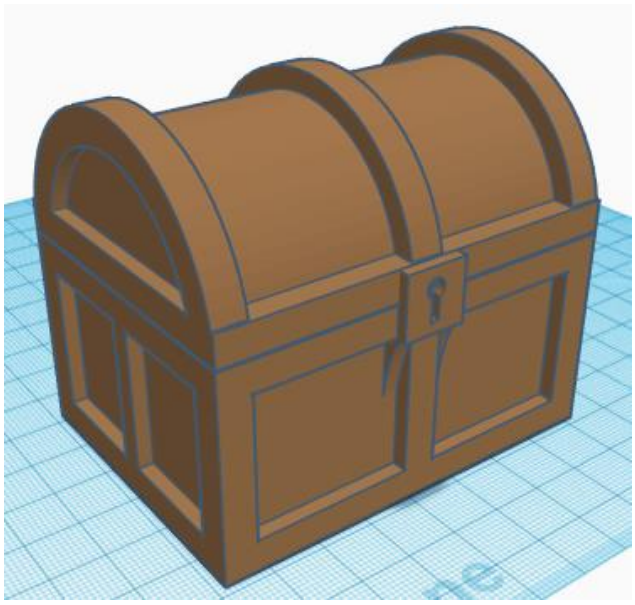
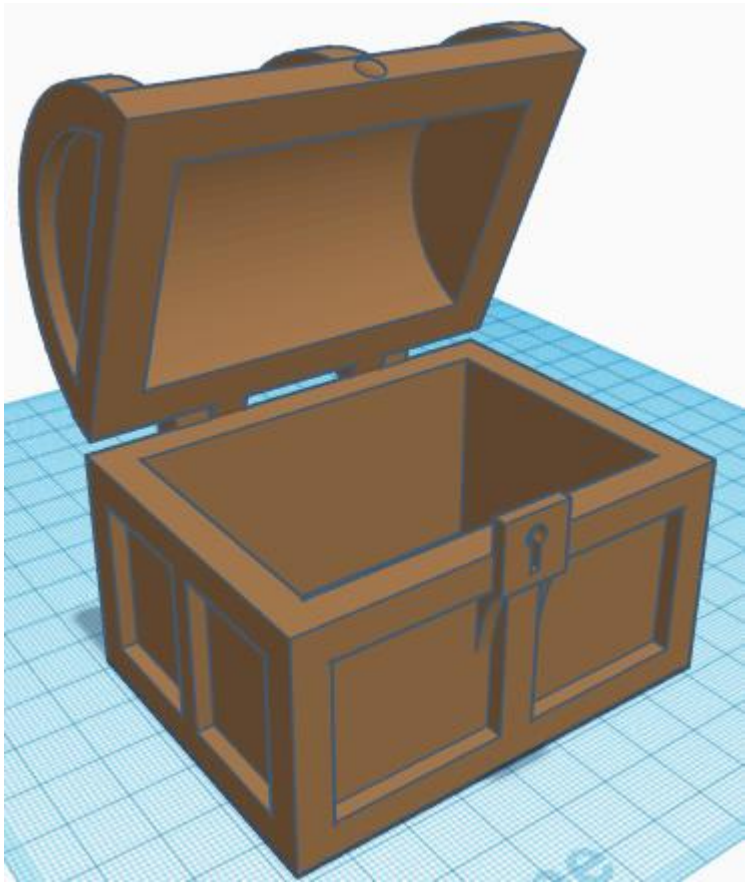
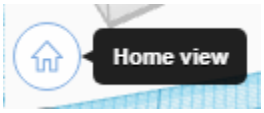
Treasure Chest Project



