

TINKERING WITH TINKERCAD

A Beginner's Guide to Creating 3D Printer Designs



**With Presenters:
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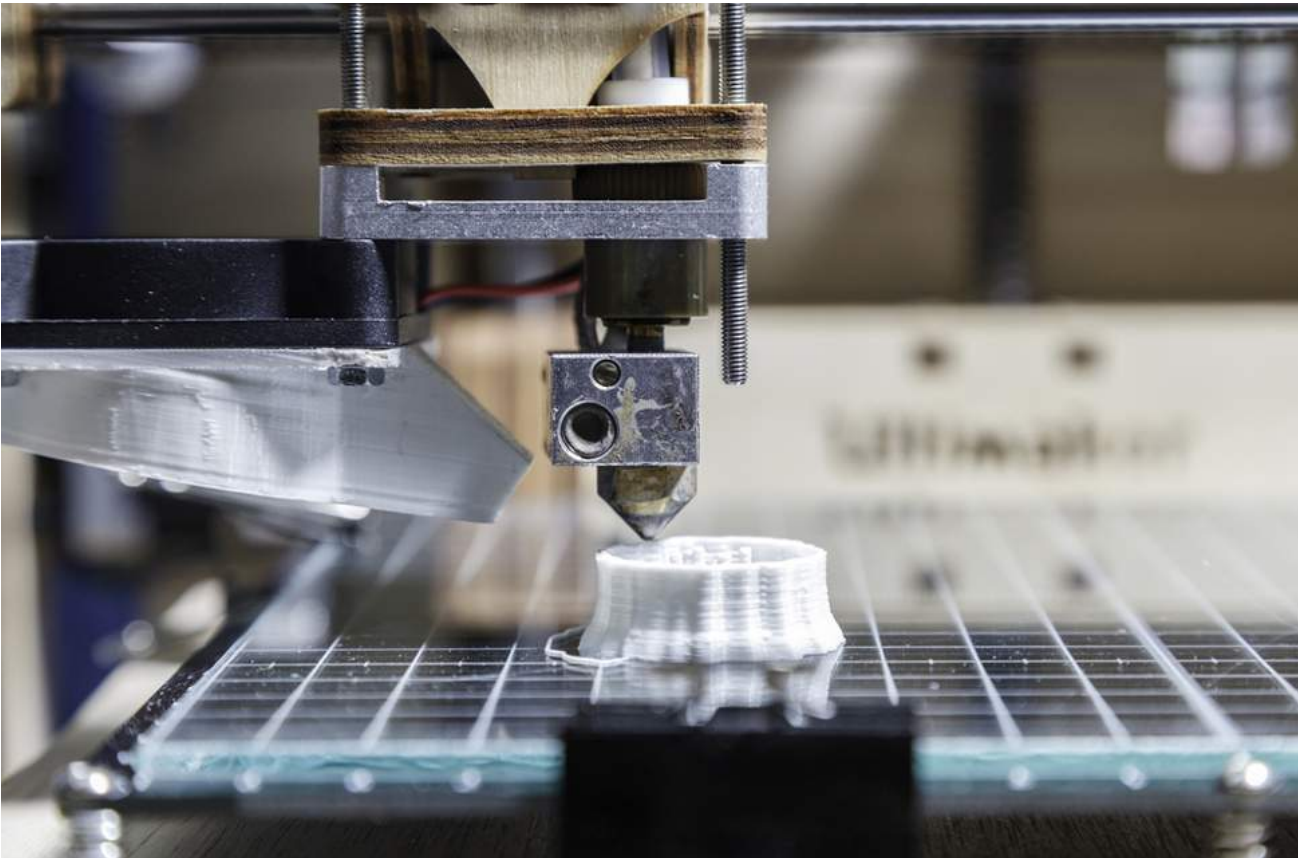


Tinkering With Tinkercad

Welcome!

In this workshop, you'll get a brief introduction to the world of 3D model file creation using Tinkercad. We'll learn what it is and how it works. We'll also create a 3D model file in class and you'll have the option of 3D printing it.

