

# 3D Software Instructions – TinkerCAD

All files at .STL

[www.tinkercad.com](http://www.tinkercad.com)

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## 3D Software Instructions – TinkerCAD

### To make an account:

1. Go to “Start Tinkering Now” and enter in your information to make your own account.
2. The benefit of using TinkerCAD is that it is browser-based CAD software. Your saved work can be accessed on any computer you log into.
3. Once you make an account you can go through a series of tutorials. These are great for learning the controls of the program and getting ideas for starting your own projects.
4. With an account, you can start projects from scratch and build anything you can imagine.

Recommended tutorials: These are the first tutorials of TinkerCAD. These are highly recommended because they will teach controls, short cuts, camera controls for 360 views; as well as the available resources and tools to build with the program.

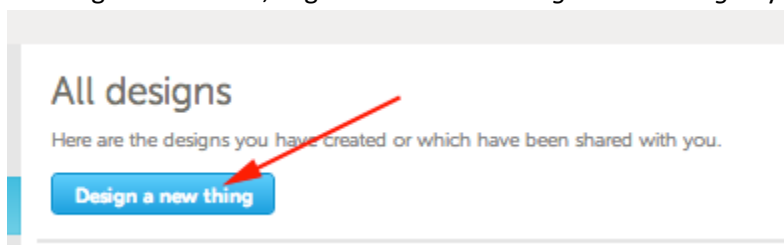
1. Lesson: Learning the moves (This will teach you how to move objects around on the workplane.)
2. Lesson: Camera Controls (This will teach you how to control the camera- from viewing your work at a birds-eye-view to seeing what’s going on underneath the workplane. This is extremely important when designing a 3D object because you have to see where everything sits at all angles.)
3. Lesson: Creating Holes (This will teach you how to cut out holes in a solid object. An example would be taking a big cylinder, and then using a small cylinder to cut a hole in the middle which will make the big cylinder hollow. This is an important tool to use because it very similar to drawing, it is what allows you to take away from object you’ve added and erase at it.)
4. Lesson: Scale, Copy & Paste (This will teach you short cuts to use along in your building process. All shapes and tools that are provided in TinkerCAD are at a set shape. It is your job to manipulate them to your design.)
5. Lesson: Key ring, letters! (This will show you more shapes and resources that TinkerCAD has to offer. Take into consideration all the shapes that were used to make the keyring- this is how you will design your own projects.)
6. Lesson: Die on the workplane (This will teach you how to manipulate objects and shapes to sit at a specific position to interact and combine with one another to make something unique. This will also show you how to move the workplane around that will help you with more precise and advanced building. This is the more advanced tutorial but extremely important for making projects that require precise detail.)

Shortcuts: (All controls are available at top left corner of work area)

1. ALT + Click & Drag = Duplicate object
2. (Hold) right click + move mouse = Change view angle at 360 degrees around workplane
3. Scroll = Zoom in and out

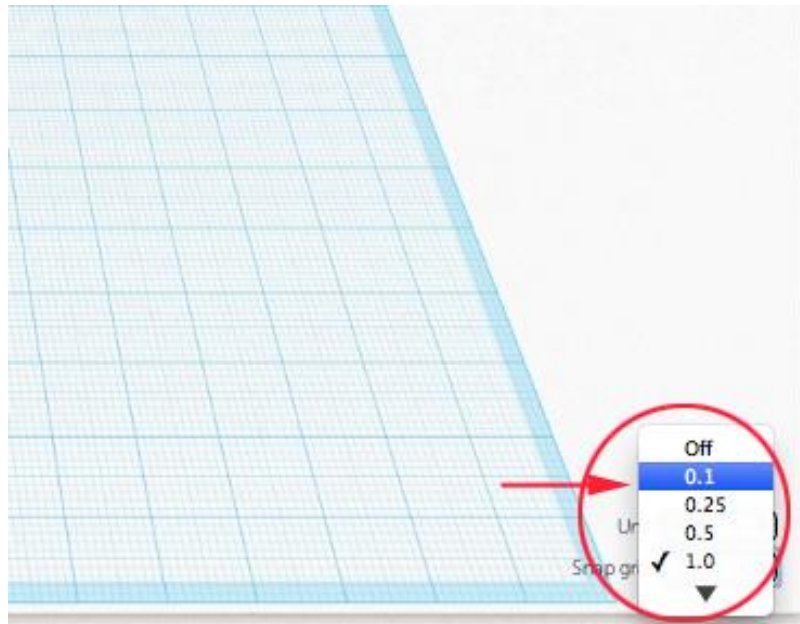
### TinkerCAD Instructions:

1. To design a 3D model, Log In and click on *Design a new thing* in your profile.

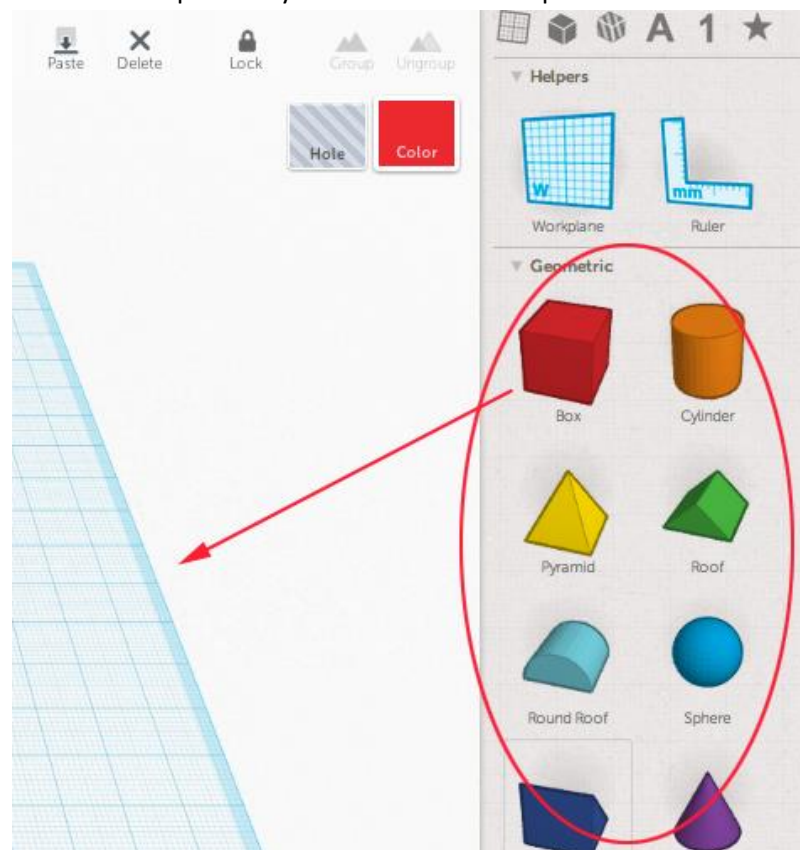


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- For greater precision I change the *Snap Grid* value to 0.25 or 0.1. This will allow the objects you're moving to take smaller steps rather than big leaps across the workplane.



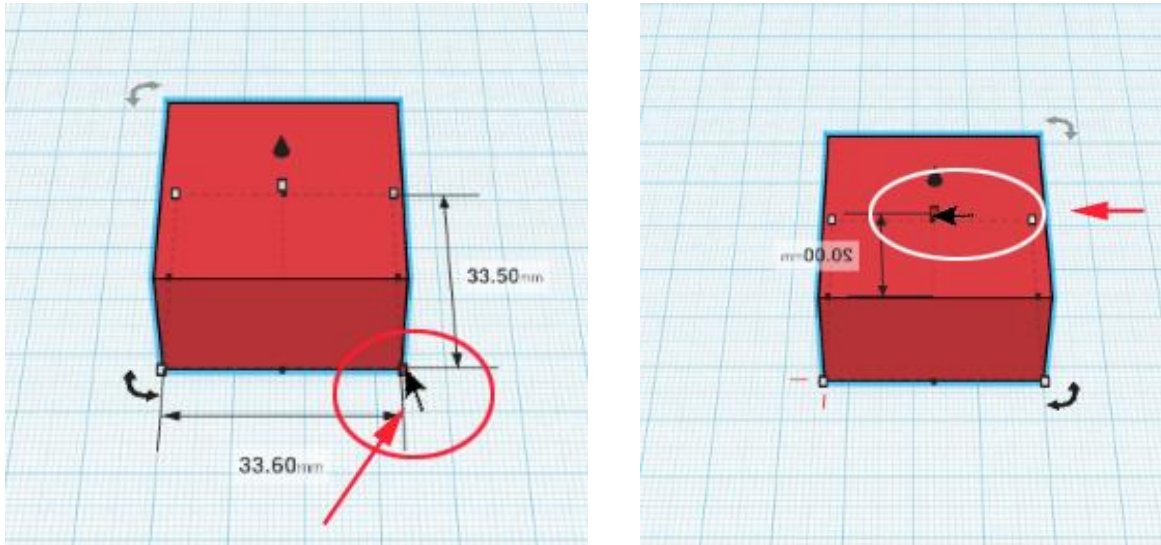
- You can also change the measuring unit of your grid for even more precision. Above the *Snap Grid* is *Edit Grid*. Here you can change the measurement from Millimeters to Inches. This can give you a better idea of the dimensions of your project if you're used to using feet rather than meters.
- To add shapes, letters and numbers drag your desired selection from the palette to the right to the workplane. Hold and drag the object over to the position you want on the workplane.



