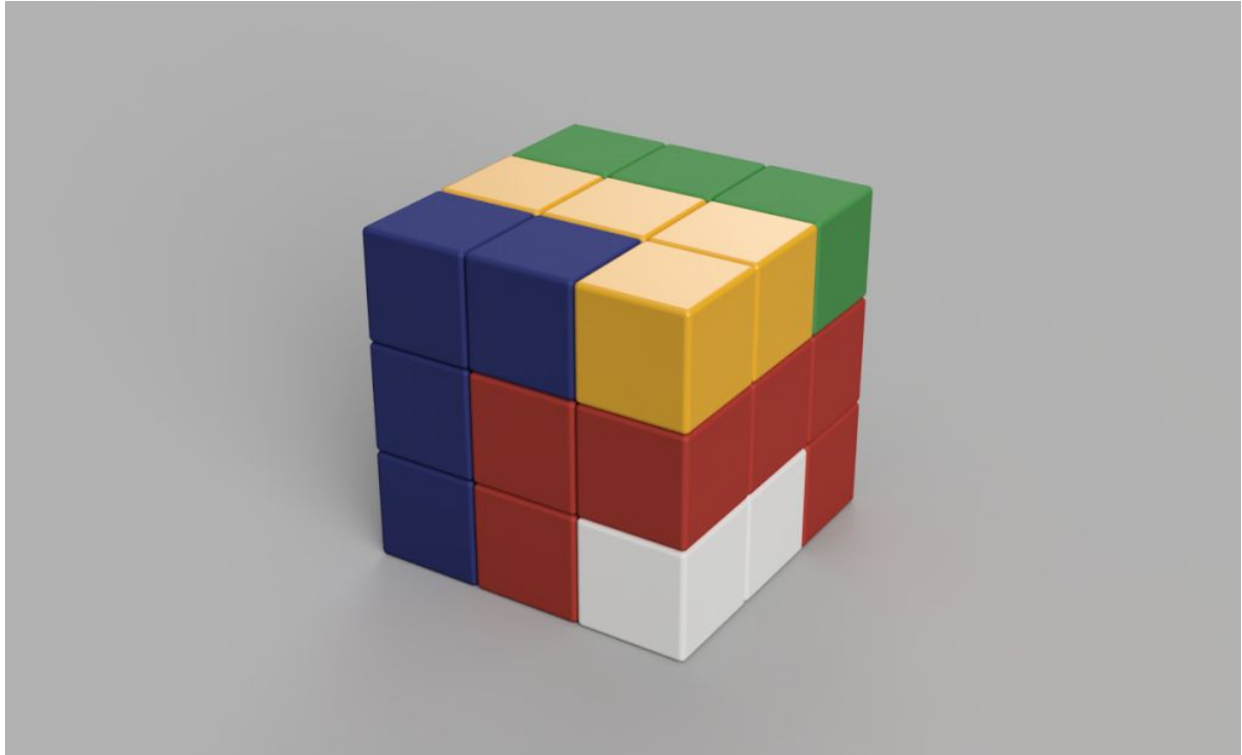
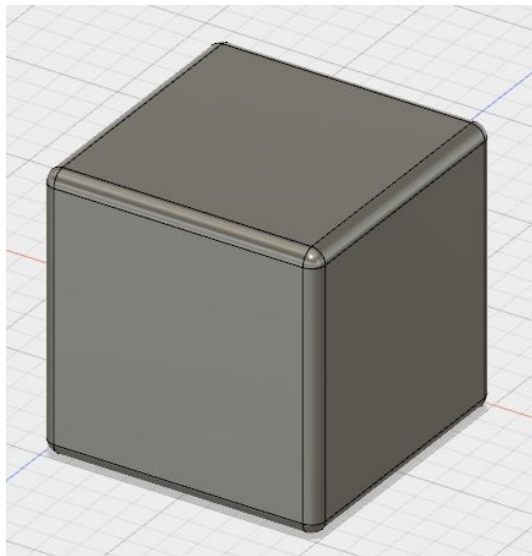


Project: Puzzle Cube

Description: This tutorial will teach you to model, animate, and render a puzzle cube! You'll learn about components, assemblies, appearances, and how to combine components from multiple files. Also, you'll learn some tools to help with presenting your models - the animation and render workspaces! For additional help building the components, watch [this](#) video by a guy on YouTube! Otherwise, if you need help, message one of the instructors!