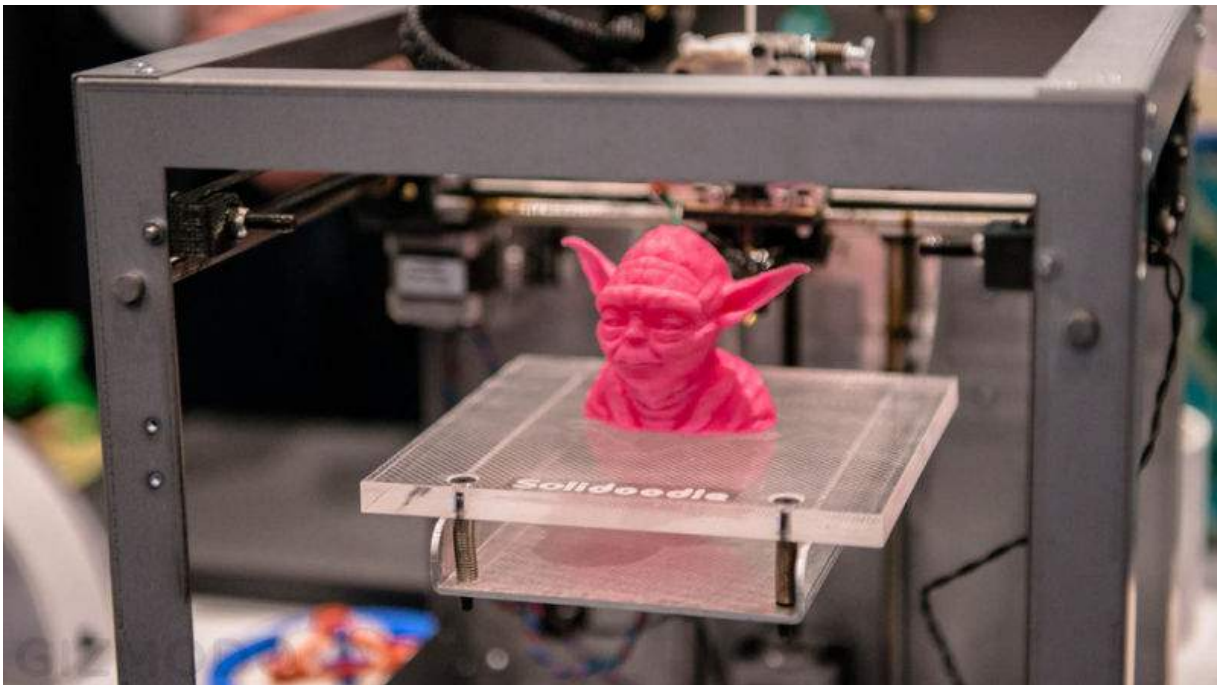
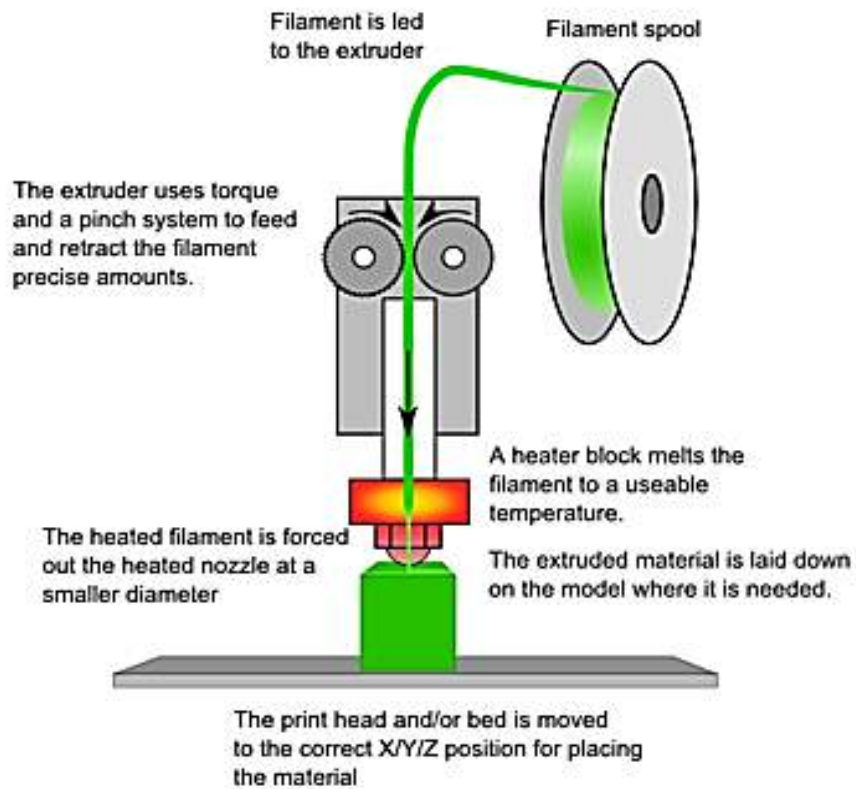
What is 3D Printing?



