3D PRINTING BOOKLET FOR BEGINNERS

The MediaLab at the Metropolitan Museum of Art's Spring 2014 Intern Expo

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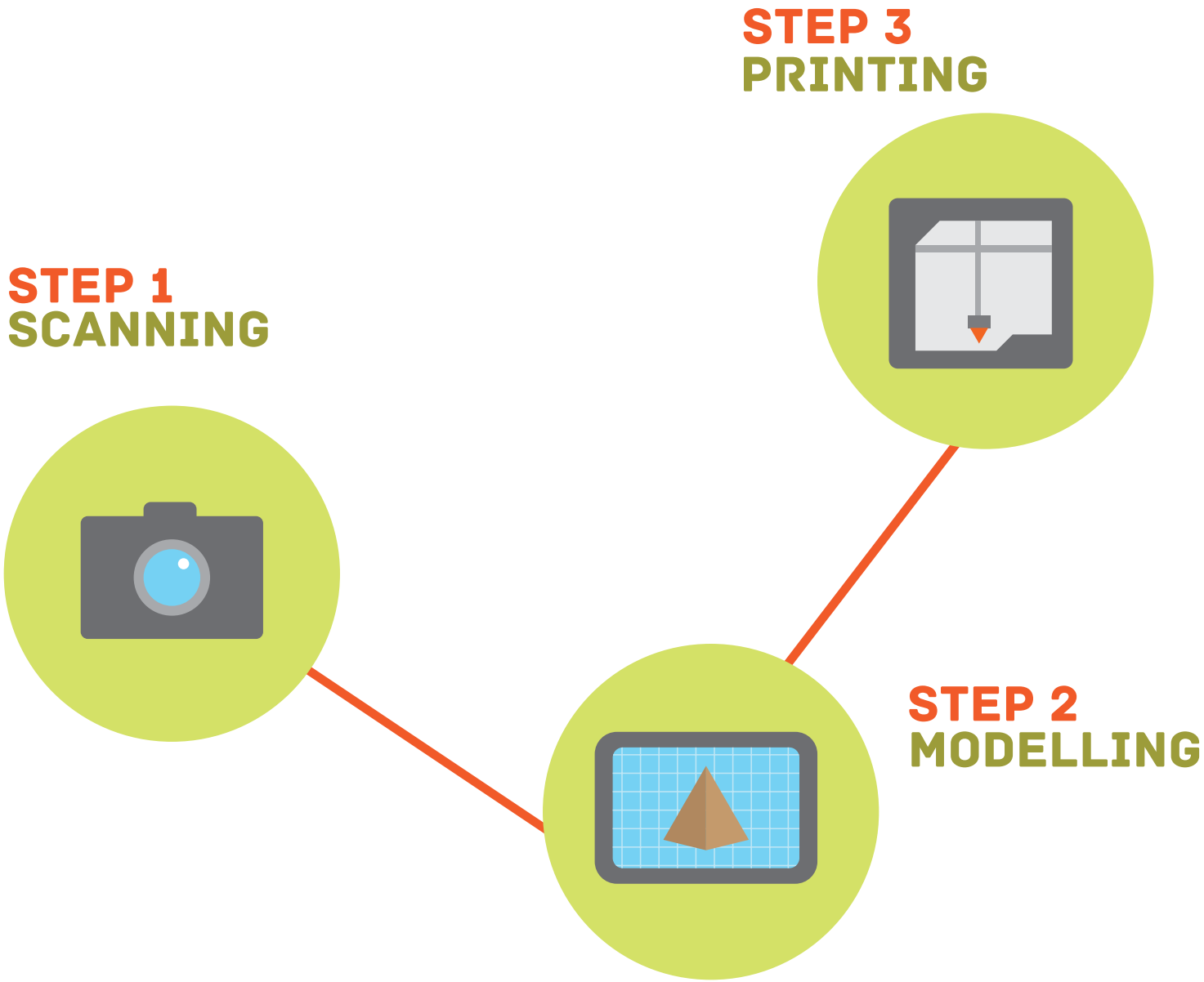
www.pdecho.com

3 SIMPLE STEPS



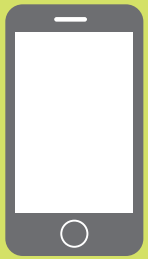
STEP 1

SCANNING

WHAT DO YOU NEED?

