MakeIT

PROGRAMME GUIDE

MakeIT in 3D Starter Session

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**

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.

Learner's Profile - Confidence Card

Need help understanding content

Content is paced well and is understandable

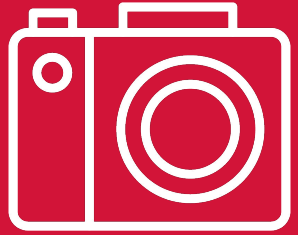
If you need help during the programme, feel free to ask. Our team is happy to pace this content to your needs.

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

A Maker values curiosity, exploration, and openness.

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.

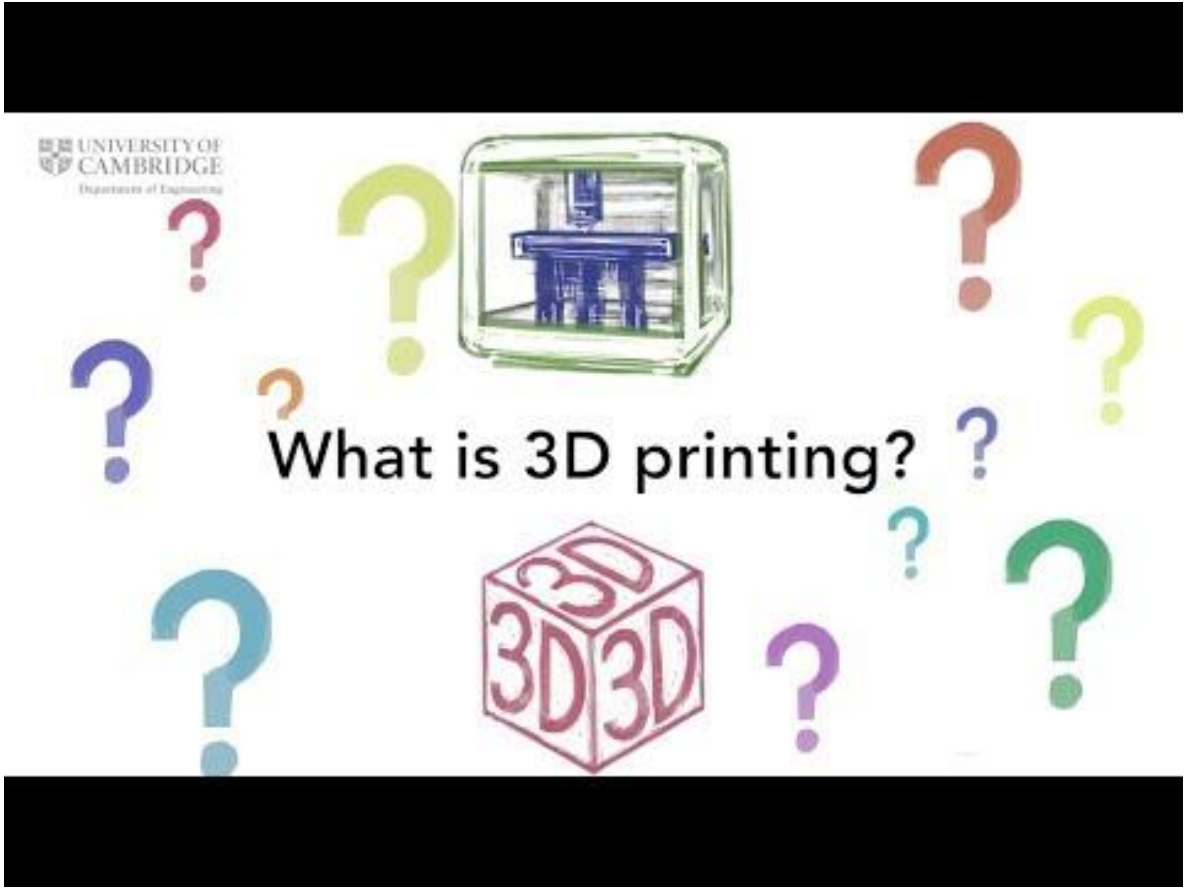
Answer the following:

Can you make this object right now?

Do you want to make that object?

Making family heirlooms can provide more meaning to your creations.

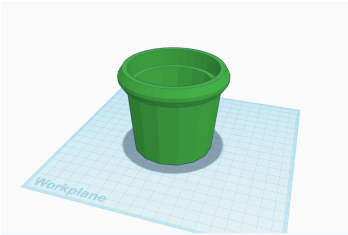
What is 3D Printing?



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

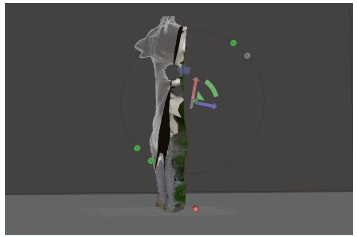
It compares different ways that we create objects, and shares what makes 3D printing unique in that regard.

Five Steps for 3D Design



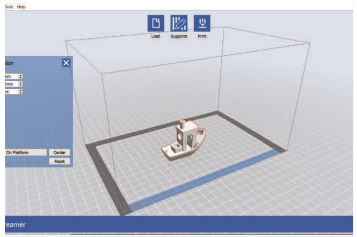
Design

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



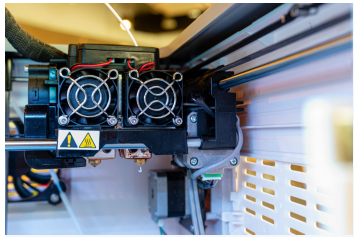
Clean

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



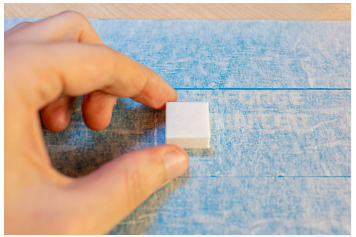
Slice

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



Print

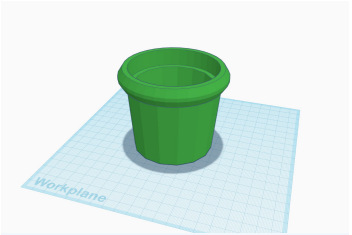
Using a 3D Printer to turn your digital object into a physical object.



Finish

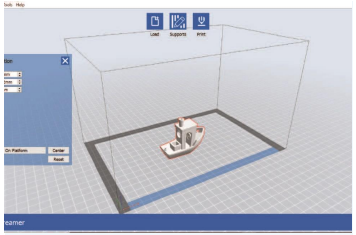
Sanding, painting, and assembling your project.

Five Steps for 3D Design



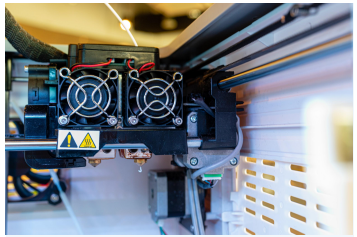
Design

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.



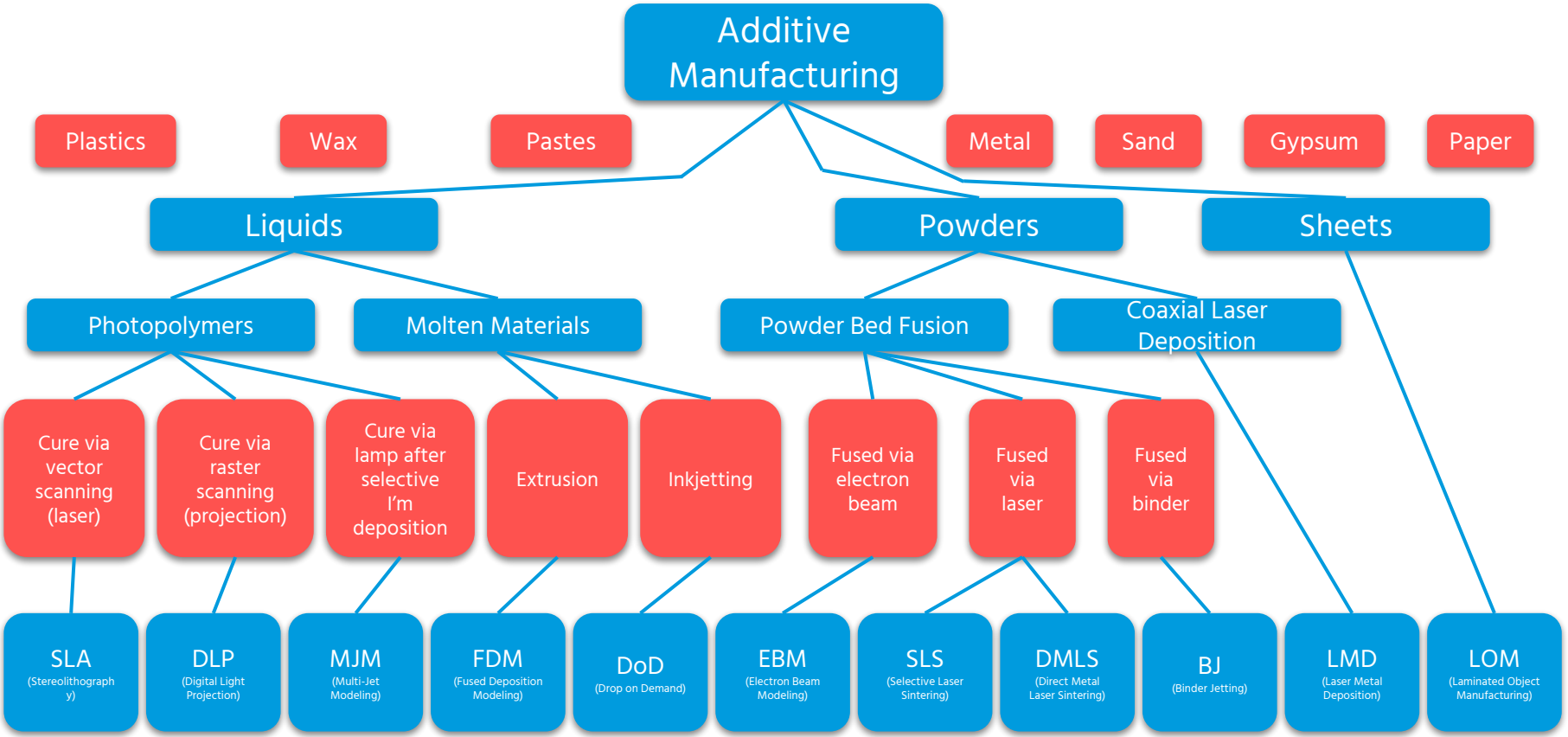
Print

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?



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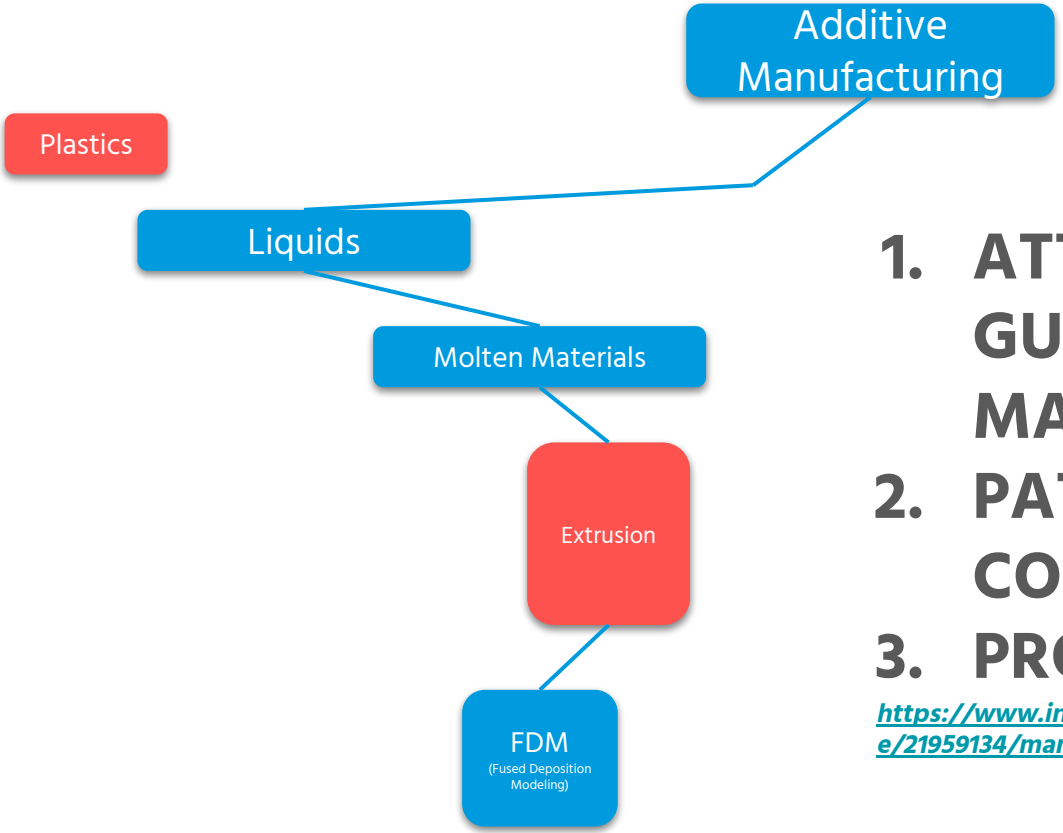
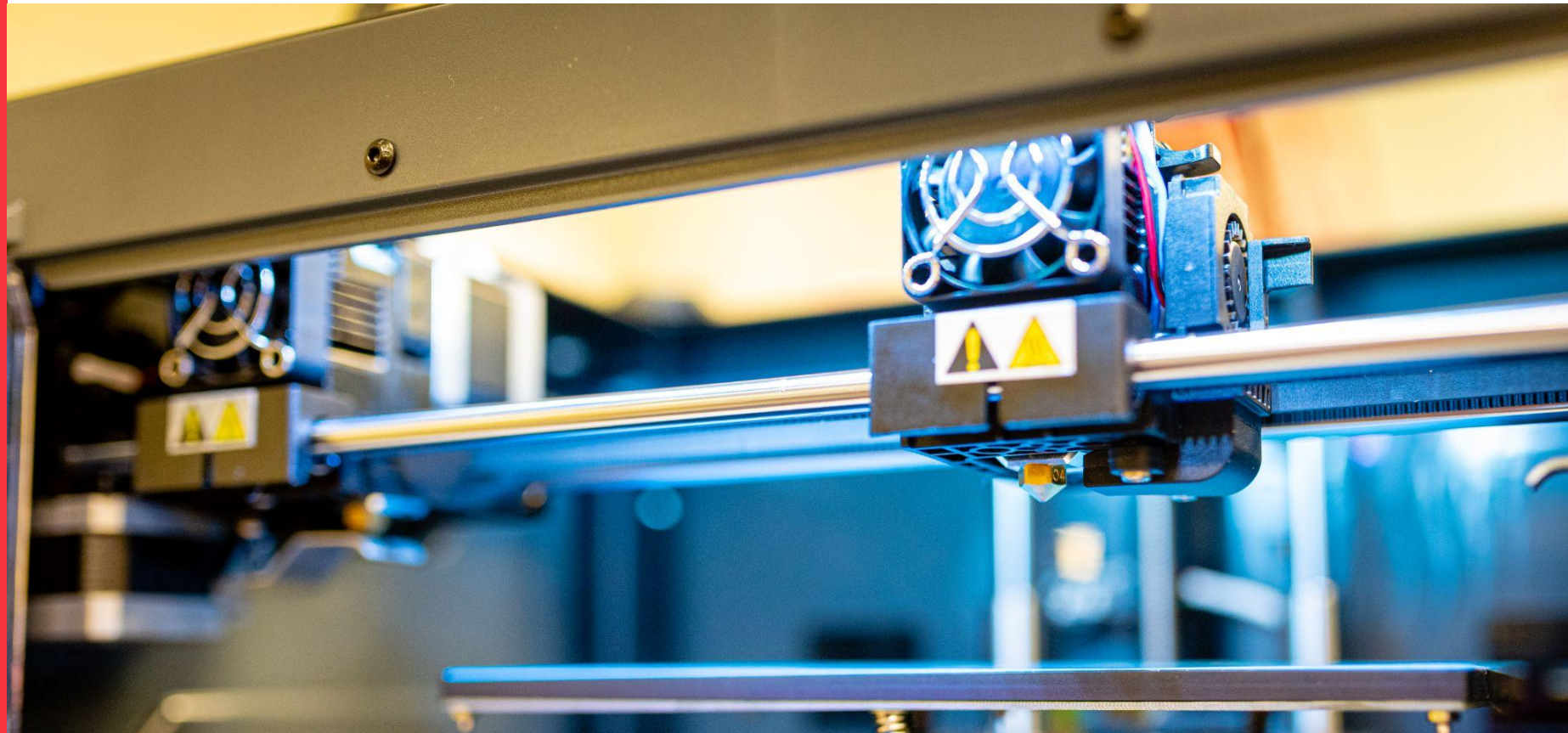


1. ATTACH A HOT GLUE GUN TO A CNC MILL TO MAKE A "FROGGIE"
2. PATENT IDEA AND FORM COMPANY
3. PROFIT!

https://www.industryweek.com/iw-manufacturing-hall-of-fame/article/21959134/manufacturing-hall-of-fame-2012-inductee-scott-crump

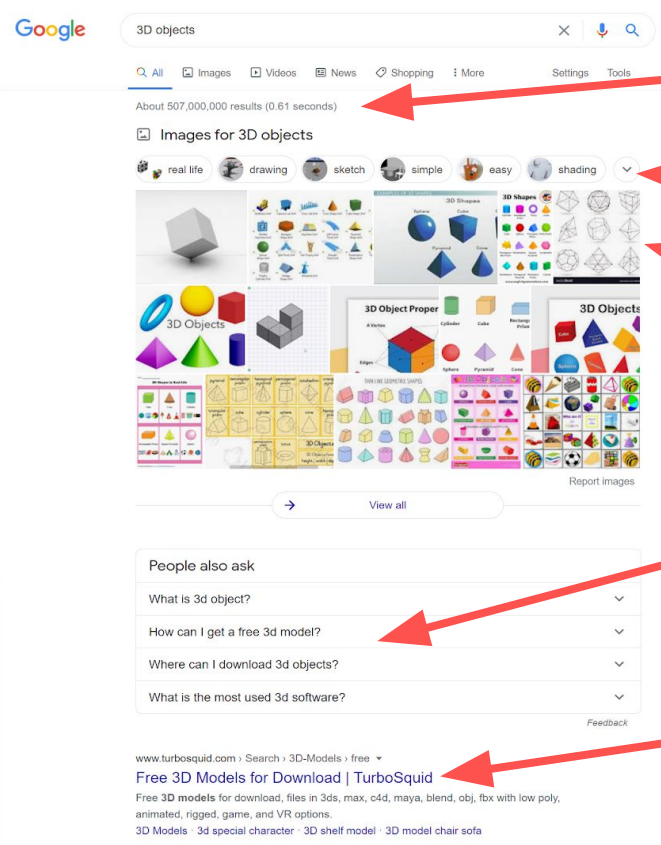
How Might We Remake This Object?



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

How to Search for 3D Objects?

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



Too many results!

Related search seems too technical.

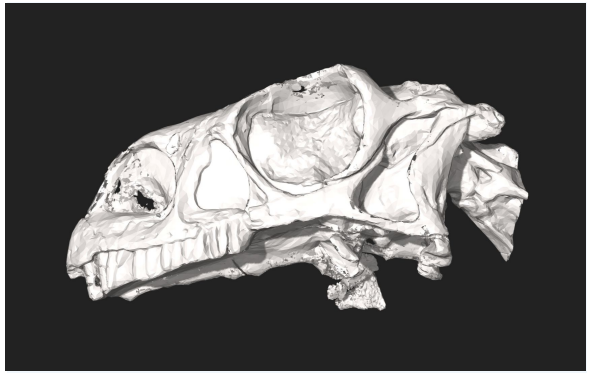
Only geometric shapes shown.

More useful! We could click this.

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

How to Search for 3D Objects?

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.



.STL

The most common file format for 3D printing.

3D scan of Massospondylus specimen BP/1/5241. Performed with the Wits Microfocus X-ray computed tomography (CT) facility of the Palaeosciences Centre at the University of the Witwatersrand, South Africa.

.OBJ

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

Photogrammetry coloured scan of posable figurine. Performed with Meshroom stitching images taken with Nikon D750 DSLR Camera.

.3MF

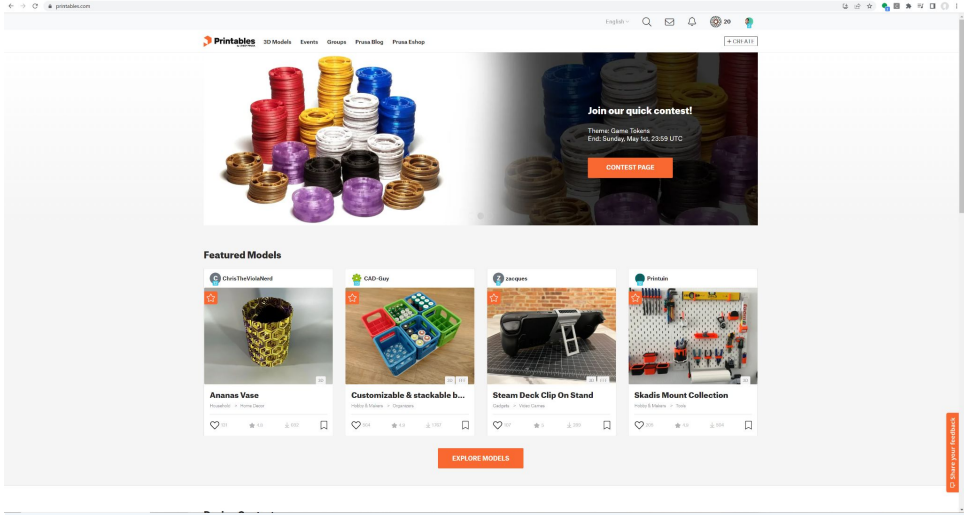
A 3D model file format designed specifically for 3D printing.

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.

How to Search for 3D Objects?

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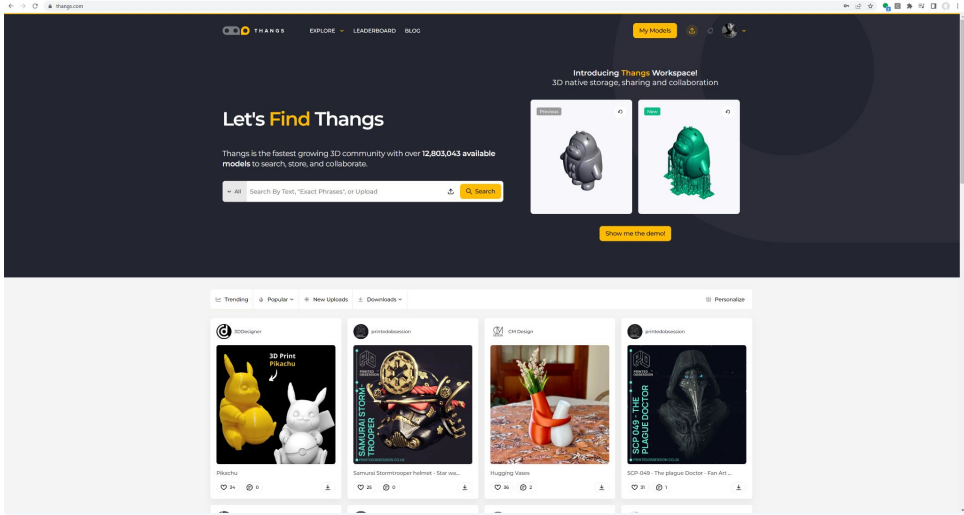
THANGS

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

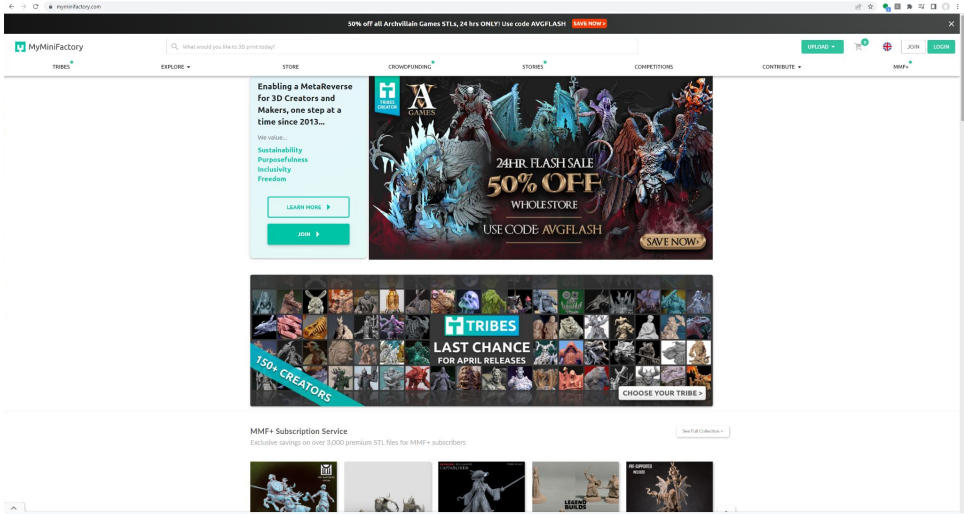
Thangs also shows 3D models on other websites, so can be used to find objects from many different sources.

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

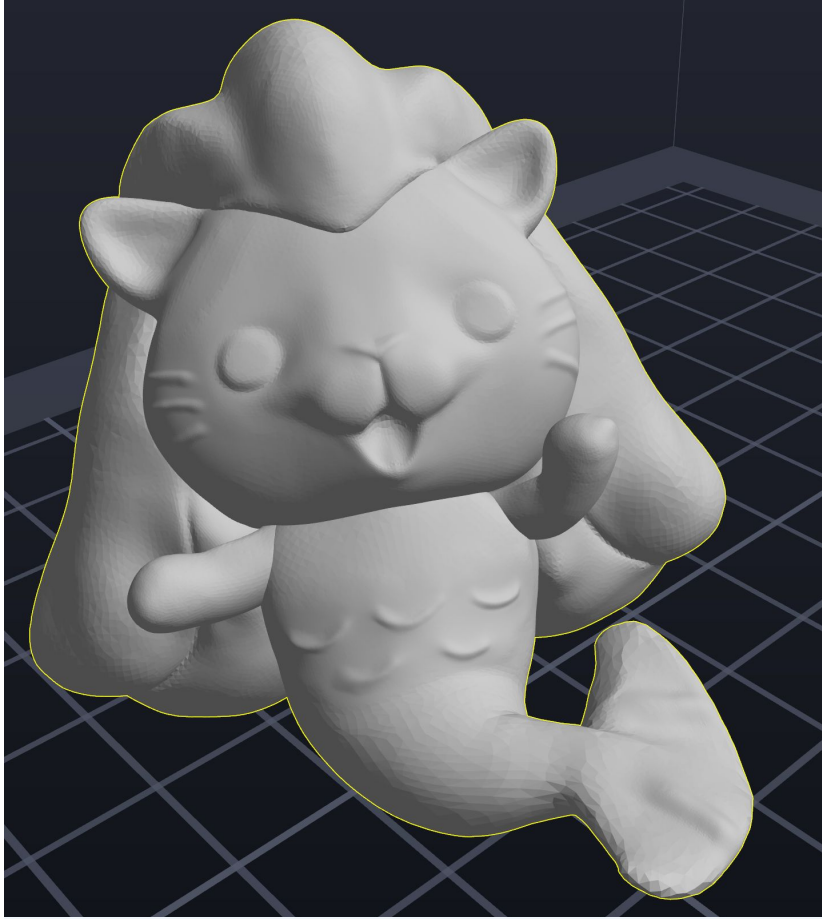
There are other websites like myminifactory for different communities - search for those depending on your interest.

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

How to Search for 3D Objects?

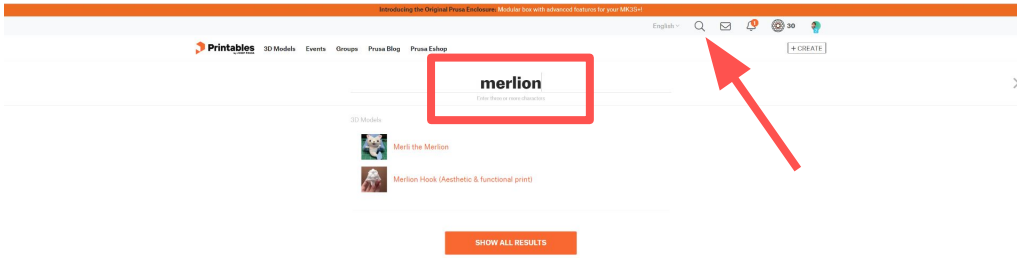
www.printables.com

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.



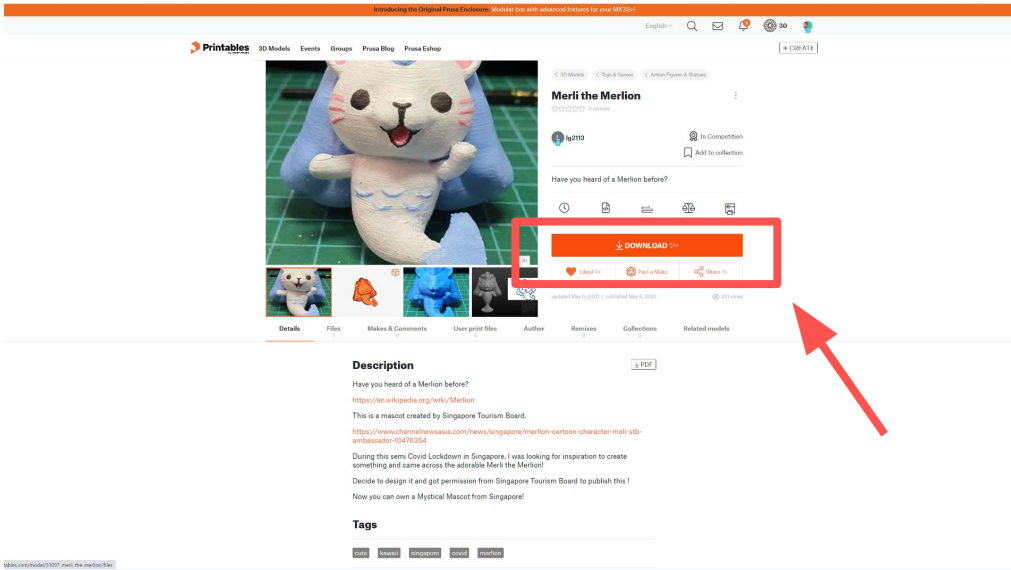
How to Search for 3D Objects?

www.printables.com

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.



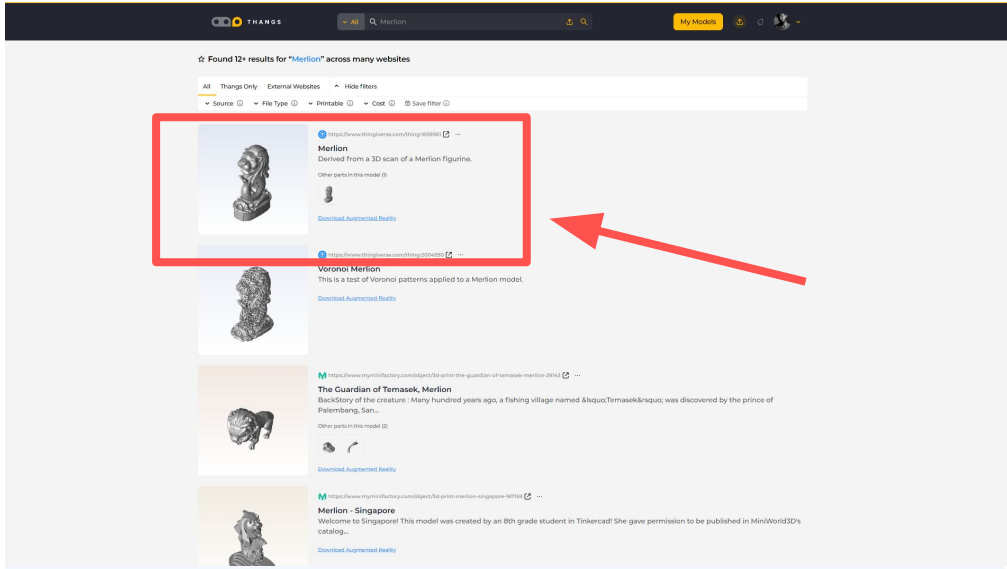
How to Search for 3D Objects?

www.thangs.com

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.



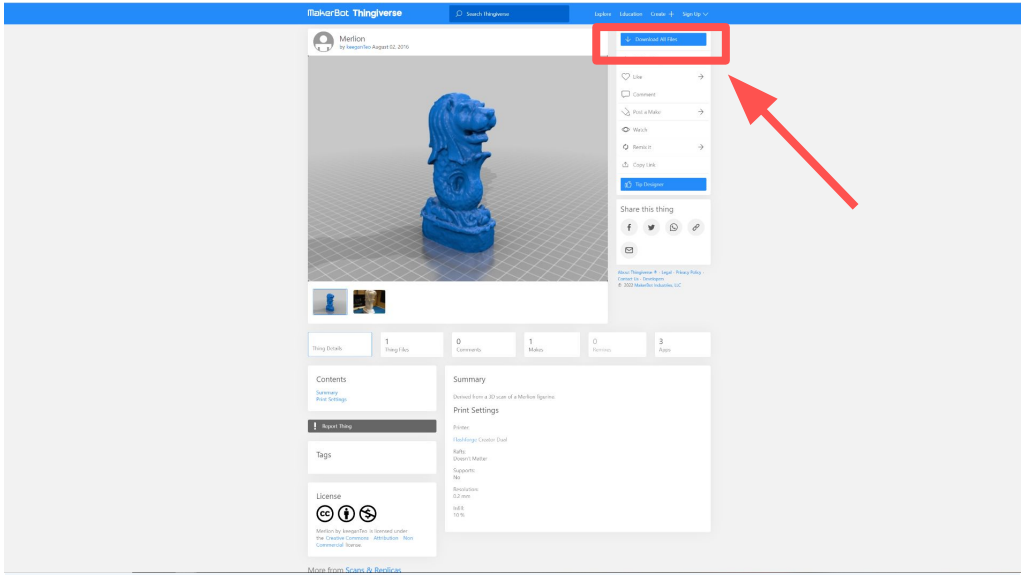
How to Search for 3D Objects?

www.thingiverse.com

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.



