

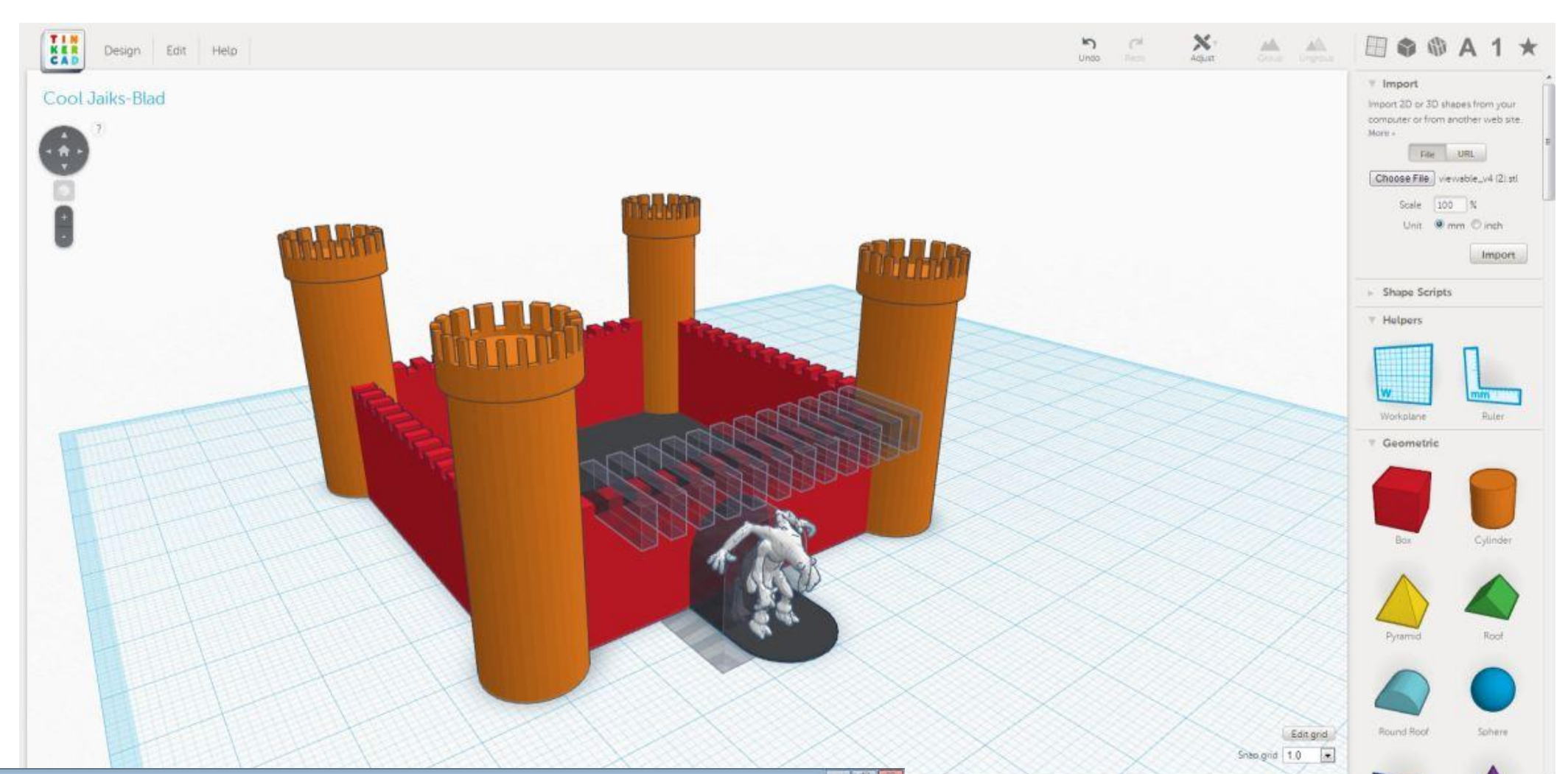
# Tinkercad to Minecraft

**WHAT:** Tinkercad is a free online tool that can be used for 3D modeling. Tinkercad allows you to bring your designs to life by creating them in a 3D environment. The 3D models you create in Tinkercad can be displayed on the web or exported to use with a 3D printer.

**YOUR CHALLENGE:** You are an architect tasked with designing a building for a new science museum in downtown Boston. Space is limited so your construction must fit with a 100 x 100 meter footprint. You will need to scale your model from meters to millimeters to design in Tinkercad. Once your design is complete, export the 3D model into the Minecraft world.

## CAN YOU:

- Create a 3D model for the new Science museum?
- Scale your model to millimeters?
- Make your model fit in a 100x100 meter footprint?
- Import your model into the Minecraft world?

