

Autodesk TinkerCAD

TinkerCAD is a simple and free online 3D modeling program with a wide array of applications and capabilities.

Getting Started

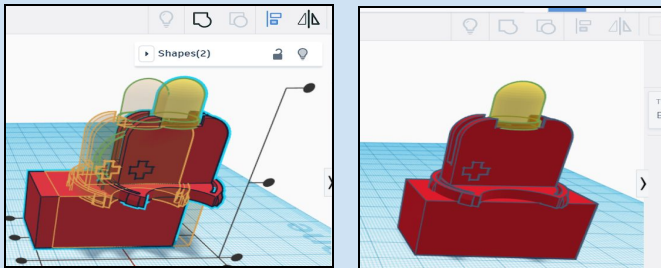
Type www.tinkercad.com into your URL bar and click “**Start Tinkering**” to create an account.

Once your account has been created, you will be taken to a dashboard where you can click “**Create new design**” to begin a new model. You also have the option to **Import** an existing object to edit.

Tools

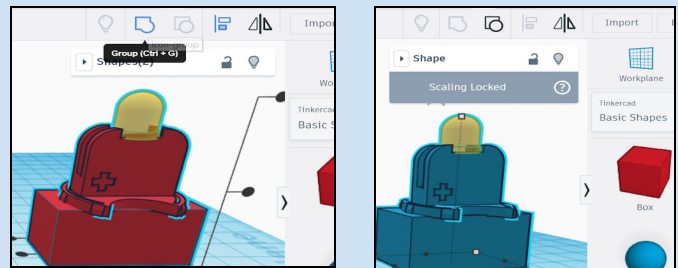
Align

Select two objects by holding **Shift** and clicking both of them, then click the **Align** icon in the top toolbar. This will bring up a grid with dots. Hovering over a dot will preview (in orange) what will happen.



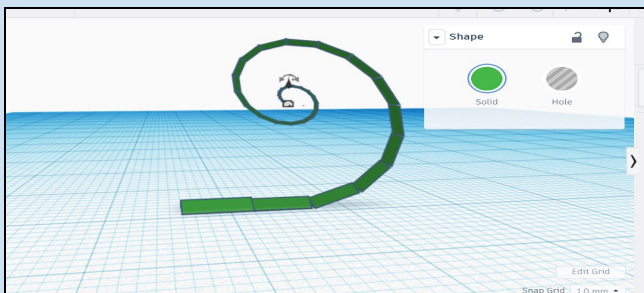
Combine (Group)*

If two or more objects are overlapping one another, they can be combined into a single object. To do this, hold **Shift** and click both objects, then click the **Group** icon in the top toolbar.



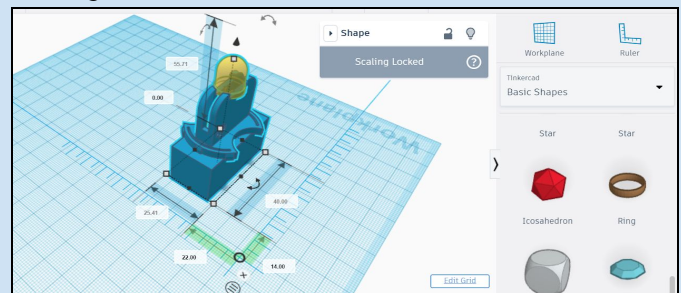
Duplicate

The **Duplicate** icon to the left will create a copy of your object with respect to all the changes you have made to the original. This is different from using copy / paste. You can achieve lots of cool effects with this tool!



Ruler

The **Ruler** icon in the right sidebar allows you to place a 2D ruler on the workplane. Moving an object inside the ruler will tell you its dimensions as well as its distance from the ruler's origin. Clicking the ruler icon again will disable the ruler.

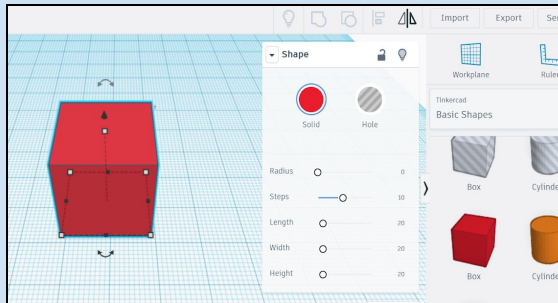


***TIP:** If one or more of the selected objects are scale locked, the whole group will become locked.

Shapes

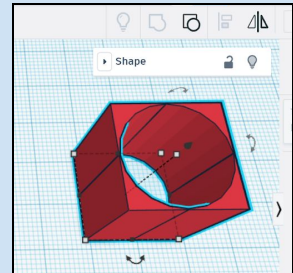
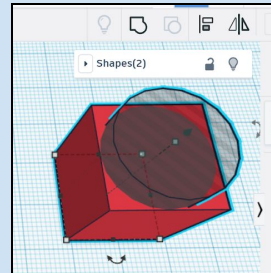
Basic Shapes

On the menu to the right, click **Basic Shapes** from the dropdown menu. Click and drag any shape onto the workspace to edit it.