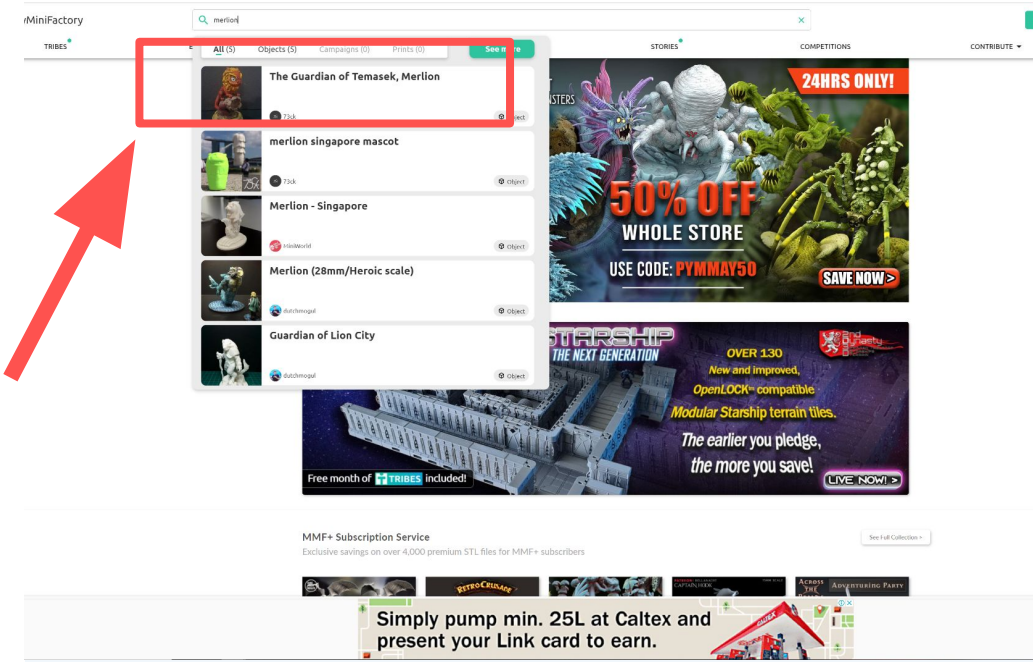
How to Search for 3D Objects?

www.myminifactory.com

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.



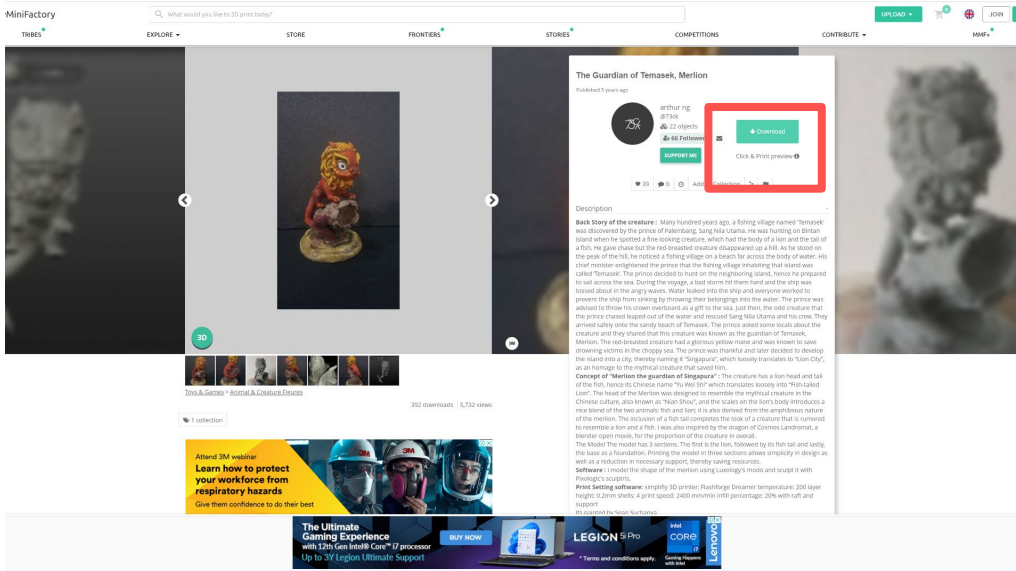
How to Search for 3D Objects?

www.myminifactory.com

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.



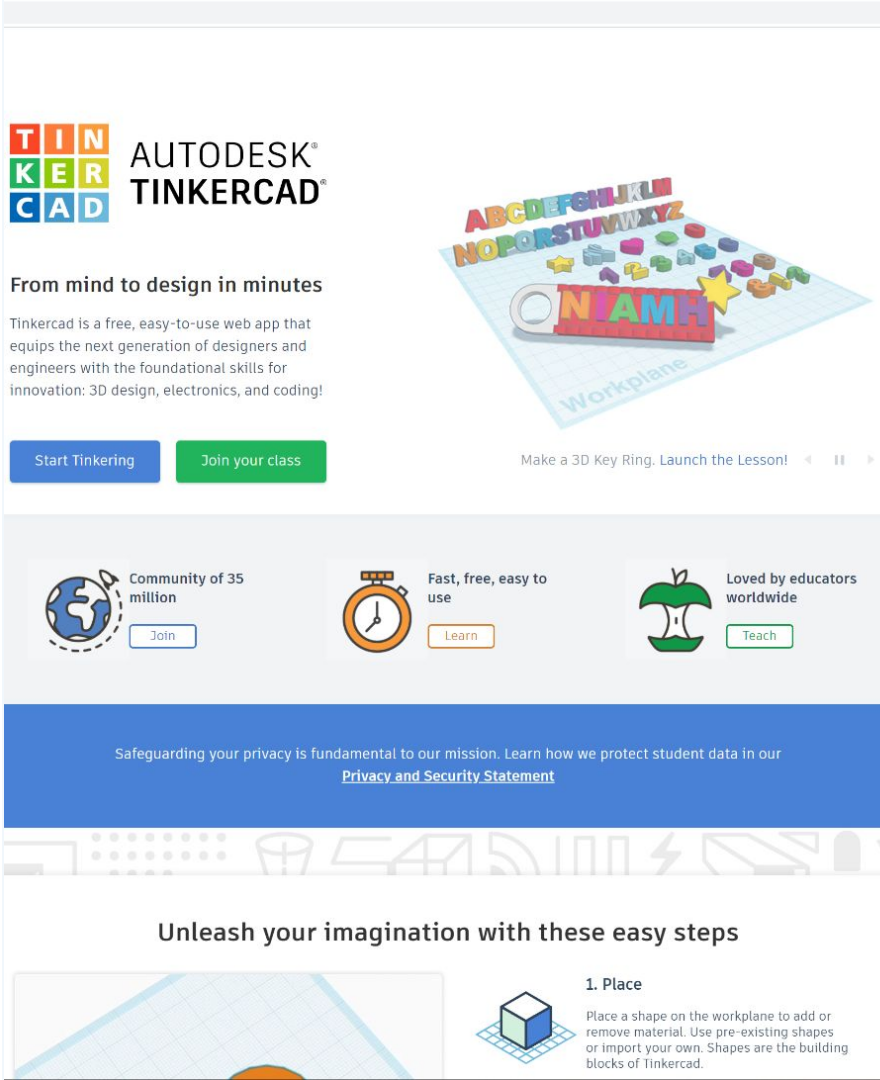
3D DESIGN FOR EVERYONE

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

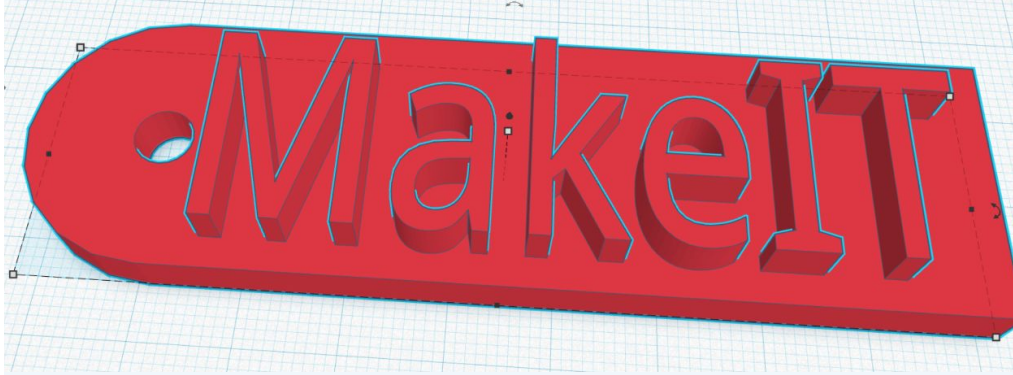
Don’t let its simplicity fool you; we consider it to be one of the fundamental building blocks for a new 3D designer.



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

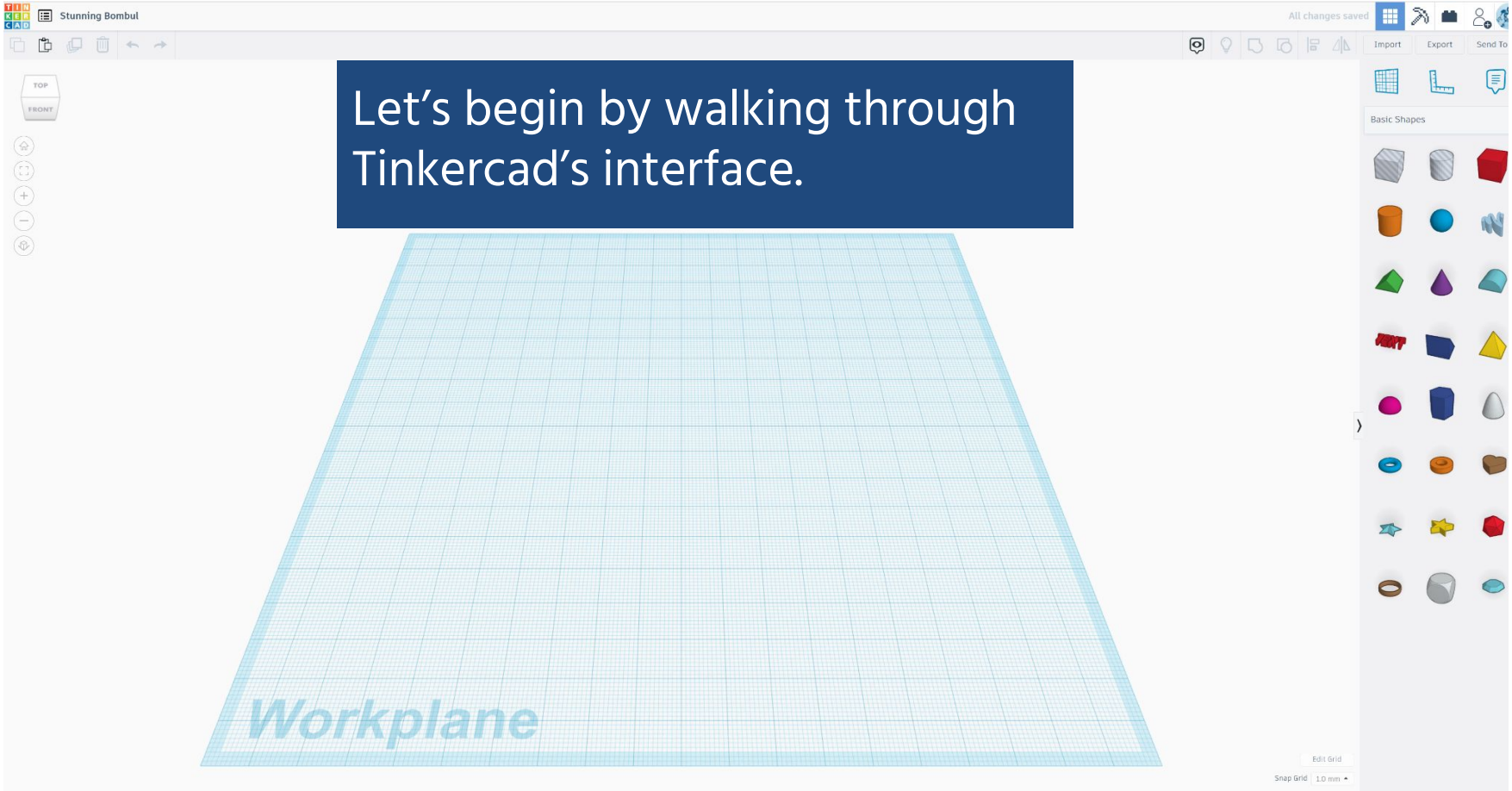
2. Create a New Design in Tinkercad

3. Learn about the Interface and Basic Operations in Tinkercad

4. Create our object using basic operations

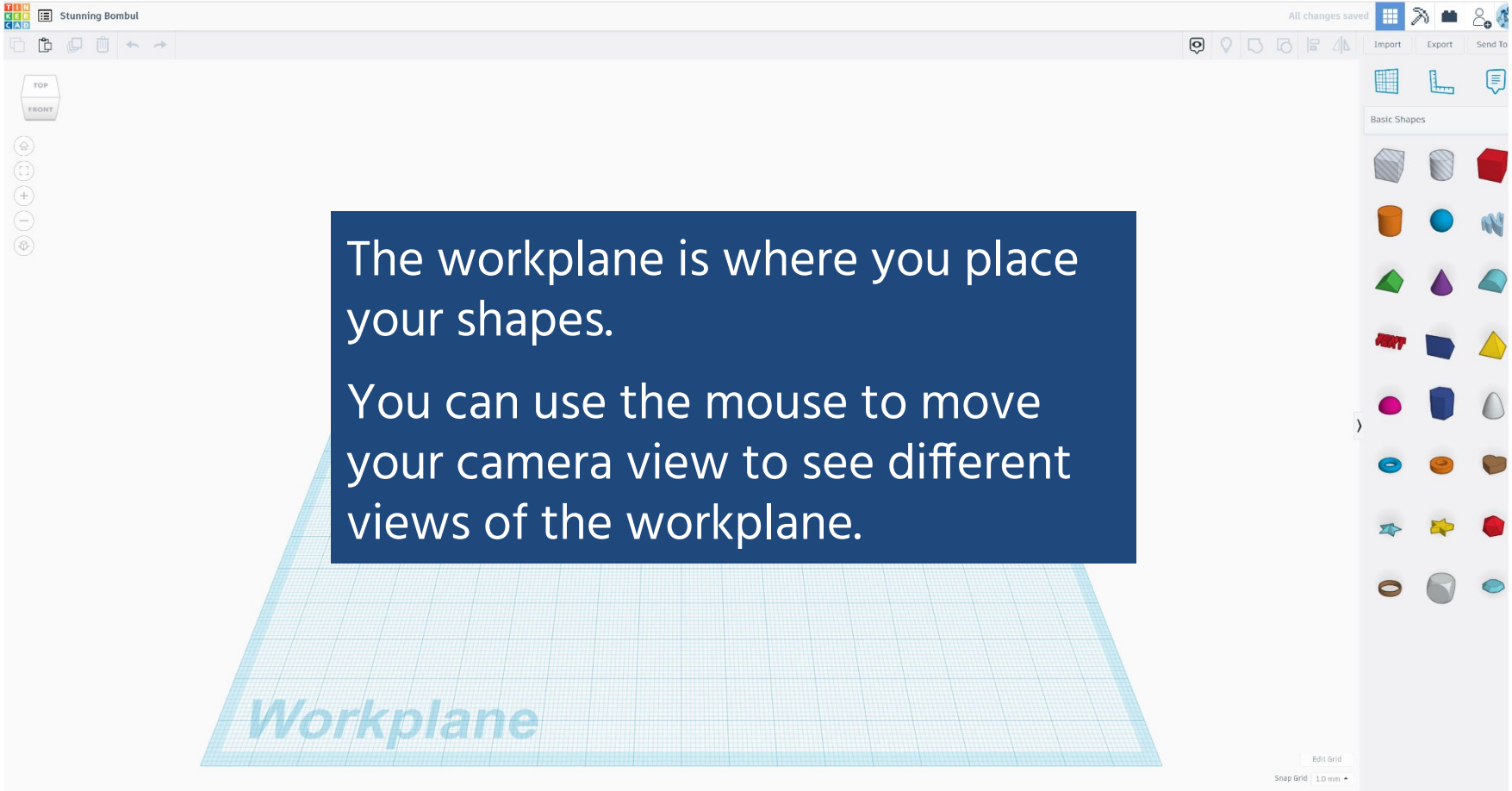
3D Design in Tinkercad

1. Control Camera in Tinkercad



3D Design in Tinkercad

1. Control Camera in Tinkercad



3D Design in Tinkercad

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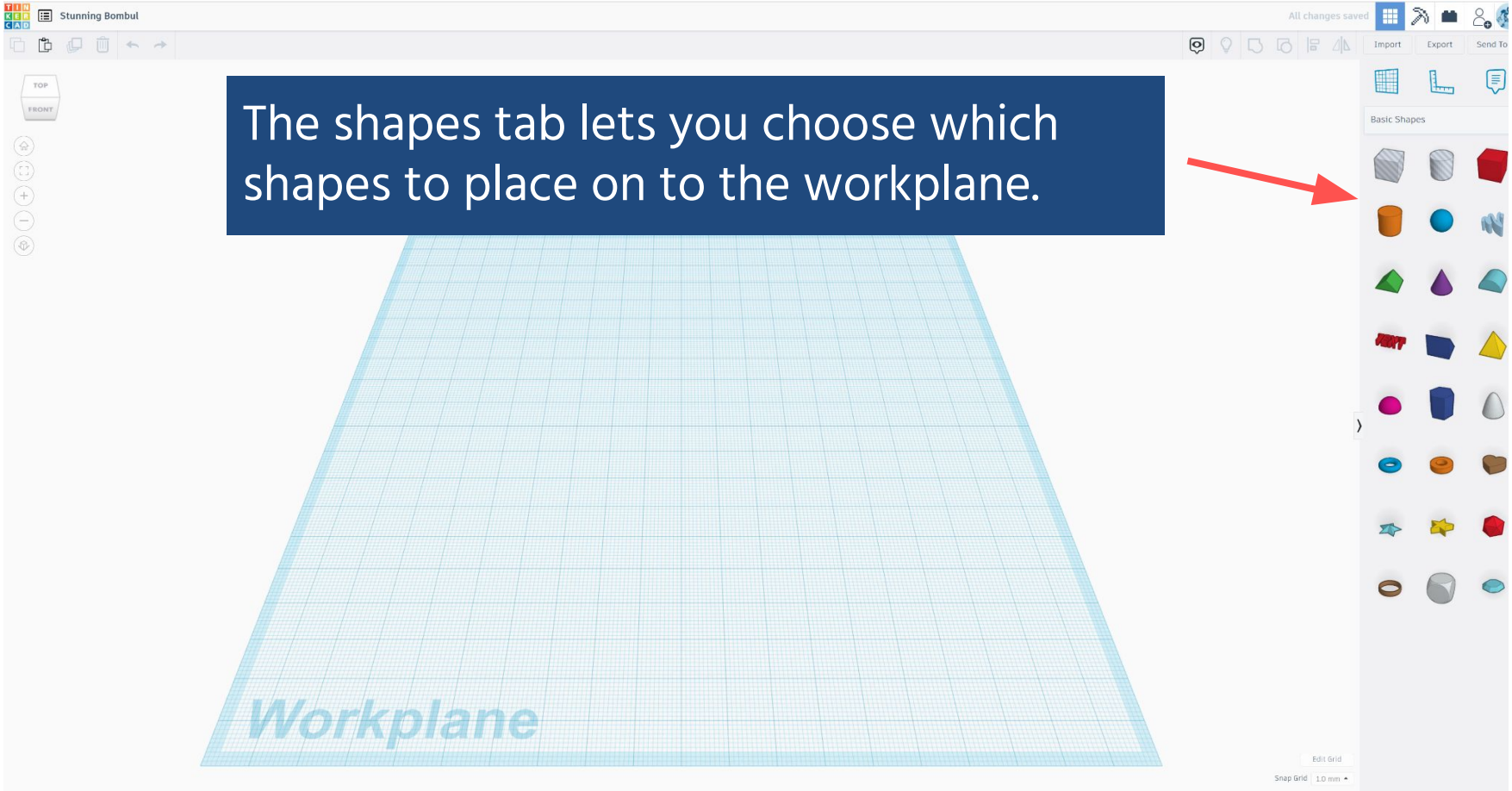

3D Design in Tinkercad

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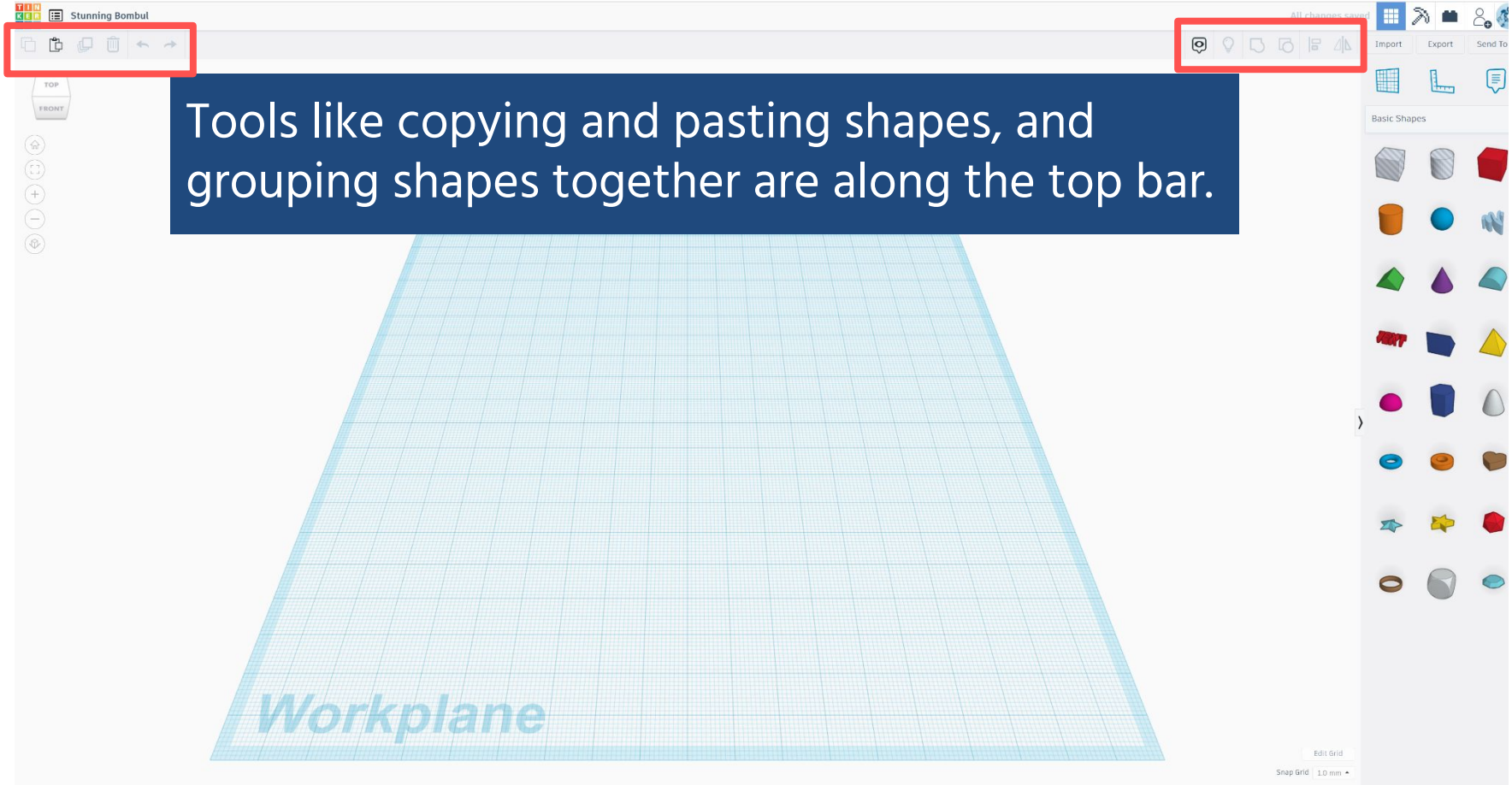


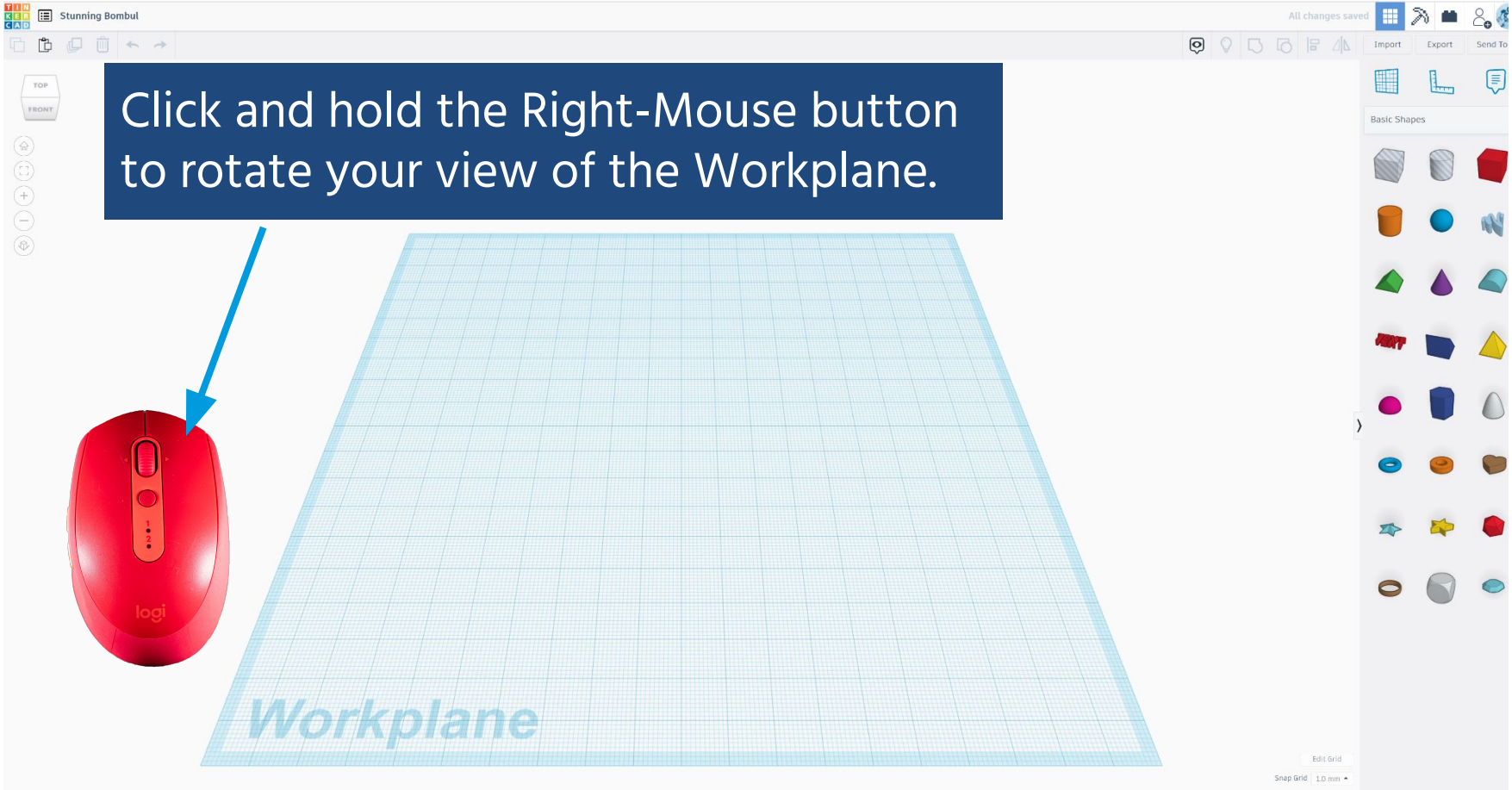
3D Design in Tinkercad

1. Control Camera in Tinkercad

We use a mouse to do things in Tinkercad.

3D Design in Tinkercad

1. Control Camera in Tinkercad



3D Design in Tinkercad

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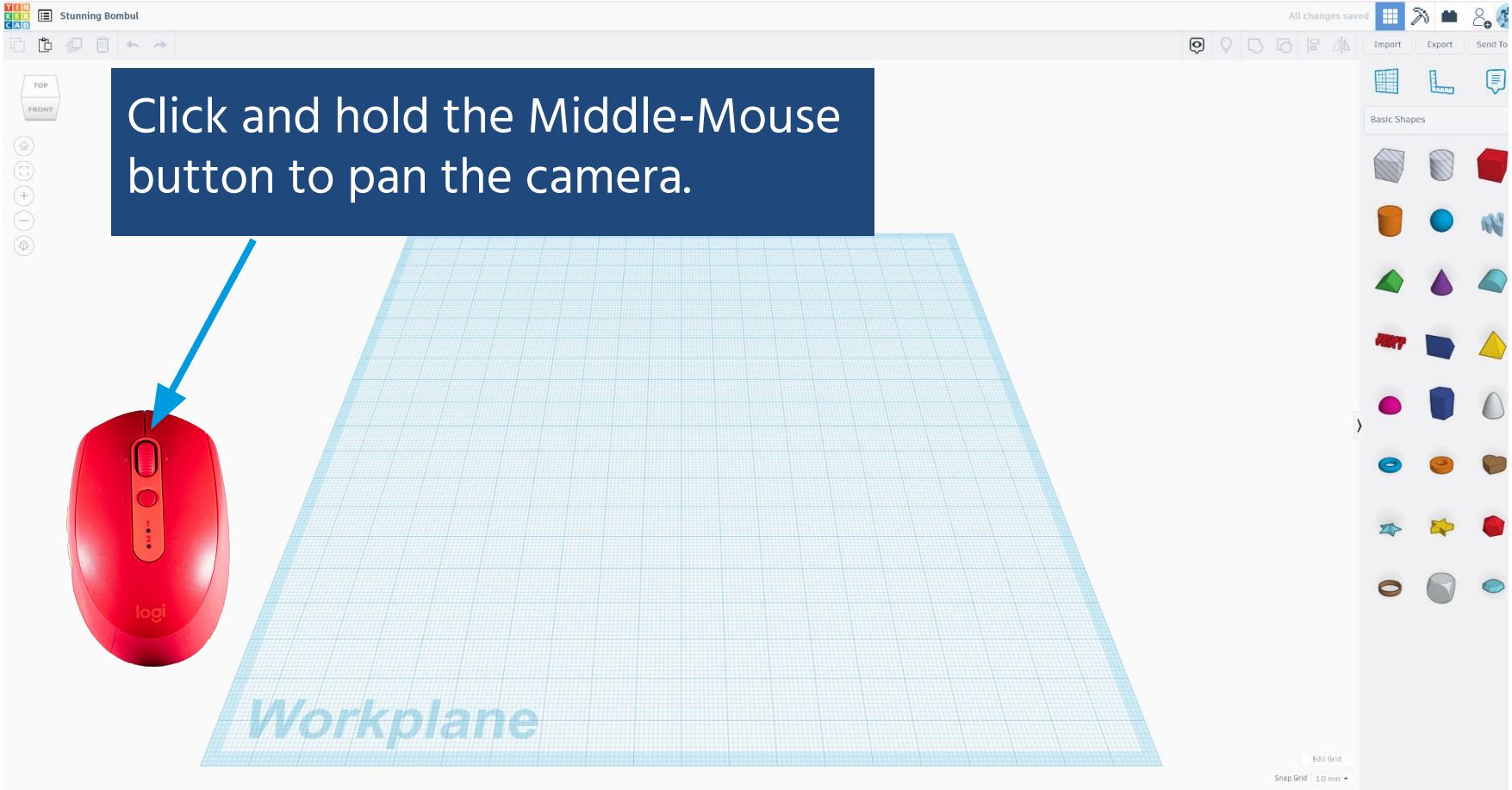

