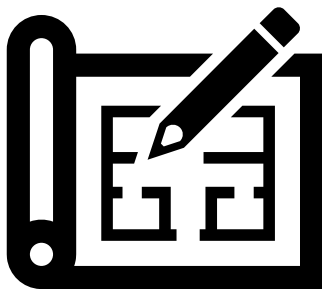


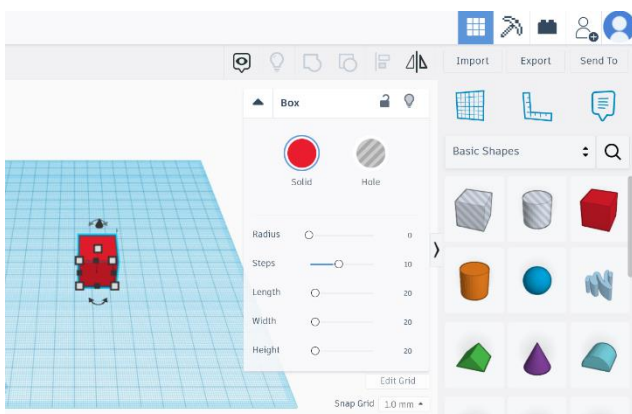
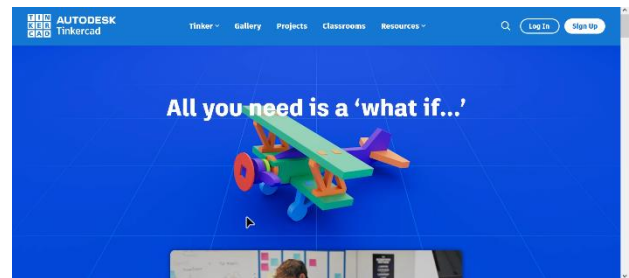


This document is designed to serve as a general introduction CAD software and programs that can be used to make 3d files. Other useful guides and videos can be found at OT3d.org



If you are new to 3d Printing, you might have asked yourself how to go about actually creating files. The .stl and .obj files that you can find on the internet all originally come from CAD software, or Computer Assisted Drafting. This guide will walk you though a few programs that you might like.

The first program that we will be talking about is TinkerCad. If you are new to CAD programs, this is a program that I would highly recommend. It has all of the tools needed to create objects and offers excellent educational resources to help you learn the program.



Tinkercad at its base is a program that allows you to build things. On the right side of the screen, there is a menu of 3d objects that you can drag onto the grid. You can resize, rotate, and flip these objects. You can even combine multiple objects to form new shapes. Combining a solid object with a 'hole' object allows you to carve out the solid object.



TinkerCad is a product of Autodesk and offers some of the best educational videos out there for its use. Following the QR code to the right will take you to a video that will get you started with the basic concepts.



Level Up Teachers & Parents

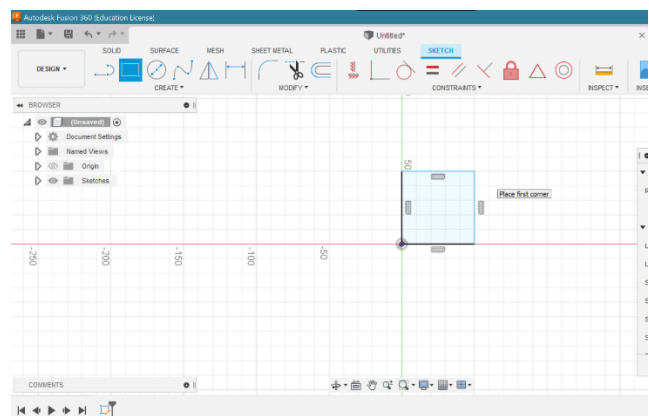
How to Level Up from Tinkercad to Fusion 360

Team Tinkercad
Jan 3, 2022

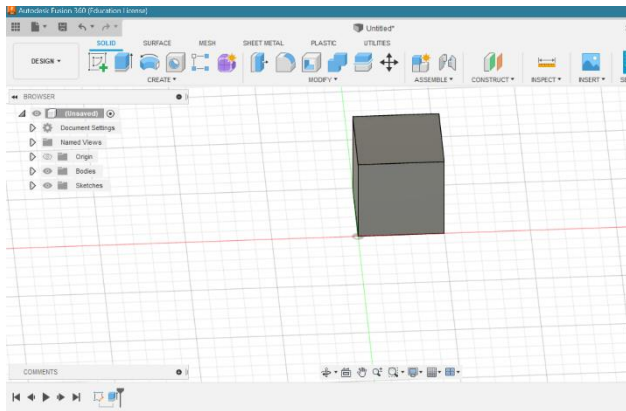


TinkerCad is free to use and does not require downloading any software, just creating an account through Autodesk. It does lack some of the more advanced options that other CAD programs offer, but it is an excellent starting program.

