

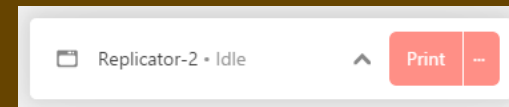
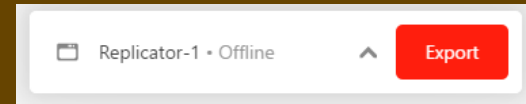
3D PRINTING: MAKERBOT PRINT

FORT FRANCES PUBLIC LIBRARY TECHNOLOGY CENTRE

MAKERBOT REPLICATOR 5TH GENERATION

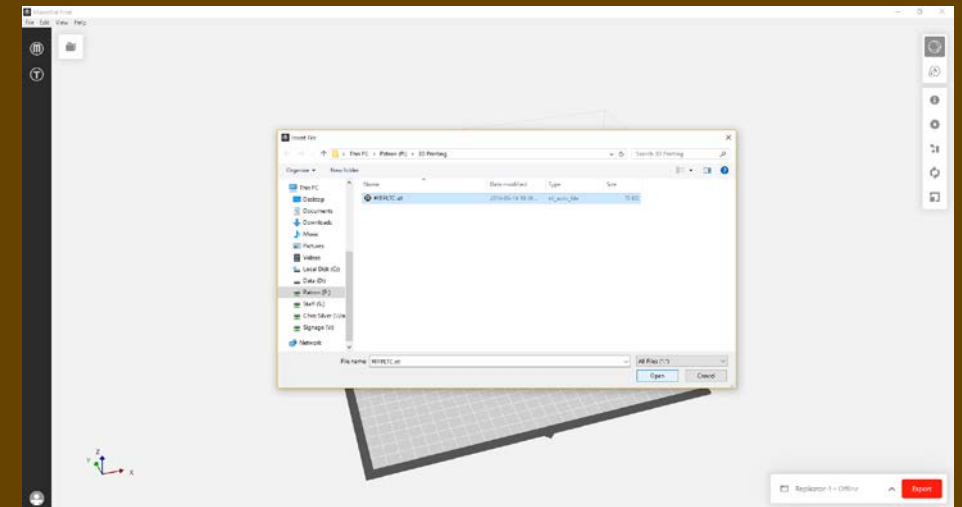
CONNECT THE 3D PRINTER

- An "Offline" message indicates the 3D printer is turned off or not connected
- The "Replicator-2" 3D printer must be turned on by pressing the dial
- An "Idle" message and a "Print" button indicates the 3D printer is connected



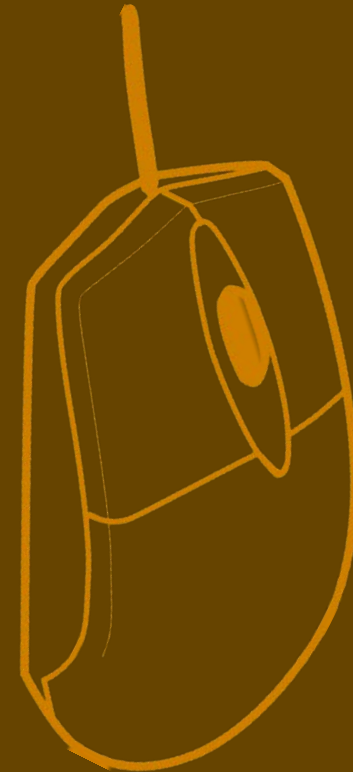
INSERT FILES TO PRINT

- Click the "File" menu, then click "Insert File"
- Navigate to the location of your ".OBJ" or ".STL" file
- Select a file, then click "Open"
- Multiple files may be added to the build plate at once



NAVIGATE IN 3D SPACE

- Zoom in and out by scrolling the scroll wheel on the mouse
- Move the build plate by clicking the scroll wheel and dragging the mouse
- Rotate the build plate by right-clicking and dragging the mouse