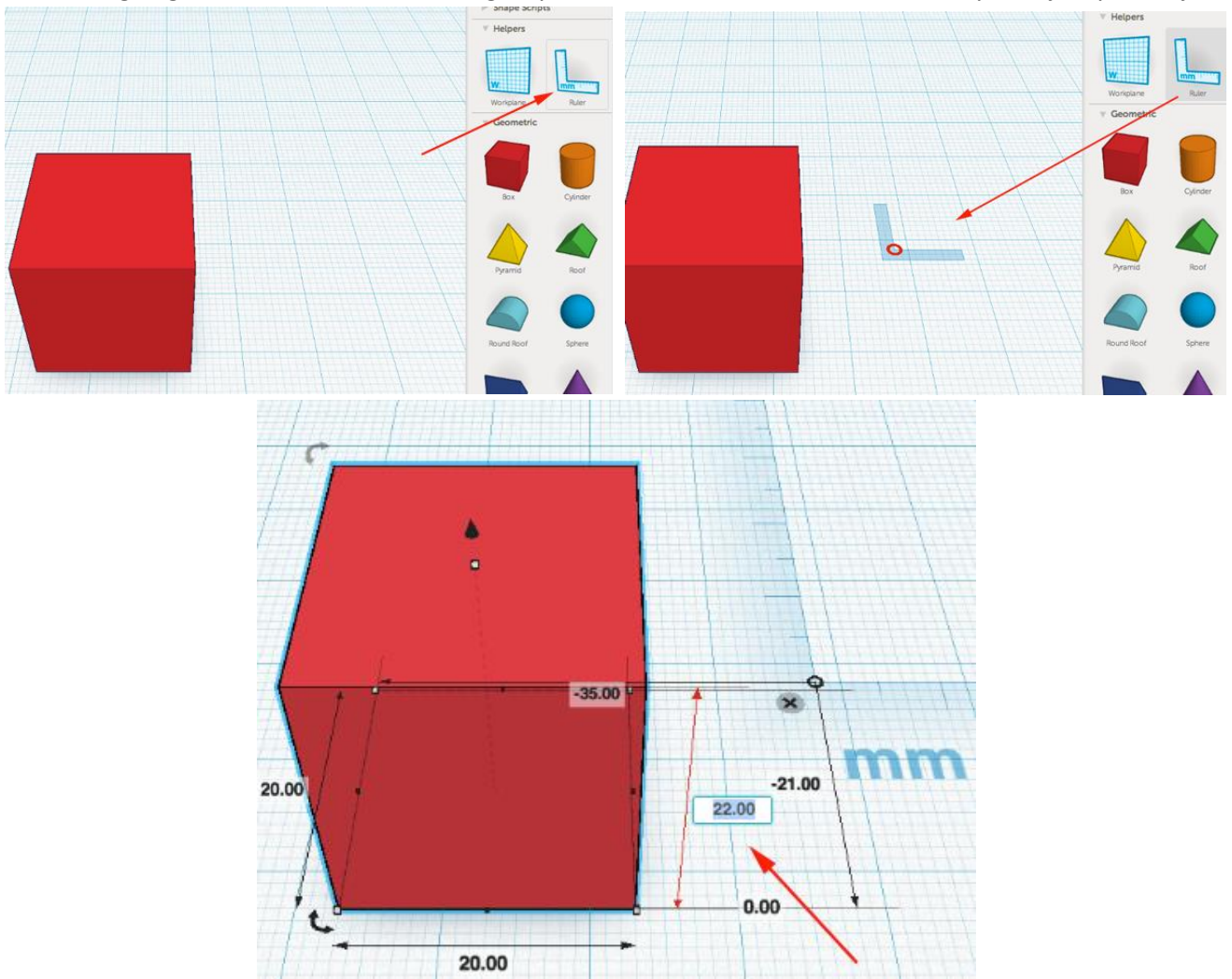
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5. You can change the dimensions/size of the object by moving the cursor over these handles (the small white squares) and dragging them to be your desired size and shape.



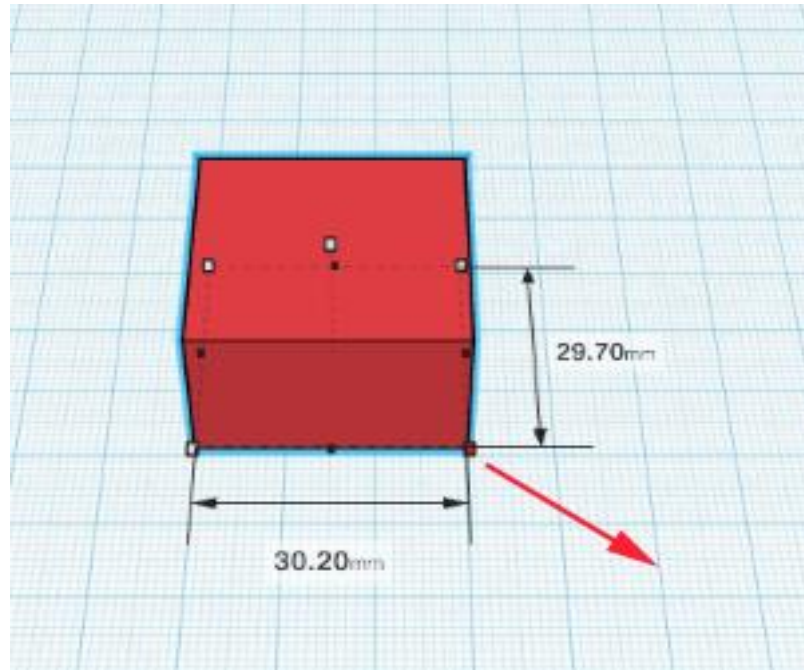
6. You can also get and modify dimensions by laying down the ruler. This will allow you to get an exact size or to see what is going on in more detail. This will give you exact measurements at all sides as you adjust your object.



