

MakeIT

PROGRAMME GUIDE MakeIT in 3D Starter Session



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REQUIRED MATERIALS

Content

1 - The Hook

15 minutes

1. What is 3D Printing?

2. The Five Stages of Designing 3D Objects

2 - The Activity

100 minutes

10 min break

1. Finding 3D Models Online

Use common 3D model repositories to find designs

2. 3D Design in Tinkercad

Using Camera, Creating, combining and changing shapes, Exporting 3D file types

3. Slicing and Printing a 3D Object

Use Flashprint 5 to slice 3D file and send to 3D printer

3 - Extensions

25 minutes

1. Booking and Using 3D Printers at MakeIT

REQUIRED MATERIALS

Materials

What You Need

1. Tinkercad Account -

Tinkercad - www.tinkercad.com

2. Slicing Software -

Flashprint -

<https://www.flashforge.com/download-center>

What You Don't Need

1. Flashforge Creator Pro 2 3D Printer -

You can access 3D printers for free at MakeIT!

MakeIT is an initiative by NLB to provide access to digital making tools and techniques. At the end of the programme, we will onboard you on to our Simplybook booking system.

REQUIRED MATERIALS

Learner's Profile - Confidence Card



Need help
understanding
content

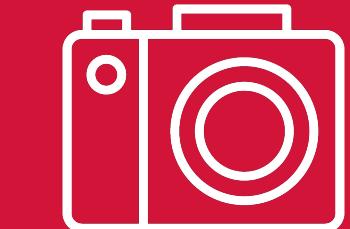


Content is paced
well and is
understandable

If you need help during the programme, feel free to ask. Our team is happy to pace this content to your needs.

Feel free to also help others! If you notice somebody struggling, offer your support.

A Maker values curiosity, exploration, and openness.



MakeIT

Smile!

You might be our next star maker!

- Please be reminded that photos and/or videos of this programme and its participants may be taken.
-
-

How to Find an Object We Care About

Why make things in 3D? Design is a deeply human process. Let's think about that before digging into how to design 3D things.

Think about the “first” object that comes to mind. Write down that thing.

Answer the following:

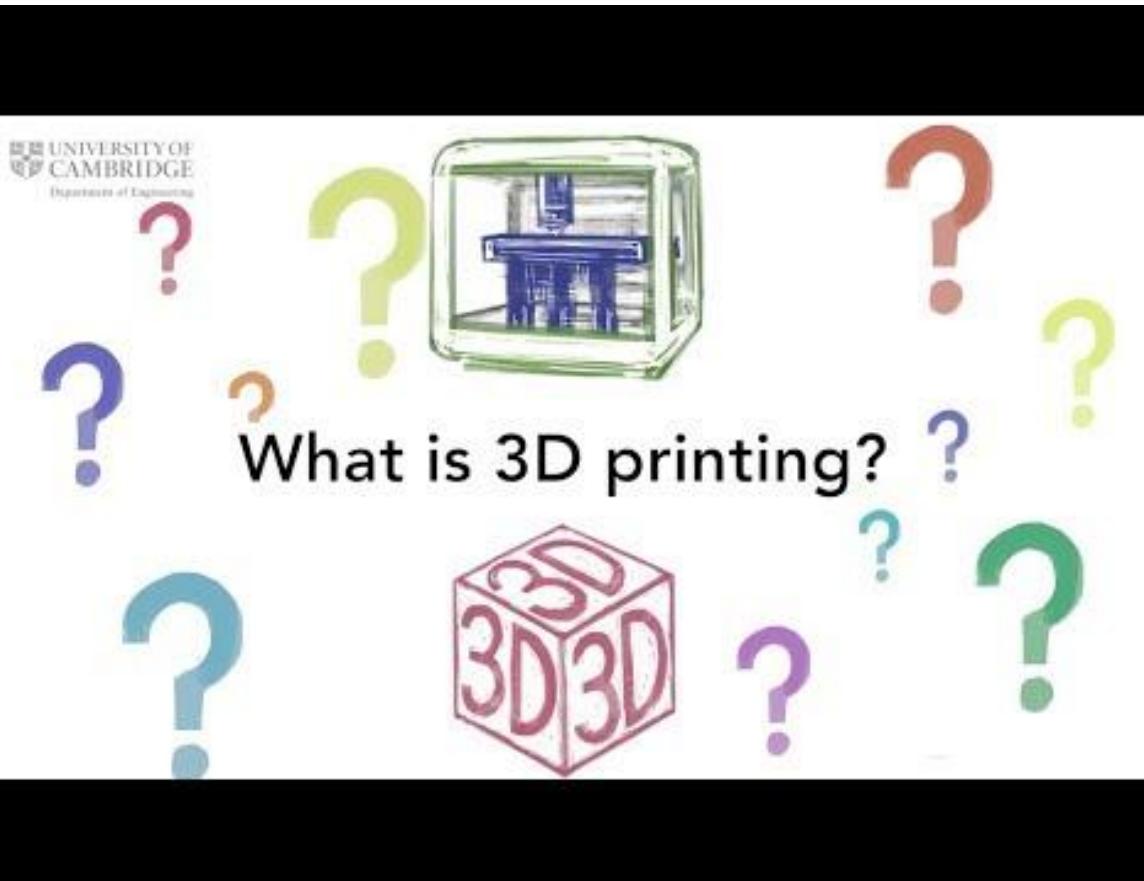
Can you make this object right now?

Do you want to make that object?



Making family heirlooms can provide more meaning to your creations.

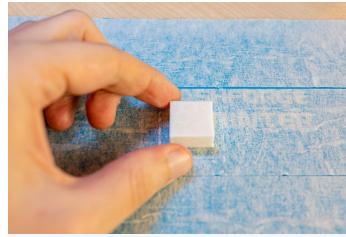
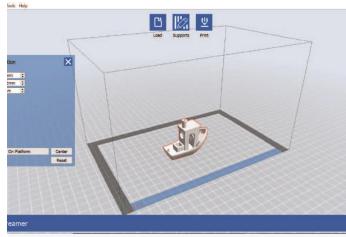
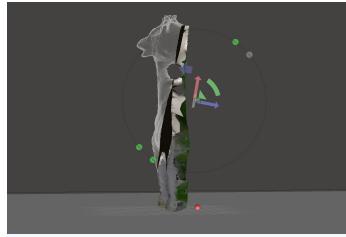
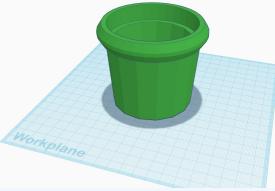
What is 3D Printing?



This introductory video from the University of Cambridge answers the question “What is 3D Printing?”

It compares different ways that we create objects, and shares what makes 3D printing unique in that regard.

Five Steps for 3D Design



Design

Turning an idea into a digital object using 3D Design software.

Clean

Using software to make sure that your 3D Design is printable.

Slice

Creating a process for your 3D Printer to understand how to make your 3D object.

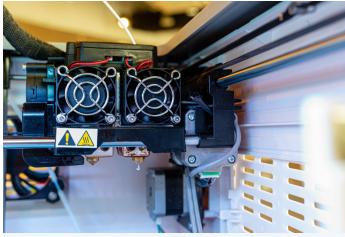
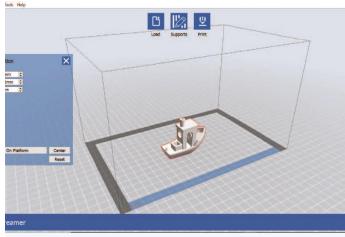
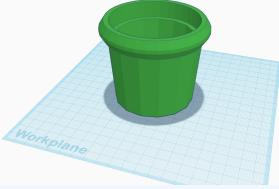
Print

Using a 3D Printer to turn your digital object into a physical object.

Finish

Sanding, painting, and assembling your project.

Five Steps for 3D Design



Design

Turning an idea into a digital object using 3D Design software.

Slice

Creating a process for your 3D Printer to understand how to make your 3D object.

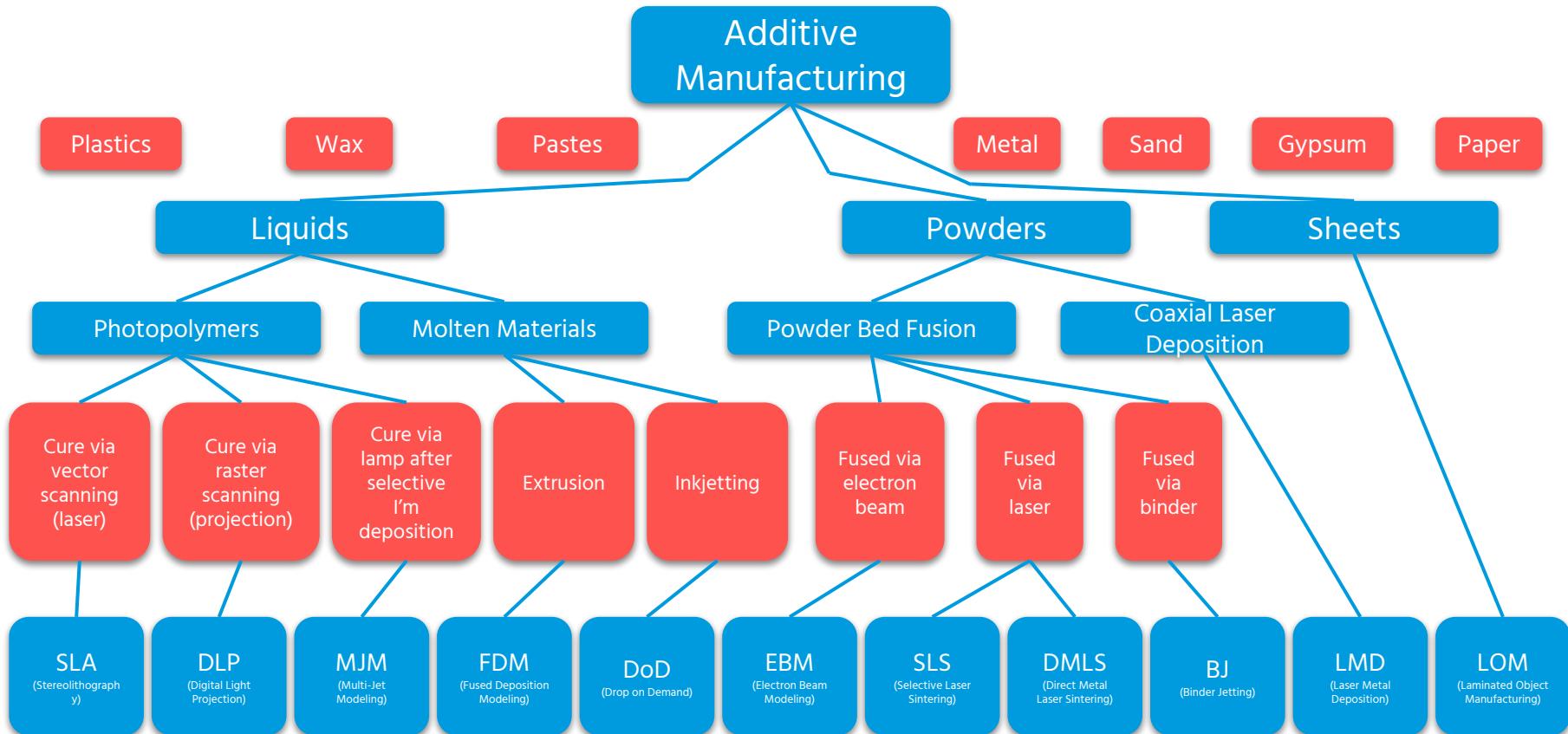
Print

Using a 3D Printer to turn your digital object into a physical object.

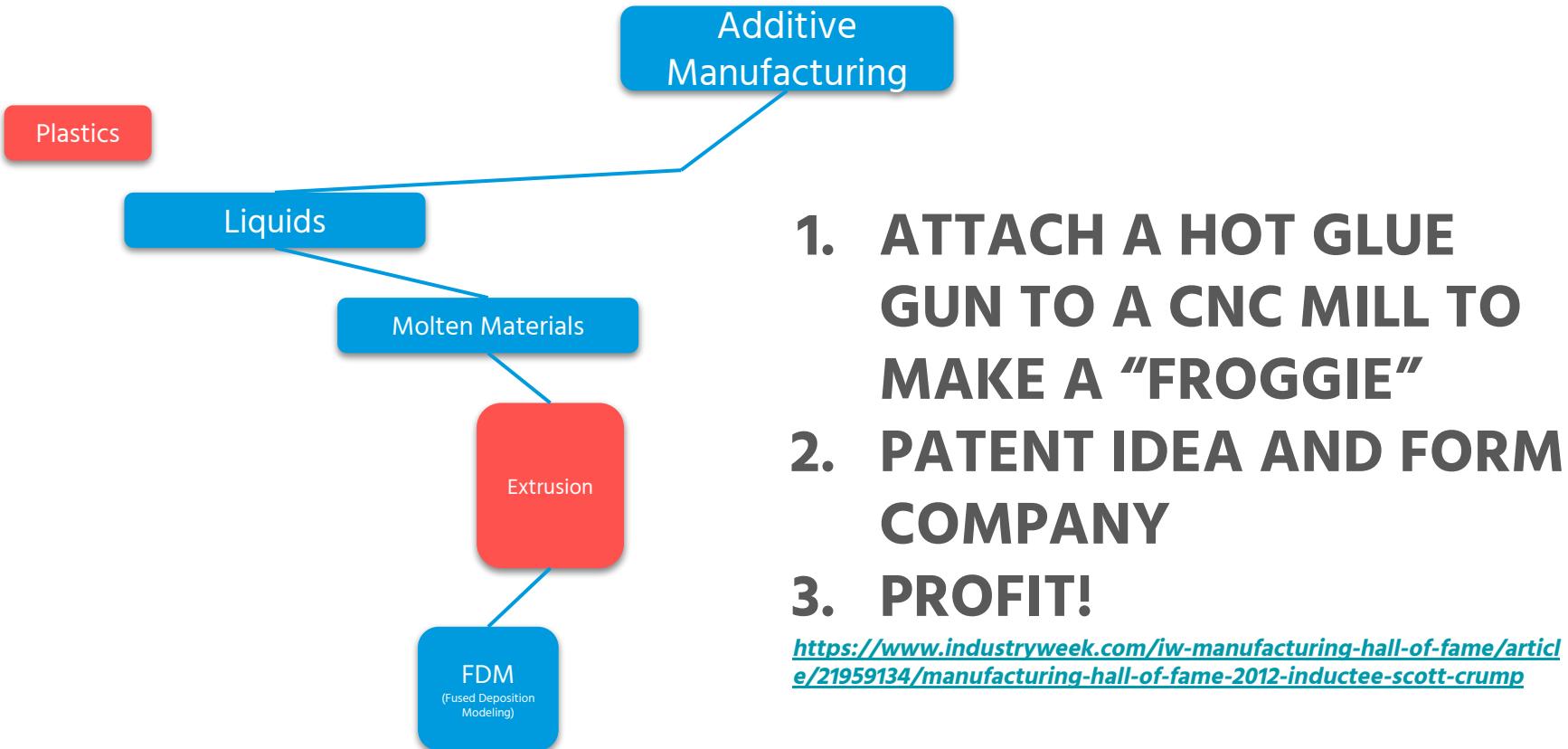
The focus of the session will be on designing, slicing, and printing.

Cleaning and finishing can take a lot of time, and there are online resources (e.g. YouTube) available if you are interested to explore further.

How Might We Remake This Object?

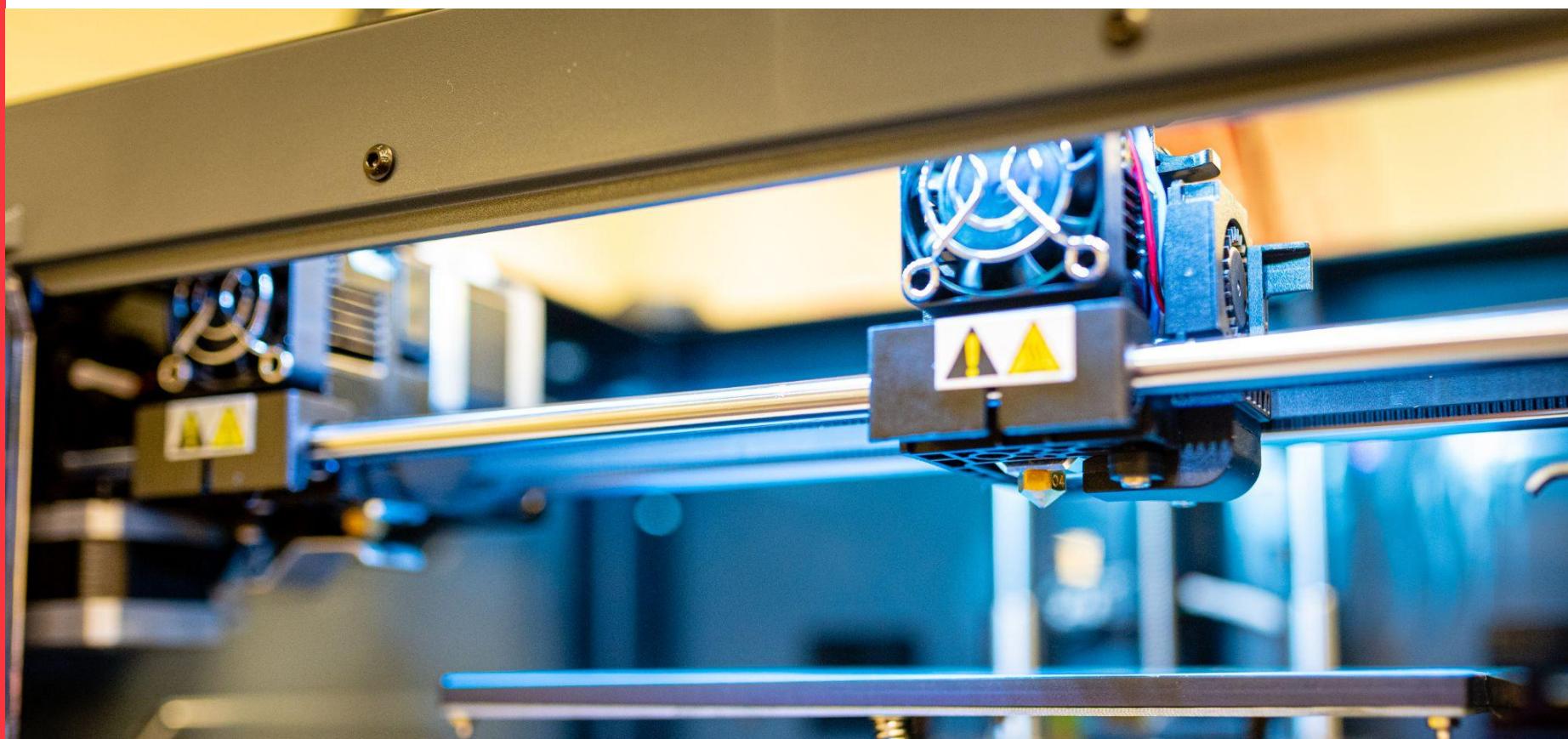


How Might We Remake This Object?



THE HOOK | SECTION 1.2 | 5 MINUTES

How Might We Remake This Object?



**BUT BEFORE WE DESIGN... LET'S
SEE IF OUR IDEA ALREADY EXISTS.**

MakeIT

THE ACTIVITY | SECTION 2.1 | 15 MINUTES

How to Search for 3D Objects?

Let's start by looking for 3D Objects on Google to see what happens.

A screenshot of a Google search results page for the query "3D objects". The search bar at the top shows the query. Below it, there are several filters: All, Images, Videos, News, Shopping, More, Settings, and Tools. A red arrow points to the "Images" filter. The search results show a grid of various 3D models, including geometric shapes like cubes, spheres, and pyramids, as well as more complex objects like a chair and a sofa. A red arrow points to one of the geometric shapes. Further down, there are sections for "People also ask" with questions like "What is 3d object?", "How can I get a free 3d model?", "Where can I download 3d objects?", and "What is the most used 3d software?". At the bottom, a link to "Free 3D Models for Download | TurboSquid" is shown, with a red arrow pointing to it. The URL "www.turbosquid.com > Search > 3D-Models > free" is visible above the link.

Too many results!

Related search seems too technical.

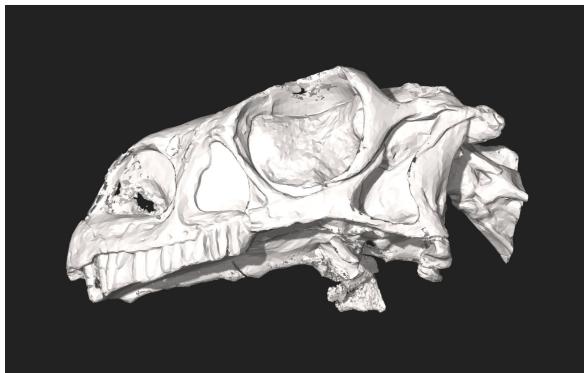
Only geometric shapes shown.

More useful! We could click this.

This looks like what we need. But what do those file types mean?

THE ACTIVITY | SECTION 2.1 | 15 MINUTES

How to Search for 3D Objects?



.STL

The most common file format for 3D printing.



.OBJ

A newer file format that preserves colour and texture information on 3D models.

For 3D objects, we can begin our search for three file types. Think of these as the 3D equivalent of .jpg files for 2D images.



.3MF

A 3D model file format designed specifically for 3D printing.

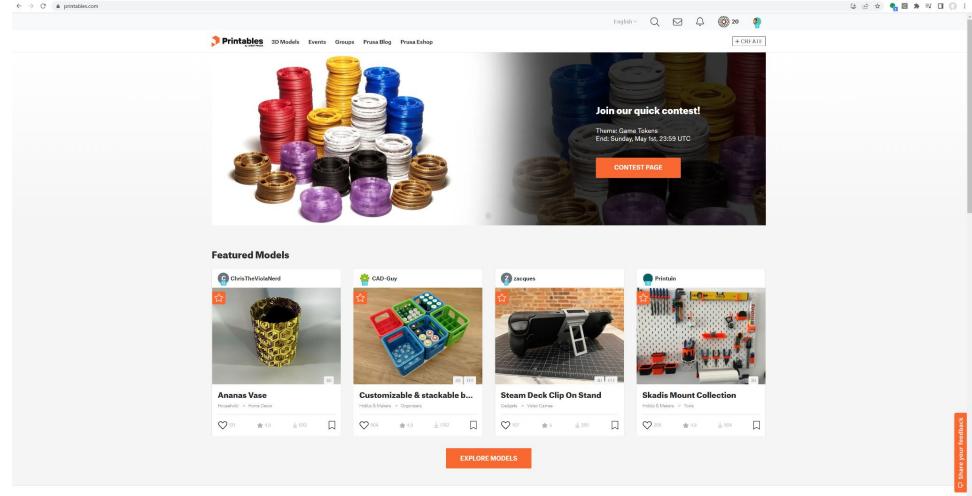
THE ACTIVITY | SECTION 2.1 | 15 MINUTES

How to Search for 3D Objects?

There are many websites available that show 3D models. We'll highlight three that we think are useful.

PRINTABLES

Printables is a repository of 3D projects submitted by makers. Projects can be simple or complex, with many common objects being available.



www.printables.com

Printables launched in 2022 and is pretty new to the 3D printing world. For those looking for older models, you can check out Thingiverse (www.thingiverse.com) as well.

