



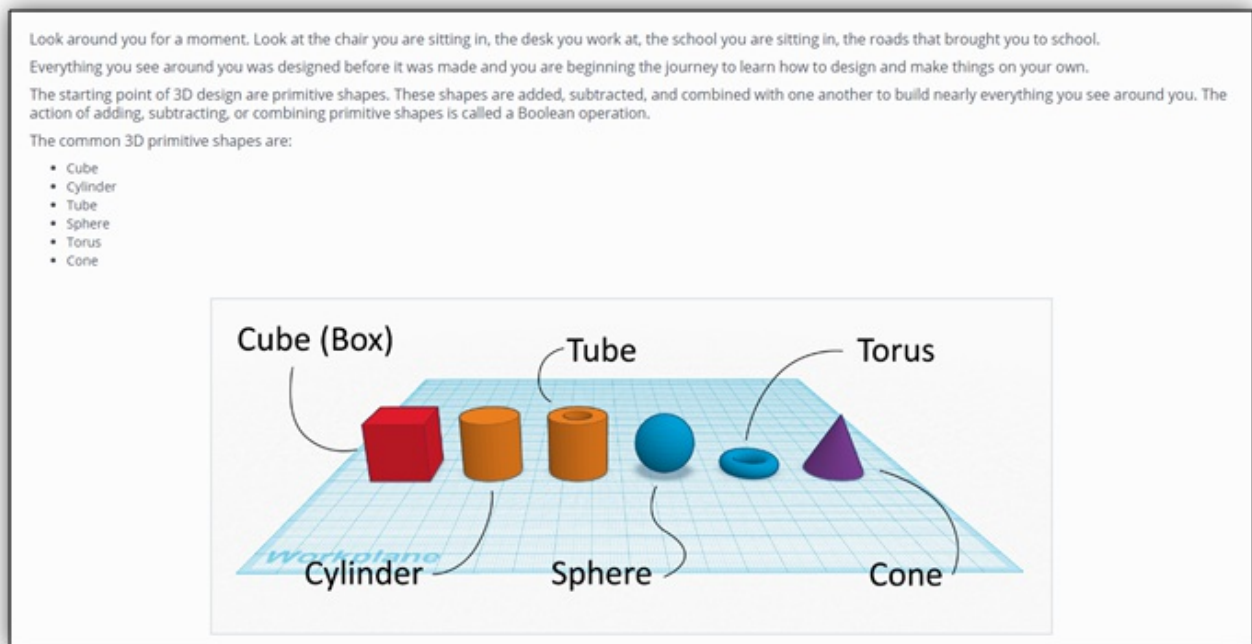
Tinkercad & 3D Printing Course

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Tinkercad

Tinkercad is an easy, browser-based 3D design and modeling tool for all. Tinkercad is also a perfect 3D printing companion. It allows students imagine anything, and then design it in minutes. It's an easy & effective gateway to 3D design. It helps students convert their dream to reality, making them a proficient Tinkerer.

Students are introduced to the world of design via 3D design software (Tinkercad) & 3D Printing technology, which plays a major role in the modern technology world



Moving objects on 3D space using computer mouse

- Press + hold right button : To rotate
- Scroll wheel : To Zoom in and out
- Press + hold middle button : To move
- Press + hold shift button : To resize shape equally (uniform scaling in all directions)
- White squares : Change dimension in two directions (X & Y)
- Black squares : Change dimension in one direction(X or Y)
- Top Square : Change height (Z direction)
- Copy :Control C (Command C for MAC)
- Paste :Control V (Command V for MAC)
- Shift + hold left button :To select more objects
- Move cursor near square to highlight dimension
- Black handle to pull up and down

Commands – User Interface & Design

- Box select for multiple objects
- New workplane, Ruler & Grid
- Press D to place object on workplane
- Modifying dimensions
- Creating text (on plane and curved surface)
- Align tool
- Group & Ungroup tool
- Assign color (Individual) & Multicolor (Group)
- Duplicate command
- Renaming & Saving the work