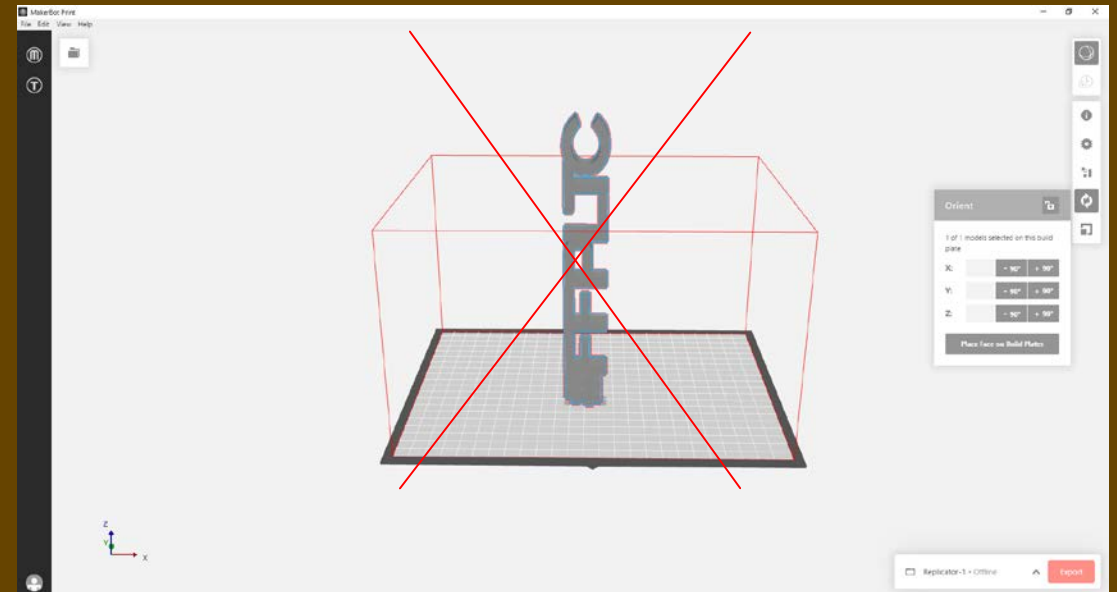
TRANSLATE, ROTATE & SCALE MODELS

- The menu bar on the right side of the screen provides controls for translation, rotation and scaling
- Select the model you wish to edit by clicking on it
- Click and drag the model to move it
- Click the second button from the bottom to rotate the model
- Click the bottom button to scale the model

