HOW TO 3D PRINT

What the Creative Studio supplies:

Dremel 3D45 Printer

PLA Filament.

Printing fee is $0.10/gram with a $1.00 minimum.

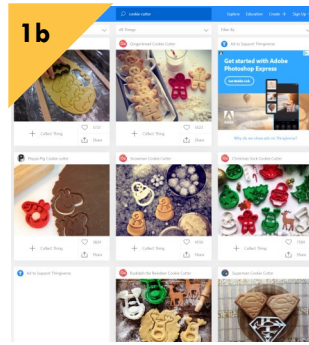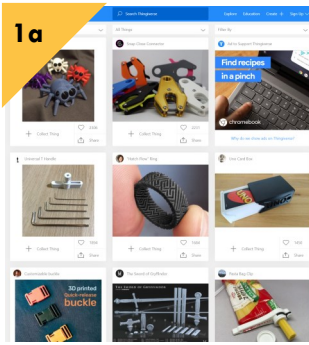## What you need:

A 3D design file in **STL (.stl)** format

♦ *Thingiverse.com* has free 3D files to download.

♦ *Tinkercad.com* is a free design software to make your own.

What is 3D printing?

3D printing is a form of **additive manufacturing**. This means that a 3D printer reads a 3D design file and re-builds it by adding one layer at a time until it is complete. The Creative Studio's Dremel 3D45 printer is a **"fused deposition modeling"** — or **"FDM"** — printer. This means it takes a spool of plastic — called **"filament"** — and melts it using an extremely hot nozzle — called the **"extruder"** — to create the layers. The filament we use is called **"PLA"** — **polylactic acid** — and is made from corn and other starch byproducts. PLA is a soft plastic that should not be used for structural parts. PLA will weaken or melt when in direct sunlight, soaked in liquid, or heated above 100F. Prints should be hand-washed with lukewarm water and air dried.
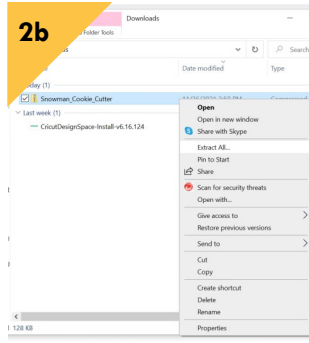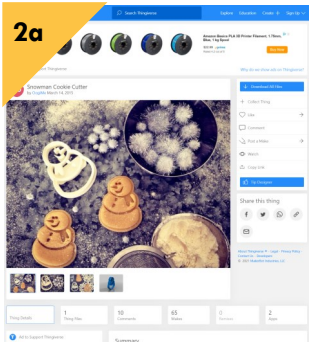
Things to consider:

- Maximum dimensions are 9.5" long x 5.5" deep x 6.7" tall (or 240mm x 140mm x 170mm)

- Maximum of 5 hours for each print

- Please allow 1-2 weeks for your file to be printed

- Unless noted, the files will be printed with 20% Infill Density and 0.2mm Layer Heights

- The library does not help modify design except to resize

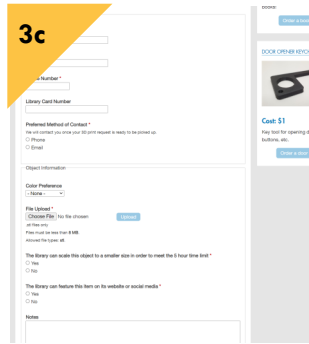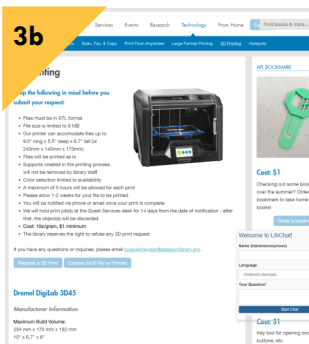- The library reserves the right to refuse any 3D print request

1. Find a Design

a. Visit thingiverse.com and search for a design. For our example, we searched the phrase "cookie cutter."

b. Once you find a design you like, click on the image of it. **Do not** click "Collect Thing."

2. Download the Design

a. Click the button "**Download All Files**" and save the file to your computer.

b. The file will be zipped. To Unzip, right-click on the folder and select "**Extract All**" (for PCs) or double-click the folder (for Mac OS).

c. Open the folder and look for a file listed as a "**3D Object**" with the .stl extension. Some folders might have two sub-folders: "Files" and "Images." The 3D Object files are in the "Files" folder.

3. Send Design to be Printed

a. Visit *addisonlibrary.org/3dprint*

b. Click "**Request a 3D Print.**"

c. Fill out the form fields. *Required fields:

- Name*
- Email Address*
- Phone Number*
- Library Card Number
- Preferred Method of Contact*
- Color Preference: No Preference, Black, Blue, Gold, Green, Orange, Pink, Purple, Red Silver, Translucent, Yellow, or White
- File Upload*: Must be .stl file and less than 8mb.
- Notes: Use this section to ask for specific print settings or additional copies of a print.

c. Click "**Submit**" to send your request.

4. Pick Up your Print

Printing is done by Library staff on a first-come, first-serve basis. We will contact you when it is ready for pick up. You can pick up and pay for your print at the **Guest Services Desk** on the 1st Floor.

What are Supports?

When you pick up your 3D print, you might notice it has extra pieces. These pieces are called "**Supports.**" For areas that have "overhangs," supports hold up the weight of the print and are necessary for a successful print. The cost of your print includes the weight of these supports. Patrons are responsible for removing the supports themselves.