3D Design in Tinkercad

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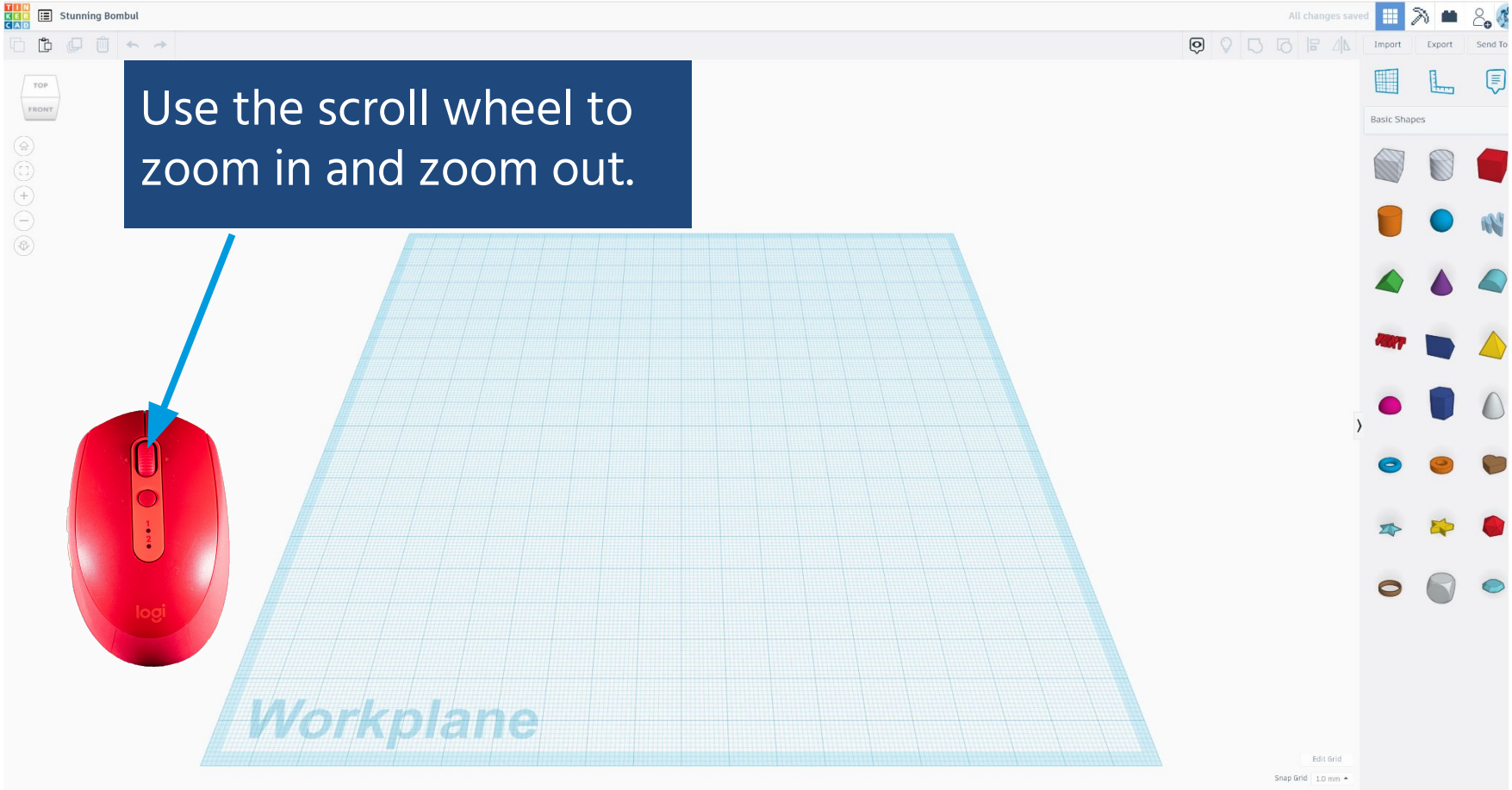
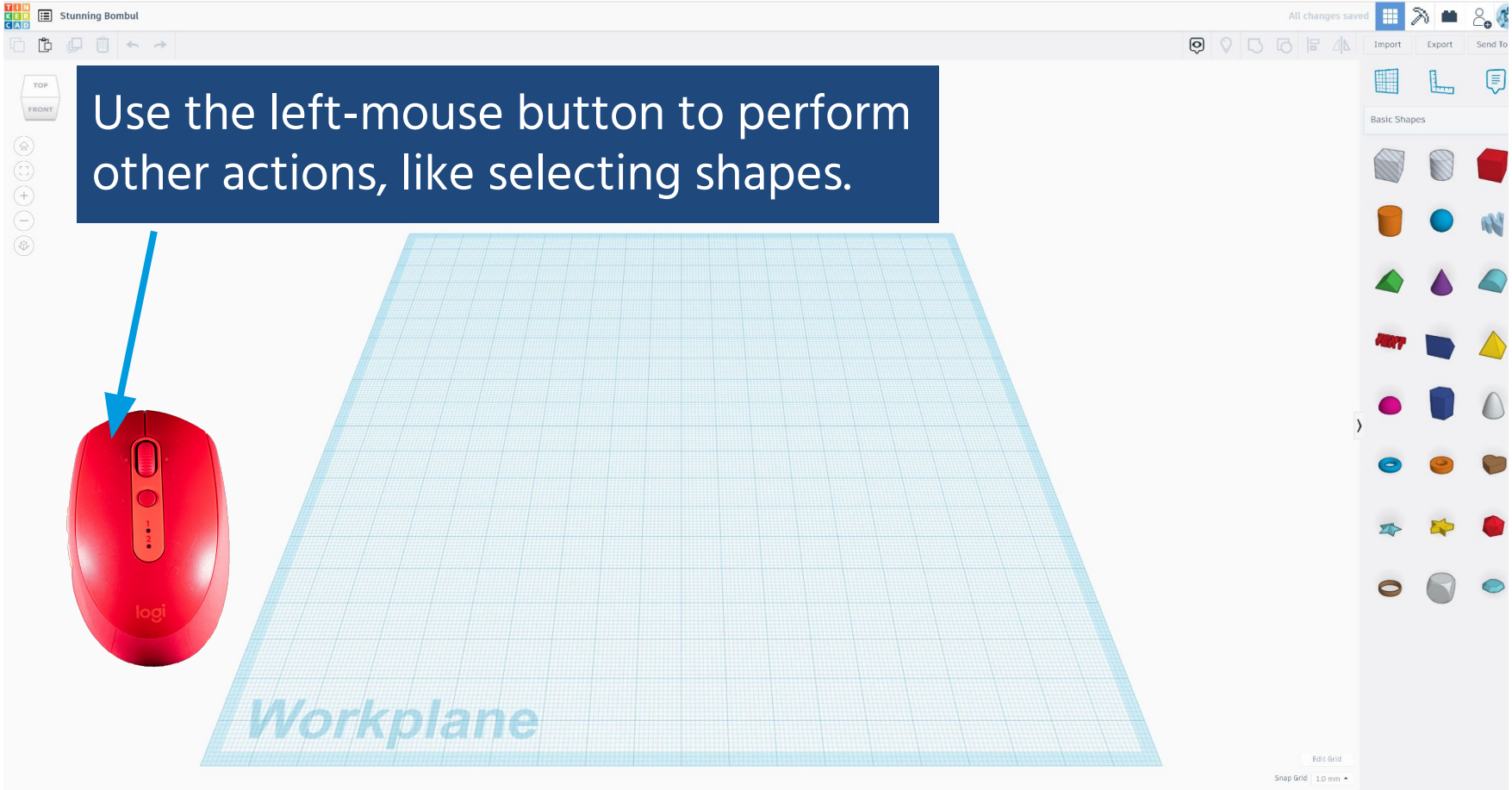


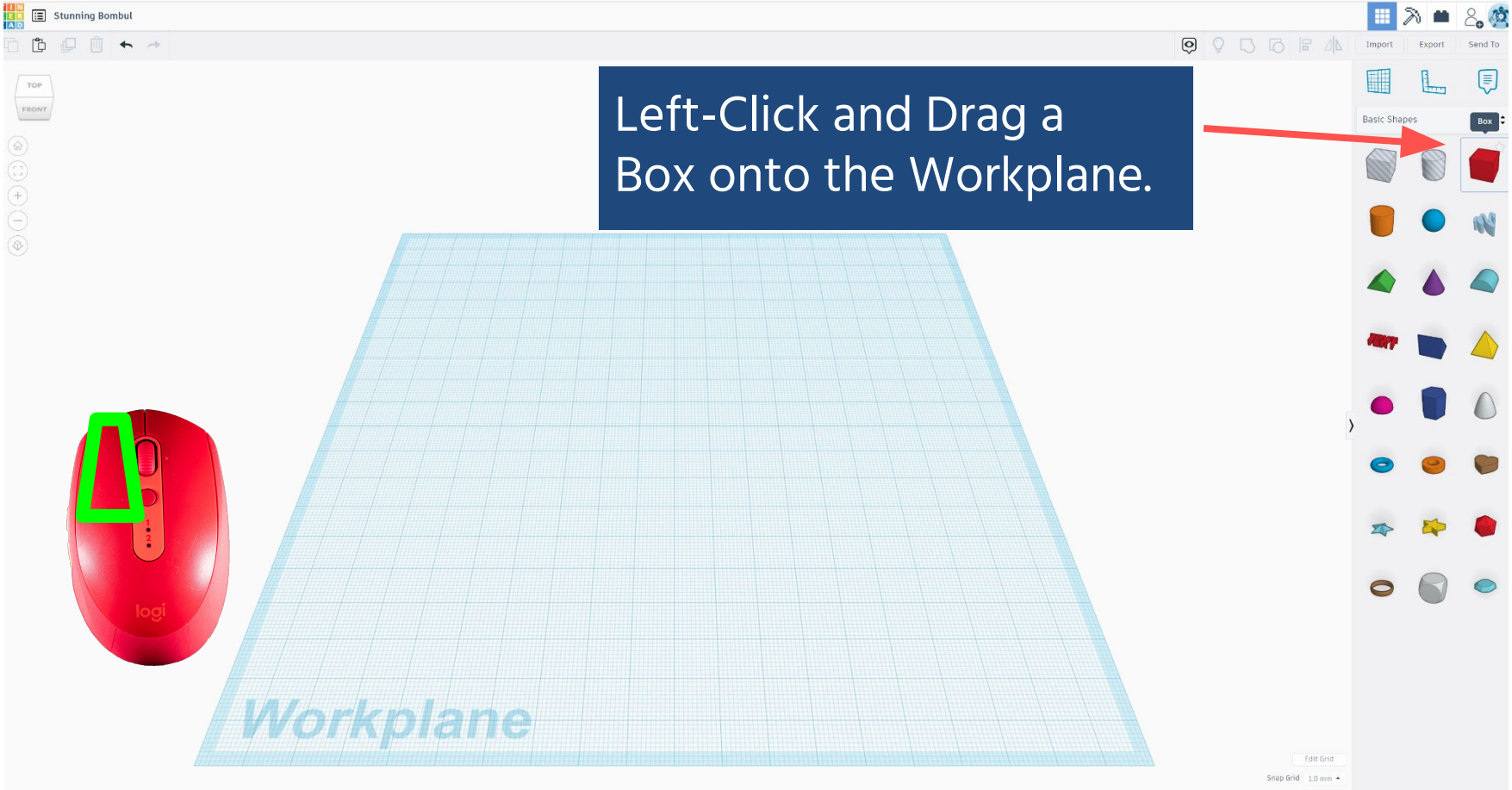
3D Design in Tinkercad

1. Control Camera in Tinkercad



3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad



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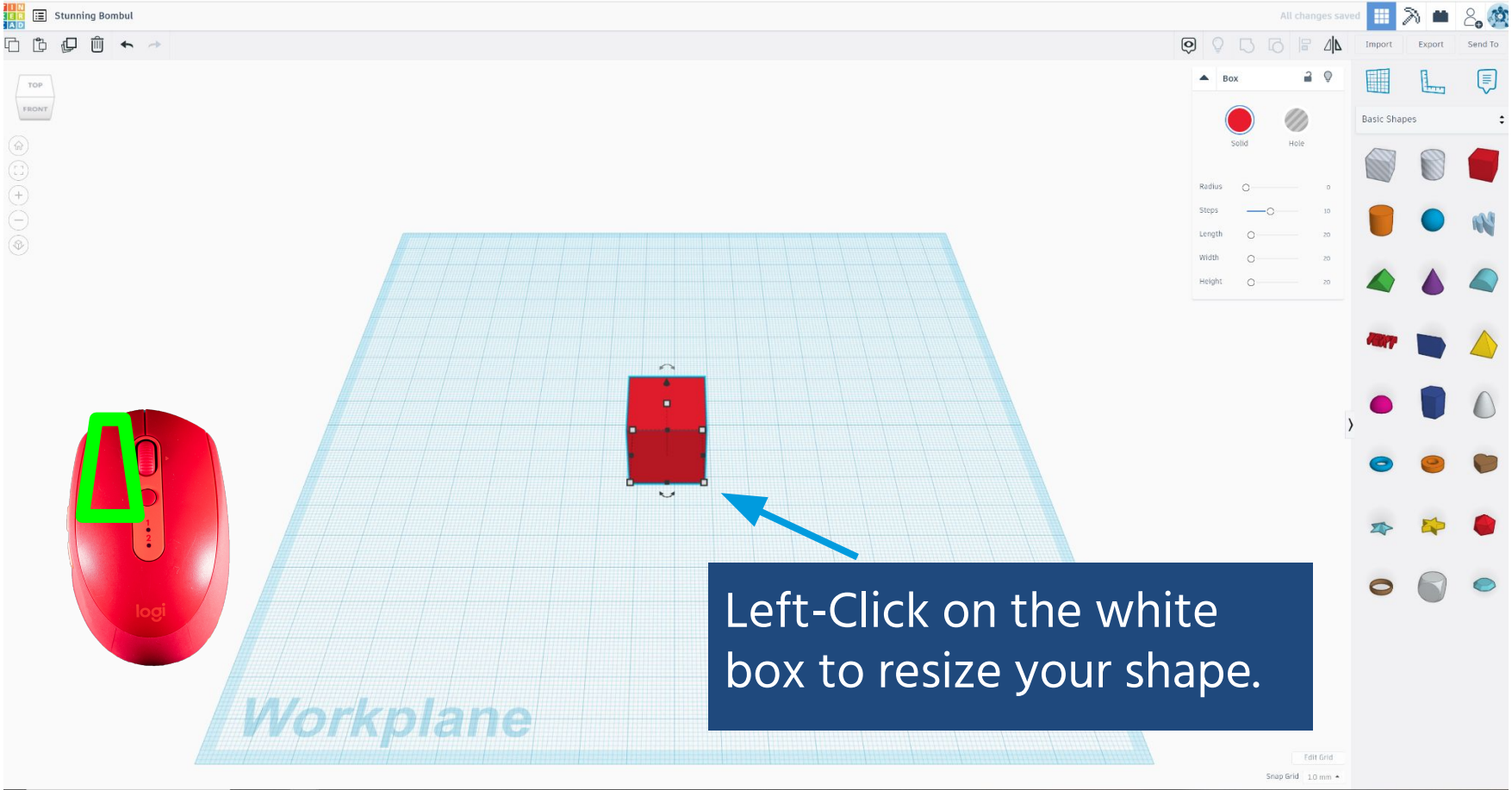

3D Design in Tinkercad

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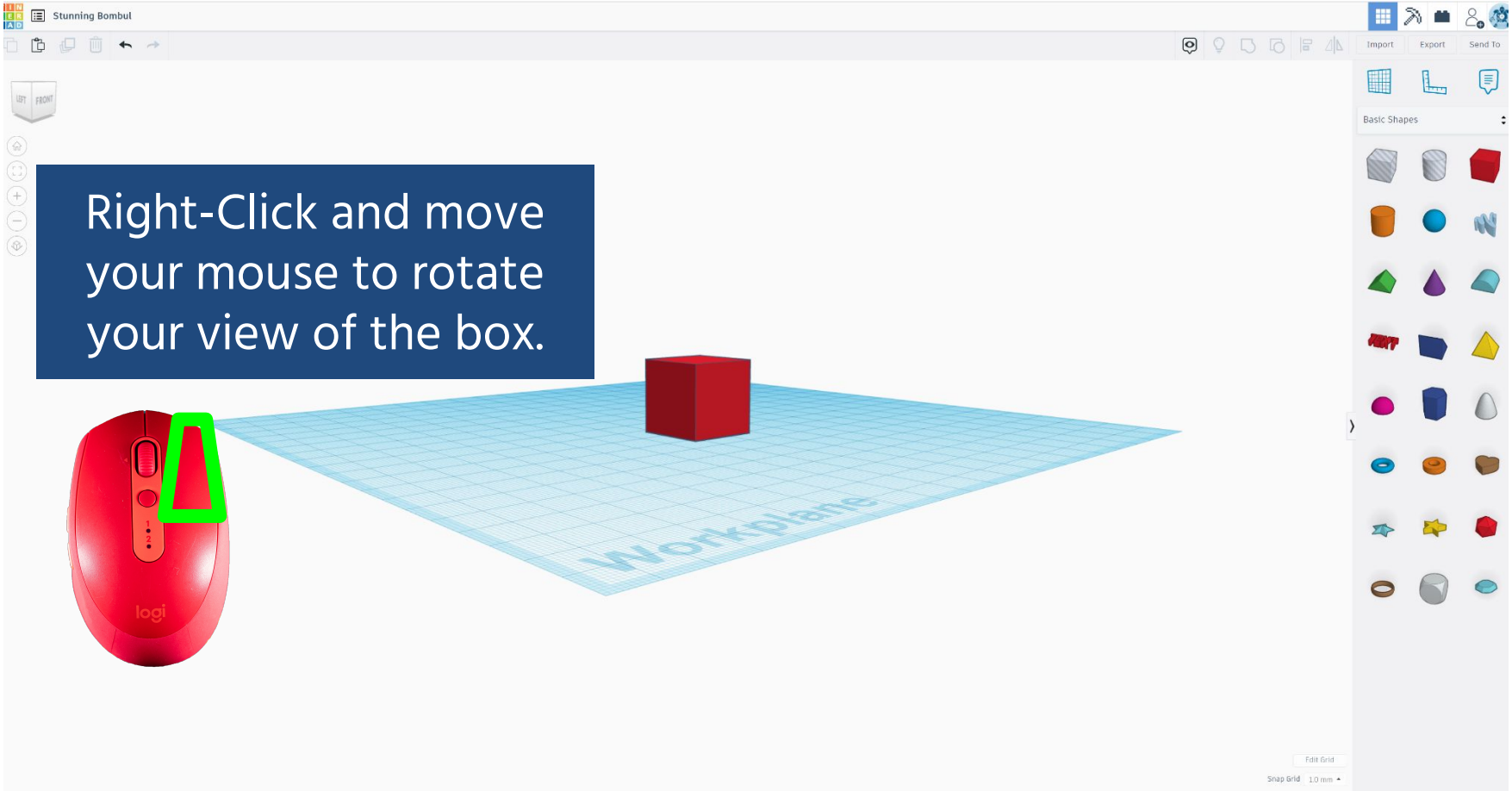

3D Design in Tinkercad

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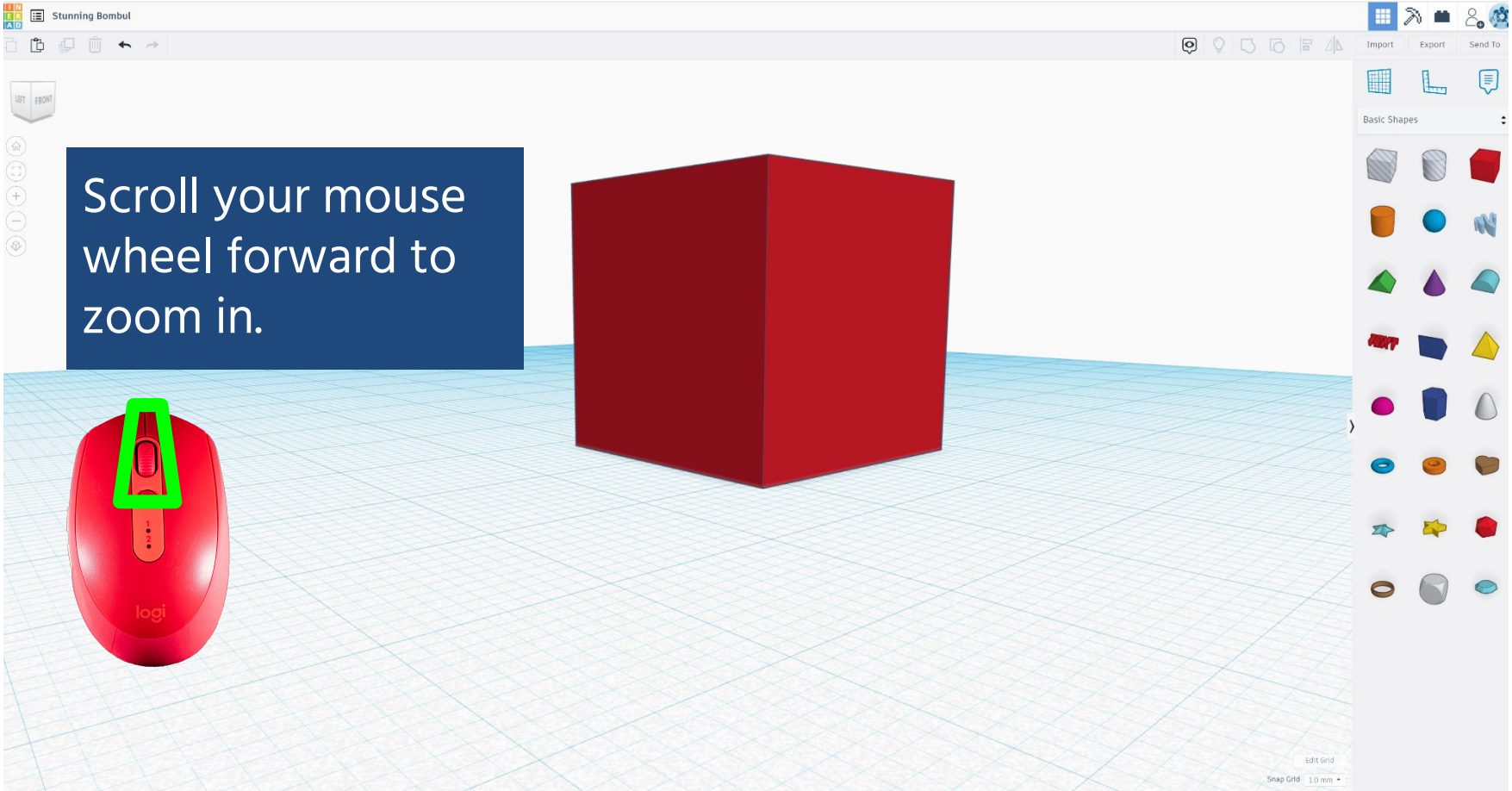

3D Design in Tinkercad

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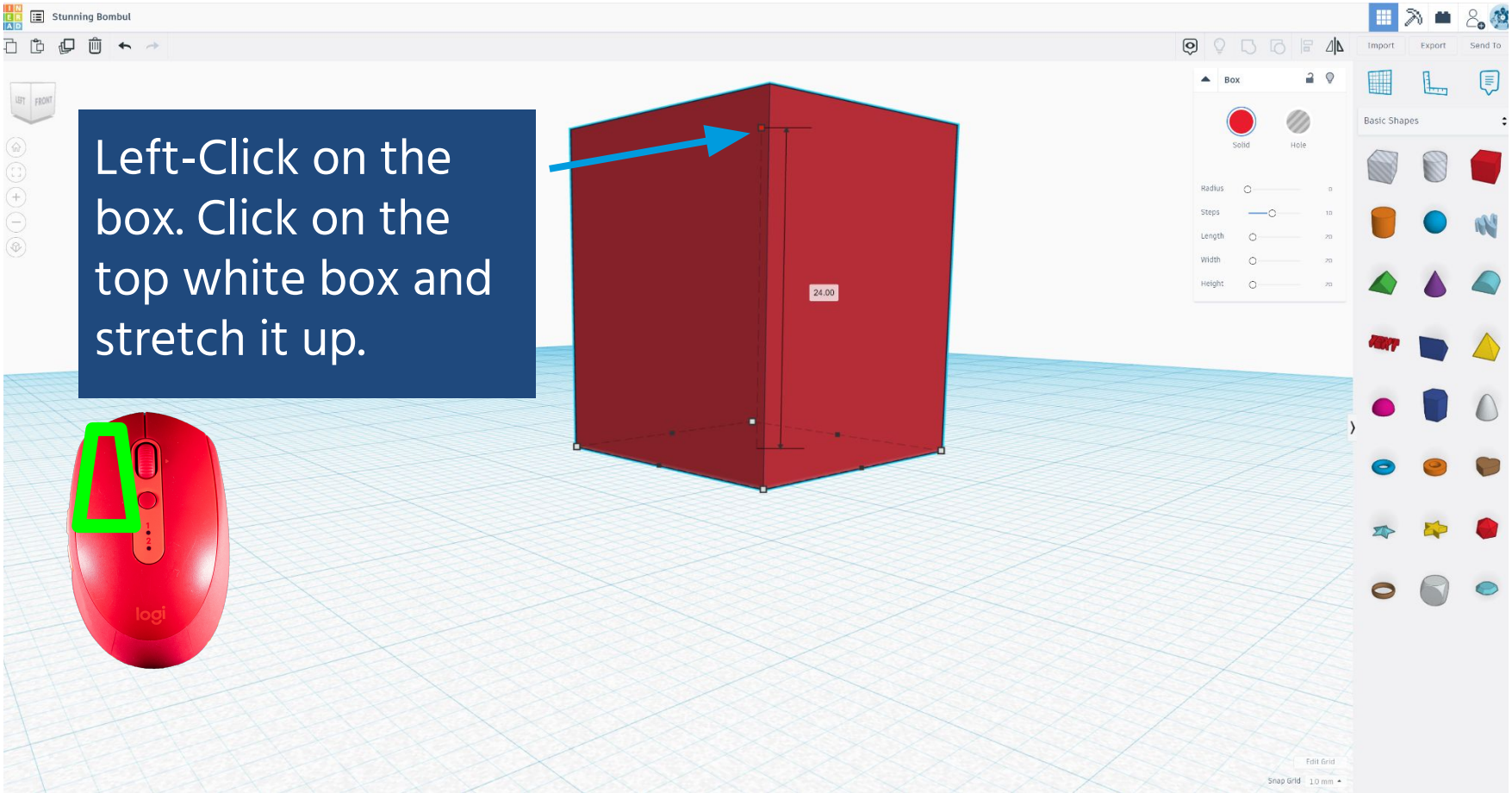
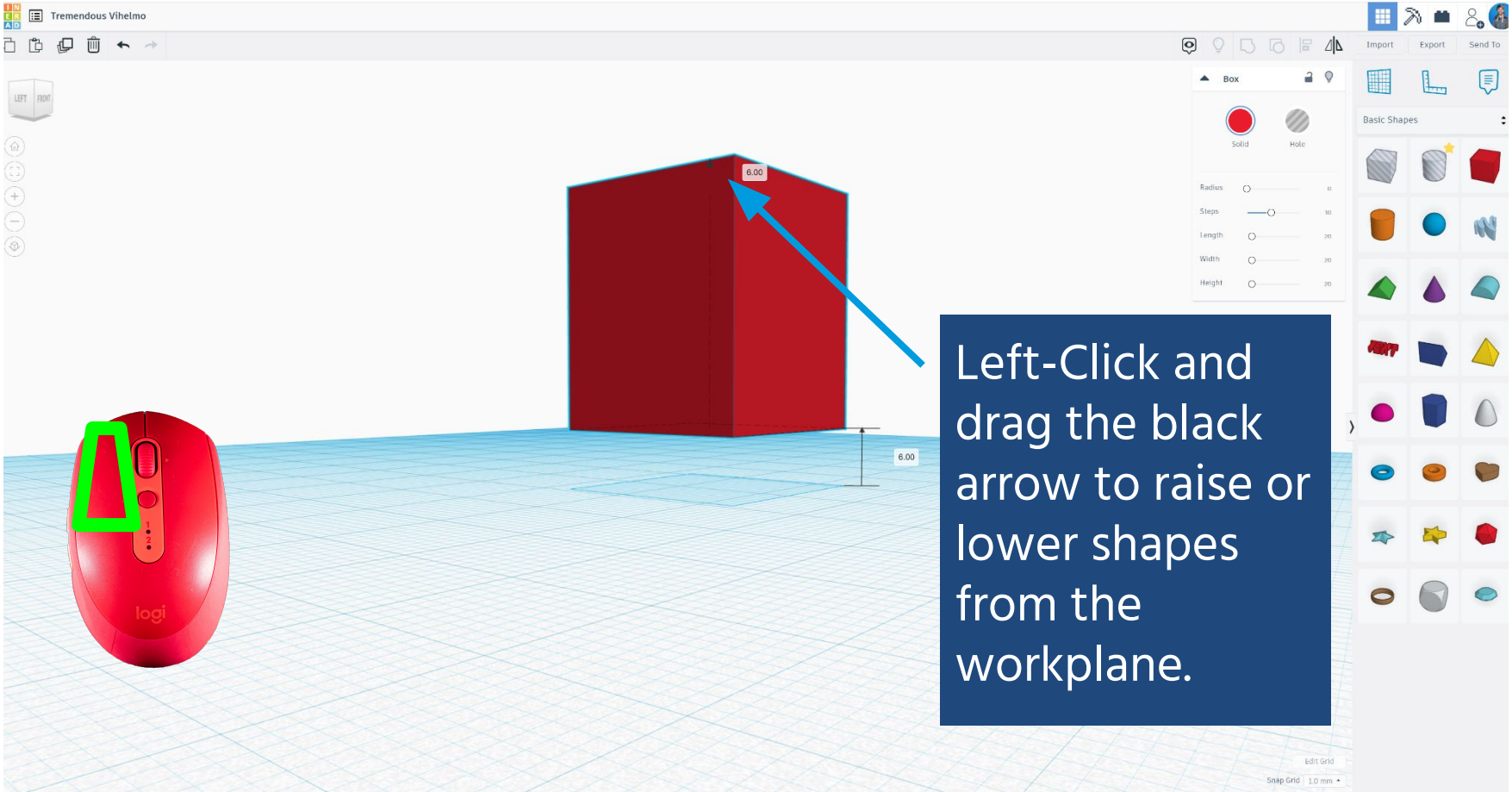


3D Design in Tinkercad

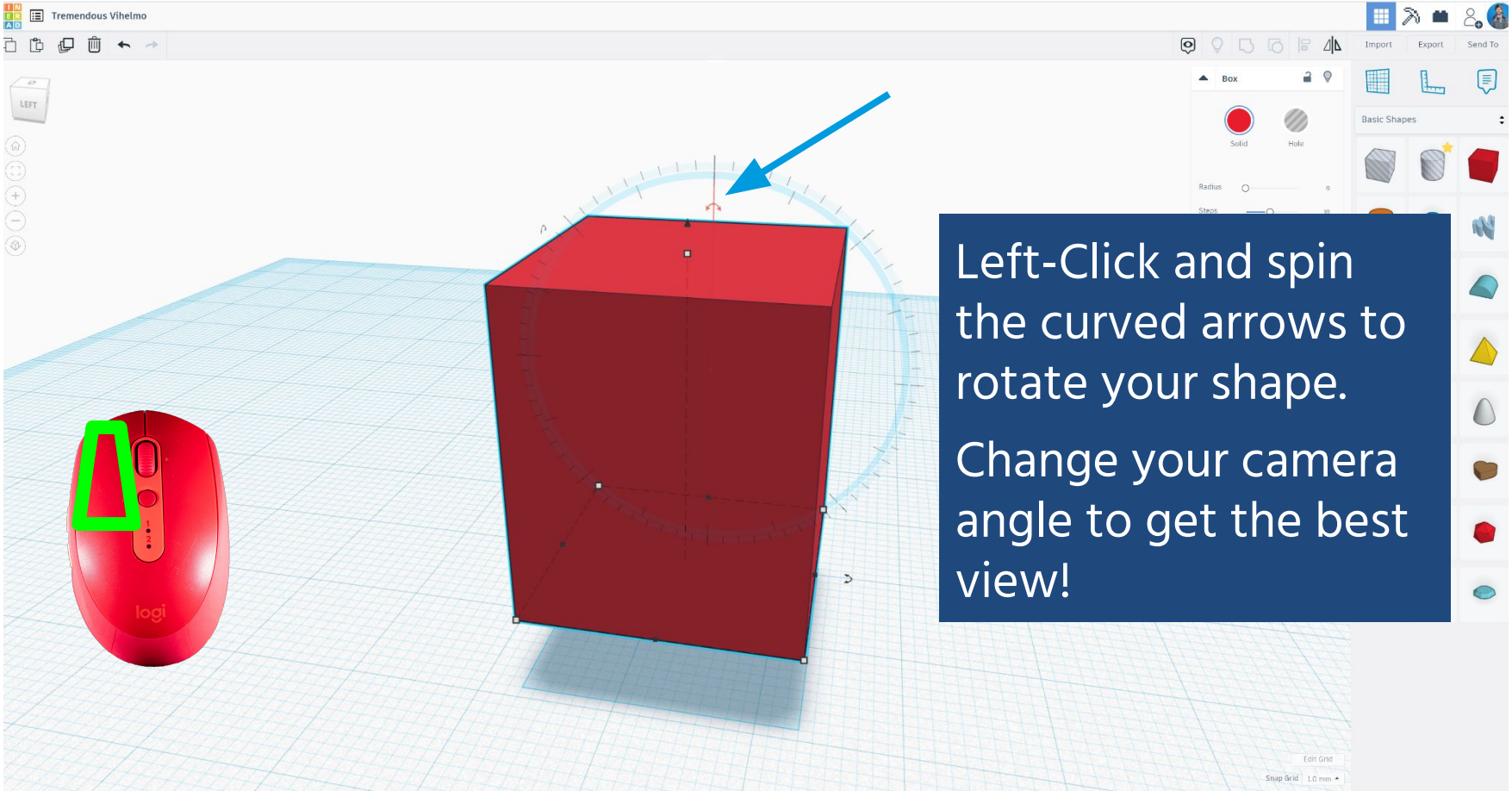
2. Manipulate Shapes in Tinkercad



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

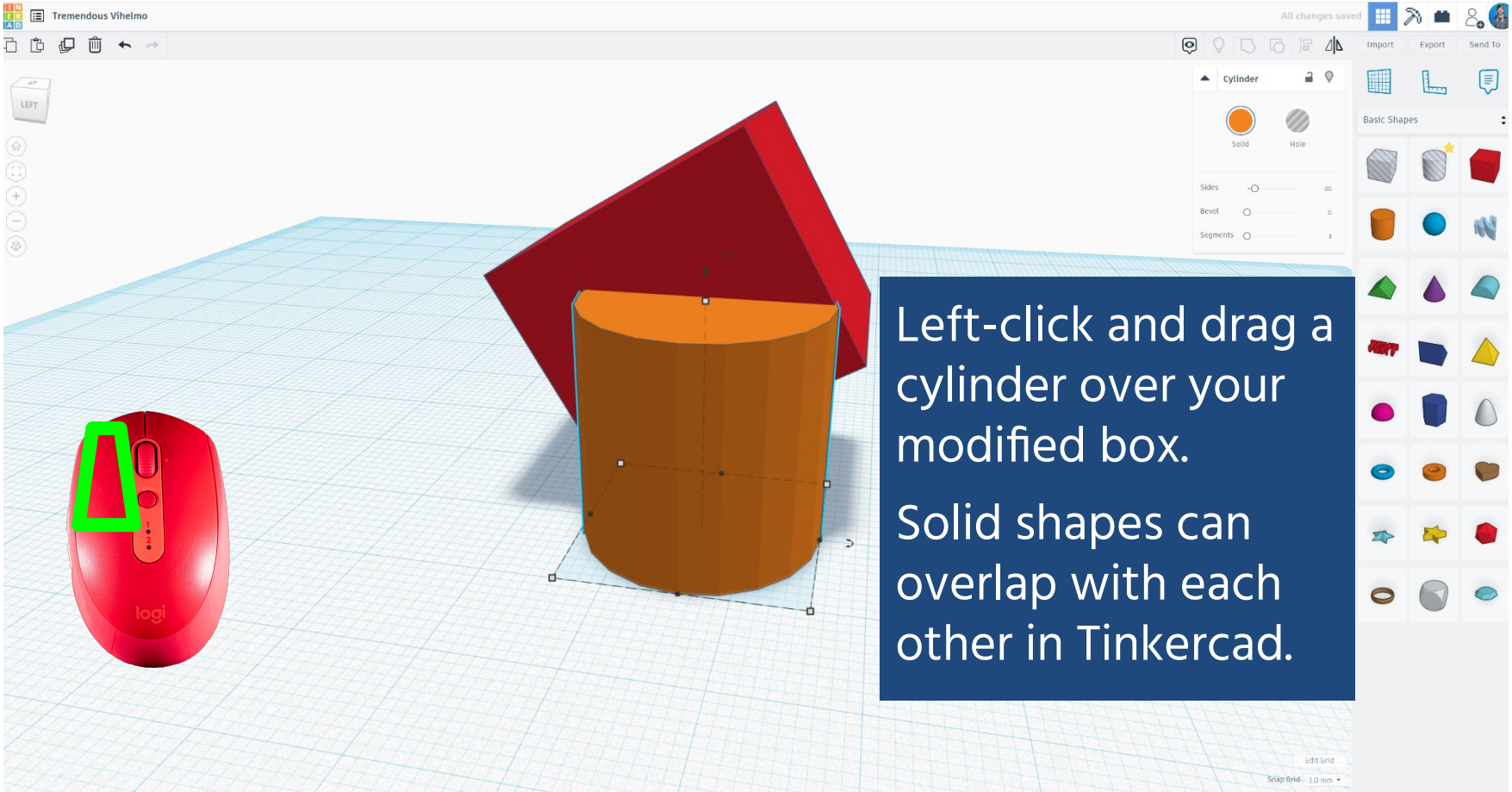
3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad



3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad

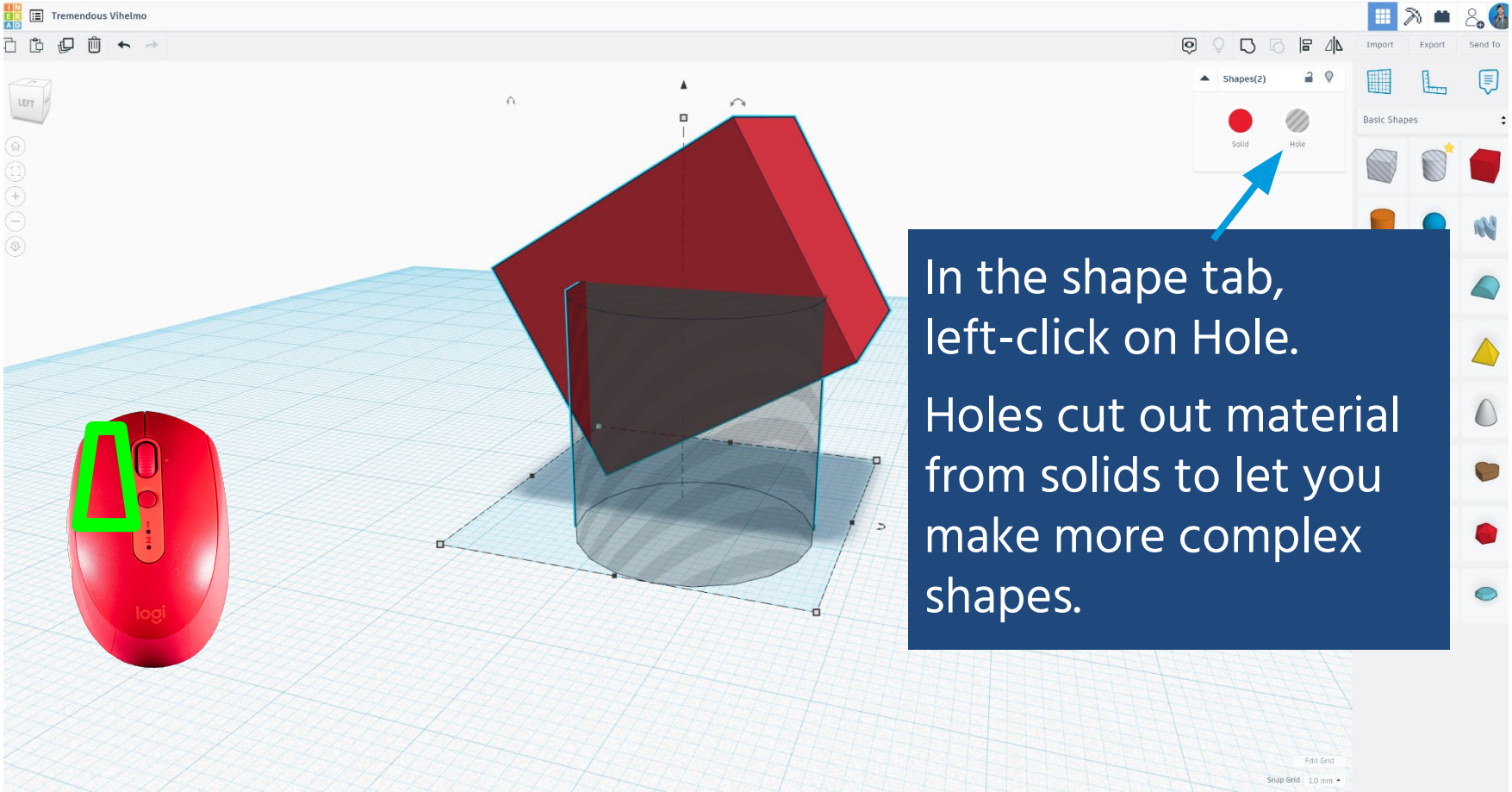


Left-click and drag a cylinder over your modified box.