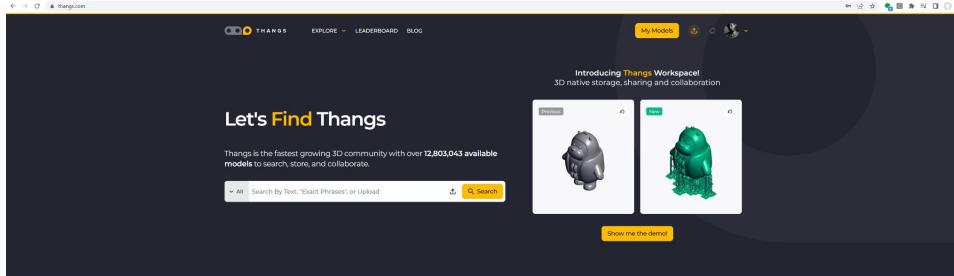
THE ACTIVITY | SECTION 2.1 | 15 MINUTES

How to Search for 3D Objects?

There are many websites available that show 3D models. We'll highlight three that we think are useful.

THANGS

Thangs lets you search many different 3D model websites at the same time, and has a useful viewing tool for 3D models.



www.thangs.com

Thangs also shows 3D models on other websites, so can be used to find objects from many different sources.

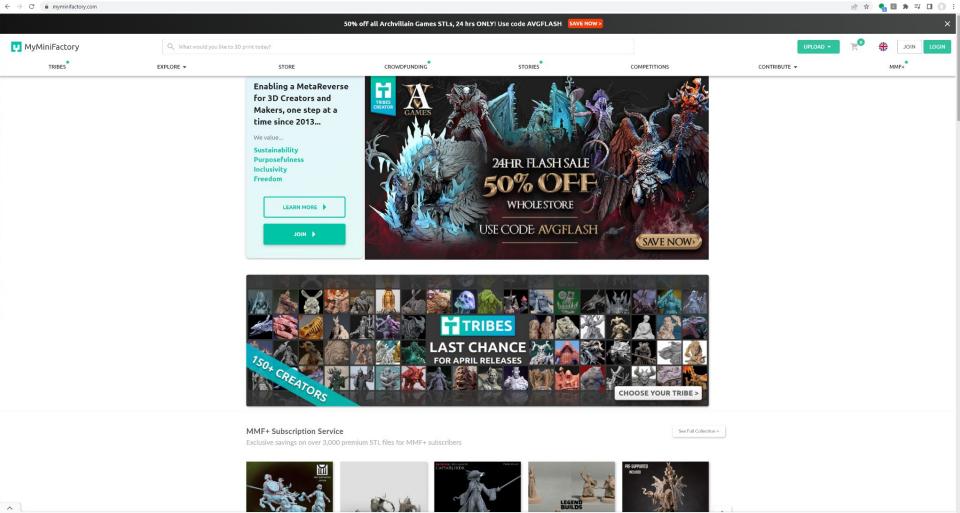
THE ACTIVITY | SECTION 2.1 | 15 MINUTES

How to Search for 3D Objects?

There are many websites available that show 3D models. We'll highlight three that we think are useful.

MYMINIFACTORY

Myminifactory is a collection of high-quality 3D models suitable for miniatures and the hobbyist community. Some models require payment.



www.myminifactory.com

There are other websites like myminifactory for different communities - search for those depending on your interest.

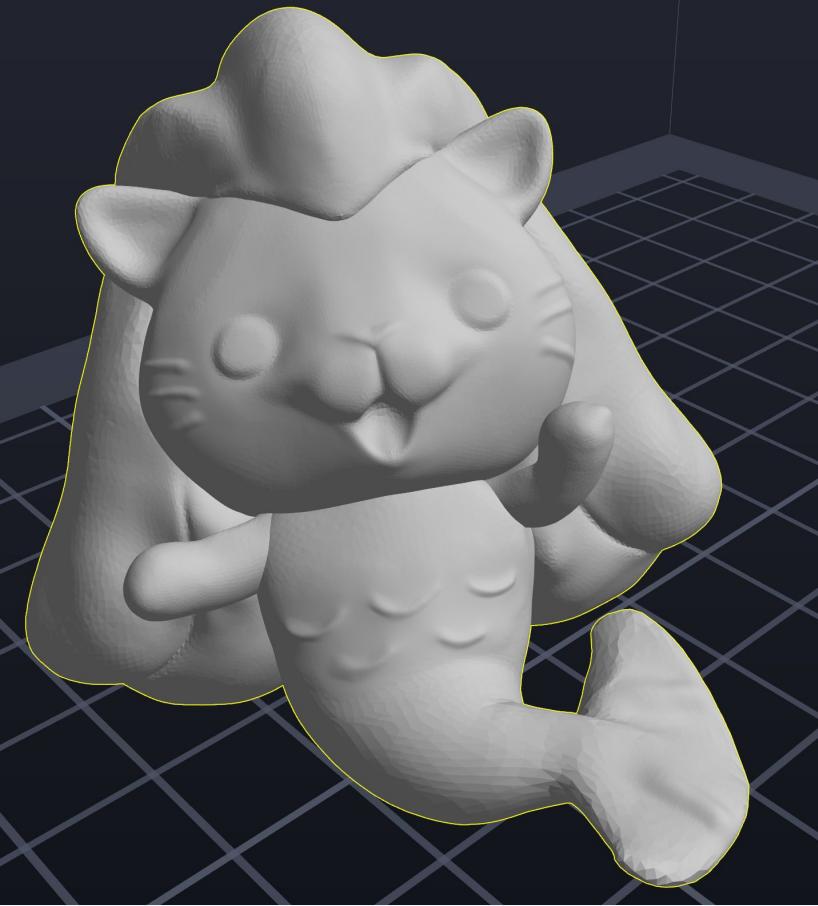
THE ACTIVITY | SECTION 2.1 | 15 MINUTES

How to Search for 3D Objects?

Look for your object on Printables, Thangs and Myminifactory.

1. Choose a website.
2. Search the website using the key term for your lost object. What are some of the things you find?
3. Go through three designs, and export your favourite as a 3D file.

It's that simple!



Merli the Merlion - by lg2113 on
www.printables.com

THE ACTIVITY | SECTION 2.1 | 15 MINUTES

How to Search for 3D Objects?

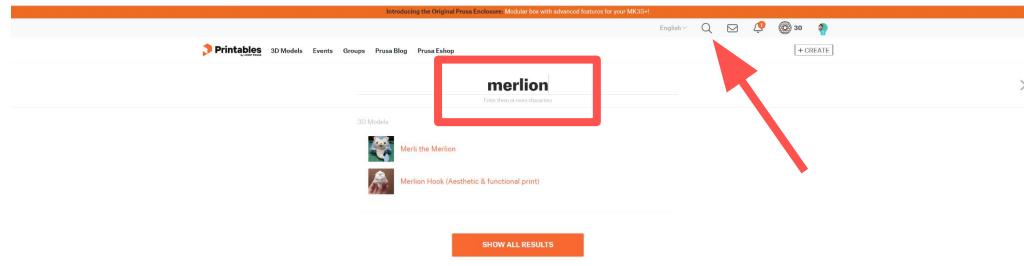
Look for your object on Printables

Click on the Magnifying Glass on the top of the page to begin your search.

Here, we search for “merlion” and come up with 2 results.

For the model you’re interested in, left-click on it to open up its page.

www.printables.com



THE ACTIVITY | SECTION 2.1 | 15 MINUTES

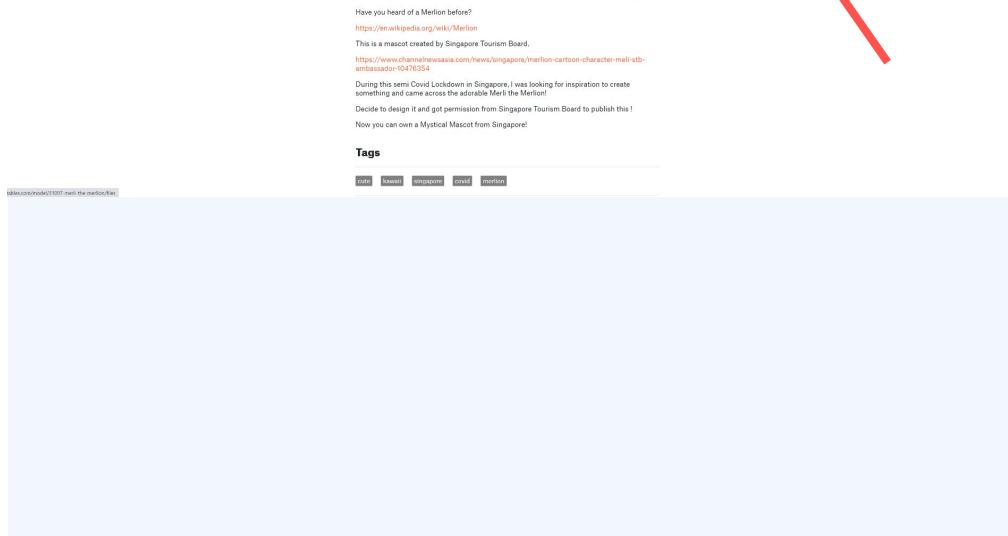
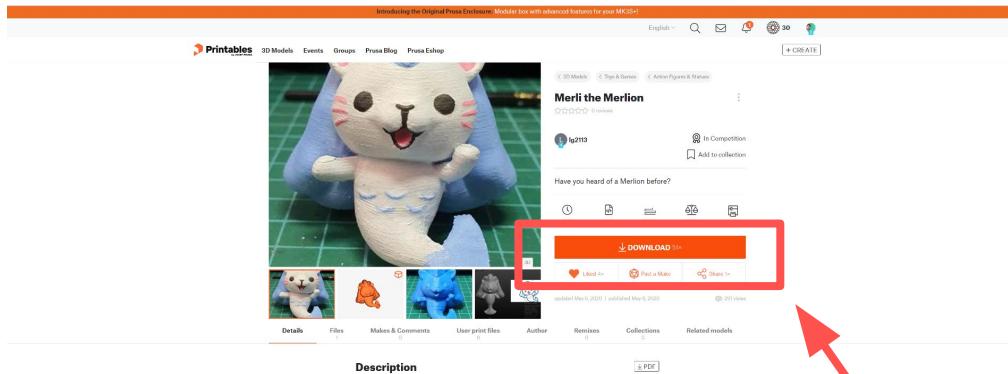
How to Search for 3D Objects?

Look for your object on Printables

The object page contains needed information about it, including assembly instructions.

You can find information about the object you choose in the Description. Press the orange Download button to download the file.

www.printables.com



THE ACTIVITY | SECTION 2.1 | 15 MINUTES

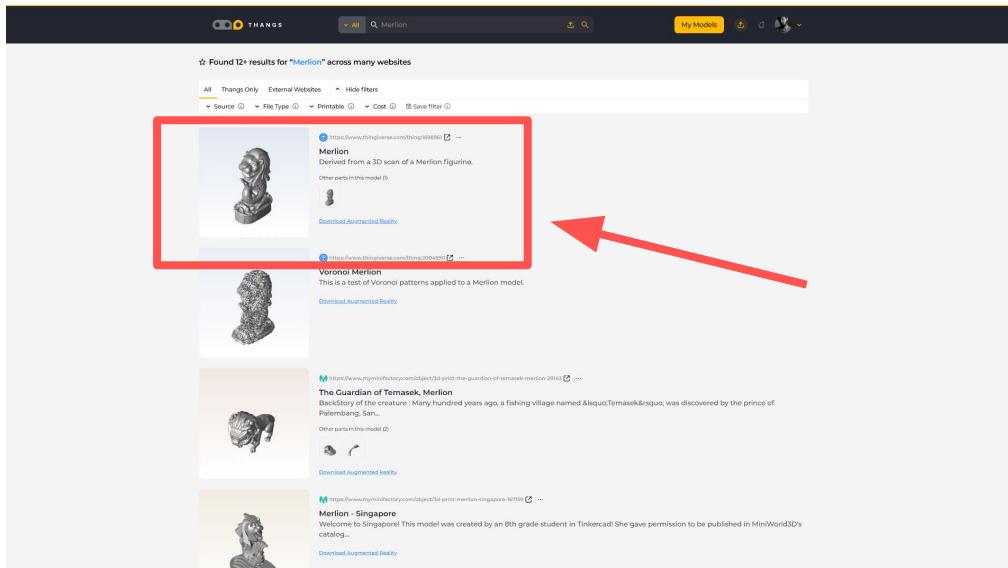
How to Search for 3D Objects?

Look for your object on Thangs

Type your search into the search field.

The search for Merlion yields many results across different websites, such as the top one on thingiverse. Click on it to go to the page.

www.thangs.com



THE ACTIVITY | SECTION 2.1 | 15 MINUTES

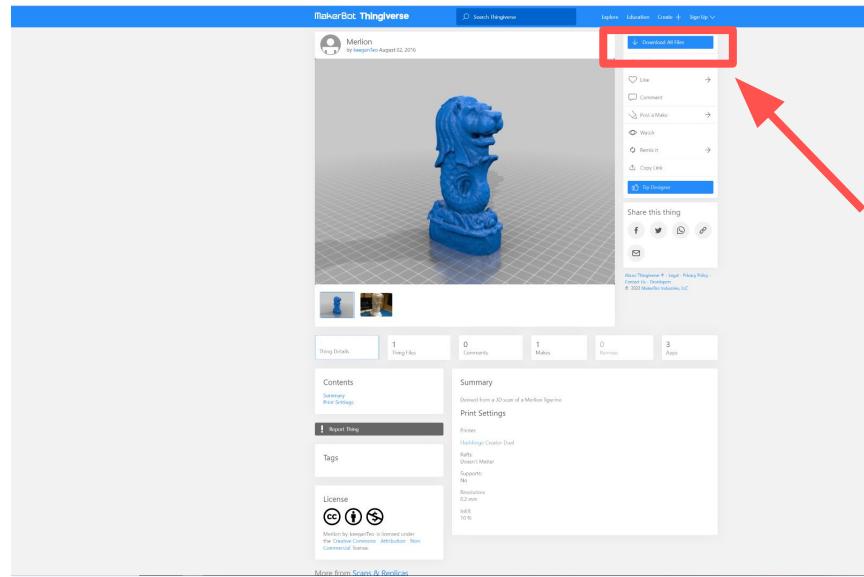
How to Search for 3D Objects?

Look for your object on Thangs

Depending on your search, it may take your result to another website.

Here, we are on Thingiverse, which has the largest collection of 3D models available. Click the blue download all files button to download the merlion 3D model.

www.thingiverse.com



THE ACTIVITY | SECTION 2.1 | 15 MINUTES

How to Search for 3D Objects?

Look for your object on Myminifactory

Type your search into the search field.

There are many high quality models to view. However, some require payment to download.

The screenshot shows the MyMinifactory homepage with a search bar containing 'merlion'. Below the search bar is a navigation menu with tabs: All (5), Objects (5), Campaigns (0), Prints (0), and a 'See More' button. The main content area displays a list of search results. The first result, 'The Guardian of Temasek, Merlion' by user '73uk', is highlighted with a red box. Other results include 'merlion singapore mascot', 'Merlion - Singapore', 'Merlion (28mm/Heroic scale)', and 'Guardian of Lion City'. To the right of the search results, there is a promotional banner for a 50% off sale with code PYMMAY50, an advertisement for 'STARSHIP THE NEXT GENERATION', and a section for the 'MMF+ Subscription Service'. At the bottom, there is a call-to-action for Caltex fuel purchases.

THE ACTIVITY | SECTION 2.1 | 15 MINUTES

How to Search for 3D Objects?

Look for your object on Myminifactory

This model by 73ck is free to download though, and the model is shown as painted.

3D models are usually printed with one colour, but can be painted after printing.

www.myminifactory.com

The Guardian of Temasek, Merlin

Published 5 years ago

arthur ng
#73ck
22 objects
46 followers

Click & Print preview

Description

Background story of the creature: Many hundred years ago, a fishing village named "Temasek" was discovered by the prince of Palembang, Sang Nila Utama, who was hunting on distant island when he spotted a fine-looking creature, which had the body of a lion and the tail of a fish. He gave chase but the creature ran away, creating a small inlet up ahead. As he rode on the path to the inlet, he saw a fishing village on a beach, because the sea was rough. His chief minister enquired of the prince that the fishing village inhabited that island was rather small and asked if the prince could not do something to help the people there to expand to sell across the sea. During the voyage, a fast storm hit them hard and the ship was tossed about in the angry waves. Water leaked into the ship and everyone worked to prevent it from flooding. In the end, the prince's crown fell into the water. The crew was advised to throw his crown overboard as a gift to the sea. Just then, the odd creature that the prince had seen earlier came up from the depths and took the crown. The crew were scared and thought that the creature would eat them. But the creature just took the crown and swam away. They arrived safely onto the sandy beach of Temasek. The prince asked some locals about the creature and they shared that this creature was known as the guardian of Temasek, Merlin. Merlin was a creature that was known to be very kind and gentle, but known to have drowning victims in the choppy seas. The prince was thankful and later decided to develop the island into a city, thereby naming it "Singapore", which loosely translates to "Lion City", as another name for the creature.

Concept of "Merlin the guardian of Singapore": The creature has a lion head and tail of a fish. The lion's head is a traditional Chinese style lion head. The scales on the lion's body introduce a mix between traditional Chinese dragon scales and the scales of a fish, which is the body shape of the merlion. The inclusion of a fish tail completes the look of a creature that is rumored to resemble a lion. I wanted to make the creature look like a Chinese dragon, but a blander, open mouth, for the sake of the coloration of the creature in general.

The Model The model has 3 sections. The first is the lion, followed by its fin tail and lastly, the base. The model is designed to be printed in one piece, which makes it simple in design as well as a reduction in necessary support, thereby saving resources.

Software : I model the shape of the merlion using SolidWorks model and sculpt it with Meshmixer.

Print Setting software: Simplify 3D printer. Flashforge Dreamer temperature: 200 layer height: 0.2mm layer, 4 print speed: 2400 mm/min infill percentage: 20% with full and support.

Its cleaned by Keyomi Software.

3D download

352 downloads | 5,732 views

3D

Toys & Games > Animal & Creature Figures

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3D Model website Learn how to protect your workforce from respiratory hazards Give them confidence to do their best

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LEGION 5 Pro

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Gaming

Lenovo

3D DESIGN FOR EVERYONE

MakeIT

THE ACTIVITY | SECTION 2.2 | 60 MINUTES

3D Design in Tinkercad

Tinkercad is a free, cloud-based Computer Aided Design (CAD) Platform designed to simplify the process of creating 3D objects.

www.tinkercad.com

Don't let its simplicity fool you; we consider it to be one of the fundamental building blocks for a new 3D designer.

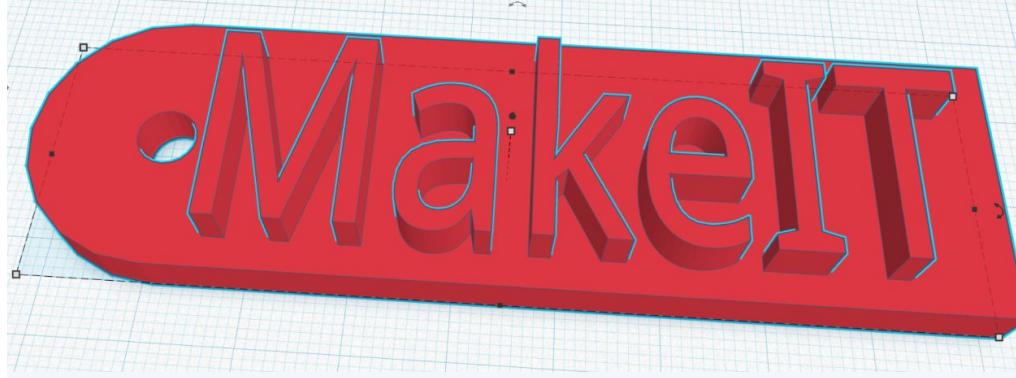
The screenshot shows the Autodesk Tinkercad homepage. At the top left is the Tinkercad logo (TINKECAD in a grid) and the Autodesk Tinkercad brand name. Below the logo is the tagline "From mind to design in minutes". A brief description follows: "Tinkercad is a free, easy-to-use web app that equips the next generation of designers and engineers with the foundational skills for innovation: 3D design, electronics, and coding!" Two buttons are present: "Start Tinkering" (blue) and "Join your class" (green). To the right is a preview of a 3D model titled "N I AMH" made of colorful blocks, with the text "Workplane" below it. A callout says "Make a 3D Key Ring. Launch the Lesson!". Below this are three icons: a globe with a dashed line around it labeled "Community of 35 million" with a "Join" button; a stopwatch labeled "Fast, free, easy to use" with a "Learn" button; and an apple labeled "Loved by educators worldwide" with a "Teach" button. A blue banner at the bottom states: "Safeguarding your privacy is fundamental to our mission. Learn how we protect student data in our [Privacy and Security Statement](#)". A large callout at the bottom center reads "Unleash your imagination with these easy steps". The bottom right shows a step 1 icon: a blue cube with the text "1. Place" and the subtext "Place a shape on the workplane to add or remove material. Use pre-existing shapes or import your own. Shapes are the building blocks of Tinkercad."

THE ACTIVITY | SECTION 2.2 | 60 MINUTES

3D Design in Tinkercad

Let's make a simple project together!

By building a keychain, we'll have the chance to design, slice, and 3D print an object before the end of the session.



- 1. Register and Sign Up for an Account**
- 2. Create a New Design in Tinkercad**
- 3. Learn about the Interface and Basic Operations in Tinkercad**
- 4. Create our object using basic operations**

3D Design in Tinkercad

1. Control Camera in Tinkercad

The screenshot shows the Tinkercad interface. At the top, there's a toolbar with various icons for file operations like Open, Save, Import, Export, and Print. Below the toolbar is a navigation bar with buttons for 'TOP' and 'FRONT' views, and other icons for zooming and orientation. On the right side, there's a sidebar titled 'Basic Shapes' containing icons for different 3D primitives: cube, cylinder, cone, sphere, torus, and various complex shapes like a star or gear. The main workspace is a light blue grid plane labeled 'Workplane' at the bottom left. A large blue rectangular callout box is overlaid on the interface, containing the text: 'Let's begin by walking through Tinkercad's interface.'

Stunning Bombul

All changes saved

Import Export Send To

TOP FRONT

Basic Shapes

Workplane

Edit Grid
Snap Grid 1.0 mm

THE ACTIVITY | SECTION 2.2 | 60 MINUTES

3D Design in Tinkercad

1. Control Camera in Tinkercad

The workplane is where you place your shapes.

You can use the mouse to move your camera view to see different views of the workplane.

