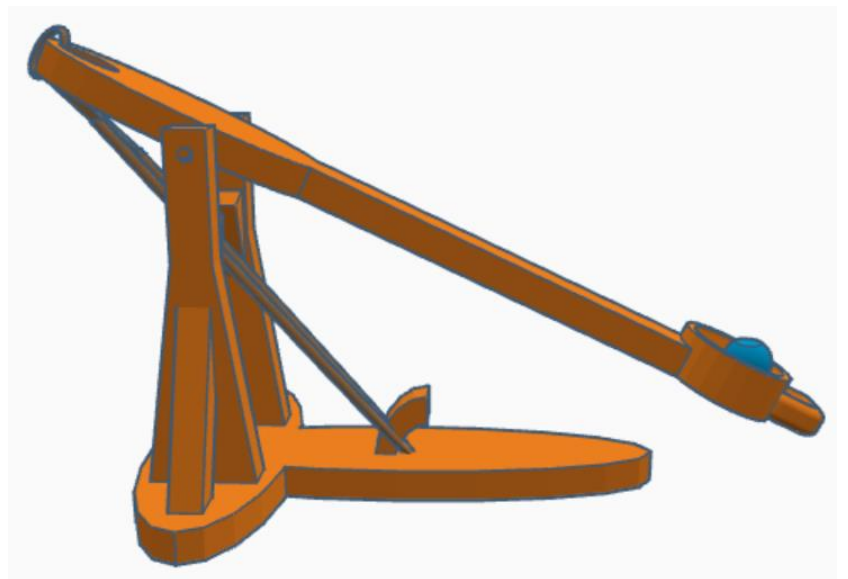
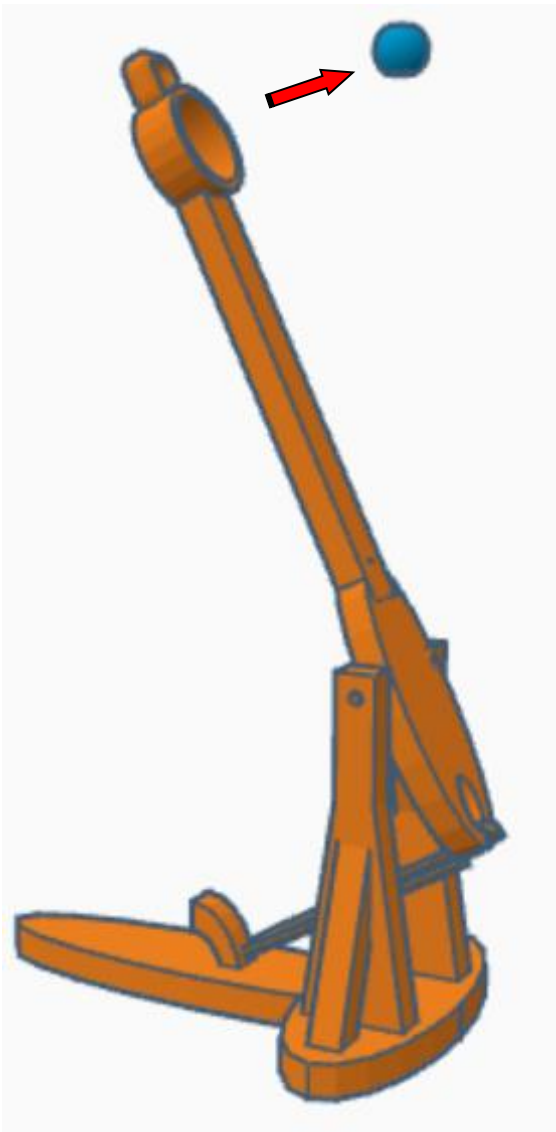




# Catapult



# **Contents:**

<b>Cover.....</b>	<b>1</b>
<b>Table of Contents.....</b>	<b>2</b>
<b>Hook Base .....</b>	<b>3</b>
<b>Hook .....</b>	<b>3</b>
<b>Stand.....</b>	<b>8</b>
<b>Stand Base .....</b>	<b>14</b>
<b>Arm.....</b>	<b>18</b>
<b>Cup .....</b>	<b>24</b>
<b>Finger Pad .....</b>	<b>28</b>
<b>Balls.....</b>	<b>33</b>
<b>Assembly.....</b>	<b>37</b>
<b>References.....</b>	<b>41</b>
<b>Tool Guide.....</b>	<b>43</b>

## **Disclaimer:**

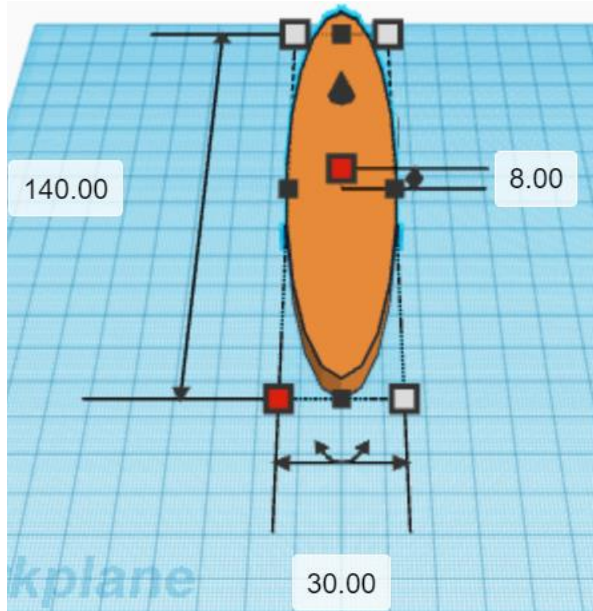
Locations of objects move on a regular basis in TinkerCAD. Although locations of objects are stated, that is the location at the time of publication. This publication has no association with TinkerCAD and does not control when TinkerCAD moves objects.

To accommodate for objects moving locations, it is suggested to add the most used objects to “Favorites”. This acts as a shortcut to the object no matter where it is moved to. To add objects to Favorites, hover the mouse over the object and in the upper right corner, an outlined star will appear. Click on the star changing it to yellow in color. The object will now appear in the Favorites area.

# Hook Base:

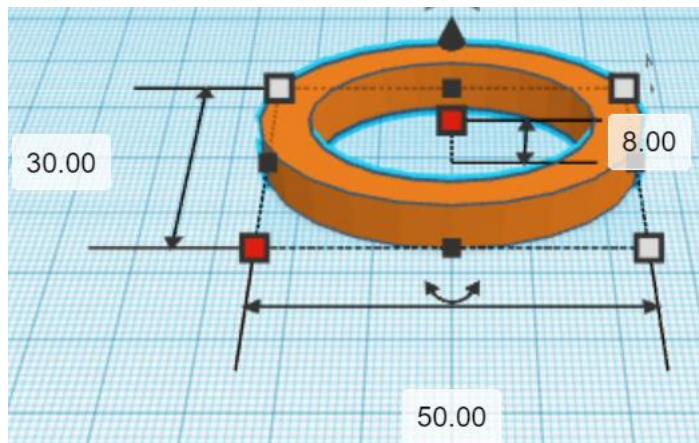
Bring in a Cylinder, located in Basic Shapes on the left 2 shapes down.  
From now on this will be called the **Base**.

Change the dimensions to  
30mm X direction,  
140mm Y direction, and  
8mm Z direction.

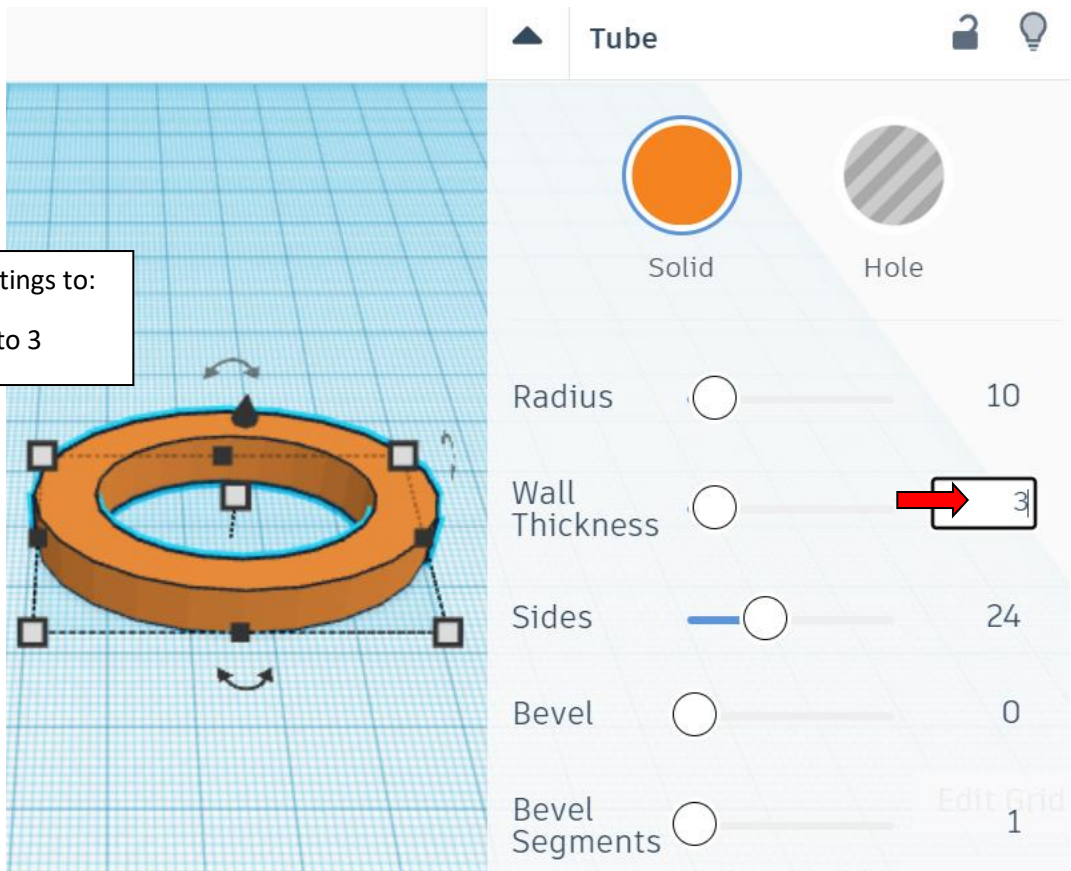


Bring in a Tube, located in Basic Shapes in the center 6 shapes down.  
From now on this will be called the **Hook**.

Change the dimensions to  
50mm X direction,  
30mm Y direction, and  
8mm Z direction.

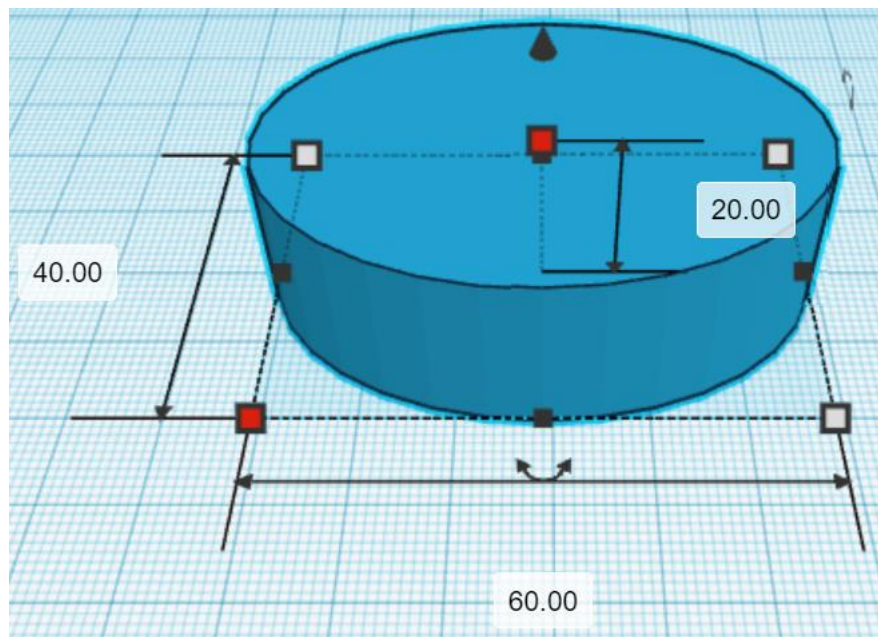


**Hook:** Change Shape settings to:  
**Wall Thickness** from 2.5 to 3



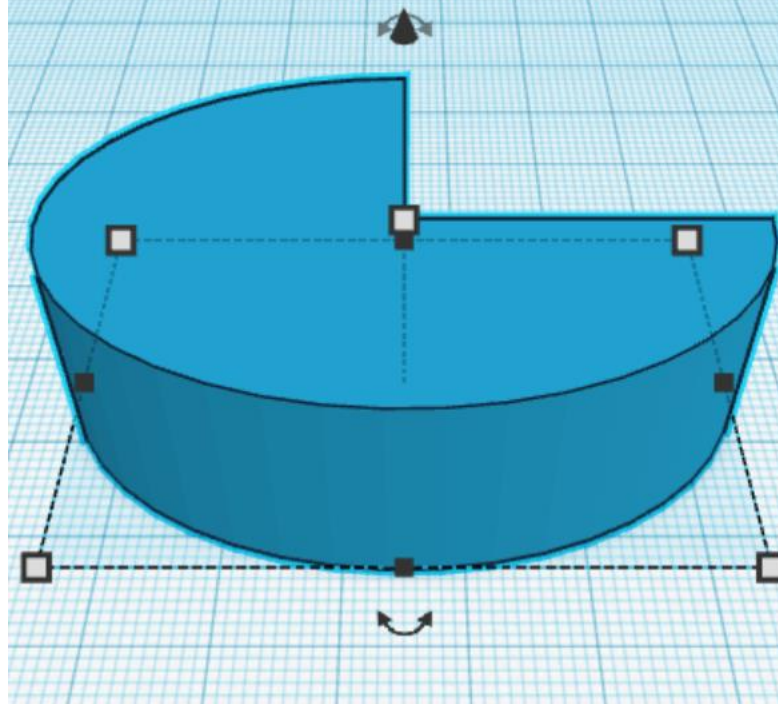
Bring in a Sliced Cylinder, located in Shape Generators, switch to All, on the right 18 shapes down.  
(Things in All move each time that Tinkercad adds items to All, so the location may move.)  
From now on this will be called the **Hook Cutout**.

Change the dimensions to  
60mm X direction,  
40mm Y direction, and  
20mm Z direction.





**Hook Cutout:** Change Shape settings to:  
**Arc** from 360 to 270



sliced cylinder

Solid  Hole

Base Radius

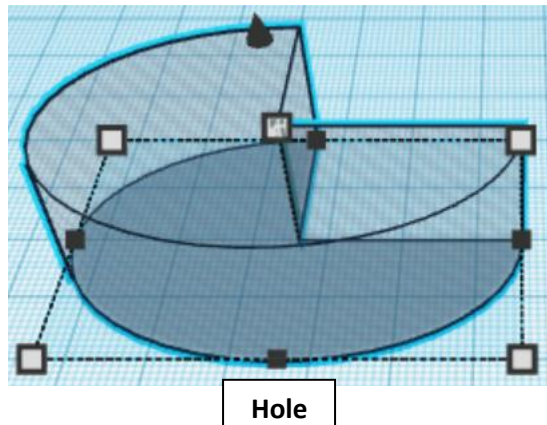
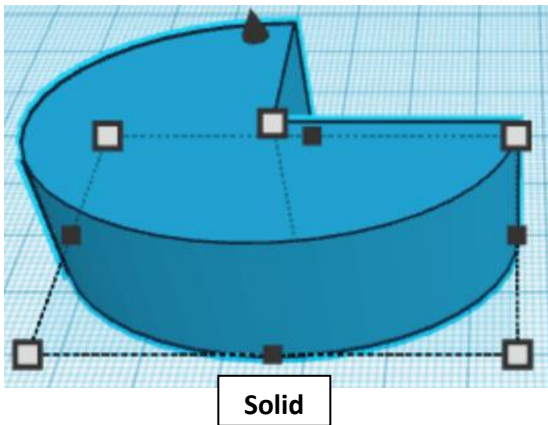
Top Radius

Height

Arc

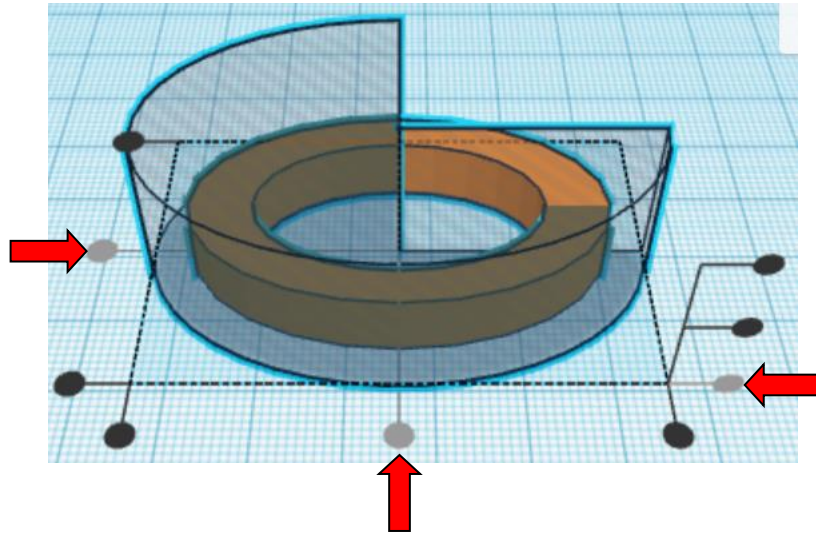
Sliced Cylinder Edit Grid

Change Hook Cutoff to **Hole** by selecting Hook Cutoff and typing "h".

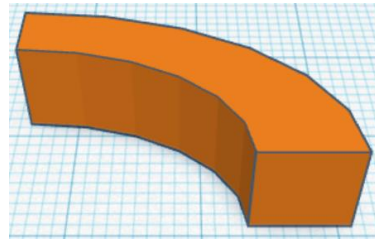


**Align Hook and Hook Cutoff**

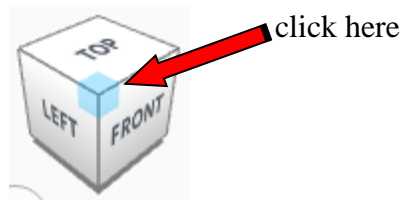
centered in X direction,  
centered of Y direction, and  
bottom of Z direction.