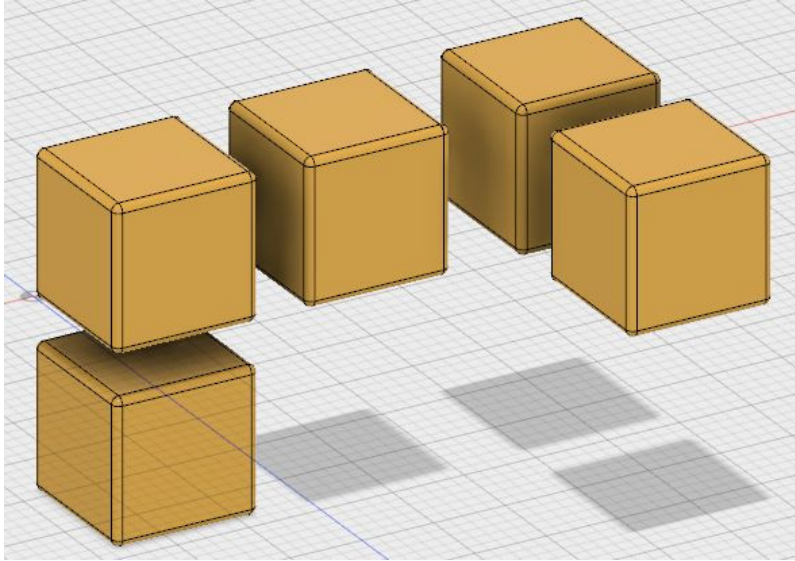


1. Build a cube with rounded corners
 - a. Sketch -> Rectangle -> 2-Point Rectangle: 10x10
 - b. Create -> Extrude: 10
 - c. Modify -> Fillet: Select all 12 edges, radius 0.5
 - d. Right click the object -> Create Component from Bodies: Make this single cube its own component
 - e. Save: Save this file