Workplane

Edit Grid
Snap Grid | 1.0 mm

Stunning Bombul

All changes saved

Import Export Send To

Basic Shapes

TOP FRONT

Workplane

3D Design in Tinkercad

1. Control Camera in Tinkercad

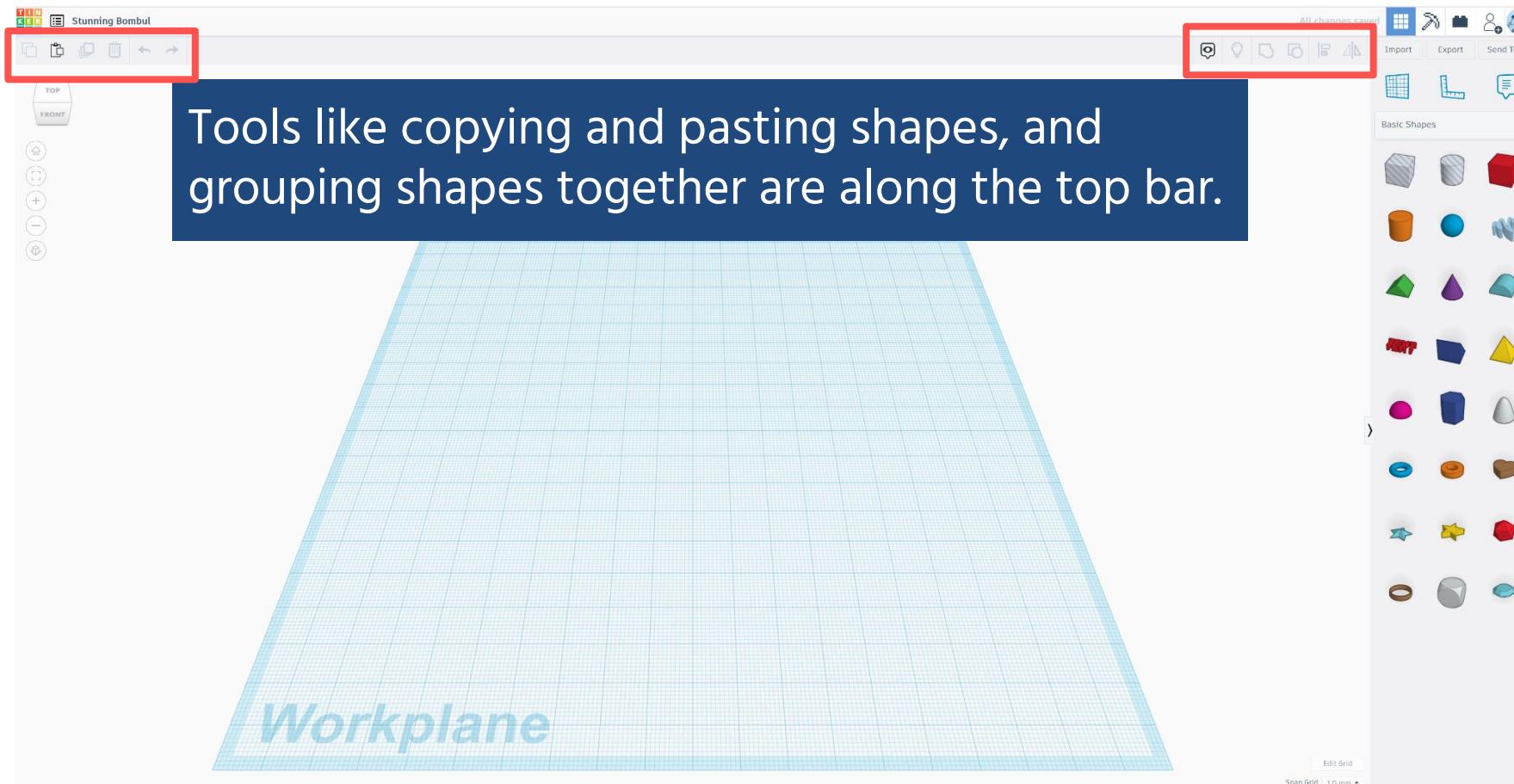
The shapes tab lets you choose which shapes to place on to the workplane.

Workplane

The screenshot shows the Tinkercad interface. On the left is a toolbar with various icons for file operations and camera controls. In the center is a large blue rectangular area labeled "Workplane" with a grid pattern. On the right is a sidebar titled "Basic Shapes" containing a grid of 3D model icons. A red arrow points from the text box to the sidebar. The top right corner of the screen shows a message "All changes saved".

3D Design in Tinkercad

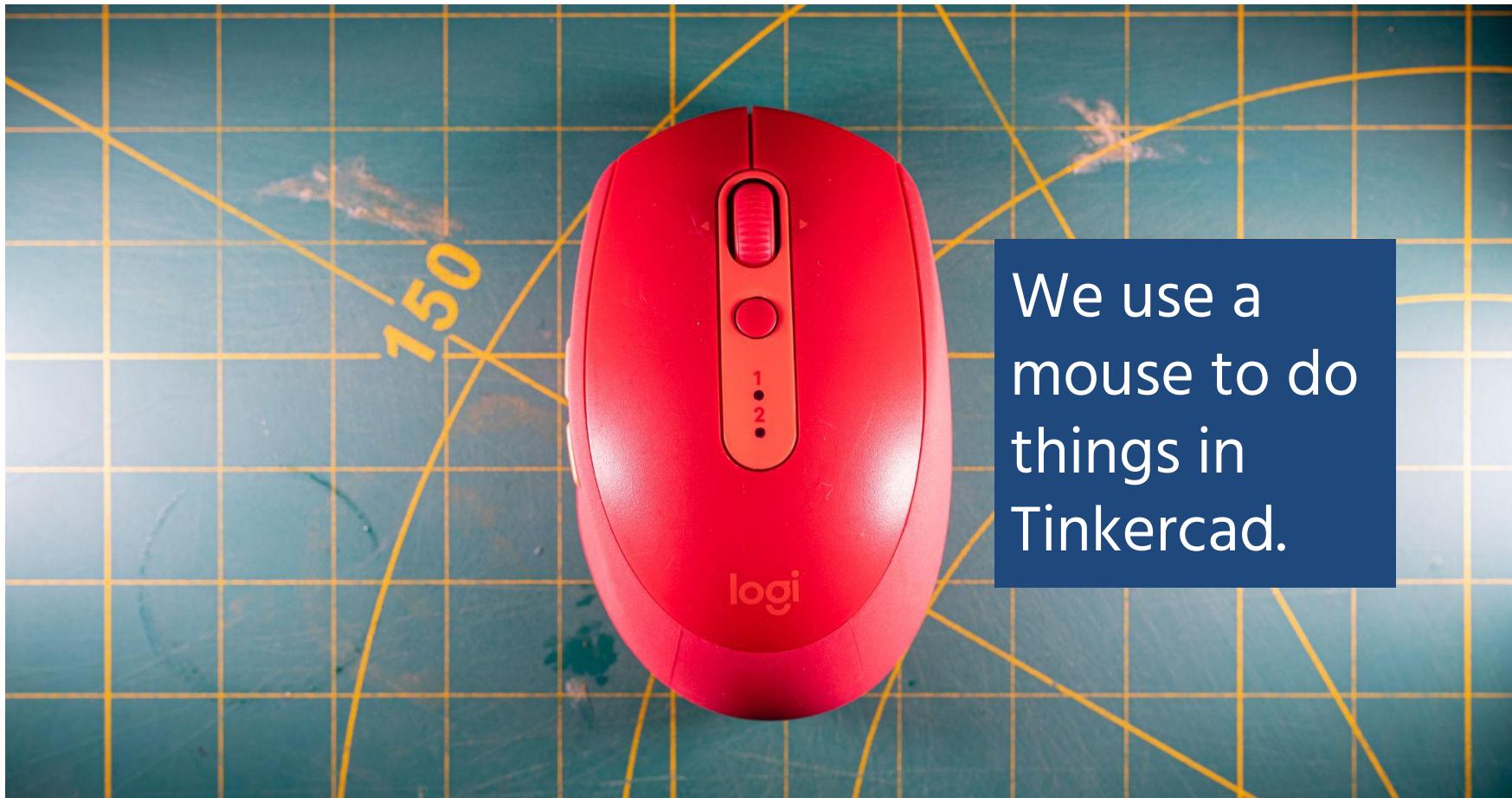
1. Control Camera in Tinkercad



THE ACTIVITY | SECTION 2.2 | 60 MINUTES

3D Design in Tinkercad

1. Control Camera in Tinkercad



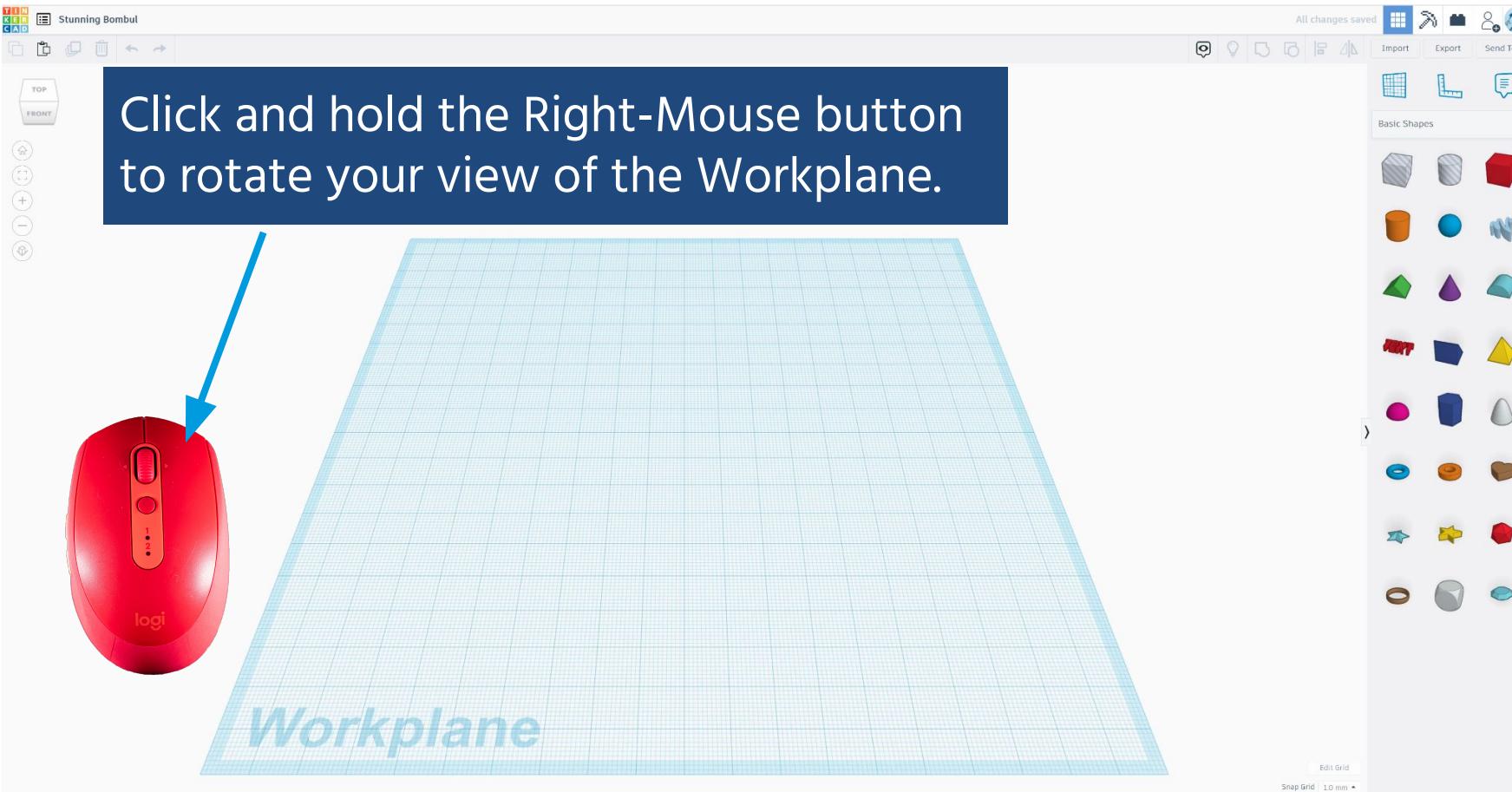
3D Design in Tinkercad

1. Control Camera in Tinkercad

Click and hold the Right-Mouse button to rotate your view of the Workplane.



Workplane



THE ACTIVITY | SECTION 2.2 | 60 MINUTES

3D Design in Tinkercad

1. Control Camera in Tinkercad

Click and hold the Middle-Mouse button to pan the camera.

Workplane

TIN
KEF
CAD

All changes saved

Import Export Send To

Basic Shapes

TOP FRONT

Import Export Send To

Edit Grid

Snap Grid 1.0 mm

3D Design in Tinkercad

1. Control Camera in Tinkercad

The screenshot shows the Tinkercad interface with a large blue callout box containing the text: "Use the scroll wheel to zoom in and zoom out." A blue arrow points from this text to the scroll wheel of a red Logitech mouse shown in the foreground. The Tinkercad workspace features a light blue grid workplane. On the right side, there's a sidebar with various 3D shapes and tools. The top bar includes file management and sharing options.

Use the scroll wheel to zoom in and zoom out.

TOP FRONT

All changes saved Import Export Send To

Basic Shapes

Workplane

Edit Grid Snap Grid 10 mm

3D Design in Tinkercad

1. Control Camera in Tinkercad

The screenshot shows the Tinkercad interface. At the top, there's a toolbar with icons for file operations, selection, and measurement. Below it is a menu bar with "All changes saved" and options like Import, Export, and Send To. On the left, there's a sidebar with view modes (TOP, FRONT, BACK, etc.) and a "Basic Shapes" library containing various 3D primitives. The main workspace is a light blue grid plane labeled "Workplane". A red arrow points from a red computer mouse icon to the left side of the screen, indicating where to click the left mouse button.

Use the left-mouse button to perform other actions, like selecting shapes.

Workplane

3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad

The image shows a red Logitech mouse with a green letter 'A' highlighted on its scroll wheel, positioned next to a 3D workplane in the Tinkercad interface. The workplane is a light blue grid surface. A large blue callout box contains the text: "Left-Click and Drag a Box onto the Workplane." A red arrow points from this callout to the "Box" icon in the "Basic Shapes" section of the Tinkercad library on the right side of the screen.

Stunning Bombul

TOP FRONT

Import Export Send To

Basic Shapes

Box

Workplane

Edit Grid Snap Grid 1.0 mm

3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad

Left-Click on the white box to resize your shape.

The Tinkercad interface includes a top toolbar with file, edit, and export options, a sidebar with basic shapes like boxes, cylinders, and spheres, and a right panel for modifying selected objects like the Box settings shown.

3D Design in Tinkercad

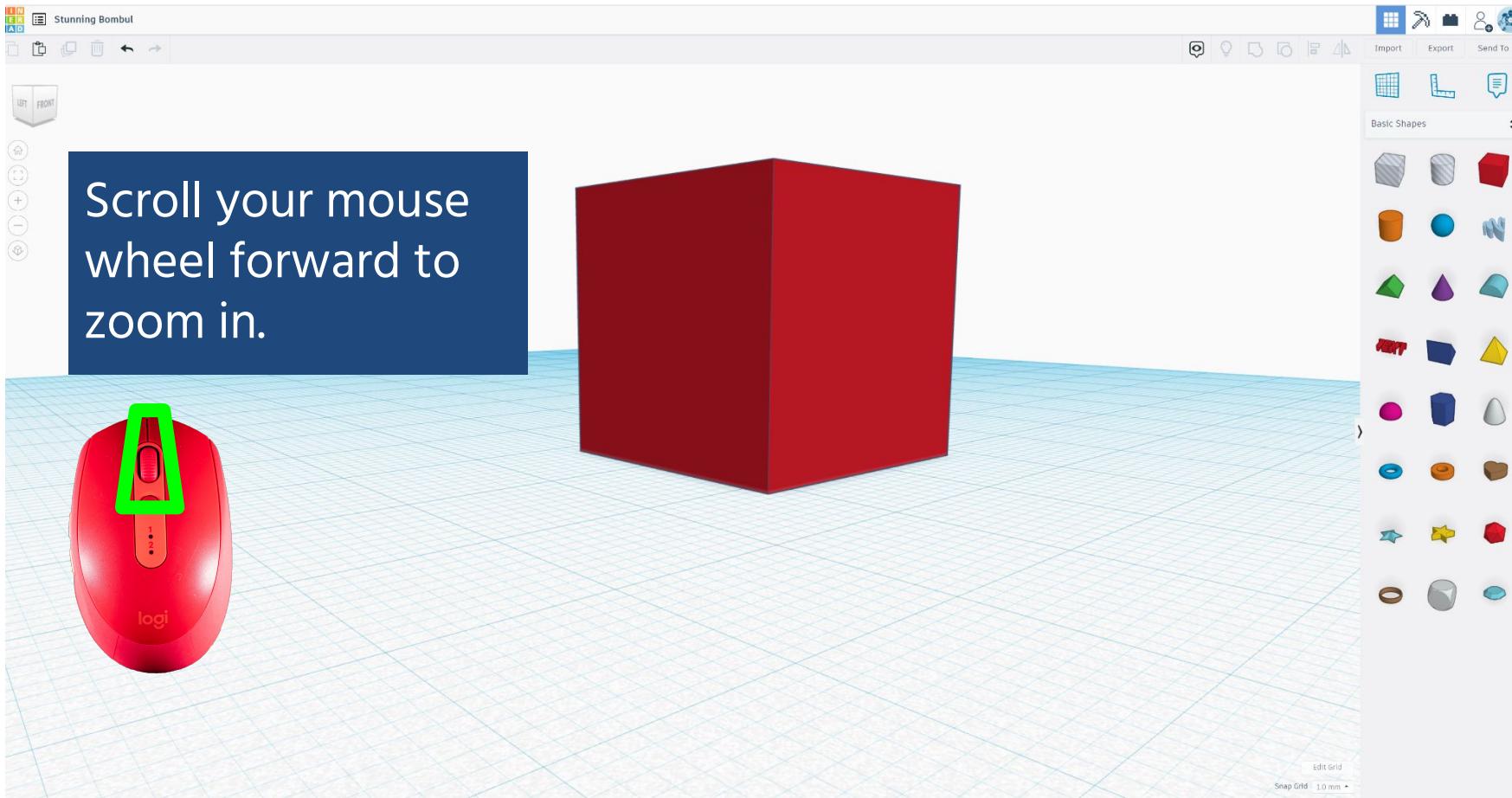
2. Manipulate Shapes in Tinkercad

Right-Click and move your mouse to rotate your view of the box.

The screenshot shows the Tinkercad interface with a red cube placed on a light blue workplane. A blue callout box with white text provides instructions on how to rotate the view. To the left of the workplane is a red computer mouse with green highlights on its scroll wheel and buttons. The Tinkercad interface includes a toolbar at the top with various icons for file operations, a sidebar on the right with shape categories like 'Basic Shapes' and 'Advanced Shapes', and a status bar at the bottom.

3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad



3D Design in Tinkercad

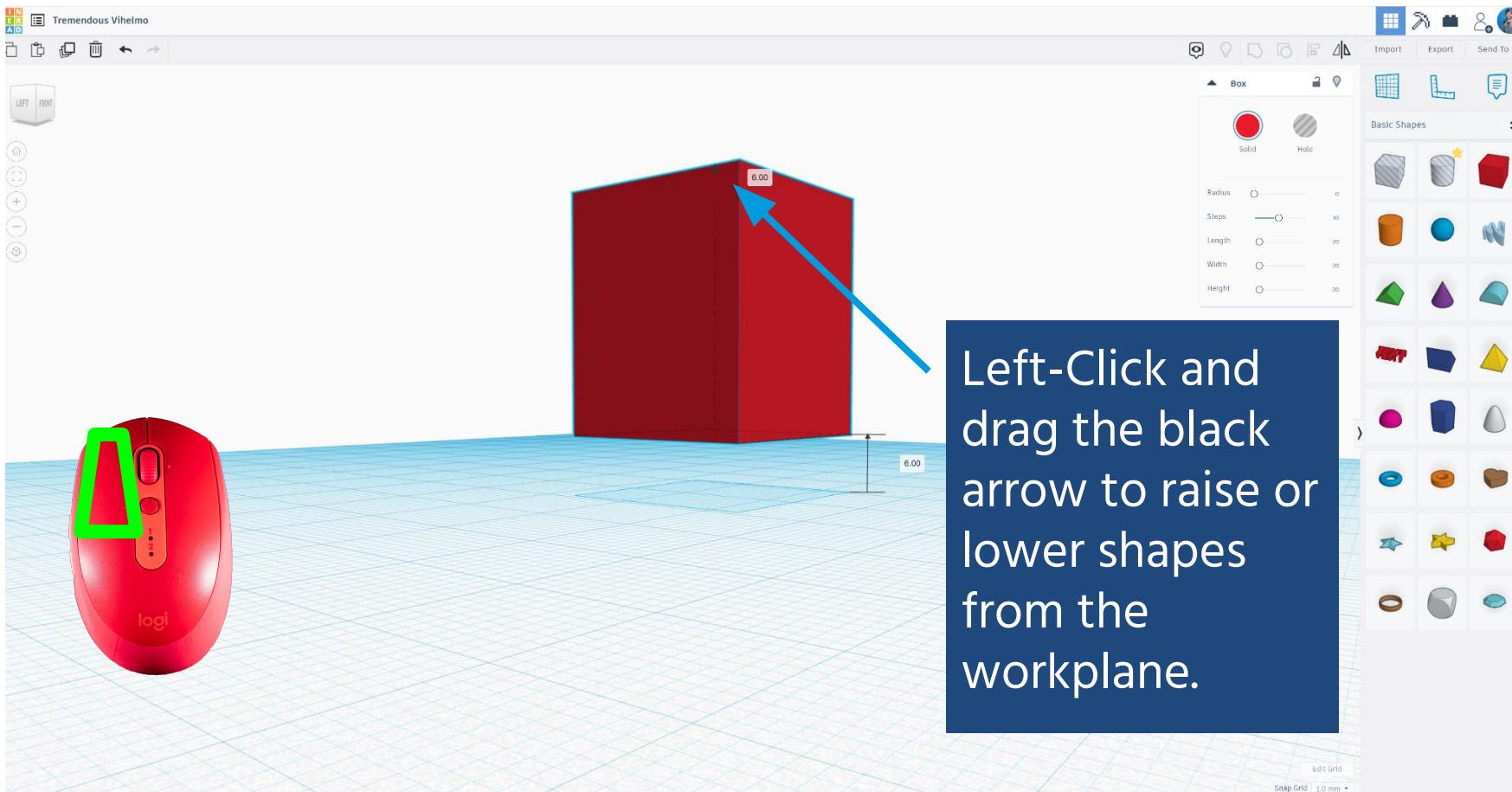
2. Manipulate Shapes in Tinkercad

The screenshot shows the Tinkercad interface with a red cube selected. A blue arrow points to the top face of the cube, indicating where to click to stretch it upwards. The cube has dimensions labeled as 24.00. On the left, there is a red Logitech mouse icon with a green 'L' shape overlaid, suggesting a physical action to perform the task. The right side of the screen displays the Tinkercad tool palette with various shapes and settings for the selected 'Box'.

Left-Click on the box. Click on the top white box and stretch it up.

3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad



Left-Click and drag the black arrow to raise or lower shapes from the workplane.