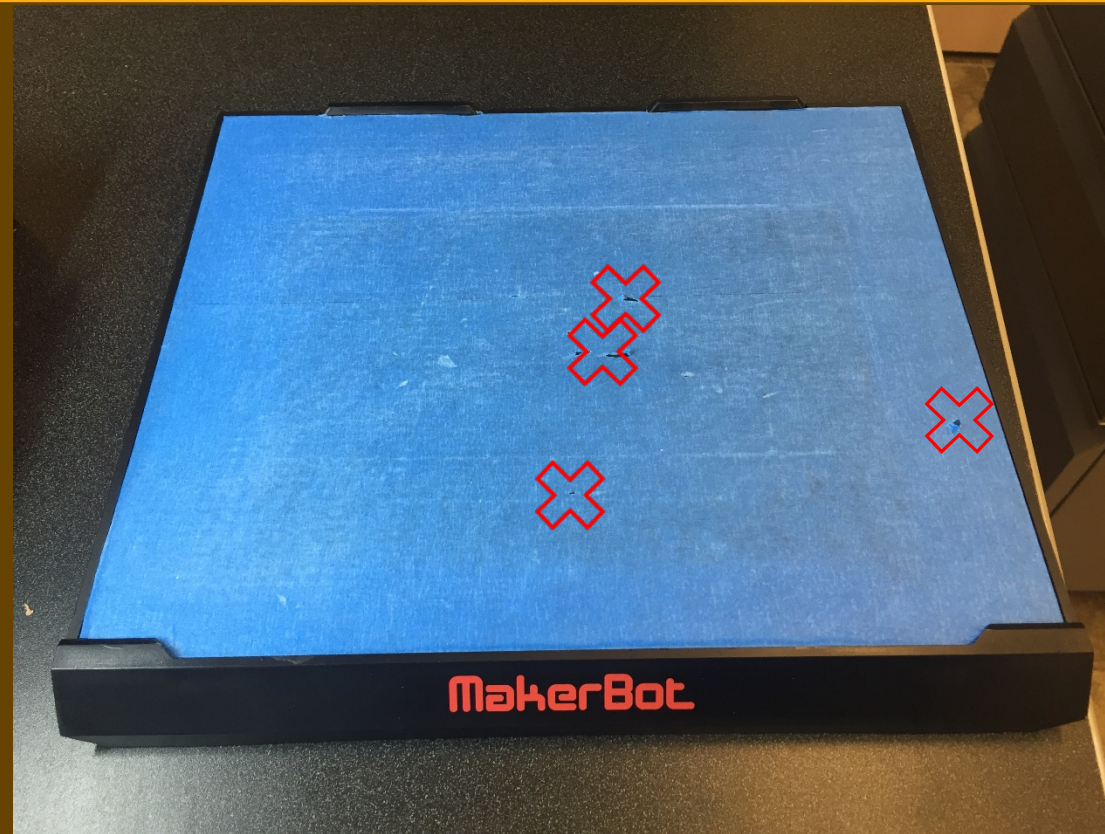


POSITION

- Position items so the largest amount of surface area is touching the build plate
- This will reduce the amount of support material needed to print your object
- It will also reduce the duration and cost of your print



TIP: WHERE TO PRINT ON THE BUILD PLATE

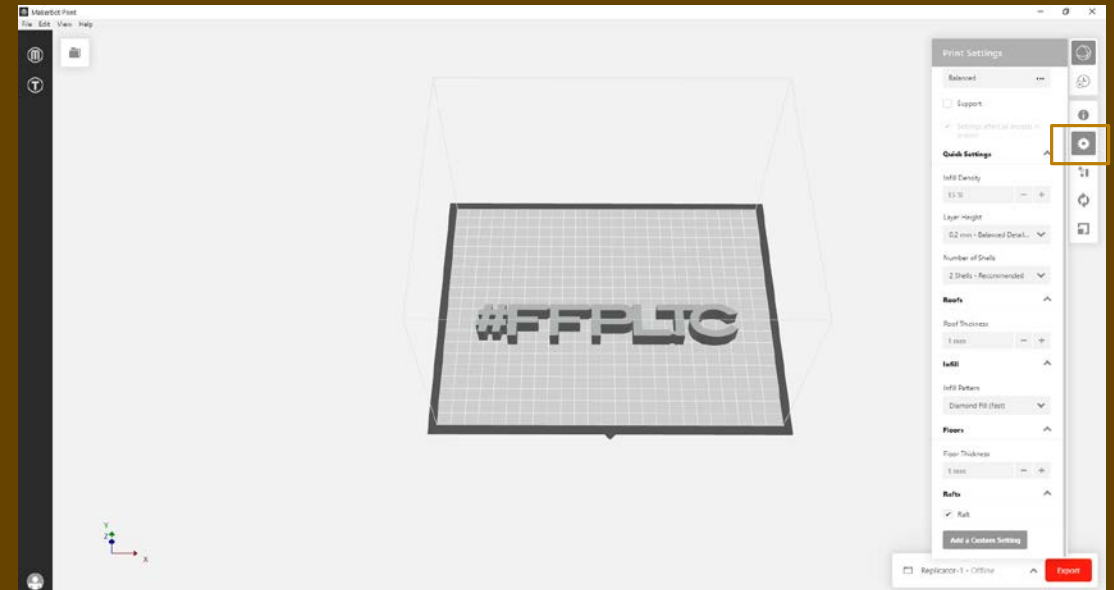


- The build plate is covered with protective tape, you should assess the tape before printing, and look for an area without rips, then position the object there to print.



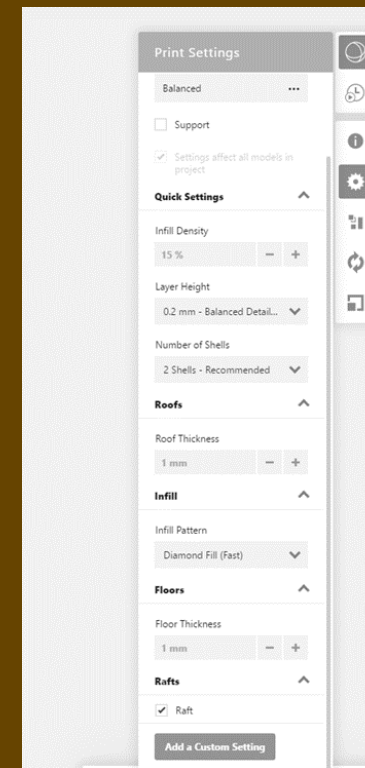
QUICK PRINT SETTINGS

- Click the gear icon to change frequently used settings
- Click "Add a Custom Setting" to add something else you want to change
- Be careful with changing advanced settings
- Some changes may damage the 3D printer