**Group Hook and Hook Cutoff**  
From now on this will be called the **Hook**

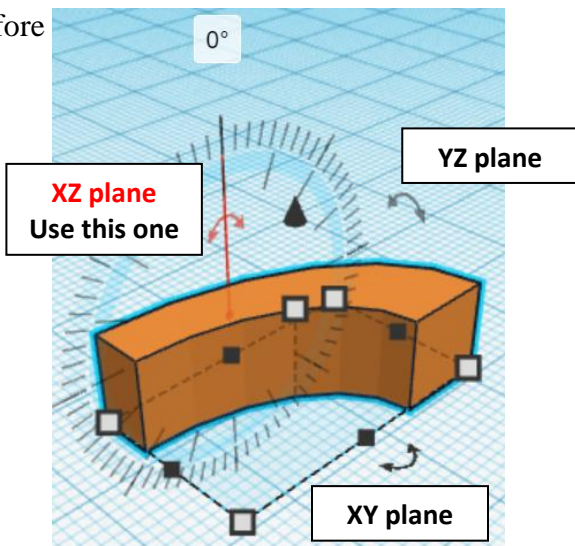


Go to TOP LEFT FRONT view for rotations

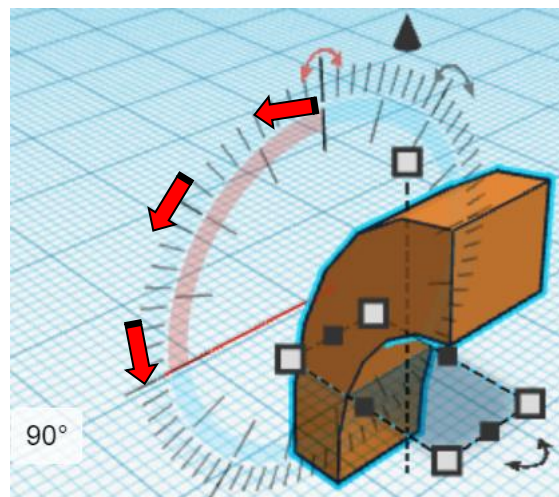


**Rotate** the Hook counter-clockwise 90 degrees in XZ plane.

Before



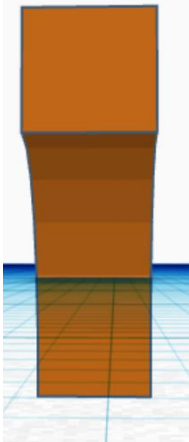
After



**Set on Workplane:**

Select the Hook and type "d" to set the body on the work plane.

Before

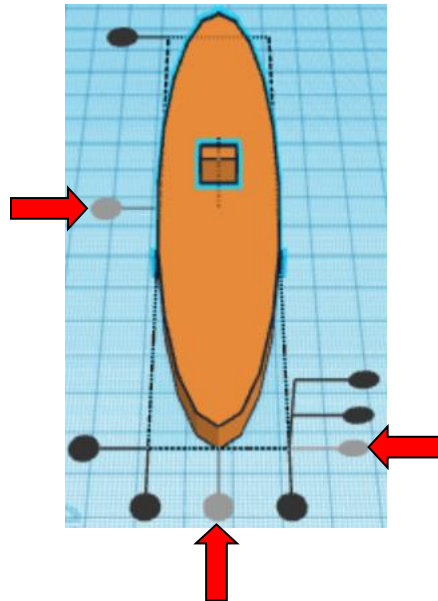


After



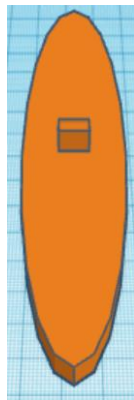
**Align Hook and Base**

centered in X direction,  
centered of Y direction, and  
bottom of Z direction.



**Group Hook and Base**

From now on this will be called the **Base**

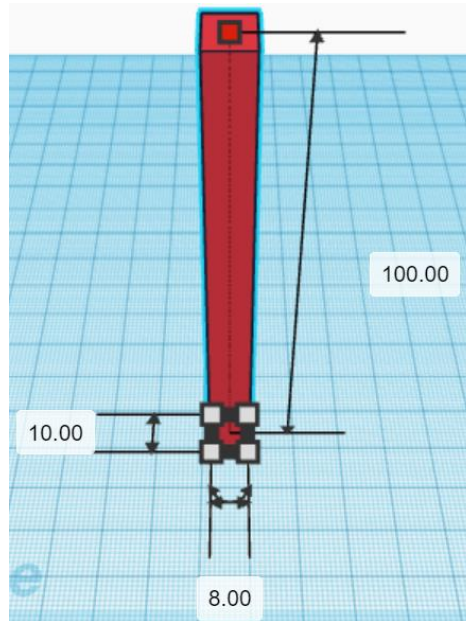




## Stand:

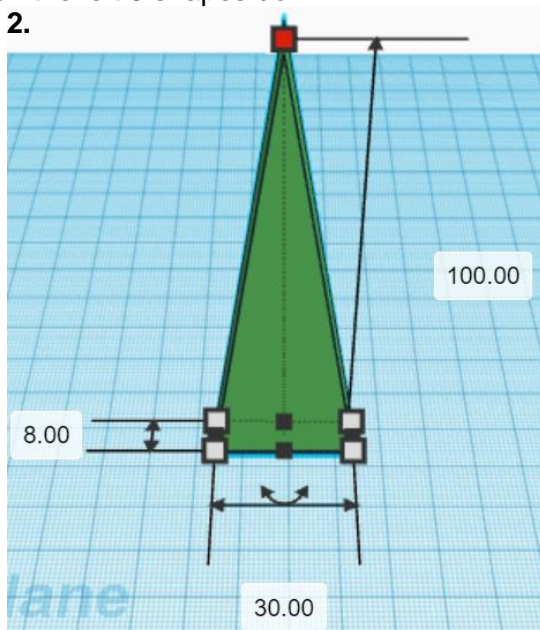
Bring in a Box, located in Basic Shapes on the right 1 shape down.  
From now on this will be called the **Stand 1**.

Change the dimensions to  
8mm X direction,  
10mm Y direction, and  
100mm Z direction.



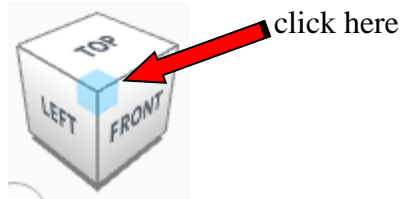
Bring in a Roof, located in Basic Shapes on the left 3 shapes down.  
From now on this will be called the **Stand 2**.

Change the dimensions to  
30mm X direction,  
8mm Y direction, and  
100mm Z direction.



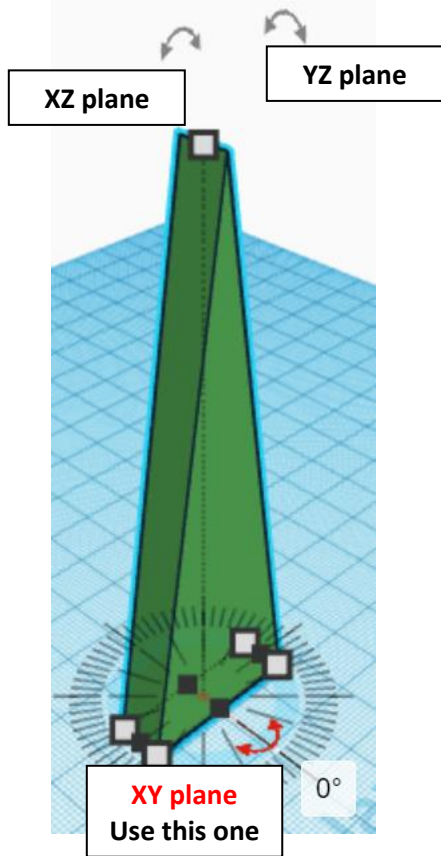


Go to TOP LEFT FRONT view for rotations

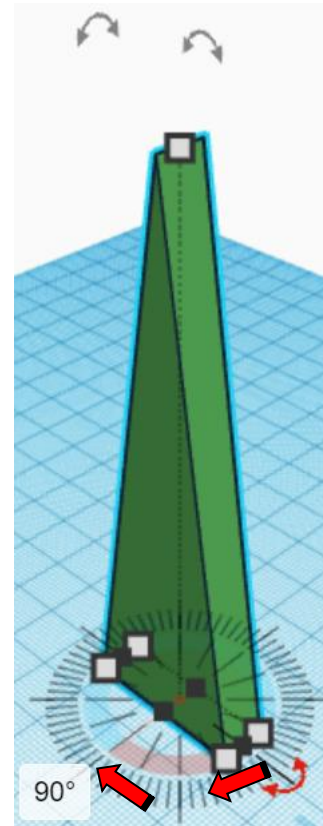


**Rotate** the Stand 2 clockwise 90 degrees in XY plane.

Before

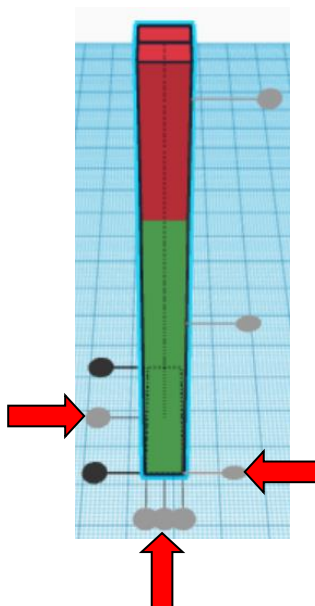


After

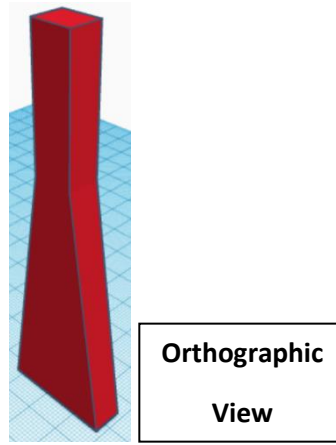


**Align** Stand 1 and Stand 2

centered in X direction,  
centered of Y direction, and  
bottom of Z direction.

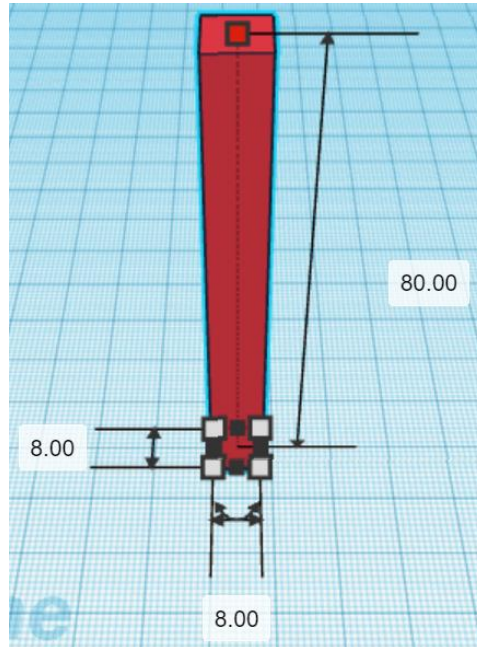


**Group Stand 1 and Stand 2**  
From now on this will be called the **Stand 1**

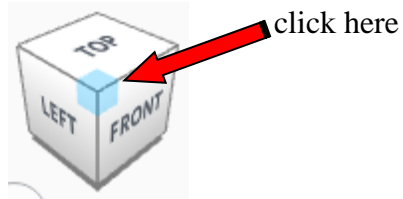


Bring in a Box, located in Basic Shapes on the right 1 shape down.  
From now on this will be called the **Stand 3**.

Change the dimensions to  
8mm X direction,  
8mm Y direction, and  
80mm Z direction.

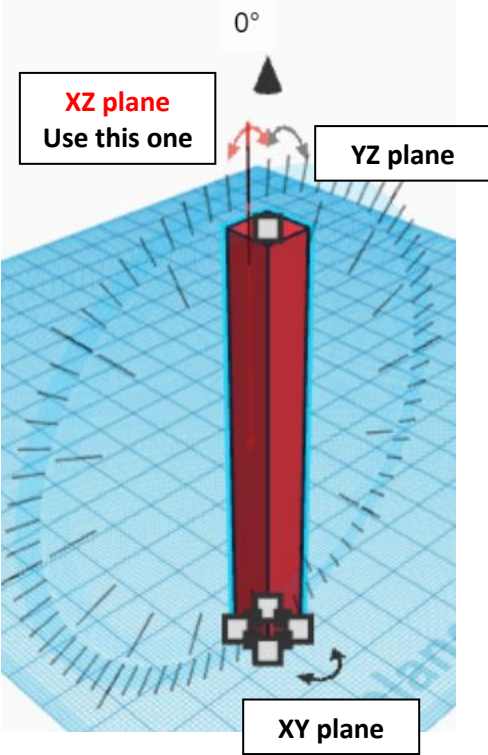


Go to TOP LEFT FRONT view for rotations

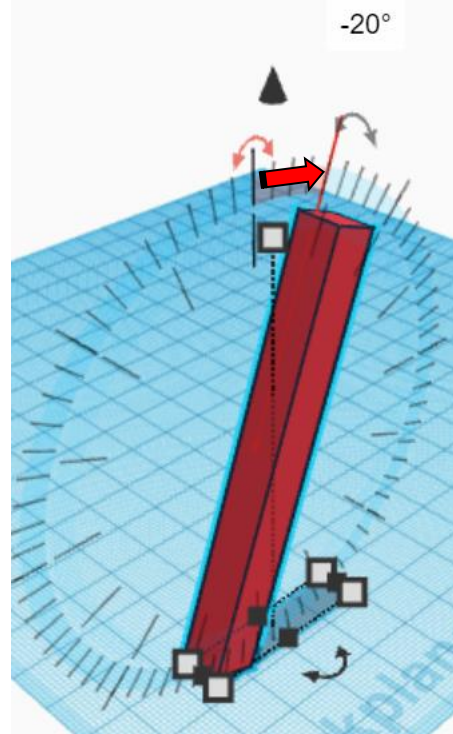


**Rotate** the Stand 3 clockwise 20 degrees in XZ plane.

Before

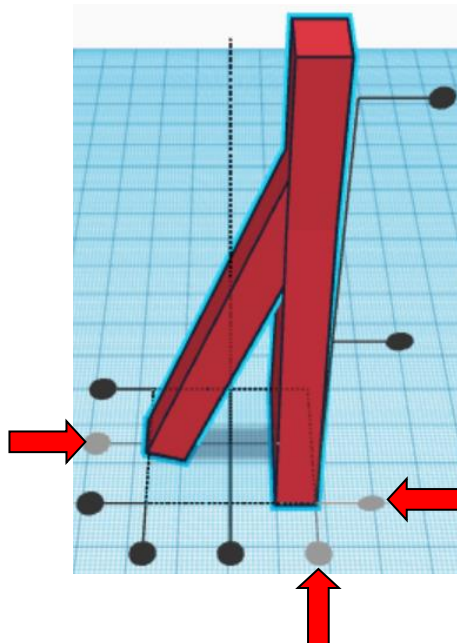


After



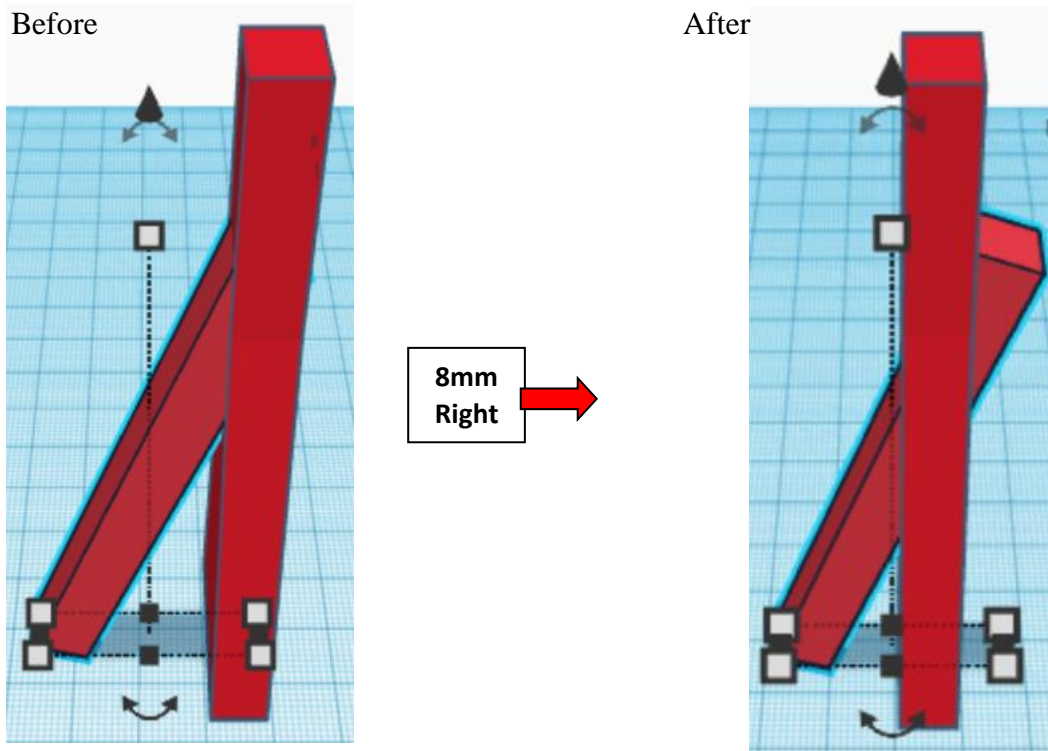
**Align** Stand 1 and Stand 3

centered in X direction,  
centered of Y direction, and  
bottom of Z direction.