Solid shapes can overlap with each other in Tinkercad.

3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad

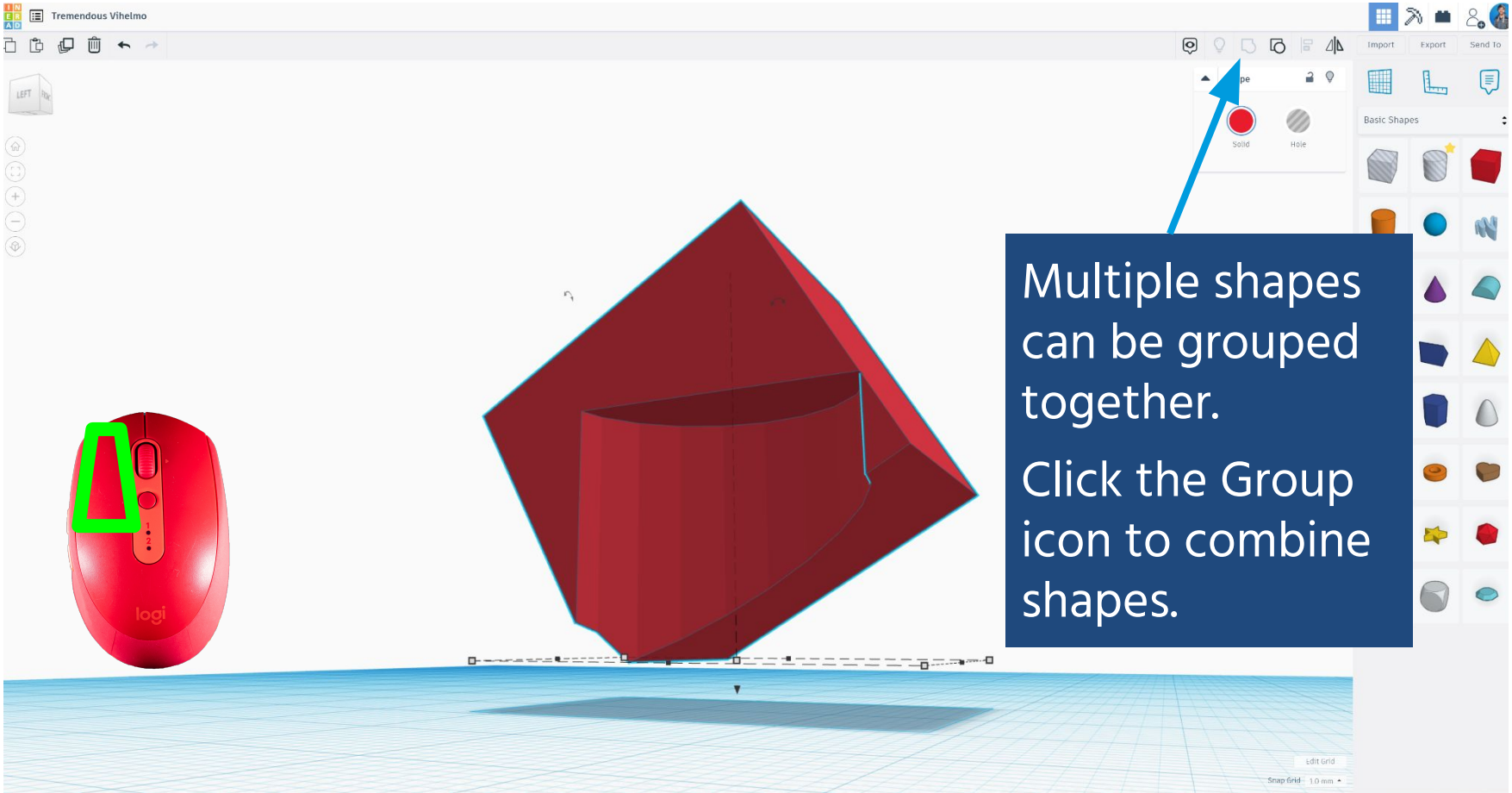


In the shape tab, left-click on Hole.