Holes*

When you select a **Hole** from the shapes menu, you will be able to drag it inside of a solid shape. Clicking **Group** will generate empty space inside the solid.



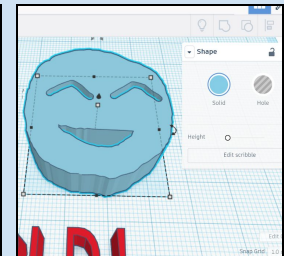
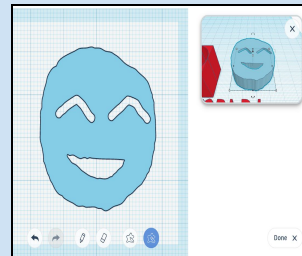
Text

Using the **Text** option allows you to type whatever you'd like. You can select a font and manipulate text like any other object.



Scribble

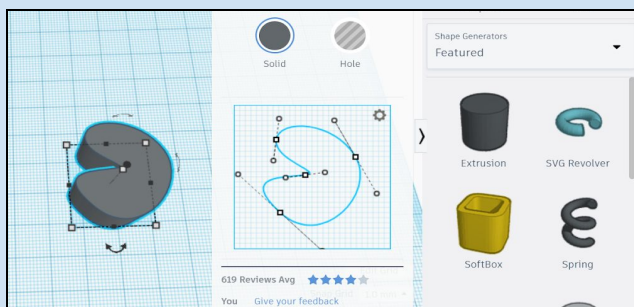
Clicking **Scribble** under **Basic Shapes** will allow you to draw a 2D image, which will be automatically extruded.



Shape Generators

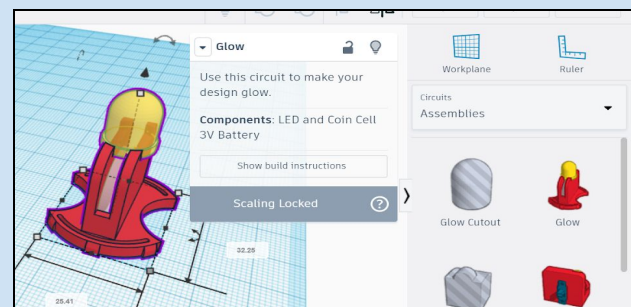
In the menu to the right, select **Shape Generators**.

This tab provides a wide variety of user-made customizable shapes. Some allow you to adjust parameters, such as number of blades on a propeller, while others let you mold a pre-existing shape.



Circuits

TinkerCAD includes a set of premade **Circuit** templates. You can use these templates to design housing or accessories for circuitry. The dimensions of these objects are "true-to-life" and cannot be scaled.

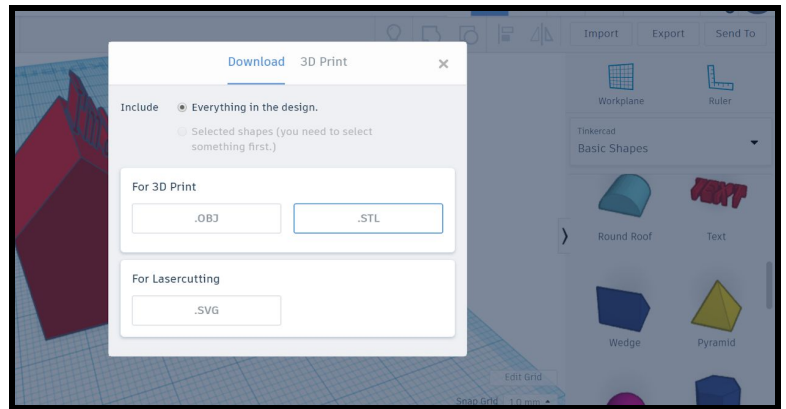


***TIP:** Any solid object can be made into a hole by simply clicking the "**Hole**" button in their shape menu!

Export your Model

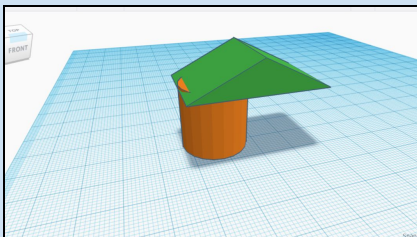
When you are happy with the model you've created, you can click the **Export** icon in the top right corner. You will generally want to save the file as a **.stl**, which is the filetype most widely used by slicing softwares.