The next program on our list is another Autodesk program called Fusion 360. Fusion 360 is a software that more closely resembles a traditional drafting program. Using this program typically entails starting from 2D drawings, extruding them to give them depth, and editing them with the tools of the program.

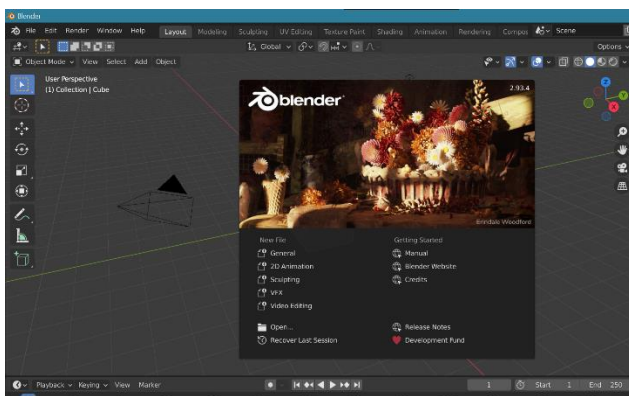


Helpful Hint: Because TinkerCad and Fusion 360 are owned by the same company, there are prebuilt instructional guides that will take you through the process of switching from TinkerCad to Fusion if you need more powerful drafting tools.



Fusion 360 has a higher learning curve than TinkerCad, but in exchange it offers a variety of tools including the ability to round edges and altering the 3d mesh of objects. Fusion 360 offers both free and paid plans, with the free plans having a few limitations.

This QR code will take you to an instructional video that gives you a follow along design using Fusion 360 that will help you to learn the basics of the program. Once you have the basics, try experimenting and making files.

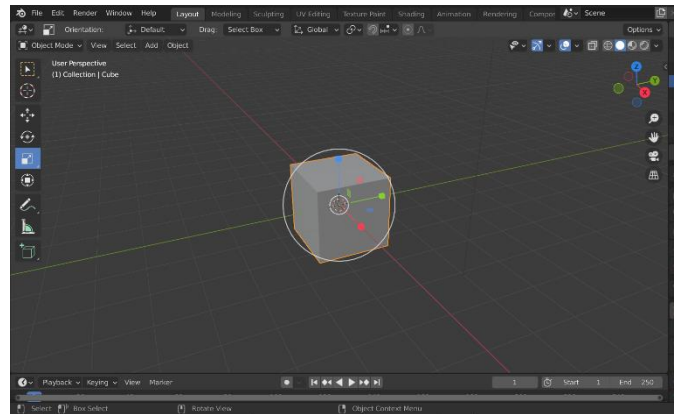


If you are hoping to design things that are a bit more fluid compared to the rigid shapes of Fusion and TinkerCad, you might consider a program called Blender. While not a traditional CAD program, it can still perform many of the roles that we expect like building 3d files for printing.

Helpful Hint: Most CAD programs will allow you to import existing files and edit them. Doing this may save time compared to building files from scratch every time.



Blender is a free downloadable program. It is traditionally used for animation, but works well for stationary objects, too. Using Blender, you start with a 3d object and slowly sculpt it to meet your desired shape. This modeling process leads to more organic shapes in your design.



Here is a QR code that will take you to an excellent tutorial on how to use blender for use in 3d modeling. Like the Fusion 360 link, this tutorial will take you through the process of modeling an object to help you understand the basics.

There are many CAD programs that can be used for 3d modeling. Check out some of the following in addition to the ones listed above to see what works best for you.

- **Rhino**
- **Solidworks**
- **Autodesk**
- **Maya**
- **Google Sketchup**
- **Openscad**
- **3dbuilder**
- **zbrush**
- **Meshmixer**

Helpful Hint: If you are just getting started, check out the tutorial for TinkerCad that I have uploaded to YouTube and OT3d.org.