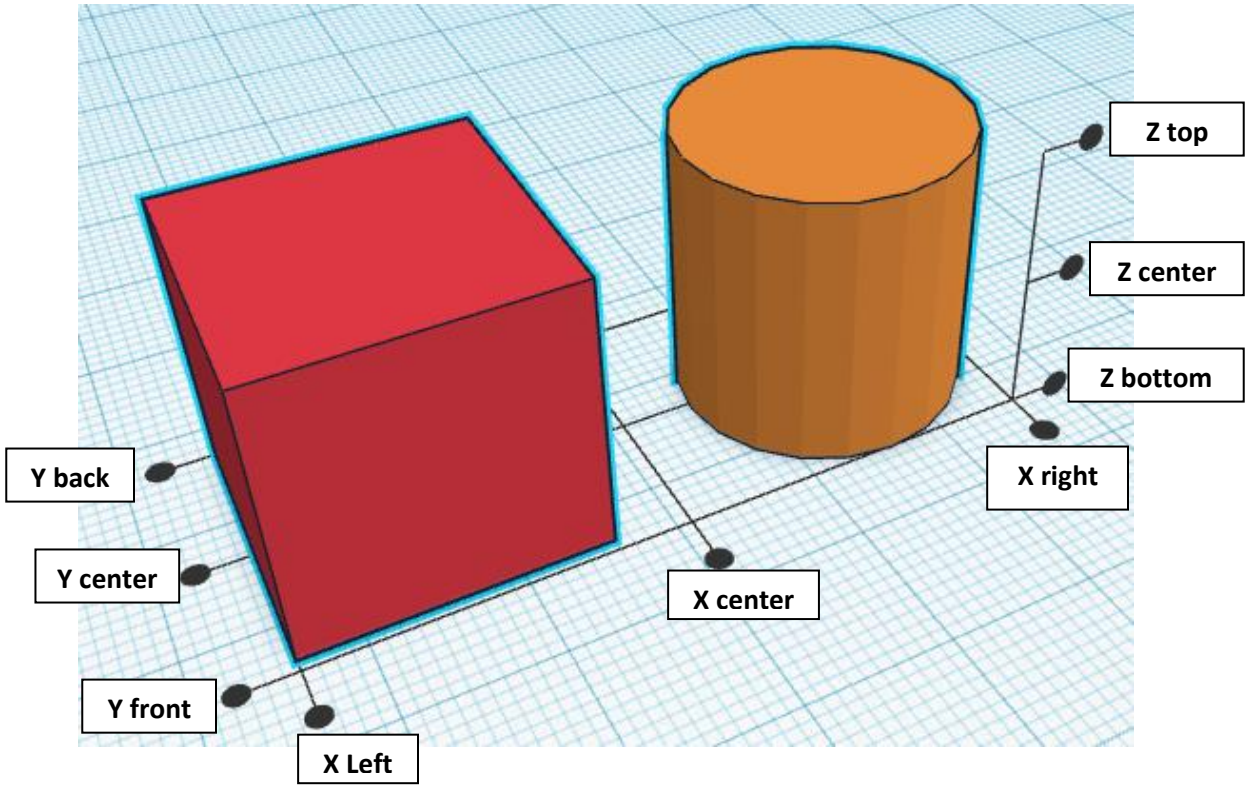


Reference to Aligning, Flip direction, Move direction, and Rotate direction.

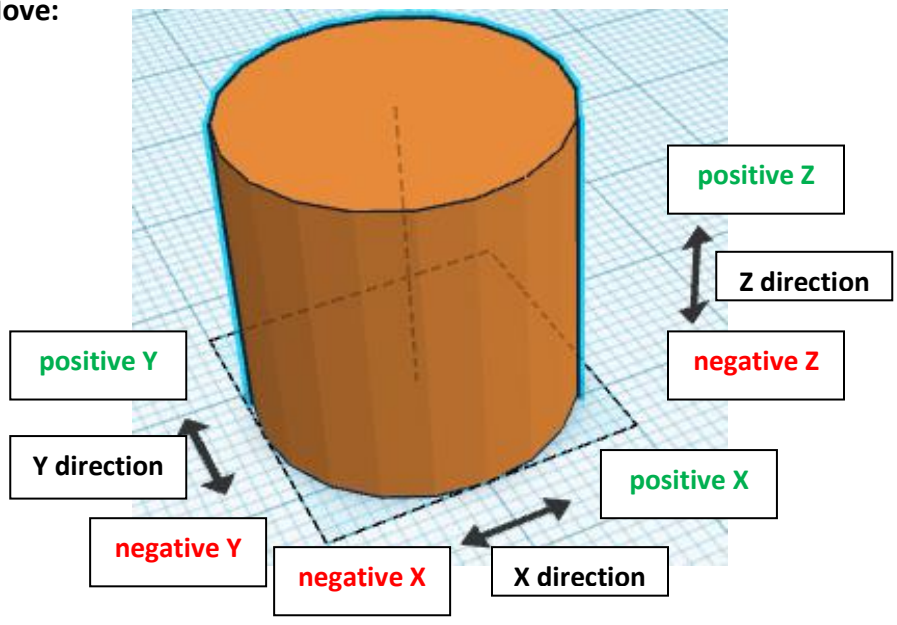
Always be in the "home view" when doing any of these!!!