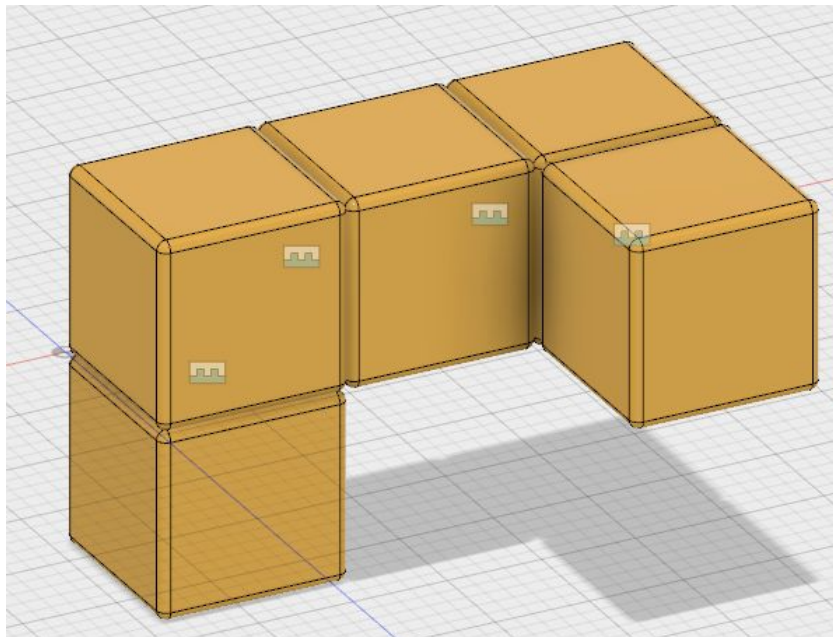


2. Piece 1

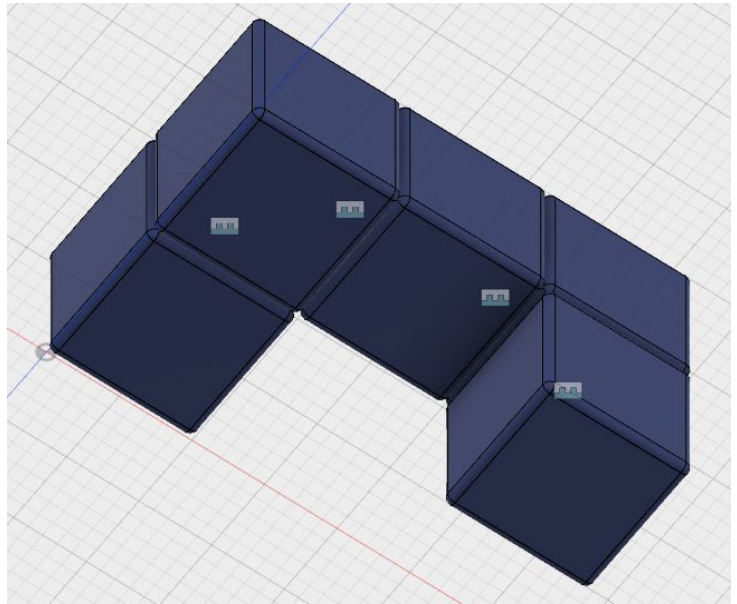
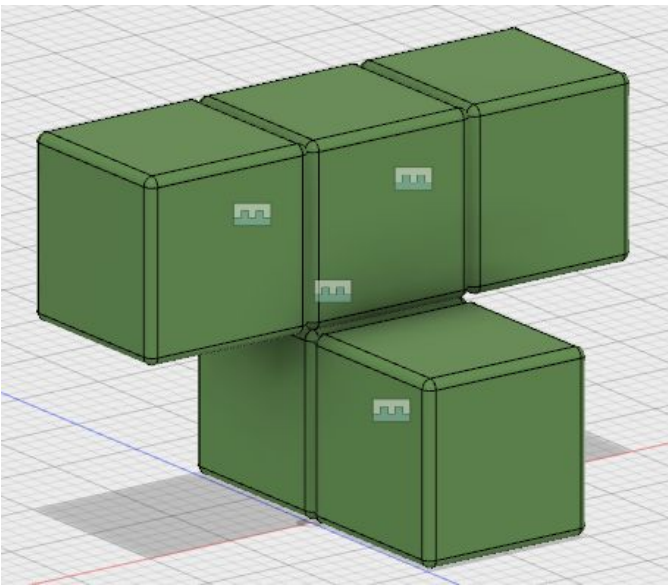
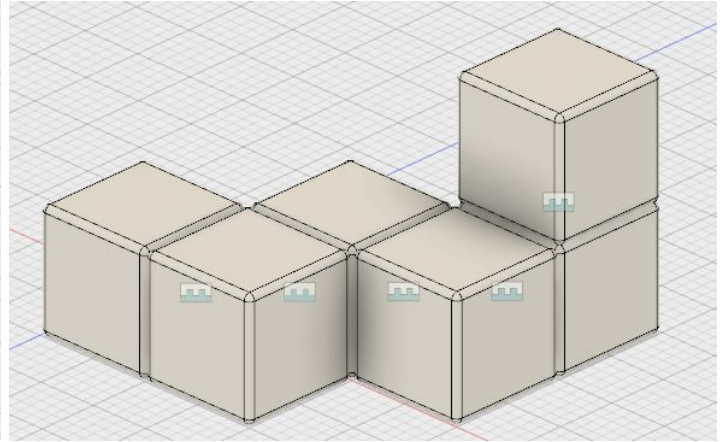
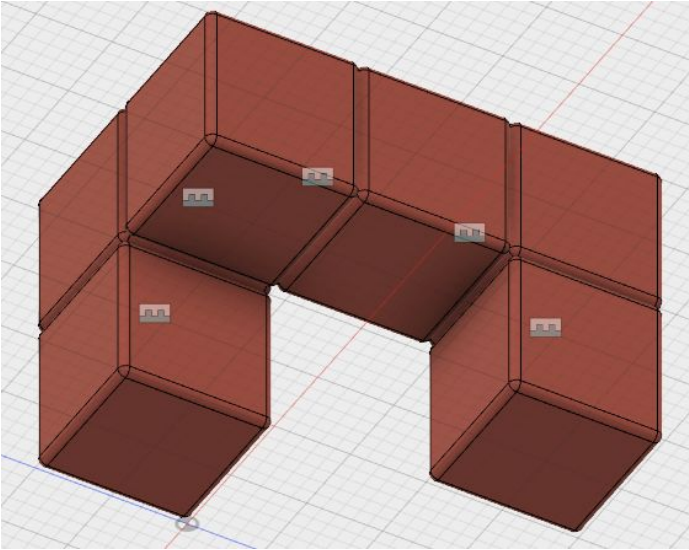
- a. Start a new file and save it
- b. Data Panel (9 Cube Grid) -> Navigate to where you saved your cube file -> Right click -> Insert into Current Design: Inserts a component from another file
- c. Right click the component name in the Nav bar -> Appearance -> Fusion 360 Appearances -> Plastic -> Opaque: Drag the "Plastic - Glossy (Yellow)" onto your component
 - i. Note: This adds more than just color - it adds a material type "Plastic - Glossy". This affects how the object appears with respect to light (consider glossy vs. matte)
- d. Right click the component name in the Navbar -> Copy: Copy the component
- e. Right click anywhere -> Paste: Paste the component and move it accordingly
- f. Repeat step d and e for the remaining 3 cubes



