

↓↓↓ **WANT TO PRINT SOMETHING IN 3-D?** ↓↓↓

## **STEP 1: DESIGN SOMETHING.**

**Student-designed objects.** We can print objects downloaded from “Thingiverse” that artists have uploaded and shared but prefer to print your designs. We feel students benefit from learning how to produce their own 3-D models and designs.

**How do I start?** There are many different solid modeling CAD software programs that can produce printable 3D models. A few popular options are SolidWorks, Inventor, 3DS Max, Blender, Creo, AutoCAD, Rhino 3D, Sketchup and Tinkercad.

**For beginners, we recommend starting with Tinkercad.** It is web-based, optimized for 3D printing, and easy to get started with. There are tutorials that will take you through basic building processes.

**Use the Desktop Computers in the Library to Access Tinkercad.** Create your own account.

- Click Sign In
- Click Sign in using social providers
- Click Google
- Create New Design
- There are tutorials in the Learn section of Tinkercad  
or you can come see Mrs. Tritz to get started!

## **STEP 2: PREPARE YOUR FILE.**

**Check file size.** Please make sure that your file can be printed in under 3 hours. For reference A product the size of a soda can would take approximately 5 hours to print. Exceptions can be made for larger files if it is for a class assignment.

**Save your file as .stl.** Name your file: lastname\_firstinitial\_modelname.ext (ex: morgenthaler\_d\_puppy.stl)

If you are using Tinkercad, click export > select everything in the design > click .STL

### **STEP 3: FILL OUT A REQUEST FORM ONLINE.**

**Fill out a Request Form.** To request a 3D print, fill out the [3-D Print Request Form](#). If you need help, please email Mrs. Tritz - [atritz@lps.k12.co.us](mailto:atritz@lps.k12.co.us)

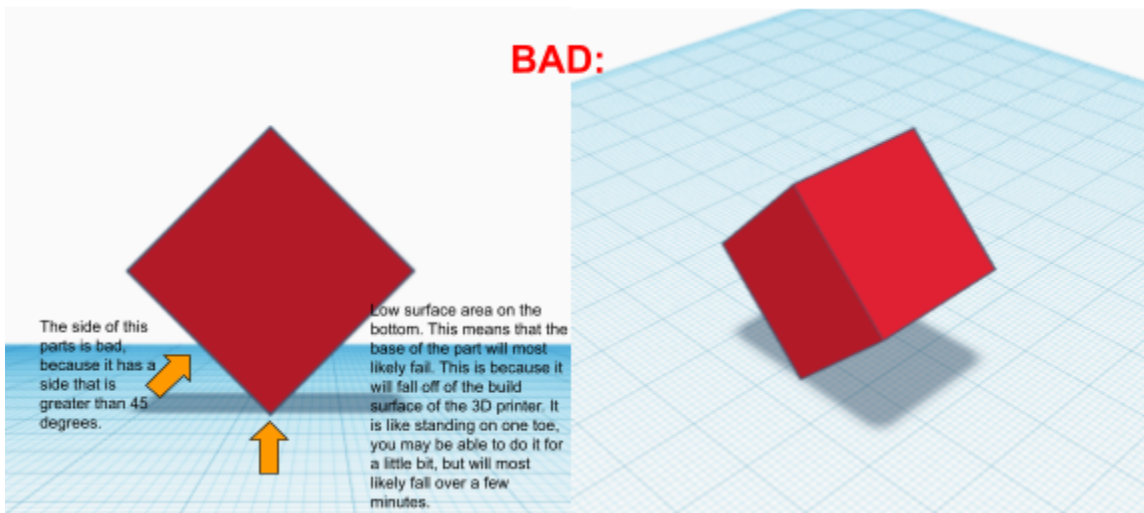
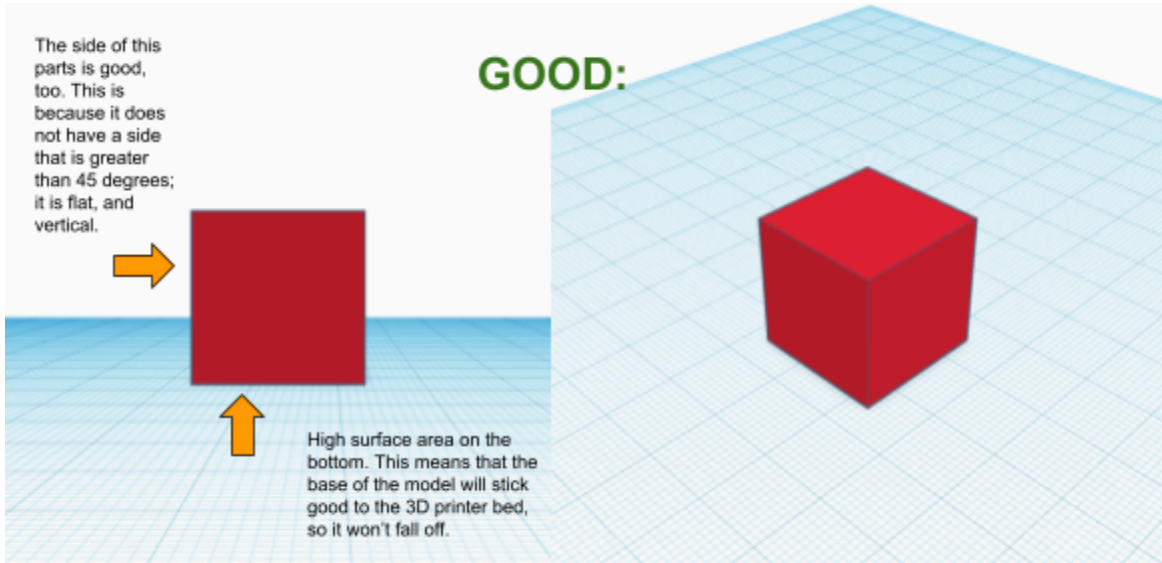
**NOTE: Please only submit ONE print request at a time.**