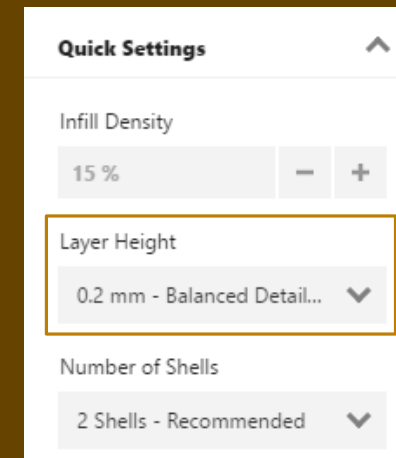
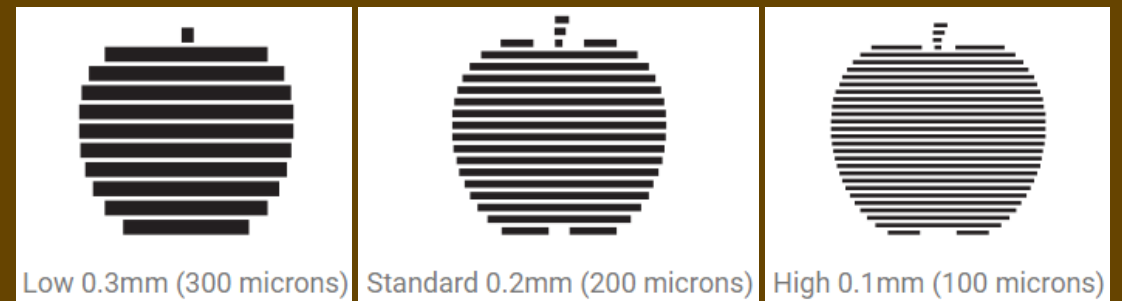
COMMON PRINT SETTINGS

- Common print settings include:
 - Layer height
 - Infill
 - Shells
 - Roof and floor settings
 - Rafts
 - Supports
- These settings directly affect how your model is prepared
- Other settings affect how the 3D printer prints your prepared model



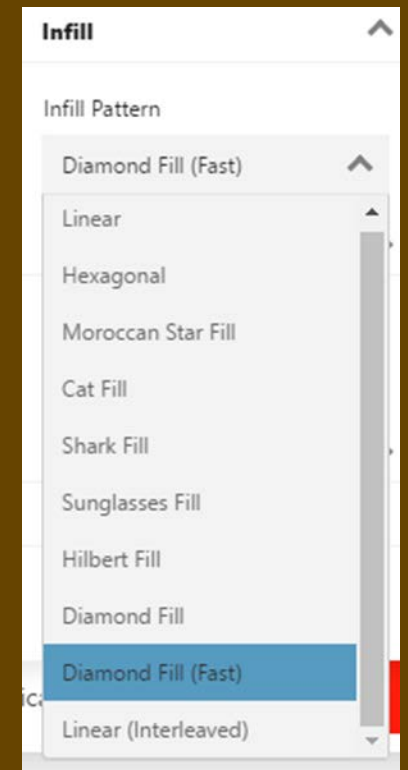
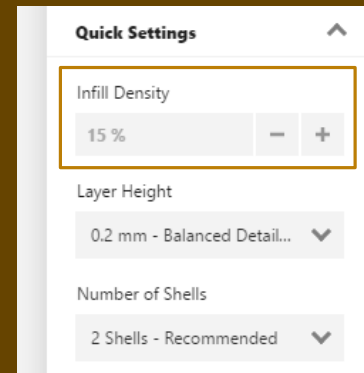
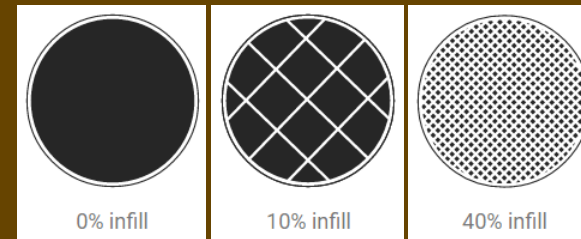
LAYER HEIGHT SETTINGS

- Layer height sets the thickness of the individual layers of your object
- A smaller layer height will result in a smoother surface
- An object with a larger layer height will print more quickly
- Layer heights greater than .35 mm are not recommended