3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad

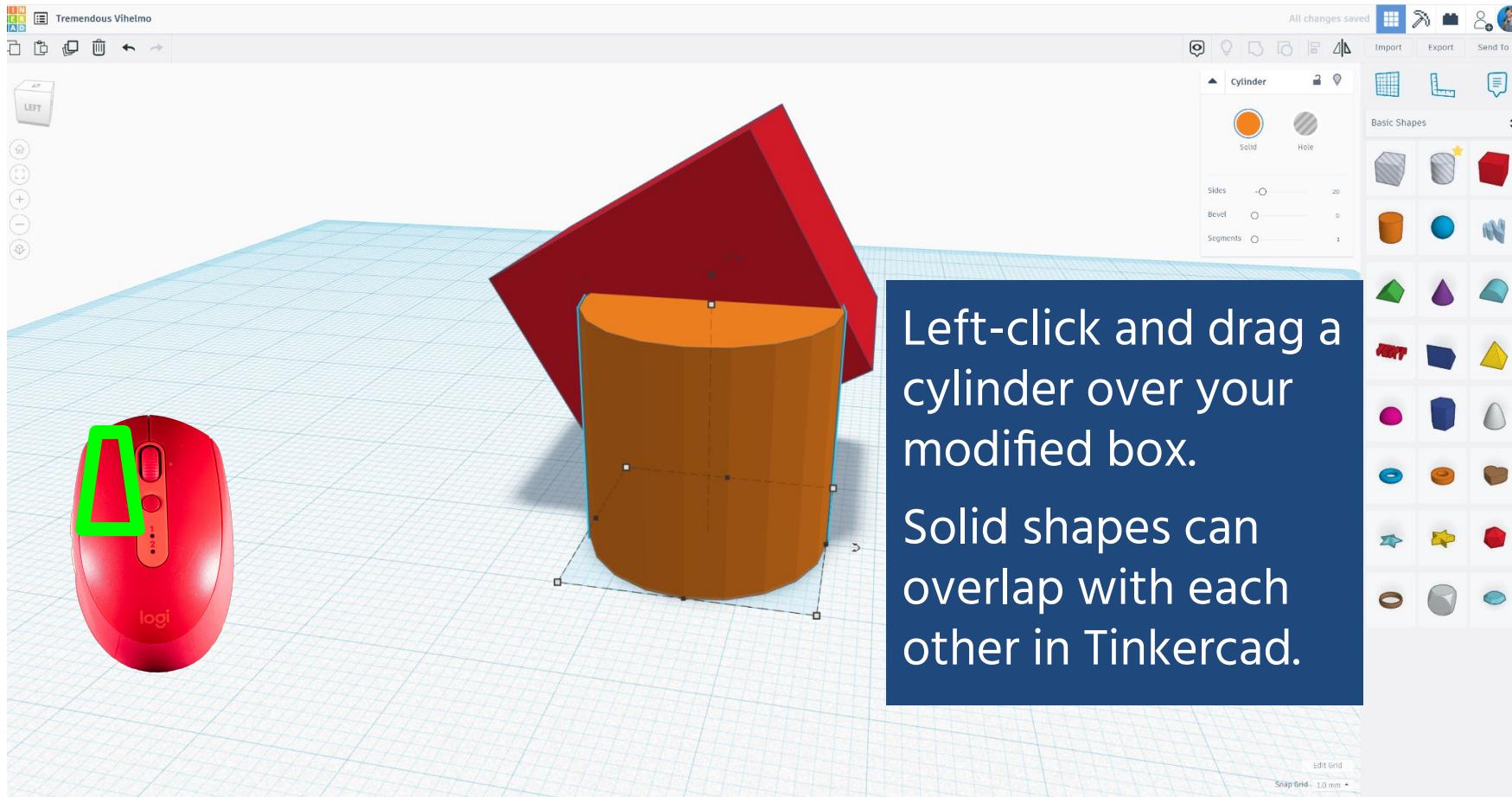
The image shows the Tinkercad interface with a 3D model of a red Logitech mouse on the left. On the right, there is a blue callout box containing the following text:

Left-Click and spin
the curved arrows to
rotate your shape.
Change your camera
angle to get the best
view!

The Tinkercad interface includes a toolbar at the top with various icons for file operations, and a sidebar on the right with categories like Box, Basic Shapes, and a library of 3D models.

3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad



Left-click and drag a cylinder over your modified box.
Solid shapes can overlap with each other in Tinkercad.

3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad

In the shape tab, left-click on Hole.

Holes cut out material from solids to let you make more complex shapes.

3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad

The image shows a 3D rendering of a red Logitech computer mouse on a light blue grid background. A green rectangular selection box highlights the top surface of the mouse, specifically the trackball area. To the right of the mouse, the Tinkercad software interface is visible, featuring a toolbar at the top with various icons for file operations, selection, and transformation. Below the toolbar is a library panel titled "Basic Shapes" containing icons for different 3D primitives like cubes, spheres, and cylinders. A large blue callout box with white text provides instructions: "Multiple shapes can be grouped together." and "Click the Group icon to combine shapes." A blue arrow points from the text in the callout box to the "Group" icon in the Tinkercad toolbar.

Multiple shapes
can be grouped
together.

Click the Group
icon to combine
shapes.

3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad

Left-click on the Tinkercad sign to head back to the main menu.

The image shows the Tinkercad interface with a 3D model of a red computer mouse. The mouse has a green and red patterned top half and a red bottom half. To the right is a 3D printed version of the same mouse, which appears to be a solid red color. The Tinkercad interface includes a toolbar at the top with various icons, a sidebar with shape tools, and a grid-based workspace. A blue callout box with a red arrow points to the Tinkercad logo in the top left toolbar, with the text "Left-click on the Tinkercad sign to head back to the main menu." A red border highlights the main workspace area.

MAKING A KEYCHAIN

MakeIt

3D Design in Tinkercad

3. Create Name Tag 3D Model

Add a Text shape onto the workplane.

The Tinkercad interface shows a 3D model of the word "TEXT" on a workplane. A blue arrow points from a text box containing the instruction "Add a Text shape onto the workplane." towards the "Text" tool in the sidebar. The sidebar also displays other basic shapes like cubes, cylinders, and spheres. A red computer mouse is shown on the left side of the workplane.

Workplane

3D Design in Tinkercad

3. Create Name Tag 3D Model

Type in the name on your keychain. We use "MakeIT" in our example.

The Tinkercad interface shows a 3D model of the word "MakeIT" in red, sans-serif font, with a blue outline. The model is positioned on a light blue workplane grid. The right side of the screen displays the Tinkercad tool palette, which includes sections for Text, Basic Shapes, and other 3D primitives. A blue arrow points from the text input field in the Text section towards the central workspace. On the far left, a red computer mouse with a green trackball is shown, likely used for navigating the software. The word "Workplane" is written in large, bold, blue letters at the bottom of the workplane.

3D Design in Tinkercad

3. Create Name Tag 3D Model

The screenshot shows the Tinkercad interface with a 3D model of the word "makey" in red. A red computer mouse is placed next to the letters. A green rectangular selection box highlights a small part of the letter "k". A blue callout box contains the text: "Zoom into your name. The closer you are to your shape, the easier it is to change." The right side of the screen displays the Tinkercad library and tools.

Zoom into your name.
The closer you are to your shape,
the easier it is to change.

Text: MakeIT
Font: Sans
Height: 10
Bevel: 0
Segments: 0

Basic Shapes

TOP FRONT

Import Export Send To

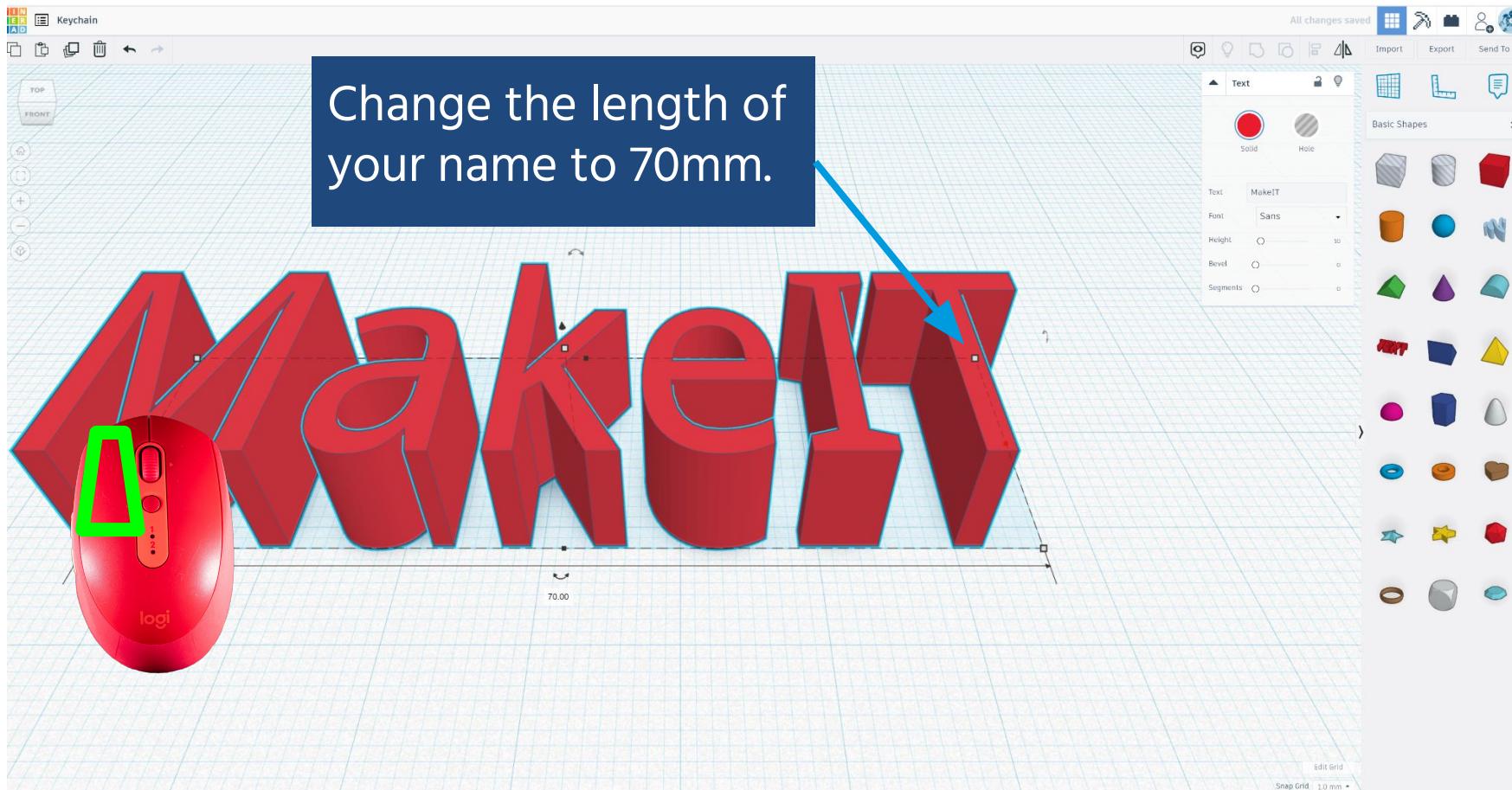
Logitech

88.40 21.38

Edit Grid
Snap Grid 1.0 mm

3D Design in Tinkercad

3. Create Name Tag 3D Model



3D Design in Tinkercad

3. Create Name Tag 3D Model



Add a box and place it on the top-left corner of your name.

3D Design in Tinkercad

3. Create Name Tag 3D Model

The screenshot shows the Tinkercad interface with a 3D model of the word "makeIT" in red. A keychain component is also visible. A callout box with a blue arrow points to a dimension of 5.00 mm on a small rectangular part of the keychain. The right side of the screen displays the Tinkercad library and tools.

Change the height of the box to 5mm.

Box settings:

- Solid
- Hole
- Radius: 0
- Steps: 10
- Length: 20
- Width: 20
- Height: 5 (highlighted)

Snapping Grid: 1.0 mm

3D Design in Tinkercad

3. Create Name Tag 3D Model



3D Design in Tinkercad

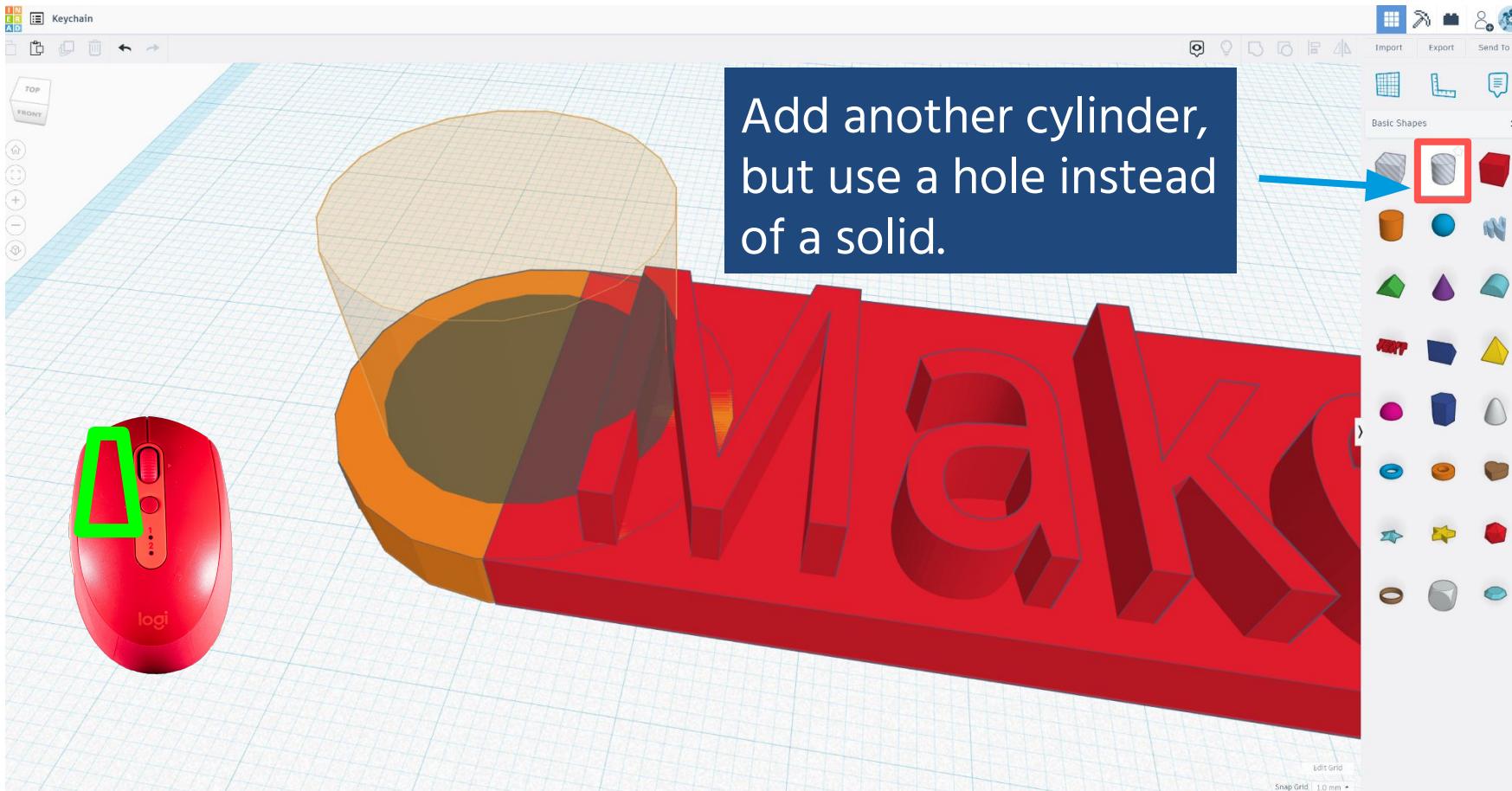
3. Create Name Tag 3D Model

Drag a cylinder to overlap with your name and the plate. Change the height to 5mm.

The image shows a 3D rendering of a name tag with the text "makeIT" in a large, bold, red font. A smaller orange cylinder is positioned above the letter "e". A callout box with a blue arrow points to the cylinder's height setting in the properties panel, which is currently set to 5mm. The Tinkercad interface includes a toolbar, a workspace with a grid, and a library of basic shapes on the right side.

3D Design in Tinkercad

3. Create Name Tag 3D Model



3D Design in Tinkercad

3. Create Name Tag 3D Model

Make sure the hole has enough space around the outer cylinder. We change it to 14mm x 14mm here.

The image shows a 3D rendering of a name tag in Tinkercad. The name tag has a red base and an orange top. A blue callout box contains the text: "Make sure the hole has enough space around the outer cylinder. We change it to 14mm x 14mm here." A red Logitech mouse is shown at the bottom left for scale.

3D Design in Tinkercad

3. Create Name Tag 3D Model

Left-click and drag a box around all shapes. Then group the shapes together.

The image shows a screenshot of the Tinkercad 3D modeling interface. On the left, there's a red Logitech mouse icon with a green 'A' button highlighted. The main workspace displays a 3D model of a name tag. The word "MakeIT" is printed in large, bold, red letters on a red rectangular base. A circular hole has been cut out of the top-left corner of the base. A red dashed rectangular selection box surrounds the entire name tag model. In the top-left corner of the workspace, there's a small blue arrow pointing towards the selection box. The right side of the interface features a toolbar with various icons for file operations like Import, Export, and Send To, along with a library of basic shapes including cylinders, spheres, and cubes in different colors and patterns. At the bottom right, there are settings for 'Edit Grid' and 'Snap Grid'.

3D Design in Tinkercad

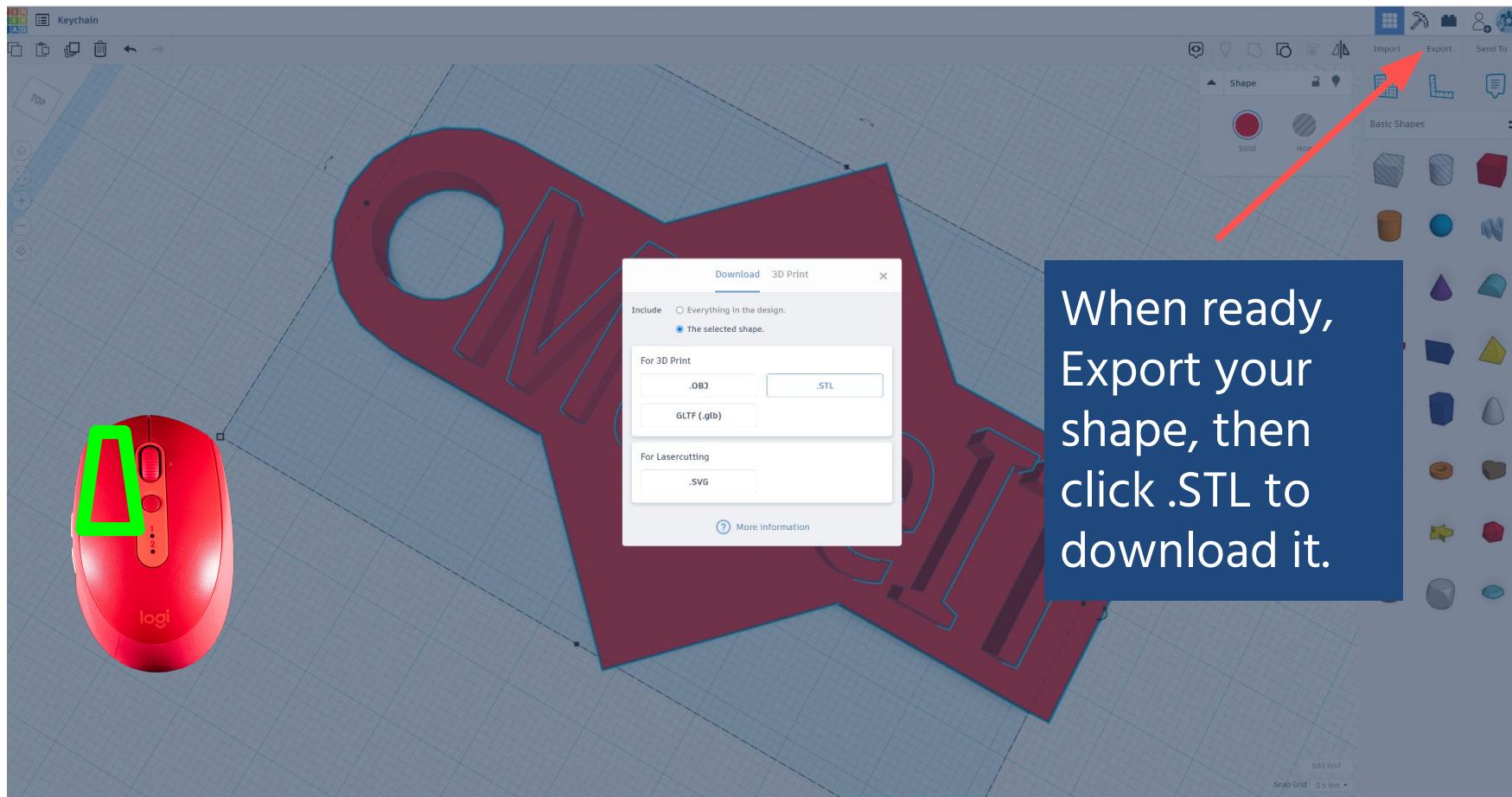
3. Create Name Tag 3D Model

Group the shapes together. Feel free to accessorise with other shapes.

The image shows a 3D rendering of a red keychain with the word "MakeIT" engraved in large, bold, 3D letters. The keychain has a standard split-ring keychain hole at one end. To the left of the main image, there is a small inset showing a red Logitech computer mouse, which serves as a scale reference. The background is a light blue grid, typical of a 3D modeling software like Tinkercad. On the right side of the screen, the Tinkercad interface is visible, featuring toolbars for selection, transformation, and basic shapes, as well as a library of various 3D primitives. A prominent blue arrow points from the text box in the center towards the 3D model, drawing attention to the task at hand.

3D Design in Tinkercad

3. Create Name Tag 3D Model



BREAK



<https://go.gov.sg/makeit-onsite-loi>

Please follow the link above to provide feedback for this workshop.

NKER
EXPLORE MakeIT
EVERYONE MakeIT
CAN MAKE MakeIT
UPCYCLING SEWING
MAKERSPACE
HELLO EVERYONE
CAN MAKE
SEWING 3D PRINTER
MAKE CODING
TINKER CREATE
CREATIVITY EXPLORE
COMPUTER

CLEAN FILES IN, CLEAN FILES OUT

MakeIT

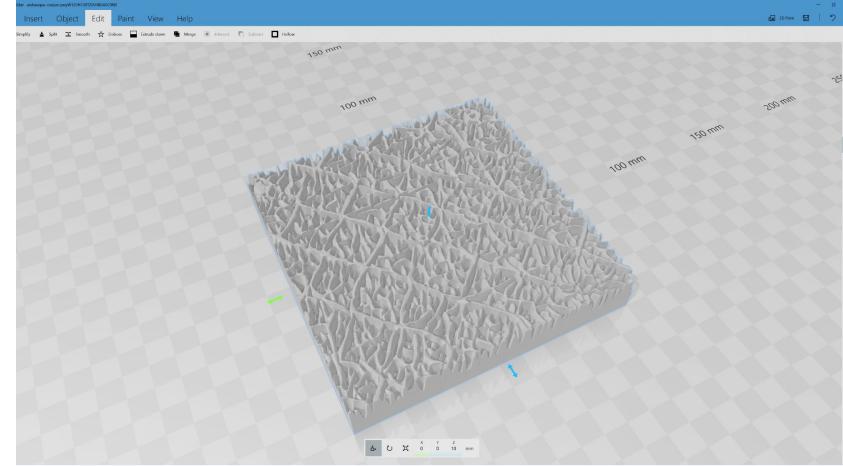
THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Slicing and Printing a 3D Object

Not all 3D files are printable! How can you check to see if an object will print?

Some 3D objects are designed for purposes unrelated to 3D printing. To see if an object is 3D printable, open that object in 3D Builder, a free program by Microsoft available on Windows.

This process of checking is called Cleaning.



In 3D Builder, you can also do things such as simplify 3D models to make them easier to slice, smooth or emboss features on 3D models, or even hollow out shapes.