STEP 01

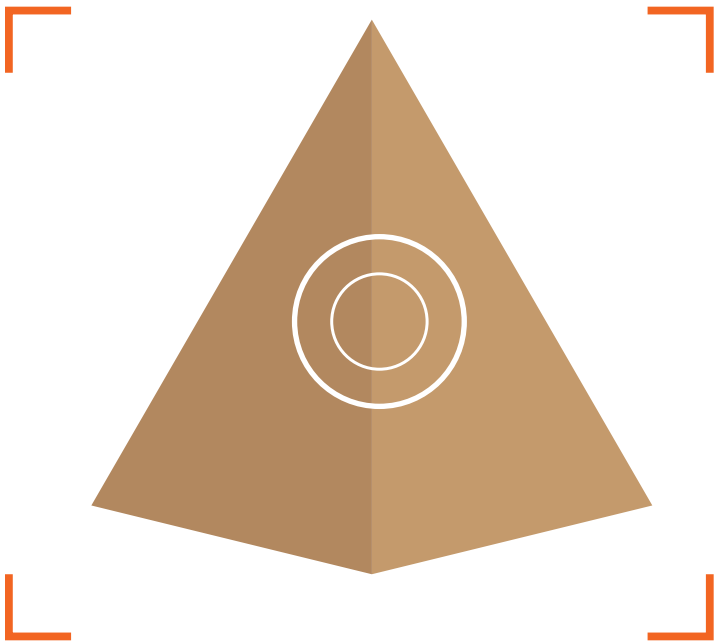
The best way to get your 3d model is to photograph it with your smartphone or digital camera, then send the pictures to be processed into a 3d model online



Smart phone with a camera

or

Digital Camera

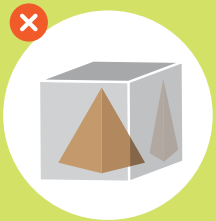


FINDING AN OBJECT

STEP 02

There are many interesting objects in the museum. Do explore with some tips below.

Museum Awareness

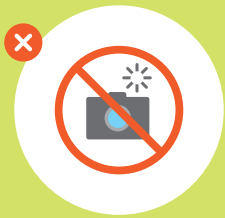


Try to avoid objects behind glass.

Look for signs that say ‘no photography

Be careful not to block people and don’t get too close to the object.

Trying to avoid dim light rooms.