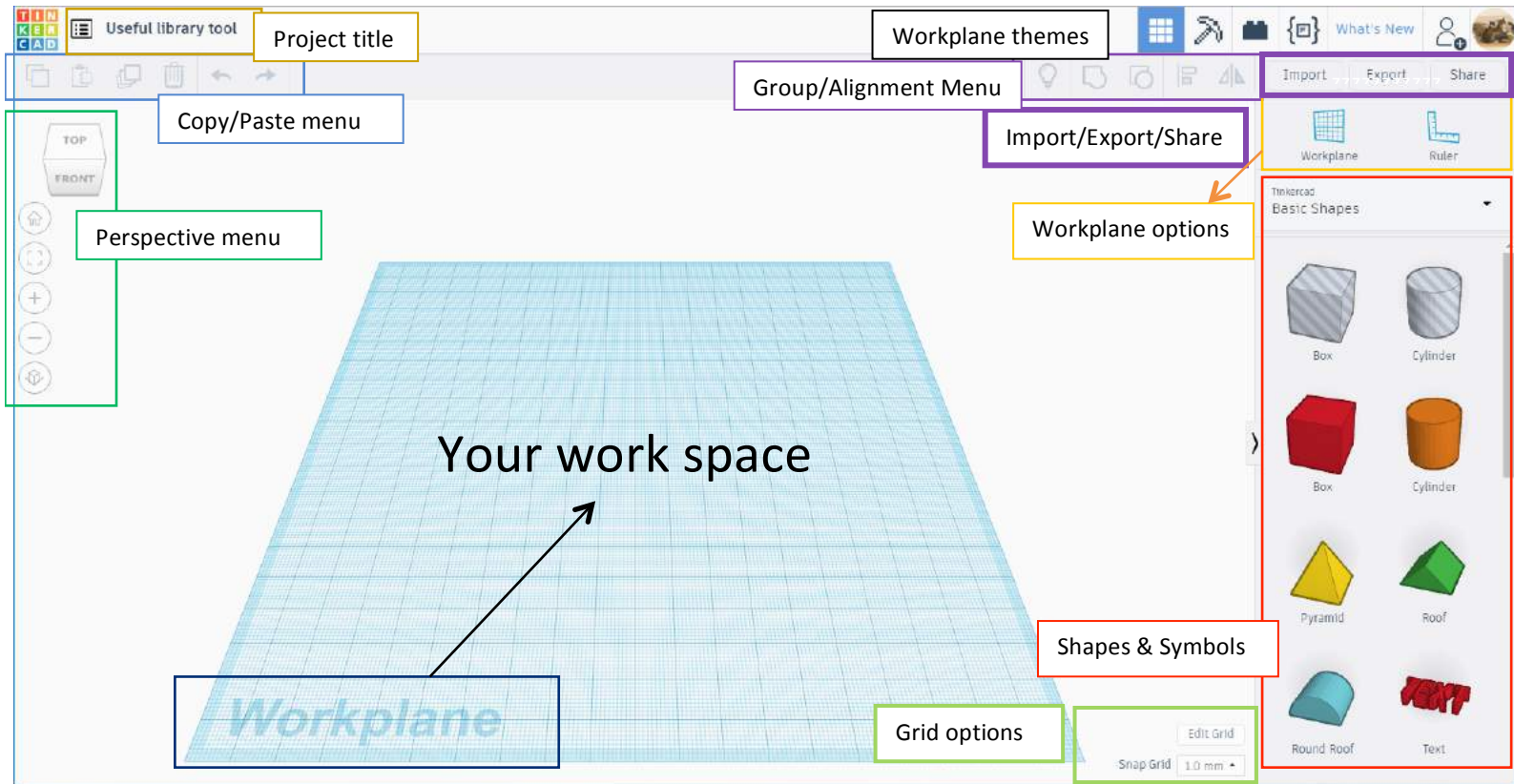
3D printing -- also known as additive manufacturing -- turns digital 3D models into solid objects by building them up in layers. The 3D printing process turns a whole object into thousands of tiny little slices, then makes it from the bottom-up, slice by slice. Those tiny layers stick together to form a solid object.