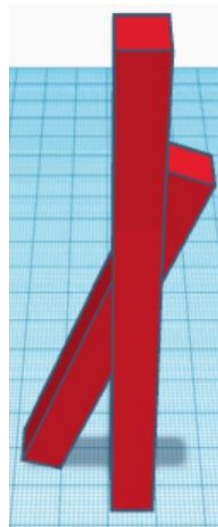


**Move Stand 3** (Must be in home view for this to work!)  
move right in positive X direction 8mm

**Hint:** Select Stand 3 and push right arrow key 8 times.



**Group Stand 1 and Stand 3**  
From now on this will be called the **Stand**



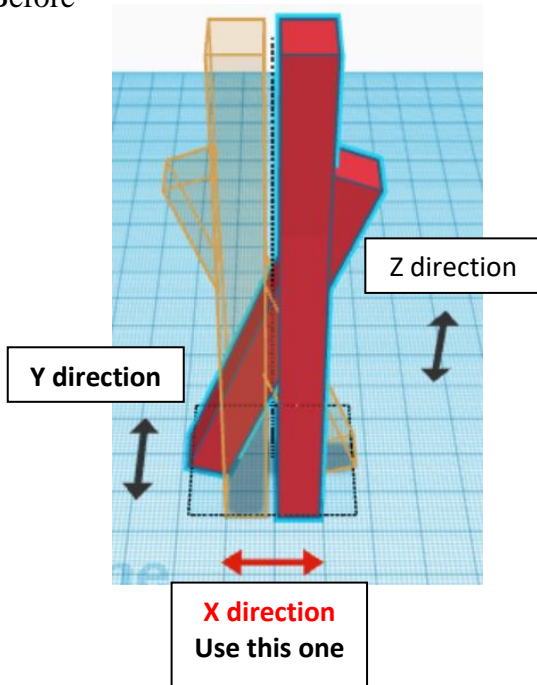


**Duplicate Stand** (1) time

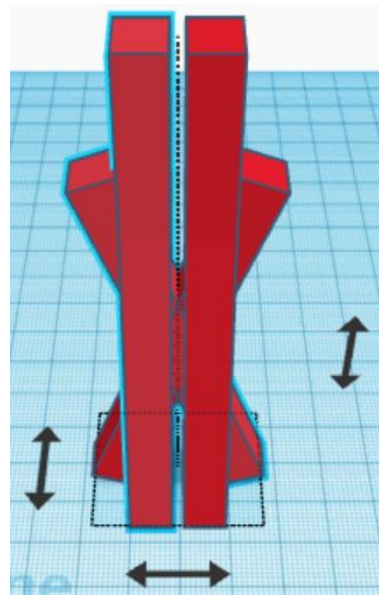
From now on this Duplicate will be called the **Flipped Stand**

**Flip Flipped Stand** in X direction.

Before



After



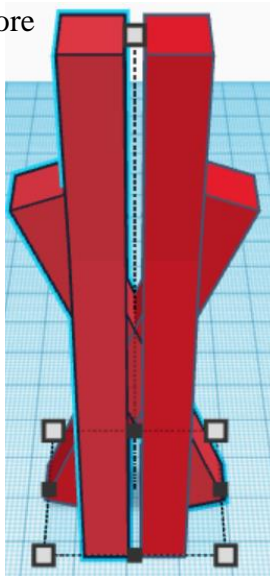
**Move Flipped Stand** (Must be in home view for this to work!)  
move right in positive X direction 50mm

**Hint:** Select **Flipped Stand** and push right arrow key 50 times.

Or

Select **Flipped Stand** and hold shift and push right arrow key 5 times.

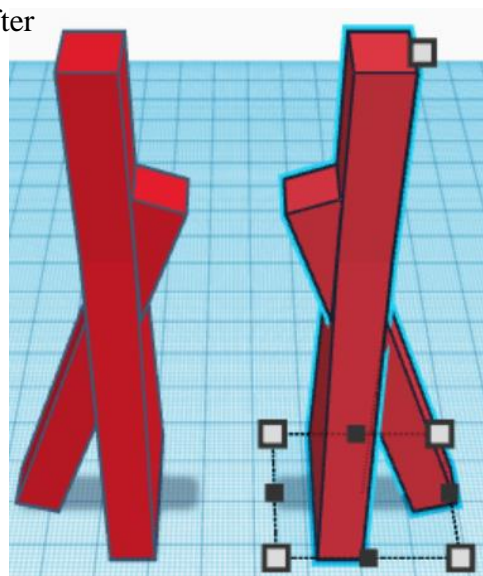
Before



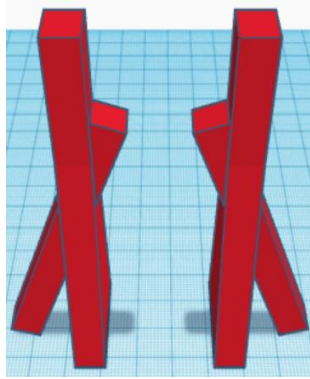
50mm  
Right



After

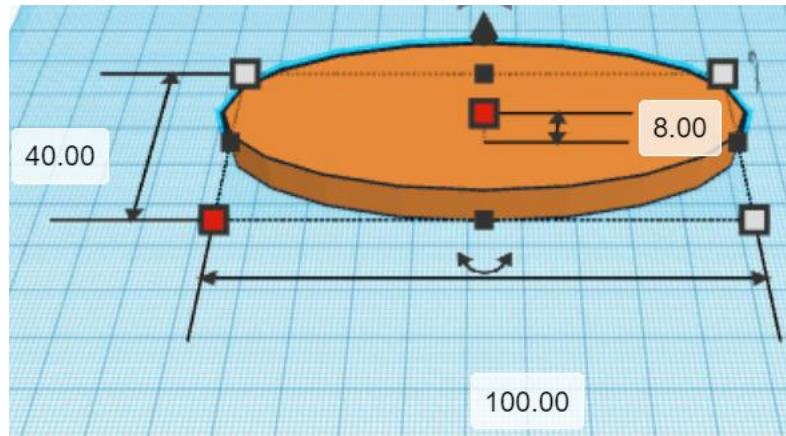


**Group Stand** and **Flipped Stand**  
From now on this will be called the **Stand**



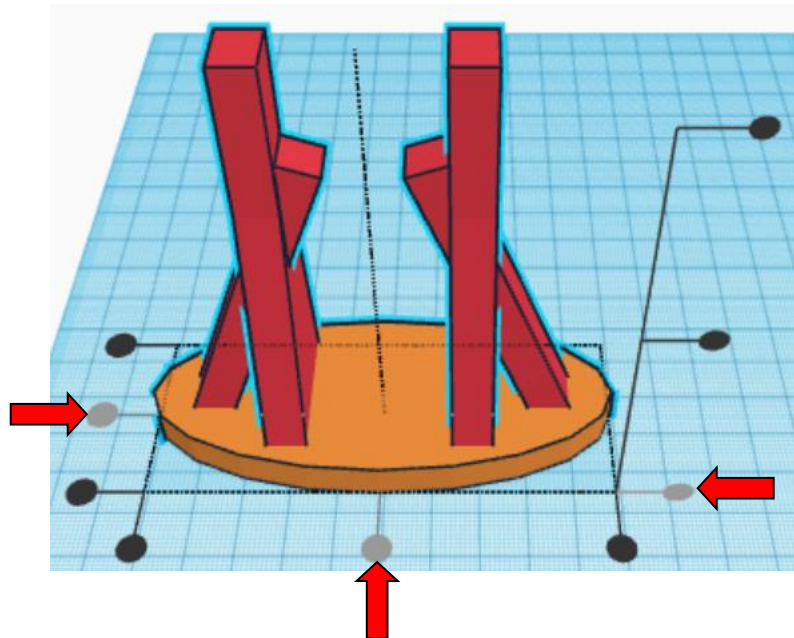
Bring in a Cylinder, located in Basic Shapes on the left 2 shapes down.  
From now on this will be called the **Stand Base**.

Change the dimensions to  
100mm X direction,  
40mm Y direction, and  
8mm Z direction.



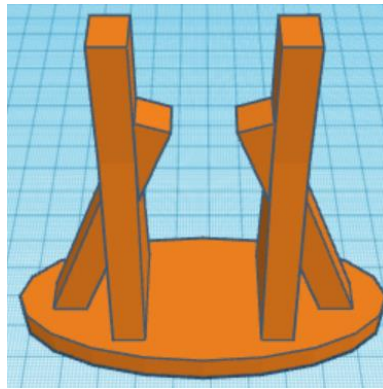
**Align Stand** and **Stand Base**

centered in X direction,  
centered of Y direction, and  
bottom of Z direction.



**Group Stand and Stand Base**

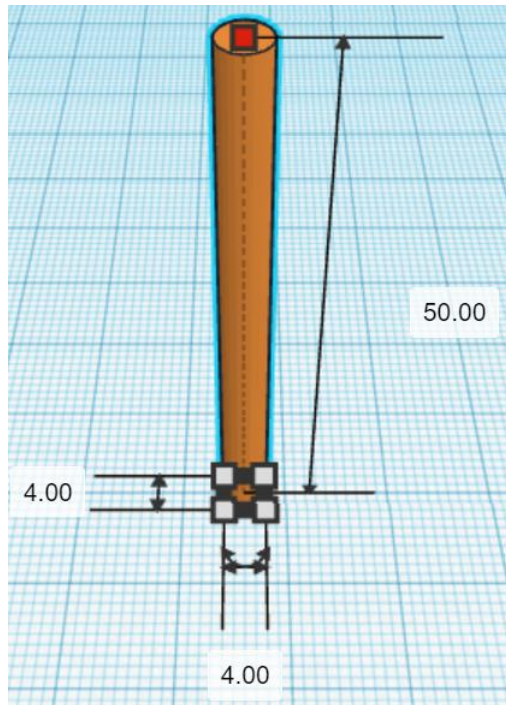
From now on this will be called the **Stand Base**



Bring in a Cylinder, located in Basic Shapes on the left 2 shapes down.

From now on this will be called the **Pivot Cutout**.

Change the dimensions to  
4mm X direction,  
4mm Y direction, and  
50mm Z direction.



**Change Pivot Cutoff to Hole** by selecting Pivot Cutoff and typing "h".



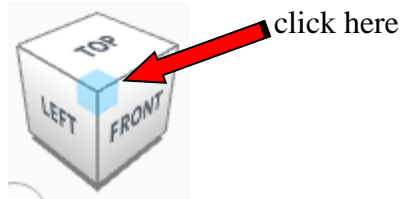
**Solid**



**Hole**

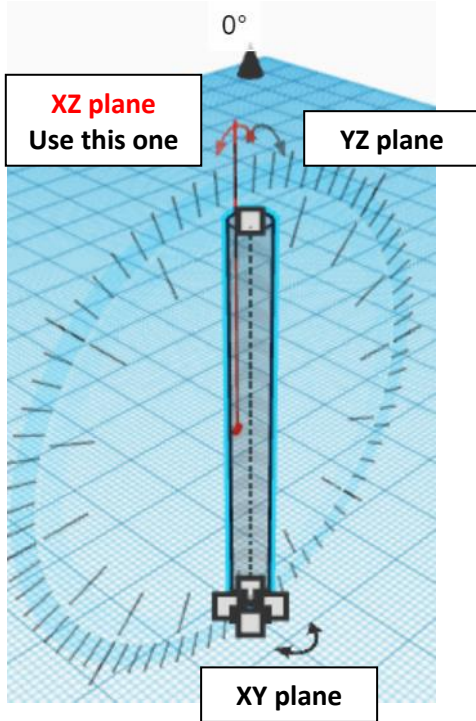


Go to TOP LEFT FRONT view for rotations

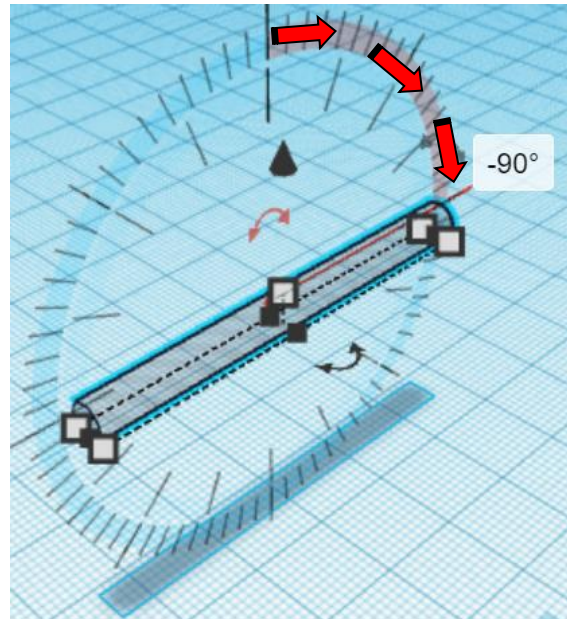


**Rotate** the Pivot Cutoff clockwise 90 degrees in XZ plane.

Before

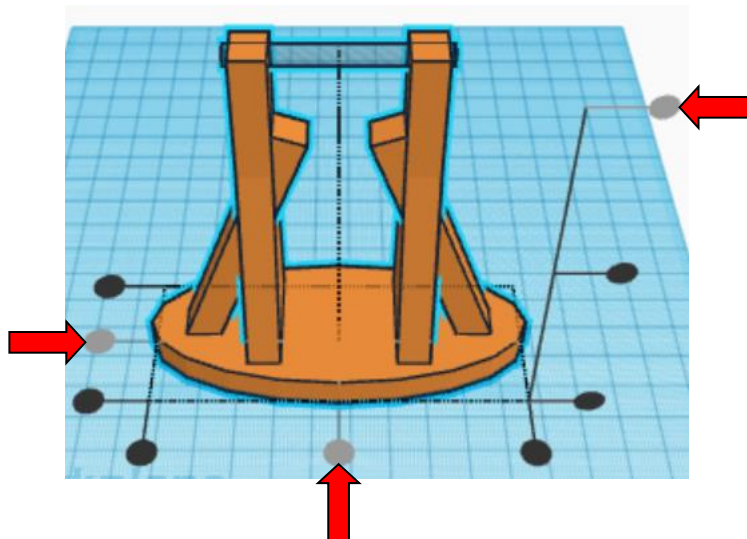


After



**Align** Pivot Cutoff and Stand Base

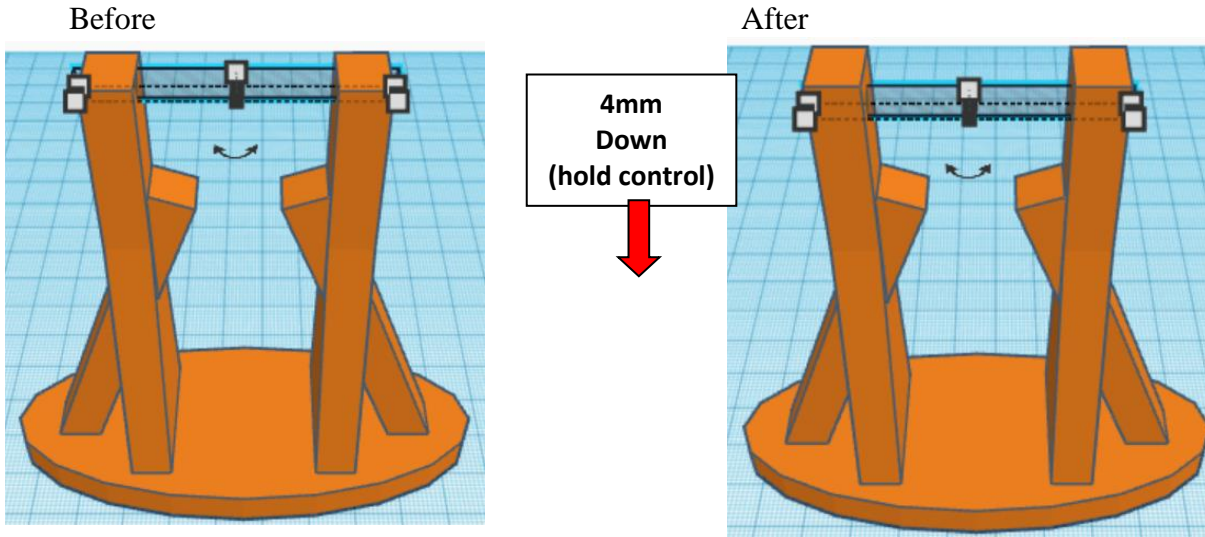
centered in X direction,  
centered of Y direction, and  
top of Z direction.



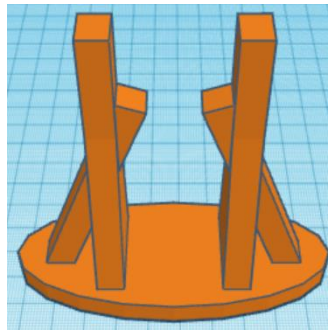


**Move Pivot Cutoff** (Must be in home view for this to work!)  
move down in negative Z direction 4mm

**Hint:** Select Pivot Cutoff and hold control and push down arrow key 4 times.

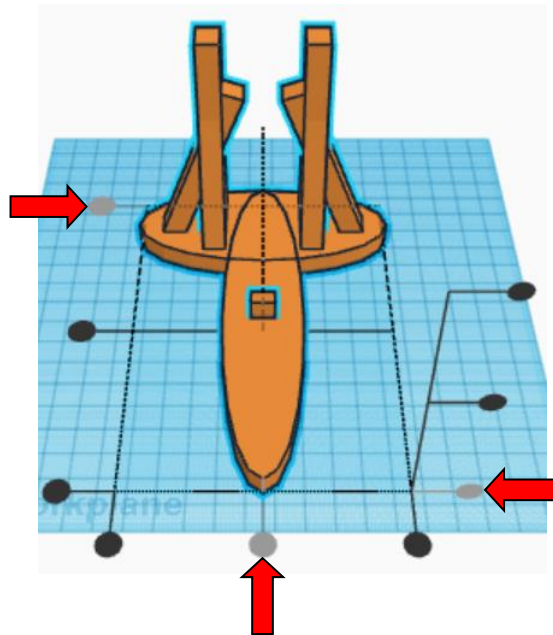


**Group Pivot Cutoff and Stand Base**  
From now on this will be called the **Stand Base**

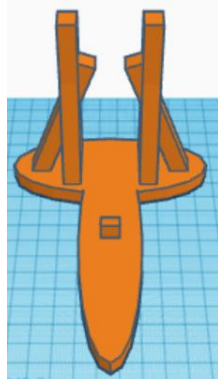


**Align Base and Stand Base**

centered in X direction,  
back of Y direction, and  
bottom of Z direction.