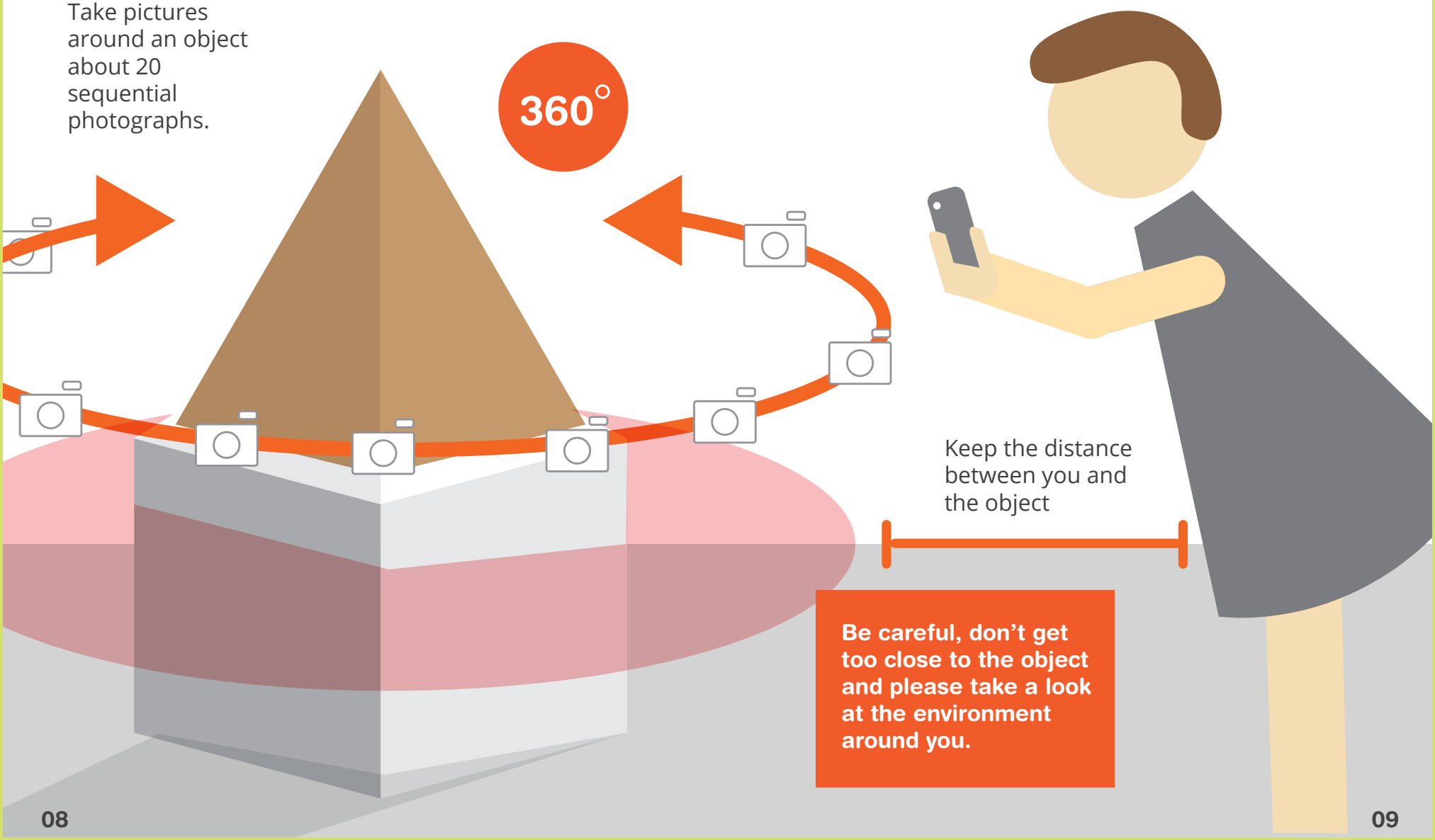
Don’t use flash

Don’t use a tripod

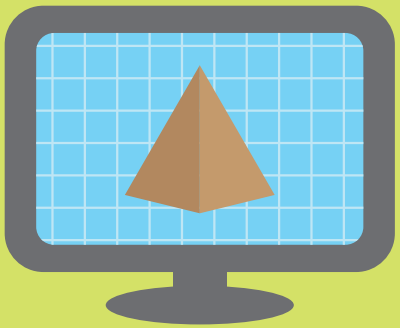
FINDING AN OBJECT

STEP 03

Take pictures around an object about 20 sequential photographs.



STEP 2



MODELLING

WHAT DO YOU NEED?

This step, we will upload pictures that we take from the object. We need a computer, internet and a web browser to process pictures to be a 3d model.

File format that we use for 3D printing is STL

STL is a tessellated triangle surface format. It turns your geometry into triangles to produce a surface that approximates your model. Therefore, It's a 3D printer friendly file format.

UPLOADING A MODEL

STEP 01

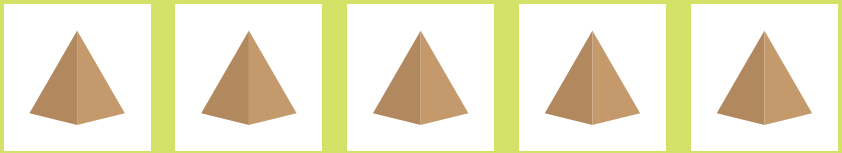
Go to 123DCATCH websitehttp://www.123dapp.com/catch
And sign up to get an account