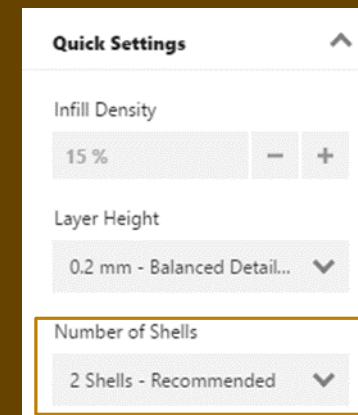
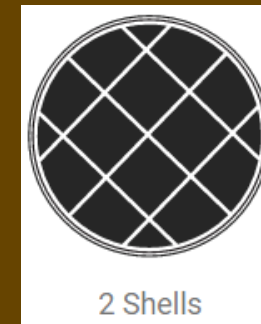
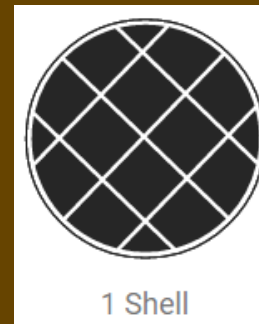
INFILL SETTINGS

- Set the infill density and infill pattern of a model to determine its internal support structure
- Higher percentages result in heavier, stronger objects, and longer print times
- 0% infill results in a hollow print
- 100% infill results in a solid print
- 20% infill is sufficient for most prints



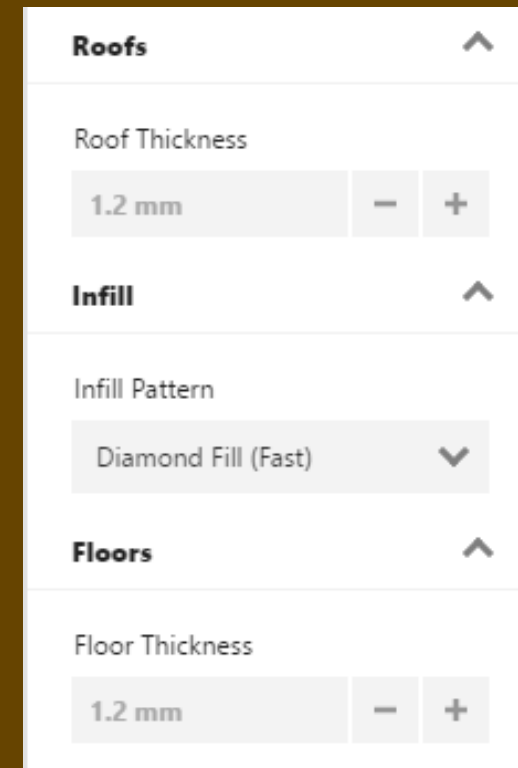
SHELL SETTINGS

- Shells make up the walls of your object
- More shells result in heavier, stronger objects, and longer print times
- 2-5 shells are recommended for most prints



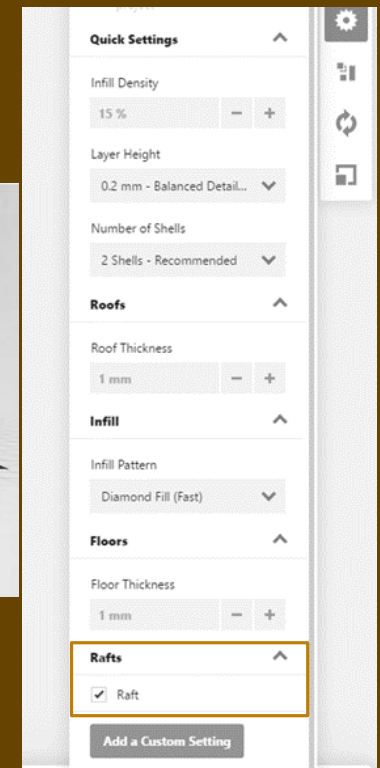
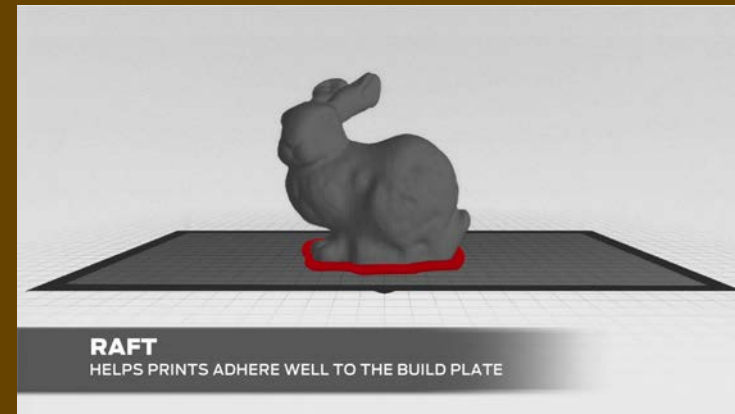
ROOF & FLOOR SETTINGS