3D printing was first developed in the 1980s for manufacturing and in recent years has been used for a variety of purposes - such as creating the models for stop motion films. 3D printing works through a process called material extrusion: the nozzle of a 3D printer pushes out a semi-liquid substance into the shape the computer tells it to form, and repeats the process - building thin layers which form the object being printed.

MATERIAL EXTRUSION



Tinkercad workspace overview

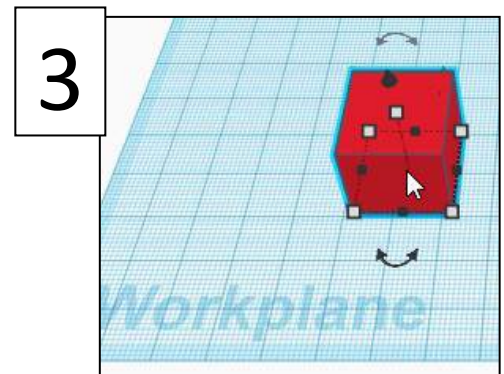
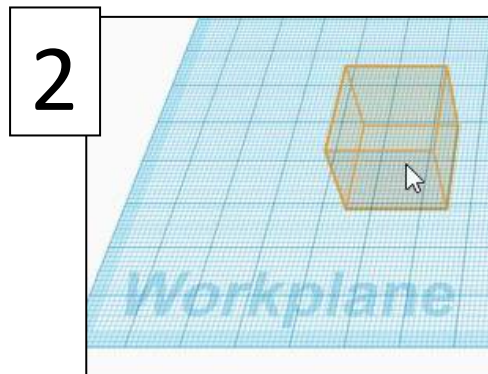
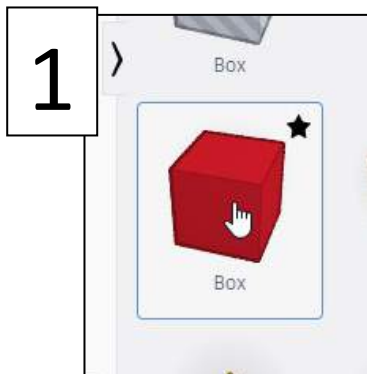