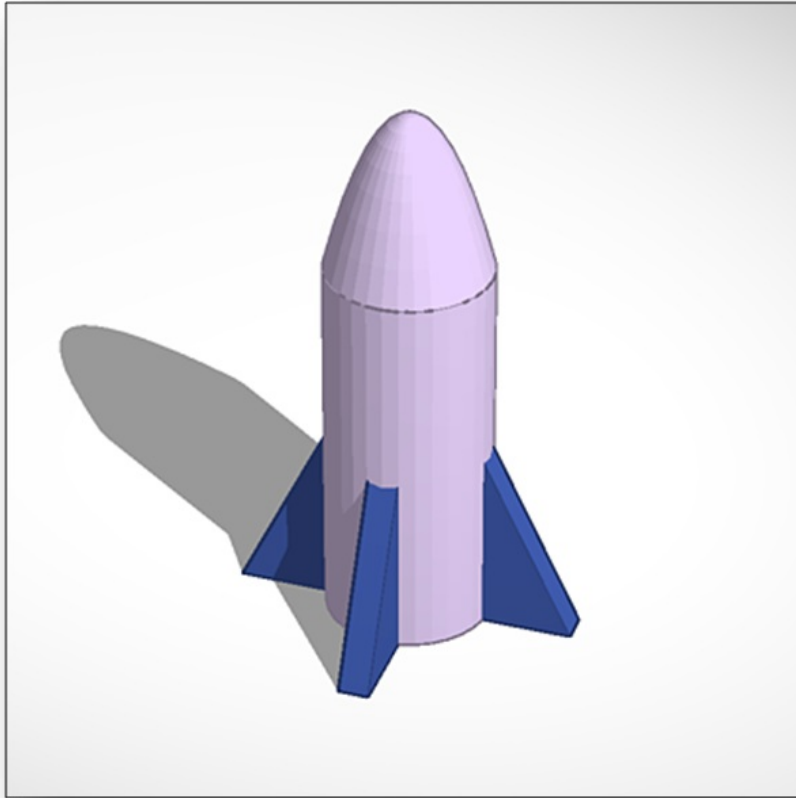
Tinkercad Keyboard shortcuts

Moving object(s)		Tools and commands	
T / ← / → / I	Move object(s) along X/Y	ctrl + C	Copy object(s)
ctrl + T / I	Move object(s) along Z	ctrl + V	Paste object(s)
Shift + T / ← / → / I	×10 Nudge along X/Y	ctrl + D	Duplicate object(s) in place. (Repeat with move, rotate and scaling for interesting effects.)
ctrl + Shift + T / I	×10 Nudge along Z	Del	Delete object(s)
Keyboard + Mouse shortcuts. (Press and hold the keys, then click or drag the mouse.)		ctrl + Z	Undo action(s)
Alt + drag left mouse button	Duplicate dragged object(s)	ctrl + Y	Redo action(s)
Shift + left mouse button	Select multiple object(s)	ctrl + Shift + Z	Redo action(s)
Shift + hold while rotating	45° rotation	ctrl + G	Group object(s)
Alt + hold side handle	Scale (1D)	ctrl + shift + G	Un-group object(s)
Alt + hold corner handle	Scale (2D)	L	Align object(s)
Shift + hold corner handle	Scale (3D)	M	Flip (or Mirror) object(s)
Shift + Alt + hold corner handle	Scale (3D)	ctrl + A	Select All object(s)
Shift + Alt + hold top handle	Scale (3D)		

Object settings		Workplane	
H	Hole turn object(s) into Holes	M	Workplane place a workplane
S	Solid turn object(s) into Solids	R	Ruler place a ruler
ctrl + L	Lock or Unlock object(s)	D	Drop object(s) to the work plane
ctrl + H	Hide object(s)	Legend	
ctrl + shift + H	Show All hidden object(s)	ctrl = Cmd / Alt = Option	
Viewing designs			
Right mouse button	Orbit the view		
Ctrl + left mouse button	Orbit the view		
Shift + right mouse button	Pan the view		
ctrl + Shift + left mouse button	Pan the view		
scroll wheel	Zoom the view in or out		
+ or =	Zoom-in		
-	Zoom-out		
F	Fit selected object(s) into the view		