- "Roof Thickness" and "Floor Thickness" set the height of the layers at the top and bottom of your print
- Thickness can create objects without any top or bottom
- Thickness can make the bottom of an object extra thick to weigh it down
- Thickness of 1.20 mm and above is recommended



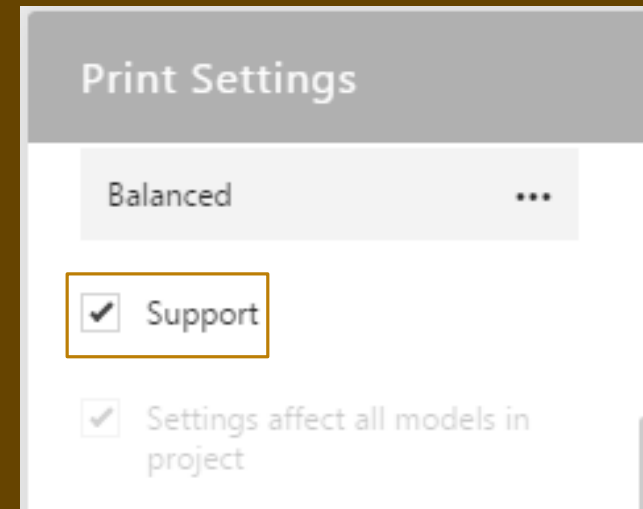
RAFT SETTINGS

- A raft acts as a base for your object
- Rafts ensure printed objects adhere well to the build plate
- Printing without a raft is not recommended, and usually results in a failed print