Some Basic Shape Menu How-Tos

I. Moving a shape or symbol from the basic shapes menu to your Workplane (clicking and dragging)

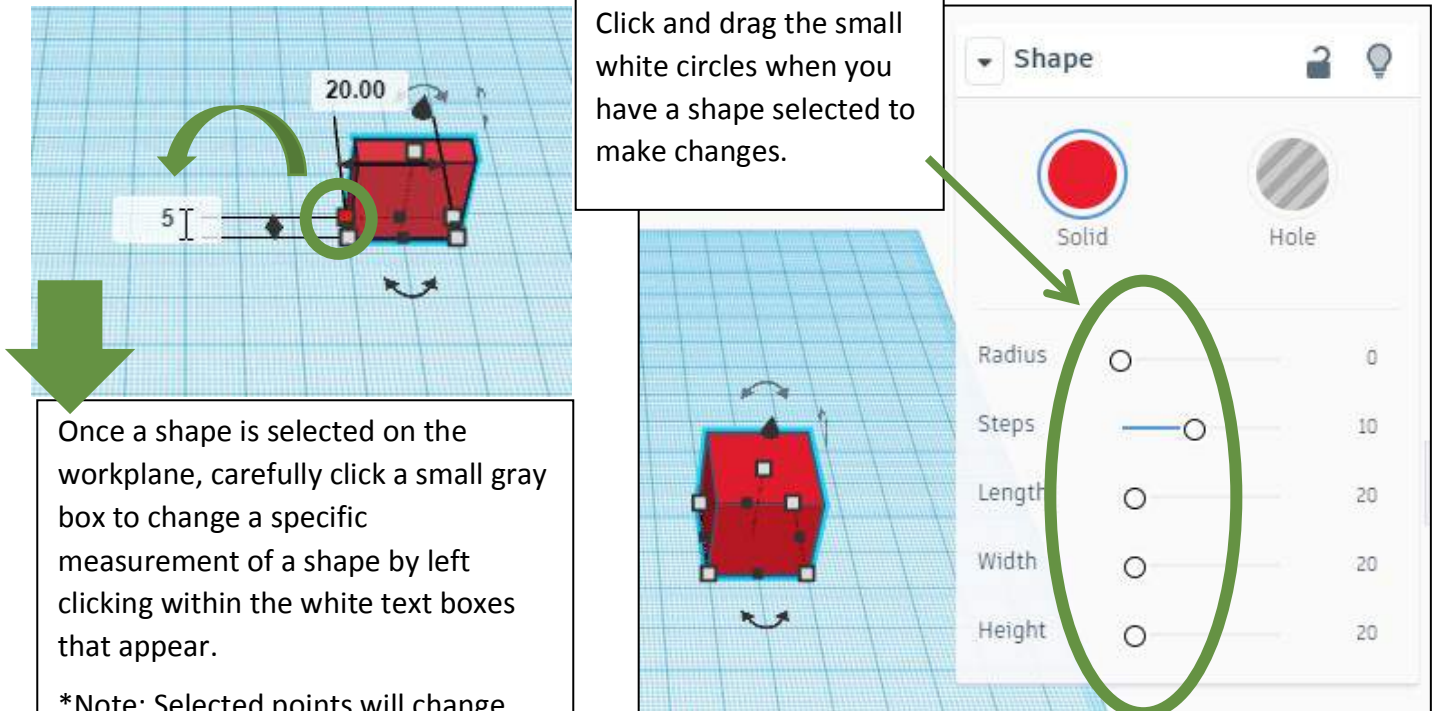
- Select which shape you would like to add to your Workplane.
- Move your mouse over the Workplane where you would like to "drop" your shape.
- Left click to "drop" shape and add it to the Workplane

*Note: Alternatively, you can left click and hold the shape you want, drag your mouse to where you want to put it on the Workplane and then let go of the left click button on the mouse to drop your shape



II. Resizing your shape.

- a. There are many different ways to edit your shape once it's on the Workplane.



Click and drag the small white circles when you have a shape selected to make changes.

Once a shape is selected on the workplane, carefully click a small gray box to change a specific measurement of a shape by left clicking within the white text boxes that appear.

*Note: Selected points will change color from gray (unselected) to red (selected).

*Note: Alternatively, you can left click and drag any of the points to change the size/shape of the object selected.

Property	Value
Radius	0
Steps	10
Length	20
Width	20
Height	20

III. Moving a shape above or below the Workplane.

- a. You can move a shape above the Workplane by clicking and dragging the cone-shaped handle above your shape. This function allows you to stack shapes on top of each other.
- b. Remember to view your shape from the front to make sure it's not floating above the Workplane. This could mess up your 3D print if the base of your project isn't touching the Workplane.