Exercise - Tinkercad

Design a Simple Rocket

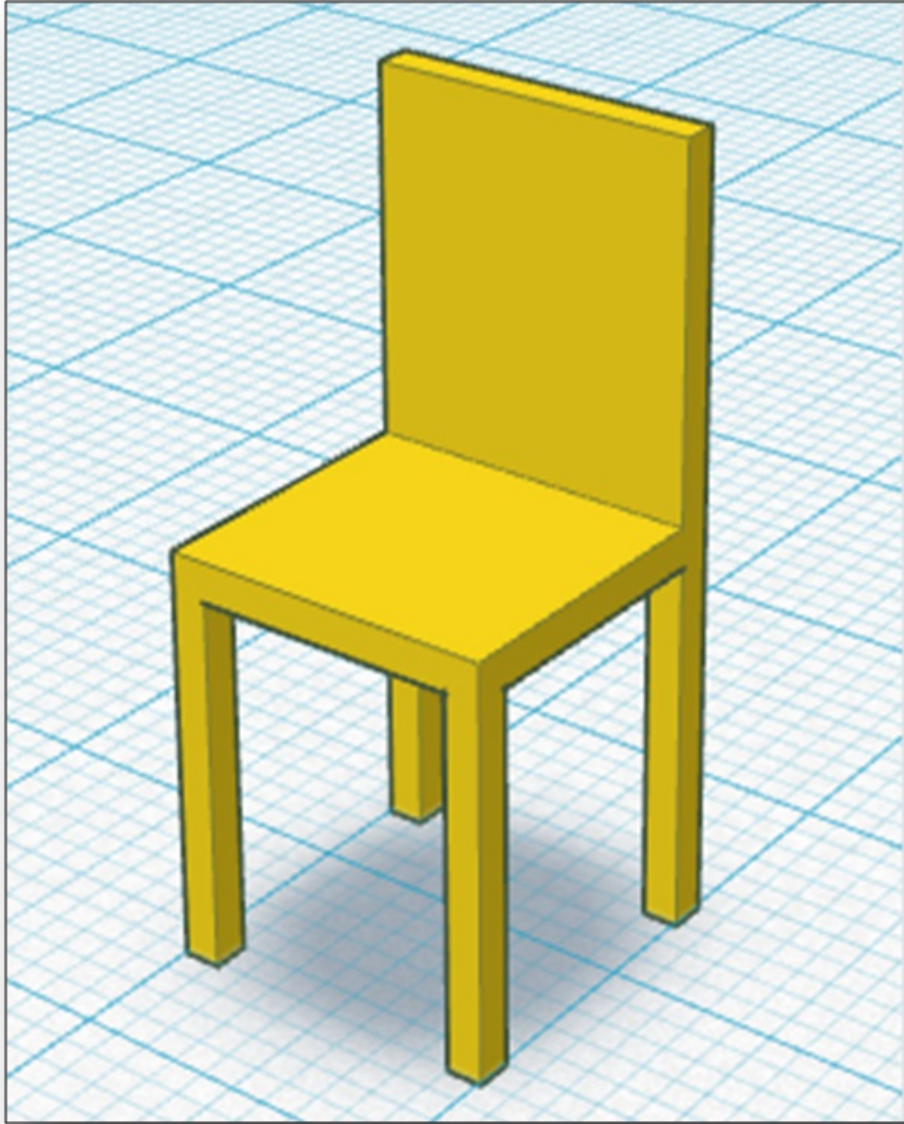


Adding Material : Addition

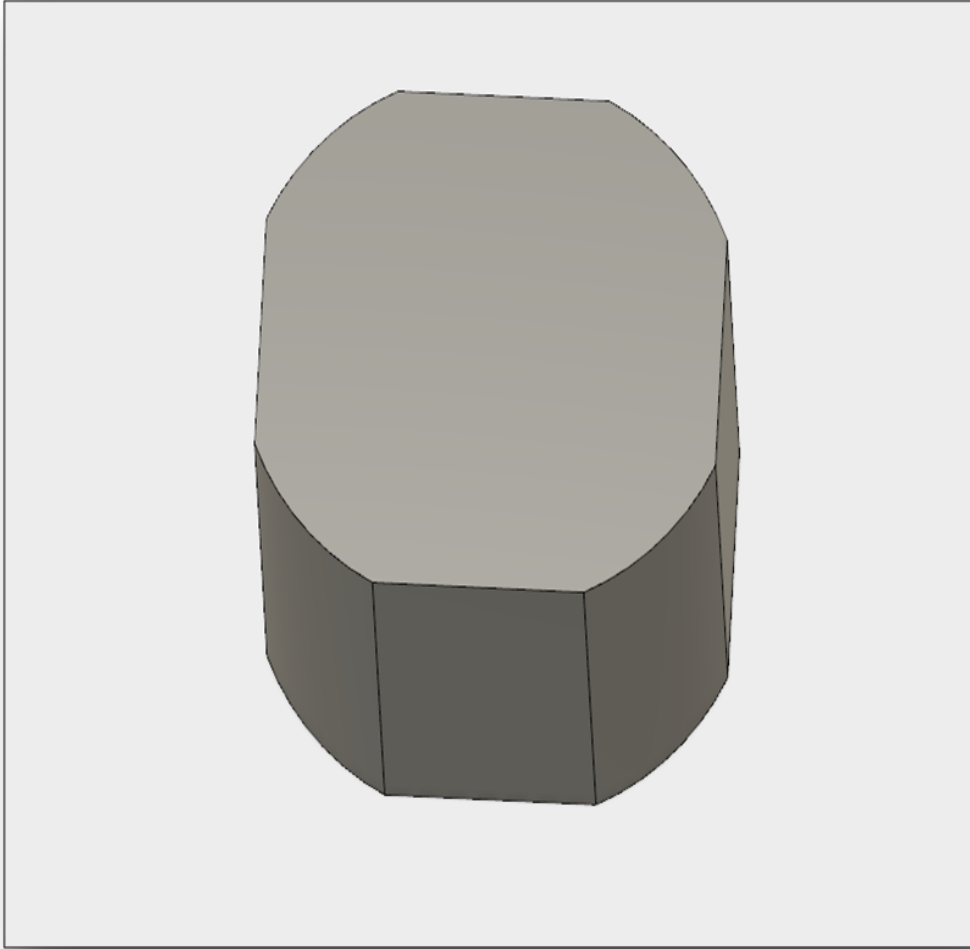
Removing Material : Subtraction