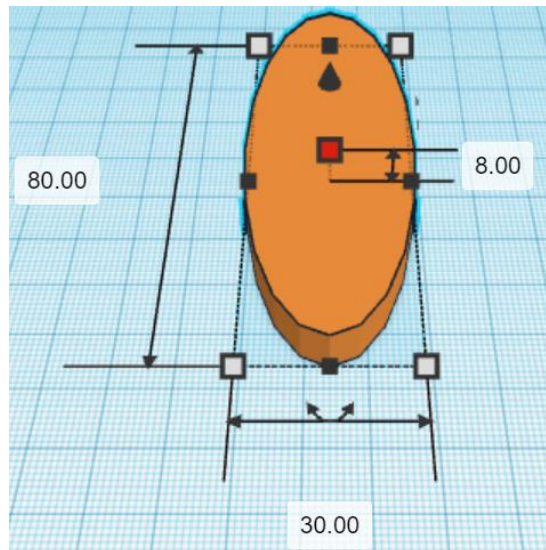
**Group Base** and **Stand Base**  
From now on this will be called the **Base**



## Arm:

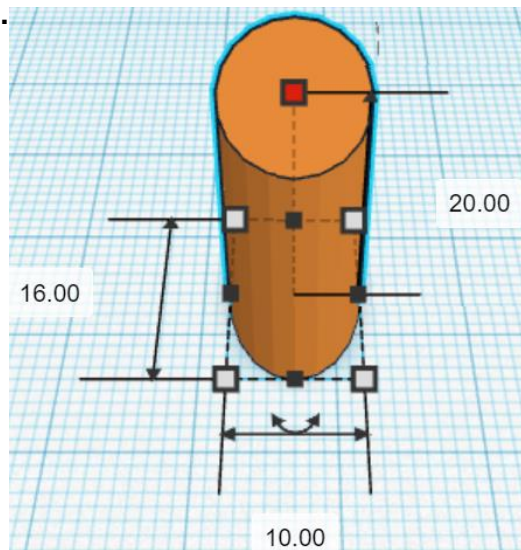
Bring in a Cylinder, located in Basic Shapes on the left 2 shapes down.  
From now on this will be called the **Arm End**.

Change the dimensions to  
30mm X direction,  
80mm Y direction, and  
8mm Z direction.

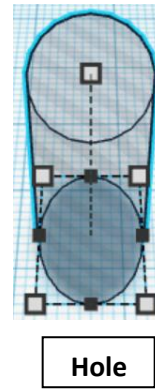
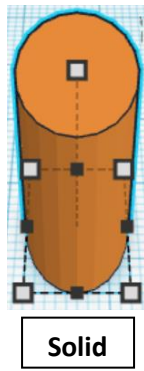


Bring in a Cylinder, located in Basic Shapes on the left 2 shapes down.  
From now on this will be called the **Arm End Cutout**.

Change the dimensions to  
10mm X direction,  
16mm Y direction, and  
20mm Z direction.

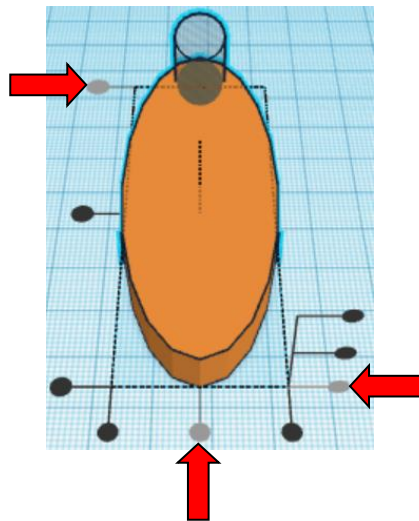


Change Arm End Cutoff to **Hole** by selecting Arm End Cutoff and typing "h".



Align Arm End and Arm End Cutout

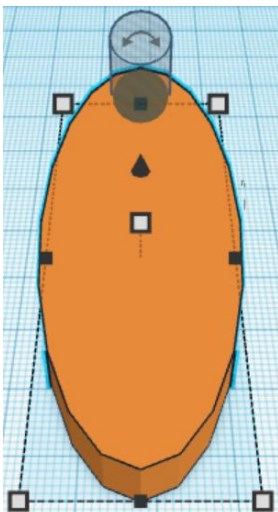
centered in X direction,  
back of Y direction, and  
bottom of Z direction.



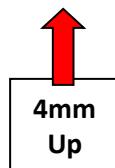
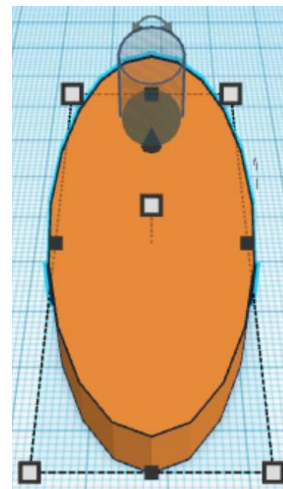
**Move** Arm End (Must be in home view for this to work!)  
move up in positive Y direction 10mm

**Hint:** Select Arm End and push up key 10 times.  
Or  
Select Arm End and hold shift and push up key 1 time.

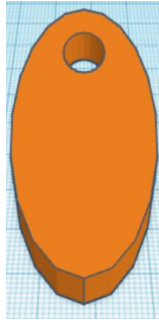
Before



After

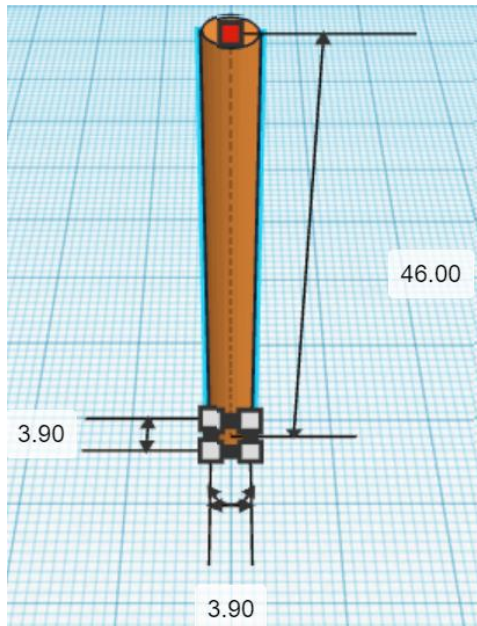


**Group** Arm End Cutoff and Stand Base  
From now on this will be called the **Arm End**



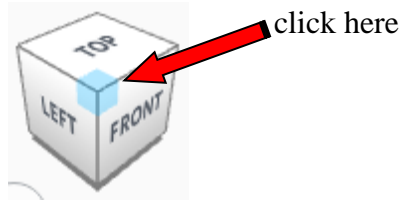
Bring in a Cylinder, located in Basic Shapes on the left 2 shapes down.  
From now on this will be called the **Pivot**

Change the dimensions to  
3.9mm X direction,  
3.9mm Y direction, and  
46mm Z direction.



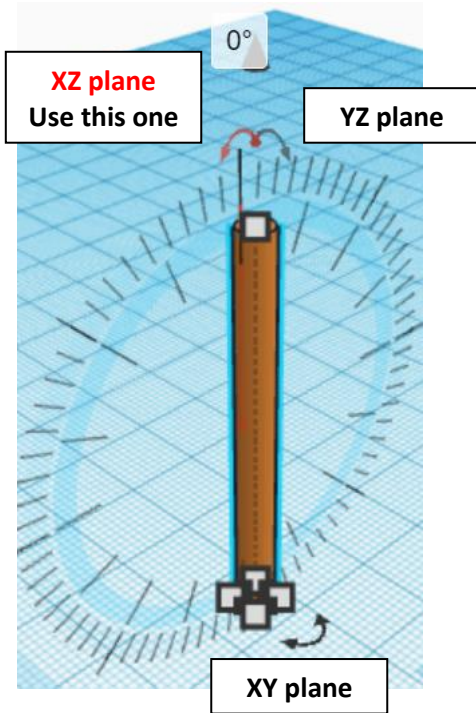


Go to TOP LEFT FRONT view for rotations

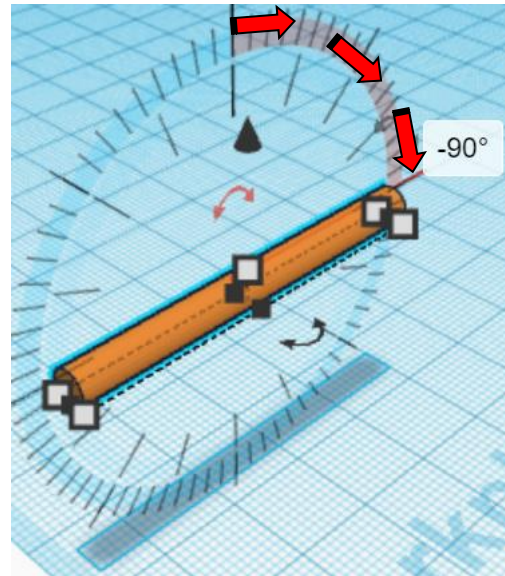


**Rotate** the Pivot clockwise 90 degrees in XZ plane.

Before

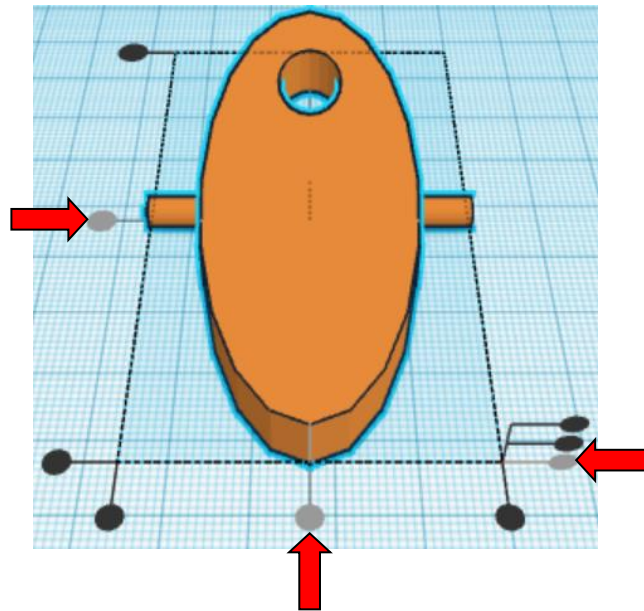


After



**Align** Arm End and Pivot

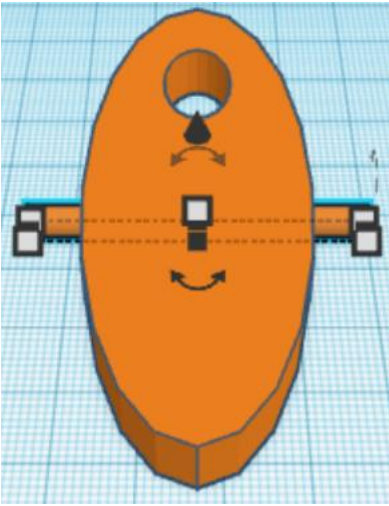
centered in X direction,  
centered of Y direction, and  
bottom of Z direction.



**Move Pivot** (Must be in home view for this to work!)  
move down in negative Y direction 8mm

**Hint:** Select Pivot and push down arrow key 8 times.

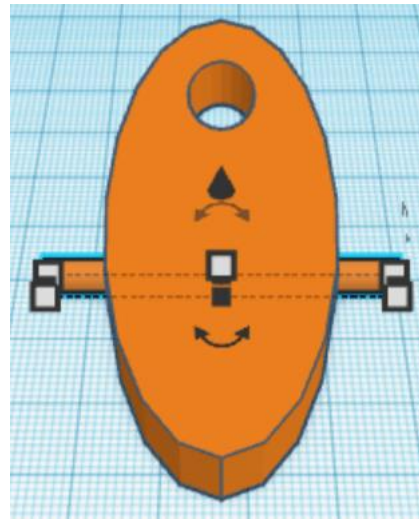
Before



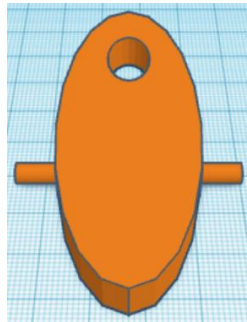
8mm  
Down

A red arrow pointing downwards, indicating the direction of the 8mm movement.

After

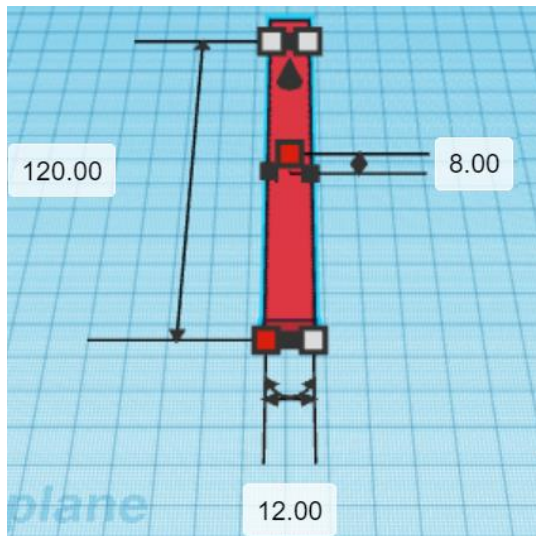


**Group Arm End and Pivot**  
From now on this will be called the **Arm End**



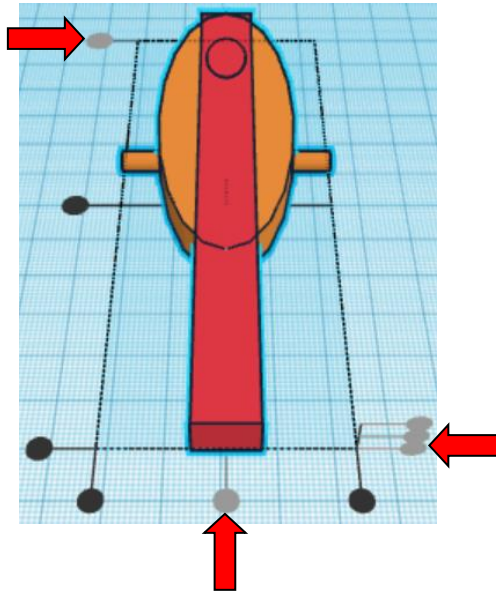
Bring in a Box, located in Basic Shapes on the right 1 shape down.  
From now on this will be called the **Arm**.

Change the dimensions to  
12mm X direction,  
120mm Y direction, and  
8mm Z direction.



**Align Arm End and Arm**

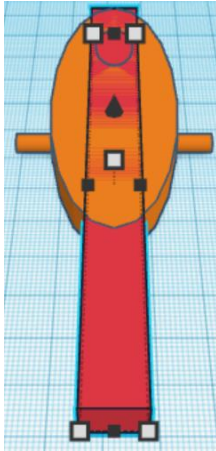
centered in X direction,  
back of Y direction, and  
bottom of Z direction.



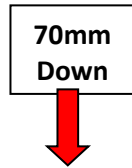
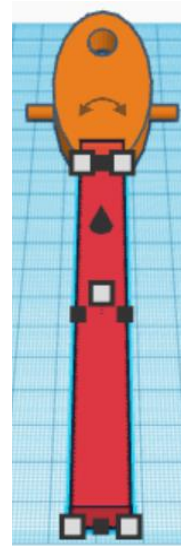
**Move Arm** (Must be in home view for this to work!)  
move down in negative Y direction 70mm

**Hint:** Select Arm and push down arrow key 70 times.  
Or  
Select Arm and hold shift and push down arrow key 7 times.

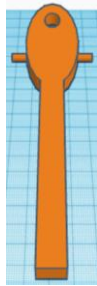
Before



After



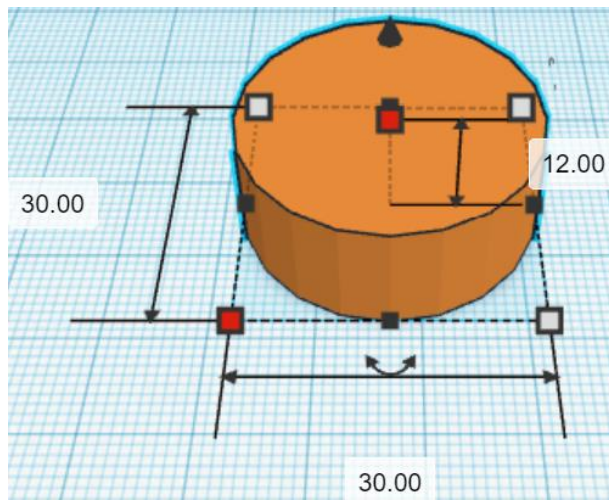
**Group Arm End and Arm**  
From now on this will be called the **Arm**



## Cup:

Bring in a Cylinder, located in Basic Shapes on the left 2 shapes down.  
From now on this will be called the **Cup**.

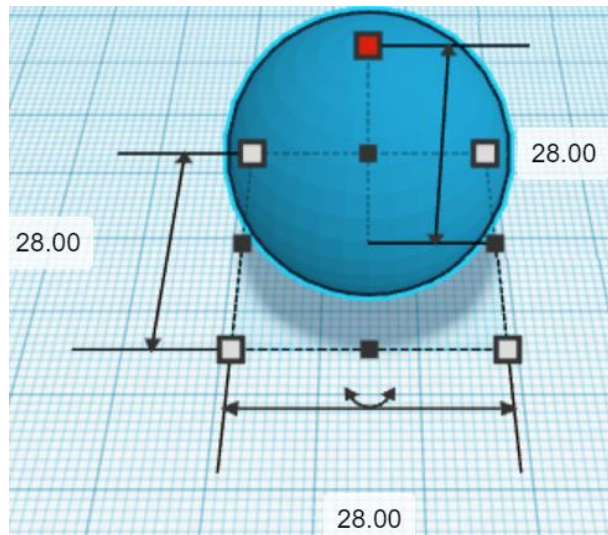
Change the dimensions to  
30mm X direction,  
30mm Y direction, and  
12mm Z direction.