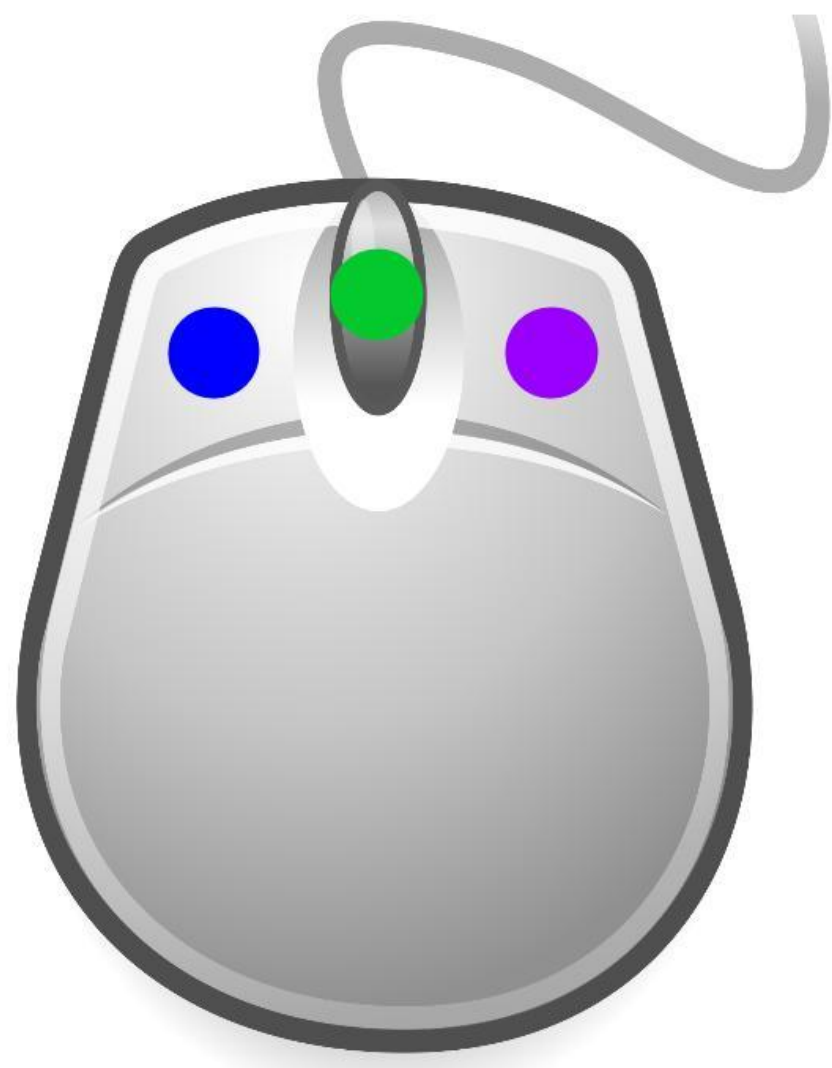




# Tinkercad Tips

Tinkercad is a free online tool that can be used for 3D modeling. The 3D models can be exported to the .stl format which can be used with the 3D printer. You will need to create a free account before you can begin using tinkercad.

## Mouse Controls



- ☐ **Left Mouse Button**

Select and drag objects

- ☐ **Middle Mouse Button (Scroll Wheel)**

*Ctrl + Shift + Left Mouse Button also works if you do not have a scroll wheel*

Move camera perspective

- ☐ **Right Mouse Button**

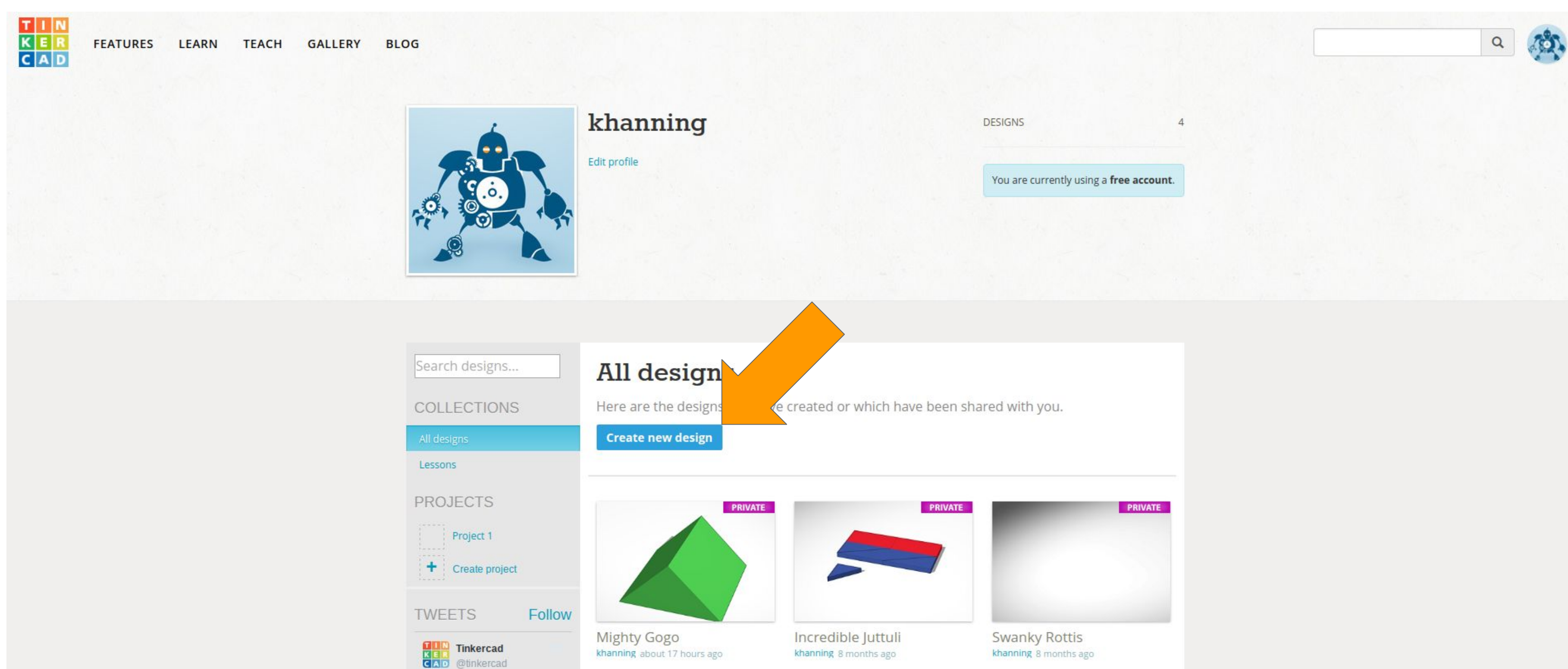
*Ctrl + Left Mouse Button also works if you do not have a right mouse button*