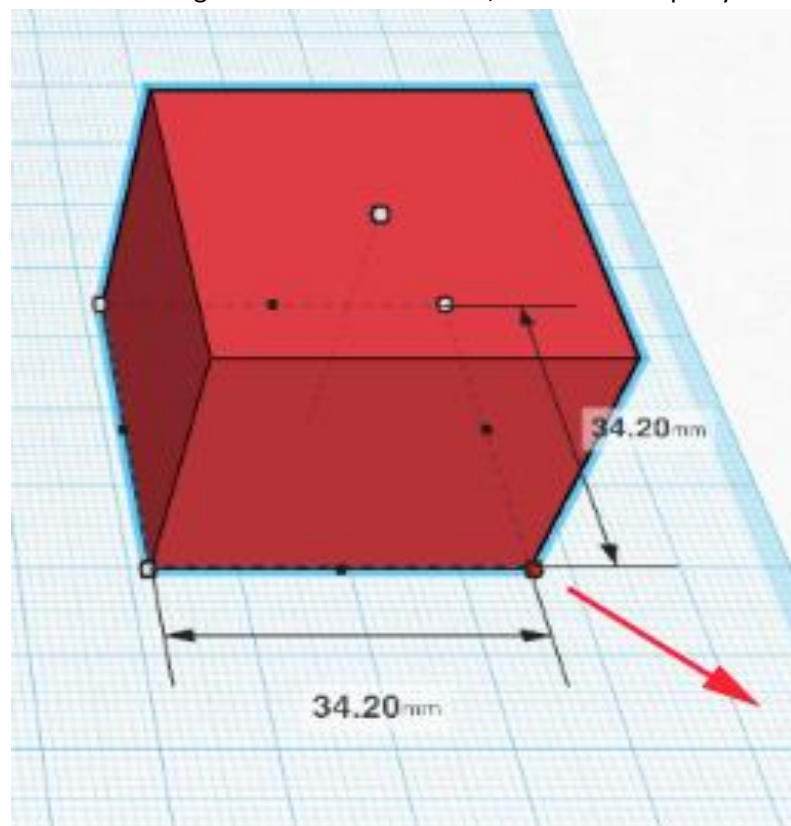


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7. You can also resize your object by dragging the corner points.

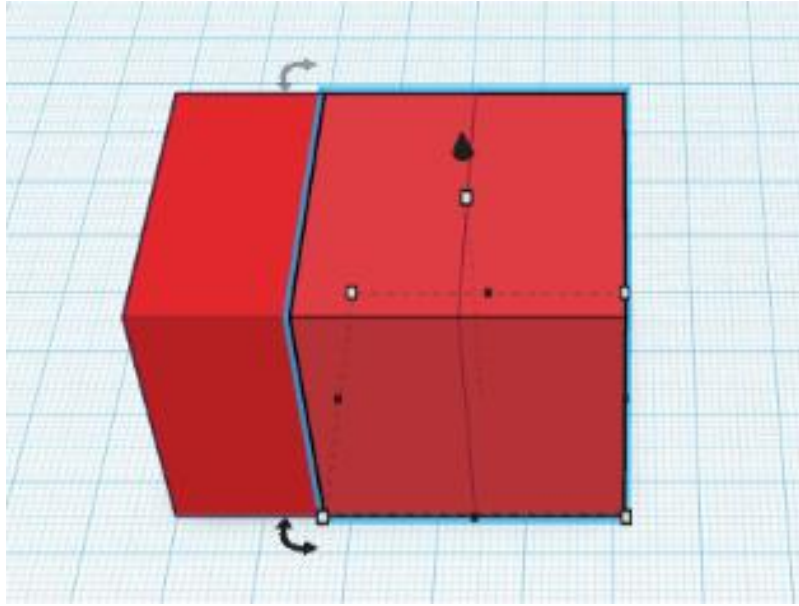


8. Dragging the corner point while holding shift will increase the X, Y and Z axis equally:

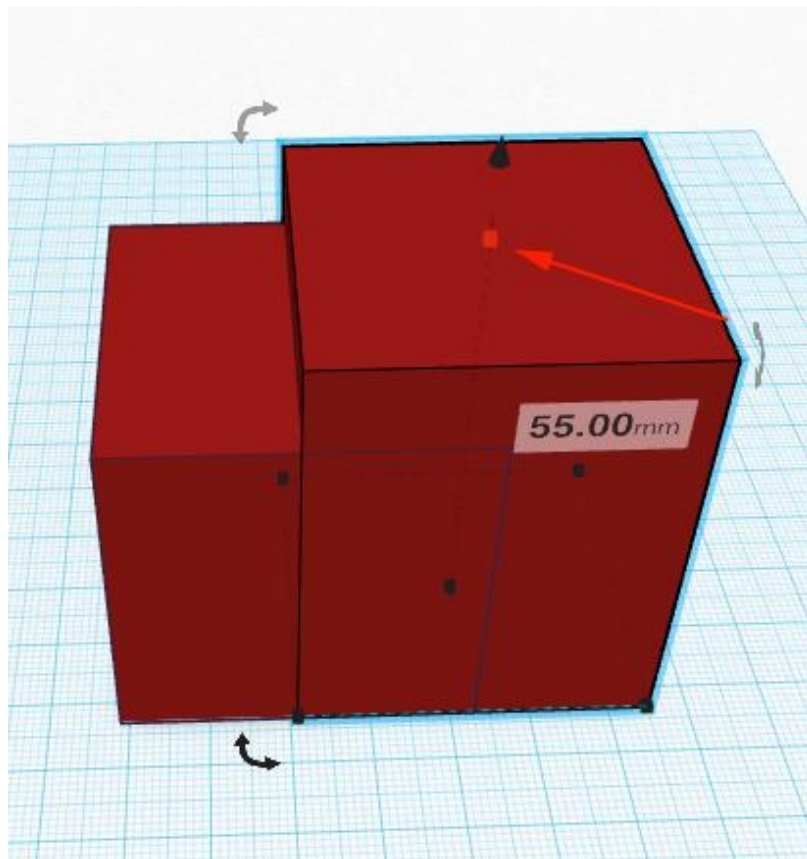


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9. You can copy and paste your forms using the standard keyboard commands (Ctrl + C & Ctrl + V). When you paste, TinkerCAD will move your new form to the right:

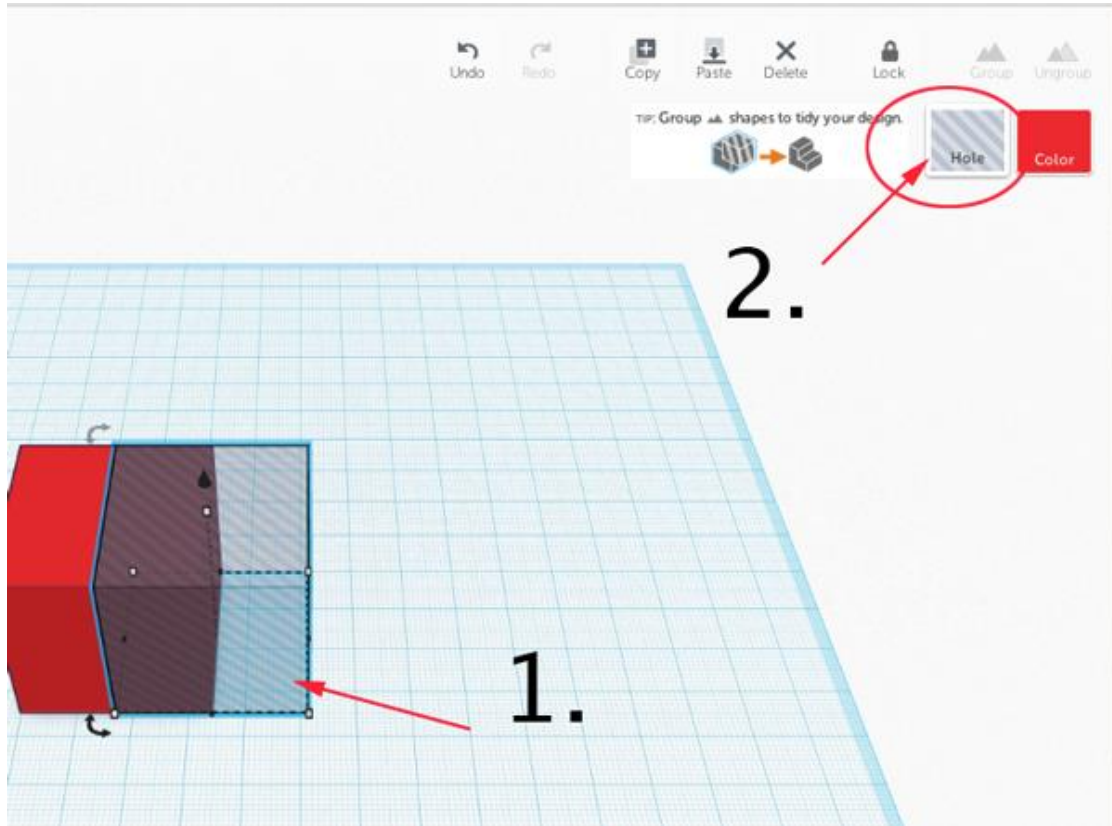


10. You can raise the height of your form by dragging the Node (white square on top), which is right below the up arrow (black cone).

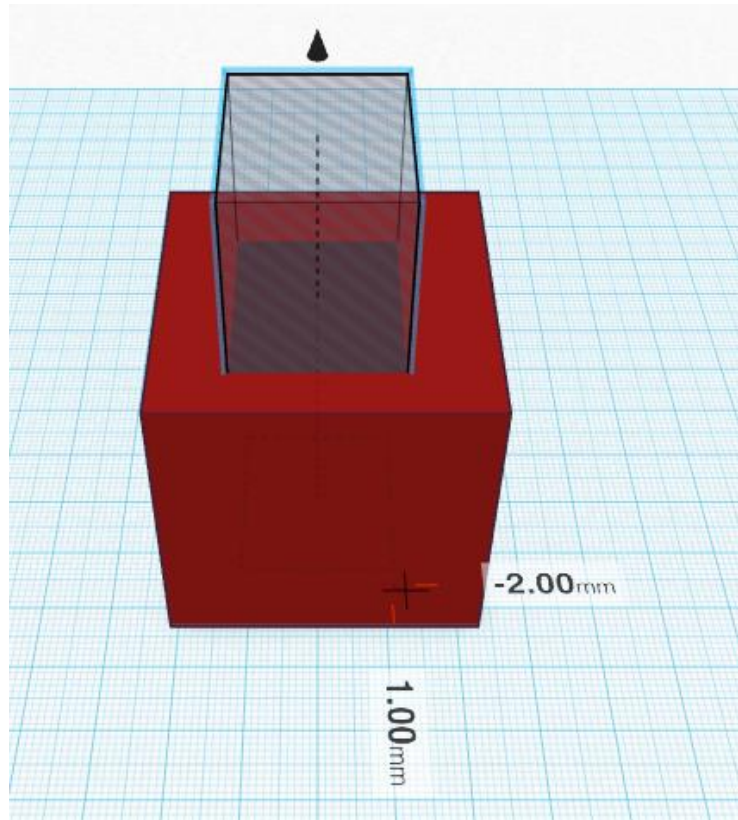


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11. You can subtract shapes from each other by placing the shape you want to remove, selecting it and then click on the *Hole* icon.