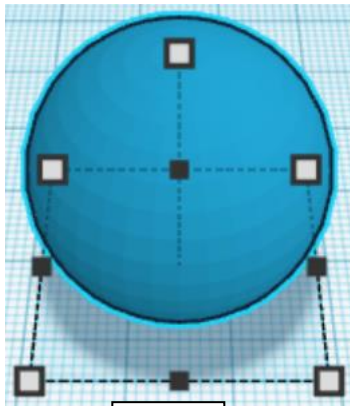


Bring in a Sphere, located in Basic Shapes in the center 2 shapes down.  
From now on this will be called the **Cup Cutout**.

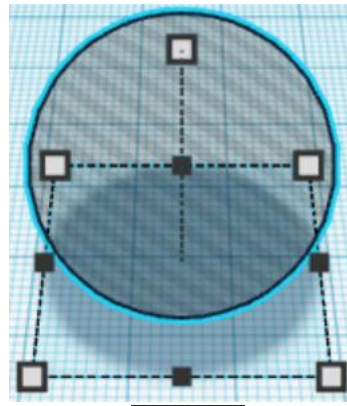
Change the dimensions to  
28mm X direction,  
28mm Y direction, and  
28mm Z direction.



Change Cup Cutoff to **Hole** by selecting Cup Cutoff and typing "h".



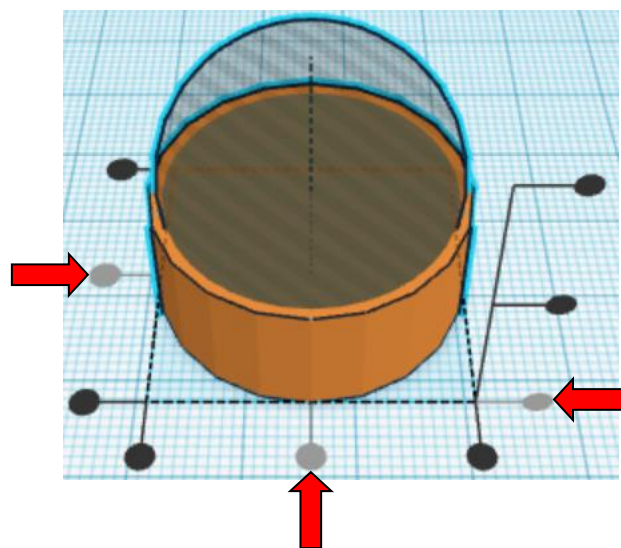
Solid



Hole

**Align** Cup and Cup Cutout

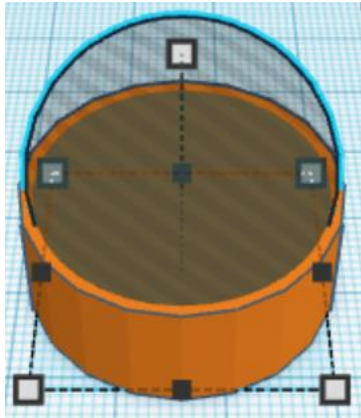
centered in X direction,  
centered of Y direction, and  
bottom of Z direction.



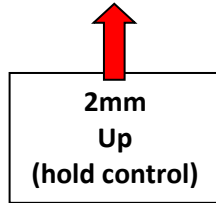
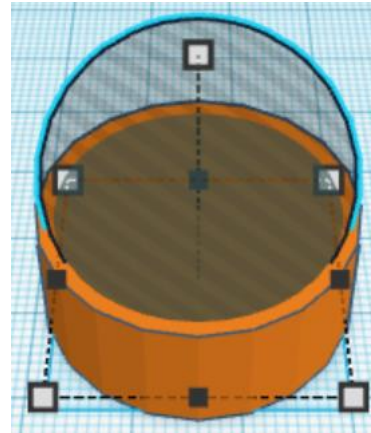
**Move Cup Cutout** (Must be in home view for this to work!)  
move up in positive Z direction 2mm

**Hint:** Select Cup Cutout and hold control and push up arrow key 2 times.

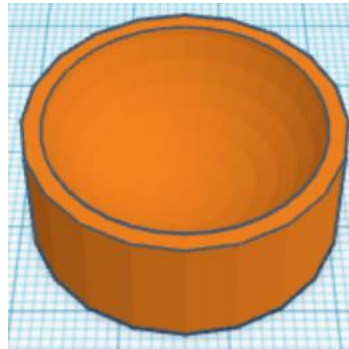
Before



After

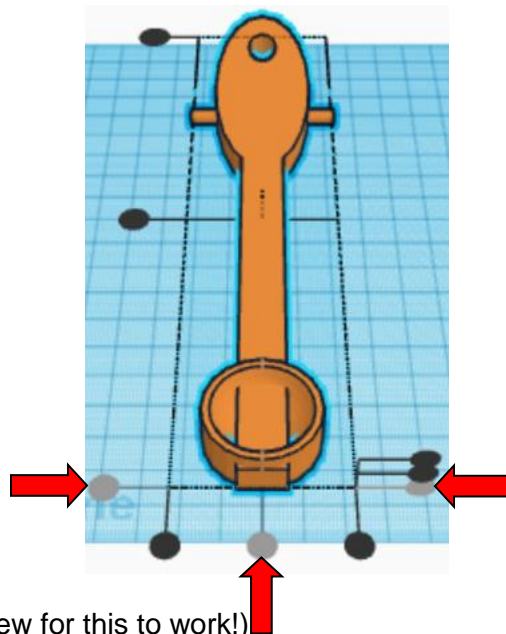


**Group Cup and Cup Cutout**  
From now on this will be called the **Cup**



**Align Cup and Arm**

centered in X direction,  
front of Y direction, and  
bottom of Z direction.



**Move Arm** (Must be in home view for this to work!)  
move up in positive Y direction 27mm

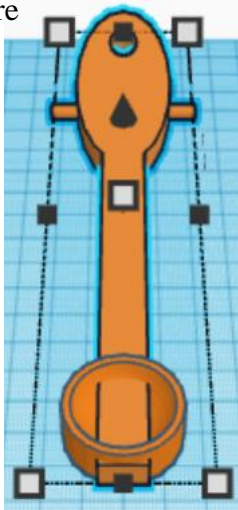
**Hint:** Select Arm and push up arrow key 27 times.

Or

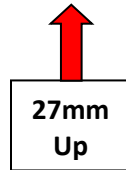
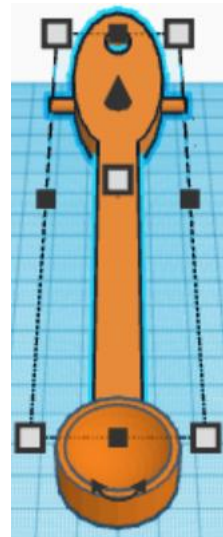
Select Arm and hold shift and push up arrow key 2 times.

Then release shift and push up arrow key 7 more times.

Before



After



**Group** Cup and Arm

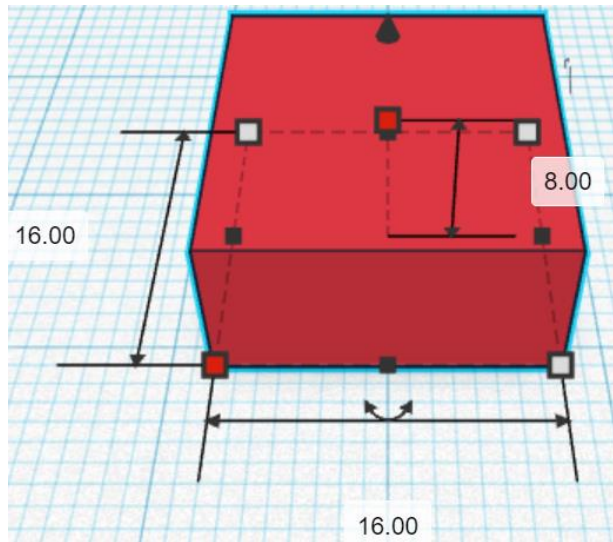
From now on this will be called the **Arm**



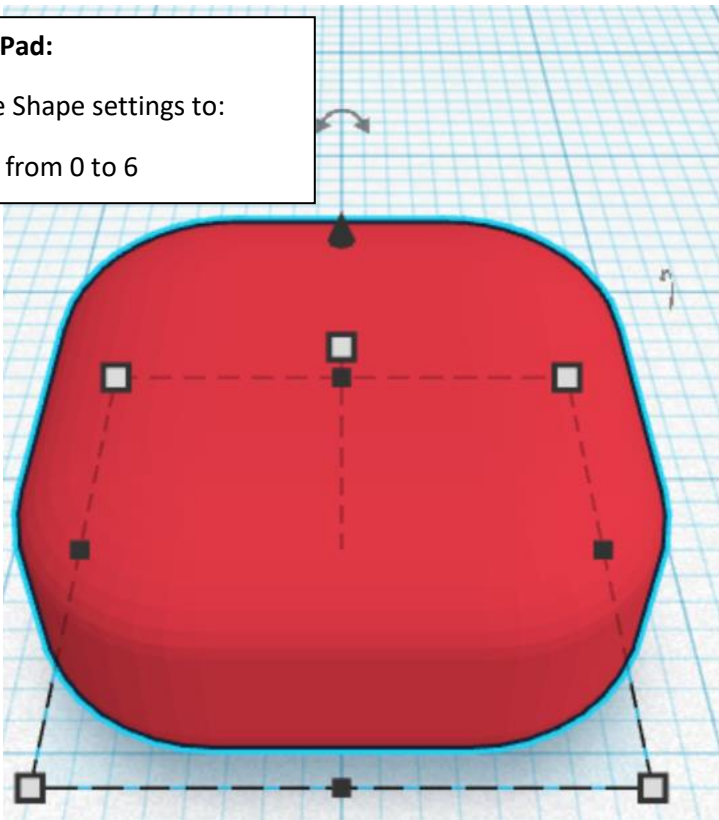
# Finger Pad

Bring in a Box, located in Basic Shapes on the right 1 shape down.  
From now on this will be called the **Finger Pad**.

Change the dimensions to  
16mm X direction,  
16mm Y direction, and  
8mm Z direction.



**Finger Pad:**  
Change Shape settings to:  
**Radius** from 0 to 6



Box

Solid Hole

Radius  6

Steps  10

Length  20

Width  20

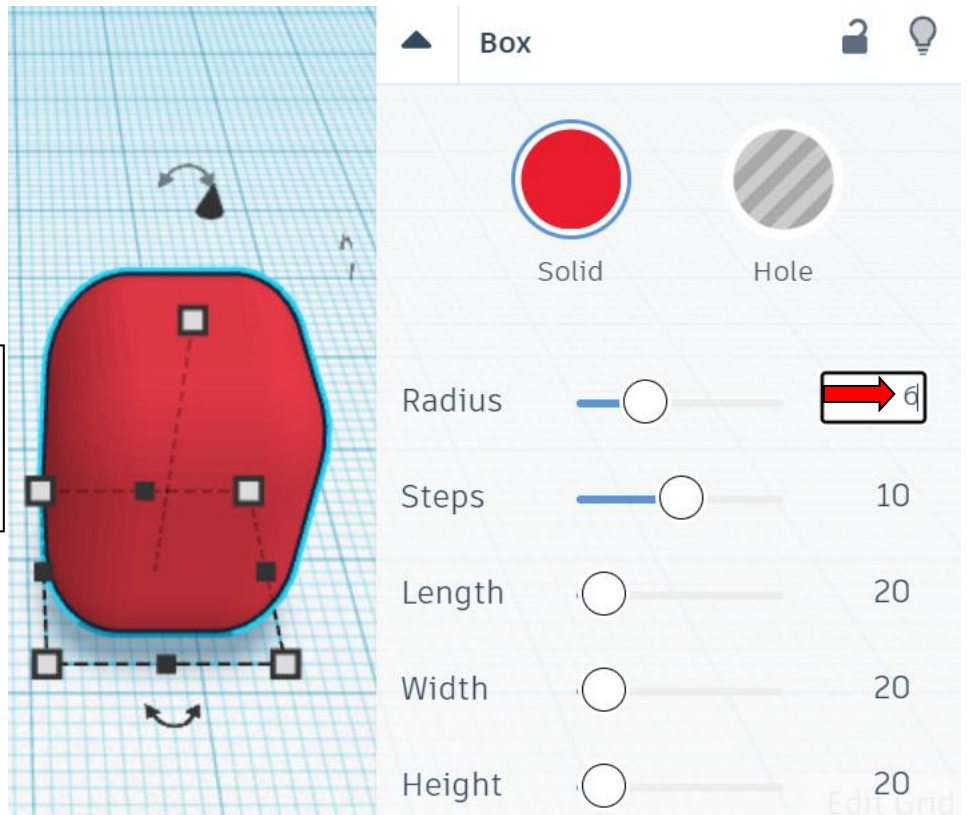
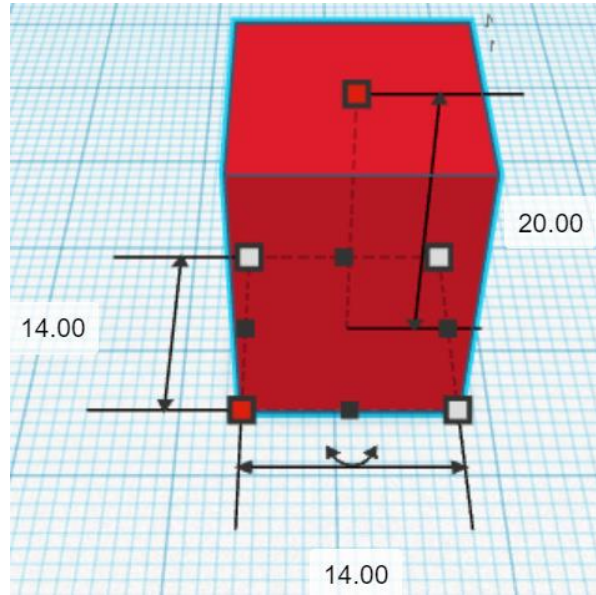
Height  20

Edit Grid

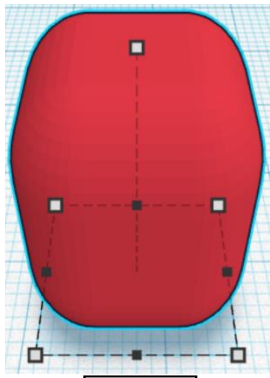


Bring in a Box, located in Basic Shapes on the right 1 shape down.  
From now on this will be called the **Finger Pad Cutout**.

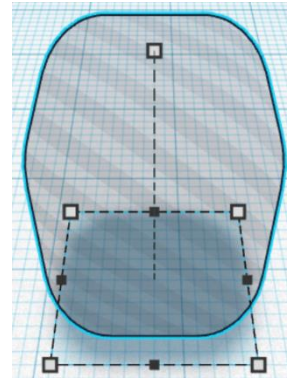
Change the dimensions to  
14mm X direction,  
14mm Y direction, and  
20mm Z direction.



**Change** Finger Pad Cutoff to **Hole** by selecting Finger Pad Cutoff and typing “h”.



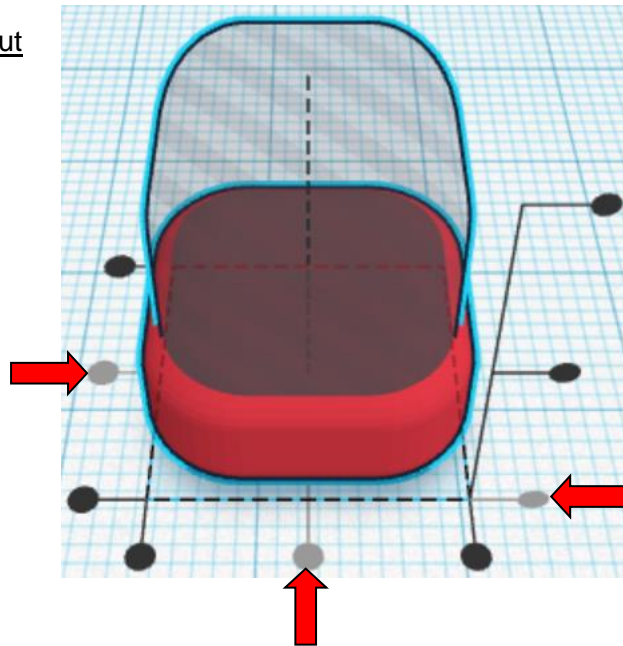
**Solid**



**Hole**

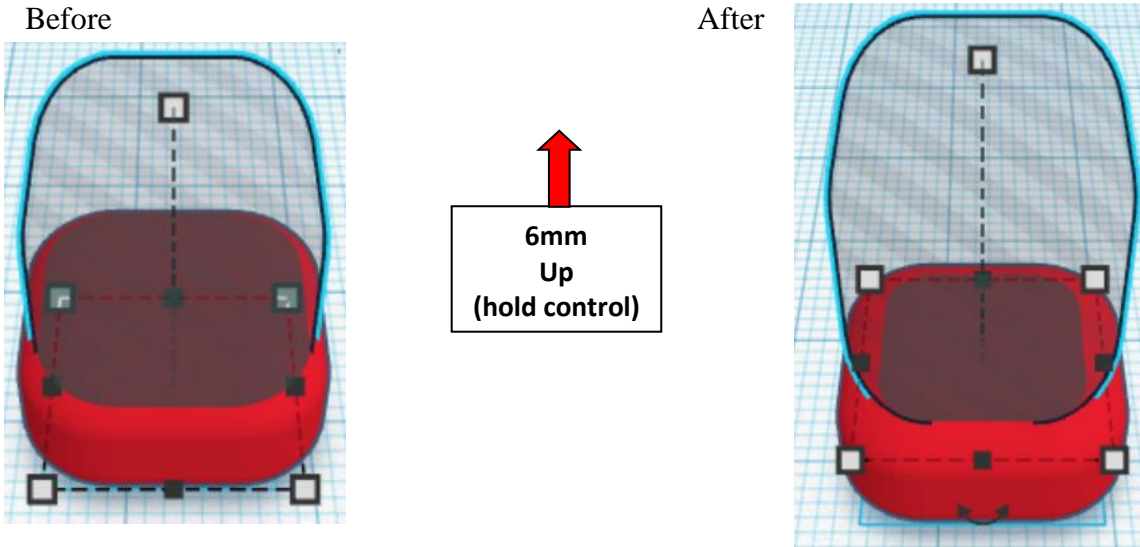
**Align** Finger Pad and Finger Pad Cutout

centered in X direction,  
centered of Y direction, and  
bottom of Z direction.