STEP 02

Launch 123D Catch online

Press launch botton

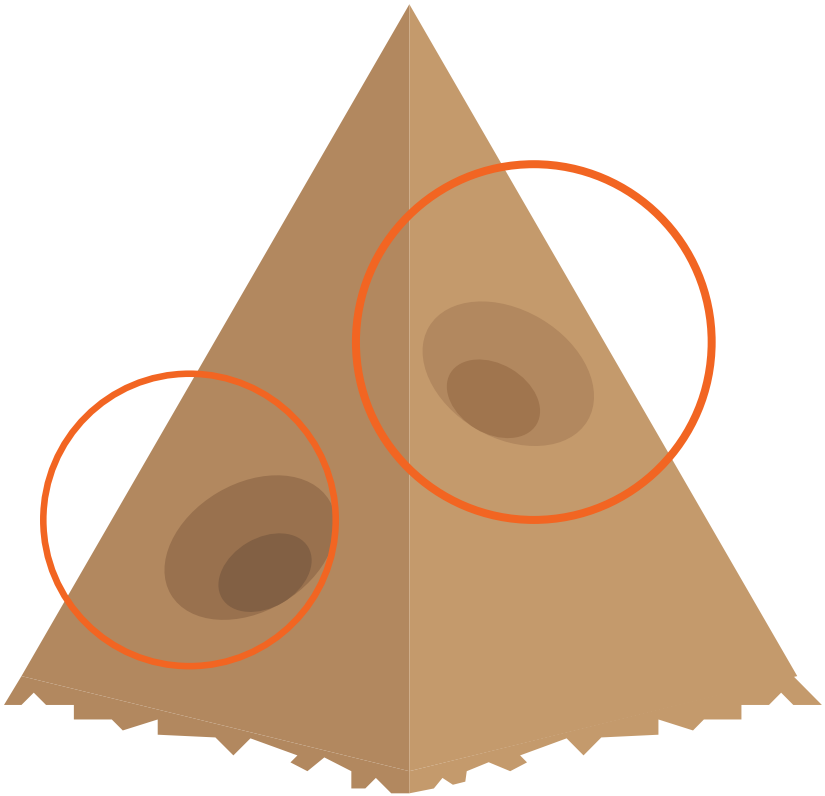
STEP 03



Uploading models from 6-20 pictures (minimum)

STEP 04

Wait for for 123D Catch's cloud servers to process your images (5-20 minutes)



FILLING HOLES

Now we've retrieved our model, but it might not be perfect, with holes and other irregularities. Don't worry, we can fix this by filling the holes.

STEP 01

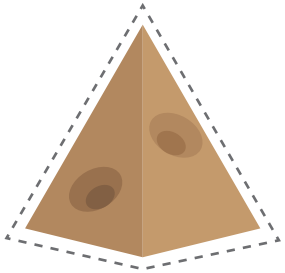
Go to 123D Catch website and sign up
http://www.123dapp.com/catch

STEP 02

Go to "Me" and "Models" menu then see the model that you've just uploaded and click edit > 123D Catch model (see the picture below). Then, Import your model using STL file to 123Dcatch.