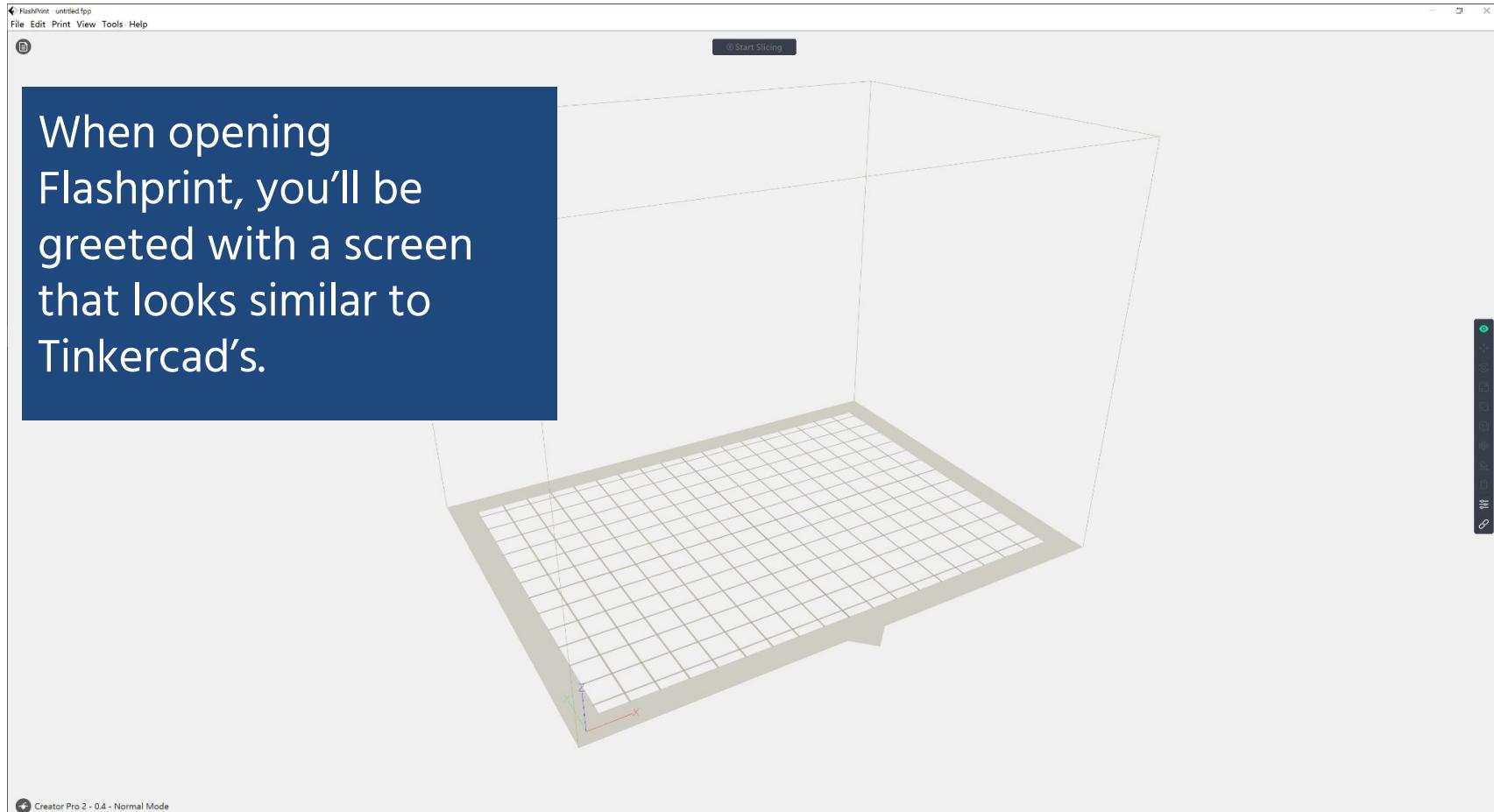
SLICING

MakeIT

THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

The right mouse button lets you rotate your workplane.

You can zoom with the middle mouse button.

Creator Pro 2 - 0.4 - Normal Mode

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

The screenshot shows the FlashPrint 5 software interface. On the left, a vertical toolbar has icons for file operations, print preview, and slicing parameters. The main workspace displays a 3D model of a rectangular name tag with a grid pattern on its top surface, resting on a grey build plate. A coordinate system with red, green, and blue axes is visible at the bottom-left corner of the build plate. In the top-left corner of the window, there's a small message box with the text "Creator Pro 2 - 0.4 - Normal Mode". At the top of the screen, a menu bar is open, showing options like File, Edit, Print, View, Tools, and Help. The "File" menu is currently active, with "Load File..." highlighted in blue and a red arrow pointing to it from the bottom-left.

Select File > Load File to load your .STL file.

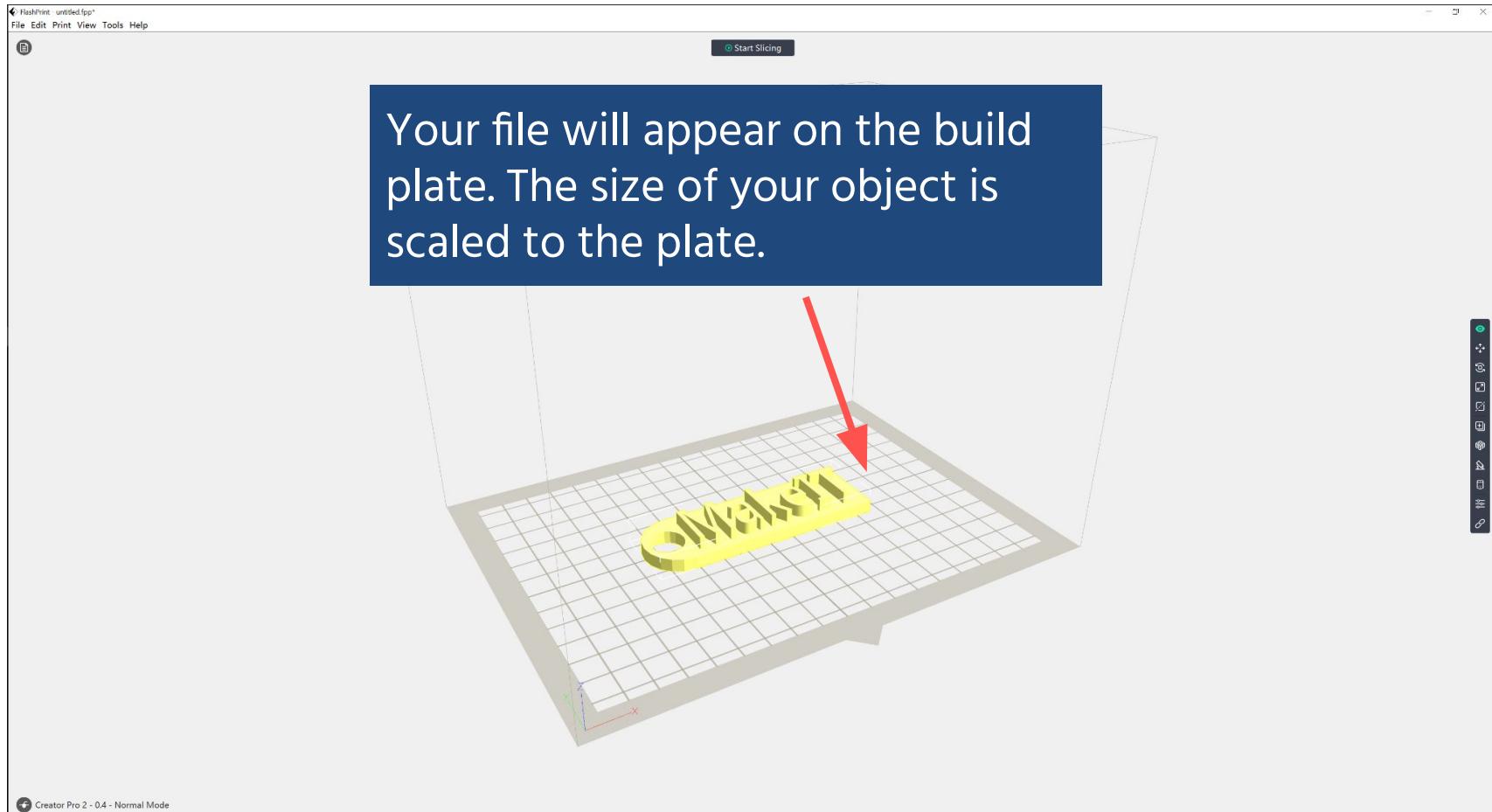
Select the nozzle at the bottom-left corner to select your printer. Ensure that you select the Creator Pro 2 3D Printer.

Creator Pro 2 - 0.4 - Normal Mode

THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

Select the Move tool, to move your object around the build plate.

Try to keep it at the centre of the build plate.

2nd Top

Move

Move

X -22.13mm
Y 1.26mm
Z 0.00mm

On Platform
Center

Creator Pro 2 - 0.4 - Normal Mode

THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

Select the Rotation tool to spin your object.

Try to orient the largest and flattest surface of your object to the build plate.

3rd Top

Rotate

Creator Pro 2 - 0.4 - Normal Mode

The screenshot shows the FlashPrint software interface. A yellow 3D model of a name tag with the text "Mickie" is centered on a build plate. Three concentric arcs (red, green, blue) are drawn around the object's long axis to indicate rotation. In the top right corner, a red button labeled "Start Slicing" is visible. On the right side of the screen, there is a toolbar with various icons. A red arrow points to the "Rotation" icon in the toolbar, which is highlighted with a black border. To the left of the toolbar, the text "3rd Top" is displayed above a small icon of a cube with a circular arrow. Below the toolbar, a panel titled "Rotation" shows three input fields: X: 0.0°, Y: 0.0°, Z: 0.0°, and a checkbox for "Surface to Platform". The bottom left corner of the screen displays the text "Creator Pro 2 - 0.4 - Normal Mode".

THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

Select the Scale tool to resize your object. It's best to use your CAD software to rescale, but if downloaded files aren't the right size, you can change them here.

4th Top

Scale

Scale

X	91.75mm	:	100.00%	:
Y	28.00mm	:	100.00%	:
Z	10.00mm	:	100.00%	:

Uniform Scaling

Inches

Maximum

Creator Pro 2 - 0.4 - Normal Mode

THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

Select the Cut tool to cut your 3D print into different parts.

Use this for large models that you need to print in multiple pieces (or if your prints are longer than 3 hours).

5th Top

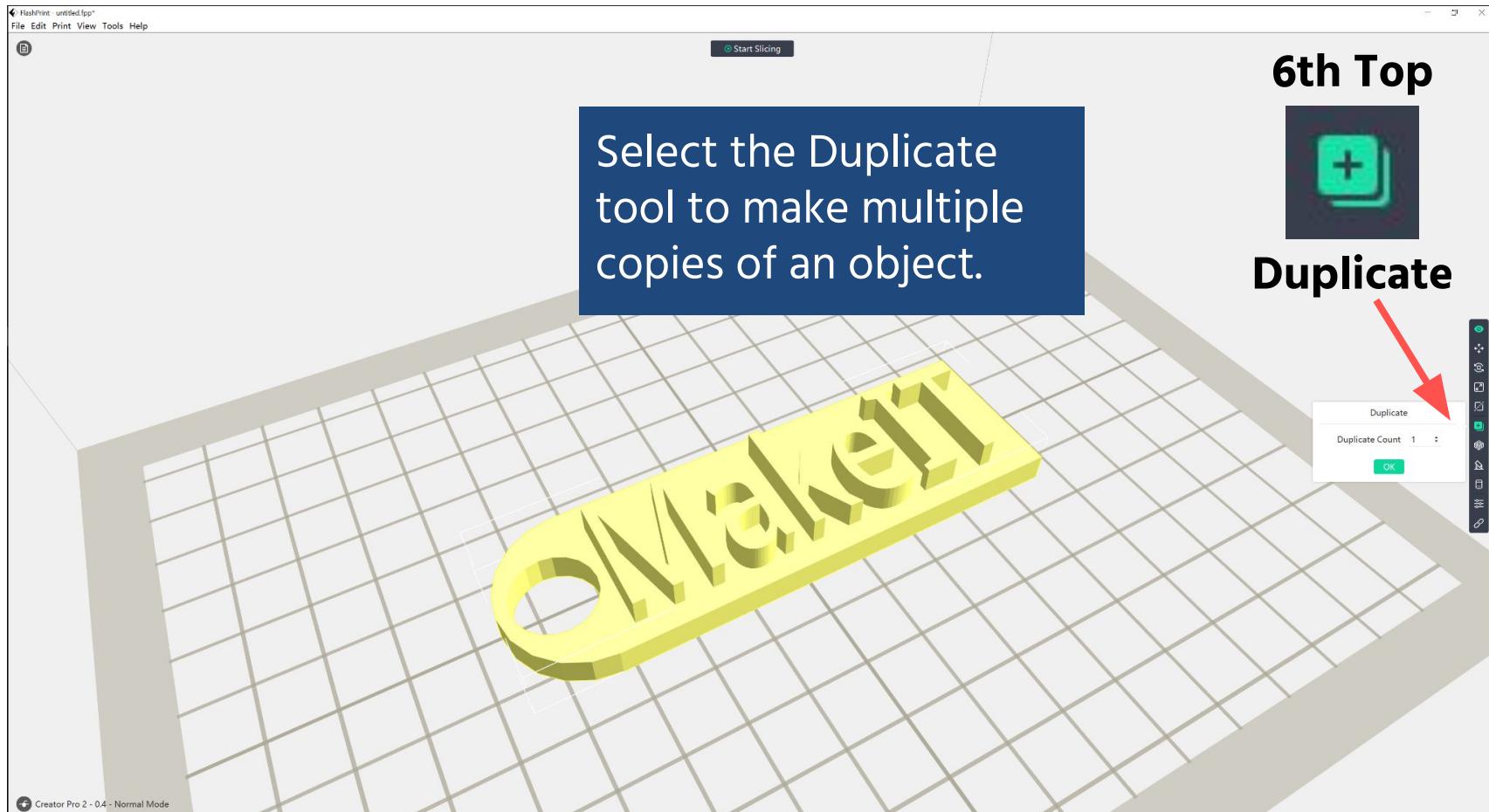
Cut

Creator Pro 2 - 0.4 - Normal Mode

The screenshot shows the FlashPrint software interface. A 3D model of a name tag is centered on a build plate. A large red arrow points from the text "Cut" to a button in the control panel on the right. The control panel includes buttons for "Position 0.00mm", "Keep parts in place", and "Start Cut". Above the control panel, the text "5th Top" is displayed next to a small icon of a green square with diagonal lines. The software's menu bar at the top includes File, Edit, Print, View, Tools, Help, and a "Start Slicing" button.

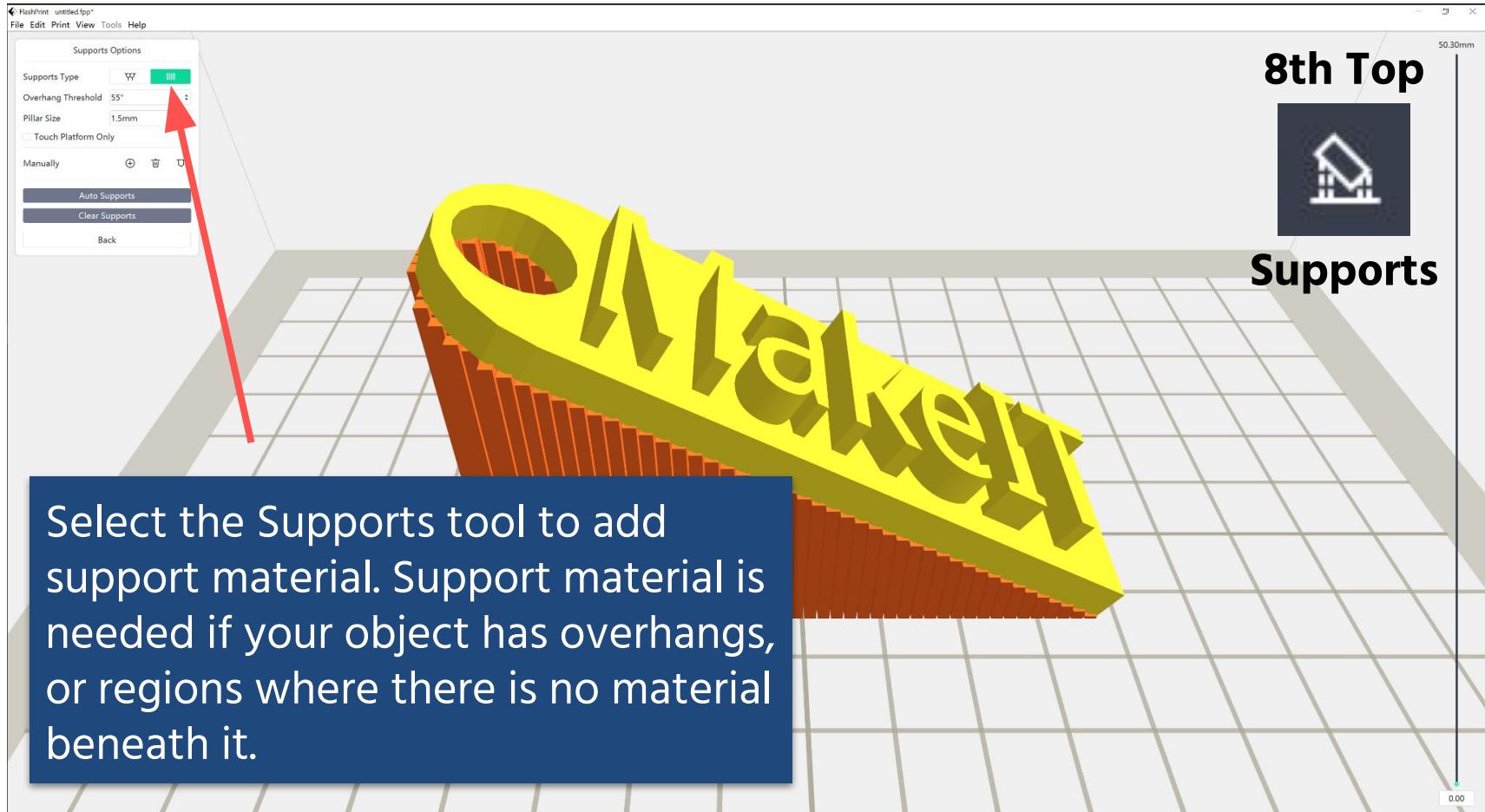
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



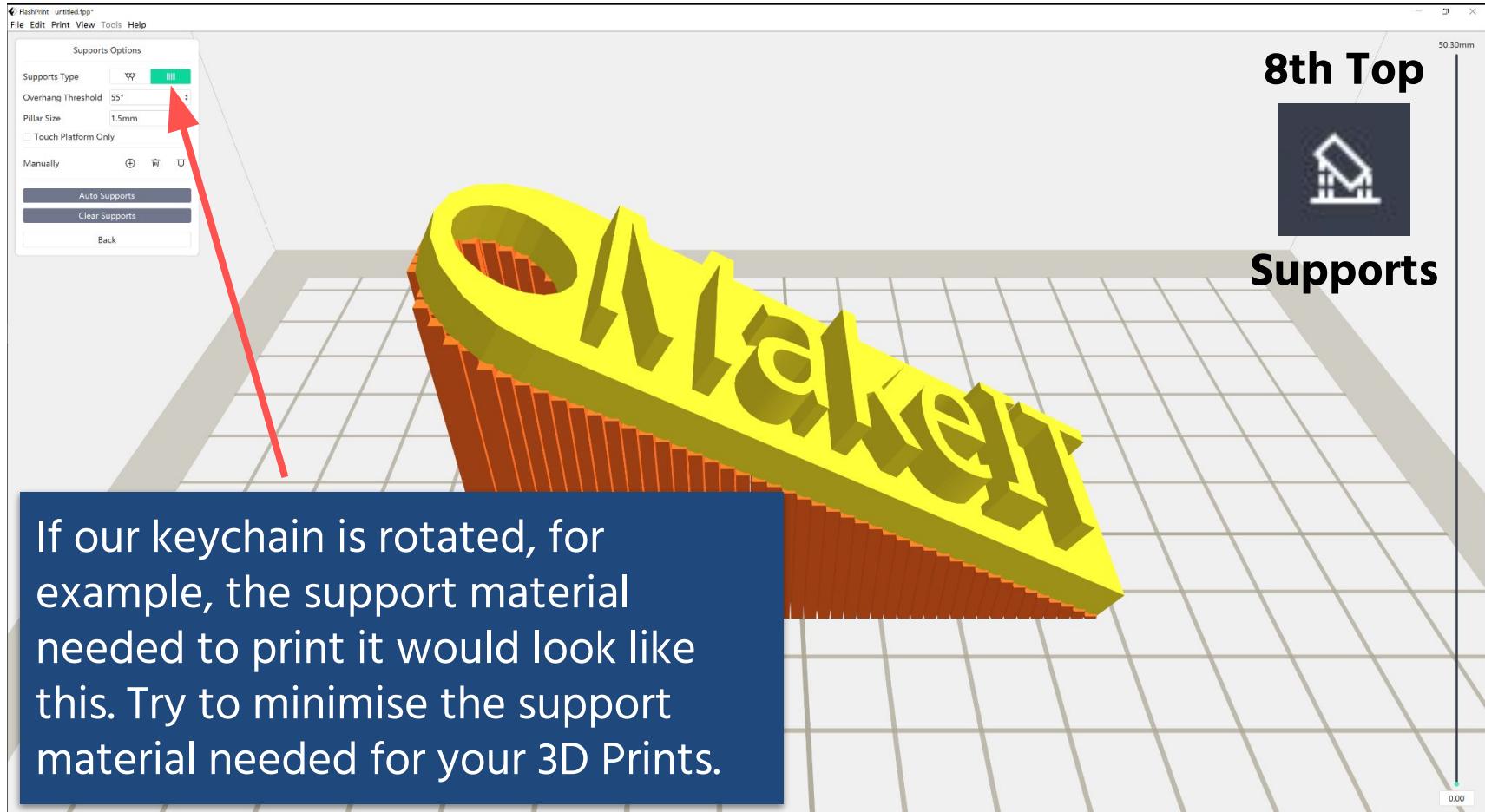
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



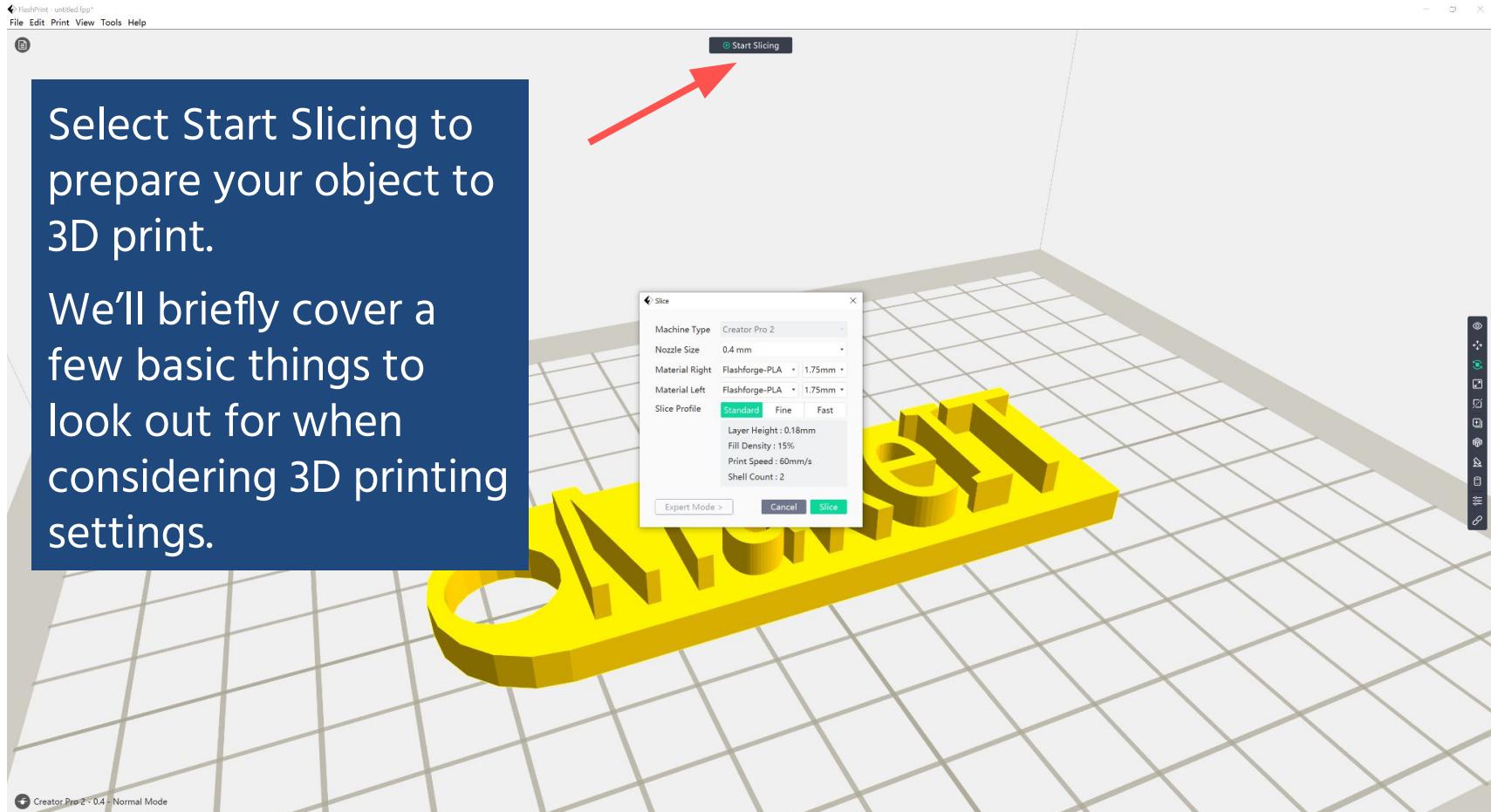
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