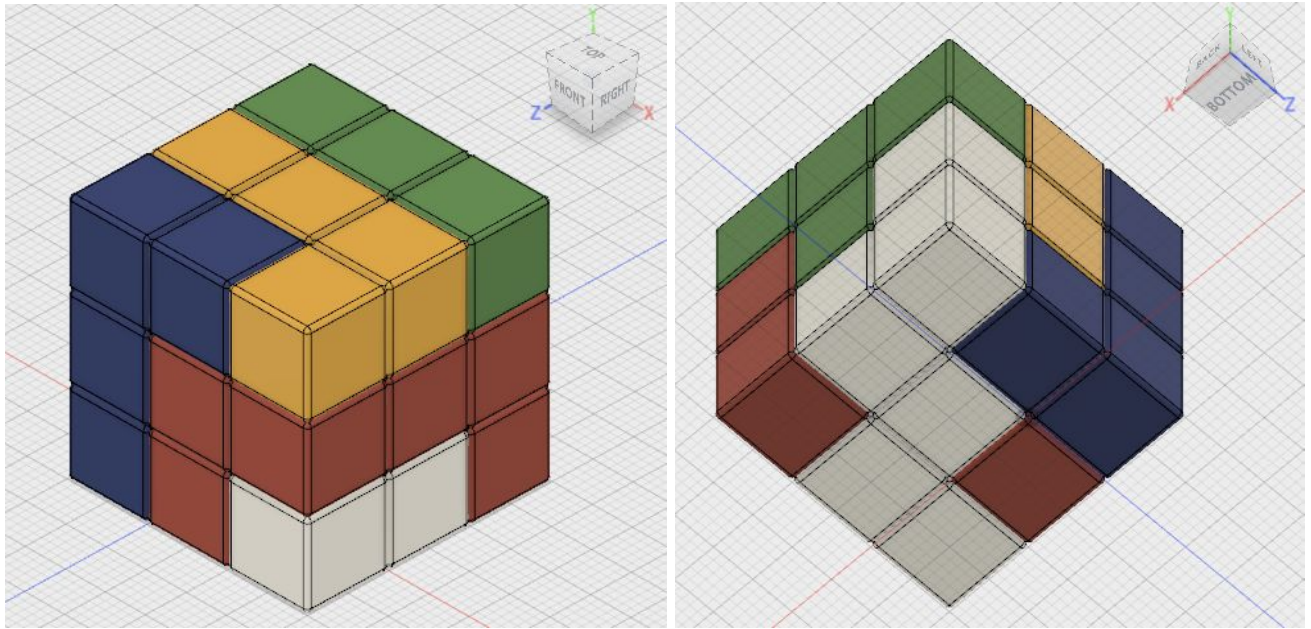
- g. Assemble -> Joint: Select faces of objects to create joints for them; the first face you select will move towards the second face, so be careful of the order that you select! (If a popup regarding "Some Components have been moved", select "Capture Position")
 - i. Note: The joint tool is essential to assemblies and CAD, consider playing around with creating joints between different parts of the cubes