Once this step is done, you're ready to move on to the final step before printing: **slicing!**



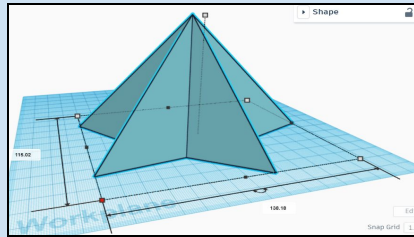
Things to Consider when Modeling

Overhangs



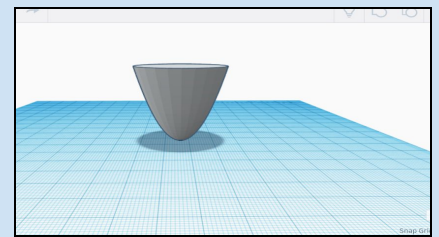
Ordinary 3D printers are not able to print overhangs without support (Details in the **Cura** pamphlet). Try to avoid adding too many overhangs, as supports can decrease the quality of a surface.

Size



Be conscious of the size of your model! While slicers are able to scale models after they're exported, this could cause a loss of detail. Make sure your model is small enough to fit into the printer you plan to use.

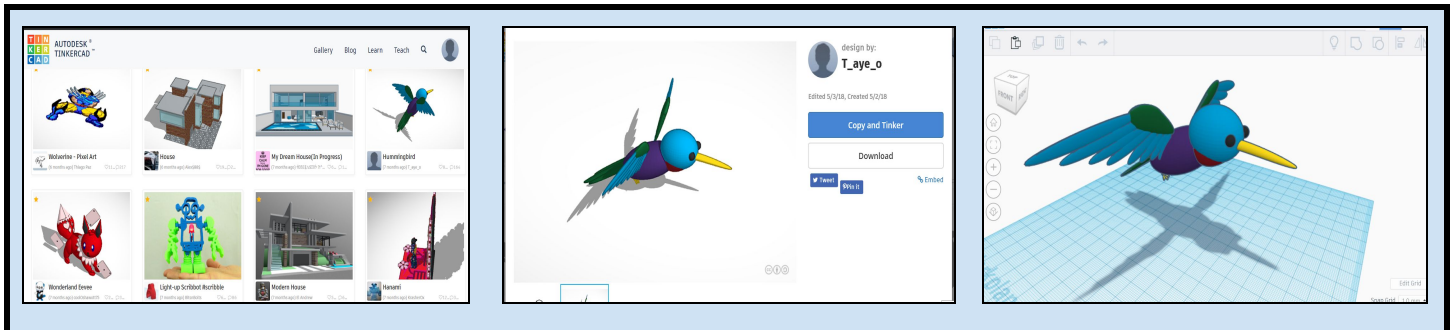
Shape



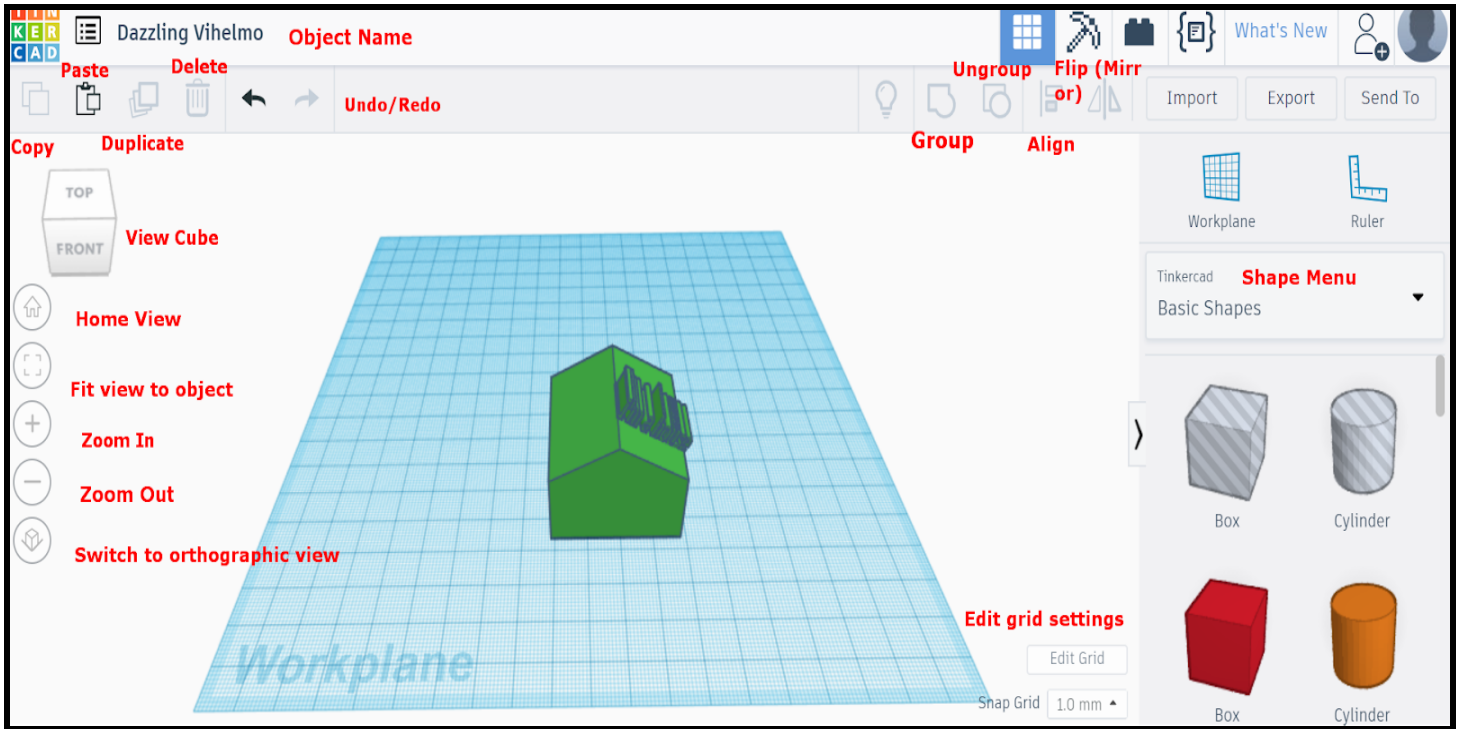
Models need to be able to properly adhere to the build plate. While there are options to help with this when slicing, try to have as much of your model touching the build plate as possible for the best quality print.

Tinker Existing Models

Some people upload their models to Thingiverse's public forum, allowing people to make changes to them! In order to do this, visit www.tinkercad.com/things. You can categorize by what's popular, staff picks, and by what's new. To tinker a model, click on it and hit **Copy and Tinker**. This will load the model into your own dashboard and allow you to make edits.



Workspace Overview



| | | | |
|--------------------|------------------|--------------------|---------------------------|