Combining Material : Combination

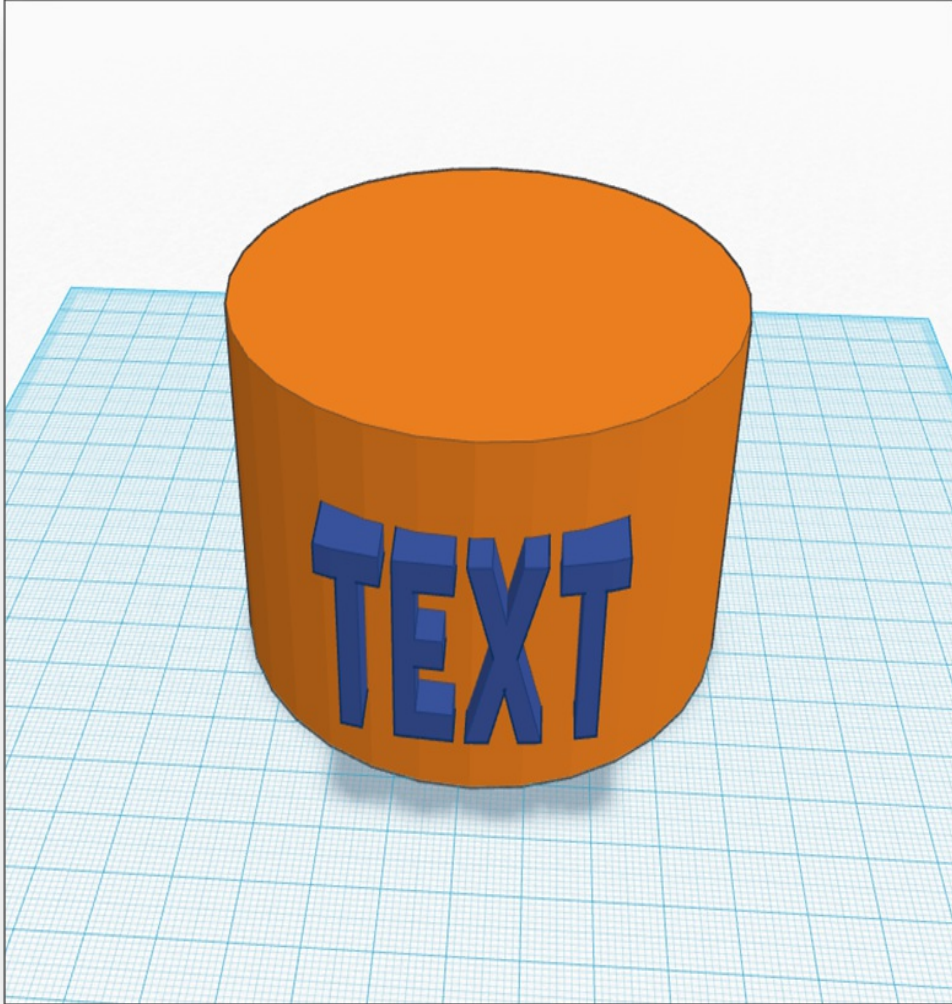
Design Challenge - Tinkercad



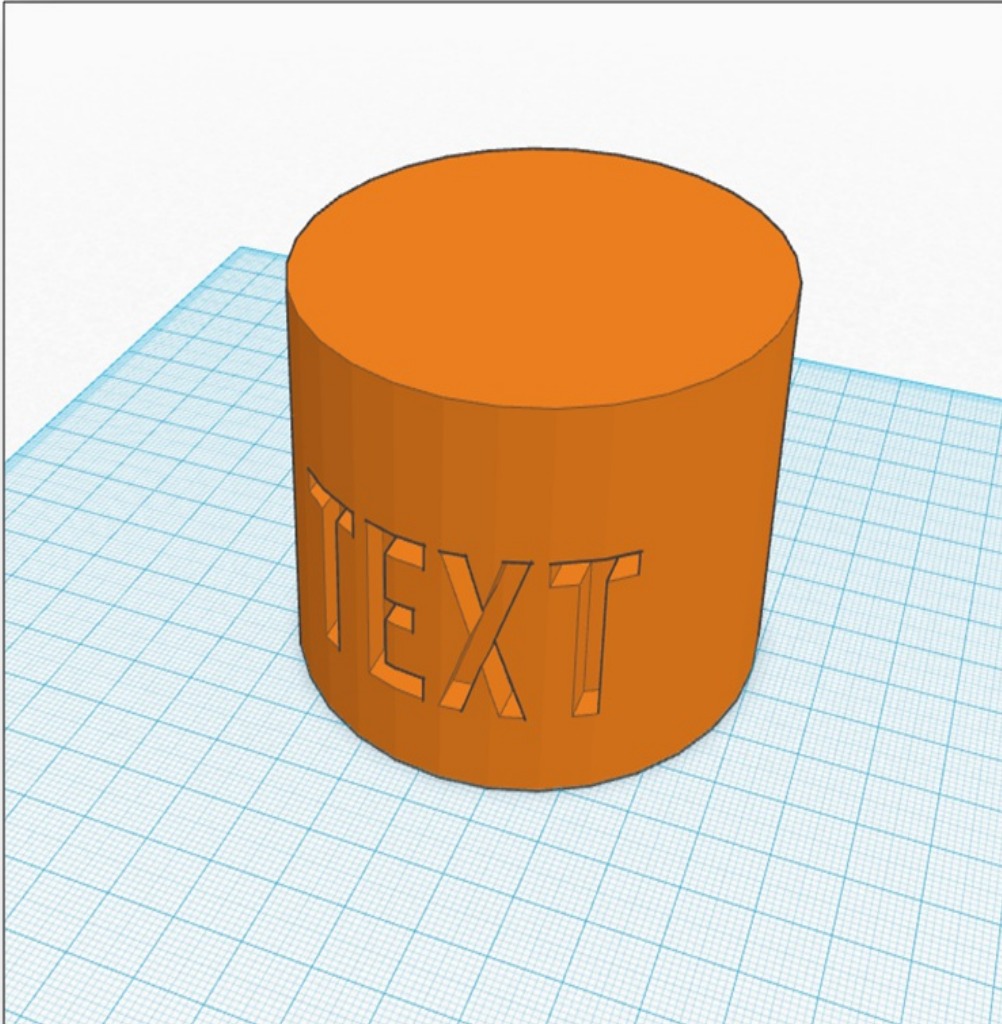