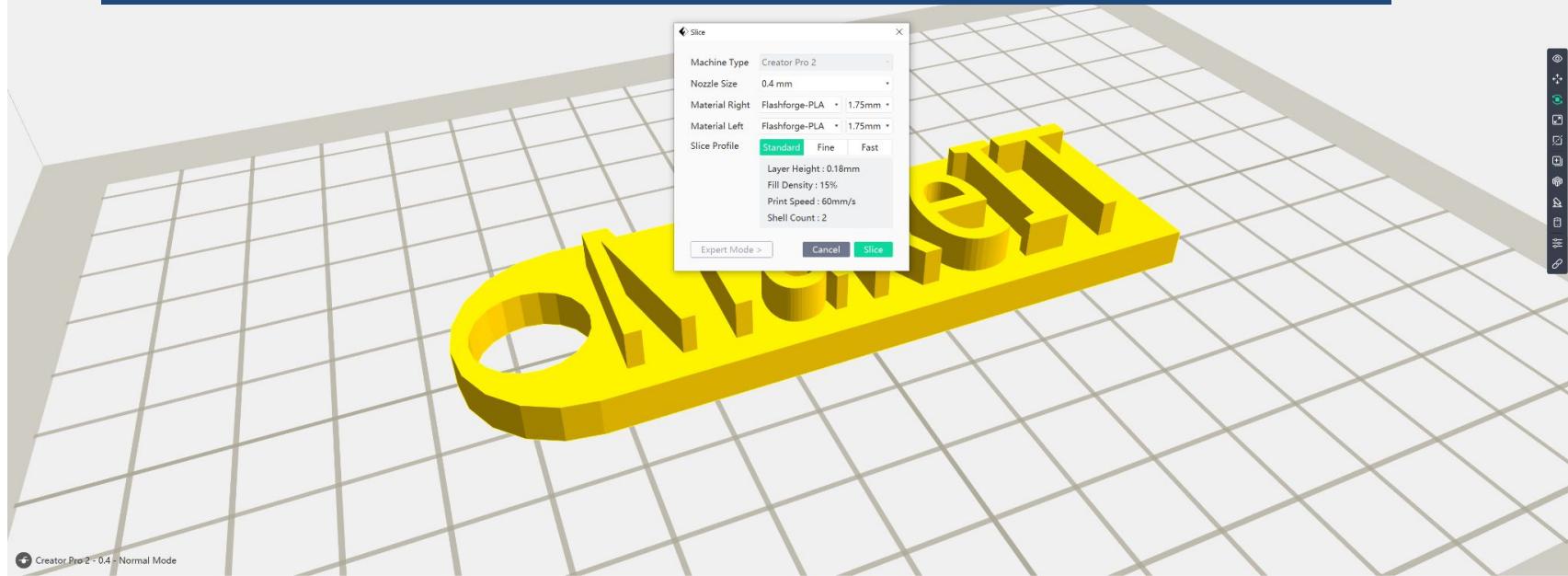


Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

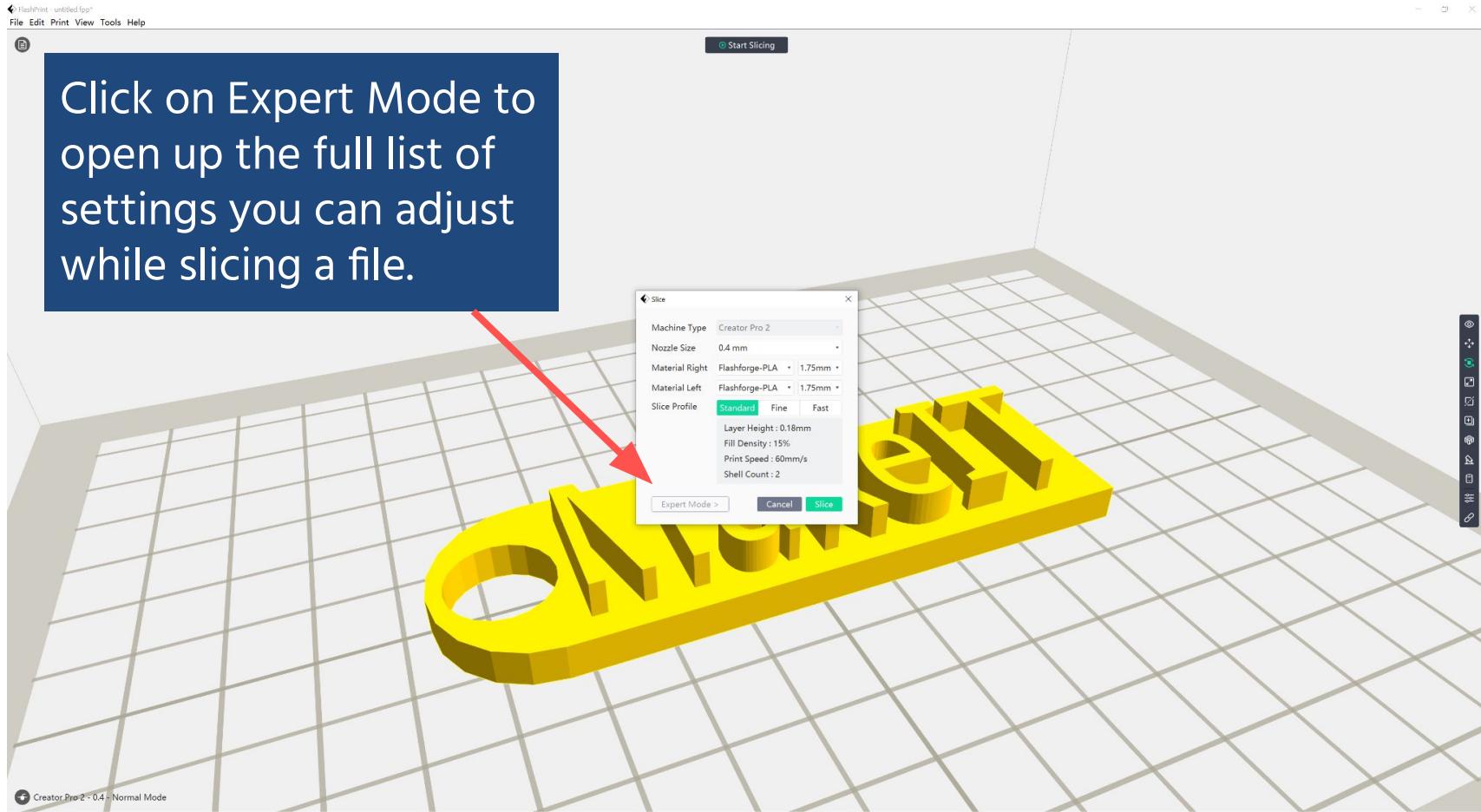
FlashPrint - untitled.fpp*
File Edit Print View Tools Help
Start Slicing

Basic mode provides minimal customization options, but will by default enable structures such as a raft that reduce the quality of your 3D prints.



Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

The screenshot shows the Flashprint 5 software interface. On the left, a vertical menu lists tabs: Printer, General (which is selected and highlighted in green), Shells, Infill, Supports, Raft, Additions, Cooling, Advanced, Others, and Retraction. The main panel displays settings under the "General" tab, specifically the "Layer Height" section. It includes "Layer Height Mode" (set to "Fixed Layer Height"), "Layer Height" (set to 0.2mm), "First Layer Height" (set to 0.2mm), "Base Print Speed" (set to 70mm/s), "Travel Speed" (set to 70mm/s), "Minimum Speed" (set to 30mm/s), and "First Layer Maximum Travel Speed" (set to 70mm/s). To the right of the main panel is a sidebar with buttons: "Basic Mode >" (disabled), "Save Configuration" (disabled), "Restore Defaults" (disabled), "Import" (disabled), "Export" (disabled), "Remove" (disabled), and "Save As New" (disabled). At the bottom right is a large green "Slice" button.

In expert mode, the tabs on the left mark the features you can change of your 3D print. We'll be using the "General", "Shells", and "Infill" tabs.

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

Increase layer height to speed up your prints.
Decrease layer height to increase your print quality.
The minimum to use is 0.1mm, and the maximum is 0.3mm.

Printer General Shells Infill Supports

Layer Height

Layer Height Mode

Layer Height

First Layer Height

Speed

Base Print Speed

Fixed Layer Height

0.18mm

0.27mm

60mm/s

100mm/s

5mm/s

10mm/s

70mm/s

0

30mm/s

Basic Mode >

Save Configuration

Restore Defaults

Import

Export

Remove

Save As New

Slice

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

Increase "Shell Count" to 3 to strengthen your part. Shells are the outermost parts of your 3D print.

Thickness
Shell Count
Shell Thickness
Overlap Perimeter
Speed

Printer
General
Shells
Infill

2
0.80mm
30%
50%
15mm/s
70%
200mm/s
100%
200mm/s

Basic Mode >
Save Configuration
Restore Defaults
Import
Export
Remove
Save As New

Start Points
Mode
closest to specific location

Slice

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

The screenshot shows the Flashprint 5 software interface with a red callout box highlighting the 'Infill' tab in the left sidebar. A red arrow points from this callout to the 'Top Solid Layers' and 'Bottom Solid Layers' settings in the main configuration area. Another red arrow points from the same callout to the 'Infill Pattern' dropdown menu, which is currently set to 'Hexagon'. A large blue callout box contains instructions: 'Increase "Top Solid Layers" to 5 and "Bottom Solid Layers" to 4 to solidify your part.' Another blue callout box contains instructions: 'Reduce infill to speed up your prints and make them lighter. Infill is the material inside of your 3D print.' On the right side, there are several buttons: 'Basic Mode >', 'Save Configuration', 'Restore Defaults', 'Import', 'Export', 'Remove', and 'Save As New'. A green 'Slice' button is at the bottom right.

Infill

General

Printer

General

Shells

Top Solid Layers

Bottom Solid Layers

Fill Density

Fill Pattern

3

3

15%

Hexagon

15%

No

Basic Mode >

Save Configuration

Restore Defaults

Import

Export

Remove

Save As New

Increase "Top Solid Layers" to 5 and "Bottom Solid Layers" to 4 to solidify your part.

Reduce infill to speed up your prints and make them lighter. Infill is the material inside of your 3D print.

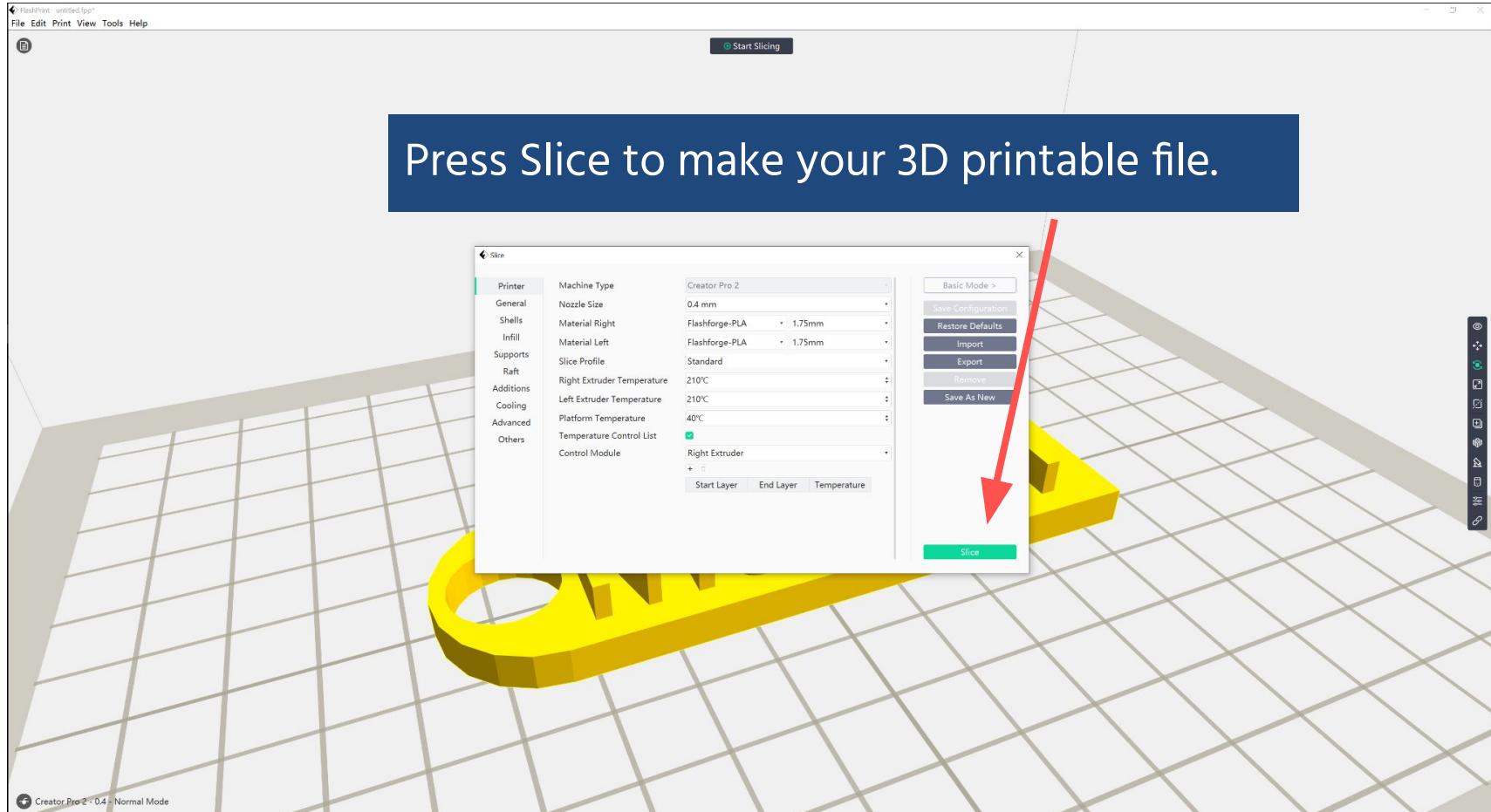
Maximum Solid Combine

Maximum Sparse Combine

Slice

Slicing - Flashprint 5

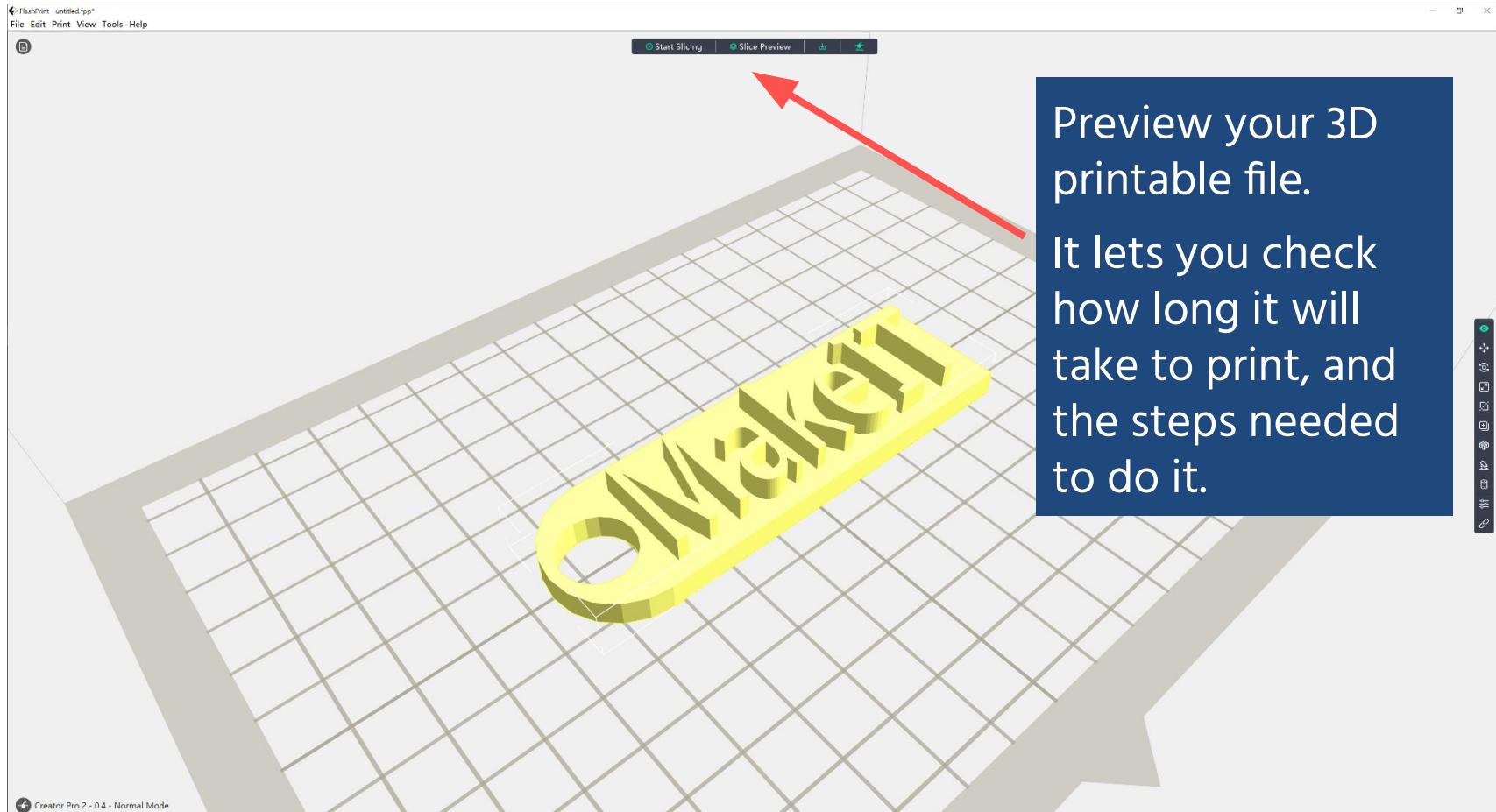
4. Slice Name Tag in Flashprint



THE ACTIVITY | SECTION 2.3 | 25 MINUTES

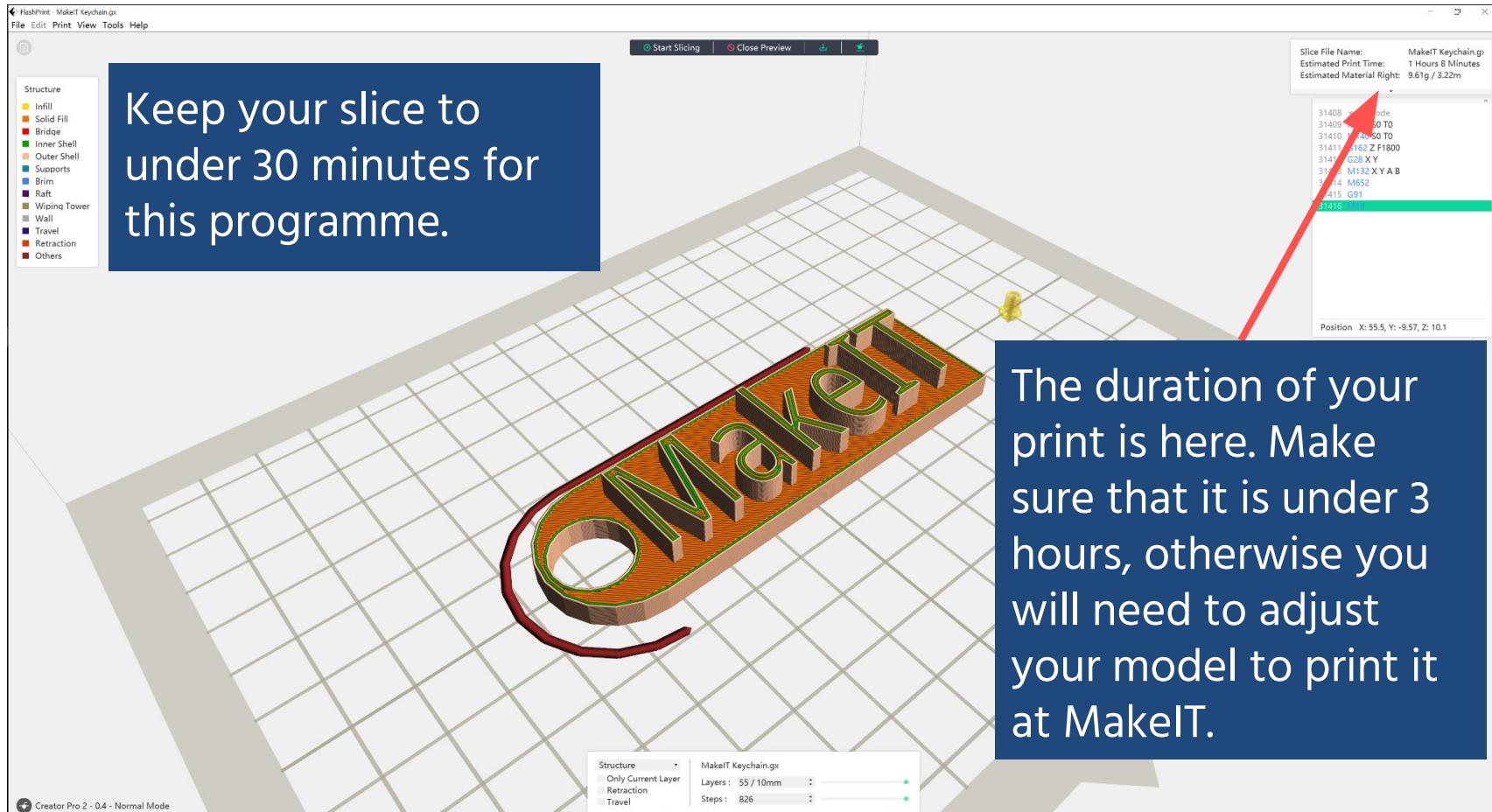
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