Rotate camera perspective

## Getting Started

Begin by logging into your Tinkercad account and clicking

Create new design



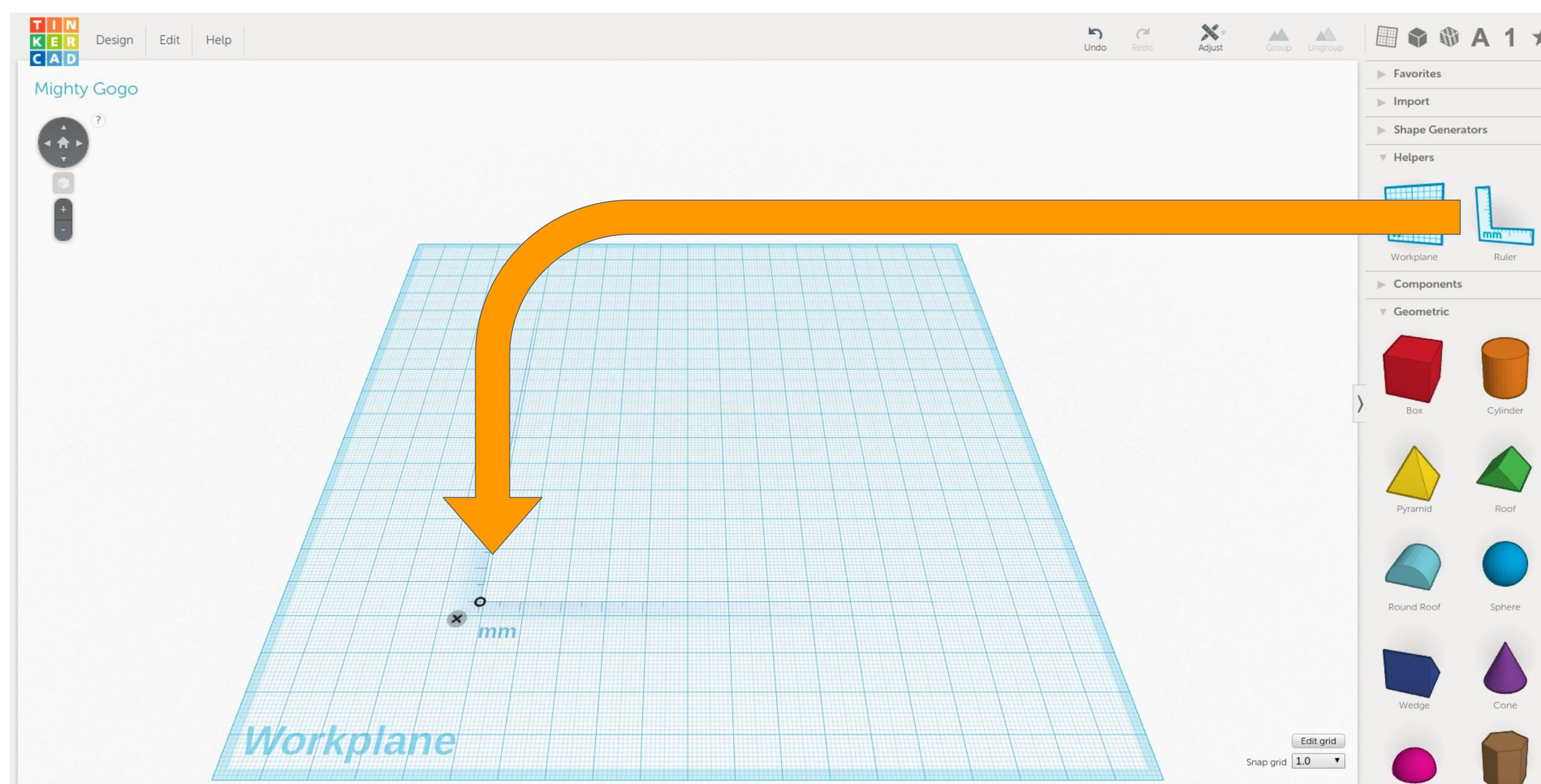


# Tinkercad Tips

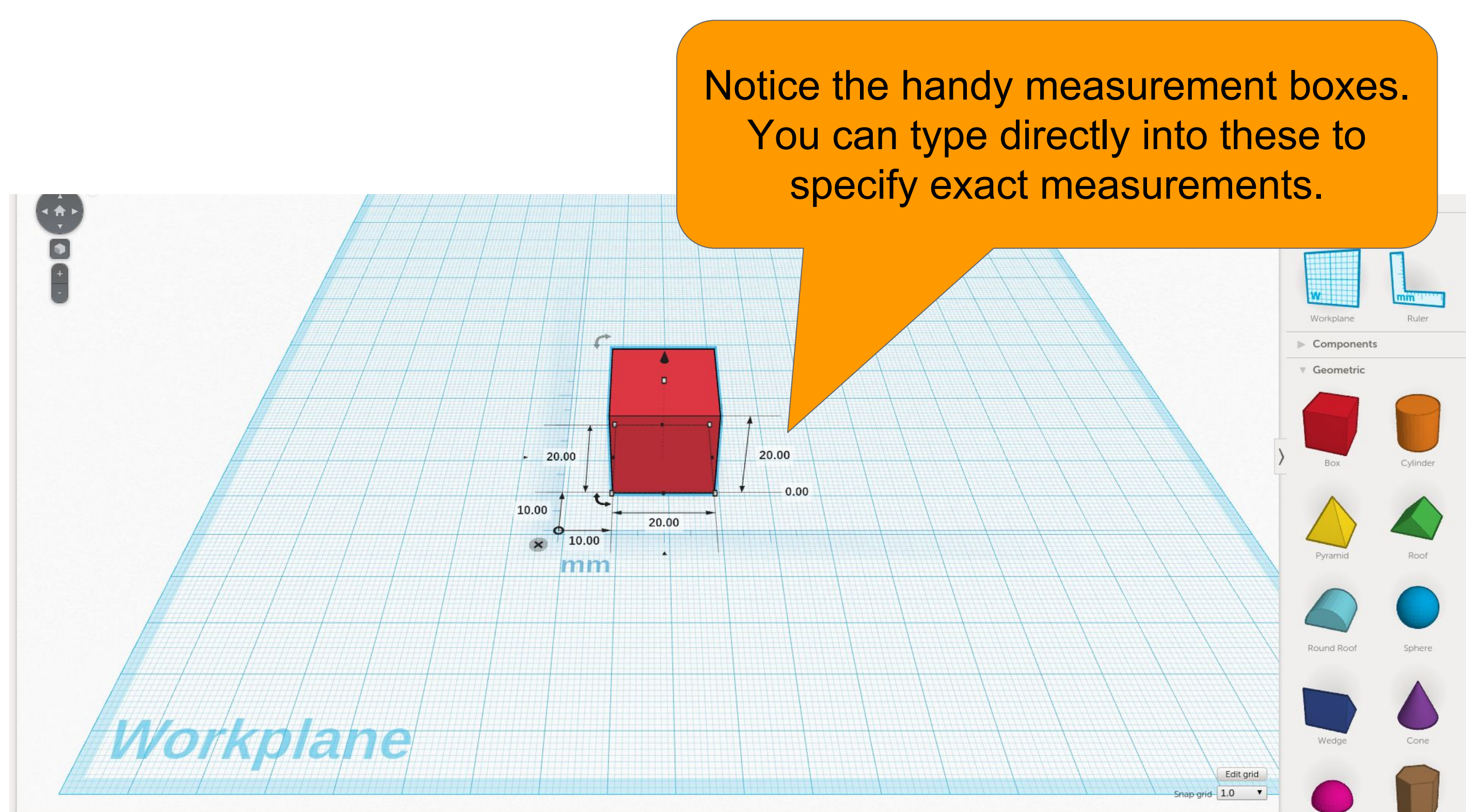
## Ruler Helper

Always begin by dragging the **Ruler** tool onto the Workplane.