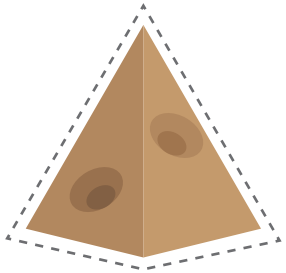
FILLING HOLES

STEP 03



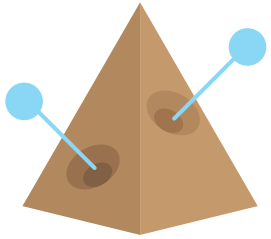
Select the object

STEP 04



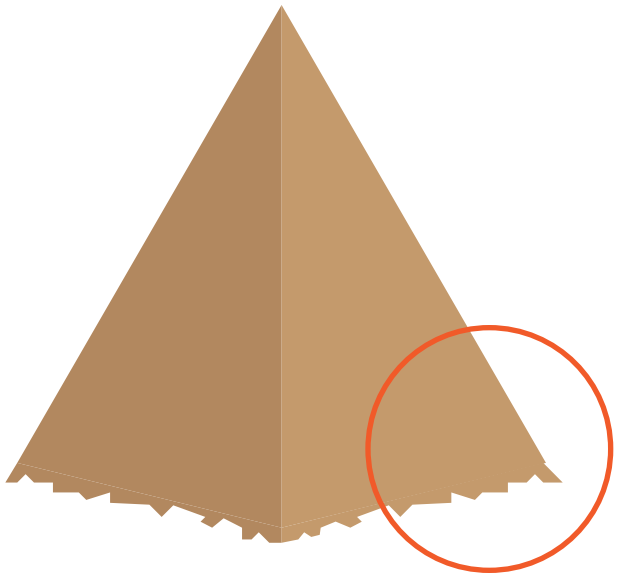
Click heal mesh icon.

STEP 05



123D Catch will shows you some areas that need to be fixed then select point to fill the hole or use fill all button.

The holes will be fixed completely and our model is ready to be used.



This model doesn't have a flat base, so it's hard to stand by itself.

PLANE CUT THE MODEL

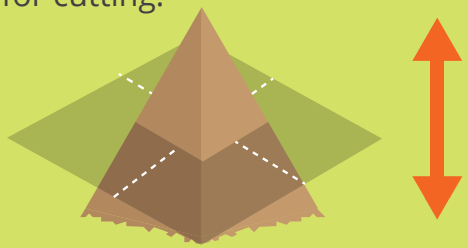
Plane cutting helps our models base to be flat so that we can make a base for the next step

STEP 01

Click plane cut icon in 123dcatch

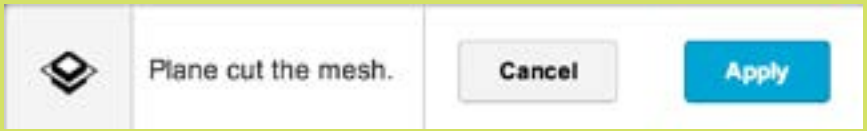
STEP 02

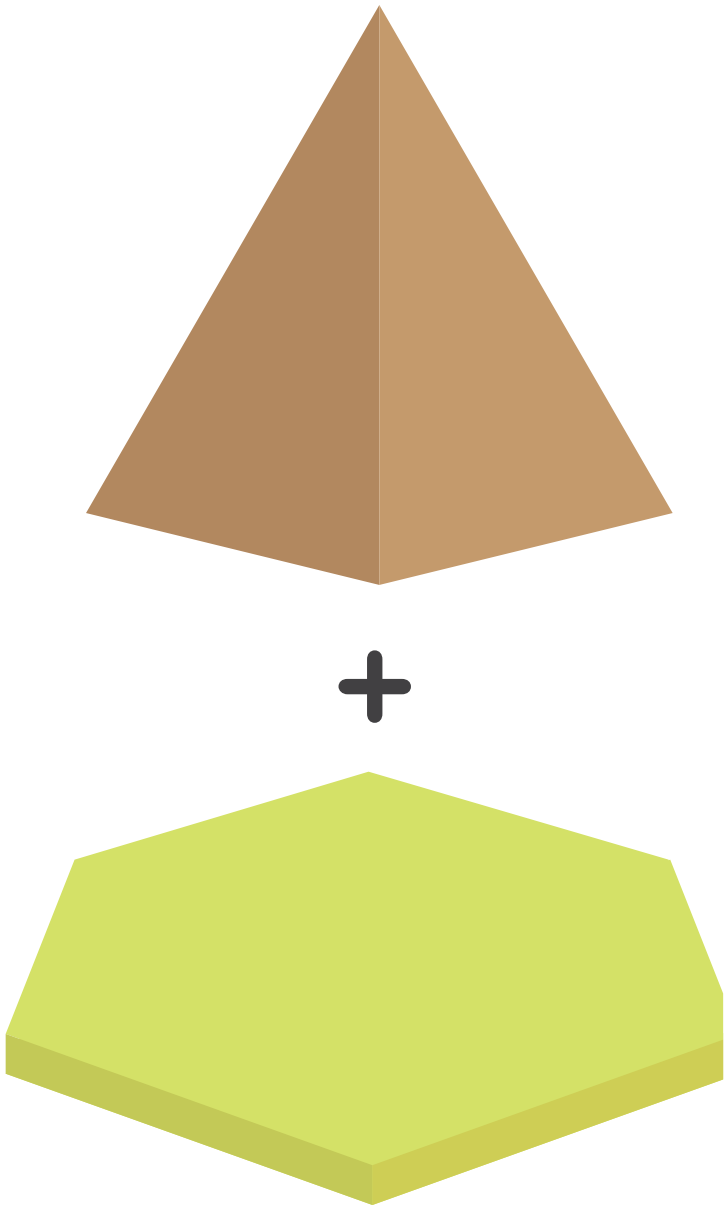
Move up and down to the right position for cutting.



