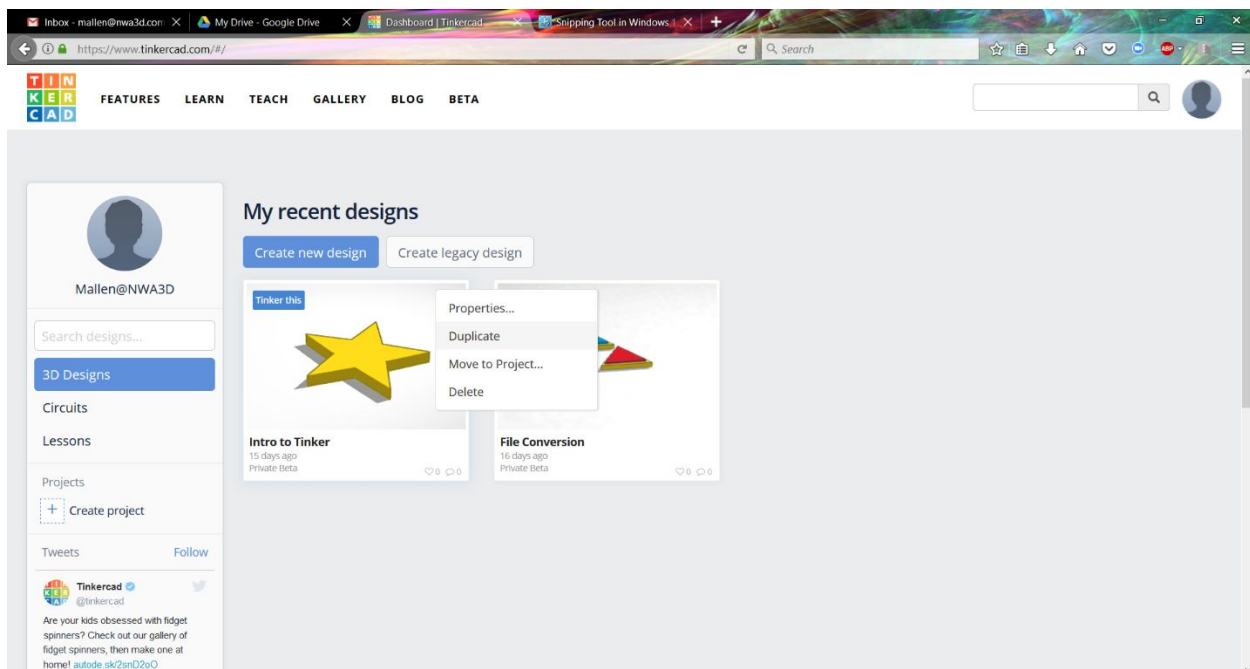


# Introduction to Tinkercad

## Keychain Activity Lesson

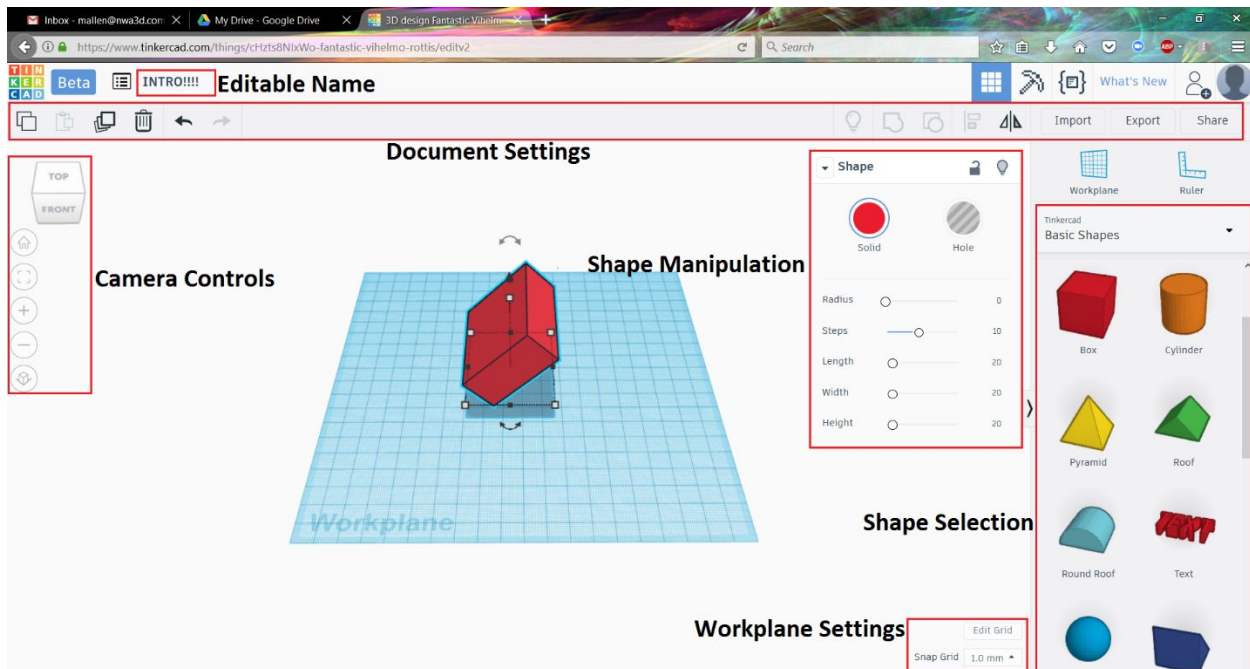
**Link to video walkthrough:** <https://youtu.be/RVX6xU11JqQ>