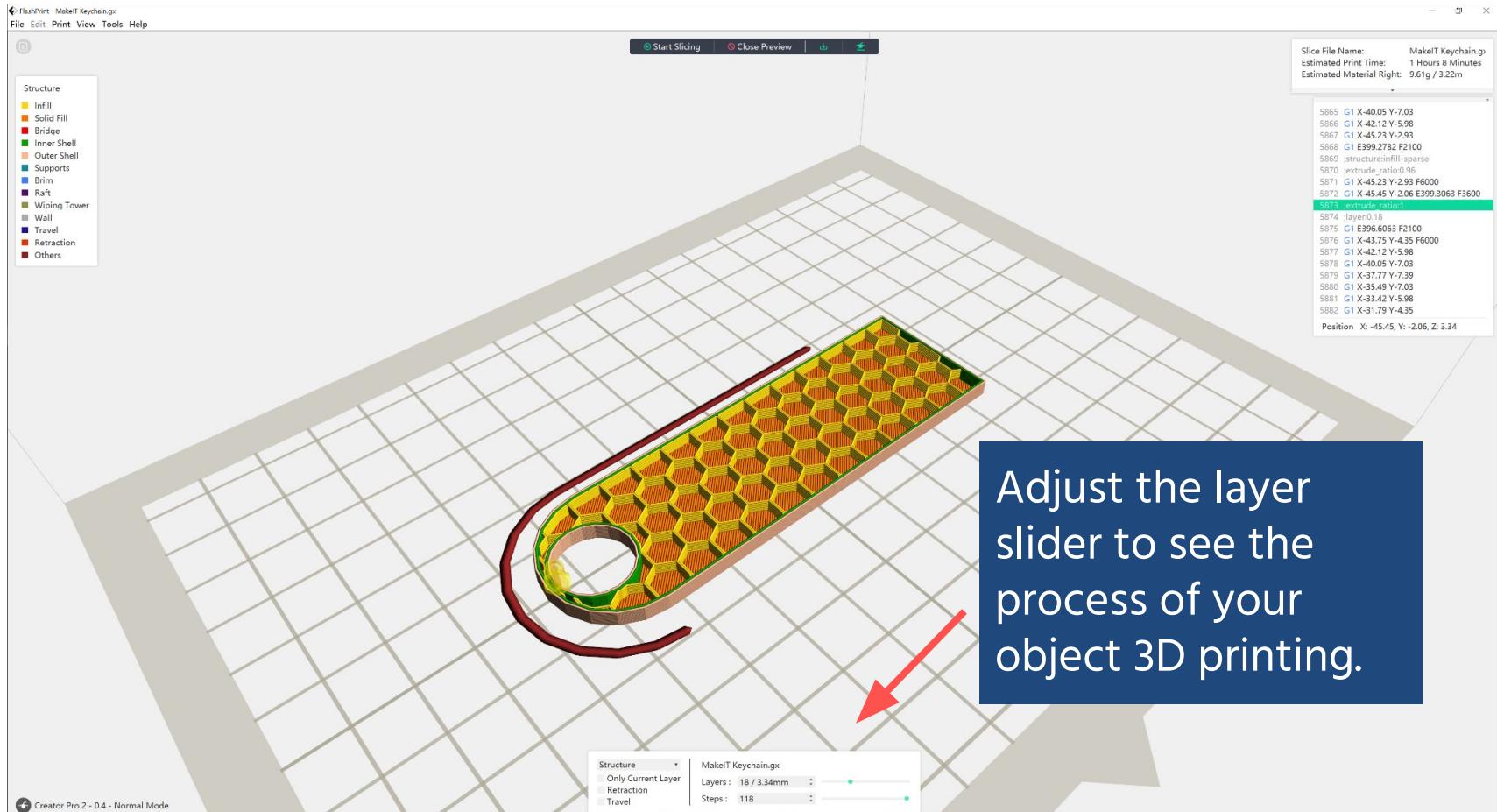
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



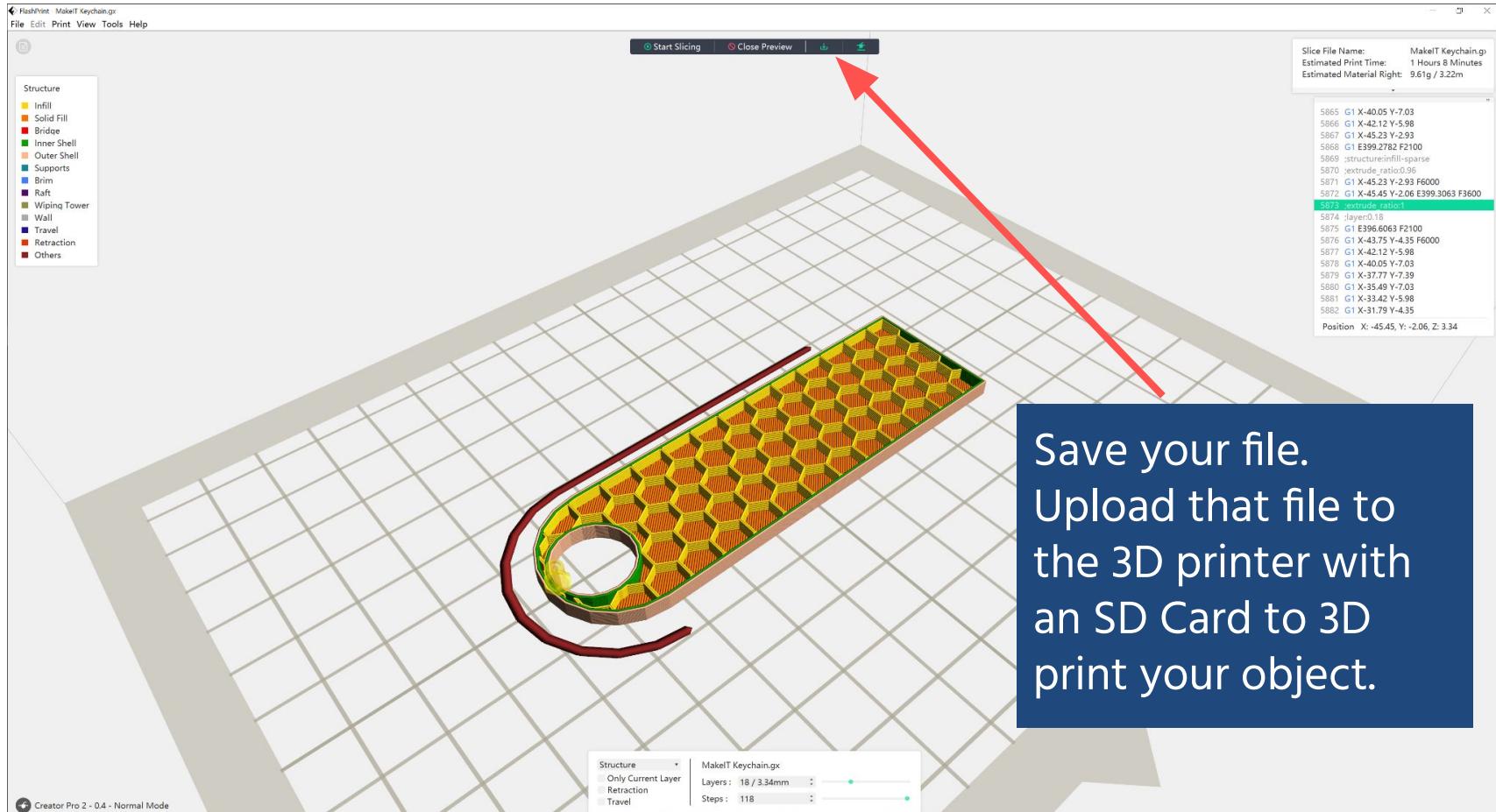
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



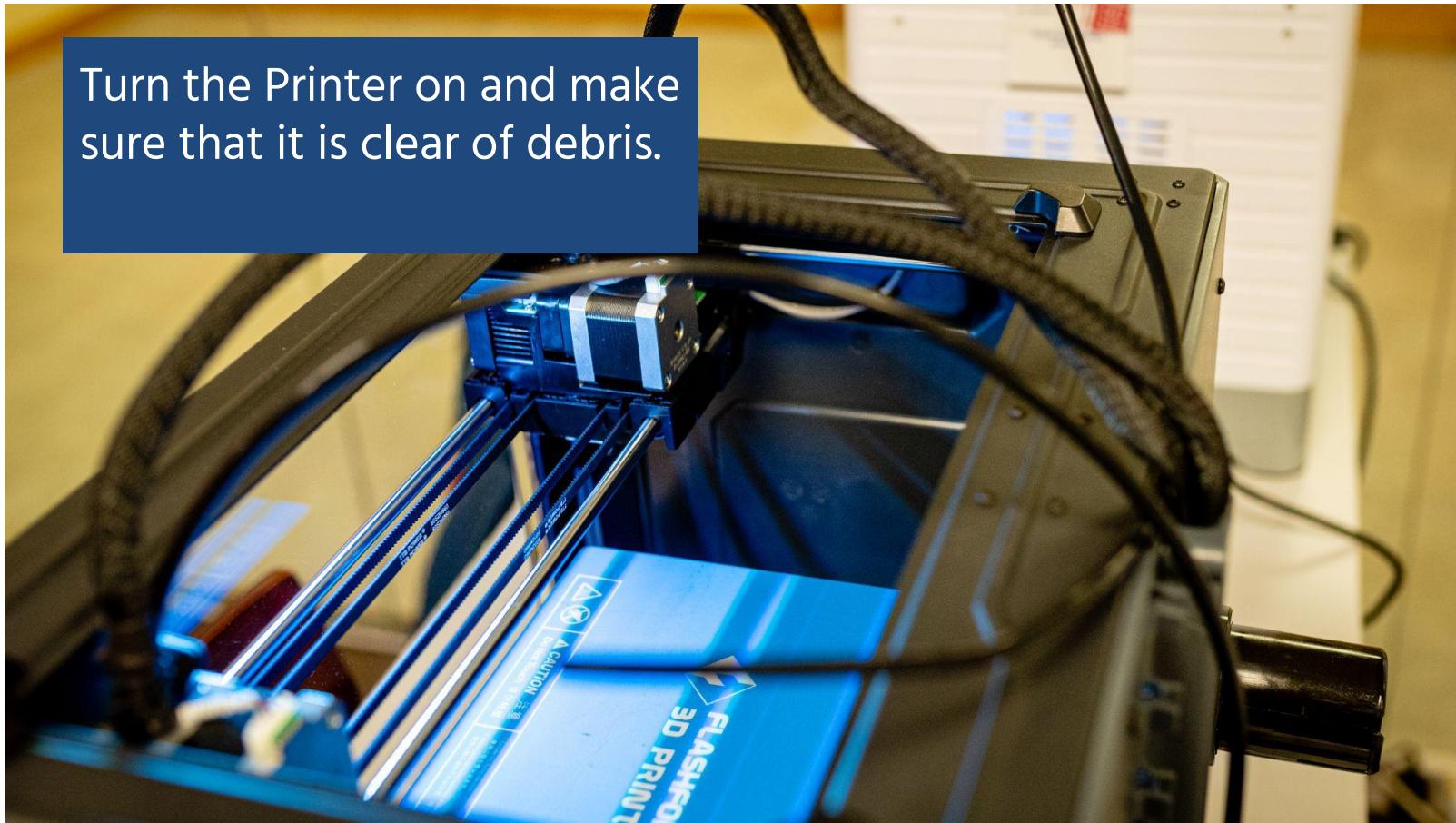
PRINTING

MakeIT

Printing - Creator Pro 2

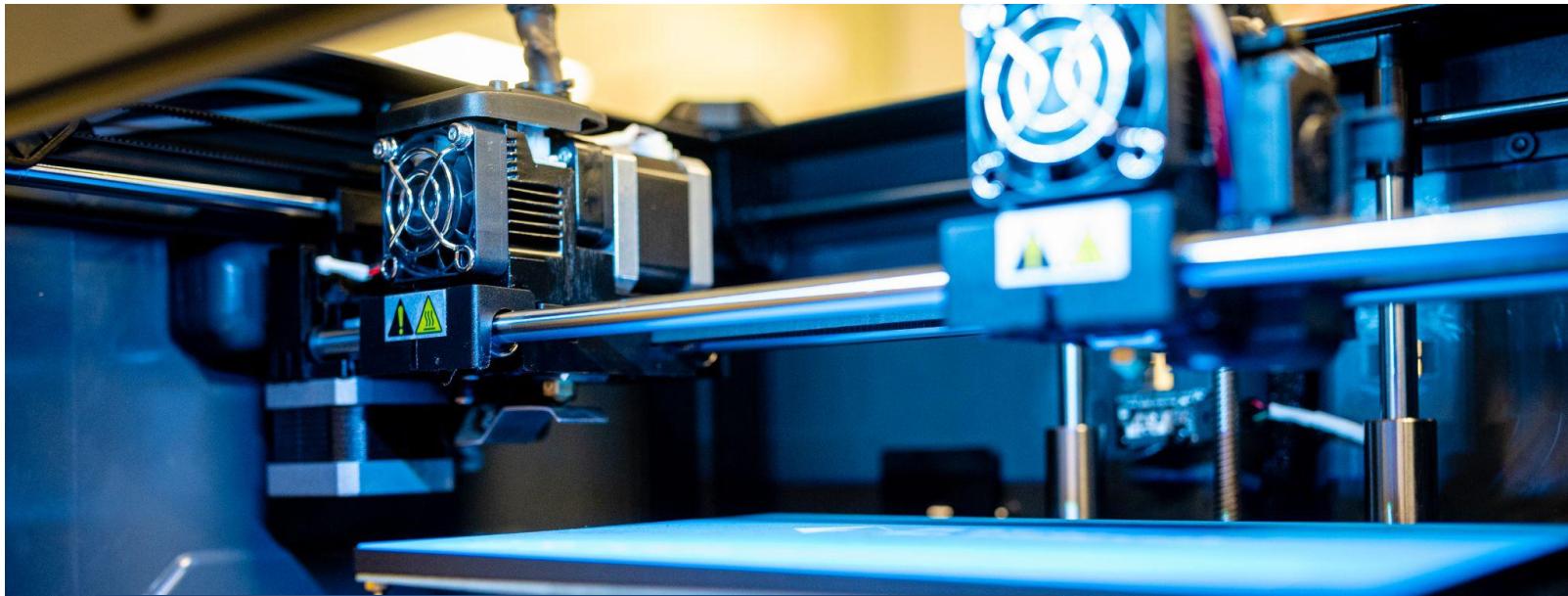
5. 3D Print Name Tag

Turn the Printer on and make sure that it is clear of debris.



Printing - Creator Pro 2

5. 3D Print Name Tag



Check that filament is loaded into the extruder. If you're not sure, check with a staff member at MakeIT.

THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Printing - Creator Pro 2

5. 3D Print Name Tag



Printing - Creator Pro 2

5. 3D Print Name Tag

Press Print on the main screen. Find your file, then select print.



Printing - Creator Pro 2

5. 3D Print Name Tag

When operating, keep your hands out of the printer. If your print does not work, pause the print, and inform MakeIT staff.



FINISHING 3D PRINTS

MakeIT

THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Finishing Techniques

Your 3D Print is not finished after it's 3D printed.

Finishing is the act of processing your print to make sure it looks and acts the way it should.

3D Prints have visible layer lines that might not look appealing. To remove those lines, you'll need to sand and prime those features away.



Sanding and priming 3D prints to look smooth can take many hours, beyond the scope of this session.

Michael Heit for all3DP created a great guide on what to do with sanding 3D prints
<https://all3dp.com/2/sanding-3d-print-pla>

THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Finishing Techniques

Depending on your slicing settings, your 3D print may have additional material that needs to be removed. Support material can be removed with the side cutters provided at MakeIT, or gently with other tools.



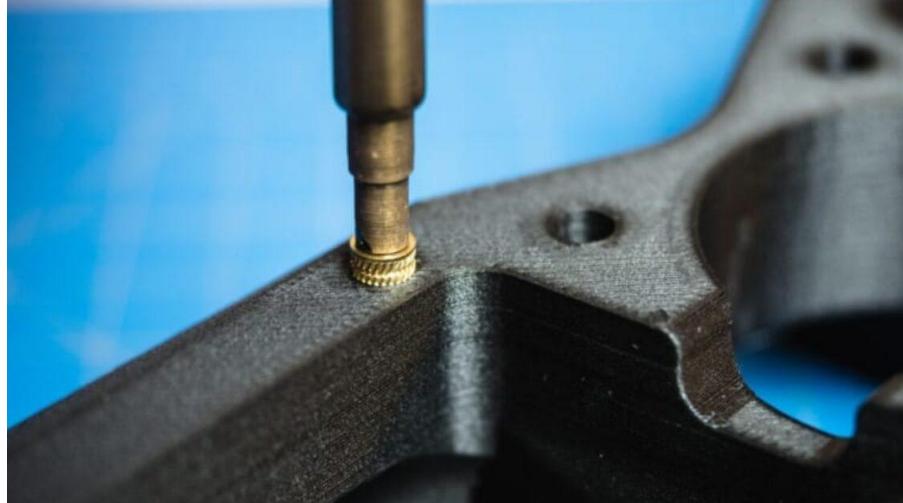
Support material can be tricky to remove, especially if the slicer settings were not optimized. Support material can fuse to the part of the print you want to keep, which is why side cutters can help with removal. Just work slowly, and you should be okay.

THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Finishing Techniques

PLA plastic can be drilled and screwed into, allowing parts to be connected together without the need for glues or other adhesives.

Most glues will work with fastening PLA to other parts. Hot glue is not recommended to use with PLA, as the glue will soften the plastic and warp it.



Heat-set inserts help make a stronger, more reliable connection with screws. For parts that will require unscrewing many times, you can use heat-set inserts to reduce the wear each time your part is taken apart.

THE ACTIVITY | SECTION 2.3 | 25 MINUTES

Finishing Techniques

3D prints are not as precise as other manufacturing technologies. Expect a tolerance of at least +/- 0.3mm to the intended size of a feature. A well-tuned printer can create more accurate features, but will always include some measure of inaccuracy.



Measure your parts to make sure they are dimensionally accurate. For holes, overestimate their size in the design. For pegs and other extruded features, such as gear teeth, underestimate their size.

EXTENSIONS | SECTION 3 | 25 MINUTES

3D Scanning

EXTENSIONS

EXTENSIONS | SECTION 3.1 | 25 MINUTES

3D Scanning

3D Scanning an existing part feels like a natural thing to do, just like taking a picture. The technology to do so exists, but it is not quite as simple as point-and-clicking like a smartphone.

3D scanners use several different techniques to reconstruct images. Affordable models use infrared light to shine patterns onto 3D objects, which help locate features.



Photogrammetry uses a collection of images and computing power to create a 3D object.

Meshroom is a free, open-source tool using the AliceVision framework for photogrammetry. Head to <https://alicevision.org/> if you're interested in discovering more.

3D Scanning

We need to use platforms such as Meshmixer, Blender, or other mesh editing software to edit our 3D scans.

Most 3D Scanning solutions are very noisy... or that designs need to be cleaned afterward.

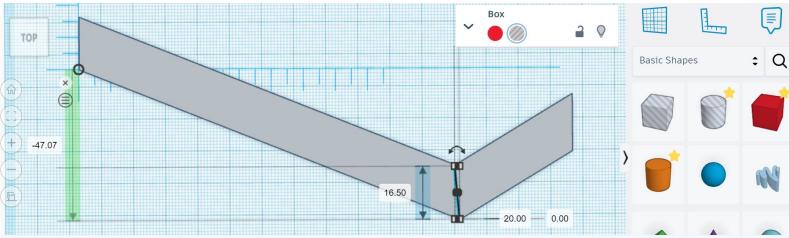
This is the type of problem that a machine would be really good at solving, provided enough information.

EXTENSIONS | SECTION 3 | 25 MINUTES

Frequently Asked Questions

HOW CAN I APPLY WHAT I'VE LEARNED?

Applying Knowledge



3D Design

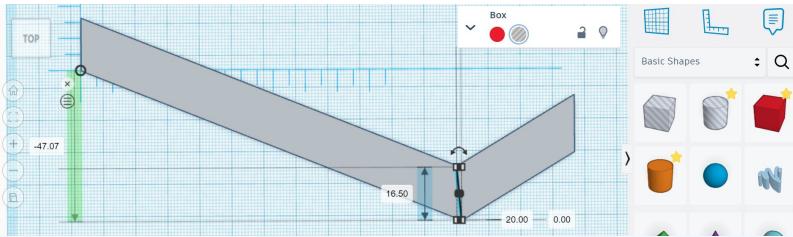
1. Find an idea to design. Look on Inventables, Printables, or the library (Check the 600 section for assistance).
2. Book tinkering time and 3D model your parts.



3D Printing

1. Search online for interesting 3D models to print.
2. Slice and print the models at MakeIT.
3. Share your designs and seek more interesting designs to print.

Applying Knowledge



3D Design - Youtubers to Follow

Eunny:

<https://www.youtube.com/@Eunny>

TinkerTips (Playlist):

<https://tinyurl.com/TinkerTips>



3D Printing - Youtubers to Follow

3D Printing Nerd:

<https://www.youtube.com/@3DPrintingNerd>

MakersMuse:

<https://www.youtube.com/@MakersMuse>

Applying Knowledge

**Join our MakeIT Facebook
Community Group to share ideas
and access our online learning
guides!**

To access additional guides on 3D modeling and printing, Navigate to the Media tab, select Videos, and search for:

3D Printable Board Games

Name Collage in Tinkercad

Slicing 3D Prints with Flashprint 5

A screenshot of a Facebook group page for "MakeIT At Libraries". The header features the text "Learn □ Tinker □ Create! Make At Libraries" in large, bold letters, with a red robot icon on the right. Below the header, it says "Group by Public Libraries Singapore". The main content area shows a grid of video thumbnails under the "Media" tab, with categories like "Photos", "Videos" (which is selected), and "Albums". Each thumbnail includes a "PROGRAMME GUIDE" link. At the bottom left is a QR code with the "GO.gov.sg" logo. On the right, there's a call-to-action text: "Scan the QR code or visit <https://www.Go.Gov.sg/makeit>".

EXTENSIONS | SECTION 3 | 25 MINUTES

Frequently Asked Questions

TINKERING AT MAKEIT AT LIBRARIES

EXTENSIONS I SECTION 3.1 | 25 MINUTES

MakeIT at Libraries - Making a Booking

Simplybook

Equipment bookings are handled through Simplybook. Talk to our Centre Manager to register for an account, then visit

<https://makeitsq.simplybook.asia/v2/> to book equipment.



Opening Hours

MON	Closed
TUE	Closed
WED	12:00 - 19:00
THU	12:00 - 19:00
FRI	12:00 - 19:00
SAT	12:00 - 19:00
SUN	12:00 - 19:00

MakeIT at Libraries

Get creative at NLB's MakeIT at Libraries, where you can create, tinker, and make with the power of tech! Try 3D printing, robotics, coding, and other crafting tools of the future, with hands-on activities, workshops, and co-making spaces that are free-to-use for all library members in Singapore.

Besides 3D printers and 3D pens, there are new equipment available for use during tinkering. Certification is required and will be enabled after completing the starter session. Sign up for the starters at <https://go.gov.sg/nlb-makeit-events> (no expertise or experience is required).

Please note the following:

- For safety, equipment certification and tinkering are recommended for ages **15 and up**.
- MakeIT will be closed between 3 to 4pm for sanitisation, cleaning & equipment upkeep.
- One booking can be made up to three weeks in advance per certification (slot availability subject to changes). Please complete the current booking before creating more bookings.