The **Ruler** can be found under the **Helpers** category. It doesn't matter where you drop the ruler, only that you bring out the ruler before any other shape.



The ruler will make it much easier to align objects or specify exact measurements.

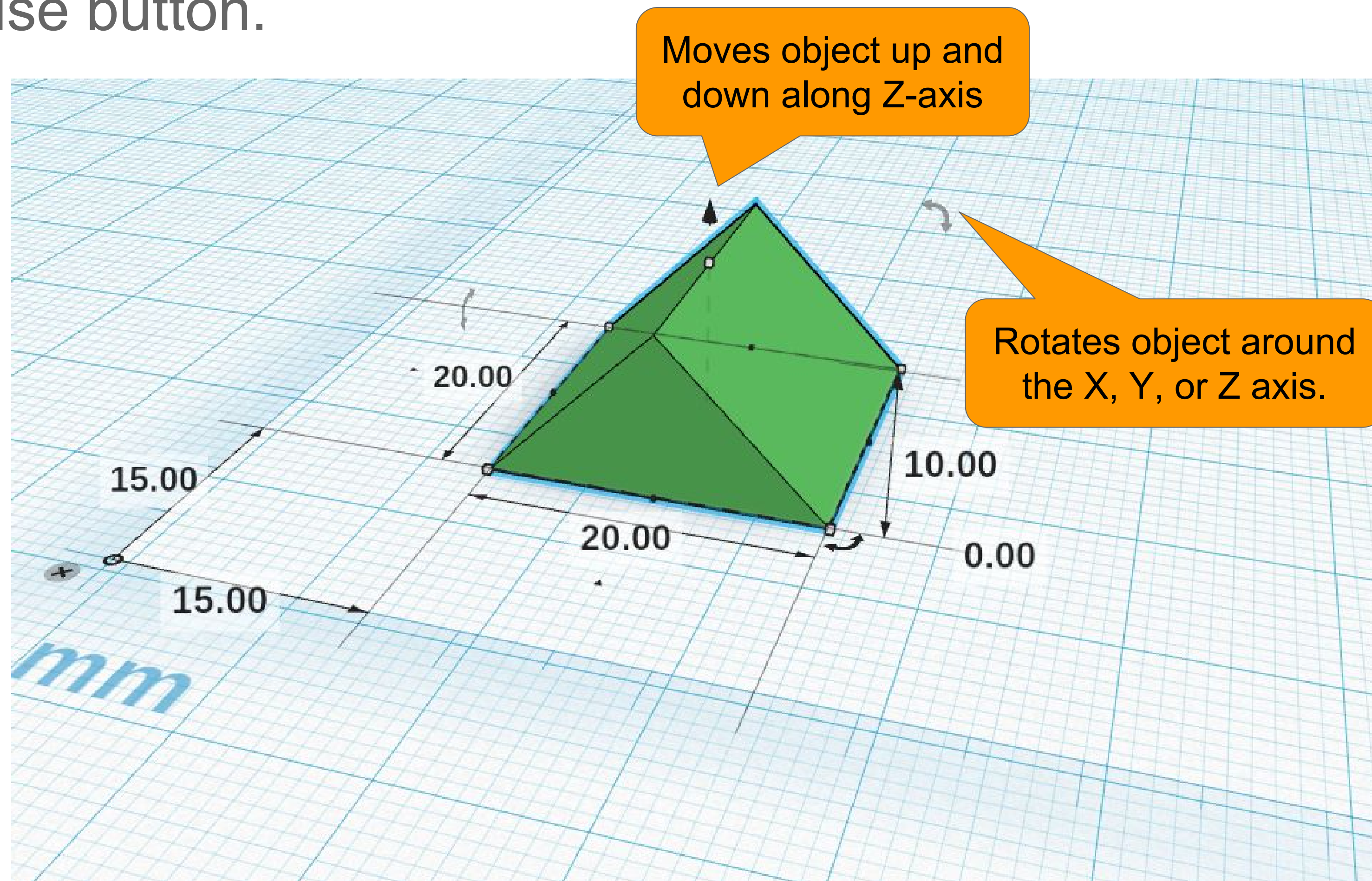




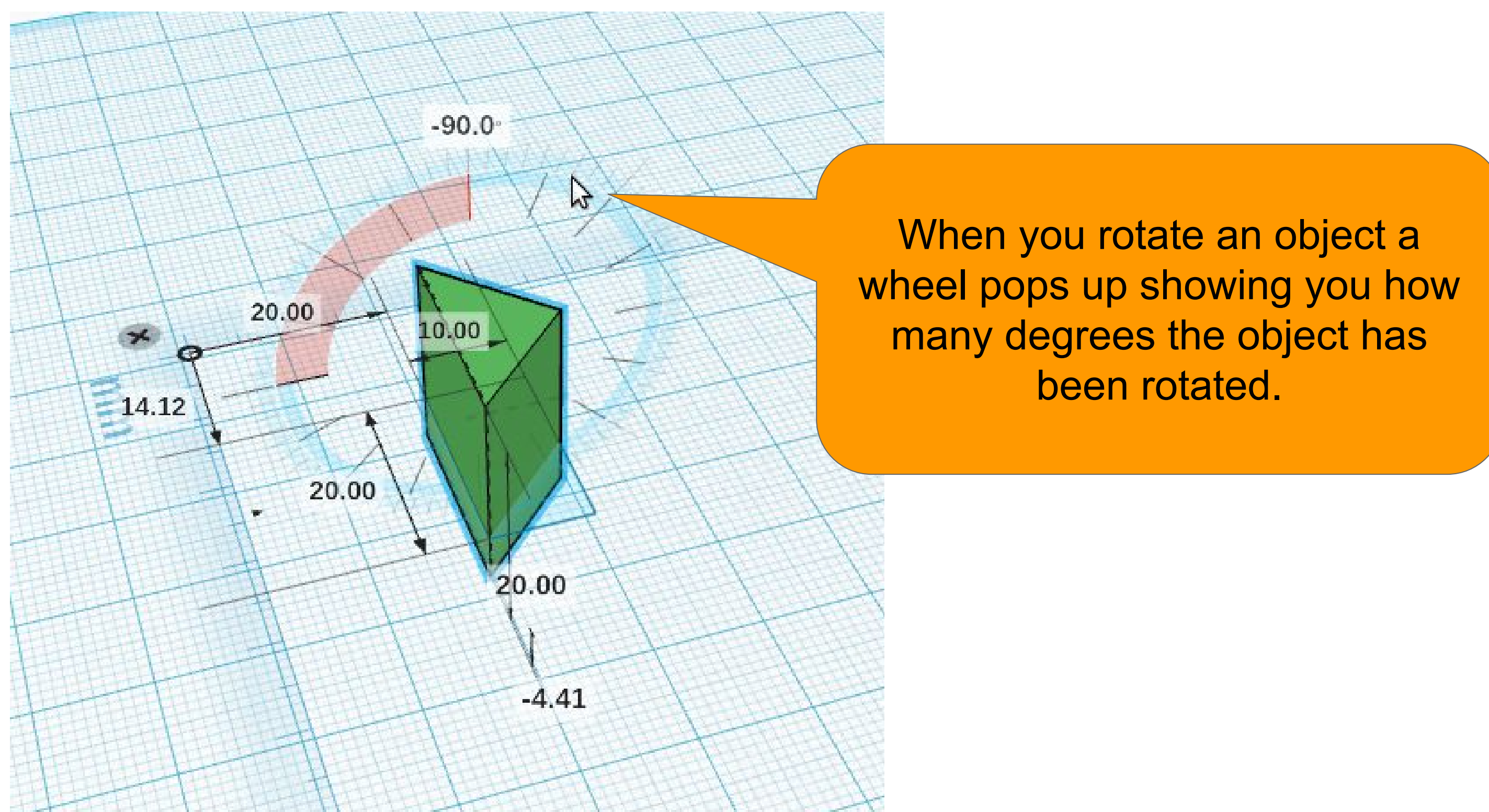
# Tinkercad Tips

## Rotating Objects

Sometimes you will have to rotate objects. To do this grab and drag the rotation handle across the correct axis. You may have to rotate the view using the right mouse button.



Sometimes you might need to rotate the camera perspective to see all of the rotation handles (↻). Click and drag with the right mouse button (or hold Ctrl + left mouse button) to rotate the camera perspective.