Design Challenge - Tinkercad



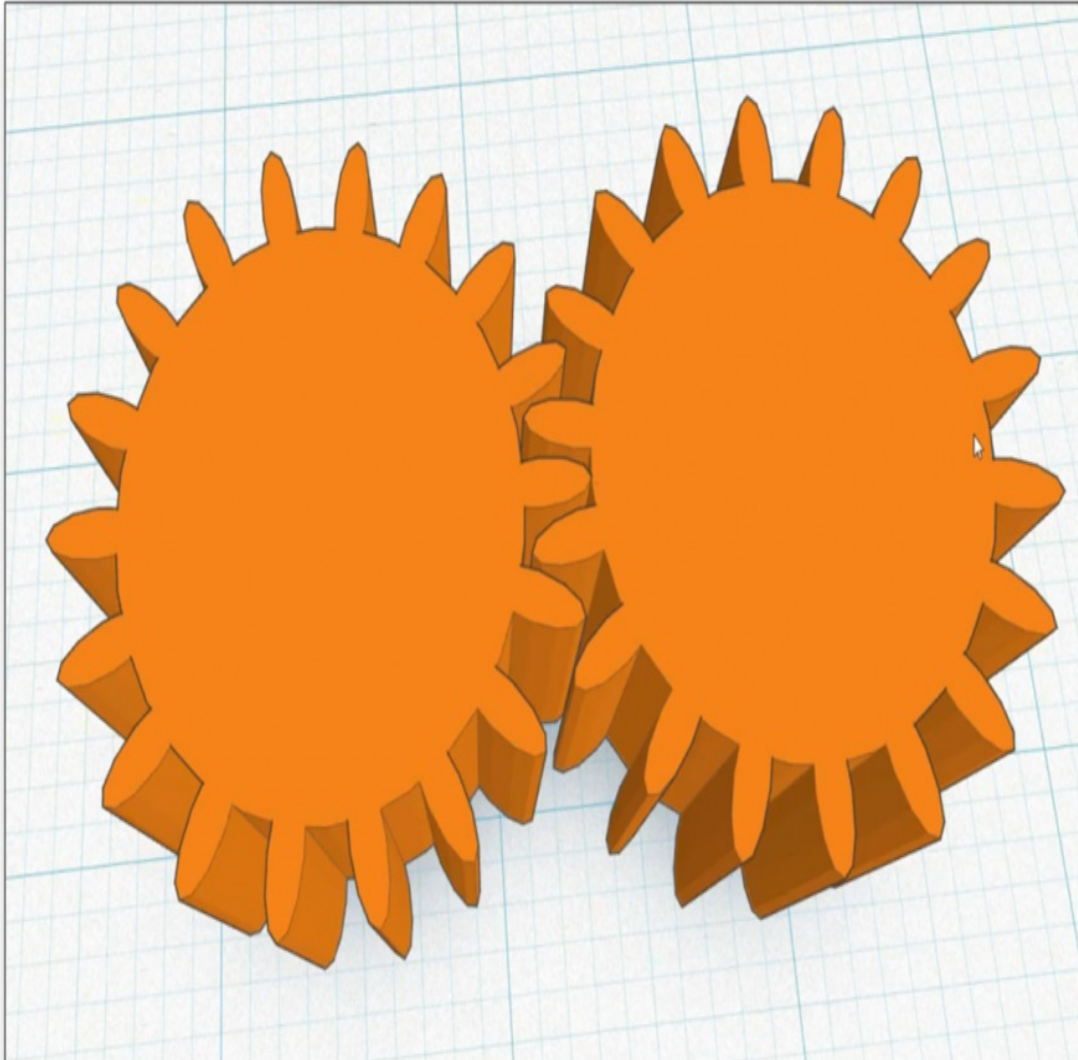
Design Challenge - Tinkercad



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Design Challenge - Tinkercad