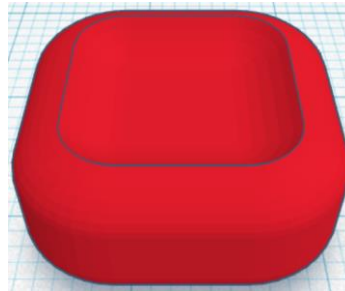


**Move Finger Pad Cutout** (Must be in home view for this to work!)  
move up in positive Z direction 6mm

**Hint:** Select Finger Pad Cutout and hold control and push up arrow key 6 times.

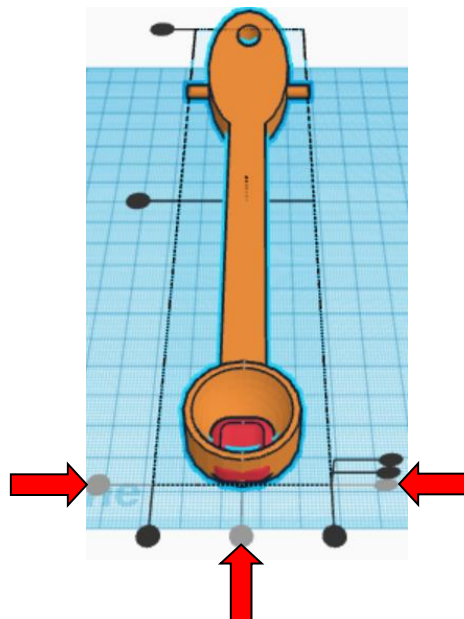


**Group Finger Pad and Finger Pad Cutout**  
From now on this will be called the **Finger Pad**



**Align Finger Pad and Arm**

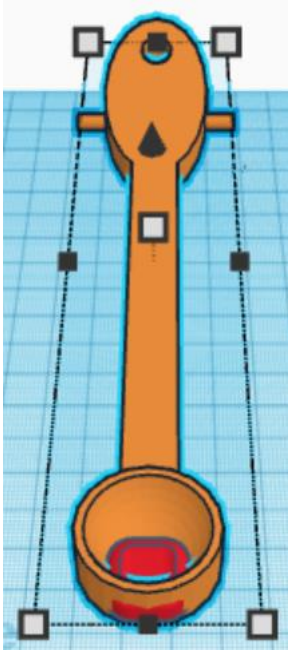
centered in X direction,  
front of Y direction, and  
bottom of Z direction.



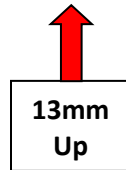
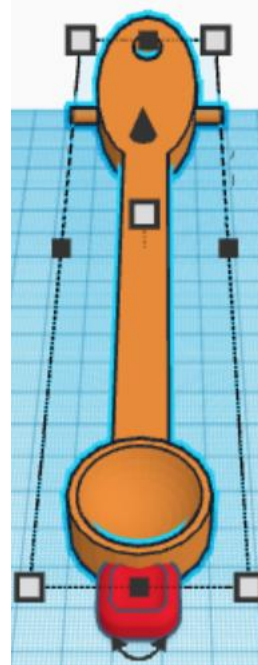
**Move Arm** (Must be in home view for this to work!)  
move up in positive Y direction 13mm

**Hint:** Select Arm and push up arrow key 13 times.  
Or  
Select Arm and hold shift and push up arrow key 1 time.  
Then release shift and push up arrow key 3 more times.

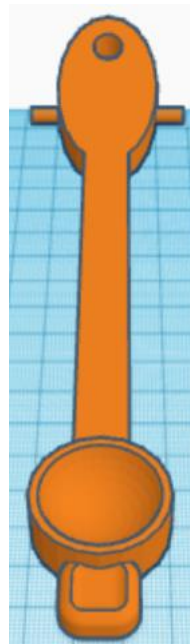
Before



After

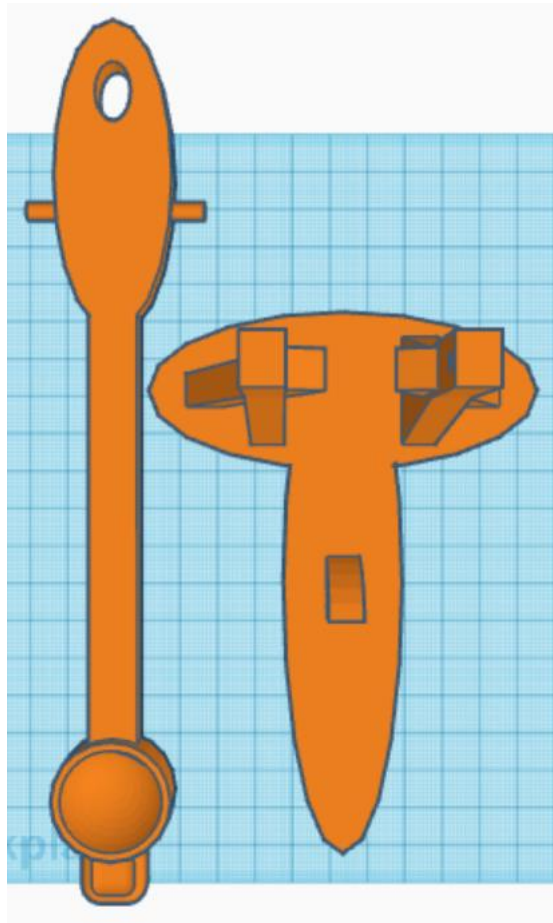


**Group Finger Pad and Arm**  
From now on this will be called the **Arm**





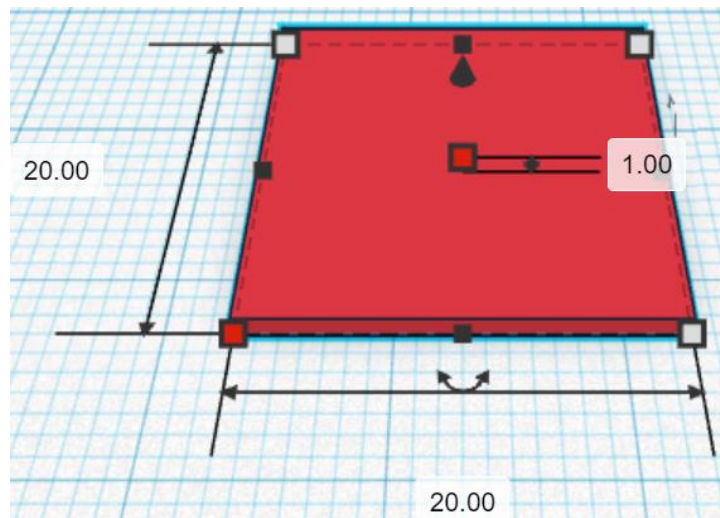
Move Base and Arm next to each other and each is set on the workplane surface.



## Balls:

Bring in a Box, located in Basic Shapes on the right 1 shape down.  
From now on this will be called the **Ball Cutout**.

Change the dimensions to  
20mm X direction,  
20mm Y direction, and  
1mm Z direction.



**Duplicate** Ball Cutout (1) time

From now on this Duplicate will be called the **Ball Cutout Top**

**Move** Ball Cutout Top (Must be in home view for this to work!)

move up in positive Z direction 11mm

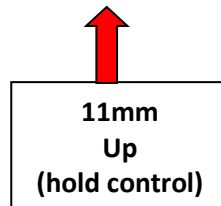
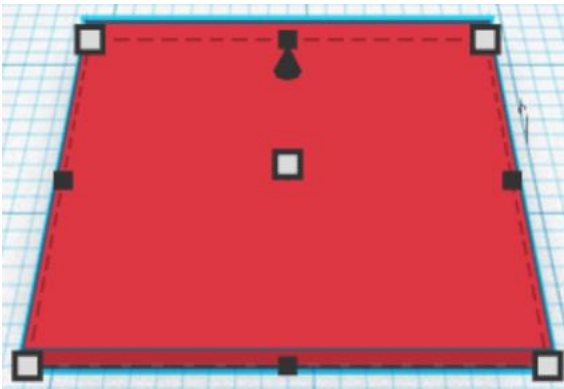
**Hint:** Select Ball Cutout Top and hold control and push up arrow key 11 times.

Or

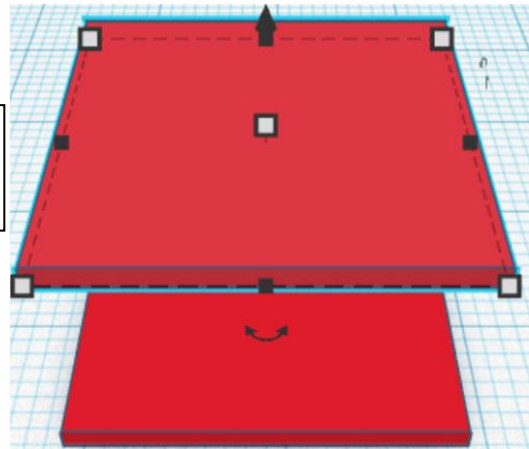
Select Ball Cutout Top and hold control and hold shift and push up arrow key 1 time.

Then release shift and push up arrow key 1 more time.

Before

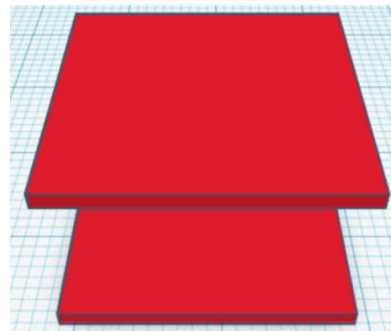


After

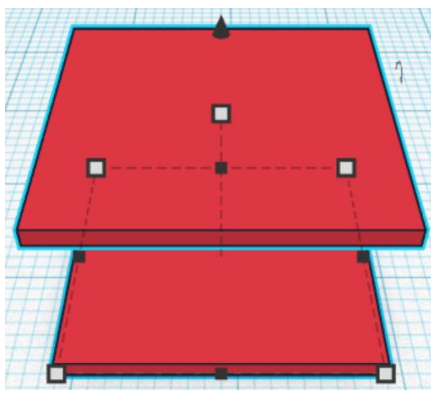


**Group** Ball Cutout and Ball Cutout Top

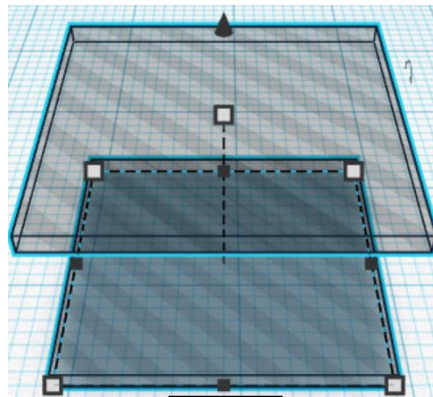
From now on this will be called the **Ball Cutout**



Change Ball Cutoff to Hole by selecting Ball Cutoff and typing "h".



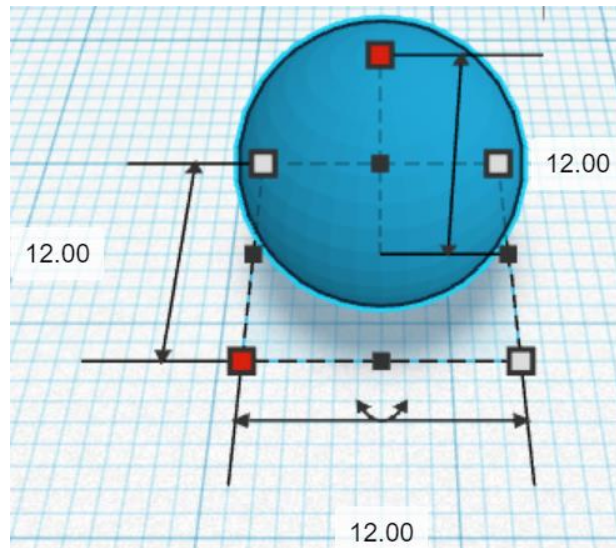
Solid



Hole

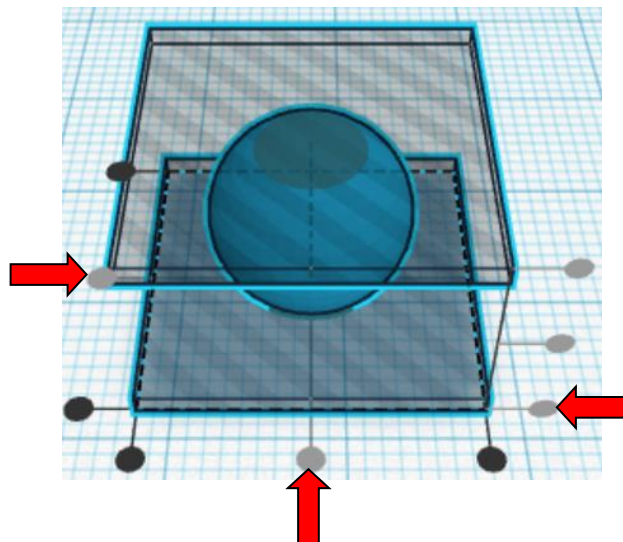
Bring in a Sphere, located in Basic Shapes in the center 2 shapes down.  
From now on this will be called the **Ball**.

Change the dimensions to  
12mm X direction,  
12mm Y direction, and  
12mm Z direction.



Align Ball and Ball Cutout

centered in X direction,  
centered of Y direction, and  
bottom of Z direction.



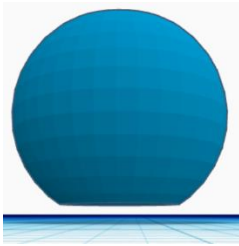
**Group Ball and Ball Cutout**  
From now on this will be called the **Ball**



**Set on Workplane:**

Select the Ball and type "d" to set the body on the work plane.

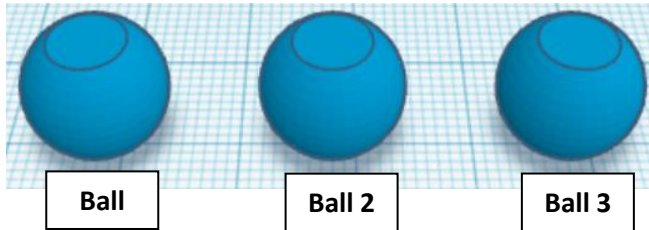
Before



After



**Duplicate Ball (2) times**  
Move Duplicates to the side  
From now on this Duplicate will be called the **Ball 2** and **Ball 3**

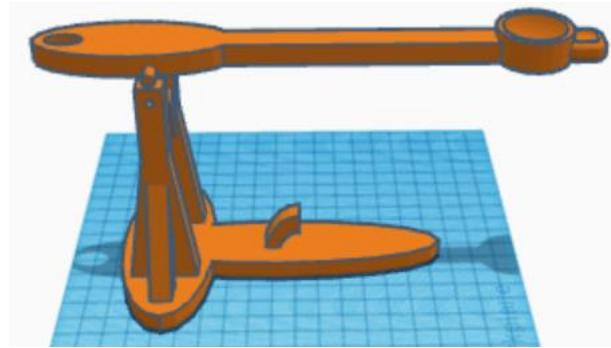


**You are done, print and enjoy!**

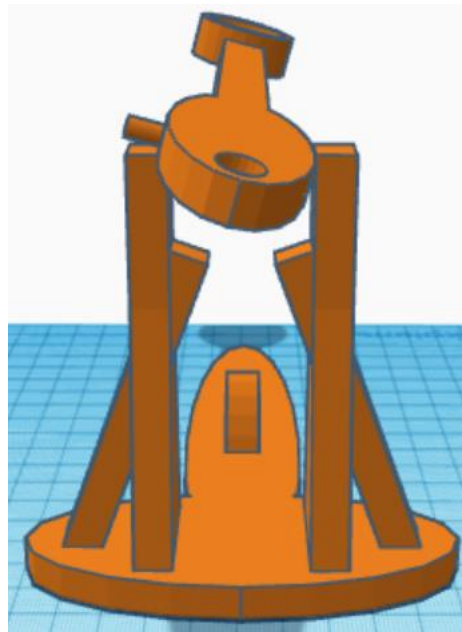


# Assembly:

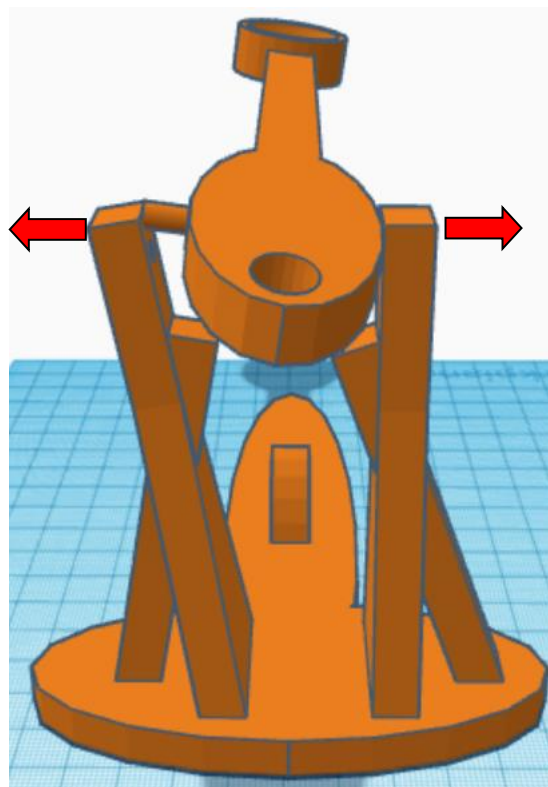
Orient the base and arm like this:



Get one side of the pivot started in the hole.