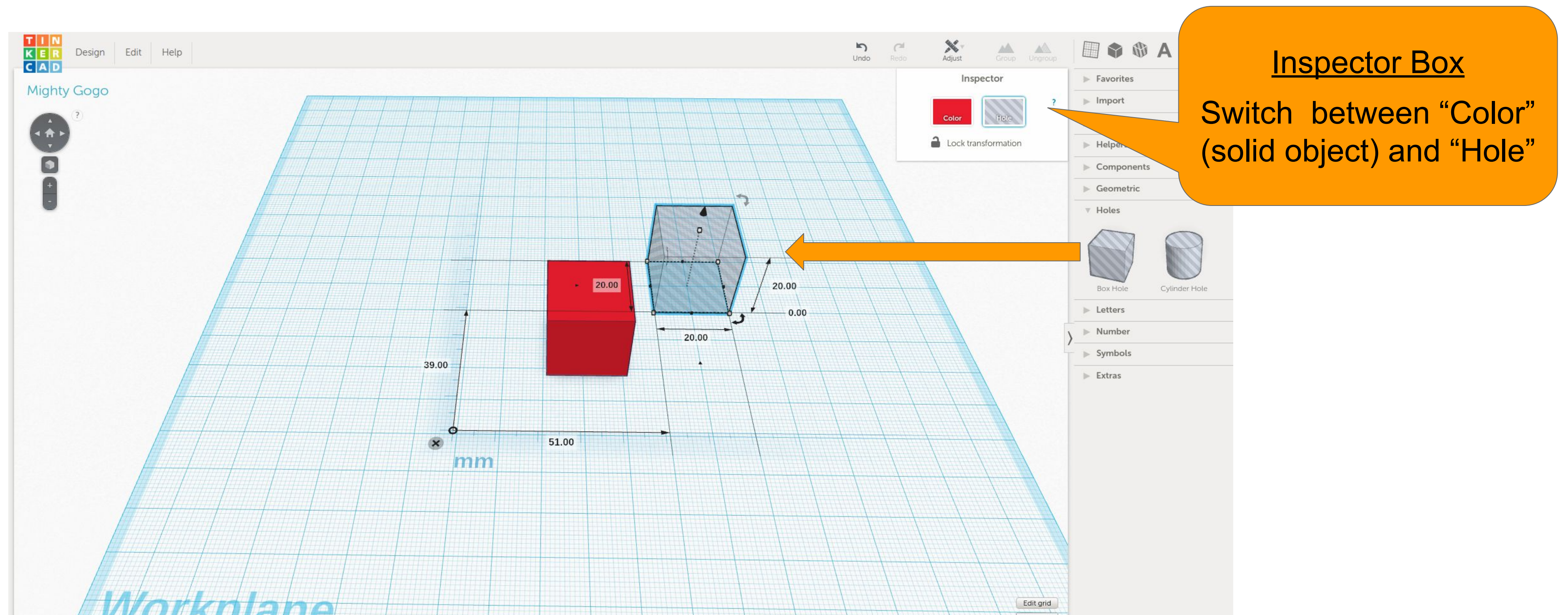




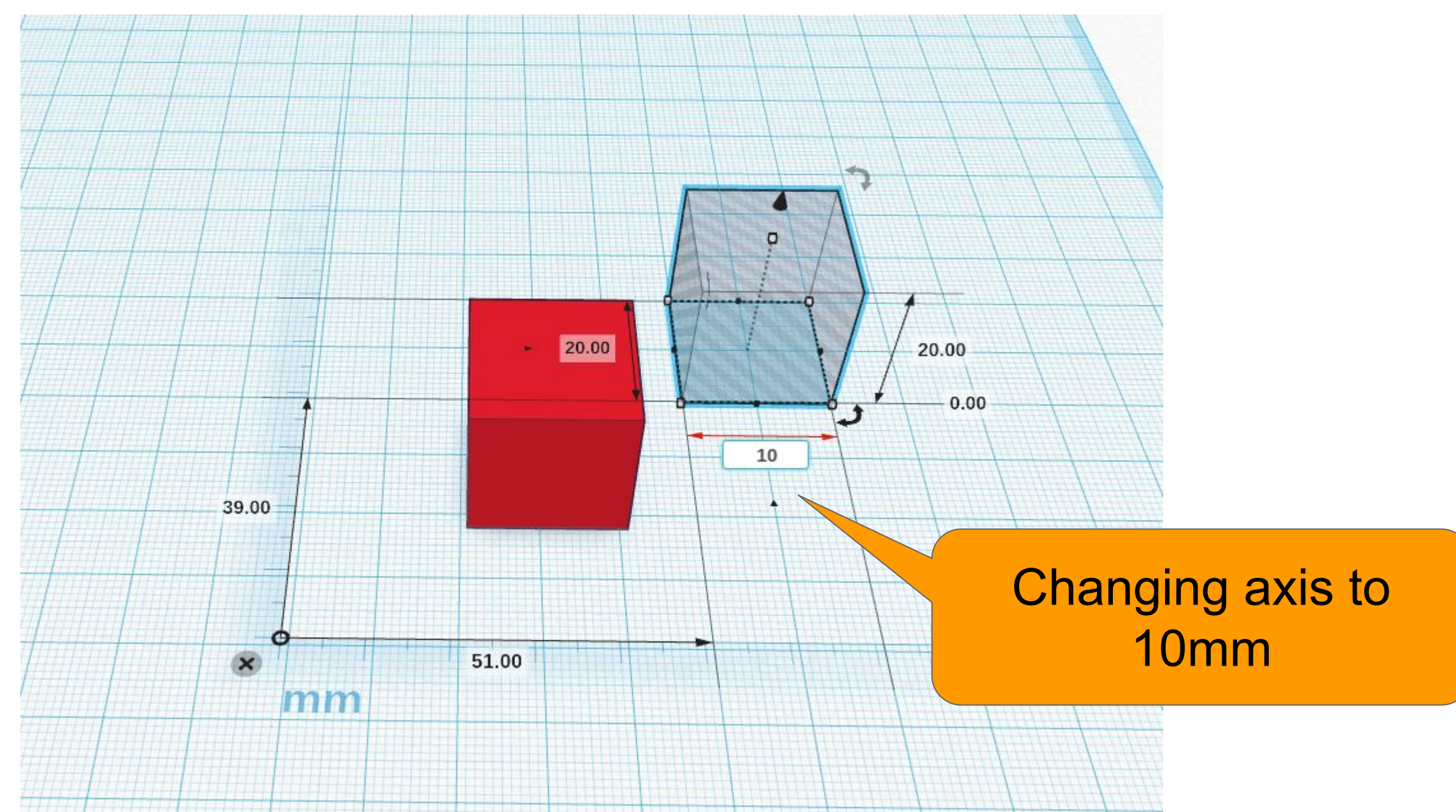
# Tinkercad Tips

## Making A Hole

To make a hole you can use the **Box Hole** and **Cylinder Hole** tools or you can use any shape by changing from “Color” to “Hole” in the inspector box.



Let’s say we want to cut a 10mm hole out of this 20mm box. First I will bring a **Box Hole** onto the workplane and resize it to 10x10x10 by typing in the measurement boxes (You may have to rotate the camera to see all the boxes).