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

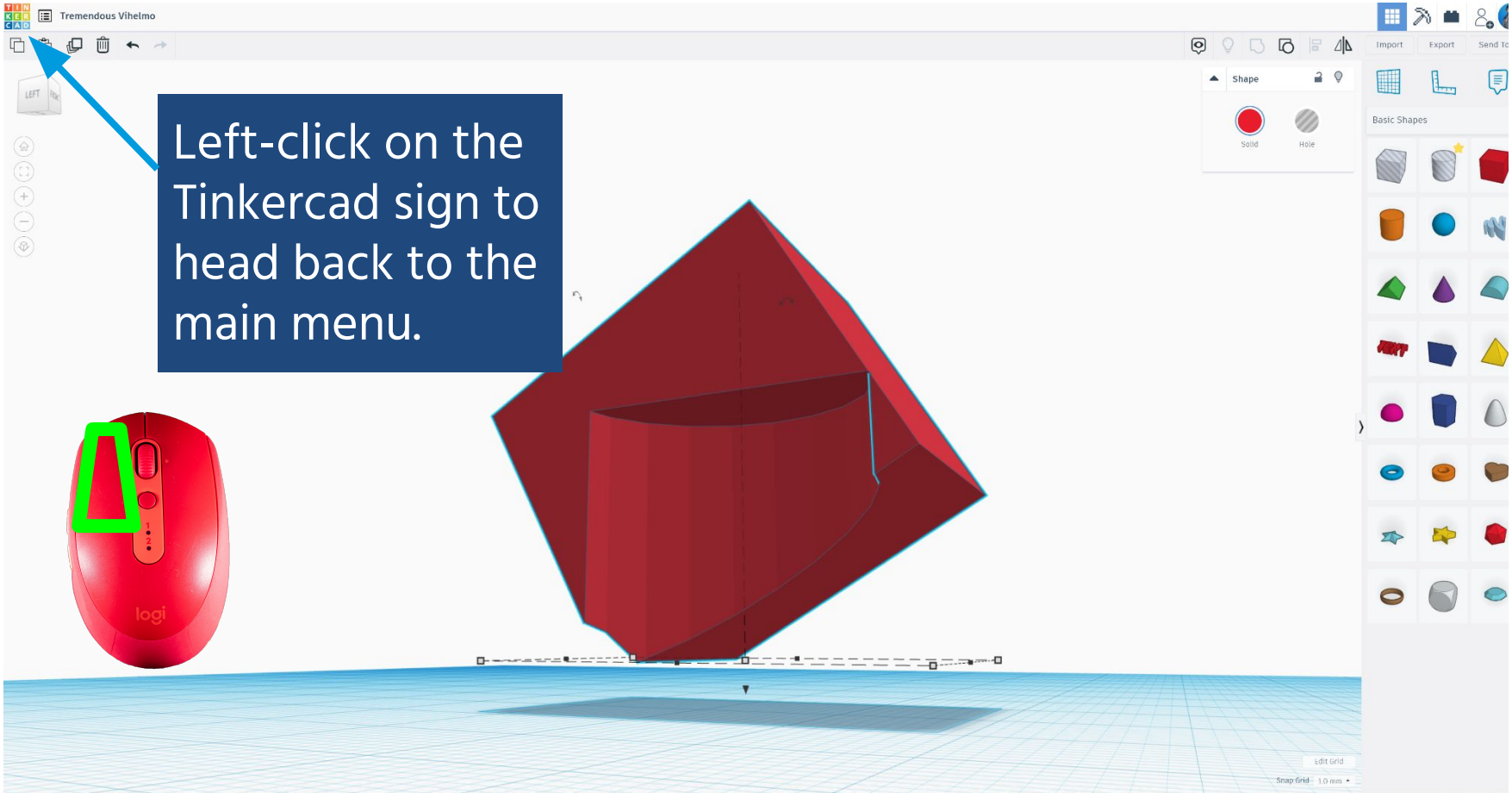
3D Design in Tinkercad

2. Manipulate Shapes in Tinkercad



3D Design in Tinkercad

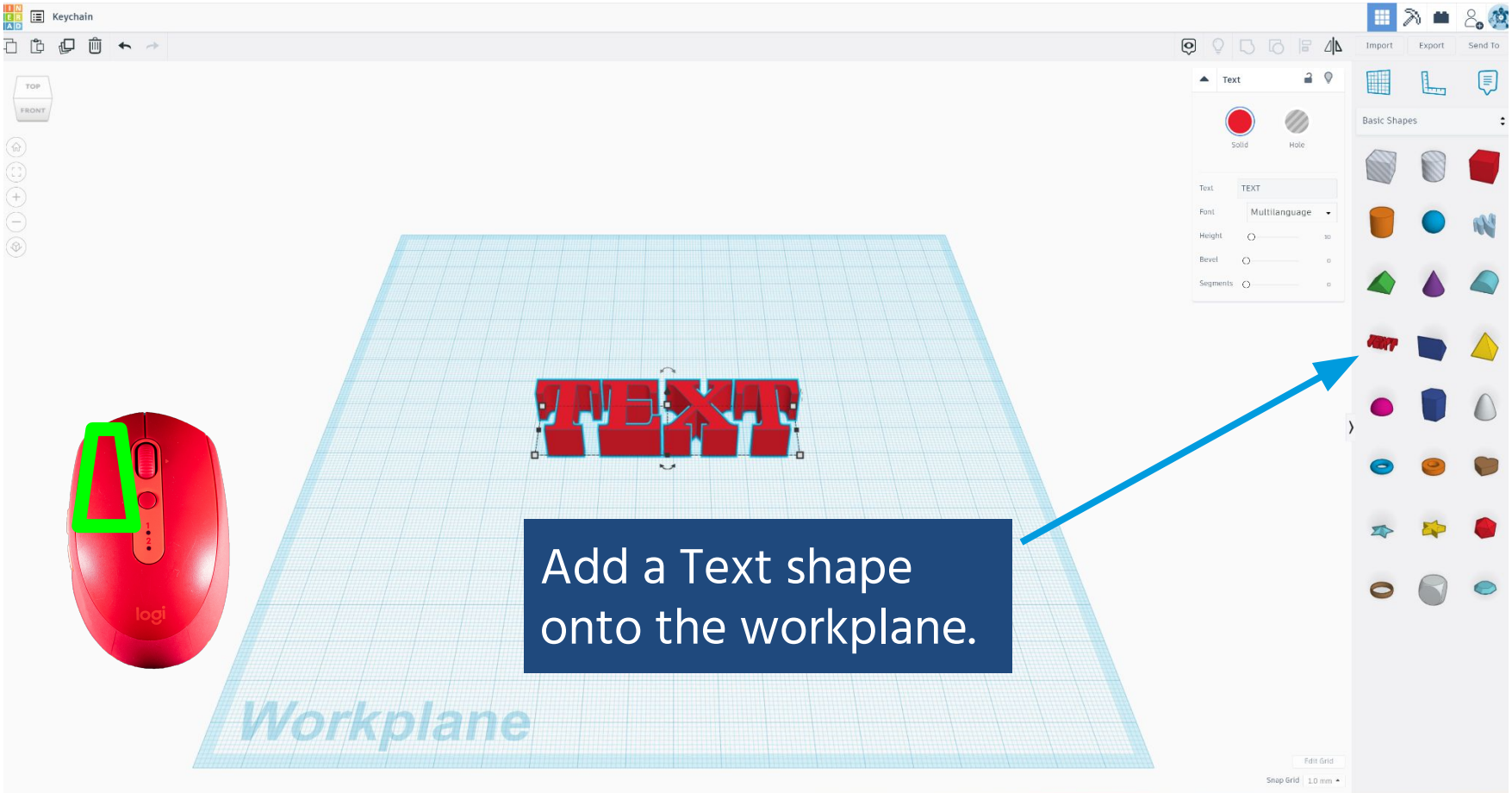
2. Manipulate Shapes in Tinkercad



MAKING A KEYCHAIN

3D Design in Tinkercad

3. Create Name Tag 3D Model

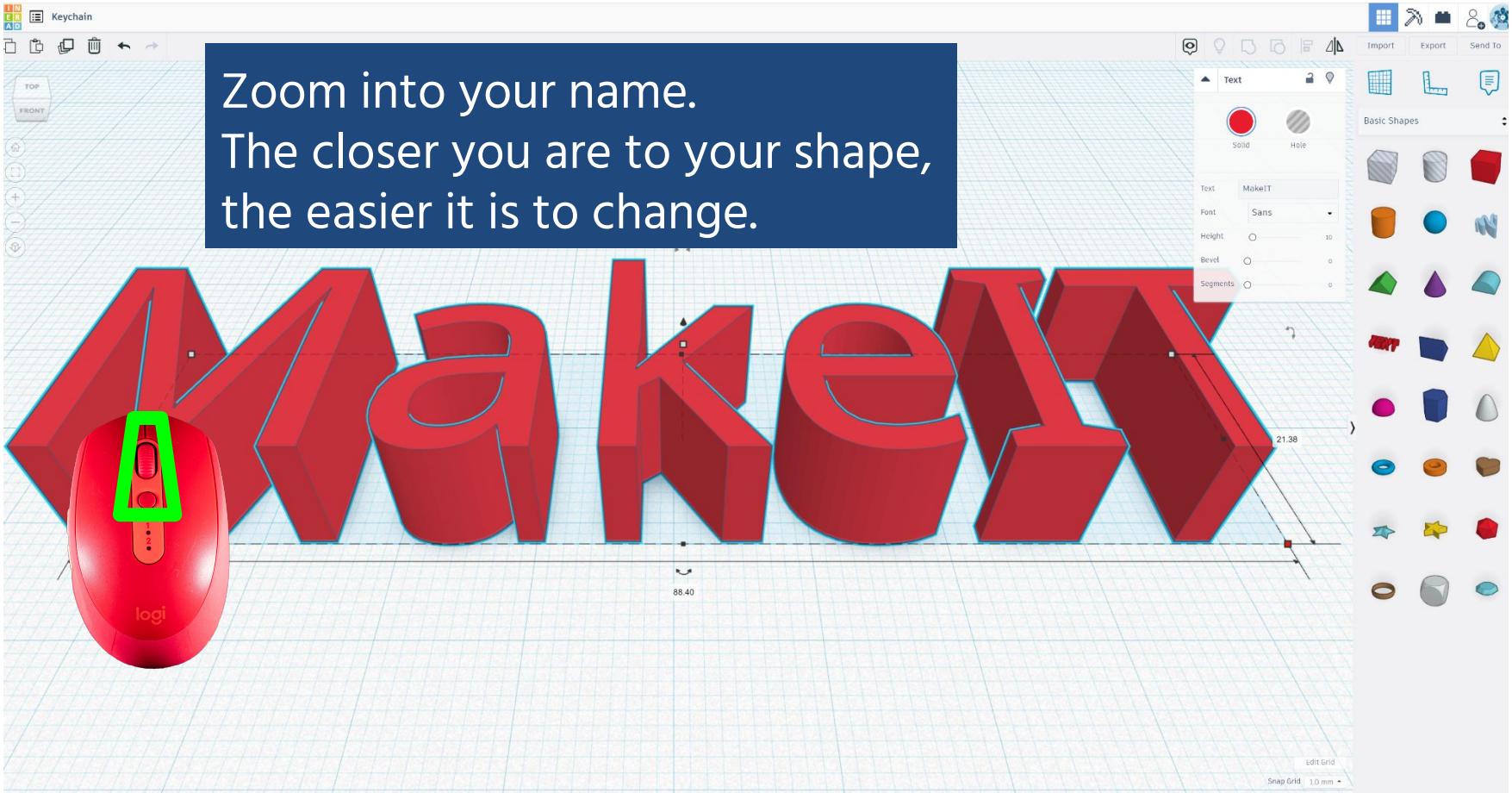


3D Design in Tinkercad

3. Create Name Tag 3D Model

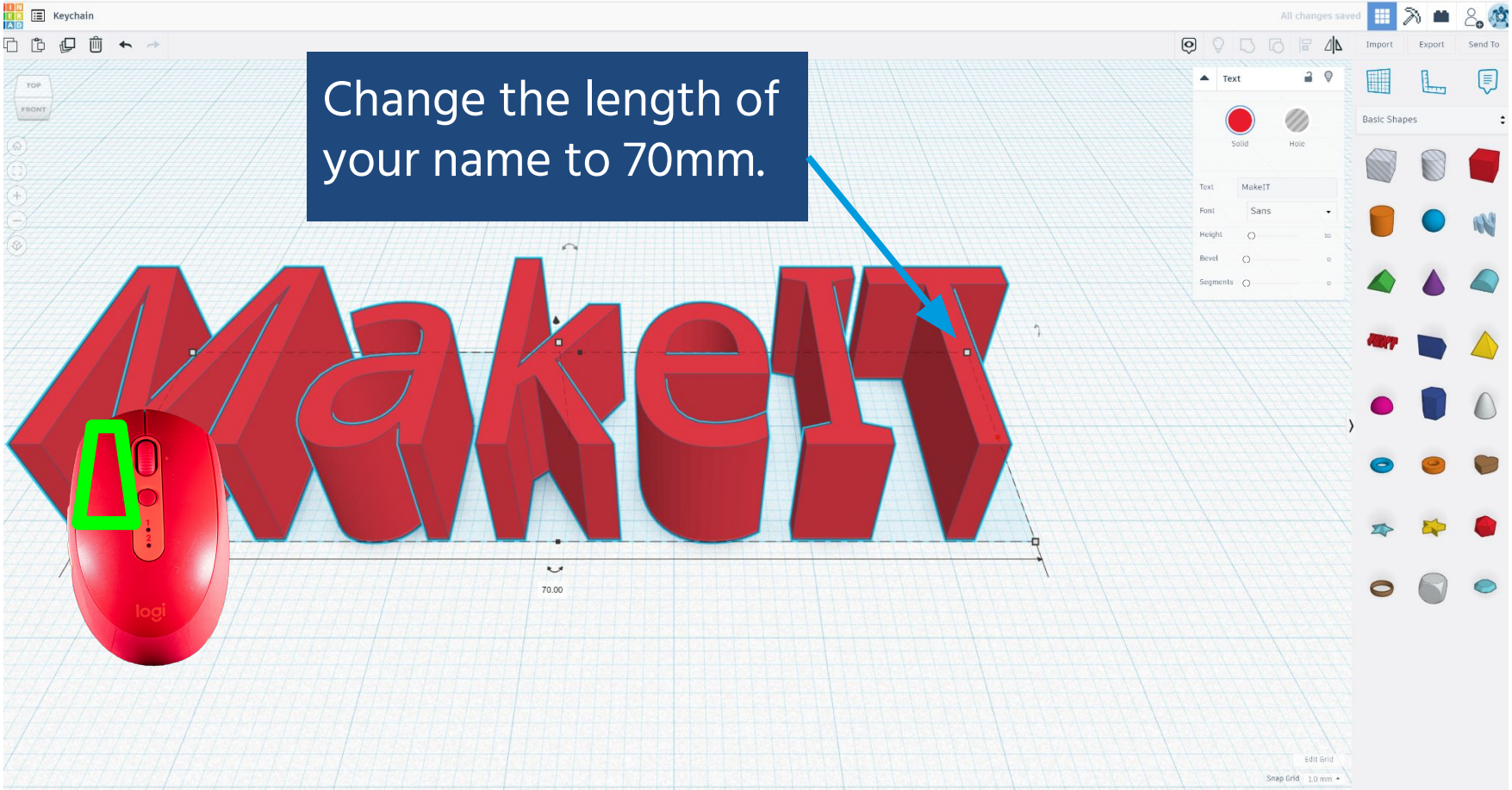
3D Design in Tinkercad

3. Create Name Tag 3D Model



3D Design in Tinkercad

3. Create Name Tag 3D Model



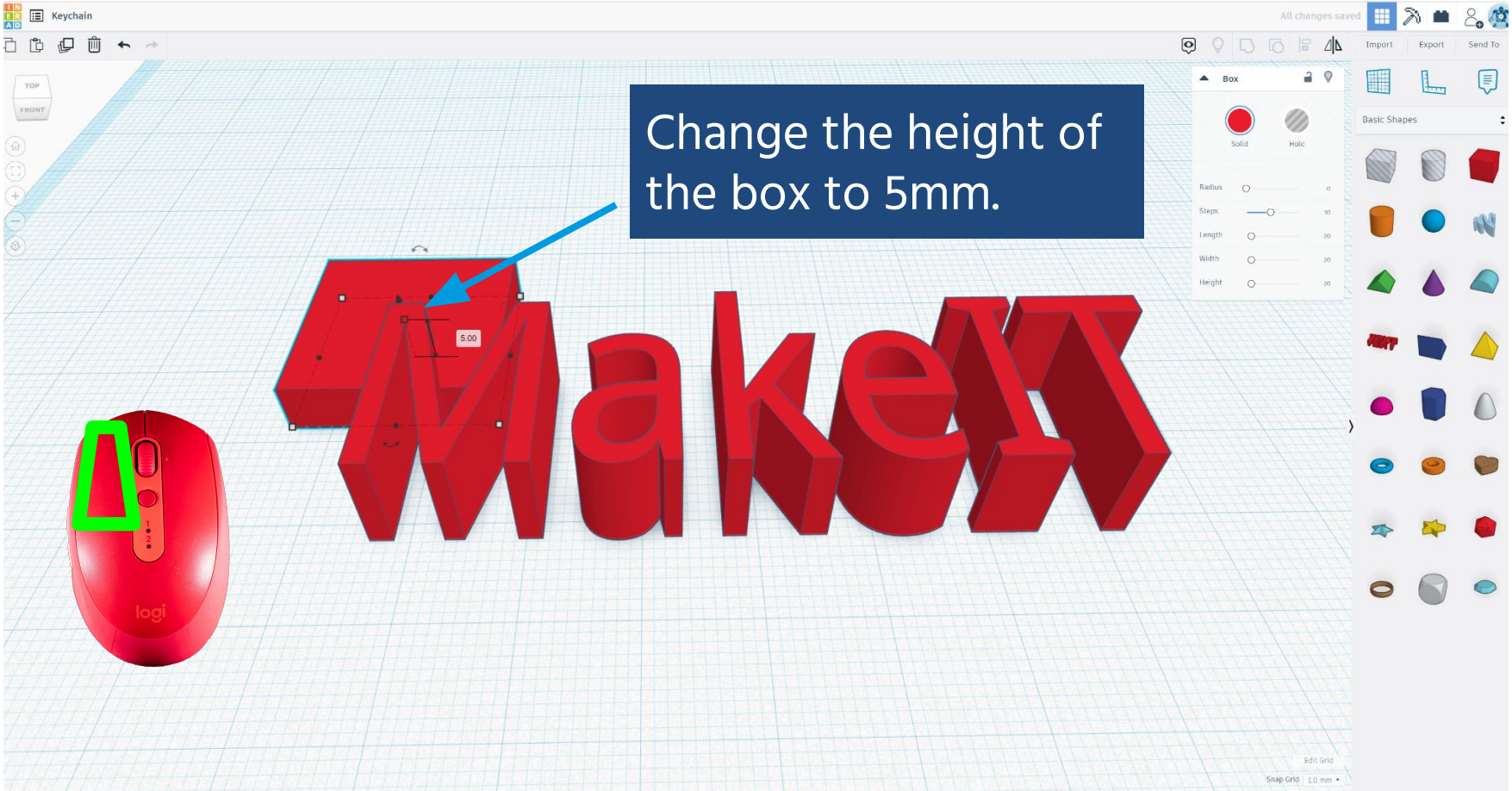
3D Design in Tinkercad

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

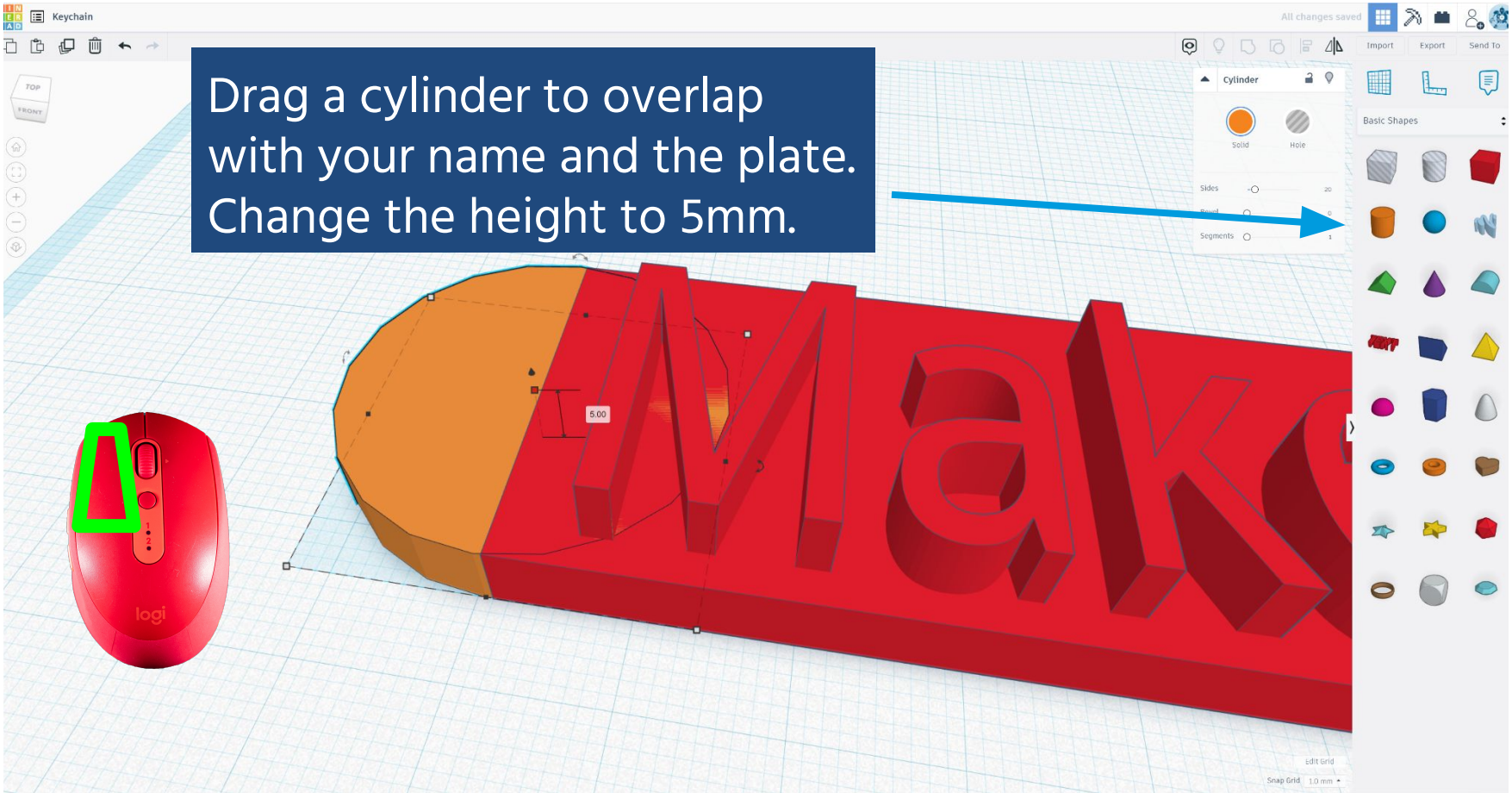


3D Design in Tinkercad

3. Create Name Tag 3D Model

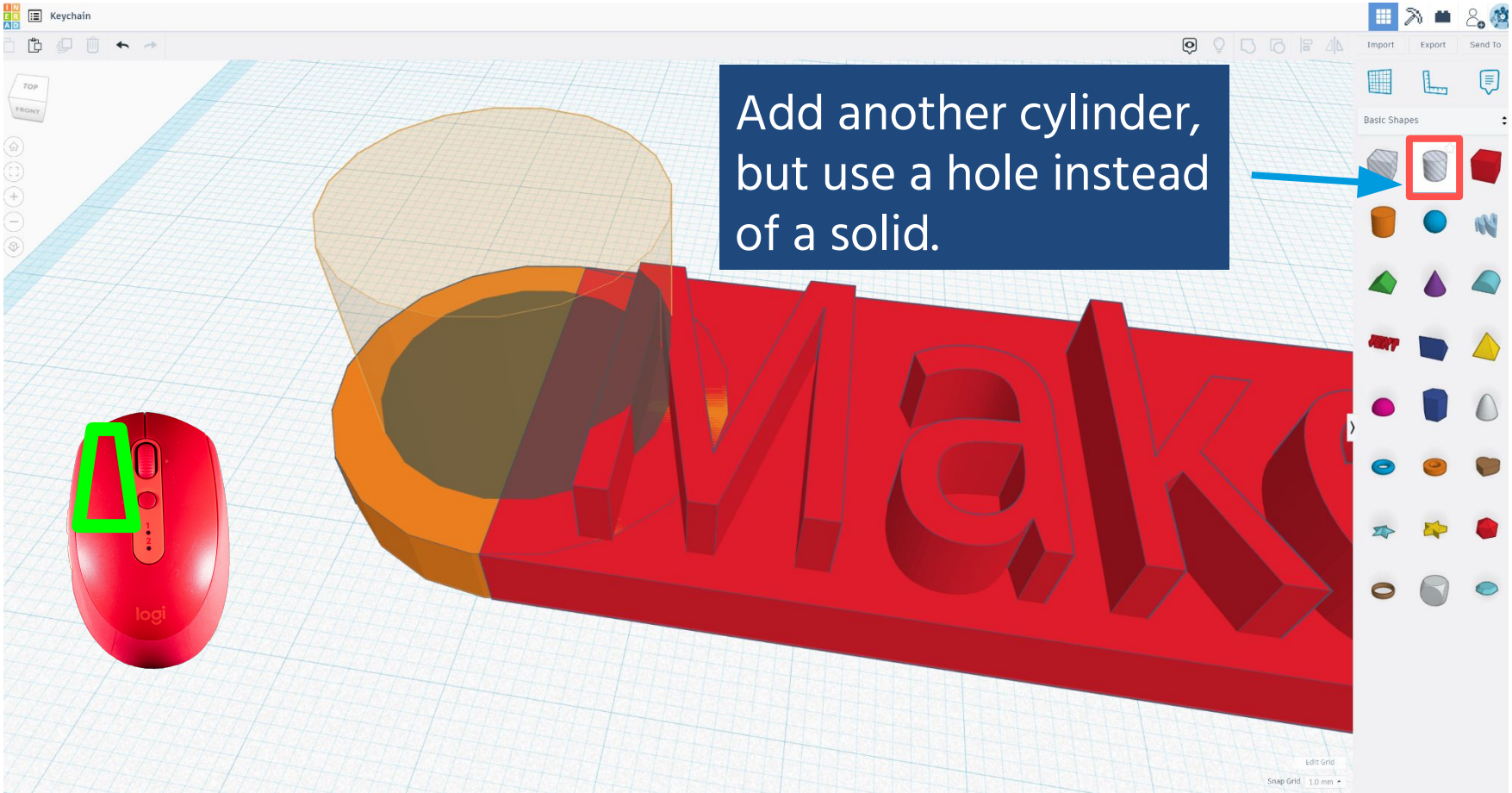
3D Design in Tinkercad

3. Create Name Tag 3D Model



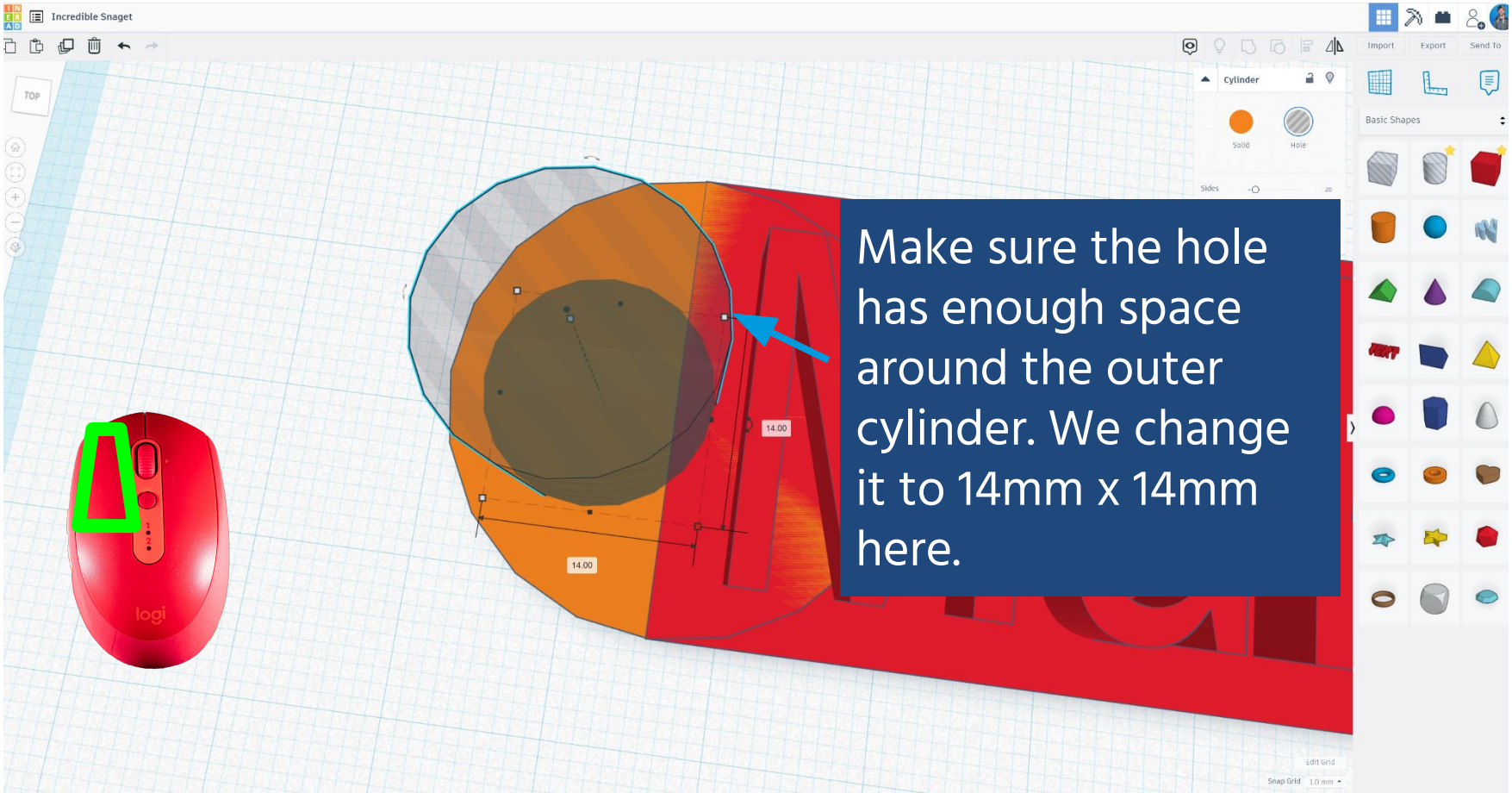
3D Design in Tinkercad

3. Create Name Tag 3D Model



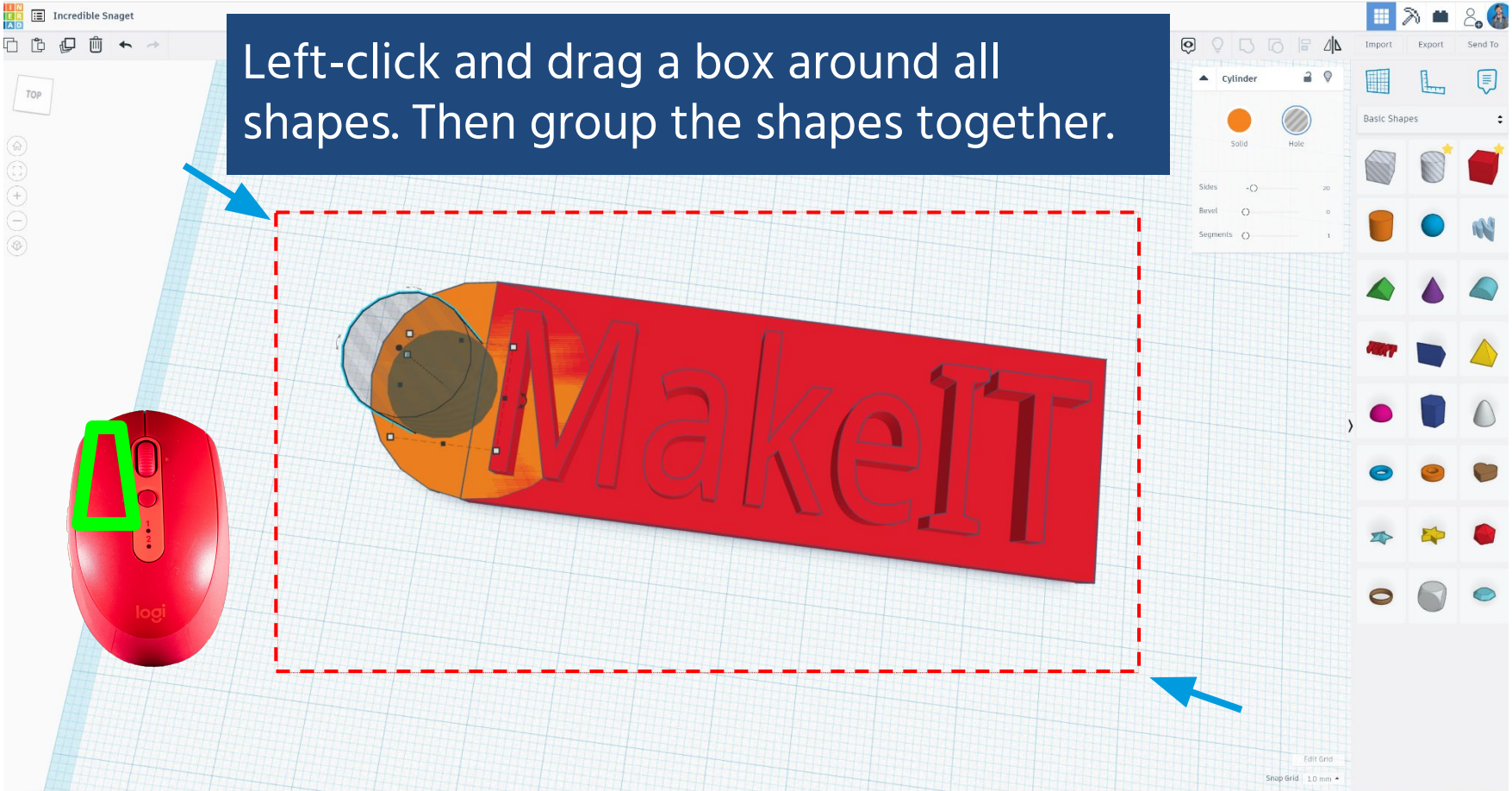
3D Design in Tinkercad

3. Create Name Tag 3D Model



3D Design in Tinkercad

3. Create Name Tag 3D Model

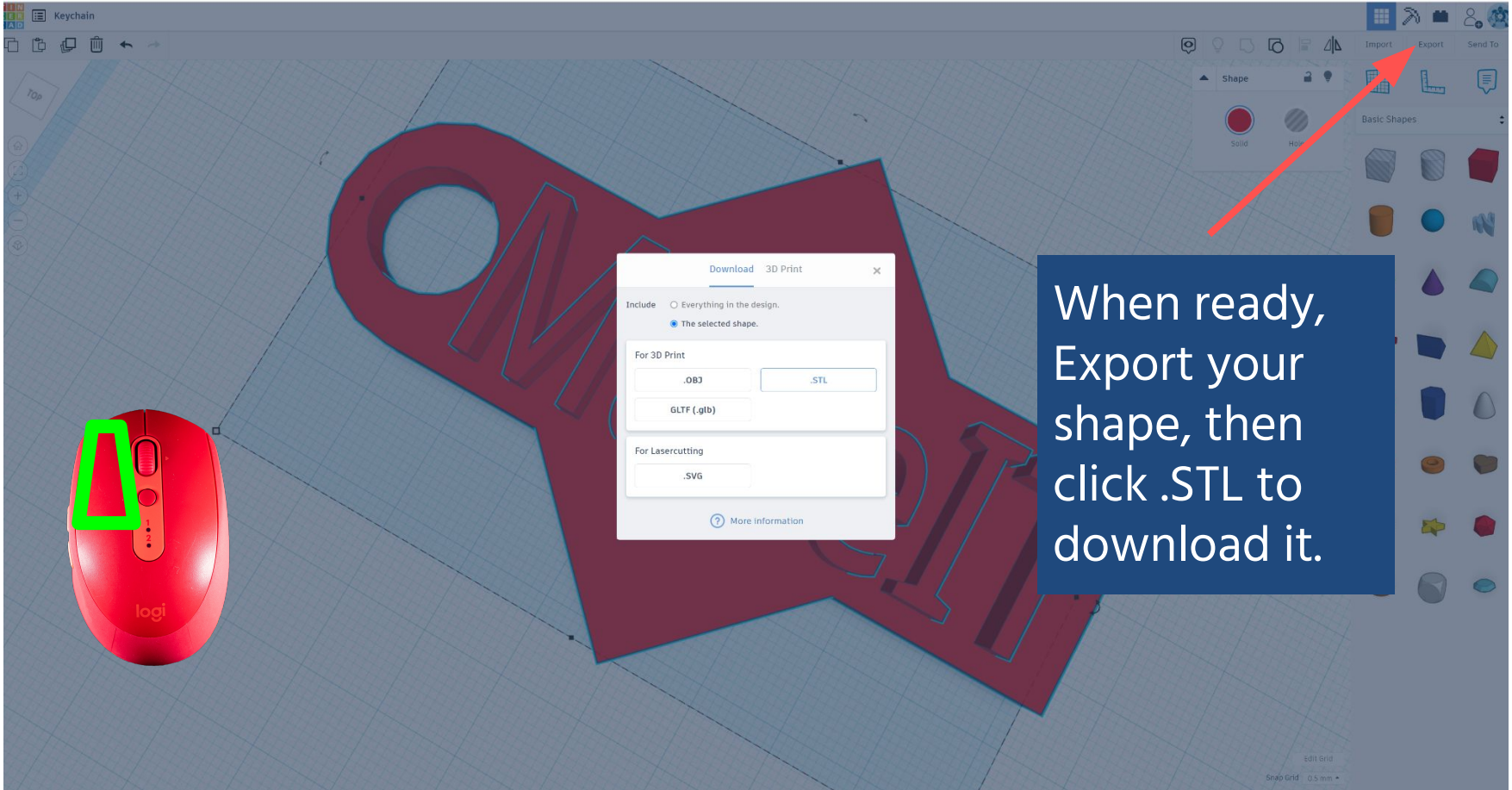


3D Design in Tinkercad

3. Create Name Tag 3D Model

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.

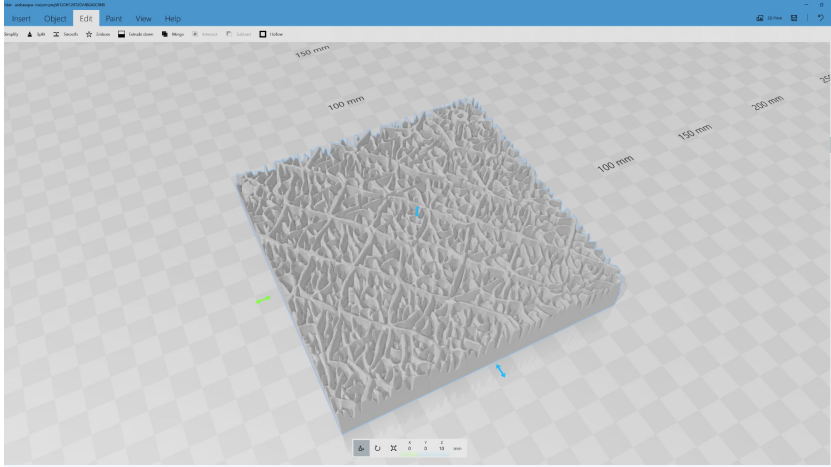
CLEAN FILES IN, CLEAN FILES OUT

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.



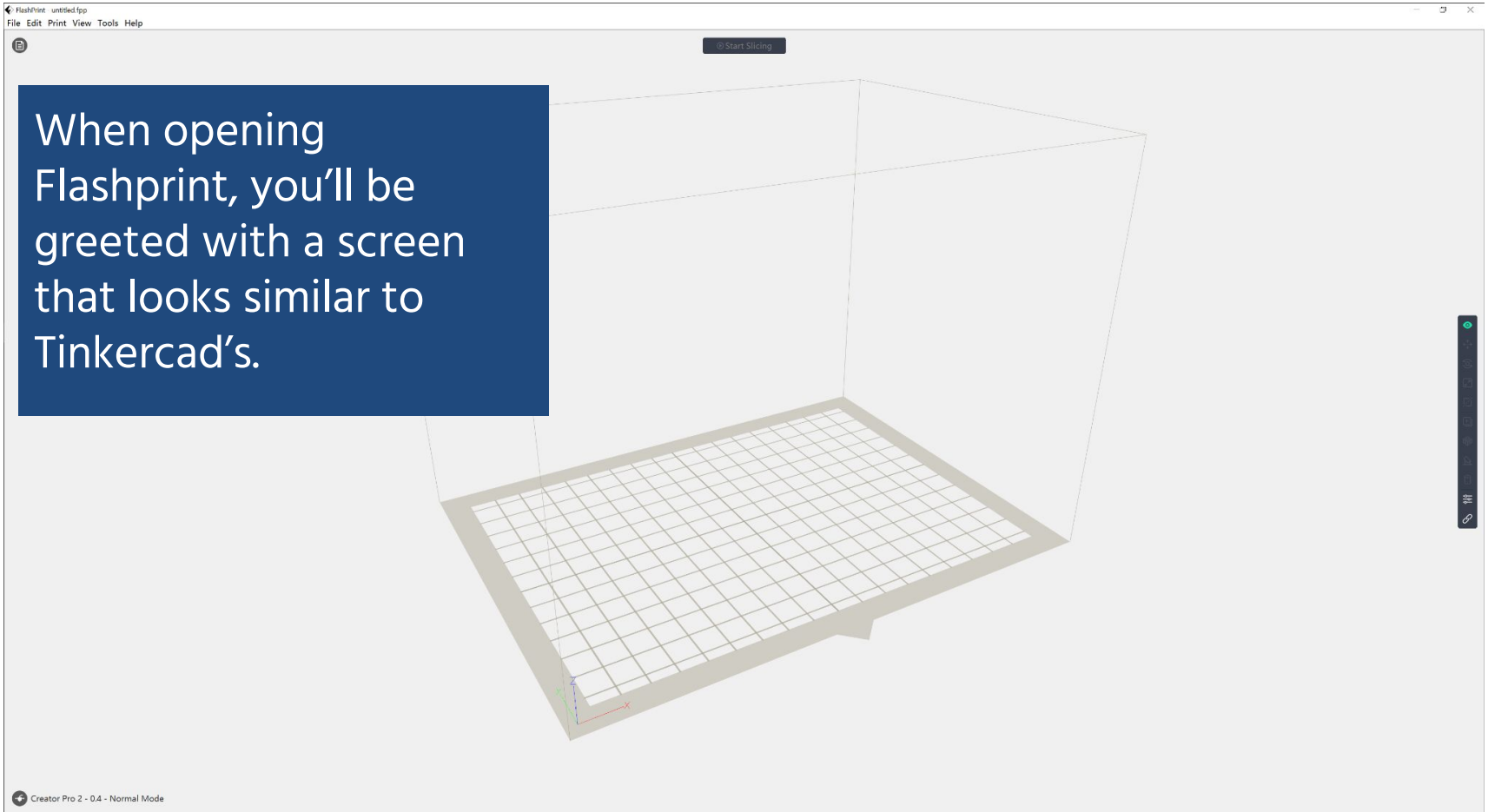
In 3D Builder, you can also do things such as simplify 3D models to make them easier to slice, smooth or emboss features on 3D models, or even hollow out shapes.

SLICING

Slicing - Flashprint 5

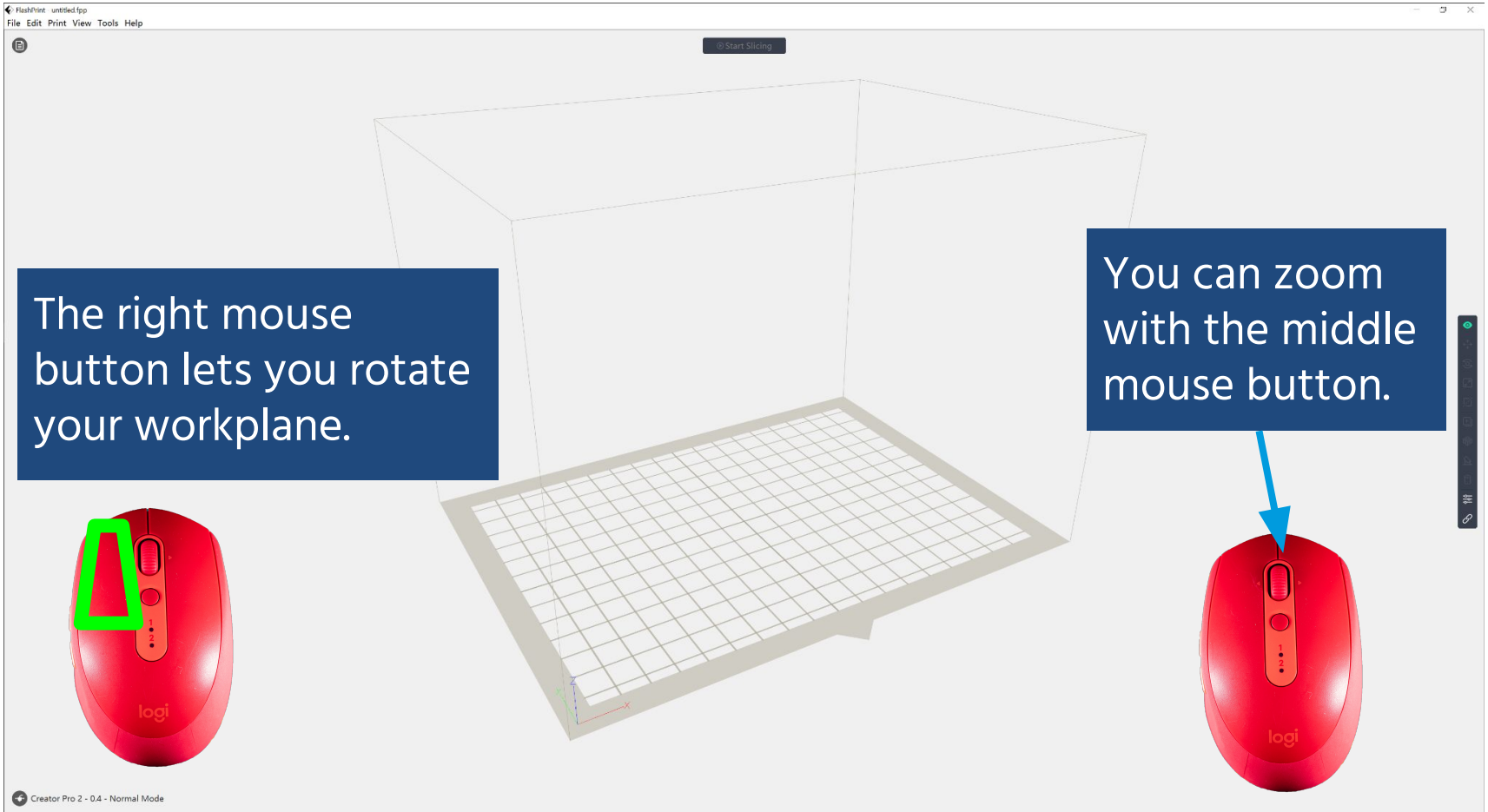
4. Slice Name Tag in Flashprint

When opening Flashprint, you'll be greeted with a screen that looks similar to Tinkercad's.



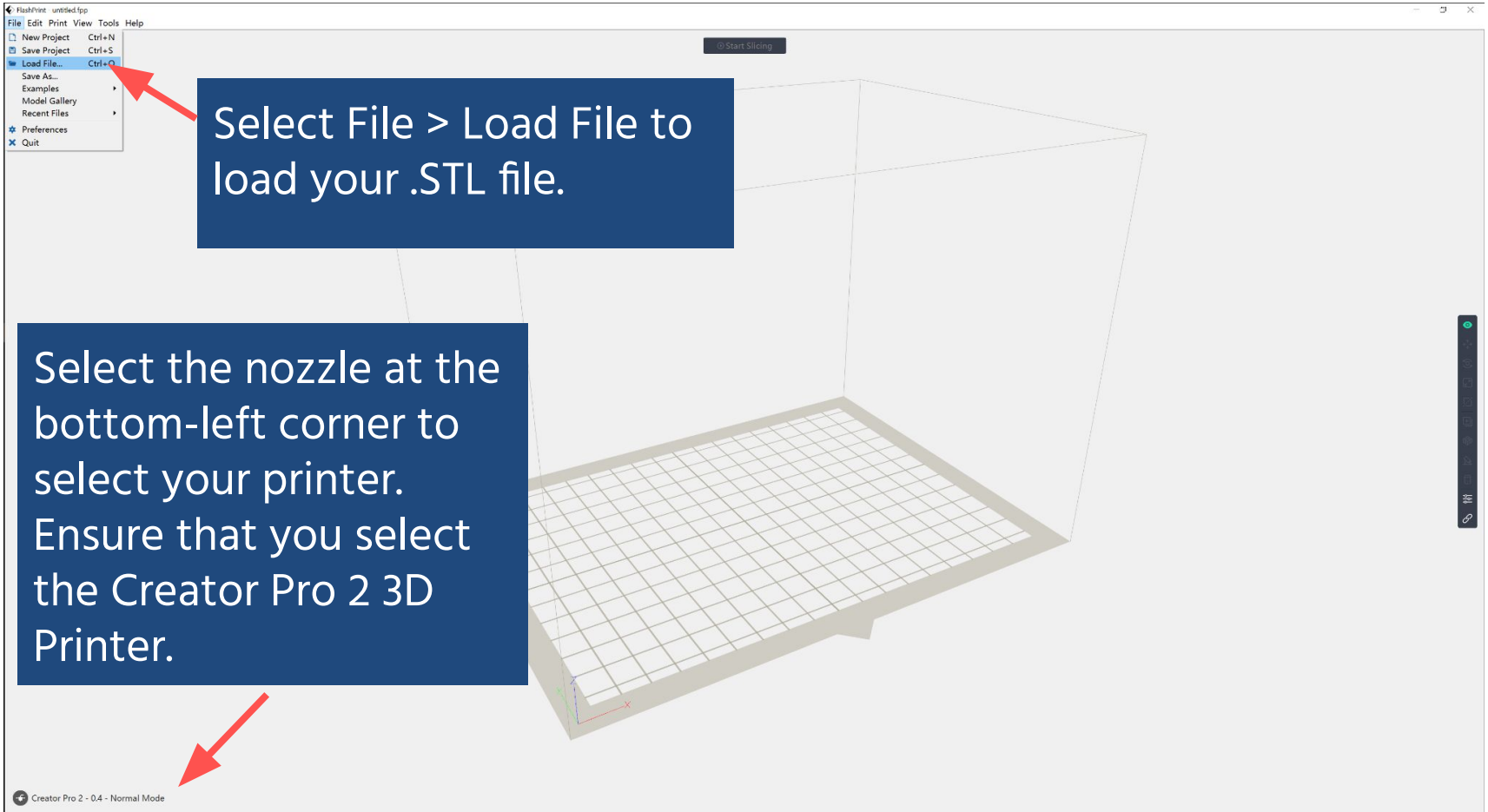
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



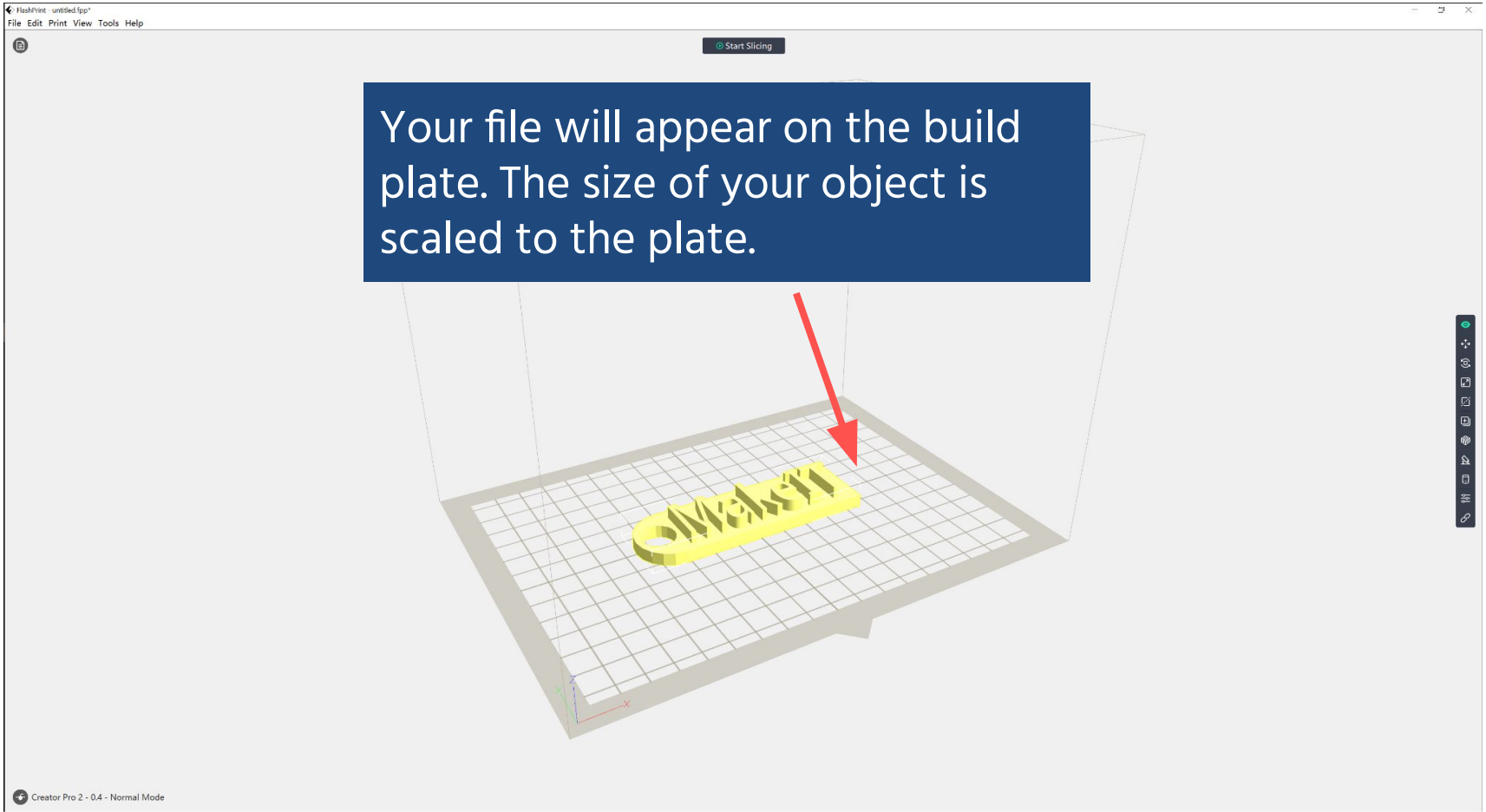
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



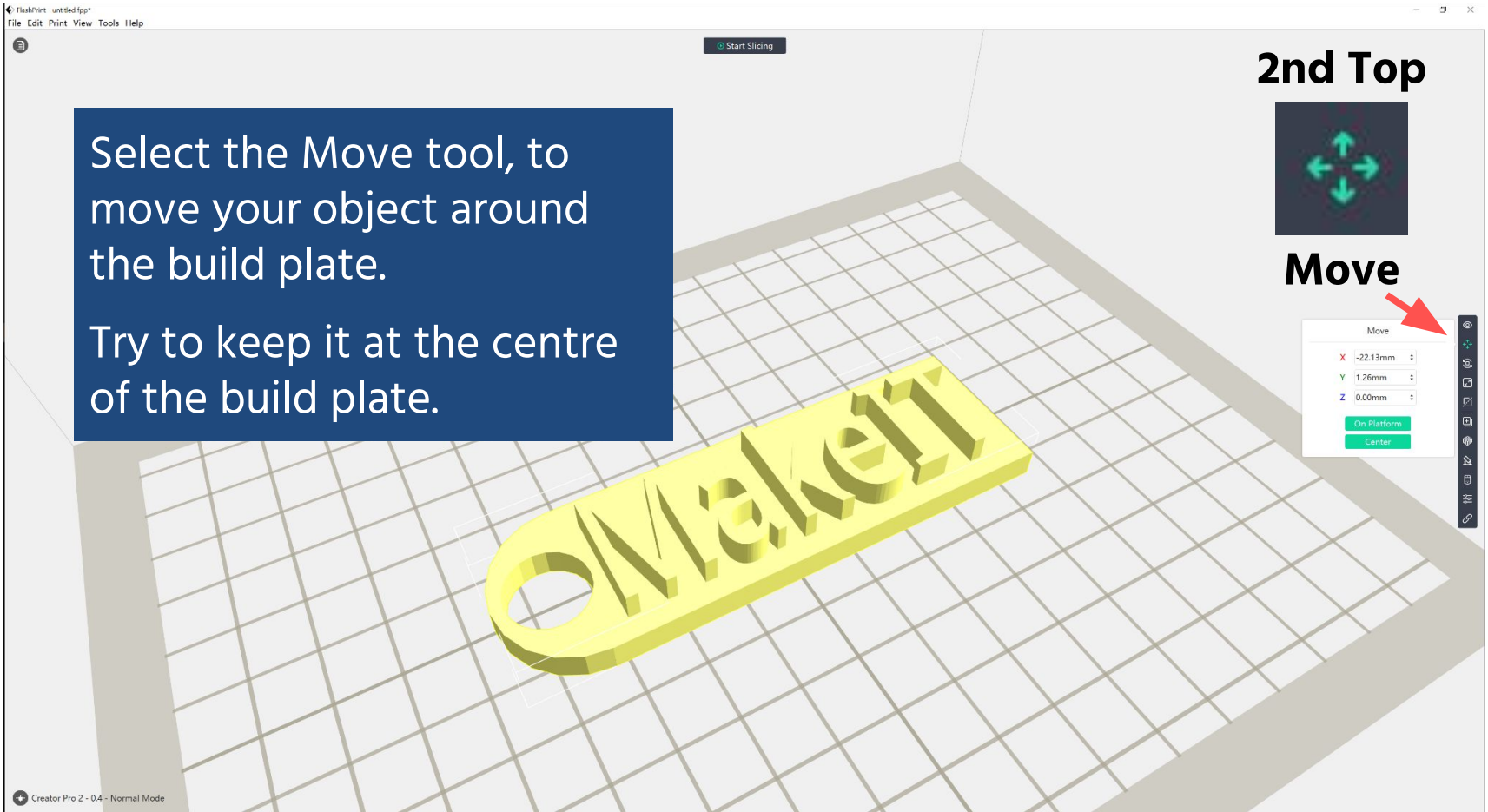
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