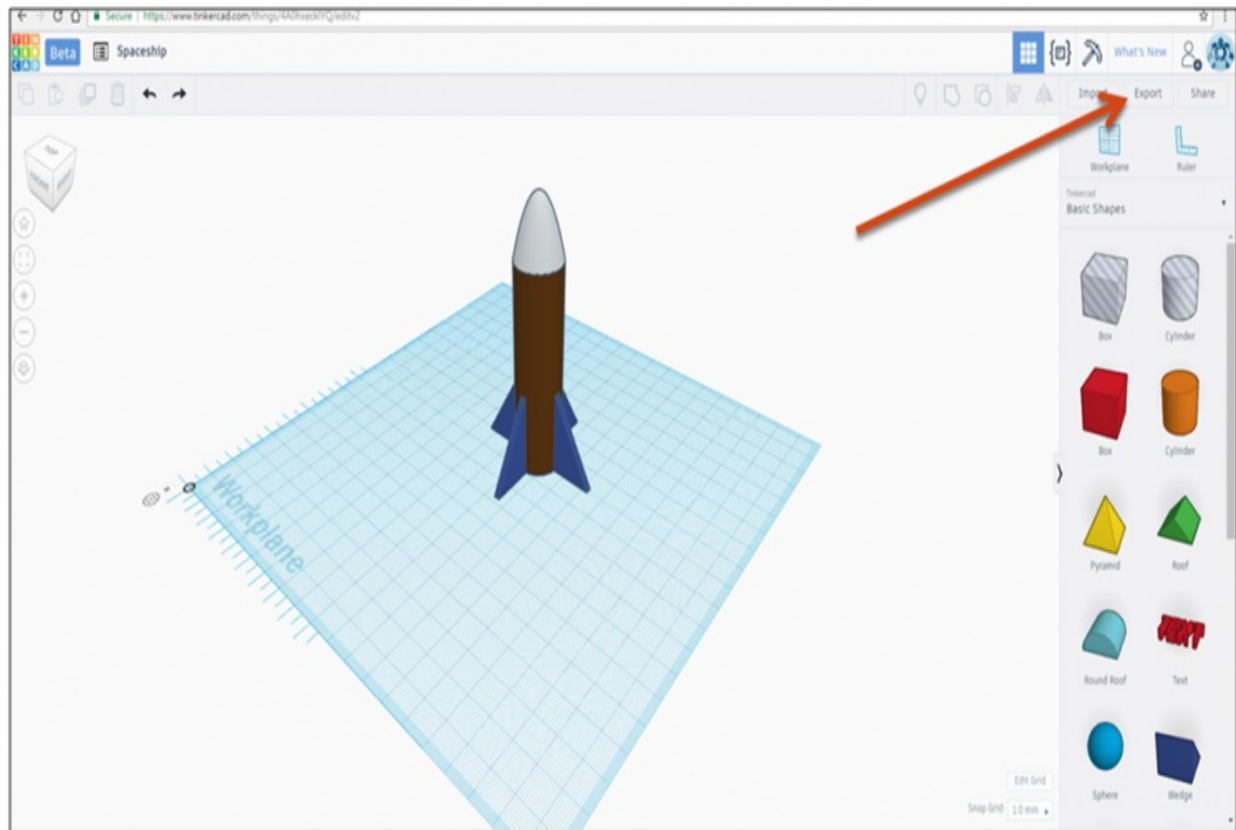


Design Challenge - Tinkercad



How to convert models to .stl (stereolithography) files for 3D printing

Once the design is made, It has to be exported in .stl format for 3D printing. Click the export button as shown below (highlighted in red)