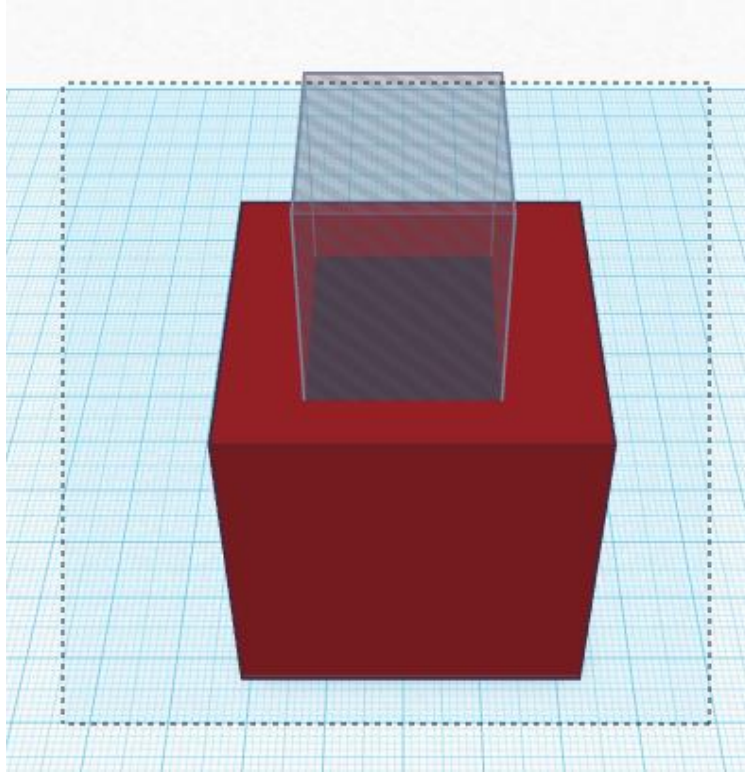
12. You can still adjust the location of the hole by dragging the form.



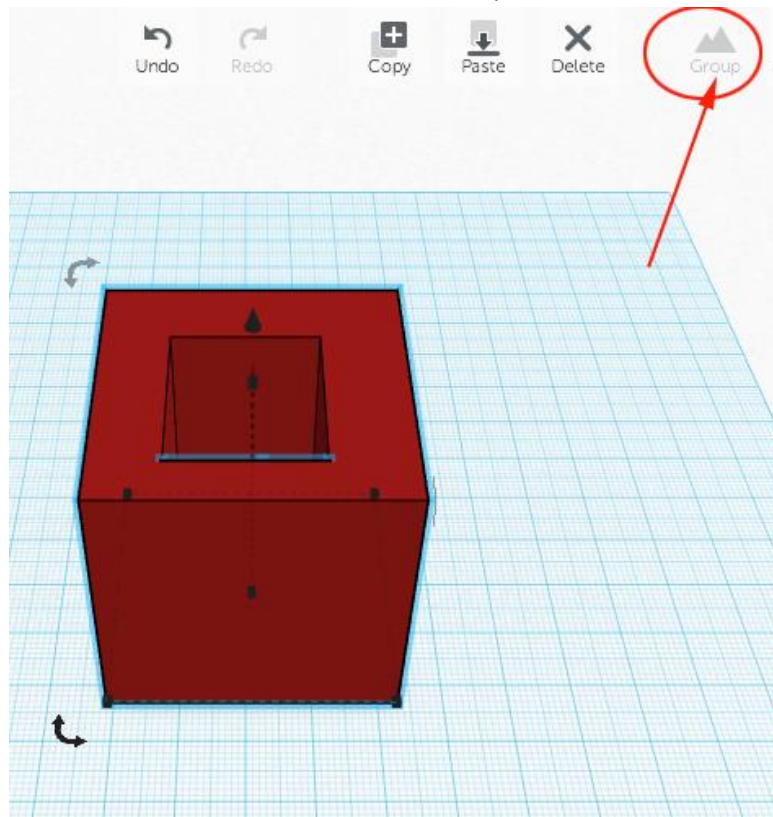


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13. When you want to remove the shape, drag your cursor over both objects to select them (or Shift + Left Click).



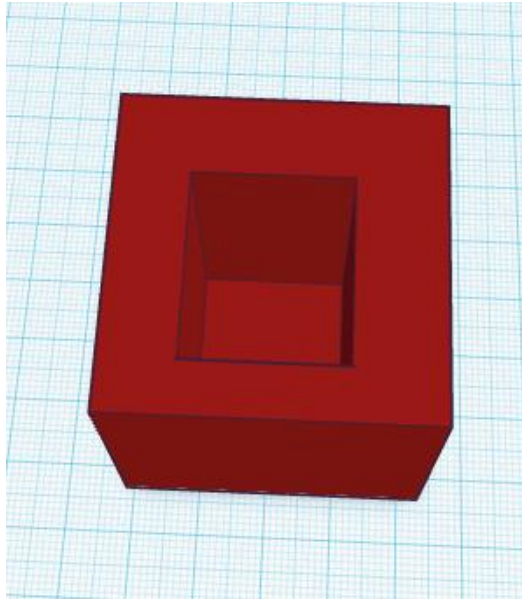
Then click on *Group*.