3. Repeat step 2 for the remaining 4 pieces
 - a. Or, just work with the files found on the hub
 - b. However, if you are determined to build them yourself, here are references

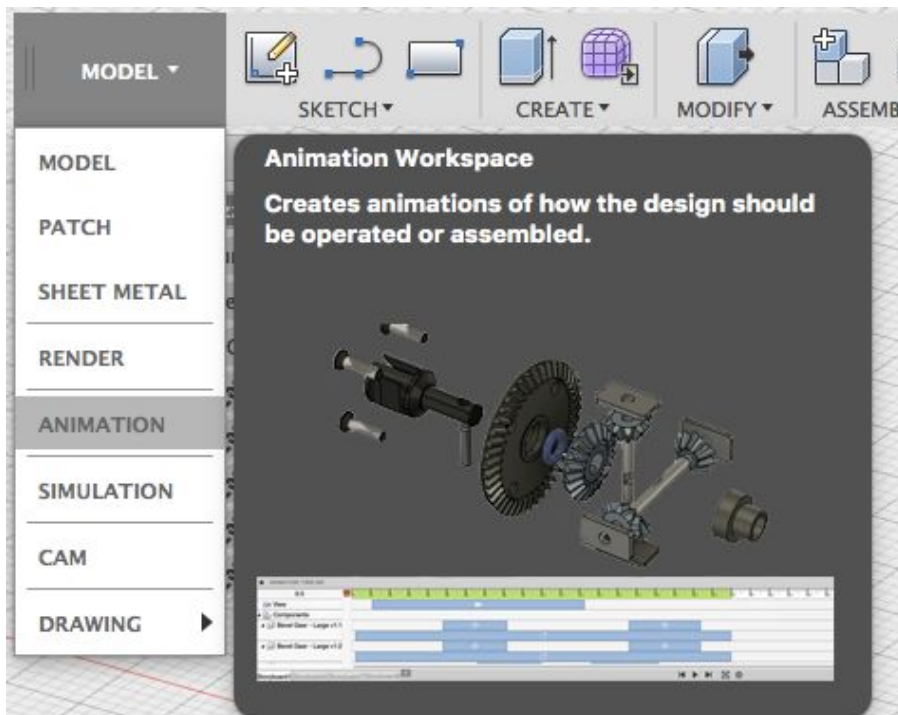


4. Assemble the cube
 - a. Start a new file and save it
 - b. Data Panel (9 Cube Grid) -> Navigate to where you saved your 5 pieces -> Right click -> Insert into Current Design: Insert the 5 different pieces into this file
 - c. Right click -> Move: Move the pieces and rotate them as necessary to build the puzzle into a cube!
 - d. Here's the end result if you don't want to figure it out yourself