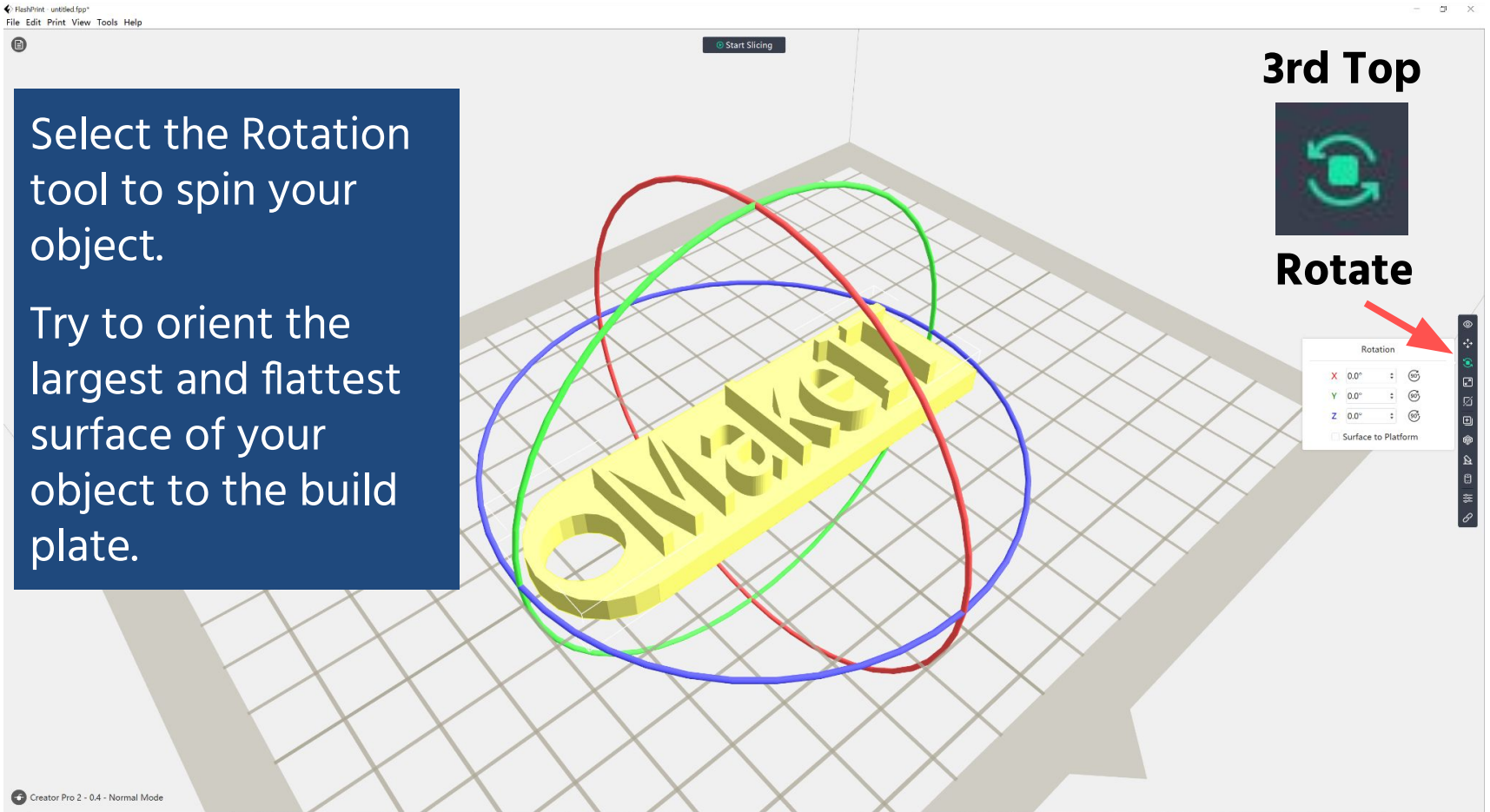


Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

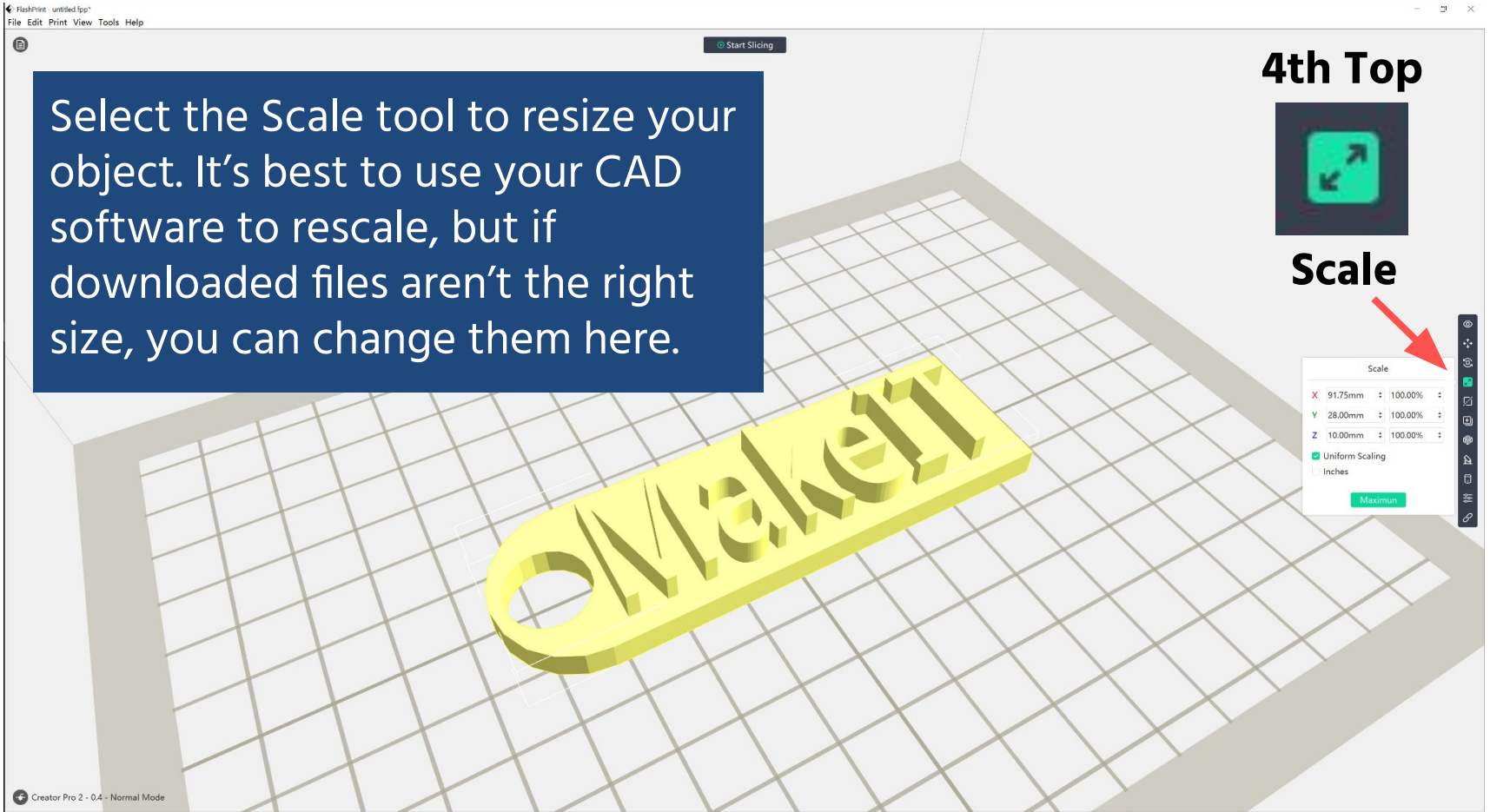
Select the Rotation tool to spin your object.

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



Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

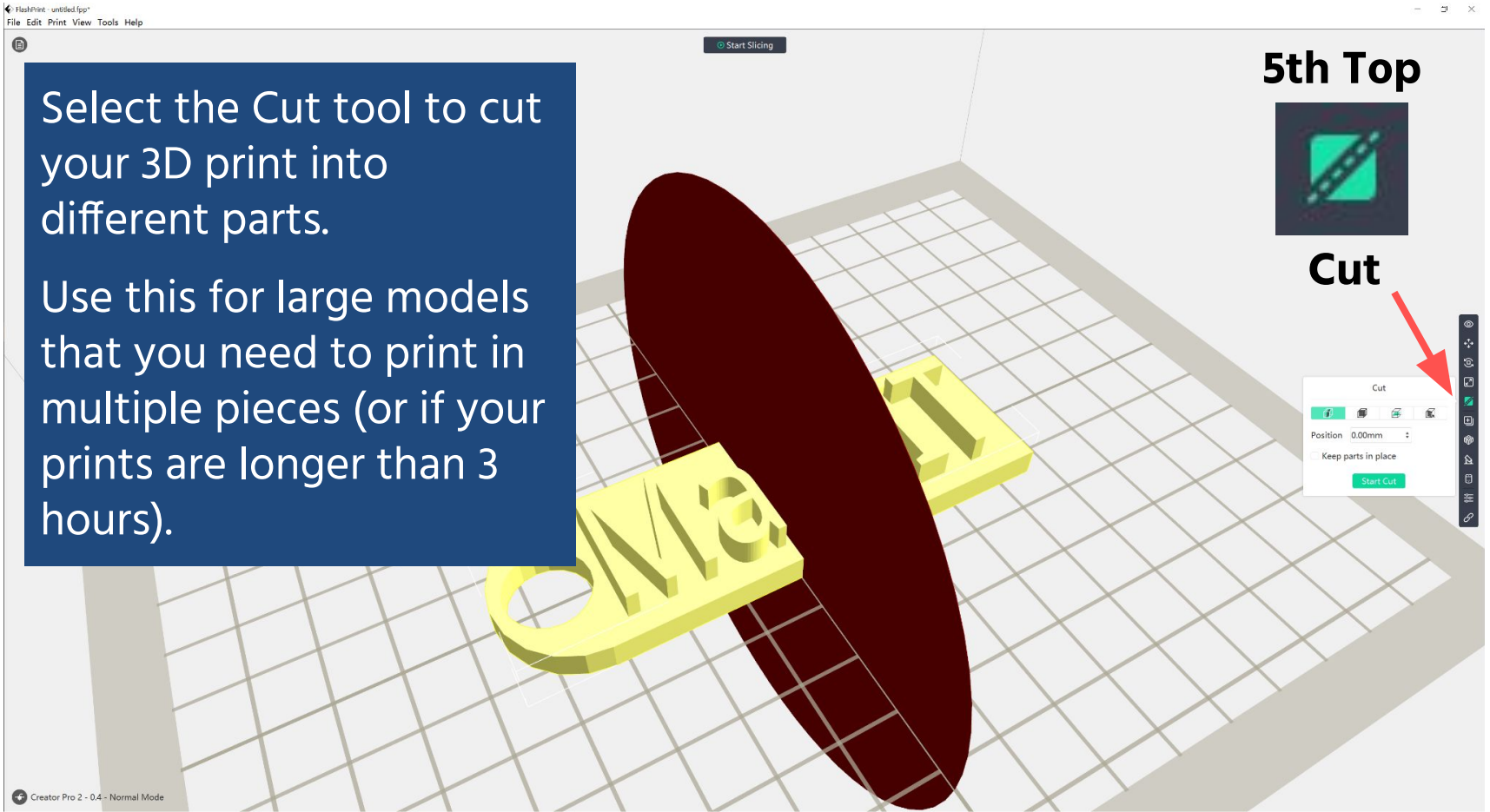


Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

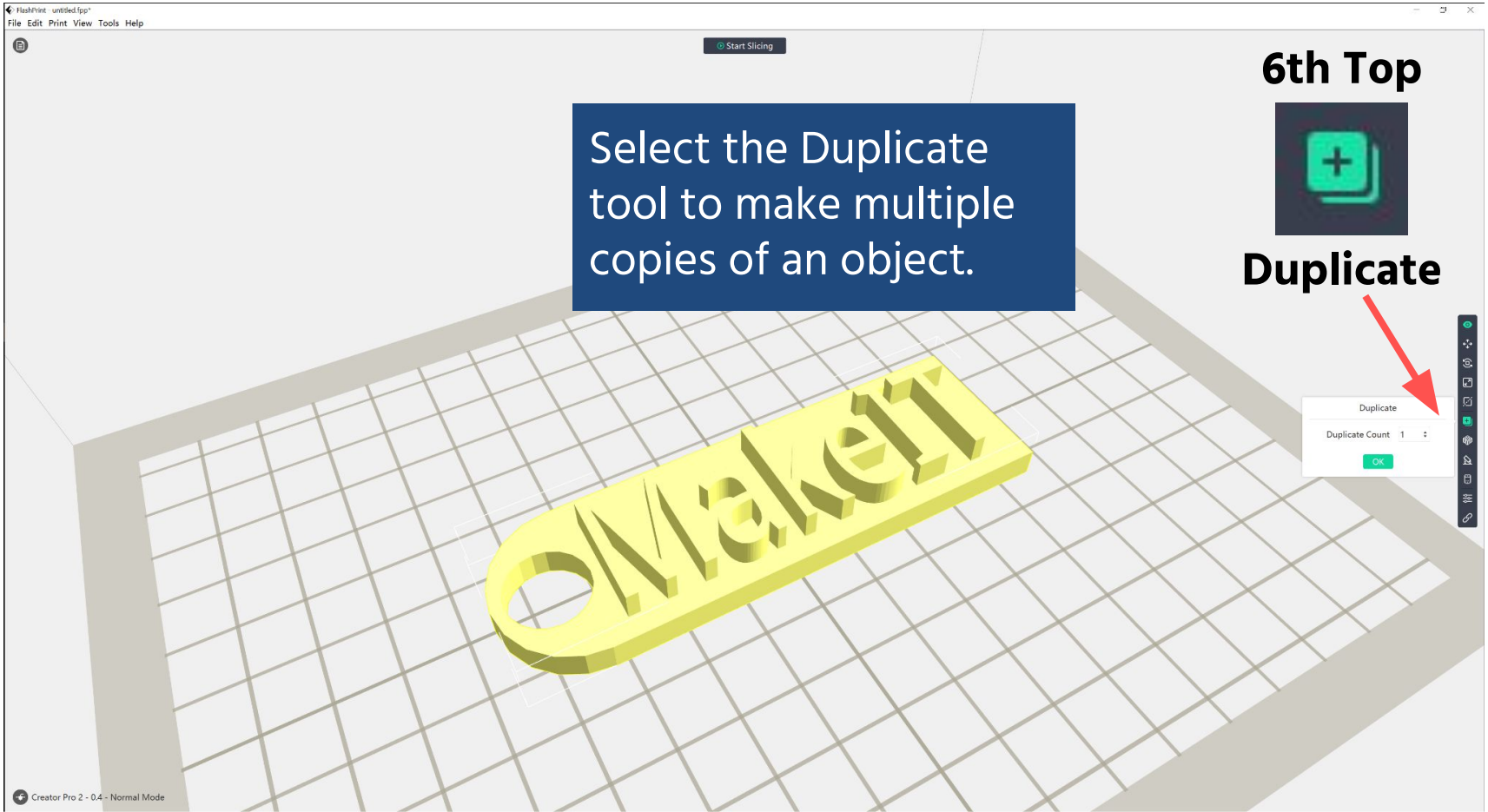
Select the Cut tool to cut your 3D print into different parts.

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



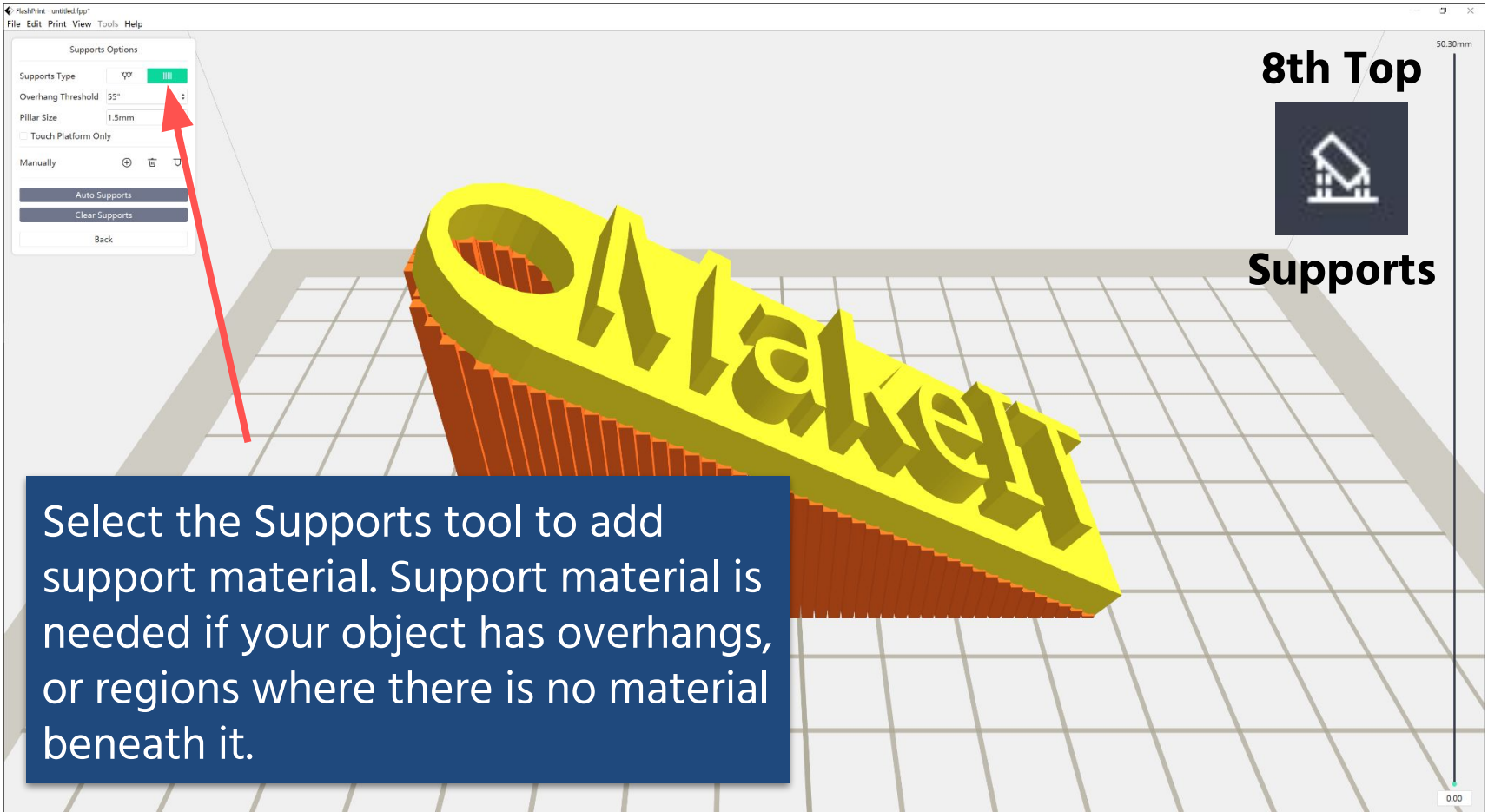
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



Slicing - Flashprint 5

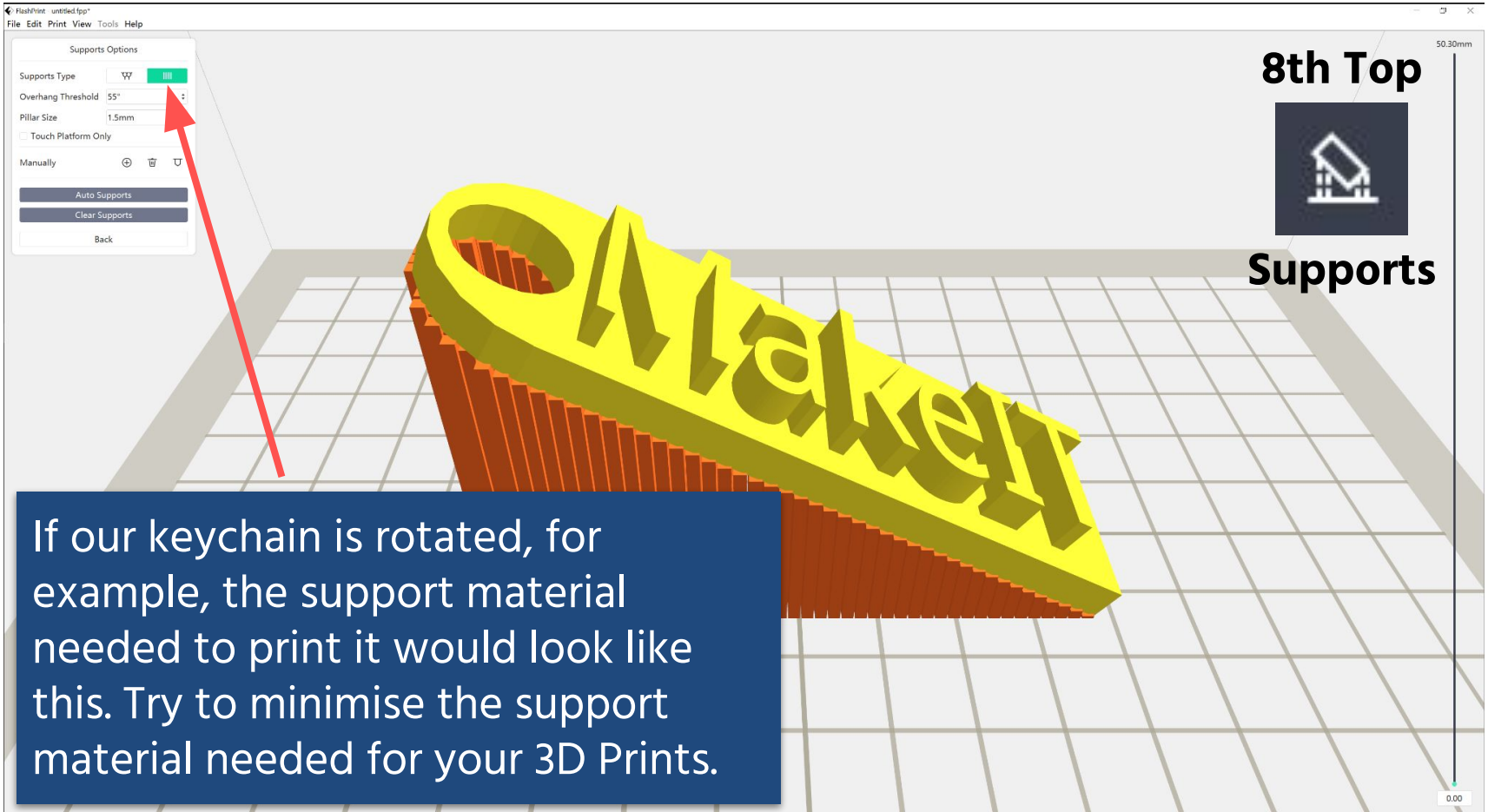
4. Slice Name Tag in Flashprint



Select the Supports tool to add support material. Support material is needed if your object has overhangs, or regions where there is no material beneath it.

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



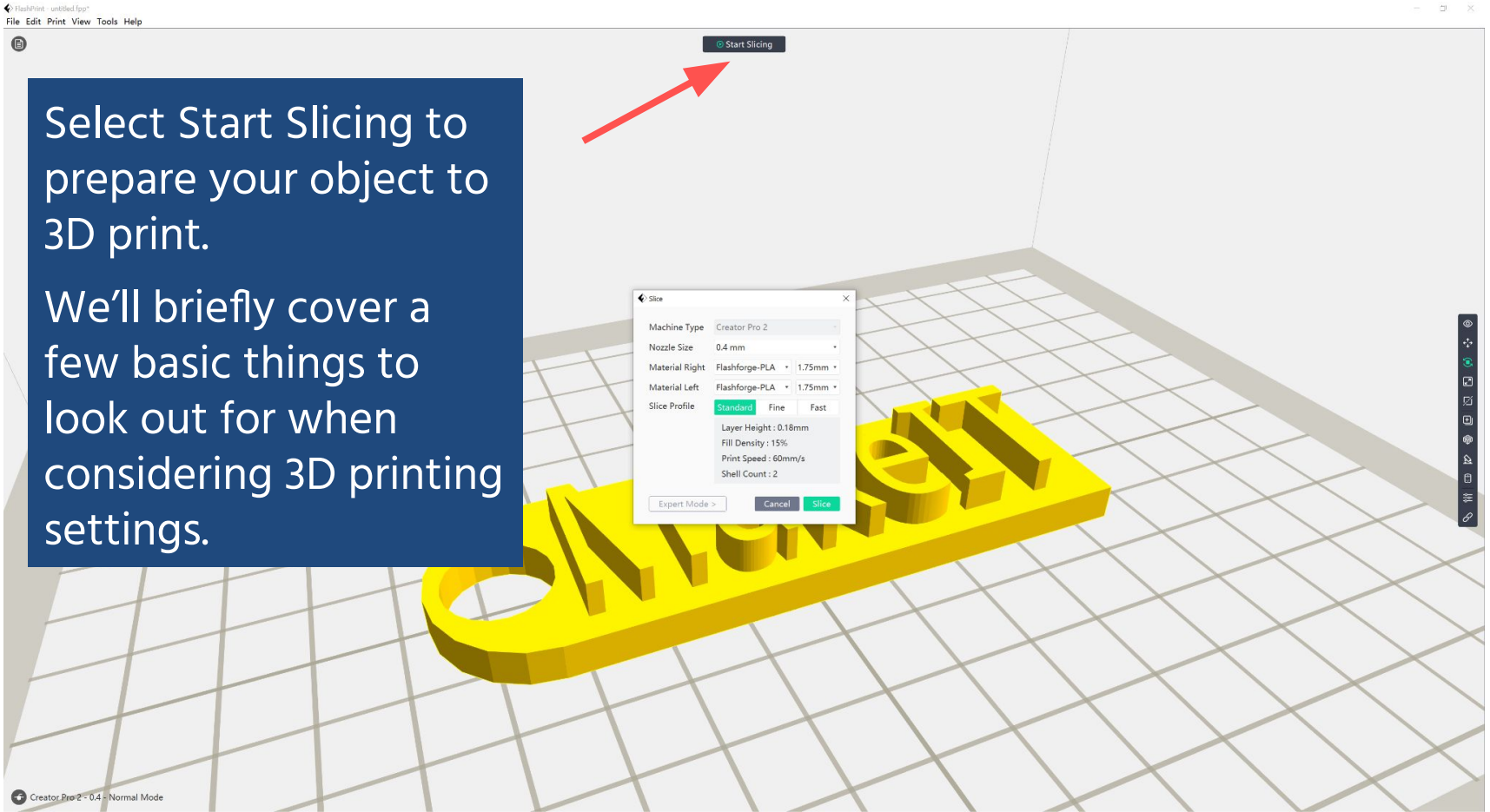
If our keychain is rotated, for example, the support material needed to print it would look like this. Try to minimise the support material needed for your 3D Prints.

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

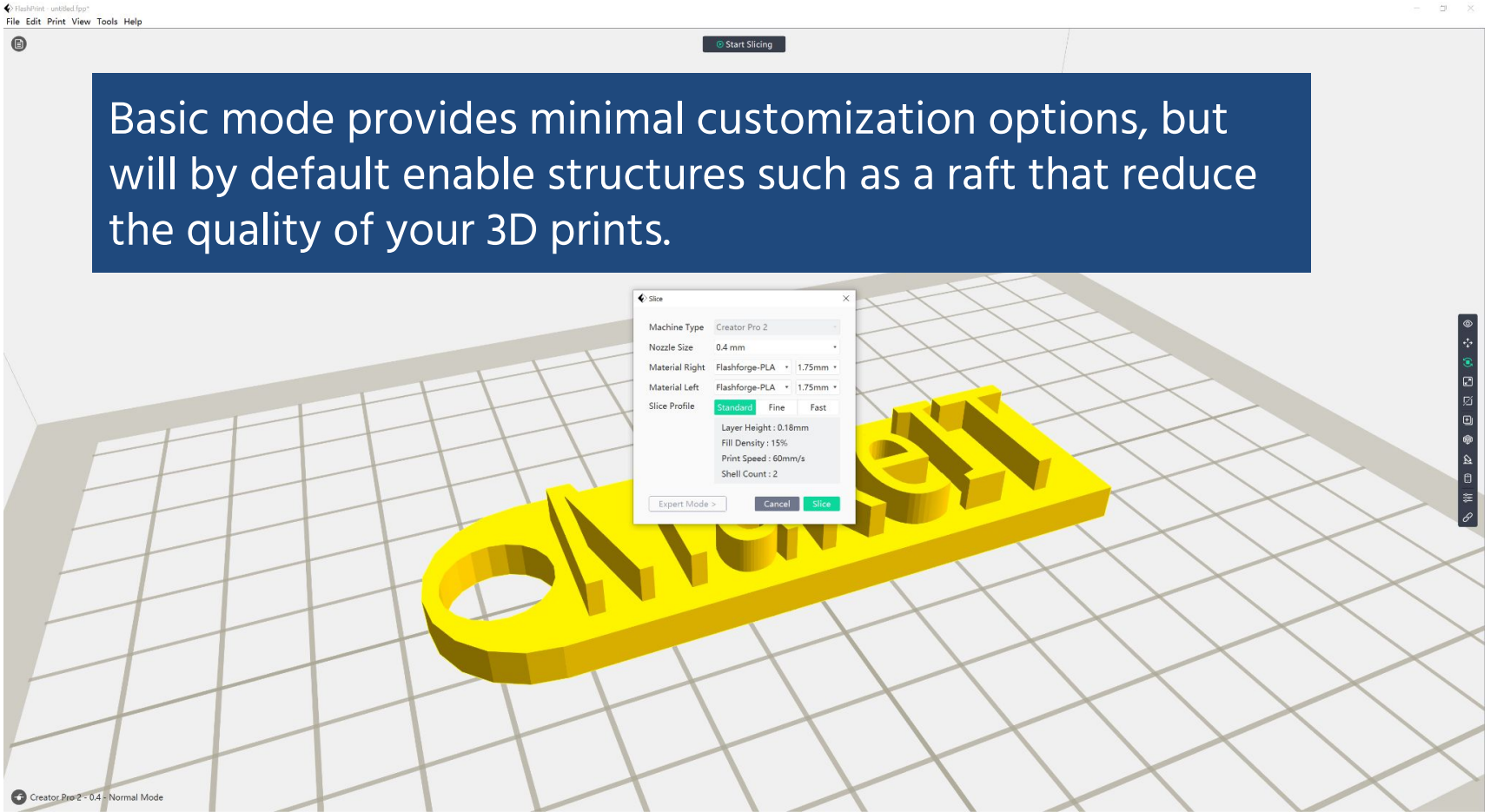
Select Start Slicing to prepare your object to 3D print.

We'll briefly cover a few basic things to look out for when considering 3D printing settings.