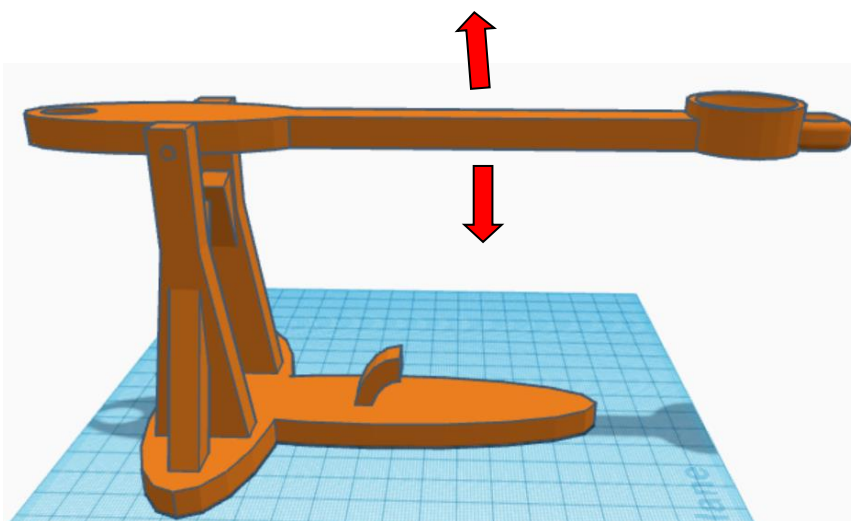


The material has some elasticity which means that it can bend some before breaking. Pull on each stand to widen the gap. Slowly push the pivot pin into the hole.

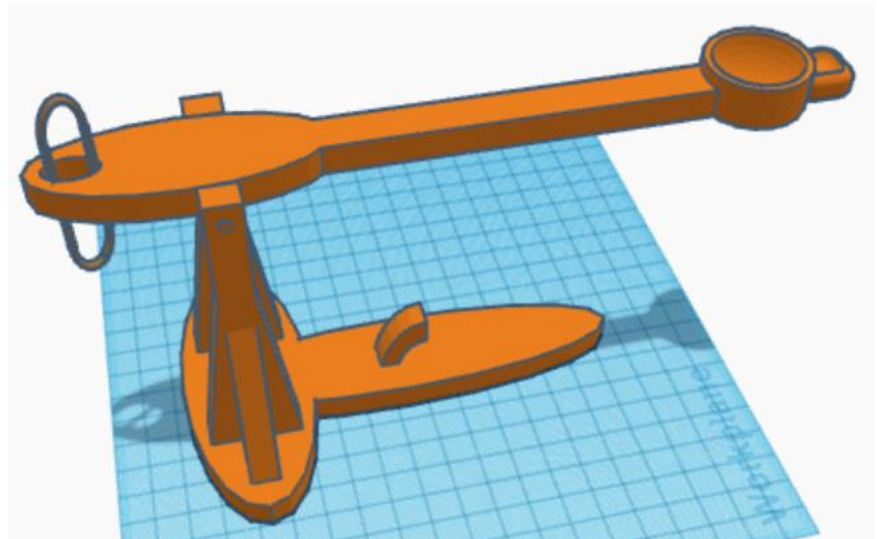


It should be tight, push the stands together until pivot pins are in.

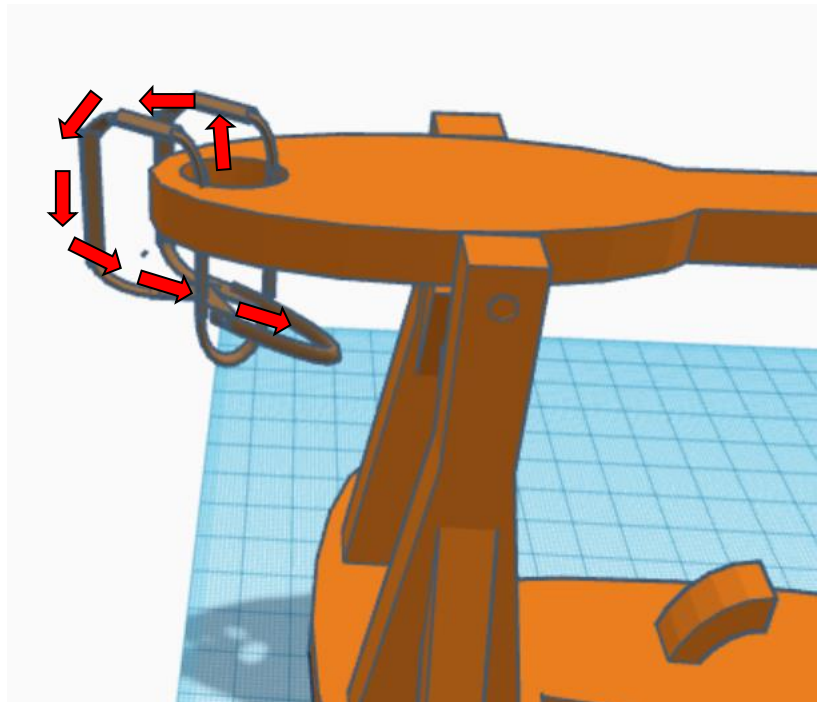
Wiggle arm up and down until it moves freely.



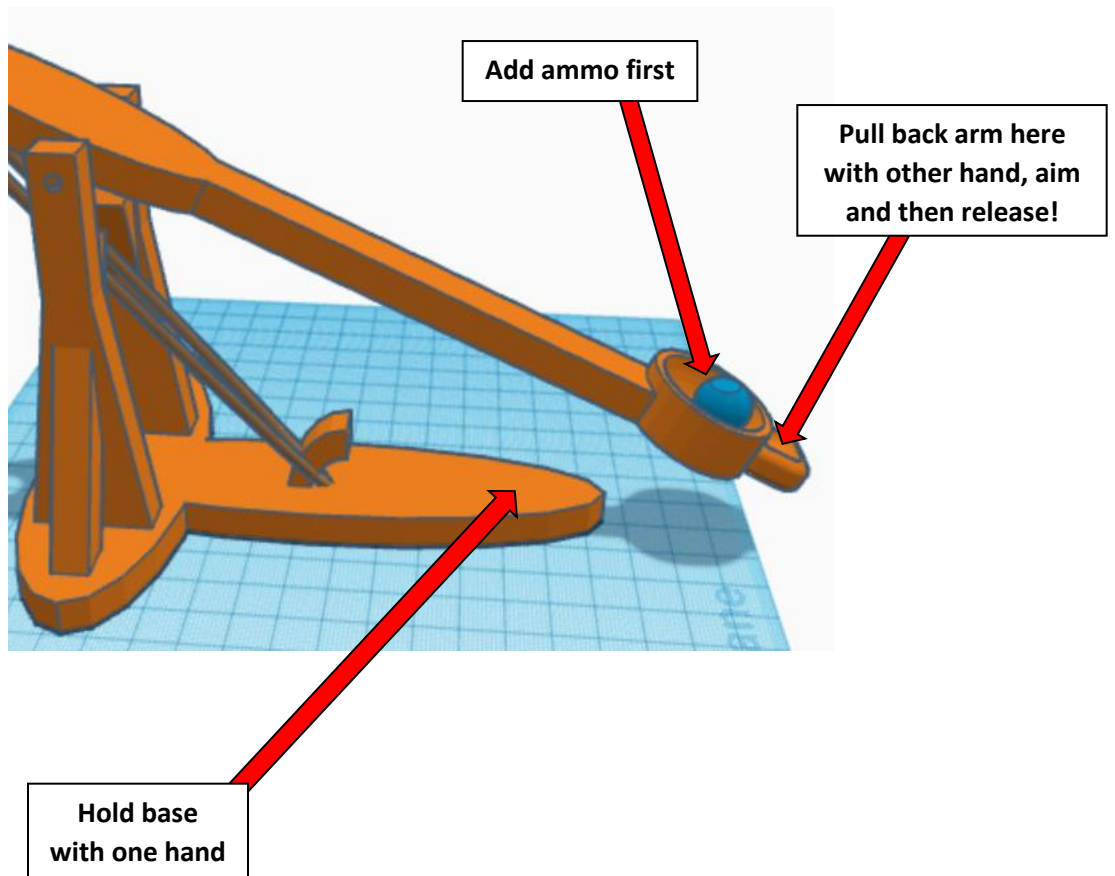
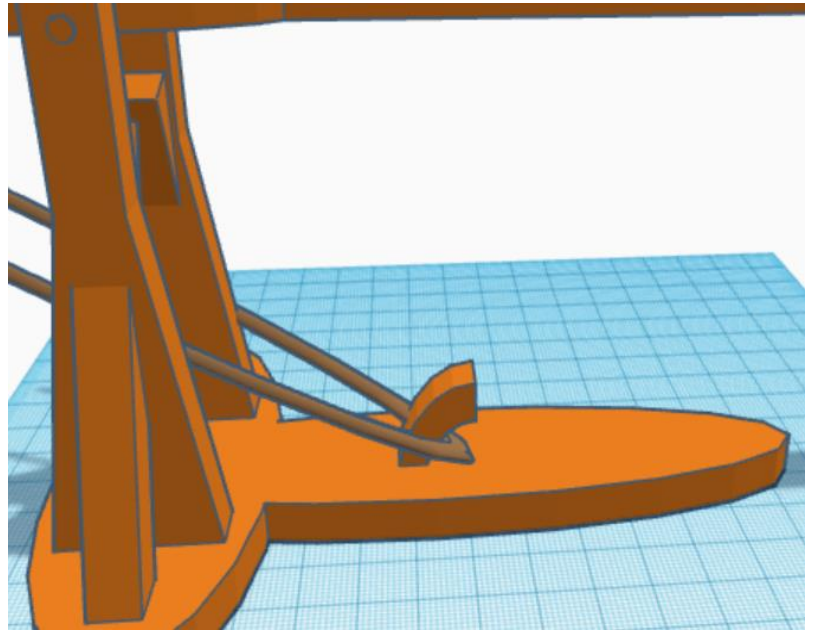
Take a rubber band and thread it through the hole in the arm.



Take the top of the rubber band and go over the side and under the arm and through the bottom loop of the rubber band.



Then pull the rubber band over the hook.



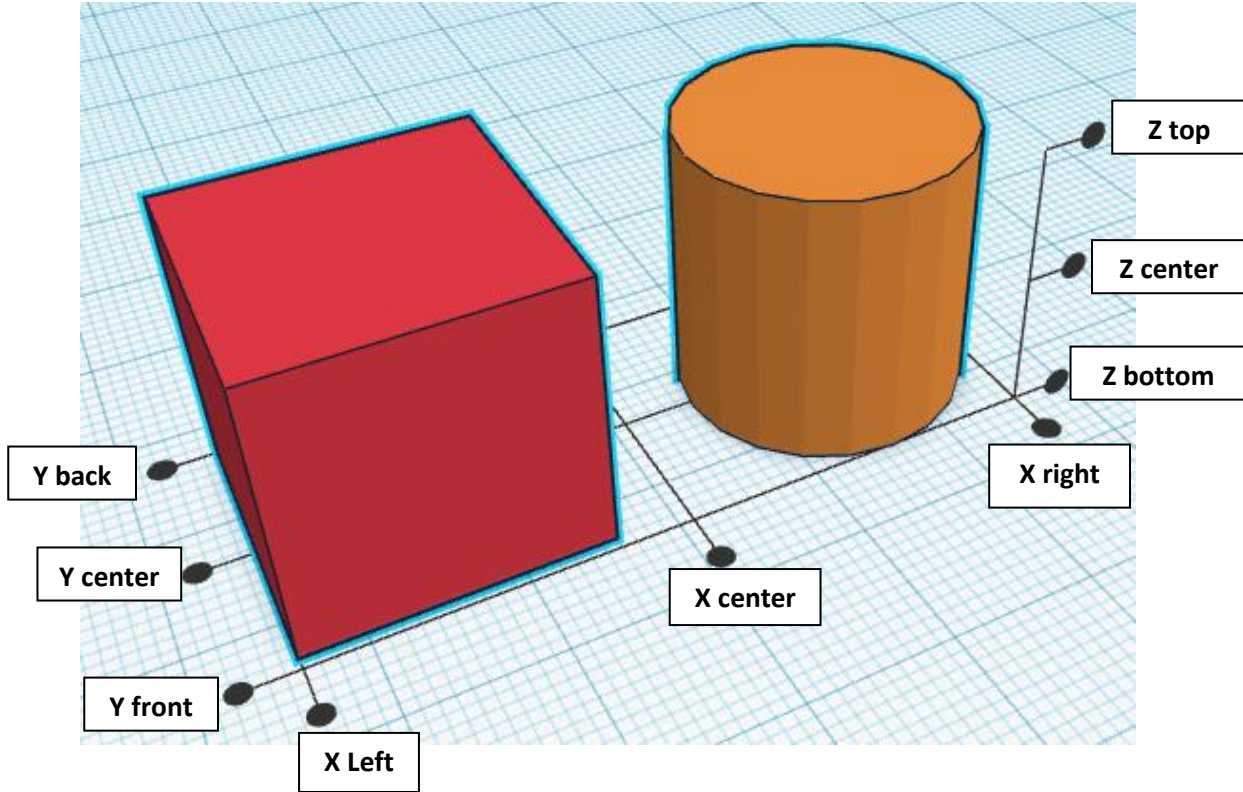


Reference to Aligning, Flip direction, Move direction, and Rotate direction.

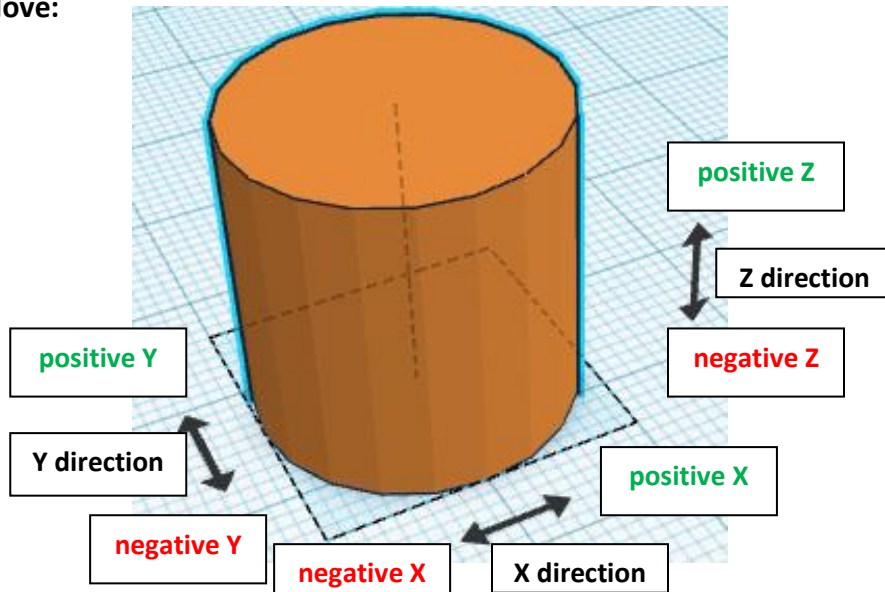
Always be in the "home view" when doing any of these!!!



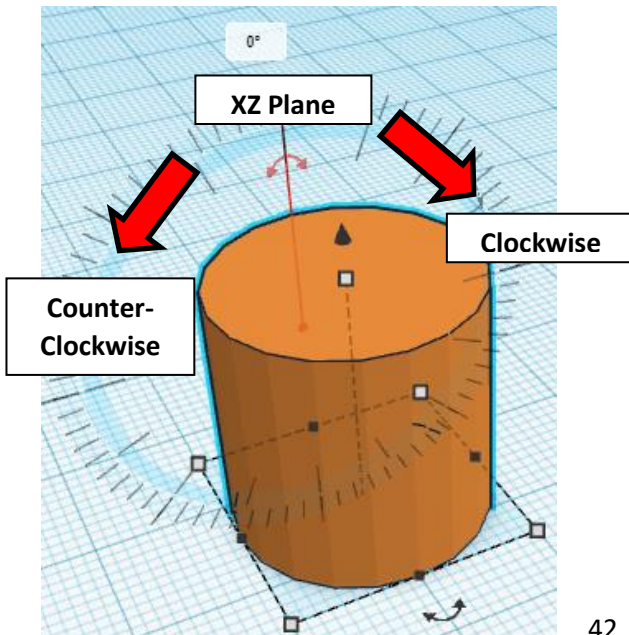
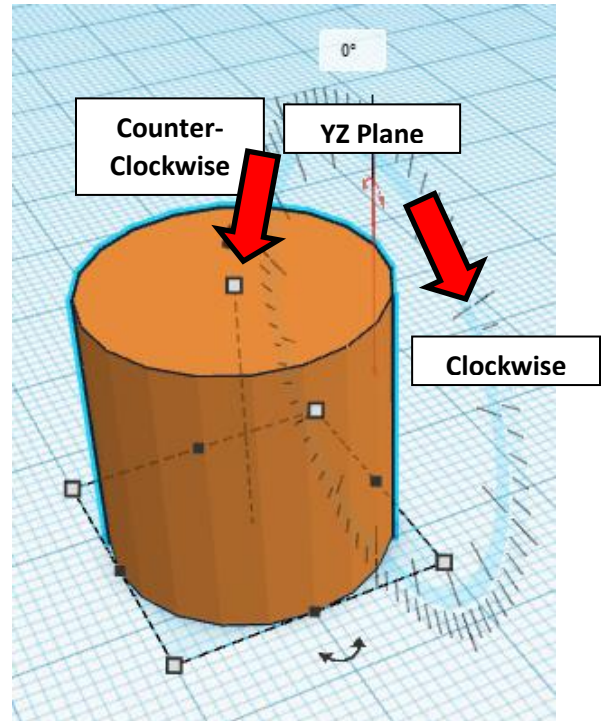
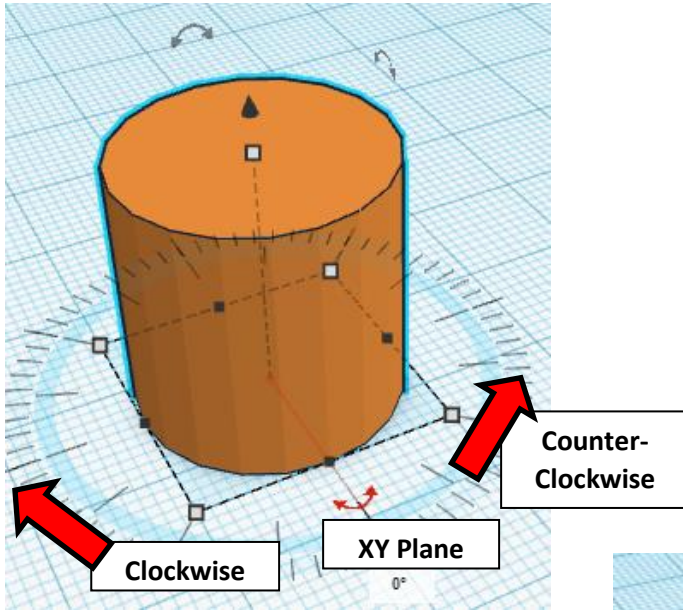
Aligning:



Flip or Mirror and Move:



Rotate:



# Tool Guide

## Most used Keyboard Shortcuts:

Transparency toggle	<b>T</b>	Duplicate object(s) in place.	<b>Ctrl</b> + <b>D</b>
Turn object(s) into <b>Holes</b>	<b>H</b>	Delete object(s)	<b>Del</b>
Turn object(s) into <b>Solids</b>	<b>S</b>	Undo action(s)	<b>Ctrl</b> + <b>Z</b>
<b>Align</b> object(s)	<b>L</b>	Zoom the view in or out	Mouse scroll wheel
<b>Flip/Mirror</b> object(s)	<b>M</b>	Zoom-in	<b>+</b>
<b>Drop</b> object(s) to workplane	<b>D</b>	Zoom-out	<b>-</b>
		Fit selected object(s) into view	<b>F</b>

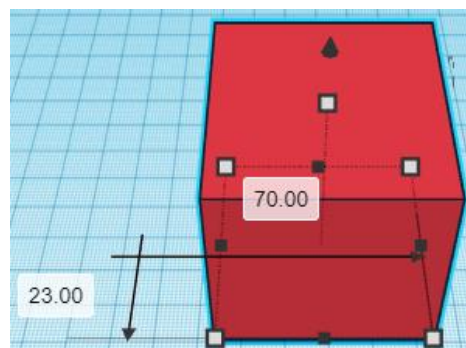
## Moving Object(s):

To move object(s) with mouse:

**In XY Plane**  
(left/right and forward/ backward)

Click and hold left mouse button on object.