| Copy | Ctrl + C | Move View | Click + Drag Scroll Wheel |
| Paste | Ctrl + P | Rotate View | Right Mouse Button |
| Duplicate | Ctrl + D | Select | Left Click Object |
| Group | Ctrl + G | Zoom | Scroll Wheel |
| Ungroup | Ctrl + Shift + G | Undo | Ctrl + Z |
| Show Hidden | Ctrl + Shift + H | Redo | Ctrl + Y |

AUTODESK TINKERCAD

MOVING OBJECT(S)
(Using keyboard)

Move along X/Y axis:

Move along Z axis:

*10 Nudge along X/Y axis:

*10 Nudge along Z axis:

KEYBOARD + MOUSE SHORTCUTS
(Press and hold the keys, then click and drag the mouse)

Duplicate dragged object(s):

Select multiple object(s):

45° rotation:

Scale in one direction:

Scale in two directions:

Uniform scale:

Uniform scale in all directions:

Uniform scale in all directions:

VIEWING DESIGNS
(With the help of a mouse or a mouse pad)

Orbit the view:

KEYBOARD SHORTCUTS

Legend:

OBJECT SETTINGS

Transparency toggle:

Turn object(s) into Holes:

Turn object(s) into Solids:

Lock or Unlock object(s):

Hide object(s):

Show all hidden object(s):

TOOLS AND COMMANDS

Copy object(s):

Paste object(s):

Duplicate object(s) in place:

Delete object(s):

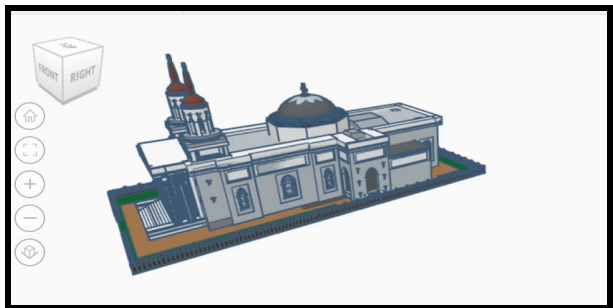
Undo action(s):

Redo action(s):

Redo action(s):

Group object(s):

Un-group object(s):



Student Technology Center
 Haggard Hall 2nd Floor
 (360) 650-4300
www.stc.wwu.edu
 Workshop guide updated Fall 2018
 by Allie Pinnock