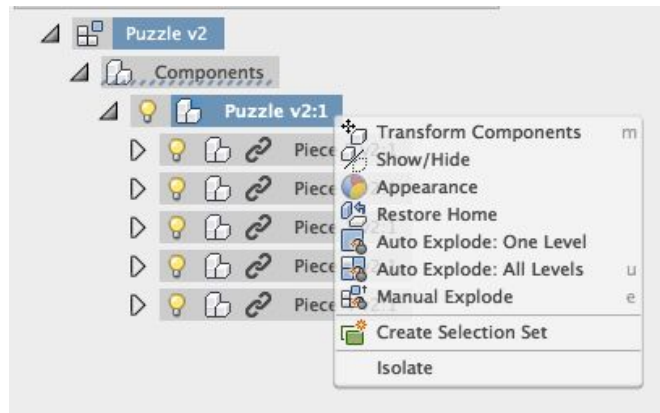


5. Animate

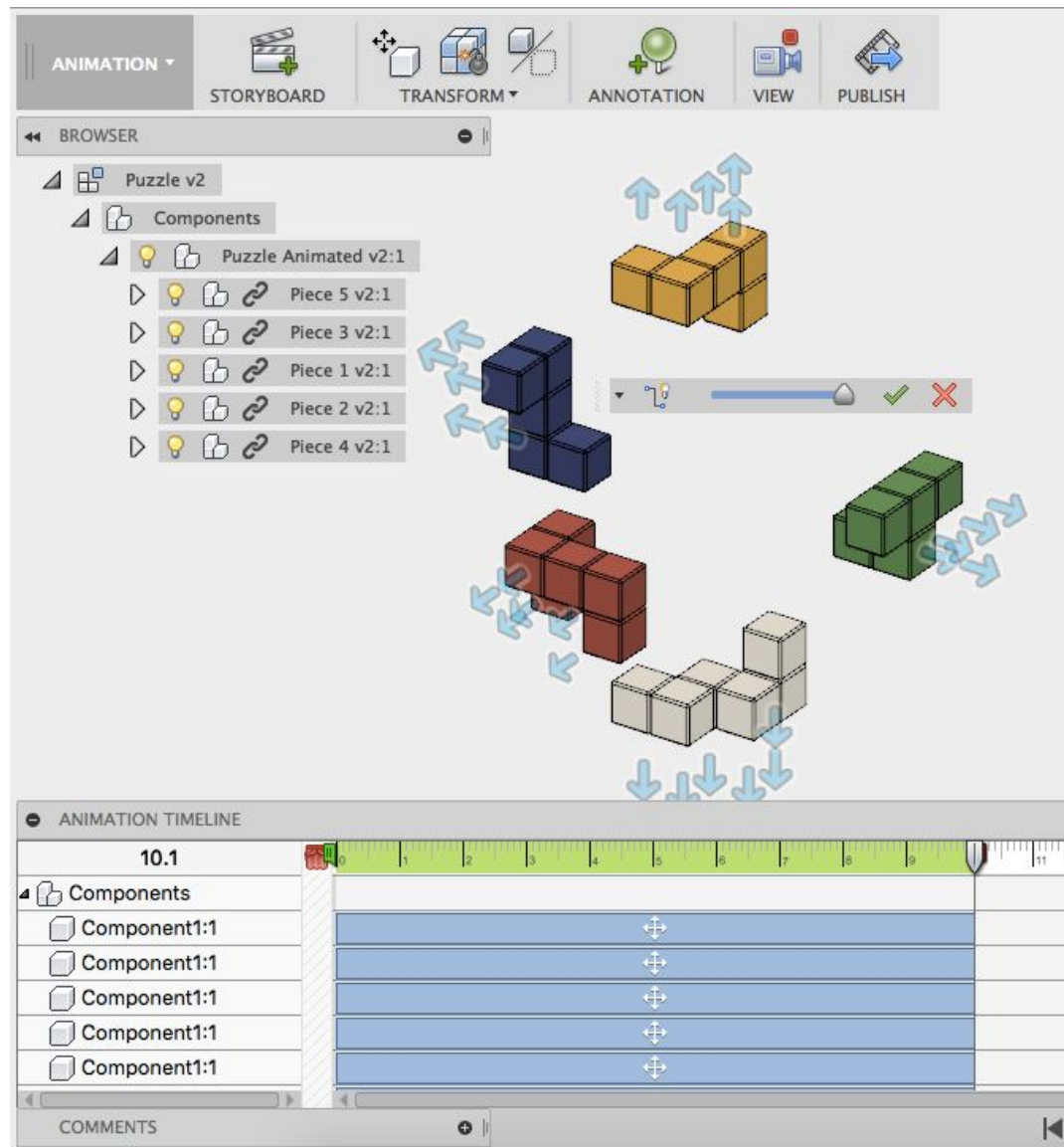
- If you are lazy and just want to animate/render, check the hub for the models
- Navbar -> Model -> Animation: We are going to animate our cube! So change the workspace to animation



- Right click the Puzzle Component -> Manual Explode: This will allow you to move the bodies over time



- i. Move the time cursor to 10
- ii. Select the four top yellow cubes, ensuring that the highlighted blue arrow is pointing outward
- iii. Repeat this for the other four pieces! (Consider toggling visibility for the different components in the left panel; this process may be very confusing otherwise)