Move mouse to desired location.

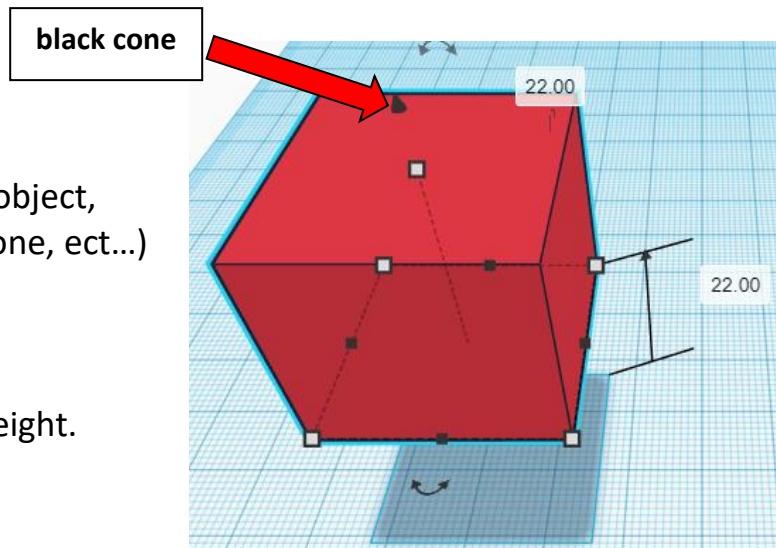


## Moving Object(s) continued:

### In Z direction (up/down)

Select object with left mouse button.  
Notice that several shapes appear on object,  
(white squares, black squares, black cone, ect...)

Click and hold left mouse button  
on the black cone at top of object.  
Move mouse up or down to desired height.



### To move object(s) with keyboard:

#### In XY Plane (left/right and forward/ backward)

Select object with left mouse button.

Use arrow keys to move the object in 1mm increments.



#### In XY Plane (fast) (left/right and forward/ backward)

Select object with left mouse button.

Hold shift key  
and use arrow keys to move the object in 10mm increments.





## Moving Object(s) continued:

### In Z direction (up/down)

Select object with left mouse button.



Hold control button  
and use up and down arrow keys to move the object in 1mm increments.

### In Z direction (fast) (up/down)

Select object with left mouse button.

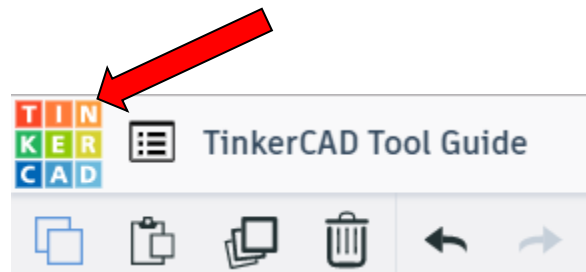


Hold control button and hold shift button  
and use up and down arrow keys to move the object in 10mm increments.

## Using on screen icons:

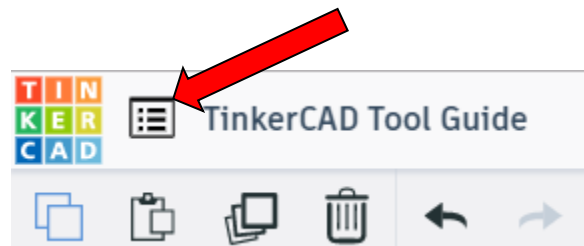
### TinkerCAD main screen:

(I know this doesn't look  
like an icon button, but it is)



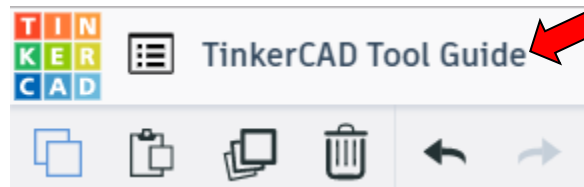
### My designs:

Pulls up menu of your designs.



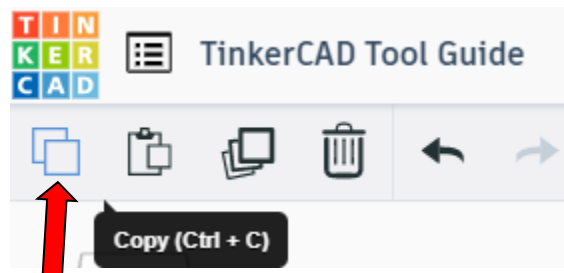
## Design name:

TinkerCAD automatically names your design a random name.  
Click here to change your design name.



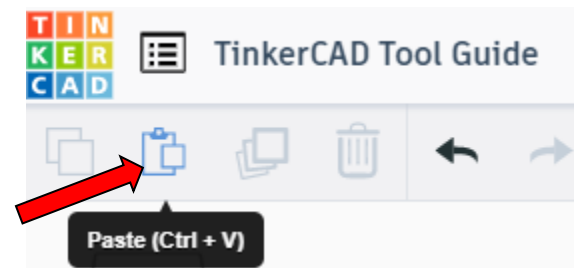
## Copy:

Select shape.  
Click copy or use ctrl + c  
Paste to copy or go into new design and paste to copy.



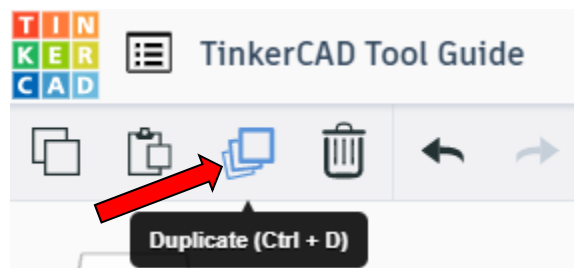
## Paste:

After using copy,  
click paste or use ctrl + v to paste.



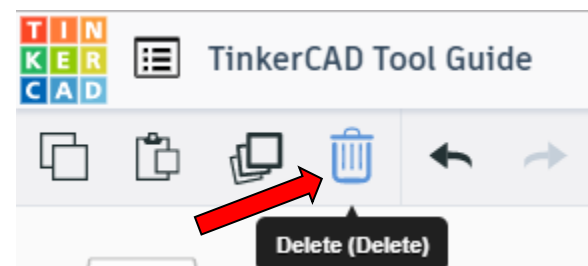
## Duplicate:

Similar to copy, but can't copy to other designs.  
Select shape.  
Click duplicate or use ctrl + d  
It will appear as if nothing happened, but if you move the shape you will see then duplicate underneath.



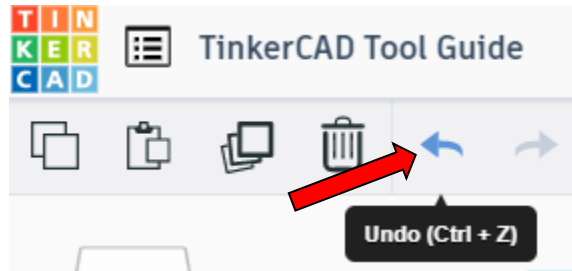
## Delete:

Select shape.  
Click delete or delete key.



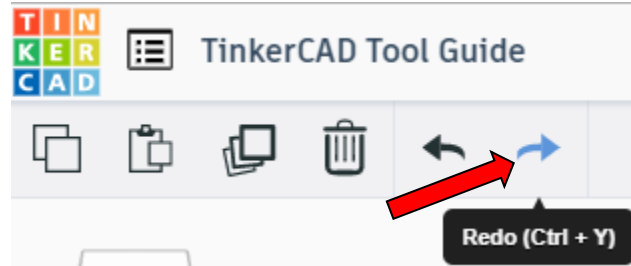
## Undo:

Click undo or use ctrl + z  
This will undo your last command.  
This can be repeated.



## Redo:

Click redo or use ctrl + y  
This will redo your last undo command,  
can only be used after using the  
undo command.



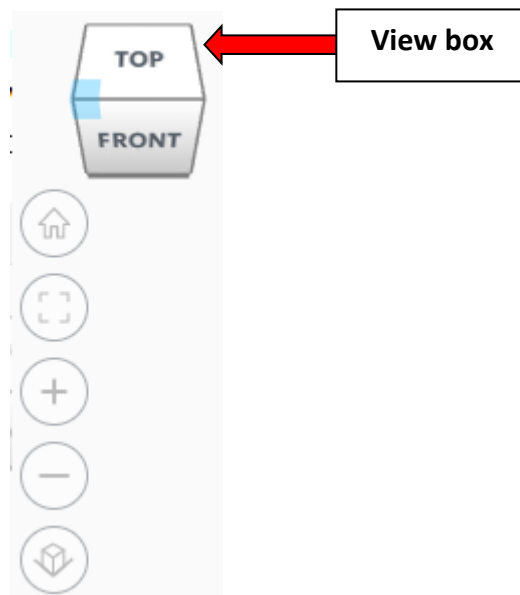
## Change View:

### To change view with mouse:

Right click and hold anywhere in work area. While holding right mouse button move mouse.  
This will change the view of the work area.

### To change view with icons:

Left click on view box.  
Where you click determines  
the view shown.

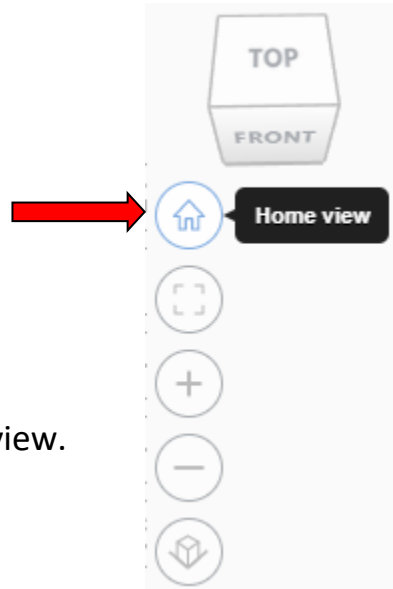


## Change view to home view:

Most TinkerCAD Tutorials only work while in home view.

Click on home view icon to go to the home view.

You can also use the view box between the top and front view to change to the home view.



## Fit all in view:

If you lose an object off the screen, you can click on Fit all in view to un-zoom to see all objects.

## Fit one or more object(s) in view:

If you want to only see one or more object(s) in the view then select the object(s) and click Fit all in view or click the "f" key. This will zoom in on the object(s).



## Zoom in:

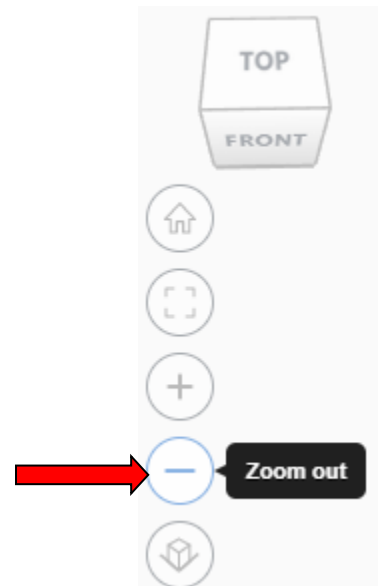
Click the Zoom in icon or click the "+" key to zoom in.





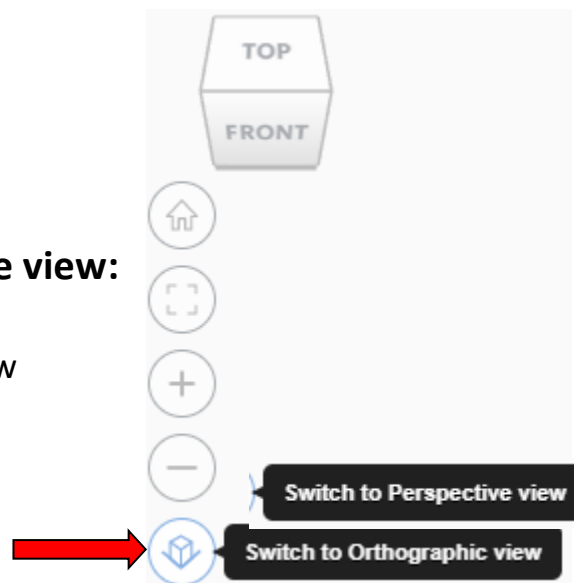
## Zoom out:

Click the Zoom out icon or click the “-” key to zoom out.



## Switching to orthographic and perspective view:

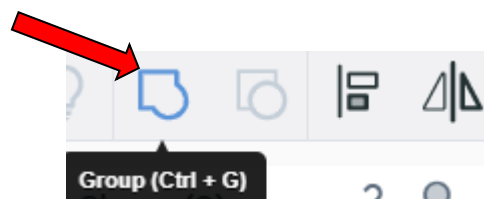
Click the Switch to orthographic/perspective view  
To change to your preferred view.



## Group:

To combine two or more objects into one object.

Select the objects to combine and click the  
Group button or click ctrl + G



## Ungroup:

After group objects, this will ungroup the object  
back to separate objects.

Select the objects to ungroup and click the  
ungroup button or click ctrl + shift + G



## Align:

To perfectly center objects to each other or  
To line up objects along their edges then use align.

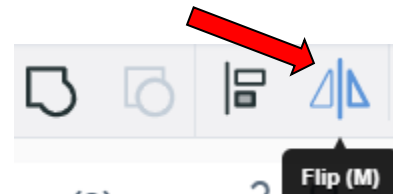
Select the objects to align and click the  
align button or click "L"



## Flip (Mirror):

This is mainly used for symmetric builds,  
you create one half, duplicate it, then flip it  
and move it in place and group it.

Select the objects to flip and click the  
flip button or click "M"



## Full list of Keyboard Shortcuts

### MOVING OBJECT(S)

(Using keyboard)

Move along X/Y axis	← / ↑ / ↓ / →
Move along Z axis	Ctrl + ↓ / ↑
×10 Nudge along X/Y axis	Shift + ← / ↑ / ↓ / →
×10 Nudge along Z axis	Ctrl + Shift + ↓ / ↑

### KEYBOARD + MOUSE SHORTCUTS

(Press and hold the keys, then click and drag the mouse)

<b>Duplicate</b> dragged object(s)	Alt + Drag left mouse button
<b>Select</b> multiple object(s)	Shift + Left mouse button
45° rotation	Shift (Hold while rotating)
Scale in one direction	Alt + Hold side handle
Scale in two directions	Alt + Hold corner handle
Uniform scale	Shift + Hold corner handle
Uniform scale in all directions	Alt + Shift + Corner handle
Uniform scale in all directions	Alt + Shift + Top handle

### VIEWING DESIGNS

(With the help of a mouse or a mouse pad)

Orbit the view	Right mouse button
Orbit the view	Ctrl + Left mouse button
Pan the view	Shift + Right mouse button
Pan the view	Ctrl + Shift + left button
Zoom the view in or out	Mouse scroll wheel
Zoom-in	+
Zoom-out	-
Fit selected object(s) into view	F

### OBJECT SETTINGS

<b>Transparency</b> toggle	T
Turn object(s) into <b>Holes</b>	H
Turn object(s) into <b>Solids</b>	S
<b>Lock</b> or <b>Unlock</b> object(s)	Ctrl + L
<b>Hide</b> object(s)	Ctrl + H
<b>Show all</b> hidden object(s)	Ctrl + Shift + H

### TOOLS AND COMMANDS

<b>Copy</b> object(s)	Ctrl + C
<b>Paste</b> object(s)	Ctrl + V
<b>Duplicate</b> object(s) in place.	Ctrl + D
<b>Delete</b> object(s)	Del
<b>Undo</b> action(s)	Ctrl + Z
<b>Redo</b> action(s)	Ctrl + Y
<b>Redo</b> action(s)	Ctrl + Shift + Z
<b>Group</b> object(s)	Ctrl + G
<b>Un-group</b> object(s)	Ctrl + Shift + G
<b>Align</b> object(s)	L
<b>Flip/Mirror</b> object(s)	M
<b>Select</b> all object(s)	Ctrl + A
Place a <b>Ruler</b>	R ( Shift toggle midpoint/center )
Place a <b>Workplane</b>	W ( press Shift to flip direction )
<b>Drop</b> object(s) to workplane	D