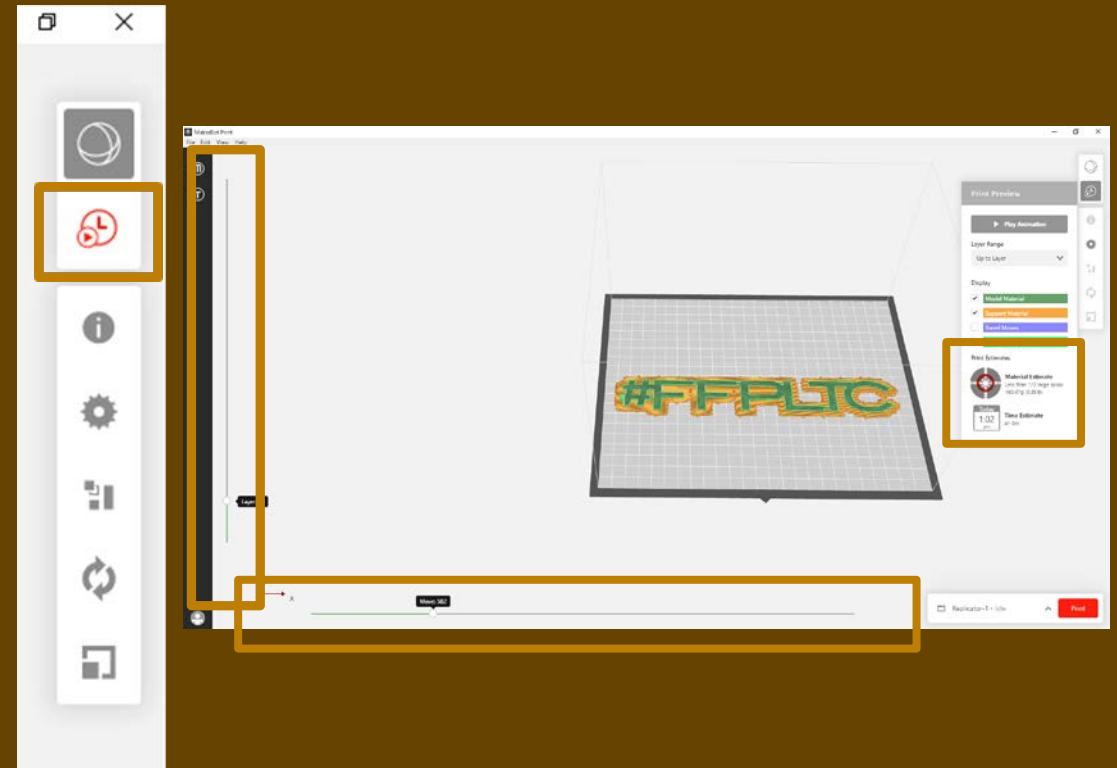
SUPPORT SETTINGS

- Supports can easily be removed once an object has finished printing
- Supports are printed scaffolding for overhanging layers
- Overhangs occur when a layer extends outward and is unsupported by the previous layer
- Overhangs greater than 68 degrees typically require supports
- Print preview can be used to determine if an object requires supports



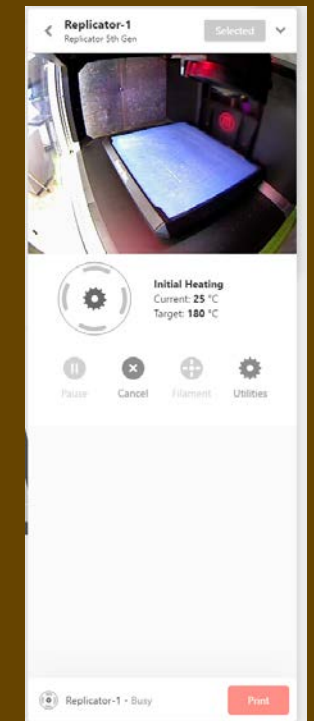
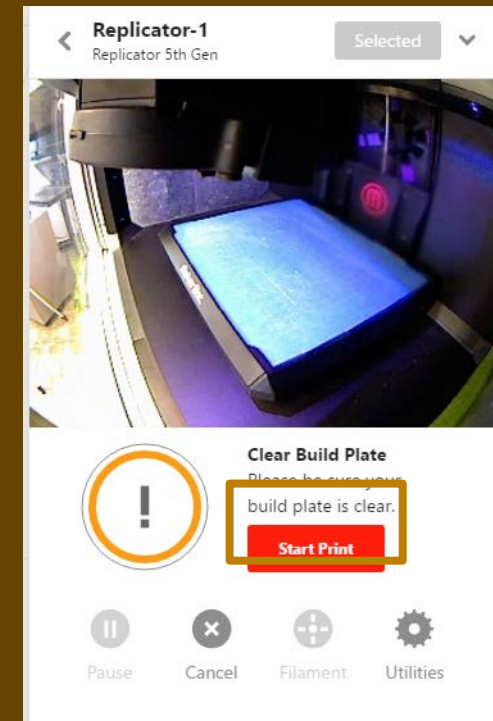
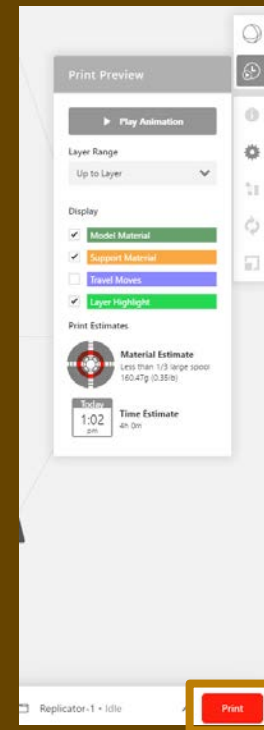
PRINT PREVIEW

- The “Estimates and print preview” button generates estimates for the amount of filament used and print times
- It can take some time to generate a print preview
- The left scrollbar navigates between layers
- The bottom scrollbar navigates within layers



PRINTING

- Press "Print" in the bottom right corner of the screen
- Verify the build plate is clear, then click "Start Print"
- The print can be cancelled at any time by clicking "Cancel"



WANT TO LEARN MORE?

- MakerBot Desktop:
 - <https://www.youtube.com/watch?v=3hTDwQZHDsU>
- How to lay out files:
 - <https://www.youtube.com/watch?v=CkdmC3jJkhE>
- Print Settings:
 - https://www.youtube.com/watch?v=F9s_z7qjHOw
- Exporting files from program to printer:
 - <https://www.youtube.com/watch?v=hZ45trIOg4Y>
- MakerBot Desktop print settings support page:
 - <https://support.makerbot.com/learn/makerbot-desktop-software/print-settings>