STEP 03

Click plane cut below the mesh then apply





MAKING A BASE

Now that we've fixed all the holes, we can make a base, so the printed model can stand by itself.

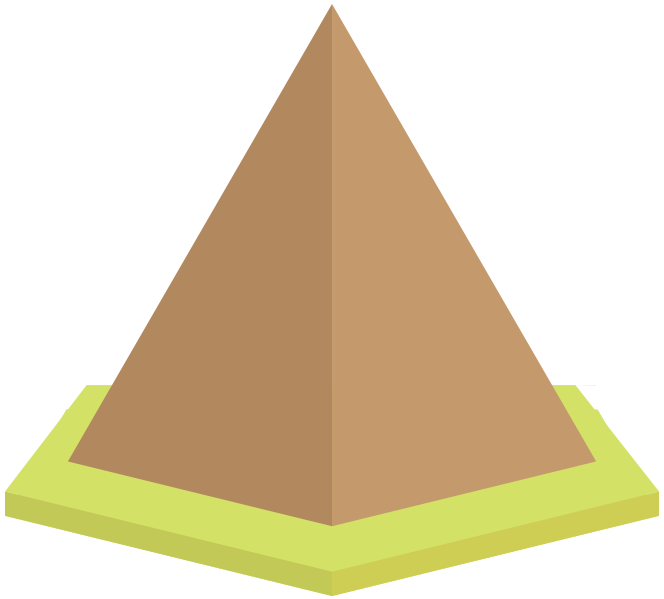
STEP 01

Sign up and Import your model into tinkercad website https://www.tinkercad.com/

STEP 02

Click the cube icon to show geometic shapes that we can bring them to make our own base

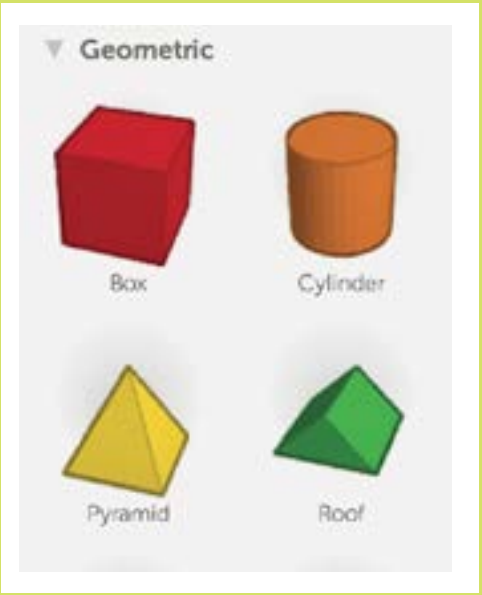
Shortcut keys video is here.
https://www.youtube.com/watch?v=erEUtG8SejE