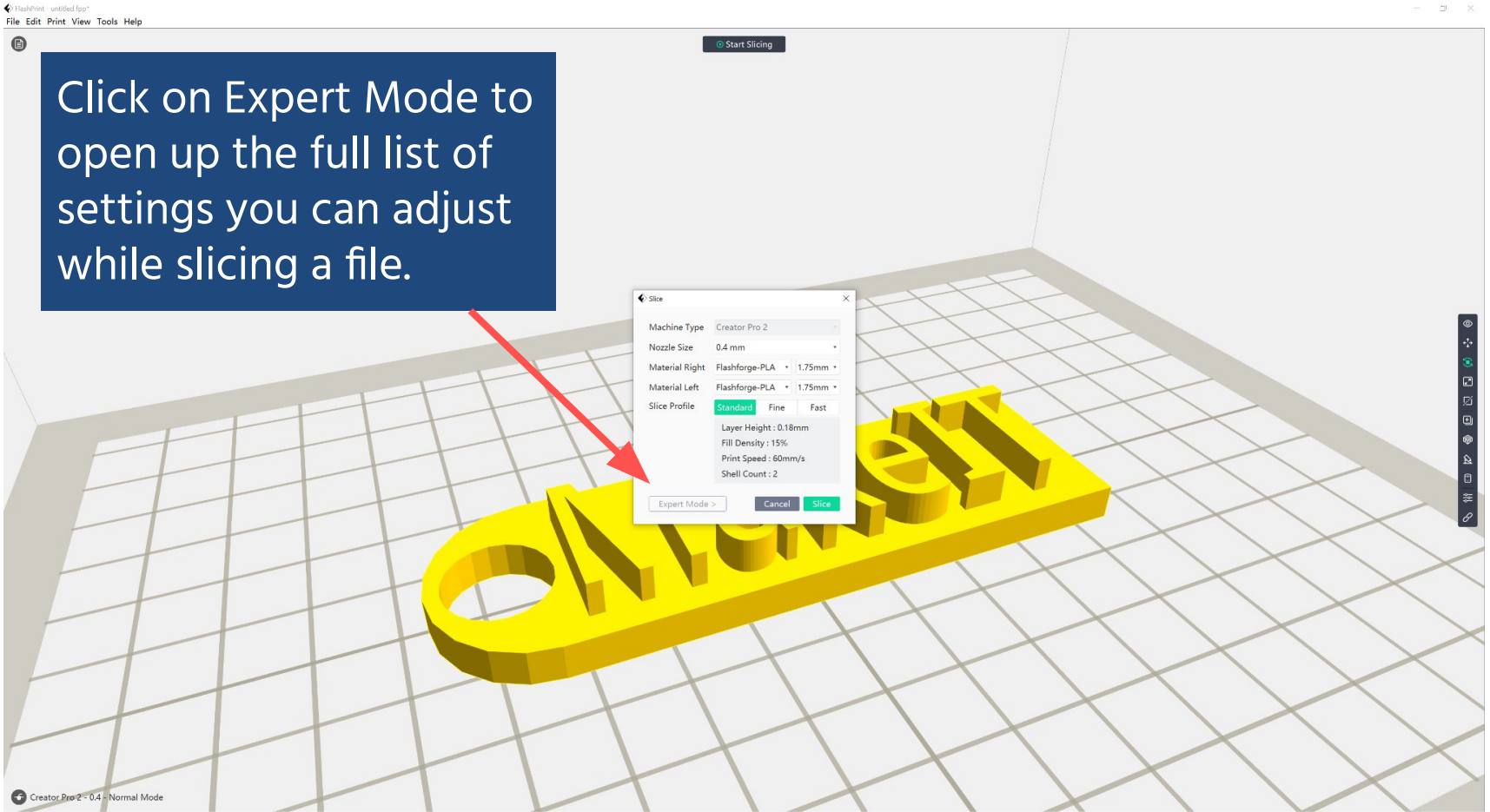
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



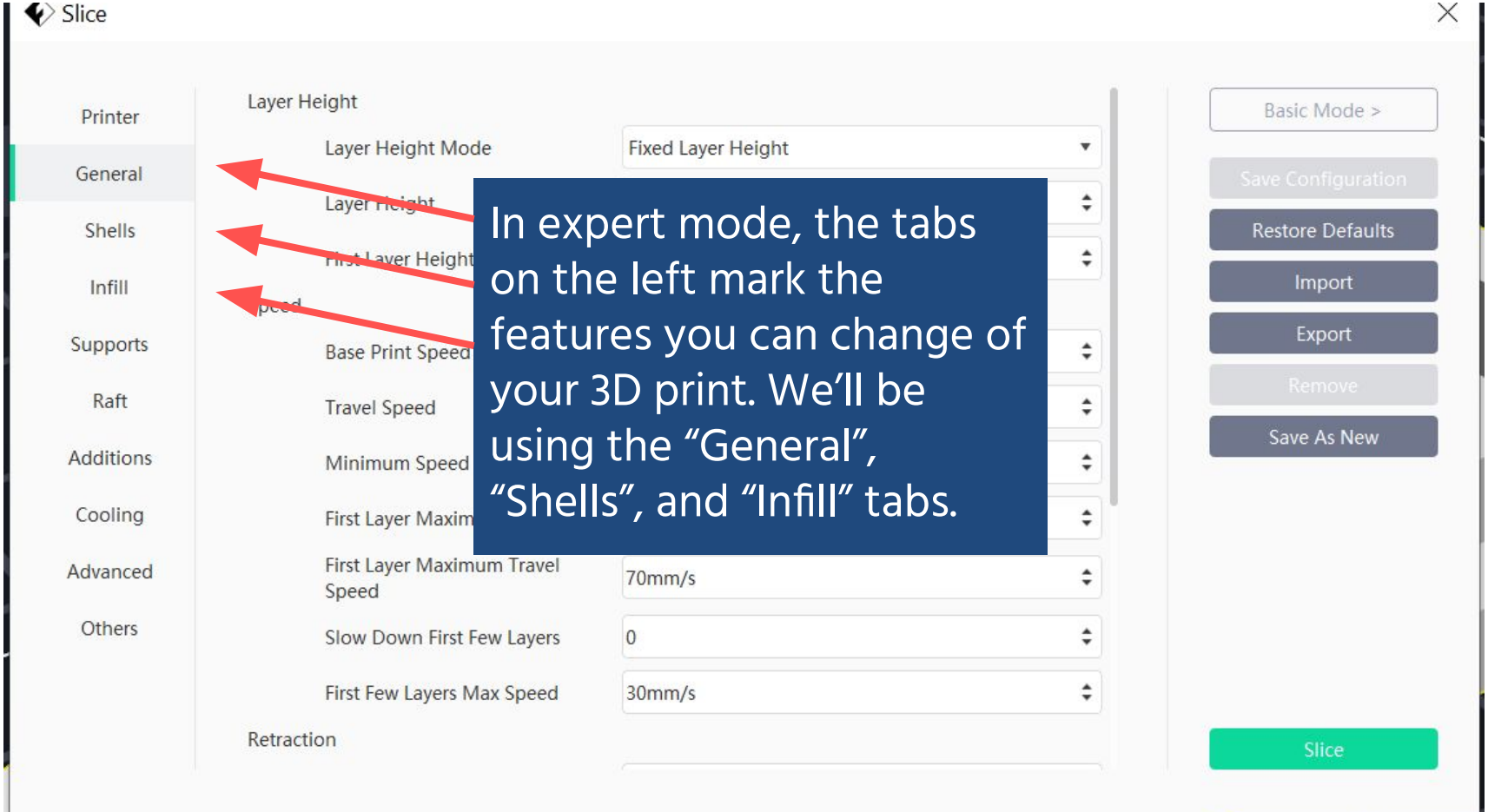
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



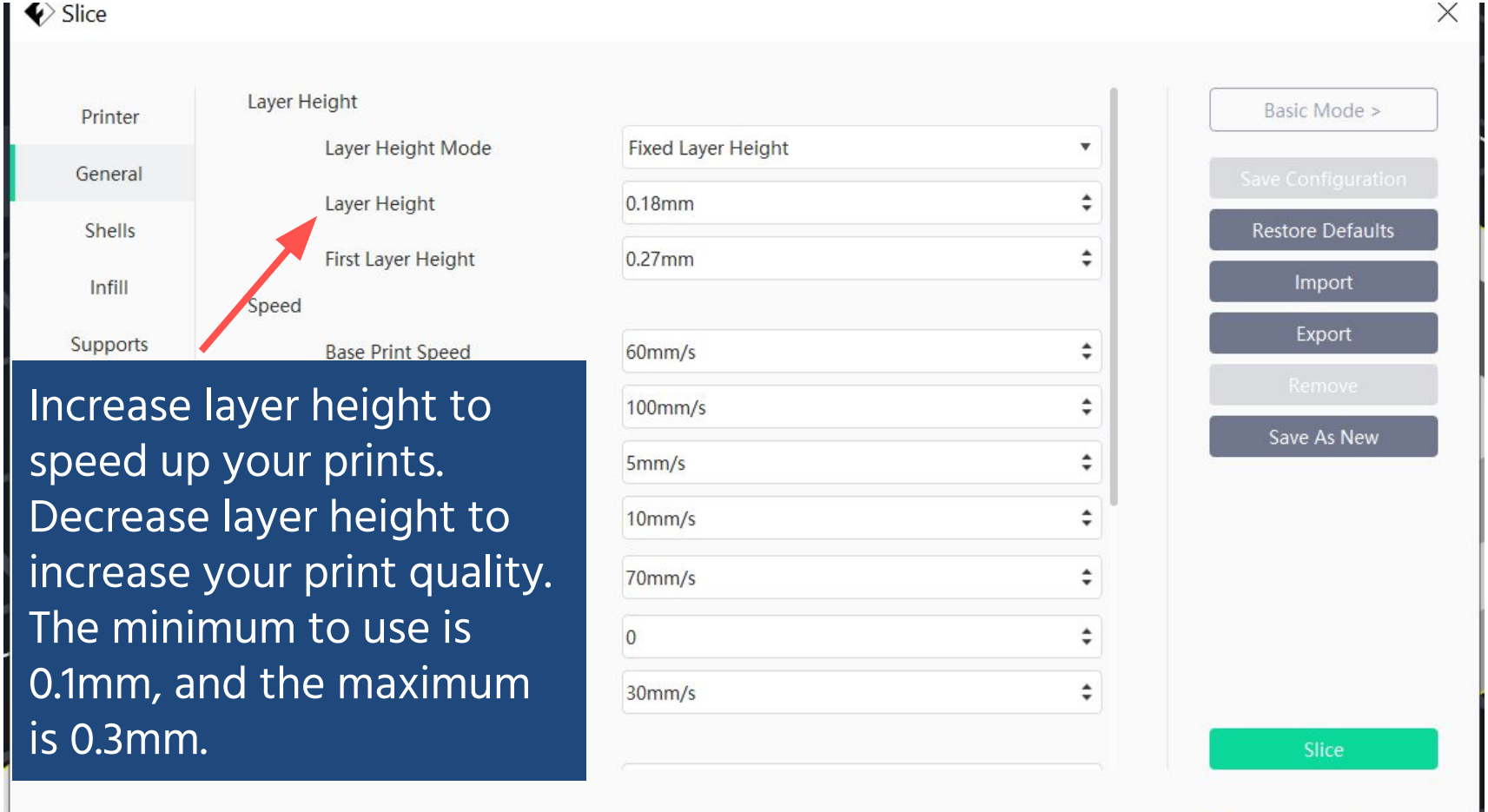
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



Slicing - Flashprint 5

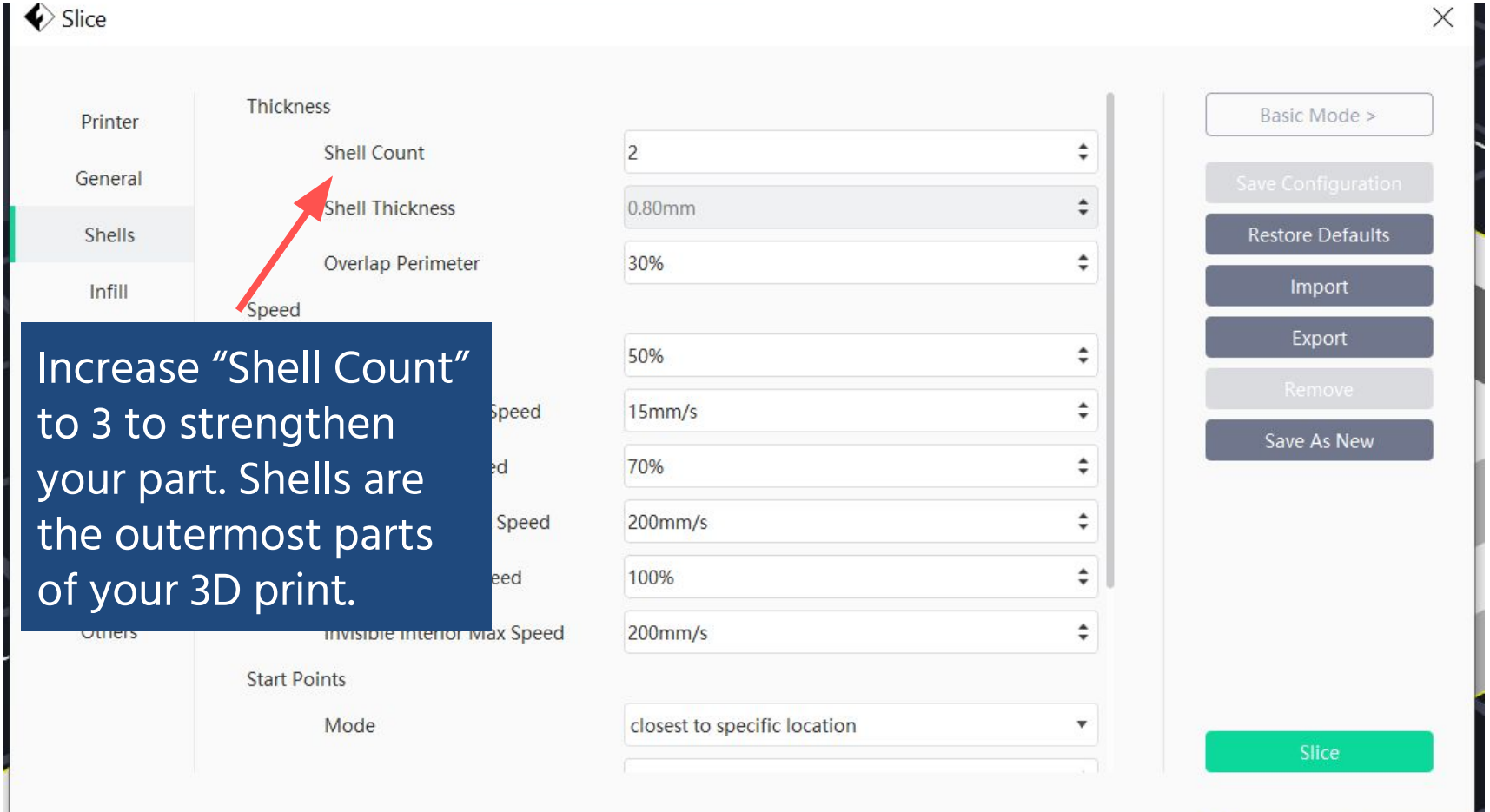
4. Slice Name Tag in Flashprint



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.

Slicing - Flashprint 5

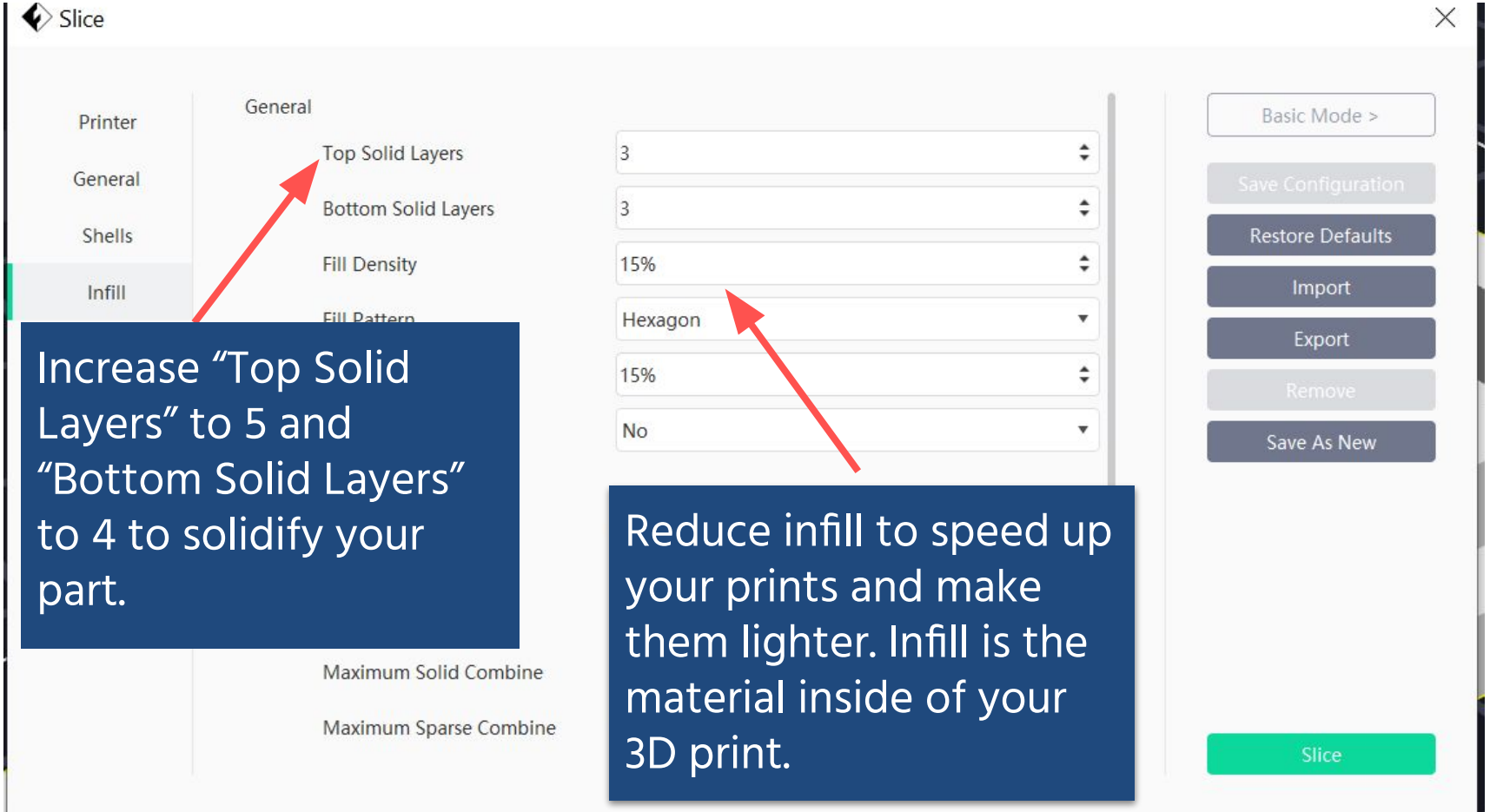
4. Slice Name Tag in Flashprint



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

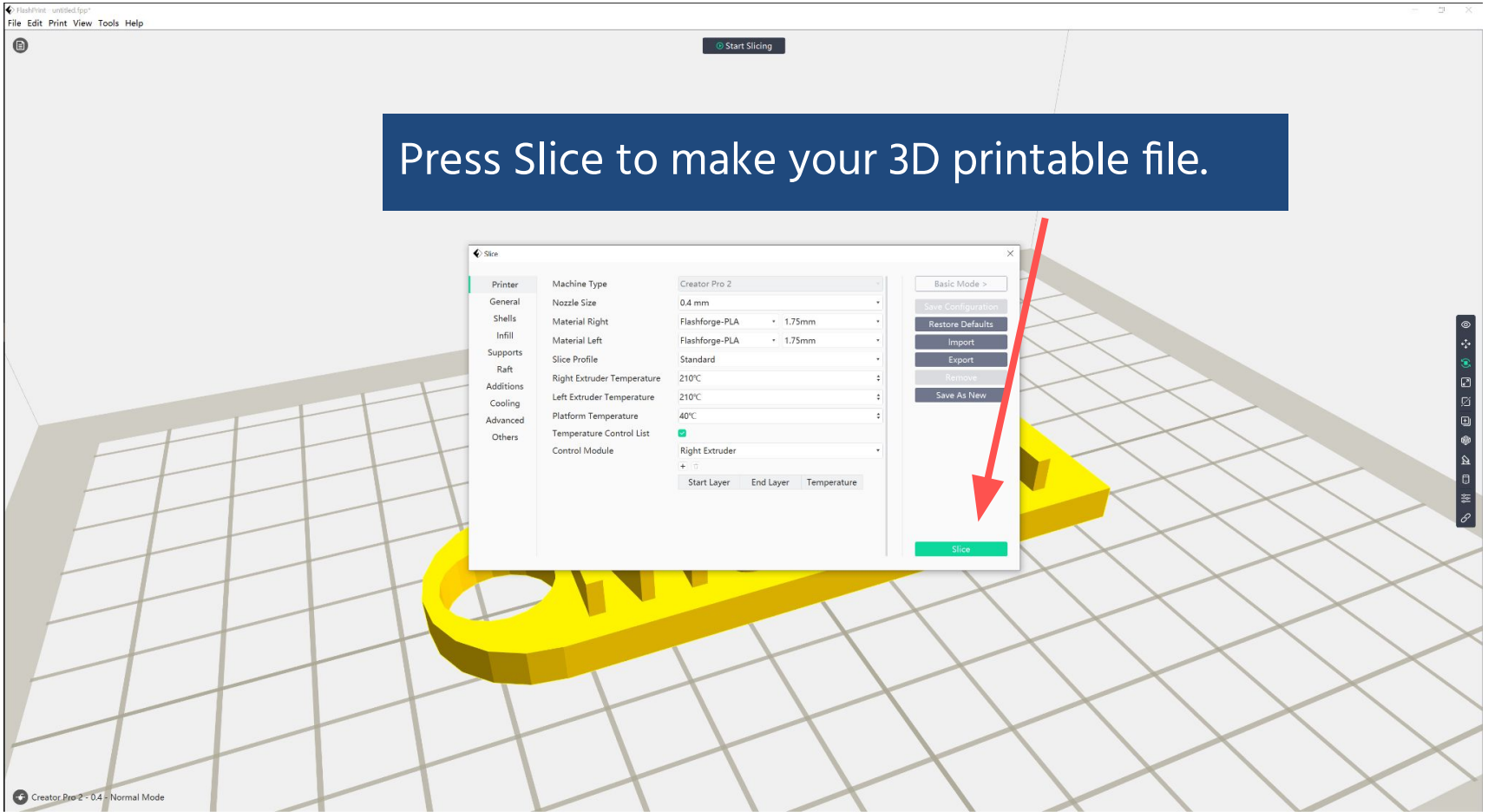
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



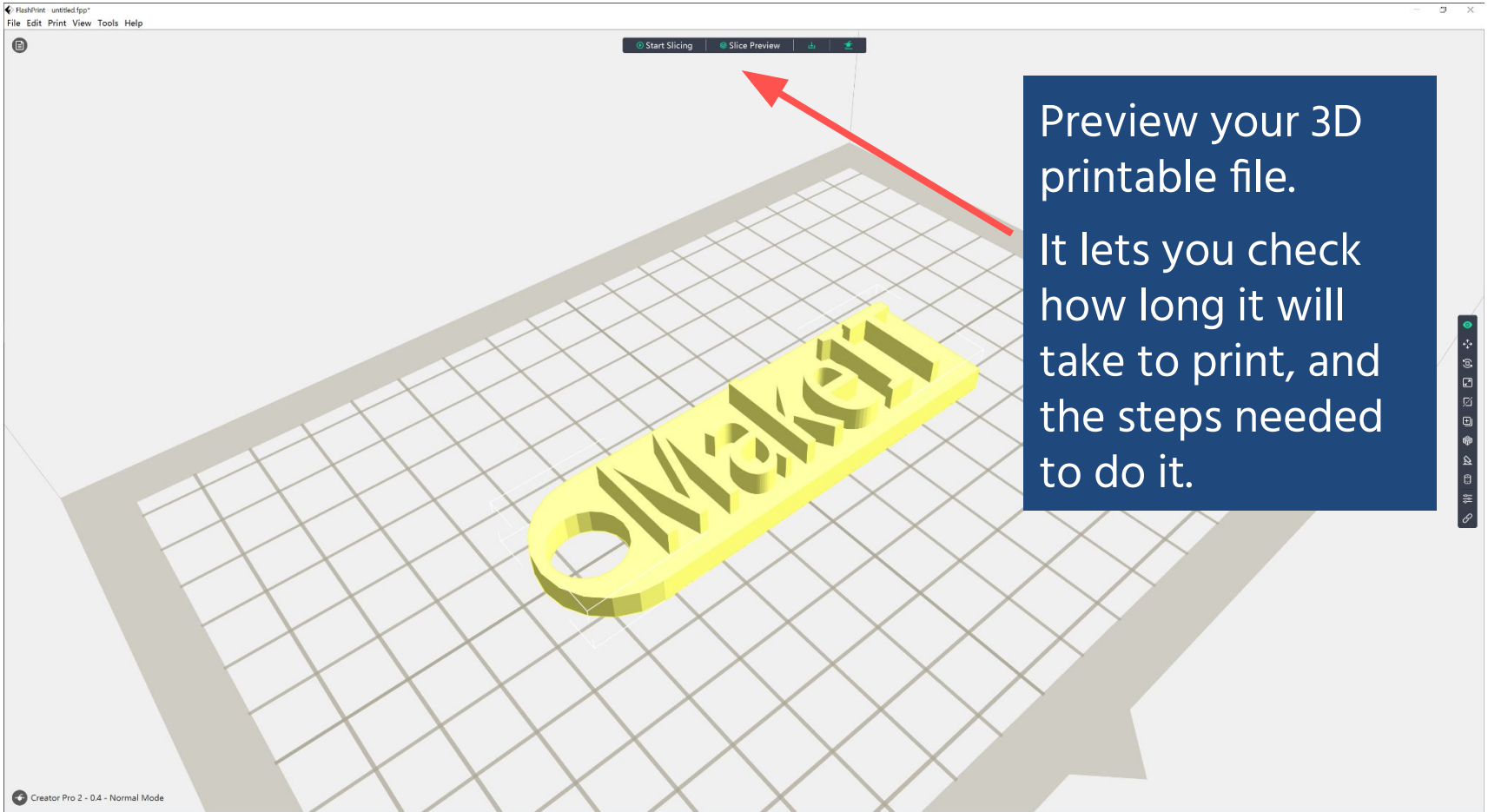
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



Preview your 3D printable file.

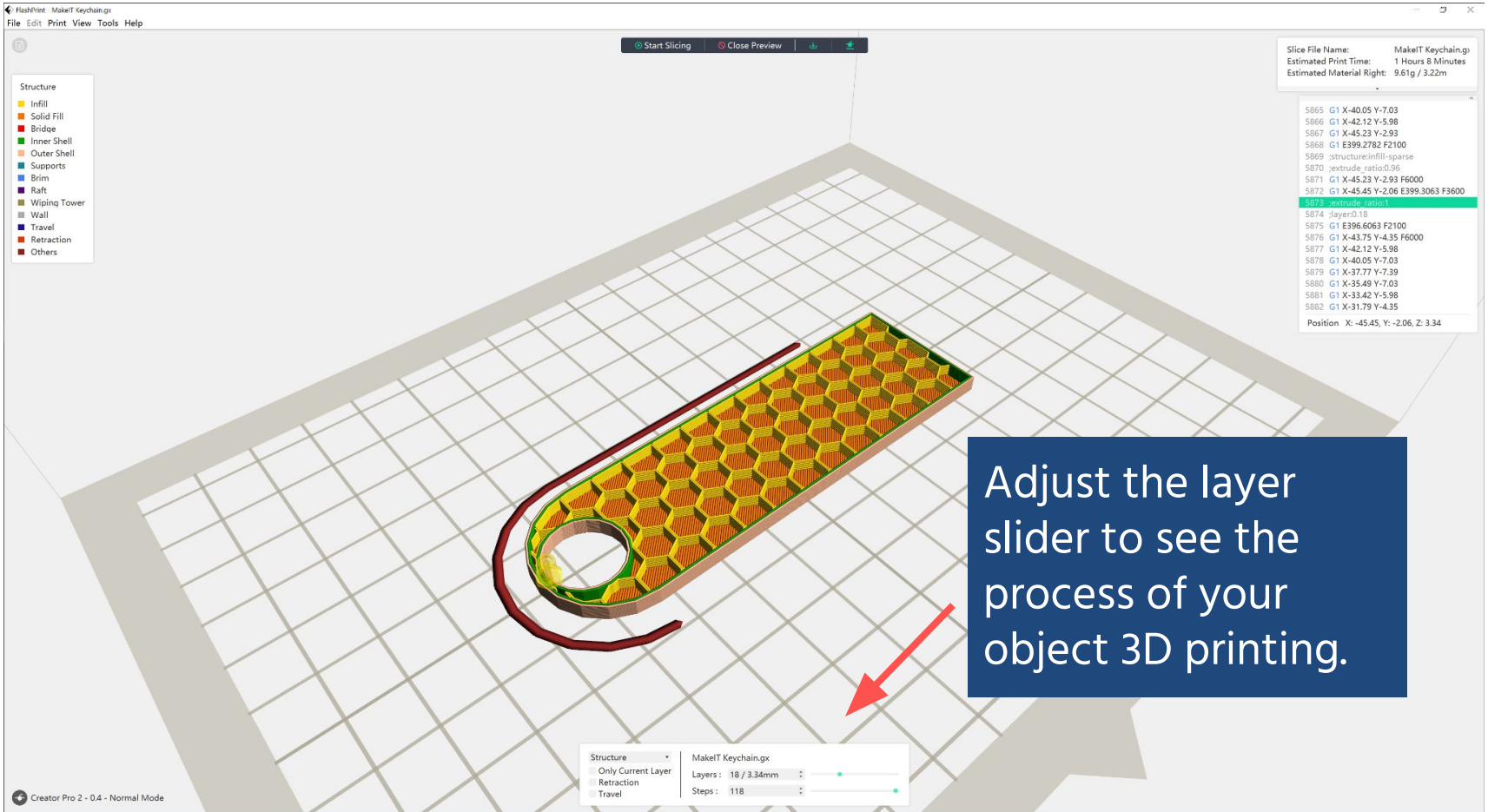
It lets you check how long it will take to print, and the steps needed to do it.

Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

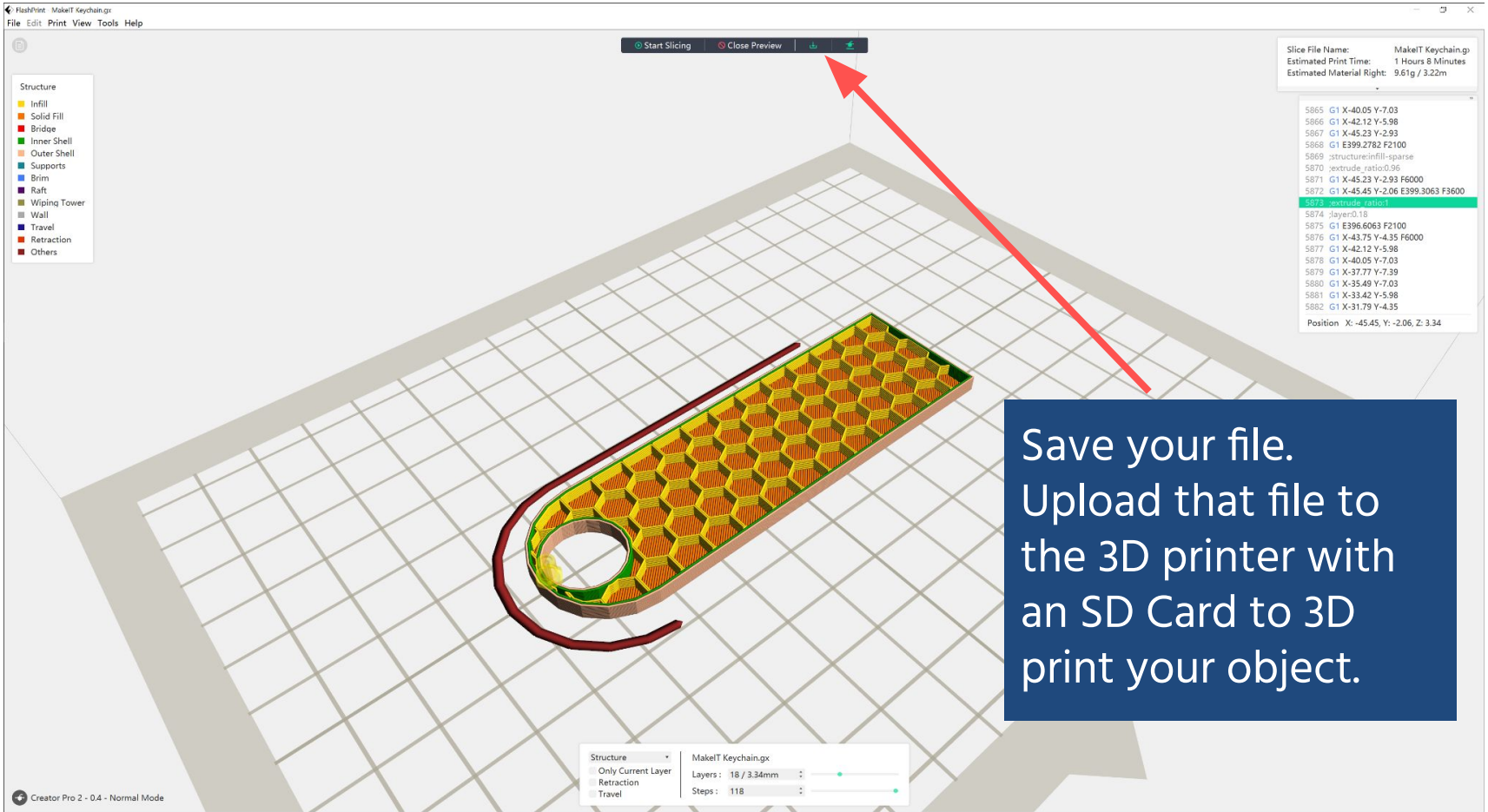
Slicing - Flashprint 5

4. Slice Name Tag in Flashprint



Slicing - Flashprint 5

4. Slice Name Tag in Flashprint

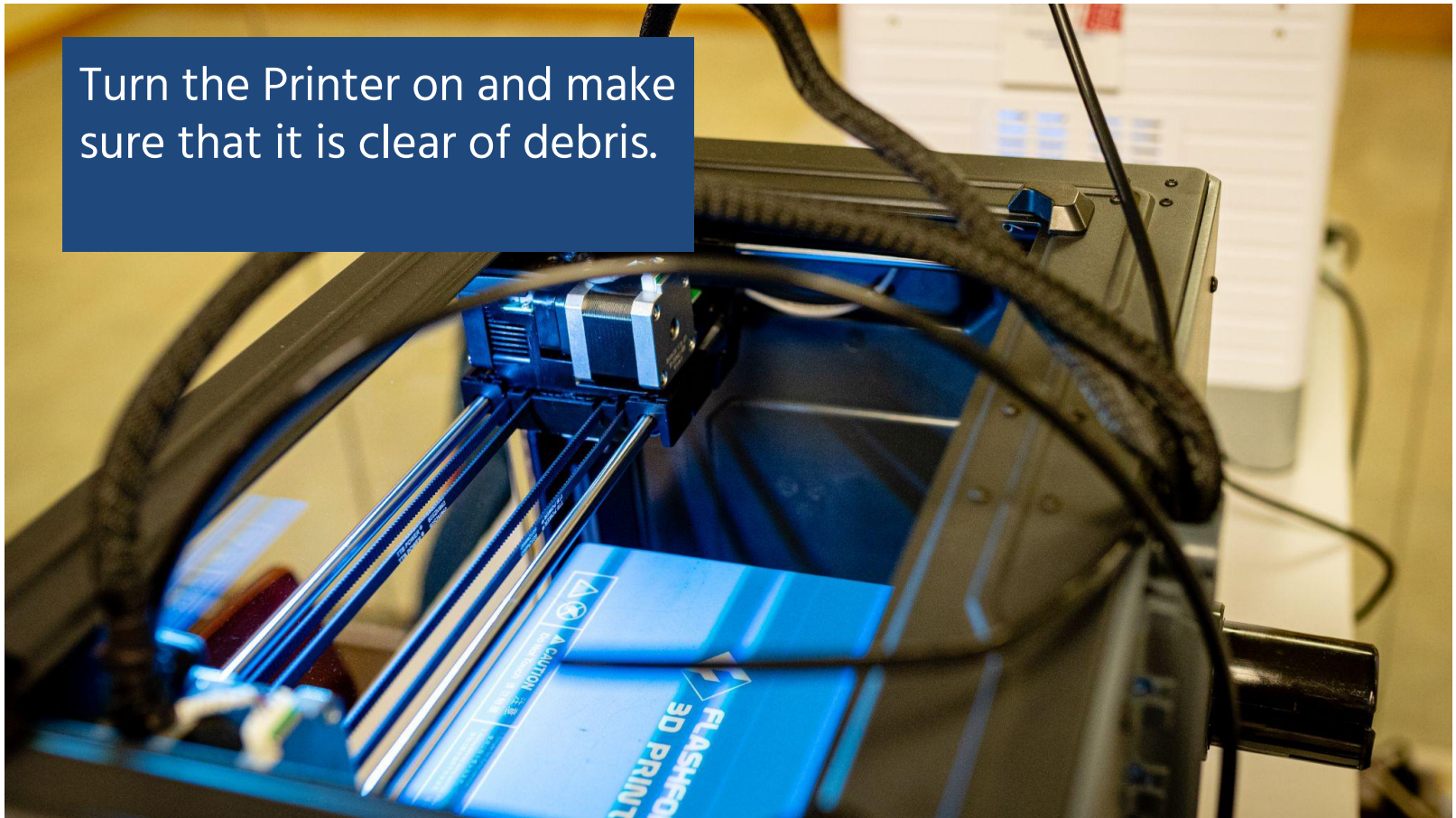


Save your file. Upload that file to the 3D printer with an SD Card to 3D print your object.

PRINTING

Printing - Creator Pro 2

5. 3D Print Name Tag



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.

Printing - Creator Pro 2

5. 3D Print Name Tag

Insert the SD card into the card slot in the printer.

Printing - Creator Pro 2

5. 3D Print Name Tag

Printing - Creator Pro 2

5. 3D Print Name Tag

FINISHING 3D PRINTS

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 I SECTION 2.3 | 25 MINUTES

Finishing Techniques

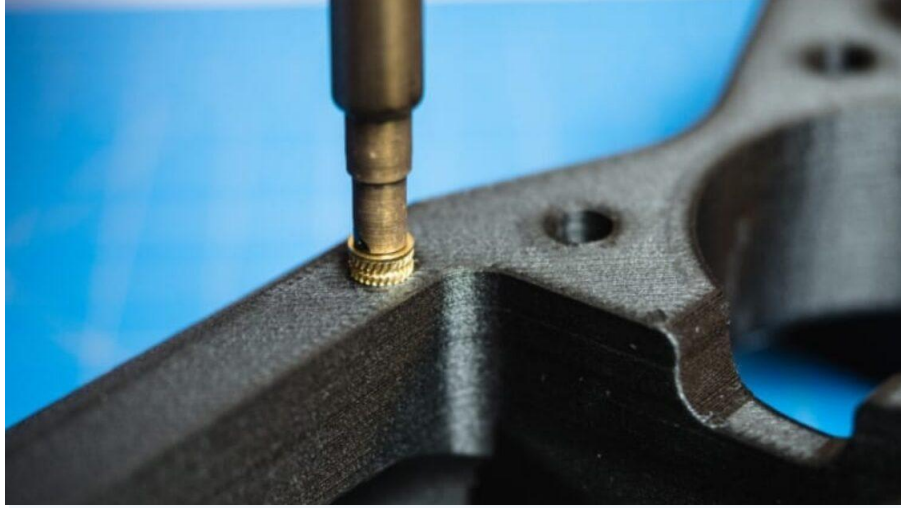
Depending on your slicing settings, your 3D print may have additional material that needs to be removed. Support material can be removed with the side cutters provided at MakeIT, or gently with other tools.