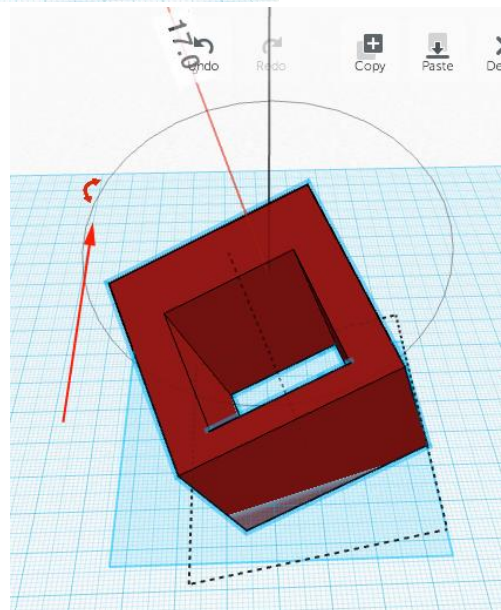
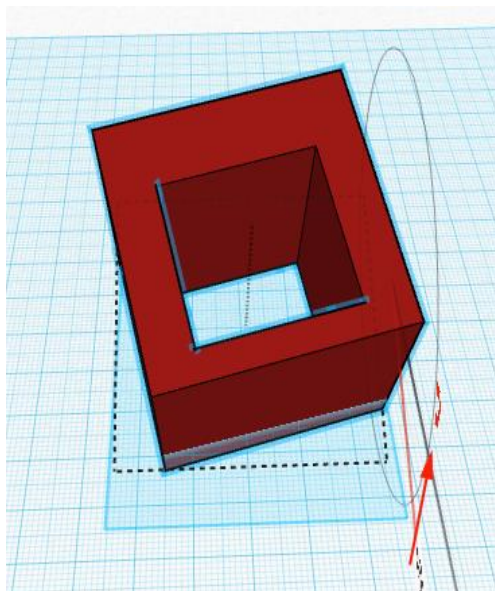
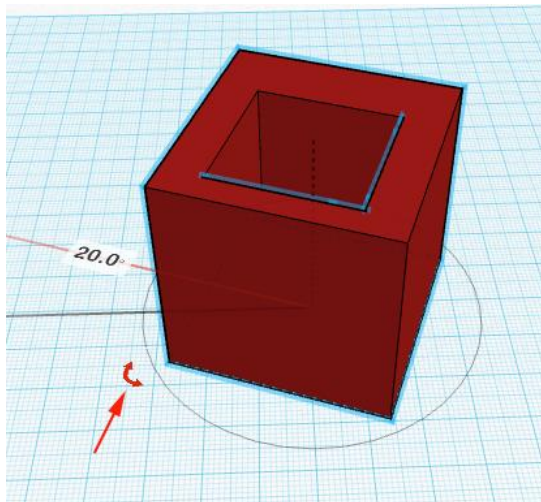


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14. To view the hole, rotate the camera angle.



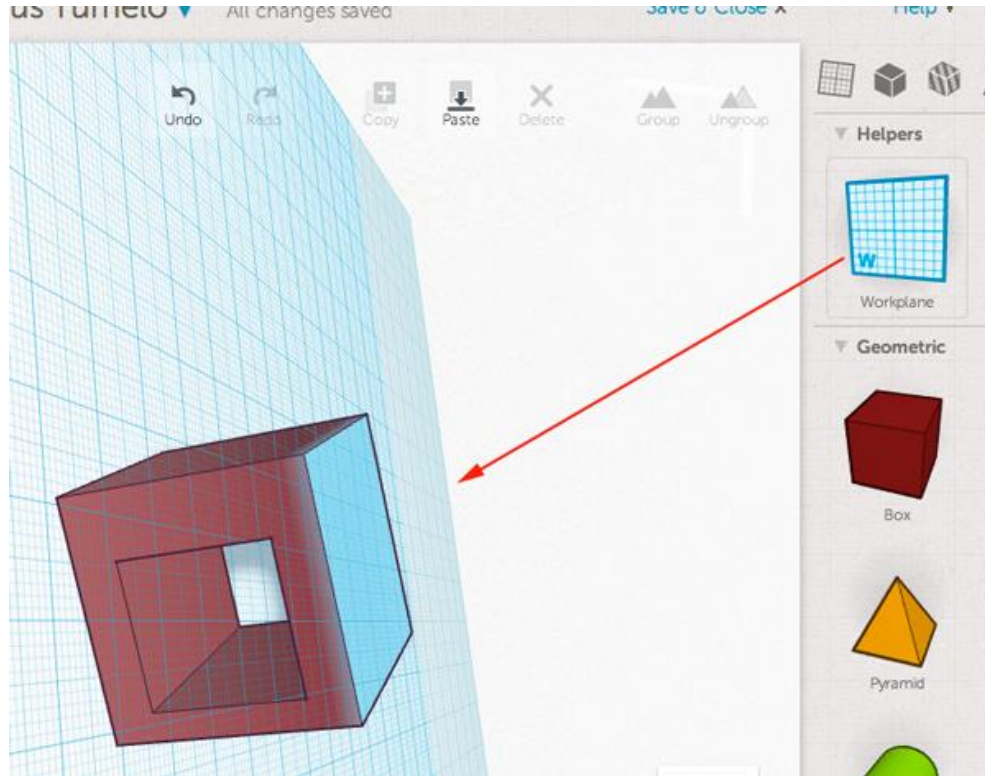
15. You can rotate how objects sit on the plane to give them new angles. This is done with the curved arrow.