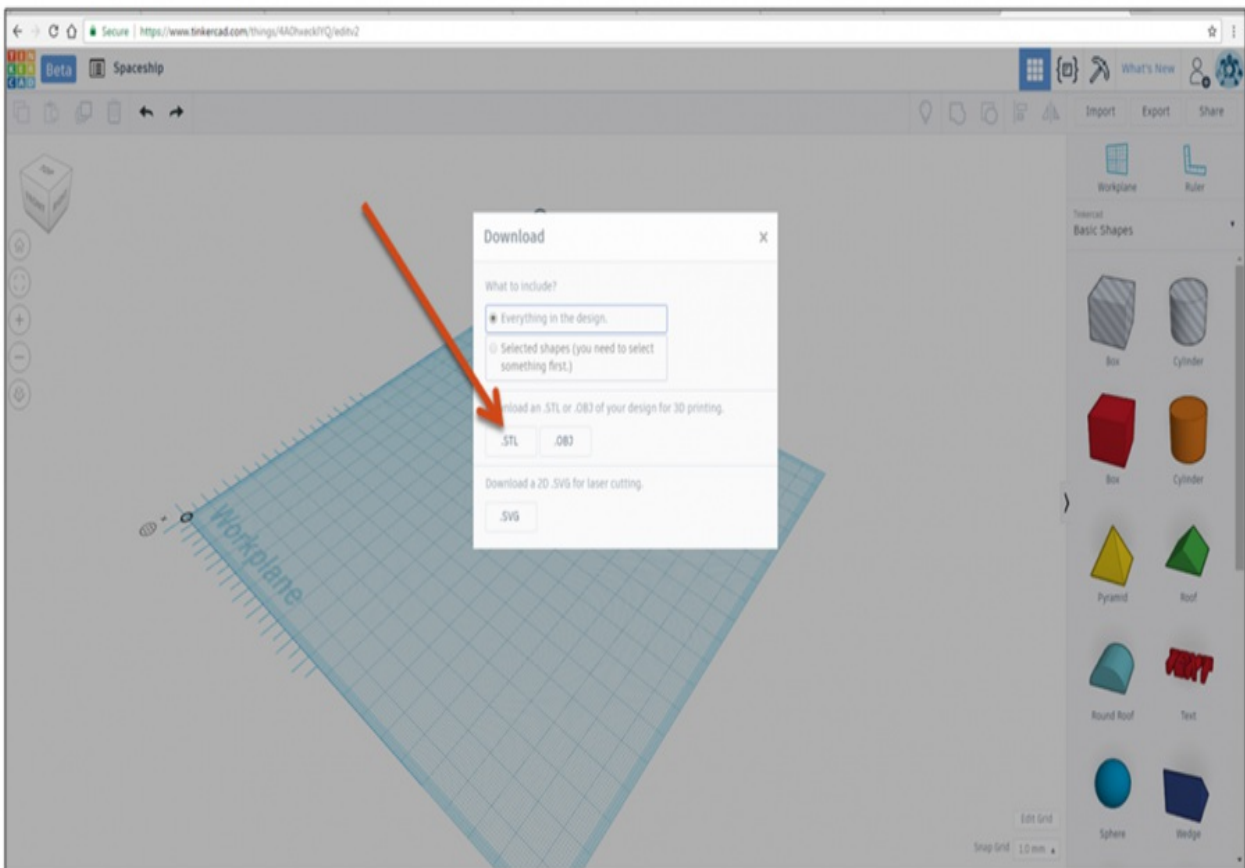
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How to convert models to .stl (stereolithography) files for 3D printing

Then click the .stl button as shown below (highlighted in red)