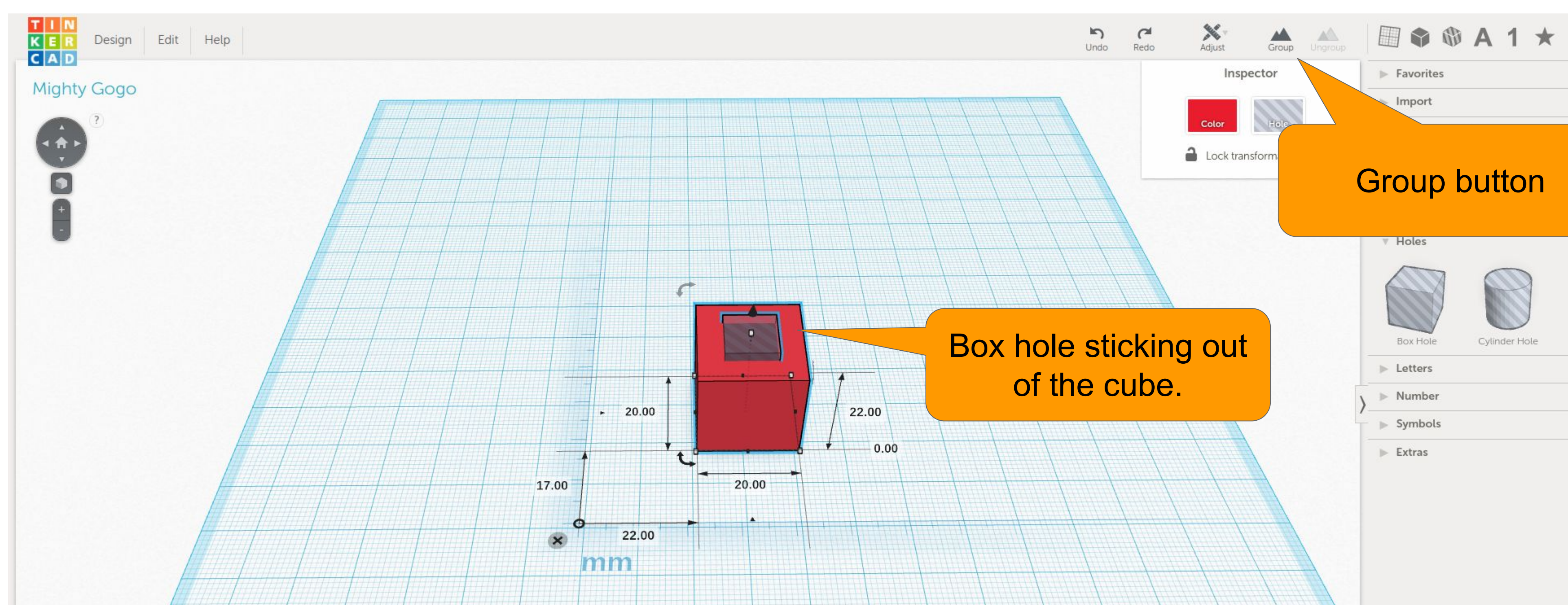




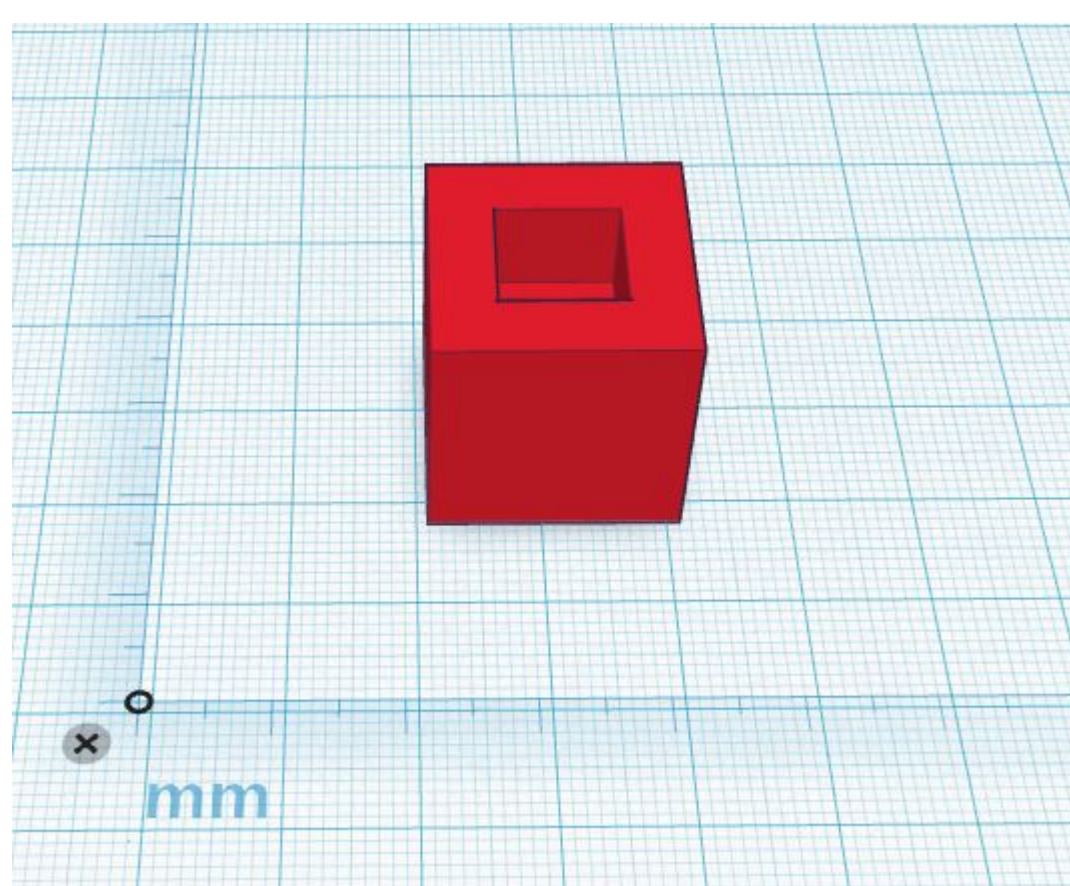
# Tinkercad Tips

## Making A Hole (cont.)

Now place the **Box Hole** where you want make a hole in the cube. Once the hole is in place, hold the Shift key and click both objects so they are both selected. With the cube and the hole objects selected click