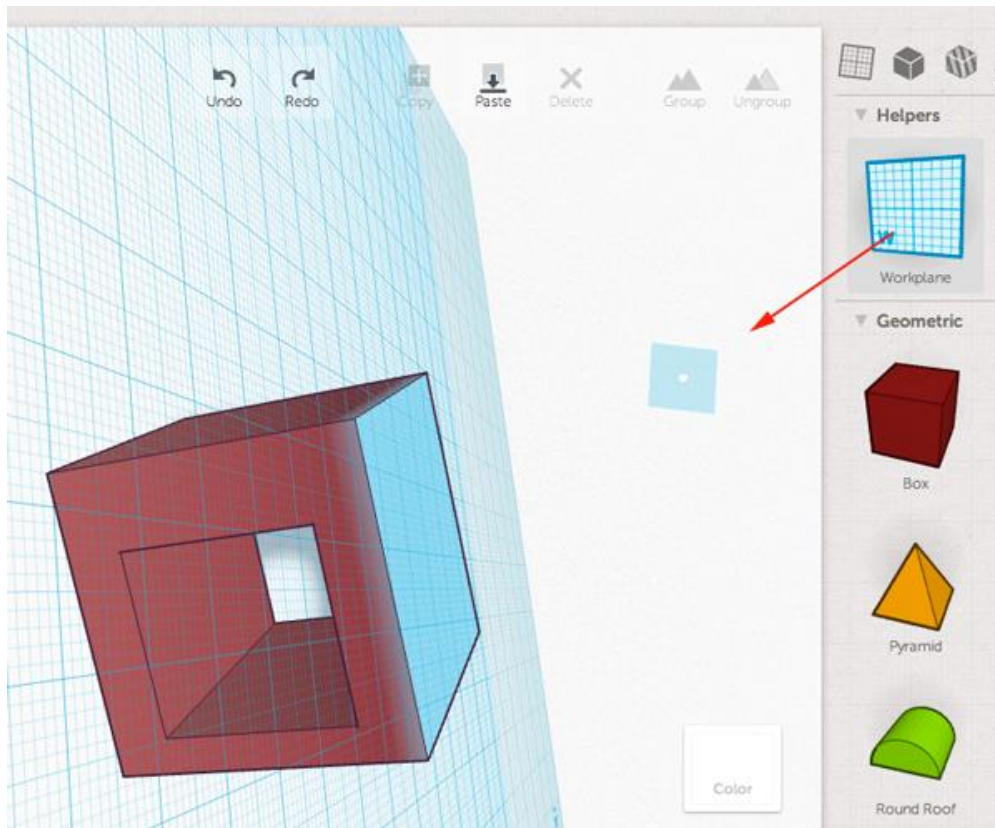
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16. You can also move the *Workplane* by placing it on the side of your form. This is great for when you want to build on that side of the object.



17. To reset the Workplane, just drag the helper from the palette to the desired surface in the work area.

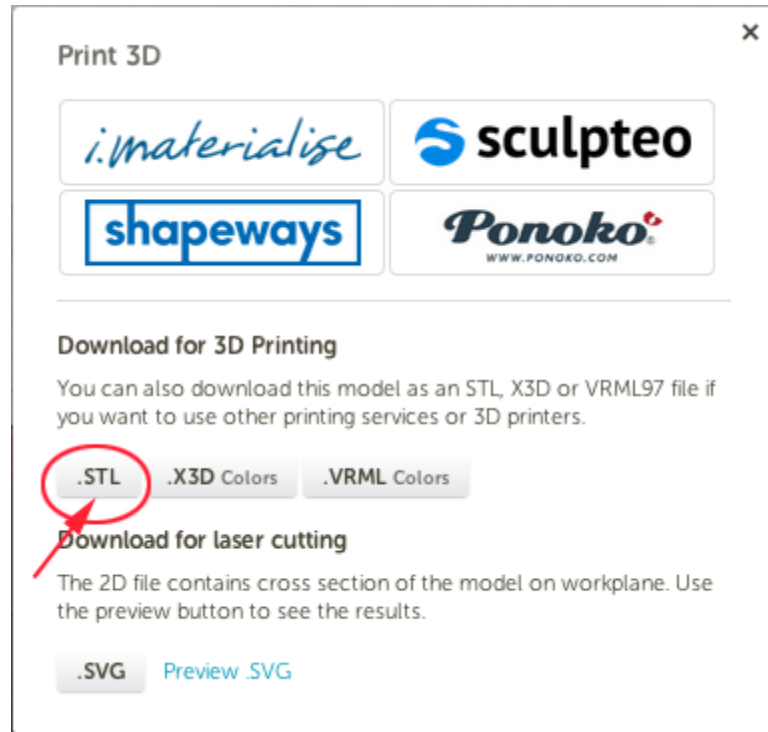


### 3D Software Instructions – TinkerCAD

18. To save the project for printing, save it as an STL file to an SD card. First, click on the *Print 3D* Button at the top right.



Then click on *Download STL* button:



19. HAVE FUN!