MAKING A BASE

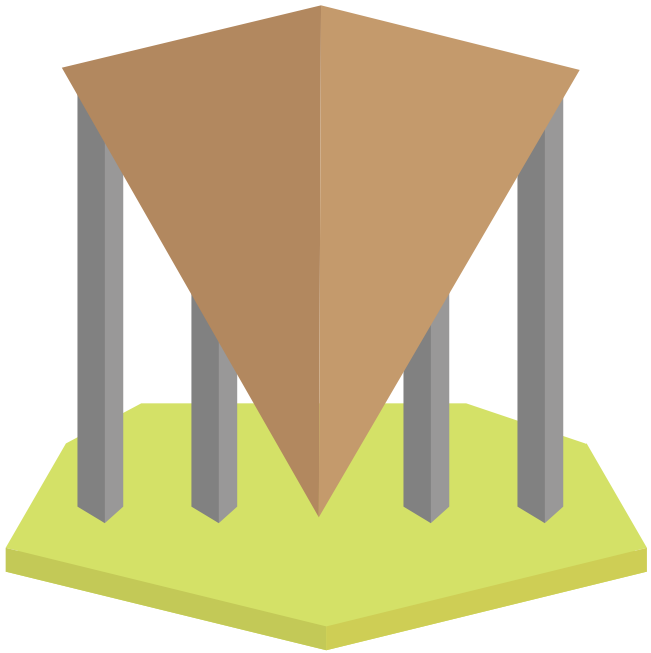
STEP 03

Select a base that you like, drag it onto the work area, and resize it as needed.



STEP 04

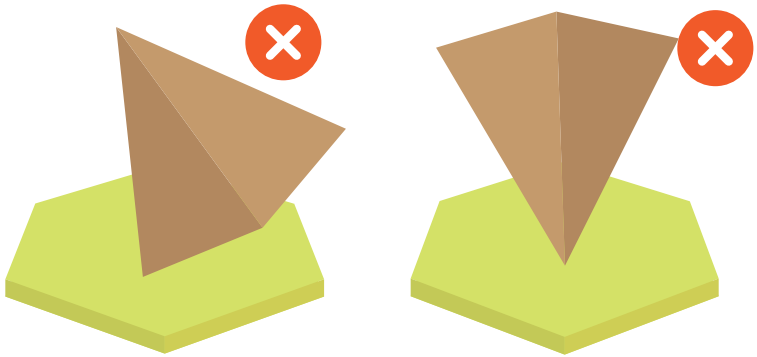
Combine the base with the model then click group icon.



BUILDING SUPPORT STRUCTURE

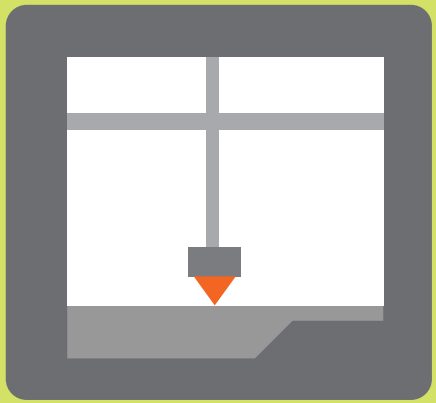
If we want our model to be in a different position, building support is structure important in this case.

3D printing services provide support structure from most of the software



Try to aviod positions like these example bacause your models will not be abple to stand on its own.

STEP 3



PRINTING

3D PRINTING SERVICES

It's time to print! We can send our STL files to 3D printing services at the websites below.

3D printing services
http://www.thingiverse.com
http://www.shapeways.com
http://i.materialise.com
https://www.ponoko.com
http://www.sculpteo.com
http://staples.myeasy3d.com/

3D modeling website / inspiration
http://www.thingiverse.com/met/designs

More inspirations
http://makezine.com/

Free 3D modeling software
http://www.123dapp.com/catch
https://tinkercad.com/
http://meshlab.sourceforge.net/

INSPIRATION

“This sculptures is possible to see in the gallery, but now this the scrupture is reproduced and can be seen in a different places at the same time.”

- John Berger, Ways of seeing, 1972 Penguin book.

Now, It's our time to explore reproduction art in order to see art in different ways.

FUN PROJECT / CHESS SETS

This is one example to explore reproduction art.
Each gallery has its own unique objects. As an example of an interesting project, we can make a chess set by 3D printing objects from different galleries.

Let's explore more with 3D printing. We hope that you can apply a tutorial from this book in a creative way.


Met Medialab intern project 2014
by Decho Pitukcharoen