- 1) Create a Tinkercad account for free (if you are over 13), if you already have one, Sign In.
- 2) This screen displays all the designs and projects you have created and allows you to manipulate saved files:



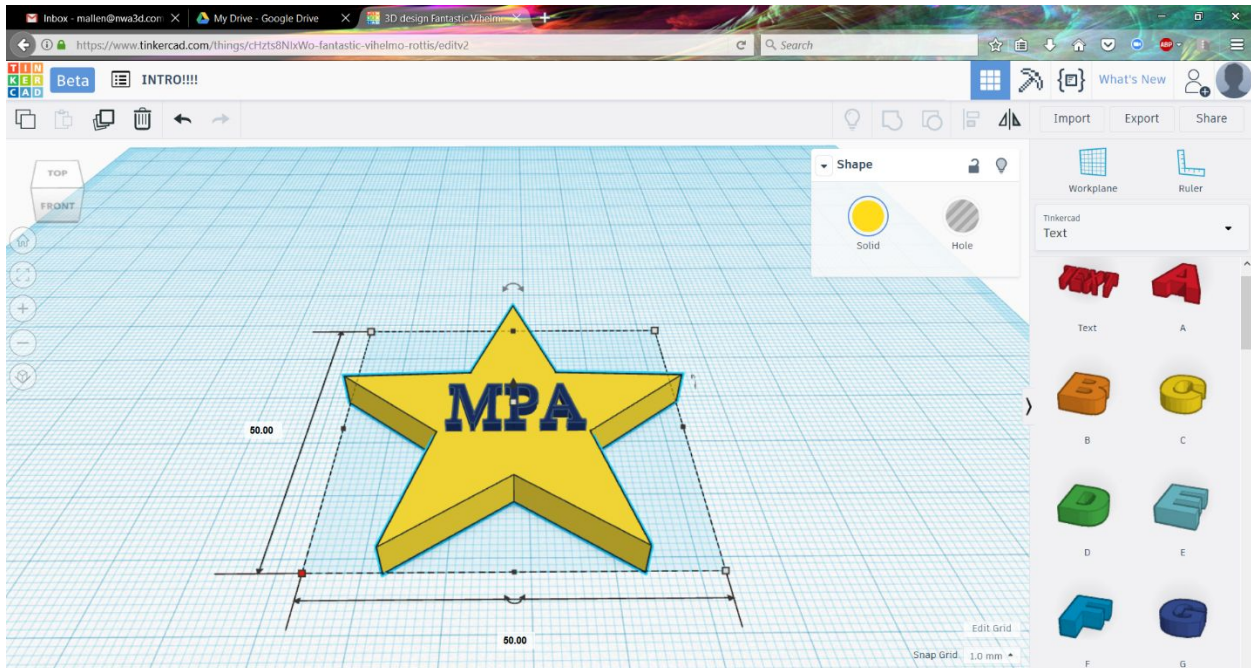
- 3) Select “Create new design.”
- 4) The following screen is a 3D workplane where your creations will appear.
  - a. Think of this plane as the 3D printer build plate.

- 5) On the right side is a panel to select different shapes. More options can be selected by clicking on the drop down box directly above the available shapes, or other options around your workplane.