the Group button. It may take a minute for the grouping to process, once it is ready the hole object will disappear.



Click off of the object to deselect it, you will see the newly created hole!



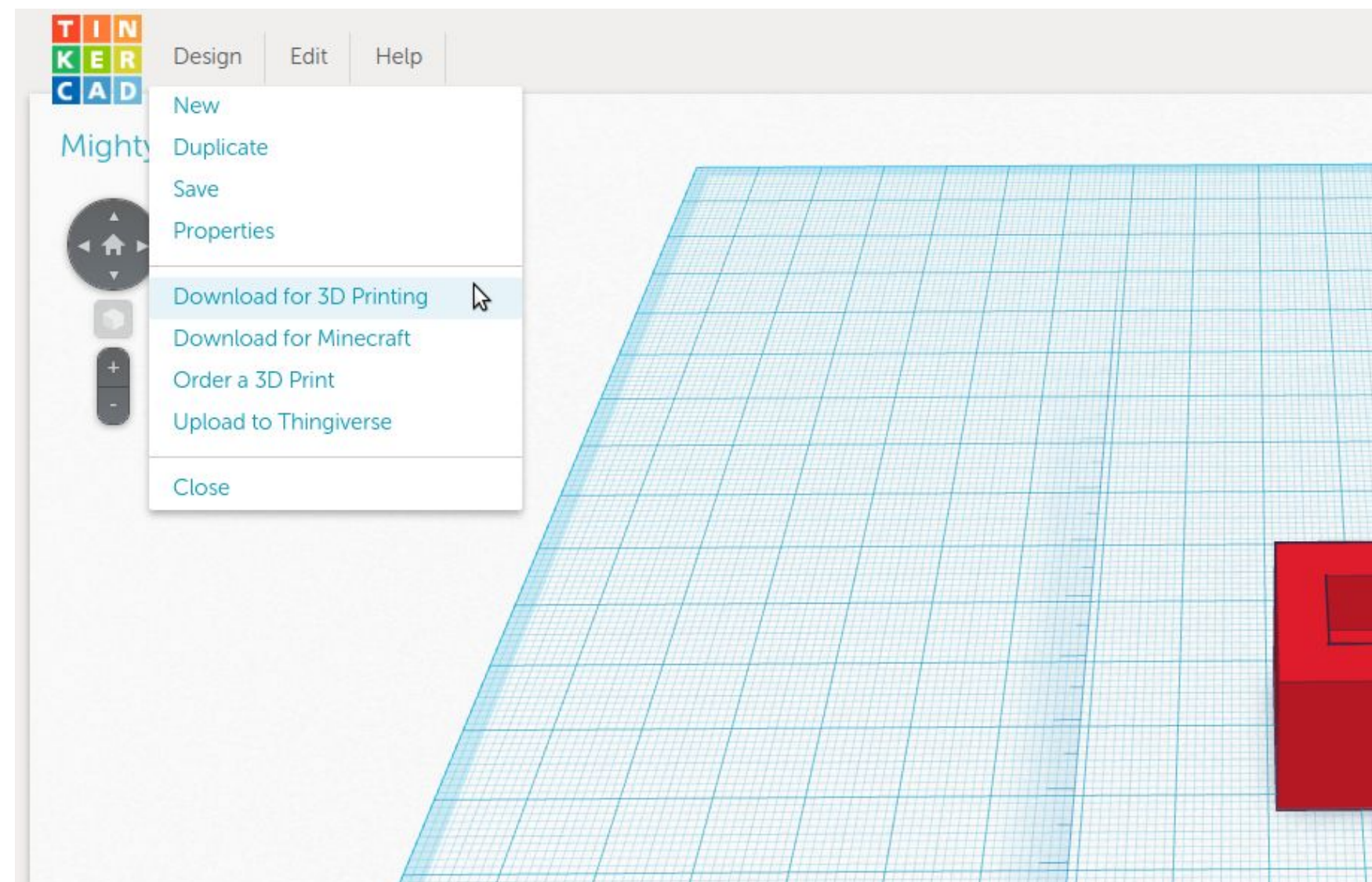
You can always modify the hole by clicking back selecting the object and clicking the Ungroup button