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.

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.

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.

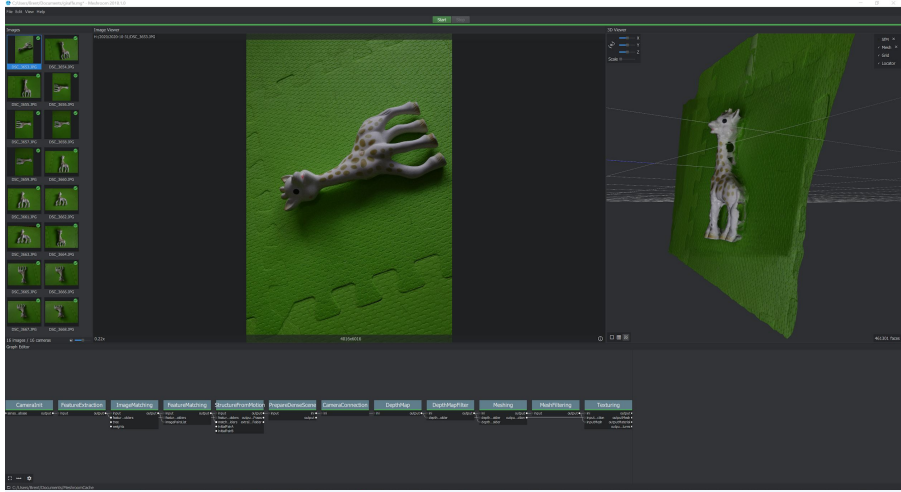
3D Scanning

EXTENSIONS

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.

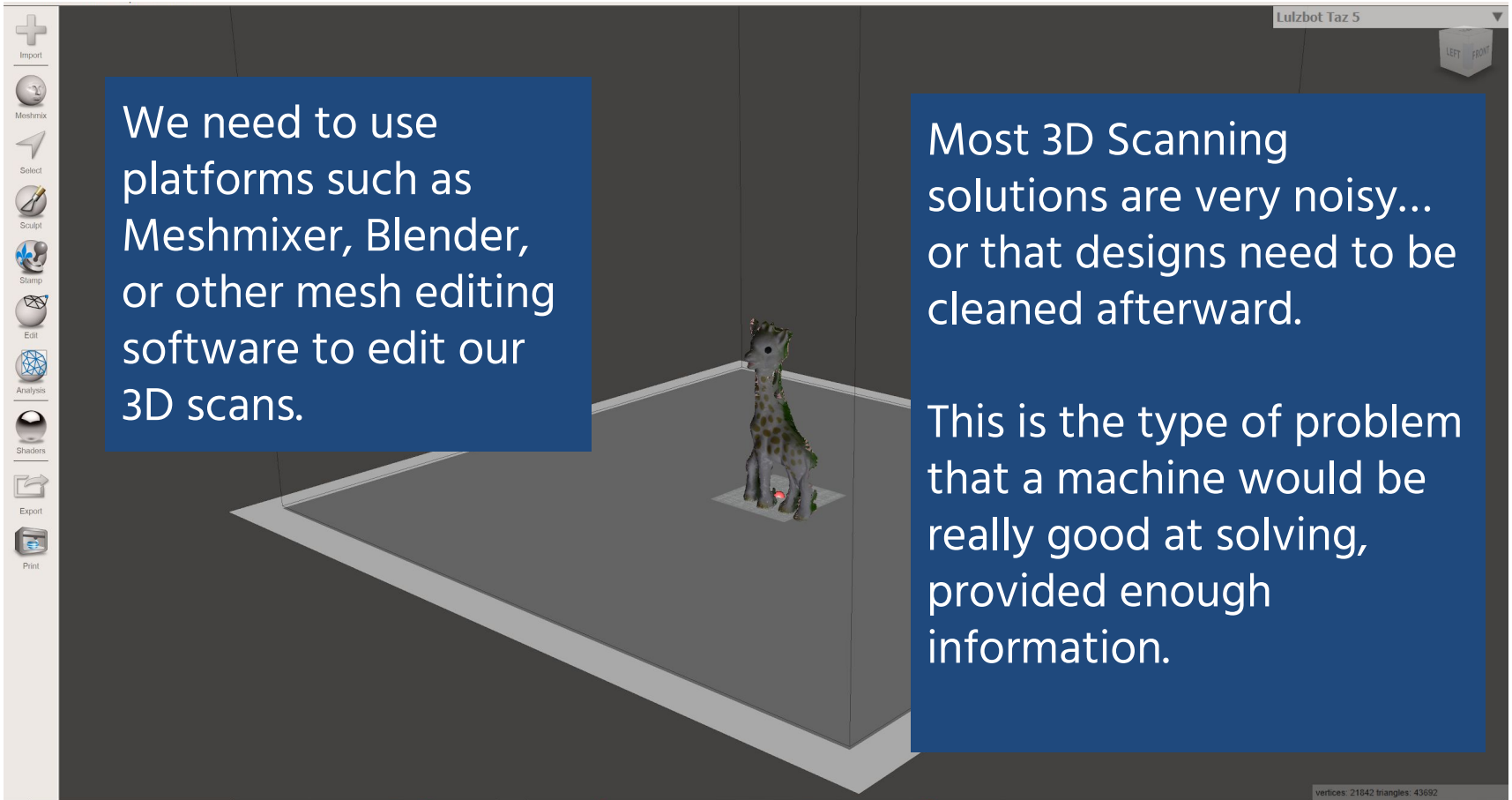
3D scanners use several different techniques to reconstruct images. Affordable models use infrared light to shine patterns onto 3D objects, which help locate features.



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.

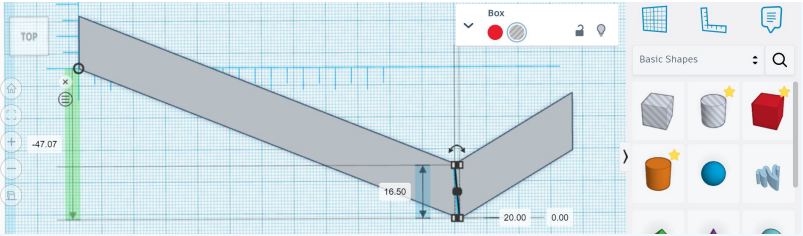
Most 3D Scanning solutions are very noisy... or that designs need to be cleaned afterward.

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

Frequently Asked Questions

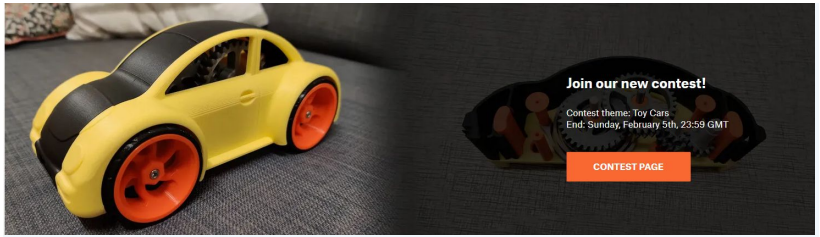
HOW CAN I APPLY WHAT I'VE LEARNED?

Applying Knowledge



3D Design

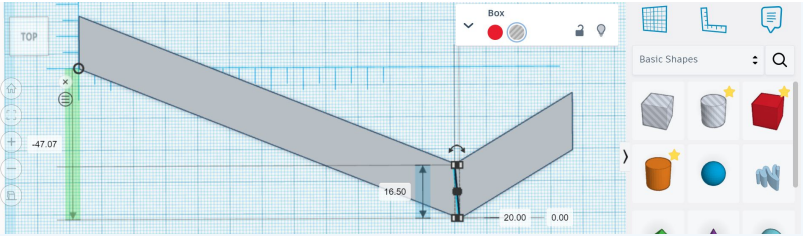
1. Find an idea to design. Look on Inventables, Printables, or the library (Check the 600 section for assistance).
2. Book tinkering time and 3D model your parts.



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.

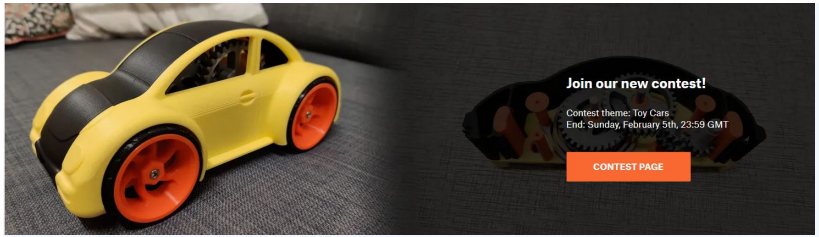
Applying Knowledge



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

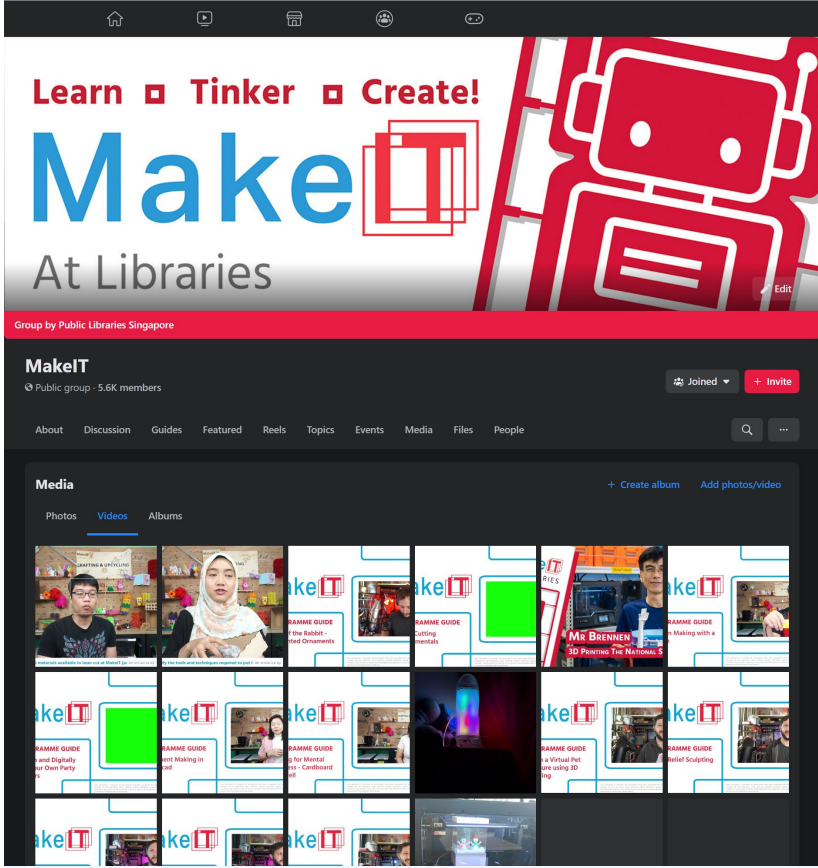
Join our MakeIT Facebook Community Group to share ideas and access our online learning guides!

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]



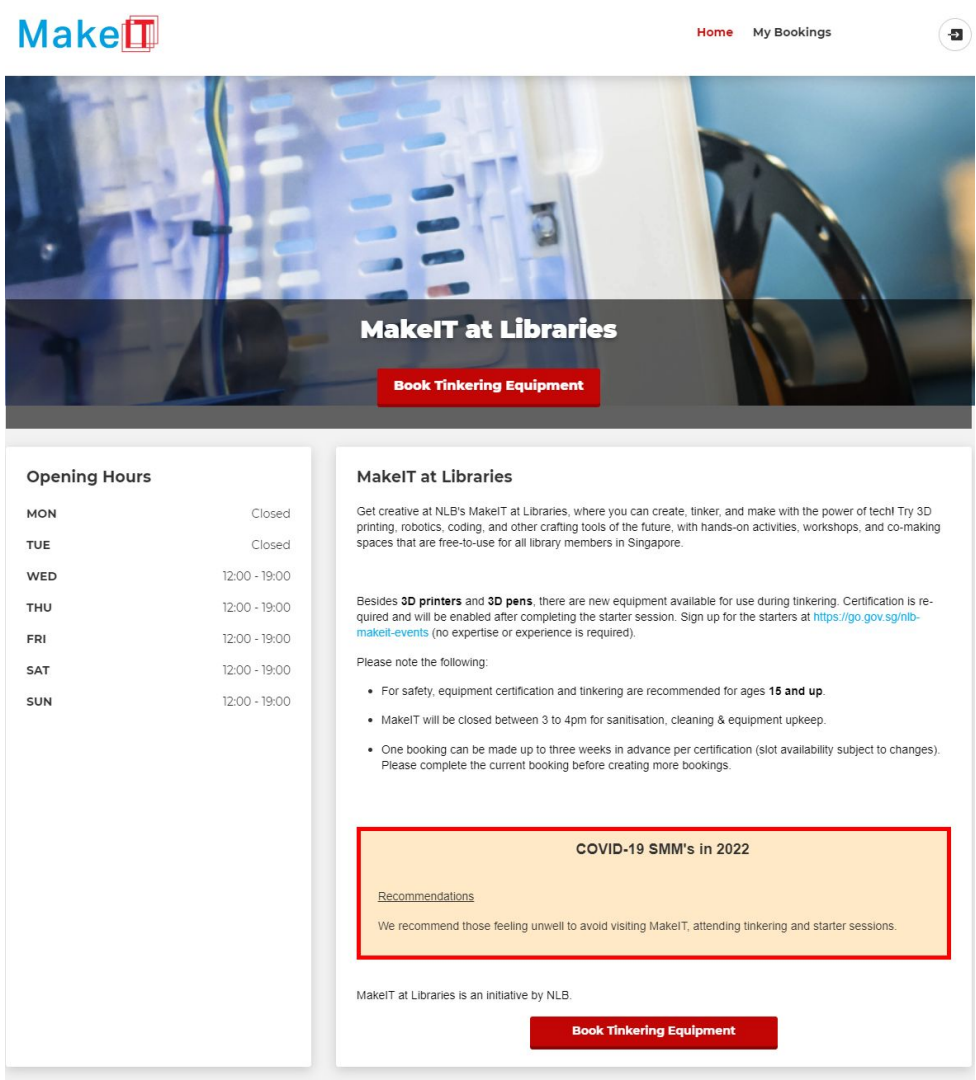
Scan the QR code or visit https://www.Go.Gov.sg/makeit

TINKERING AT MAKEIT AT LIBRARIES

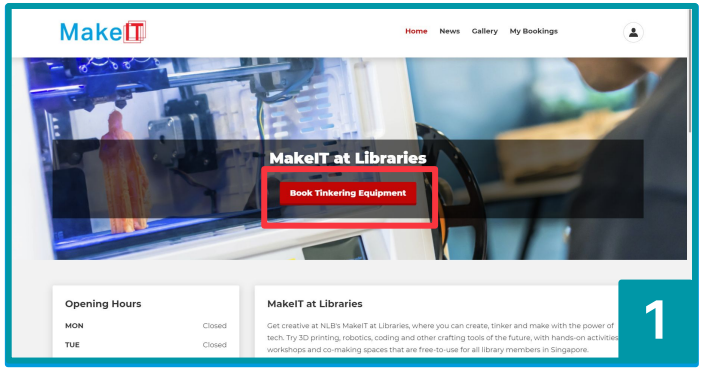
MakeIT at Libraries - Making a Booking

Simplybook

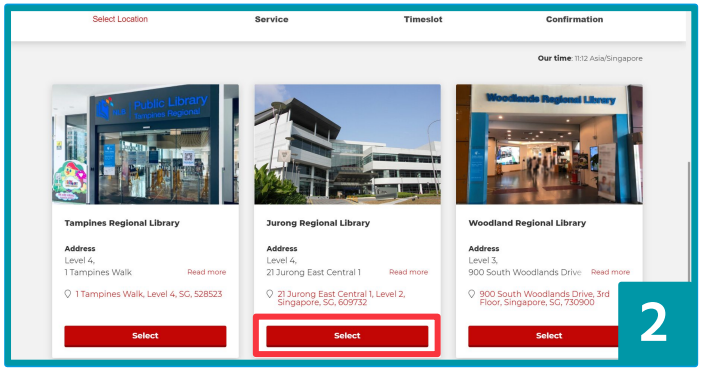
Equipment bookings are handed through Simplybook. Talk to our Centre Manager to register for an account, then visit *https://makeitsg.simplybook.asia/v2/* to book equipment.



MakeIT at Libraries - Making a Booking

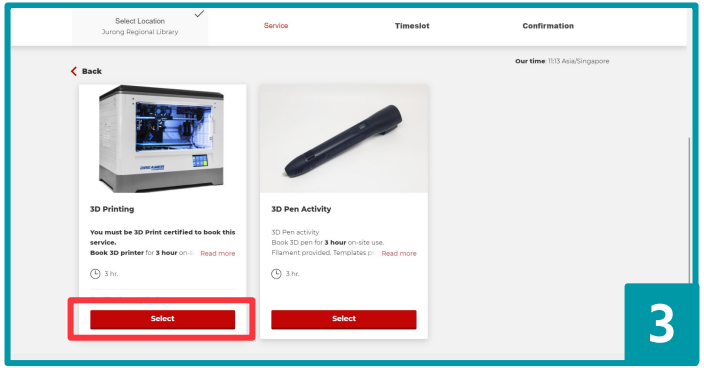


Once you have logged in, click on “Book Tinkering Equipment”.

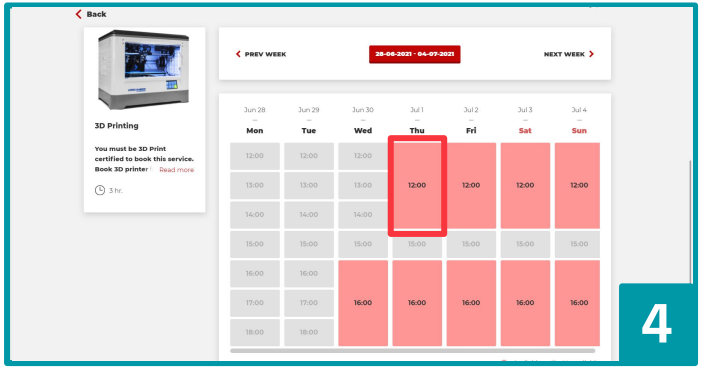


You will be redirected to a page that allows you to choose which MakeIT branch you will like to visit. Select one of the branches by clicking the respective branch “Select” button.

MakeIT at Libraries - Making a Booking



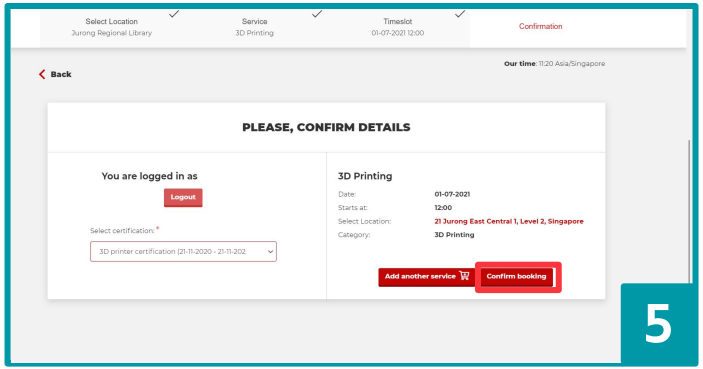
Click the “Select” button respective to the equipment that you will like to use.
Note: Bookings for most equipment can only be placed once you have gone for the required training.

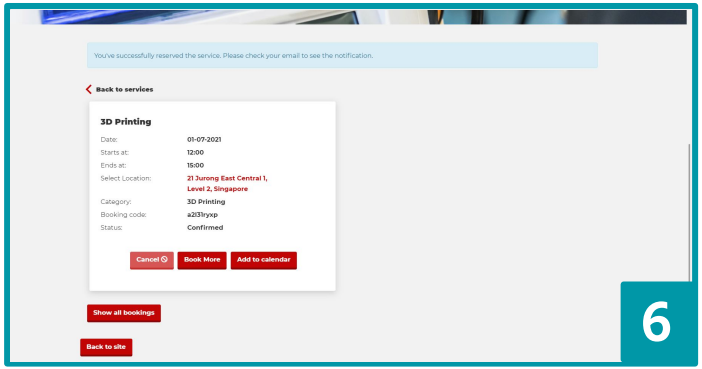


Slots available for booking will be displayed, click on the slot that you will like to book.

Red - Available for booking
Grey - Unavailable

MakeIT at Libraries - Making a Booking

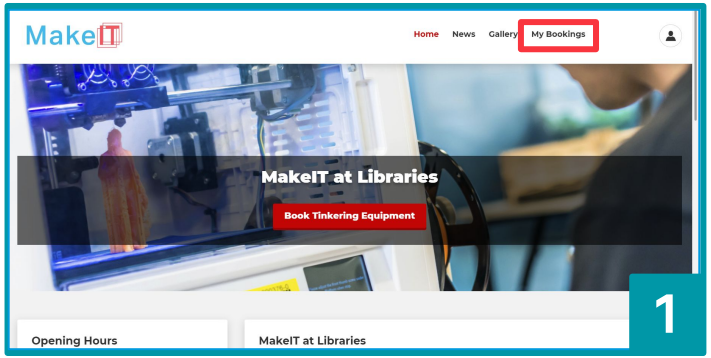




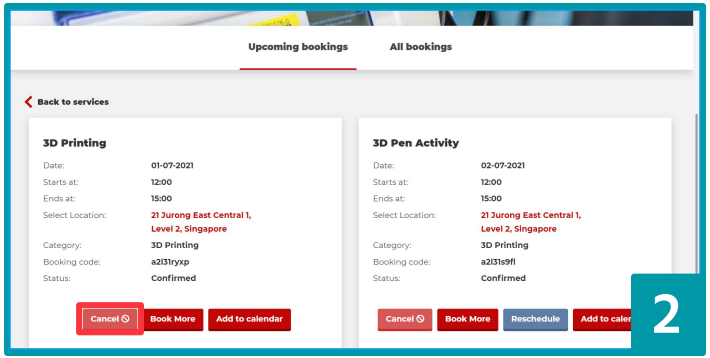
Ensure that you have selected the correct slot and click on “Confirm booking”.

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

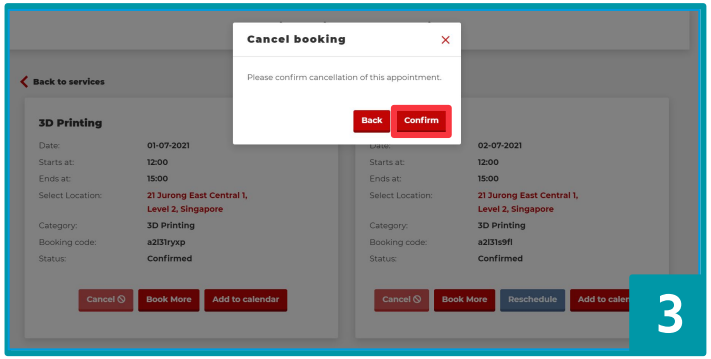


Once you have logged in, click “My Bookings”.

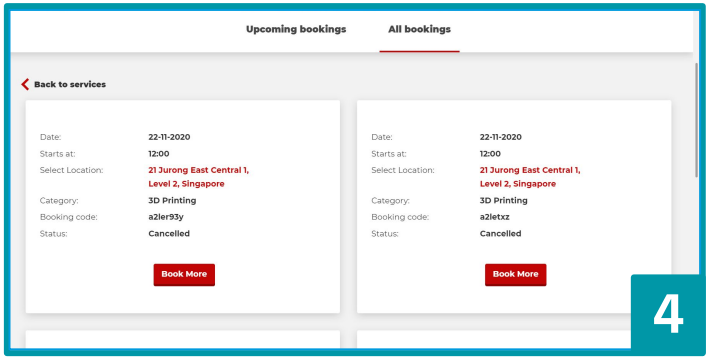


Your upcoming bookings will be displayed as shown above. To cancel your booking, click “Cancel”.

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.

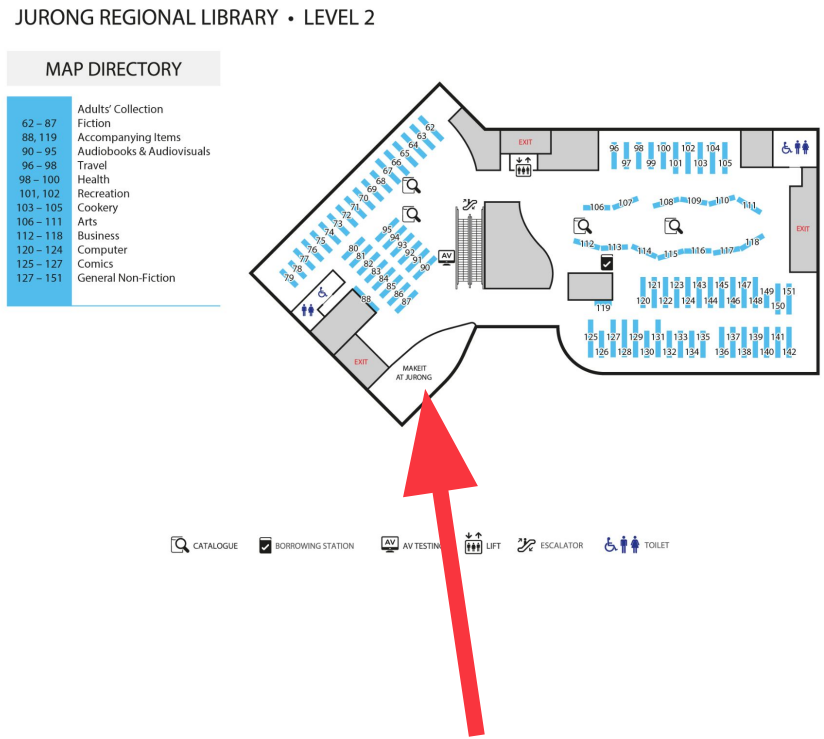
2. How long can I 3D print per booking?
Bookings are limited to 3 hours. If you want to print larger 3D prints, cut them and attach them together after the prints finish.

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.

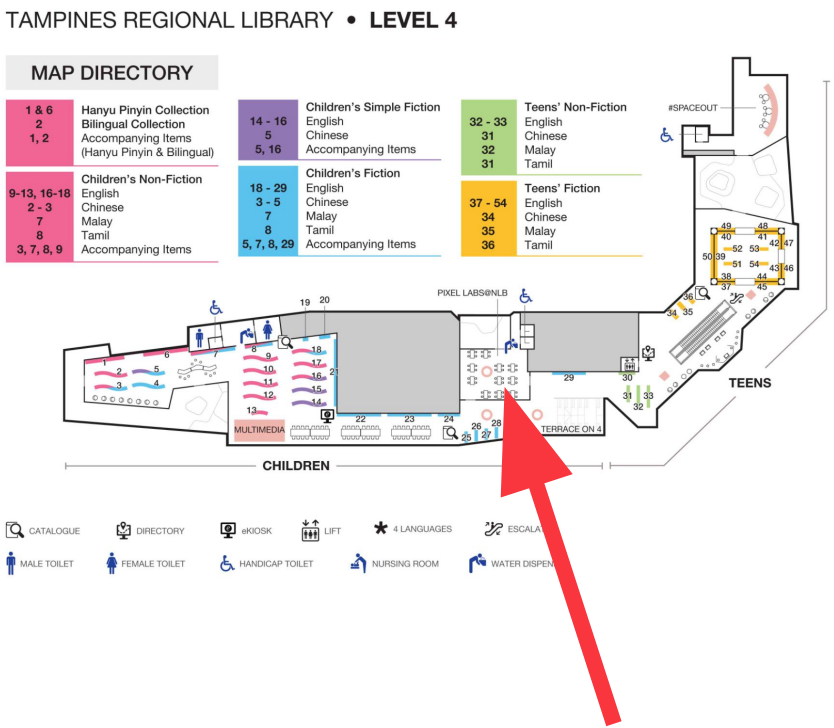
5. What can I 3D Print?
You may 3D Print anything except for items subject to copyright, patent, or trademark infringement, illicit or prohibited objects, such as weapons, firearms, or pornography, or obscene and inappropriate items for a library environment.

MakeIT at Jurong



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

MakeIT at Tampines



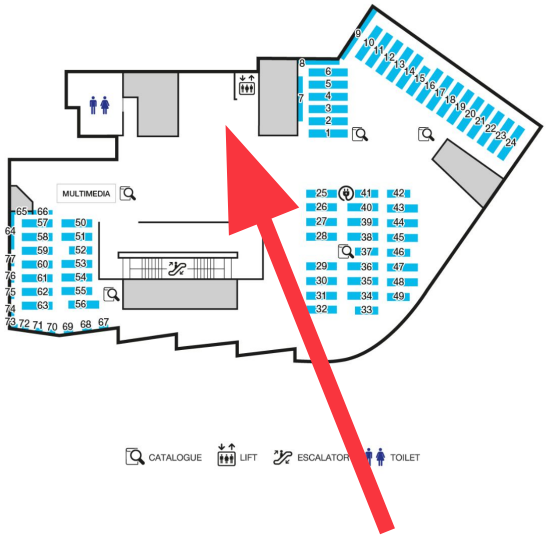
Location	Tampines Regional Library, 4th Floor
Address	1 Tampines Walk, #02-01 Our Tampines Hub, Singapore 528523
Closest MRT Station	EW2 — DT32 Tampines
Opening Hours	Wednesday - Sunday, 12 - 8PM

MakeIT at Woodlands

WOODLANDS REGIONAL LIBRARY • **LEVEL 3**

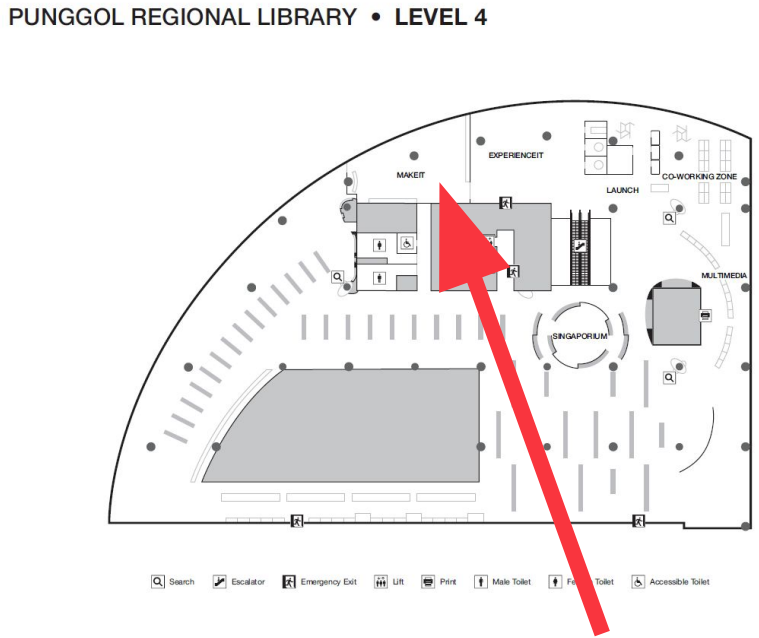
MAP DIRECTORY

	Adults' Collection
1 – 6	Singapore Collection
7 – 24	General Non-Fiction
25	Comics
26 – 28	Computers
29 – 34	Business
35 – 37	Health
38	Recreation
39 – 43	Arts
44 – 46	Cookery
47 – 49	Travel
50 – 66	English Fiction
67 – 77	English Fiction (Large Print)



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

MakeIT at Punggol



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

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!

Sign up now!

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

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.

MakeIT AT LIBRARIES
go.gov.sg/makeit

NLB | National Library Board Singapore

THANK YOU!

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

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.

Learner's Profile - Confidence Card

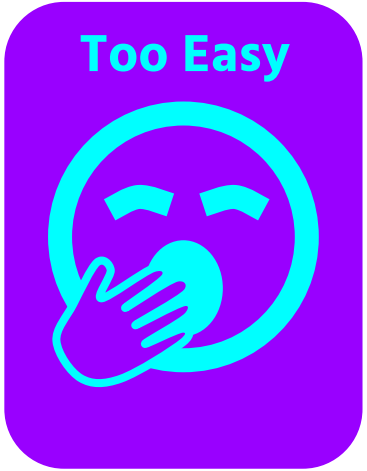
Beginner

Need help understanding content

Intermediate

Content is paced well and is understandable

Advanced



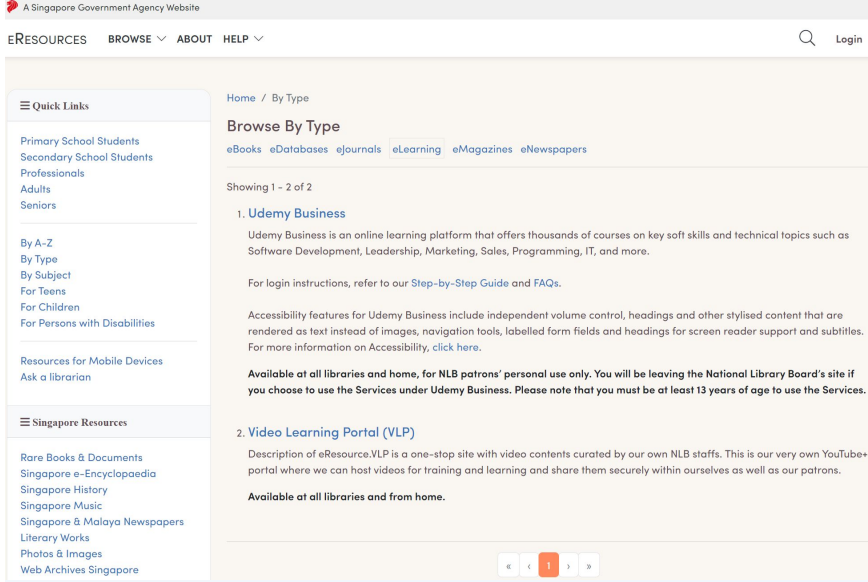
Content is too simple; need a bigger challenge

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/*



Navigate here to get started:
https://eresources.nlb.gov.sg/elearn

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/