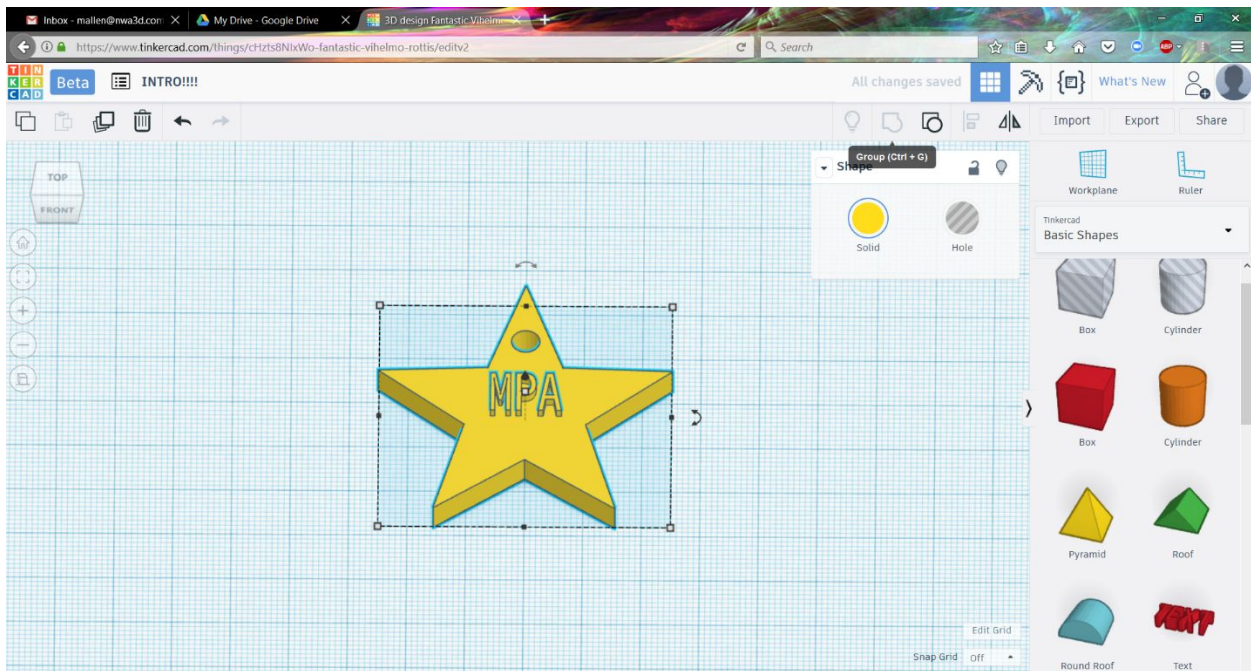
- 6) Select the “Symbols” option.
- 7) Navigate to the ‘Star’ shape and left-click to select the item.
- 8) Move your mouse onto the workplane.
  - a. The resulting transparent shape is an indicator to help you position the shape.
- 9) Left-click to ‘Drop’ the shape onto the workplane.
- 10) The object will become solid and is now editable by manipulating the symbols around it.
  - a. The ‘White and Black Boxes’ or handles are used to resize the object. When selected, they display a number value that is also editable. The default unit is millimeters.

- b. The ‘Christmas Tree’-shaped symbol is used to move the selected object up or down. To move the object side to side, simply left-click and drag.
  - c. The ‘Curved Arrow’ symbols allow you to rotate the object in the displayed directions.
- 11) Resize the ‘Star’ to be 50mm long, 50mm wide, and 5mm tall.
- a. You can change the snap to grid settings by changing the number value in the bottom right corner of your build window.
- 12) When you have finished resizing, change the available shapes from “Symbols” to “Text.”
- 13) Place your initials onto the ‘Star’ with the ‘TEXT’ function, resizing as necessary.



- 14) To create a keychain, we will need a hole in the top of the ‘Star.’
- 15) To create this negative space, select an object or shape and choose the “Hole” option in the upper right corner of the build window.

- 16) Place a 'Cylinder' using the "Hole" function on the 'Star,' and then resize the cylinder to create a 5mm hole.
- 17) To better position the cylinder hole, use the 'Camera' tools on the left-hand side of the build window.
- 18) When all shapes are in position and you are happy with how your design looks, Select All by clicking off the shapes and dragging the mouse over them. You can also multi-select by holding the Shift key down and selecting each shape individually.
- 19) Once selected, choose the "Group" button on the toolbar above the build window. This will combine your shapes into one solid object. The hole shape will effectively remove material.



- 20) If the object looks just like you planned, Great Job! If it does not look as you expected, use the "Ungroup" button to return.

- 21) If a shape disappeared upon grouping, stretch the height of the shape by using the white handle to be above the 'Star.' You can also choose the "Hole" option to remove material instead of adding it to the final object.
- 22) If you are having trouble selecting a shape that is inside another, move the one you can select.
- 23) Finalize your design and make sure that everything is touching before grouping.
- 24) If you haven't already, change the name in the top left of the build screen to "Your\_Initials Keychain."
- 25) Congratulations!! To save this file and get it ready to 3D print, click on "Export" button in the top right corner. Select "Everything" and click ".STL" and place the file where you can find it later!