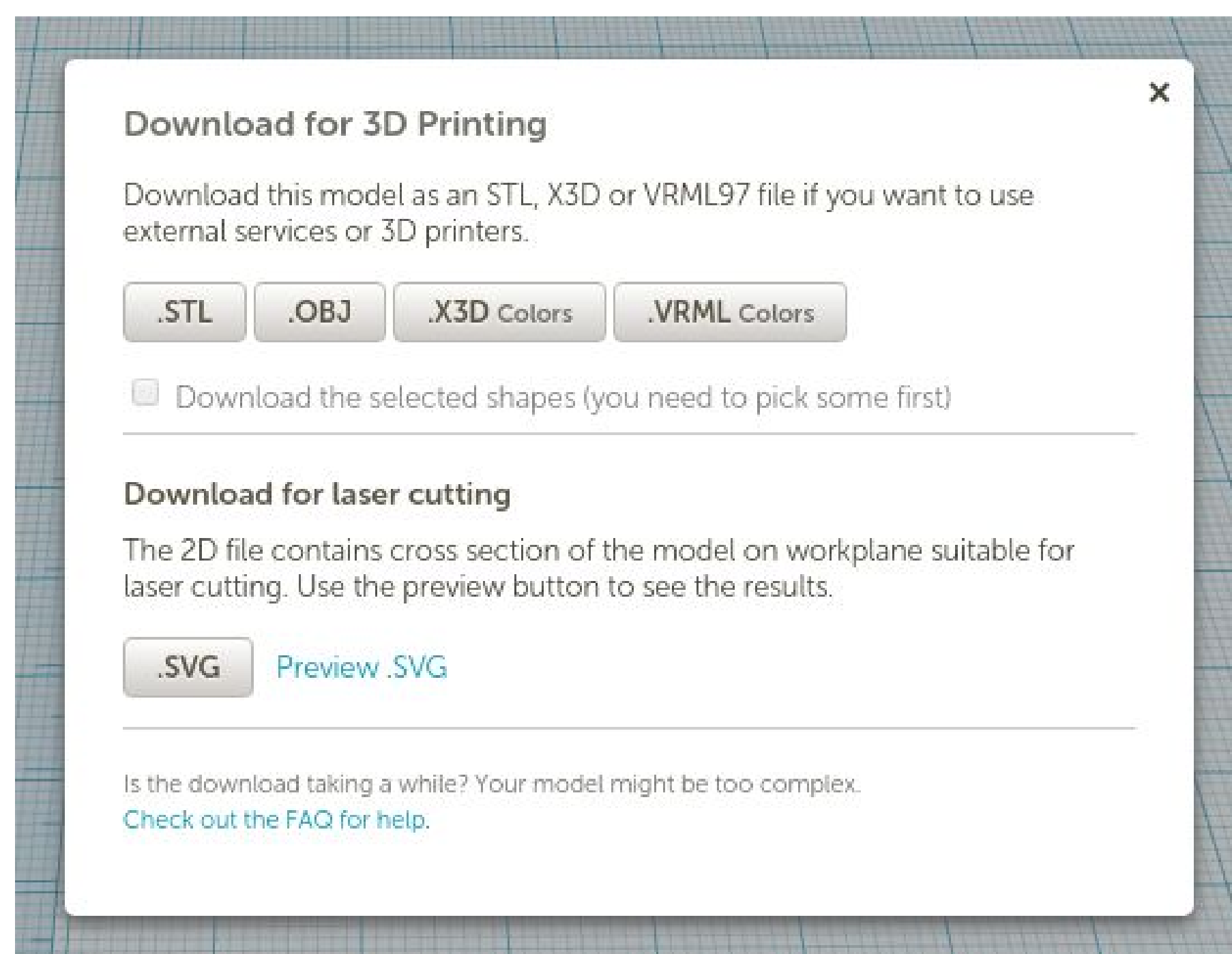
# Tinkercad Tips

## Download for Printing

Once you are happy with the design we need to download it so we can prepare it for the 3D printer. Click on Design then “Download for 3D Printing”.



We want an .stl (stereolithography) file, which is common 3D model format used with many 3D printers.



That's it! Now we have a 3D model that is ready to be prepped for 3D printing. Unfortunately, 3D printers can't read .stl files directly. What we need to do next is a process called “slicing”. Slicing is the process of converting a 3D model to instructions for the 3D printer which is known as GCODE.