COVID-19 SMM's in 2022

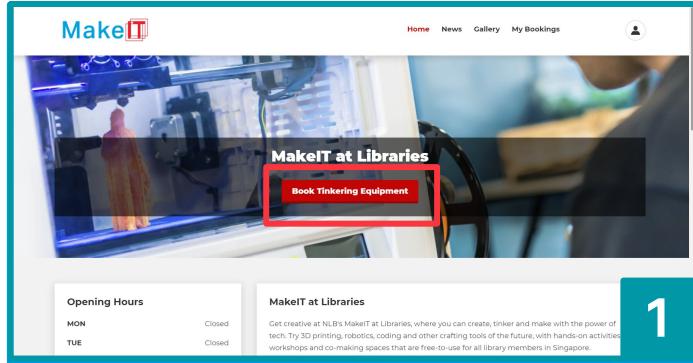
Recommendations

We recommend those feeling unwell to avoid visiting MakeIT, attending tinkering and starter sessions.

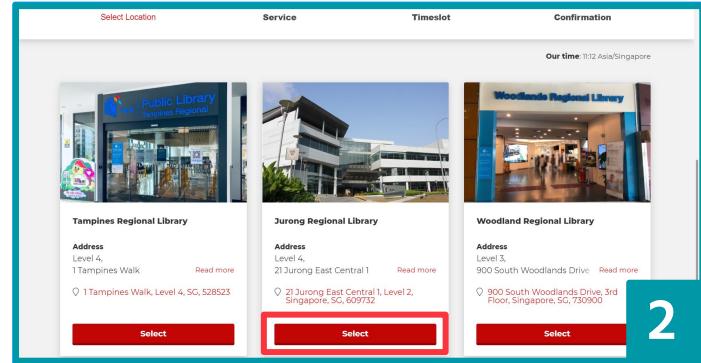
MakeIT at Libraries is an initiative by NLB.

[Book Tinkering Equipment](#)

MakeIT at Libraries - Making a Booking

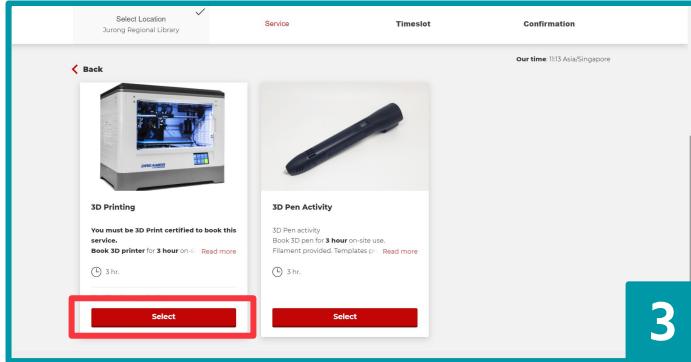


Once you have logged in, click on “Book Tinkering Equipment”.



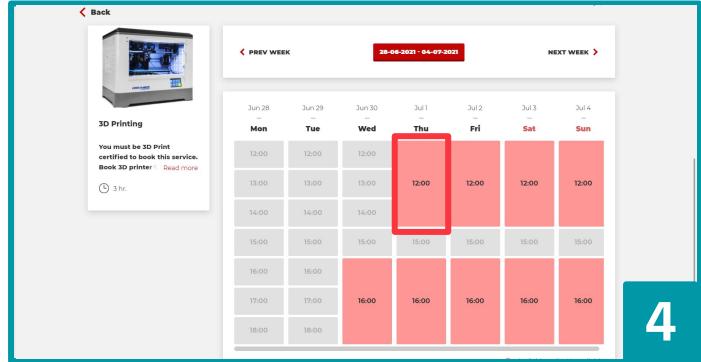
You will be redirected to a page that allows you to choose which MakeIT branch you will like to visit. Select one of the branches by clicking the respective branch “Select” button.

MakelT at Libraries - Making a Booking



Click the “Select” button respective to the equipment that you will like to use.

Note: Bookings for most equipment can only be placed once you have gone for the required training.



Slots available for booking will be displayed, click on the slot that you will like to book.

Red - Available for booking
Grey - Unavailable

MakelT at Libraries - Making a Booking

The screenshot shows a booking confirmation interface. At the top, there are dropdown menus for 'Select Location' (set to 'Jurong Regional Library'), 'Service' (set to '3D Printing'), and 'Timestamp' (set to '01-07-2021 12:00'). Below this is a 'Confirmation' section showing 'Our time: 12:00 Asia/Singapore'. A 'Back' button is on the left. The main area has a heading 'PLEASE, CONFIRM DETAILS' and a message 'You are logged in as [username] Logout'. It lists a booking for '3D Printing' on '01-07-2021' at '12:00' at '21 Jurong East Central 1, Level 2, Singapore'. The category is '3D Printing'. There is a dropdown for 'Select certification' containing '3D printer certification [21-11-2020 - 21-11-2022]'. Buttons for 'Add another service' and 'Confirm booking' are at the bottom.

5

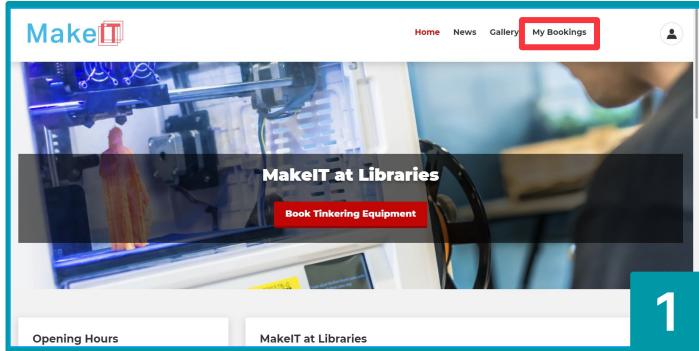
Ensure that you have selected the correct slot and click on “Confirm booking”.

The screenshot shows a confirmation page for a booking. At the top, a message says 'You've successfully reserved the service. Please check your email to see the notification.' A 'Back to services' button is on the left. The main area shows a booking for '3D Printing' on '01-07-2021' from '12:00' to '16:00' at '21 Jurong East Central 1, Level 2, Singapore'. The category is '3D Printing' and the booking code is '4239742'. Buttons for 'Cancel', 'Book More', 'Add to calendar', 'Show all bookings', and 'Back to site' are at the bottom.

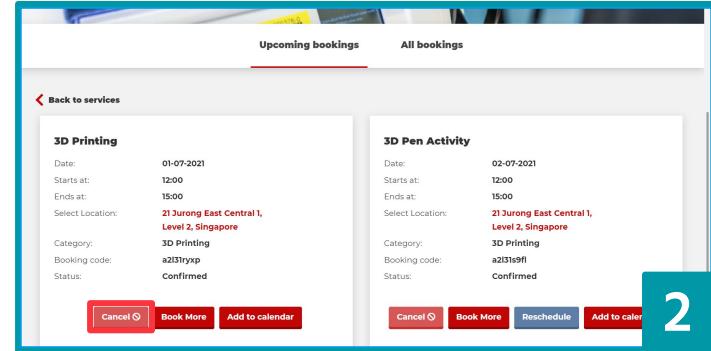
6

You will be redirected to a confirmation page with your booking details. Should you need to cancel your booking, you may click “Cancel”.

MakeIT at Libraries - Cancelling your Booking

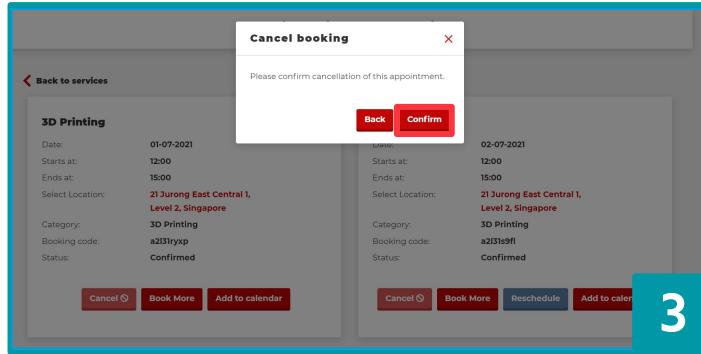


Once you have logged in,
click “My Bookings”.

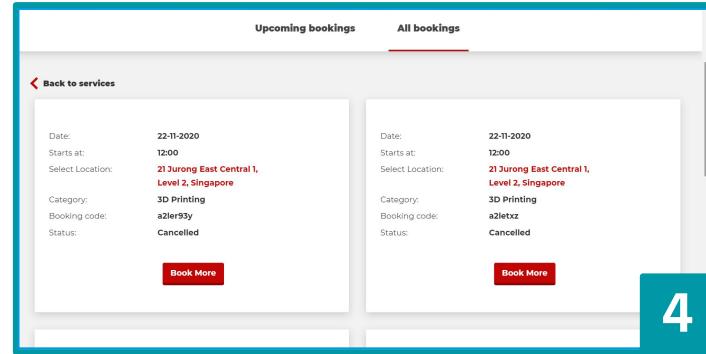


Your upcoming bookings
will be displayed as shown
above. To cancel your
booking, click “Cancel”.

MakeIT at Libraries - Cancelling your Booking



Click “Confirm” to cancel the booking.



To see all past and future bookings, click on “All bookings”.

Frequently Asked Questions

1. How do I book a printer?

Register as a user for MakeIT's Simplybook booking system, and book an available time slot for the 3D printer.

2. How long can I 3D print per booking?

Bookings are limited to 3 hours. If you want to print larger 3D prints, cut them and attach them together after the prints finish.

3. How many 3D printers can I book? Can I book multiple printers?

You may only book 1 3D Printer at a time within MakeIT.

4. Can I choose which 3D printer to use?

3D printers are booked on a first-come, first-served basis. Arrive at your allocated time on time to begin using one of the available printers.

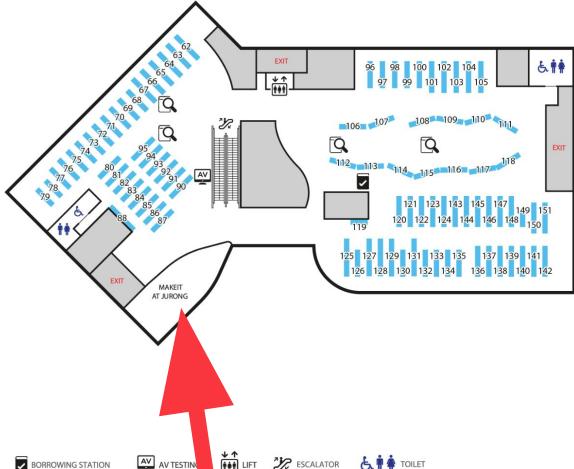
5. What can I 3D Print?

You may 3D Print anything except for items subject to copyright, patent, or trademark infringement, illicit or prohibited objects, such as weapons, firearms, or pornography, or obscene and inappropriate items for a library environment.

MakelT at Jurong

JURONG REGIONAL LIBRARY • LEVEL 2

MAP DIRECTORY	
62 – 87	Adults' Collection
88, 119	Fiction
90 – 95	Accompanying Items
96 – 98	Audiobooks & Audiovisuals
98 – 100	Travel
101, 102	Health
103 – 105	Recreation
106 – 111	Cookery
112 – 118	Arts
120 – 124	Business
125 – 127	Computer
127 – 151	Comics
	General Non-Fiction



Location

Jurong Regional Library,
2nd Floor

Address

21 Jurong East
Central 1
Singapore
609732

Closest MRT Station

NS1 EW24 JE5
Jurong East

Opening Hours

Wednesday -
Sunday, 12 - 8PM

MakelT at Tampines

TAMPINES REGIONAL LIBRARY • LEVEL 4

MAP DIRECTORY

1 & 6
2
1, 2

Hanyu Pinyin Collection
Bilingual Collection
Accompanying Items
(Hanyu Pinyin & Bilingual)

14 - 16
5
5, 16

Children's Simple Fiction
English
Chinese
Accompanying Items

32 - 33
31
31

Teens' Non-Fiction
English
Chinese
Malay
Tamil

9 - 13, 16 - 18
2 - 3
7
8
3, 7, 8, 9

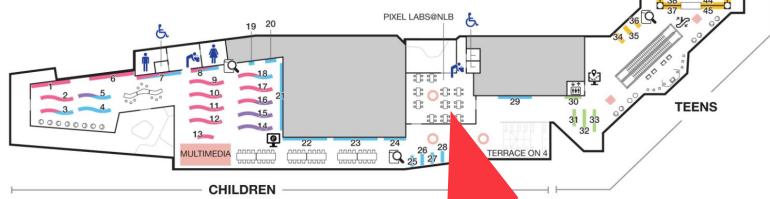
Children's Non-Fiction
English
Chinese
Malay
Tamil
Accompanying Items

18 - 29
3 - 5
7
8
5, 7, 8, 29

Children's Fiction
English
Chinese
Malay
Tamil
Accompanying Items

37 - 54
34
35
36

Teens' Fiction
English
Chinese
Malay
Tamil



CATALOGUE DIRECTORY eKIOSK LIFT * 4 LANGUAGES ESCALA
MALE TOILET FEMALE TOILET HANDICAP TOILET NURSING ROOM WATER DISPEN

Location

Tampines
Regional Library,
4th Floor

Address

1 Tampines Walk,
#02-01 Our
Tampines Hub,
Singapore 528523

Closest MRT Station

EW2 — DT32
Tampines

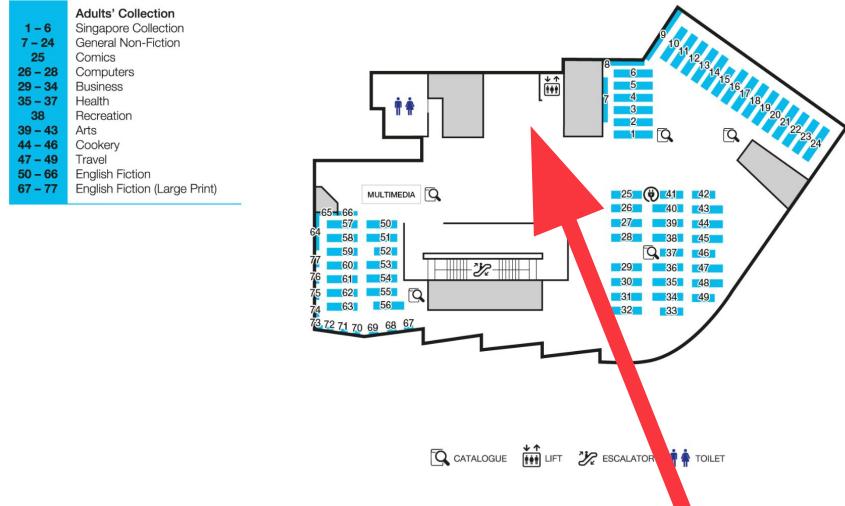
Opening Hours

Wednesday -
Sunday, 12 - 8PM

MakelT at Woodlands

WOODLANDS REGIONAL LIBRARY • LEVEL 3

MAP DIRECTORY



Location

Woodlands
Regional Library,
3rd Floor

Address

900 South
Woodlands Drive
#01-03. Singapore
730900

Closest MRT Station

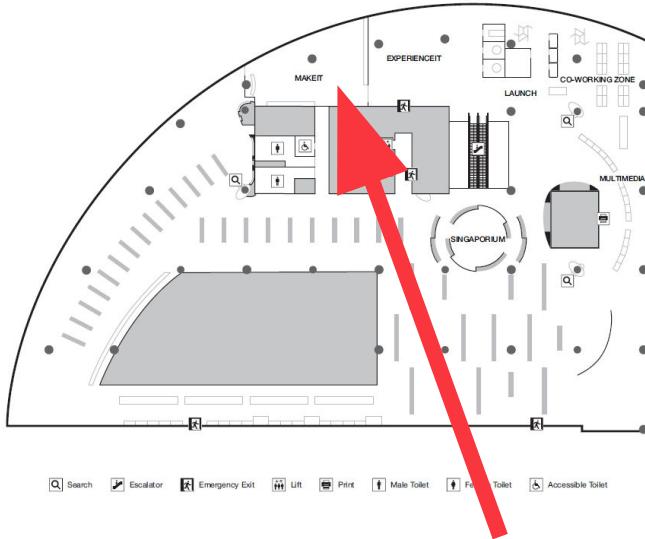
NS9 TE2
Woodlands

Opening Hours

Wednesday -
Sunday, 12 - 8PM

MakelT at Punggol

PUNGGOL REGIONAL LIBRARY • LEVEL 4



Location

Punggol Regional Library,
4th Floor

Address

1 Punggol Drive
One, #01-12,
Singapore 828629

Closest MRT Station

**NE17 PTC
Punggol**

Opening Hours

Wednesday -
Sunday, 12 - 8PM

MAKE TOGETHER WITH US

MakeIT

Contribute your user creations with MakeIT at Libraries!

(Ongoing)

- Whether you've fabricated something physical like a 3D print or designed a digital creation, we would love to feature them at MakeIT!
- Simply leave your physical works and/or source files with our Maker Coaches at any of our makerspaces.



• **SHARE YOUR CREATIONS WITH MAKEIT!**
Submit us your works

And have them possibly showcased at our exhibition at MakeIT!



From Nov 2023

Submissions can be contributed during MakeIT hours



Any MakeITs

Jurong Regional Library
Punggol Regional Library
Tampines Regional Library
Woodlands Regional Library

Hey there, talented users of MakeIT at Libraries!

We've seen some amazing stuff being created here in our makerspaces, and we're creating a collection of items to display and share them with others!

Whether you've fabricated something physical like a 3D print or designed a digital creation, we would love to feature them at MakeIT!

GETTING STARTED

- Contributor must be a registered user of MakeIT at Libraries. Not a member? Sign up with us in one of our Starter Sessions!
- Feel free to leave your physical works and/or source files with our Maker Coaches at any of our makerspaces.
- Your works will be part of MakeIT's open source library, which will be freely shared to other users for their own projects.
- For safety reasons, MakeIT at Libraries are recommended for ages 15 and above.

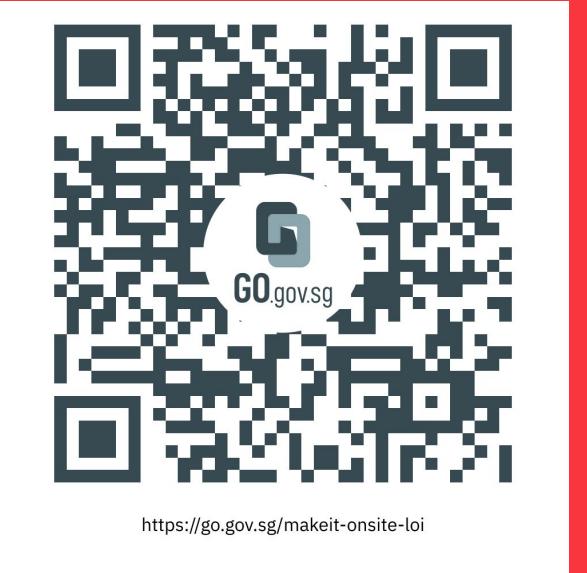


Scan the QR code to join MakeIT via our Starter Sessions!

MakeIT
AT LIBRARIES
go.gov.sg/makeit

National Library Board
Singapore

THANK YOU!



Please follow the link above to provide feedback for this workshop. We'll use this information to continue to develop your learning journey within MakeIT.

THANK YOU!



Please follow this link for a copy of these contents. Note that these contents are for personal use only and are not to be distributed to other parties.

NKER
EVERYONE CAN MAKE
UPCYCLING
MAKERSPACE
HELLO
SEWING
EVERYONE CAN MAKE
MAKE
CODING
TINKER CREATE
CREATIVITY
EXPLORE COMPUTER
3D PRINTING
SEWING
3D PRINTER
ROBOTICS
NLB

REQUIRED MATERIALS

Learner's Profile - Confidence Card

Beginner



Need help understanding content

Intermediate



Content is paced well and is understandable

Advanced



Content is too simple; need a bigger challenge

Applying Knowledge

Udemy

Users with a valid myLibrary ID can access Udemy Business with their library account to access thousands of courses online for free.

Udemy has courses ranging from technology topics to traditional crafting, all available to enroll from:
<https://www.udemy.com/>

Quick Links

Primary School Students
Secondary School Students
Professionals
Adults
Seniors

By A-Z
By Type
By Subject
For Teens
For Children
For Persons with Disabilities

Resources for Mobile Devices
Ask a librarian

Singapore Resources

Rare Books & Documents
Singapore e-Encyclopaedia
Singapore History
Singapore Music
Singapore & Malaya Newspapers
Literary Works
Photos & Images
Web Archives Singapore

Home / By Type

Browse By Type

eBooks eDatabases ejournals eLearning eMagazines eNewspapers

Showing 1 - 2 of 2

1. Udemy Business

Udemy Business is an online learning platform that offers thousands of courses on key soft skills and technical topics such as Software Development, Leadership, Marketing, Sales, Programming, IT, and more.

For login instructions, refer to our [Step-by-Step Guide and FAQs](#).

Accessibility features for Udemy Business include independent volume control, headings and other styled content that are rendered as text instead of images, navigation tools, labelled form fields and headings for screen reader support and subtitles. For more information on Accessibility, [click here](#).

Available at all libraries and home, for NLB patrons' personal use only. You will be leaving the National Library Board's site if you choose to use the Services under Udemy Business. Please note that you must be at least 13 years of age to use the Services.

2. Video Learning Portal (VLP)

Description of eResource.VLP is a one-stop site with video contents curated by our own NLB staffs. This is our very own YouTube+ portal where we can host videos for training and learning and share them securely within ourselves as well as our patrons.

Available at all libraries and from home.



Navigate here to get started:

<https://eresources.nlb.gov.sg/elearn>



EXTENSIONS | SECTION 3.1 | 25 MINUTES Applying Knowledge

Udemy - 3D Printing

The ‘Other Design’ tab features 3D Printing.

Check out 3D Printing and Tinkercad Crash Course to cover the basics of Tinkercad once again, or look into other topics.

<https://www.udemy.com/course/3d-printing-and-tinkercad-crash-course/>

Design • Other Design • 3D Printing

3D Printing and Tinkercad Crash Course

Learn the basics of 3D Printing using Tinkercad

4.7 ★★★★☆ (53 ratings) 1843 students

Created by Michael Andrew

Last updated 2/2020 • English • English [Auto]



Preview this course

\$25.98

Add to cart

Buy now

30-Day Money-Back Guarantee

This course includes:

2 hours on-demand video

Full lifetime access

Access on mobile and TV

Certificate of completion

Share Gift this course Apply Coupon

What you'll learn

- ✓ Basics of 3D Printing and Tinkercad
- ✓ Recommended 3D Printer Options
- ✓ Where to Find Free Print Models, and some services you can use to order prints if you do not have your own printer.
- ✓ Advanced Tinkercad Methods
- ✓ How to measure an existing object and recreate it in Tinkercad (Light Switch Cover Example)
- ✓ An Overview of how 3D Printers work
- ✓ Filament Types with their strengths and weaknesses
- ✓ How To Setup and Use Basic Tinkercad to design your own custom prints
- ✓ How to prepare your files for printing

Course content

1 section • 14 lectures • 2h 2m total length

Introduction	14 lectures • 2hr 3min
Introduction	Preview 02:25
3D Printing Basics - How They Work	Preview 05:27
Filament Types	Preview 06:56
Online Resources	03:08
Tinkercad 1- Basic Movements &Controls	12:09
Creating A Hole	13:12
Your First Print	19:47
Centering, Poles, Holes & Spheres	05:20
Advanced Shapes - Nuts & Bolts, Screw Threads	10:43
Accessory Printing Tools - Notebook & Digital Calipers	03:29
Reverse Engineering, Measuring A Known - Lightswitch Plate	06:09
Recreating Lightswitch Cover, Workplane & Ruler	27:45
Postprocessing Print Removal & Sanding	05:40

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