#### **TinkerCad Guide**

This document is designed to serve as a general introduction to using TinkerCad. Other useful guides and videos related to more specific topics can be found at OT3d .org



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TinkerCad is a program that can be used to help create files for 3d printing. It is more beginner friendly than many traditional CAD programs while also being free and working on most computers. I tend to introduce people to file creation through TinkerCad and this guide will walk you through all of its functions.

TinkerCad is a web based program, meaning that you will not need to download anything to use it. To get started, you can log into <u>https://www.tinkercad.com</u>. You will be directed to make an Autodesk account. TinkerCad is free and will not ever ask for financial information.





After making an account, you can log in. You will then be directed to the landing page. This is the location where all of your previous designs are, along with educational content from Autodesk (the parent company of TinkerCad).



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If you would like to edit an older design, you can do that starting on the landing page by clicking on the design and clicking 'tinker this.' If you would like to make a brand new design, you can simply click on the button that says, 'Create New Design.'

#### My recent designs

Create new design





After making your selection, you will be taken to a build area. This area is where you will create your design and import or export it for printing. If you would like to edit an existing object, you can do so by clicking on the import button in the top right corner and selecting the .stl, .obj, or .svg file.

To adjust your view of the build plate, you can use your mouse or the cube in the top left corner. You can click or click and drag the cube to adjust your view. Scrolling will zoom in and out of the build area. The left mouse button can be use to spin around the center axis of the build plate in all directions.



Helpful Hint: If you are on a laptop, you may want to consider using a mouse instead of a trackpad. The mouse allows for easier manipulation of the build plate view.

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To start a new design from scratch, you can select from the shapes menu on the right side of the screen. There are a few different categories of shapes that you can use. You can even have customized text.

To place a shape of the build plate, click on the shape you would like to use and then click on where you would like it on the build plate. When you click on the placed shape, you will see a menu pop up on the right. Here you can adjust some of the settings like the size, number of sides, and color of the shape. Different shapes will have different options.





Clicking on the shape will bring up a few icons. The black boxes on the shape allow you to manipulate the size of the shape in a single plane or axis by clicking and dragging.

Helpful Hint: In addition to clicking and dragging, you can also manipulate shapes on the build plate using the directional arrow keys on your keyboard for more precise movements.

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The white boxes allow you to adjust the shape in multiple planes at once (ex. Changing the length and width). If you would like to scale the object proportionally, you can do so by holding the 'shift' key as you click and drag. The top center white square just adjusts the object height.





You can also adjust the size of the object by clicking on the numbers that appear on the object and typing in your desired measurement.

To raise or lower the object, you can click on the small black cone that hovers above the top center of the object. As with the other measurements, you can click on the number that appears and type in a set value.



Helpful Hint: By default, the units in TinkerCad are in millimeters. While this allows for more precise measurement, you can change to inches by clicking the button for 'Edit Grid' in the lower right hand corner.

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To rotate an object, you can first click on it and then select the curved arrows for the plane you would like to spin it in. Dragging the mouse closer to the object will make it snap on intervals, while dragging it further away will go degree by degree.

If you would like to flip or mirror an object, you can do so using the mirror function in the top right hand corner. To do so, select the object and then click on the arrow that corresponds to the plane that you would like to mirror the object on.





You can place multiple objects on the build plate at once and manipulate them. To move objects, you can click on any area without a symbol and drag it around the build plate.

Helpful Hints: In addition to the back arrow in the top left hand corner to undo a step, you can also use ctrl+z or command+z to perform the same function. If you would like to delete an object, you can do so by pressing the backspace key. Pressing tab allows you to shift from dimension box to dimension box quickly.

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When you have multiple objects on the build plate, you can select more than one by clicking a blank area and then dragging the mouse to highlight multiple shapes. You can also click on multiple shapes while holding shift to do so.





When multiple shapes are highlighted, you are given access to align and grouping tools. The align tool allows you to align to the edges and centers of objects by clicking on the small black circles that appear after selecting it.

The group function will join to objects together when multiple are selected. If you want to physically join two objects, make sure that they are touching or overlapping to physically connect them.



Helpful Hint: You can use the import function on TinkerCad to adjust svg files in addition to 3d files. This could be used for making outlines or specific shapes in printed materials.

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If an object was previously grouped, you can select it and click 'Ungroup' to separate it. You will need to click off of the object in order to then manipulate the ungrouped objects separately. The ungroup option will disappear if there are no further objects to separate.

To remove material or create a hole in an object, you can do so by making a hole. Any solid shape on the right side can be made into a hole by first placing it on the build plate. Then navigate to the pop up menu for the shape and click the gray striped circle labeled 'Hole.'





An object that is a hole can be placed so that it overlaps a solid object. Both objects can be selected and then grouped to create the hole.

Helpful Hints: All shapes in TinkerCad, including those which were imported into the program manually, can be converted into a 'hole'. This can be useful to create hollowed out objects by scaling the hole down slightly.

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When you are done with your design, you can download it by clicking on the 'Export' button in the top right hand corner of the screen.

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You can select single objects on your build plate to export, multiple objects, or all objects on the build plate. If you have multiple objects selected, they will download in the position in which they were selected.

TinkerCad will automatically save your file as long you have a good internet connection. If you encounter any errors, a small error box will pop up that you can click to receive additional details about why the error occurred.



This guide and more like it can be found at OT3d.org.

Happy Printing!