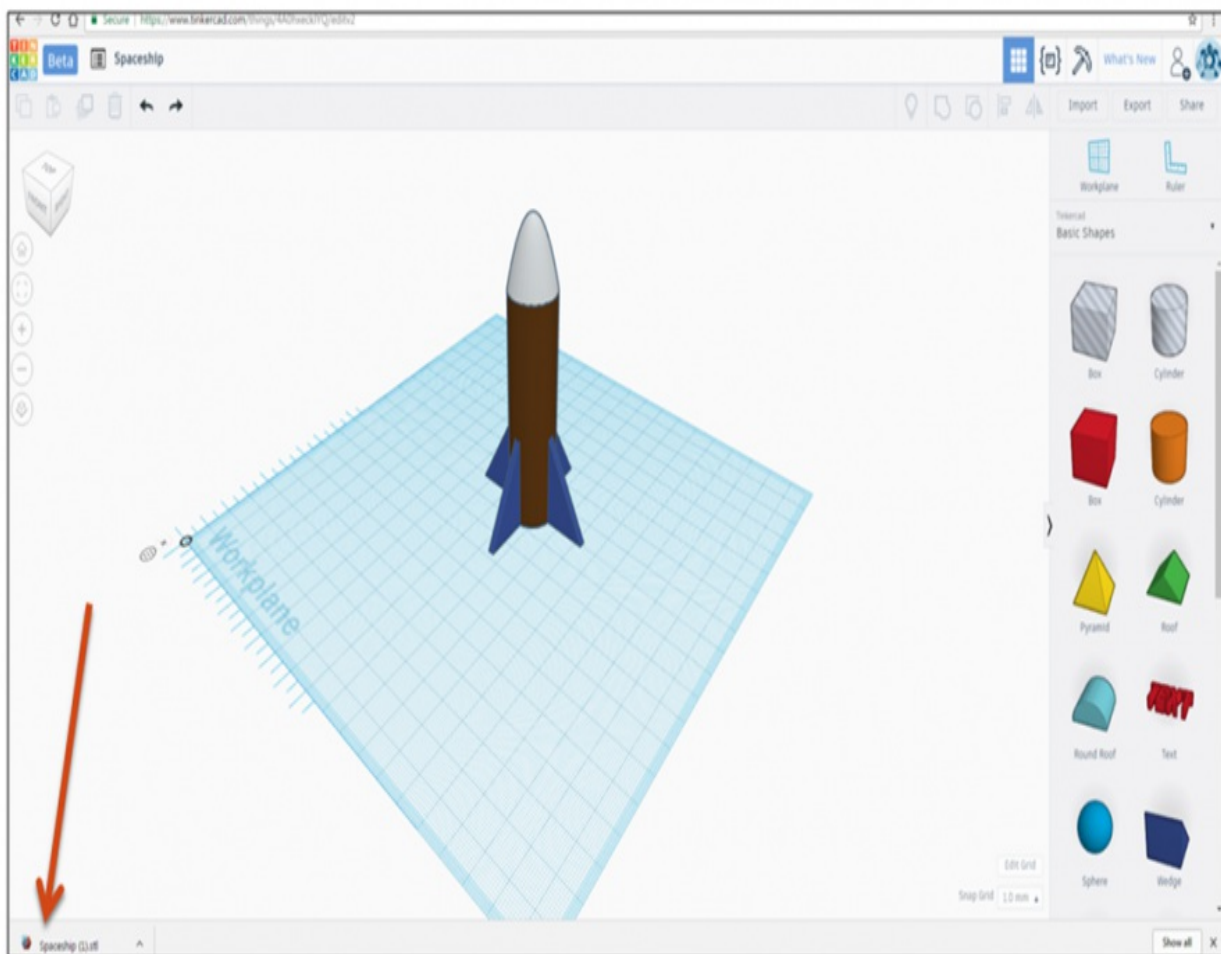
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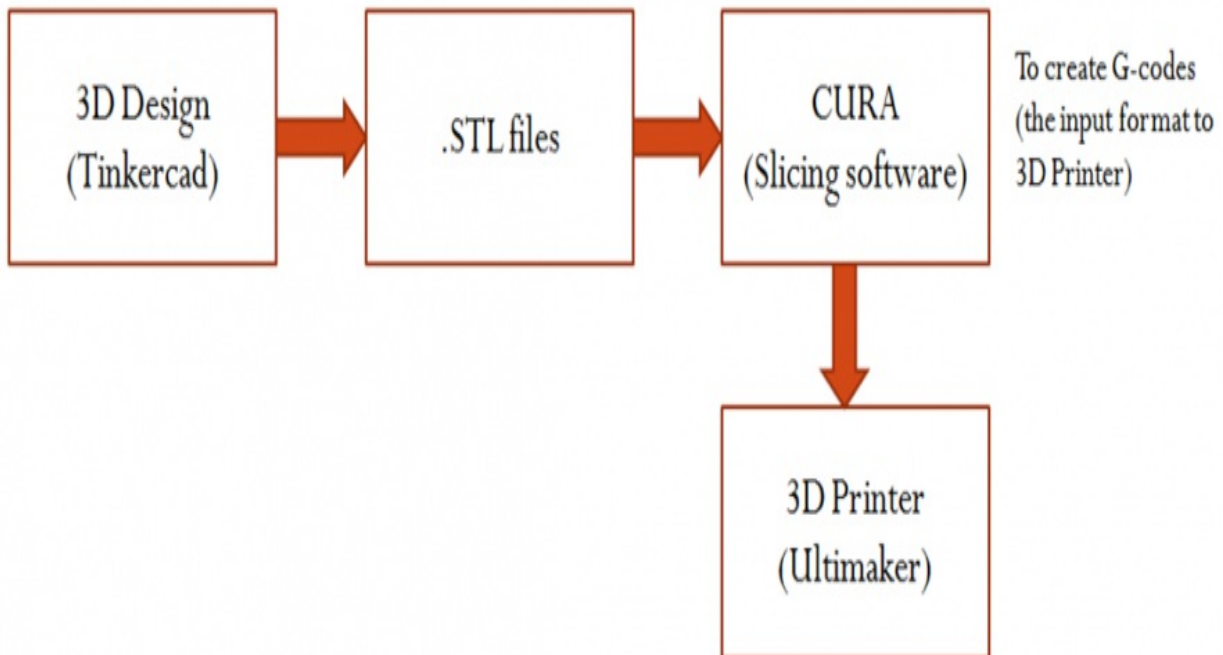
How to convert models to .stl (stereolithography) files for 3D printing

Now, you can see that .stl file is created (highlighted in red) and it's ready to be downloaded.



Sequence

The whole sequence of 3D design till 3D Printing



How to Turn 2D Images into 3D Objects - Tinkercad



<http://image.online-convert.com/convert-to-svg>



batman-logo.svg

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