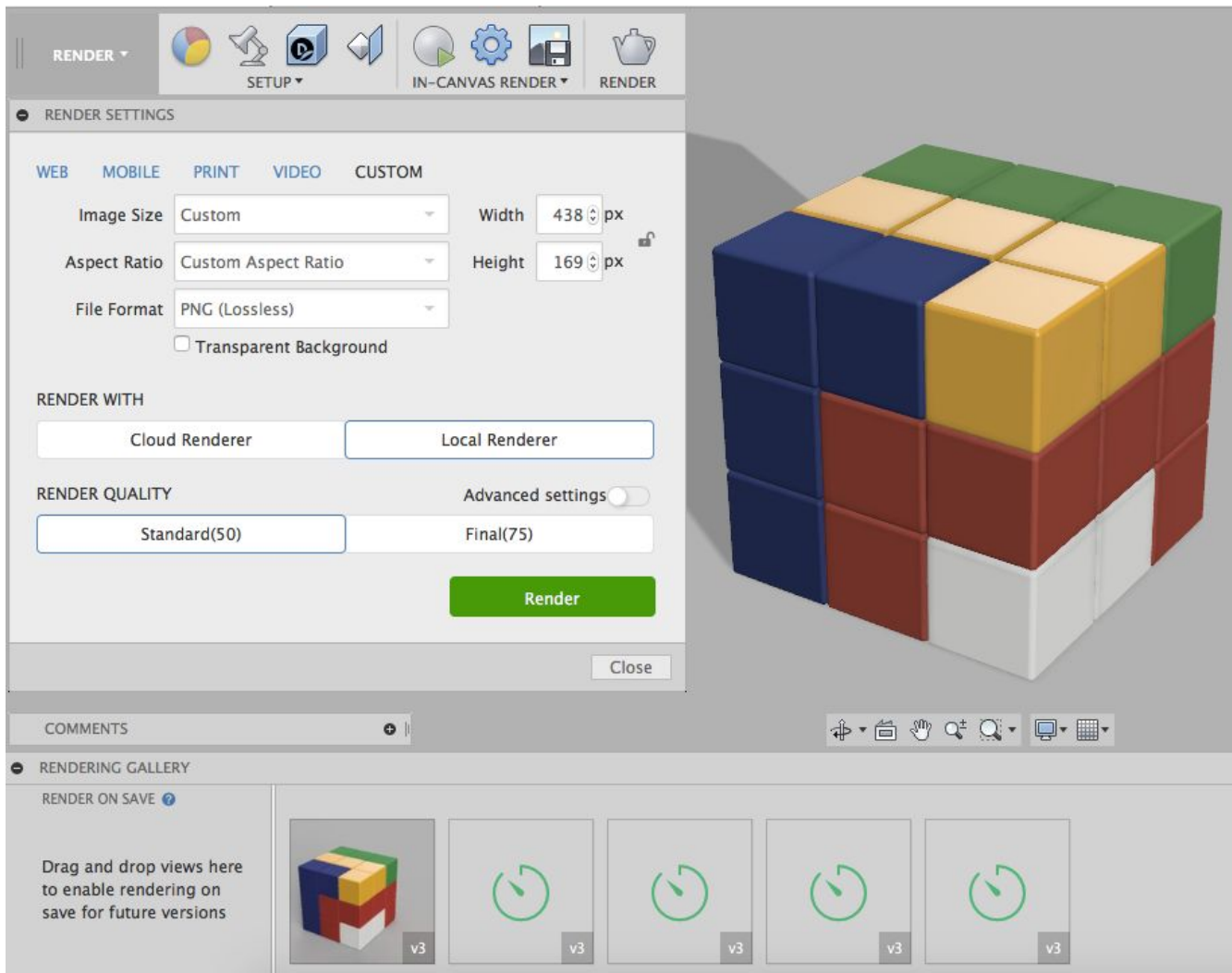


- d. Slide the explode cursor to the right
- e. Click the green check arrow to confirm

- f. Bottom Horizontal Bar -> Play Arrow: Click it to view your animation! It may be playback slower than realtime if your computer is slow

6. Render

- a. Navbar -> Animation -> Render: We are going to render our object, so change your workspace
- b. Navbar -> Render -> Custom:
 - i. Choose Local Render
 - ii. Choose a smaller width * height resolution for quick render times
 - iii. Choose Standard Render quality for quicker render times
 - iv. Click the green "Render" button
- c. Your image should appear in the bottom pane, as shown in the screenshot



7. Finished! Hopefully this tutorial has taught you the following skills:

- a. Quickly build objects by copy/pasting and jointing their pieces together
- b. How to add materials and colors to your components
- c. How to add components together
- d. How to animate
- e. How to render