### **STEP 4: SHARE YOUR FILE WITH US ONLINE.**

**Check your school email.** Staff or student assistants will check your file to be sure that everything has been received and that your file it complies with our guidelines (see below). You will receive a notification email that your file has been received and added to the queue.

## How to design a good 3D printable model.

Most users will begin with designing objects in Tinkercad, a CAD modeling software. Here, we will start with an example of a box.



## **3D Printing FAQ**

### **What is 3D printing? How does it work?**

3D printing is the process of making a physical object from a digital model. It is also known as additive manufacturing because the physical model is built up one layer at a time. Both of our 3D printers use a process called Fused Deposition Modeling (FDM), in which a plastic filament is fed through a heated nozzle which melts the plastic. Computer-controlled motors move the nozzle around to create the shape of a layer, which hardens immediately. The object is built this way, one layer at a time, from the bottom up.

### **What are some practical uses of 3D printing?**

There are a multitude of practical applications for 3D printing, from aerospace and automotive engineering to prosthetics and other medical uses. 3D printing enables rapid prototyping of design concepts and functional, working models; it is used for low-volume, custom, or on-demand manufacturing.

### **What software can you use to make printable 3D models?**

There are many different programs that can produce printable 3D models. Most 3D modeling software will output the filetype our machines use, the .stl file. Solid modeling CAD software is much more likely to produce a successful print than surface modeling software. A few popular options are SolidWorks, Inventor, 3DS Max, Blender, Creo, AutoCAD, Rhino 3D, Sketchup and Tinkercad. For beginners, we recommend starting with Tinkercad. It is web-based, optimized for 3D printing, and easy to get started with.

### **Is this 3D printing technology brand new?**

No, the technology has been around for over 20 years. The machines would typically be found in engineering and design firms. However, there is a lot of excitement around

3D printing now, because it is becoming more accessible to average people. This is due in large part to the pioneering open-source RepRap Project, and to startups like MakerBot Industries and Shapeways.