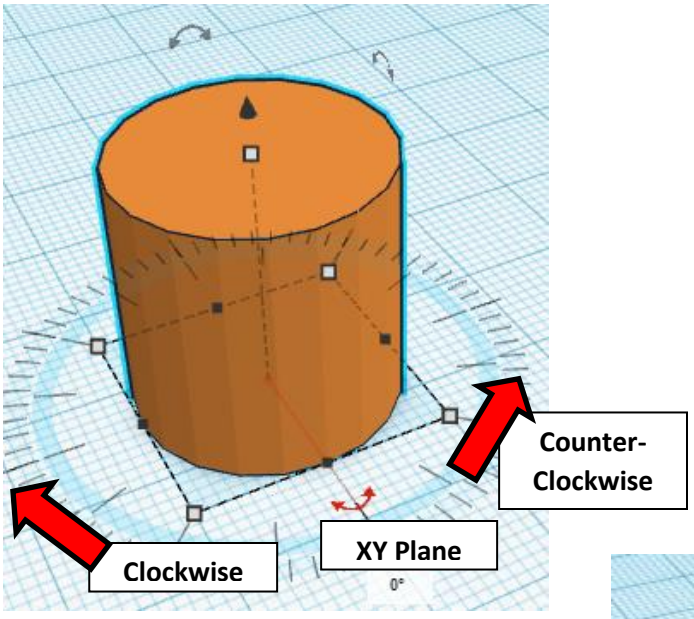
Aligning:

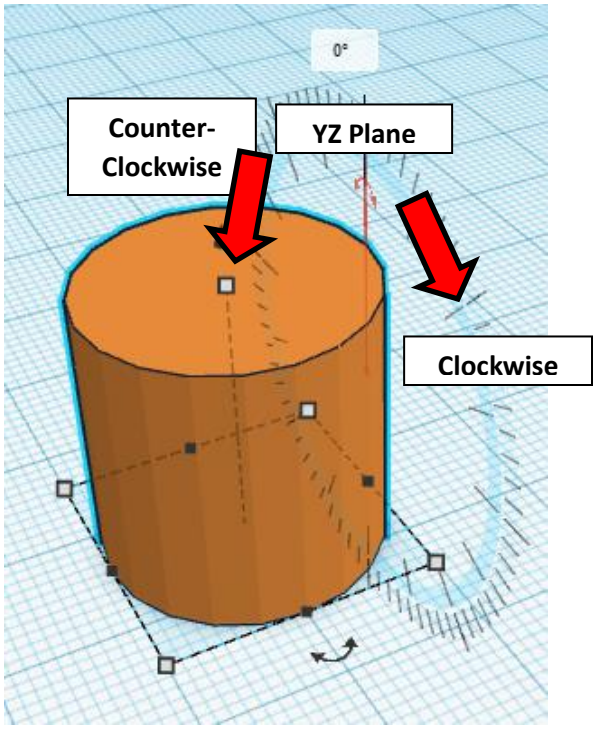


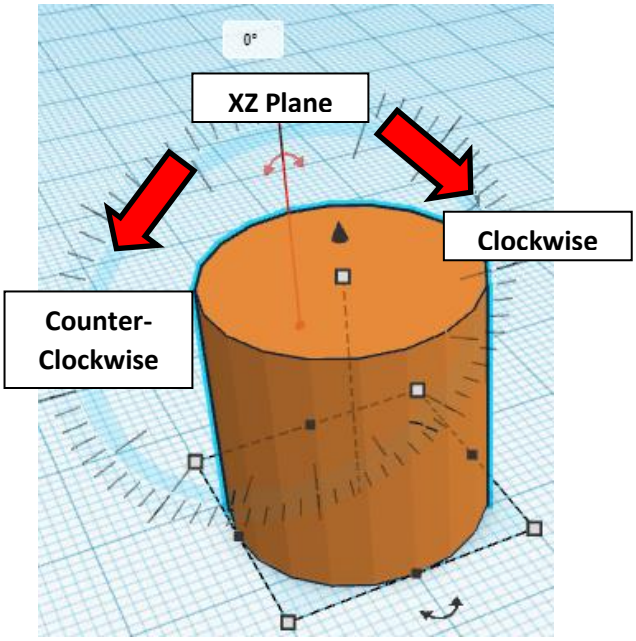
Flip or Mirror and Move:



Rotate:


Counter-
Clockwise
Clockwise
XY Plane


Counter-
Clockwise
YZ Plane
Clockwise

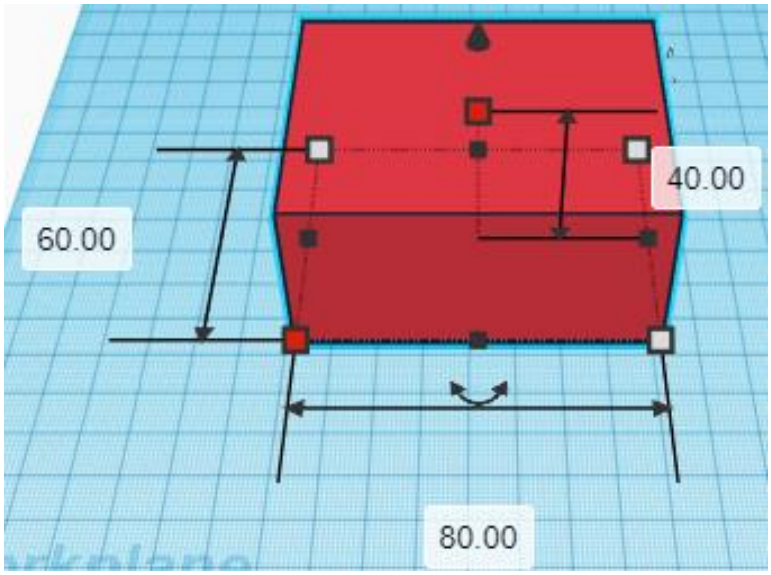

XZ Plane
Clockwise
Counter-
Clockwise

Treasure Chest:

Box Base:

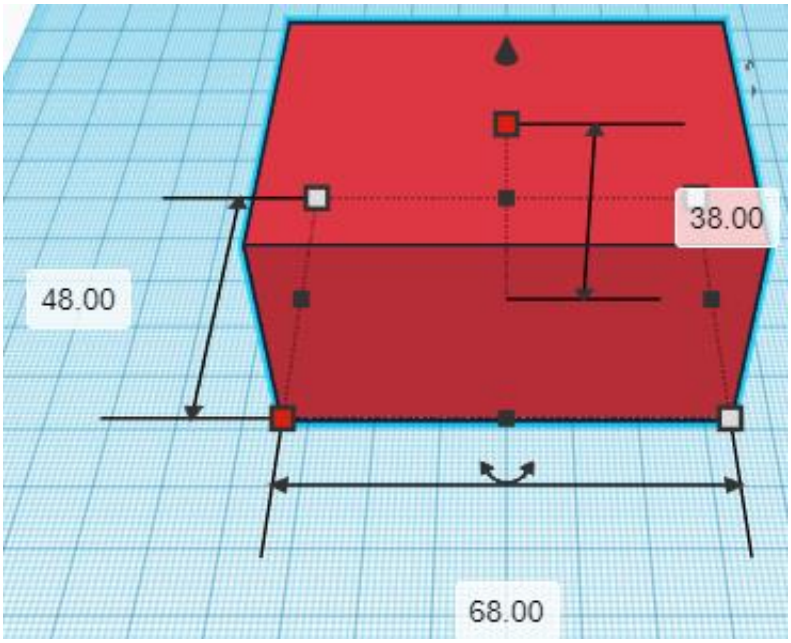
Bring in a Box, located in Basic Shapes on the left 2 shapes down.
From now on this will be called the **Base**.

Change the dimensions to
80mm X direction,
60mm Y direction, and
40mm Z direction.



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

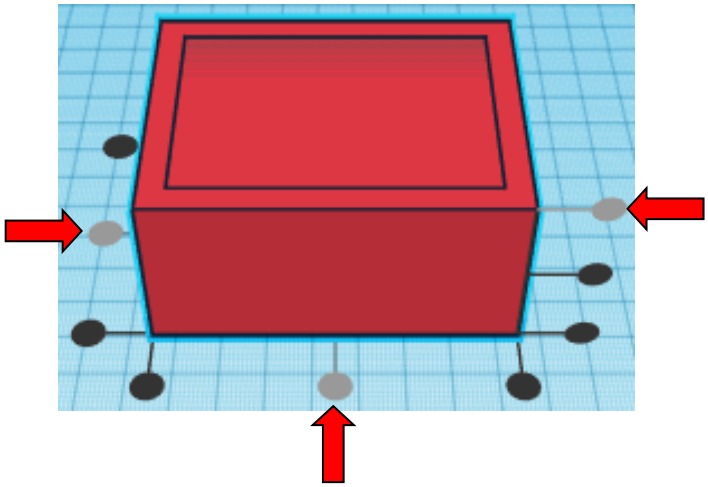
Change the dimensions to
68mm X direction,
48mm Y direction, and
38mm Z direction.



Change Base Cutout to **Hole** by selecting Base Cutout and typing “h”.

Align Base and Base Cutout

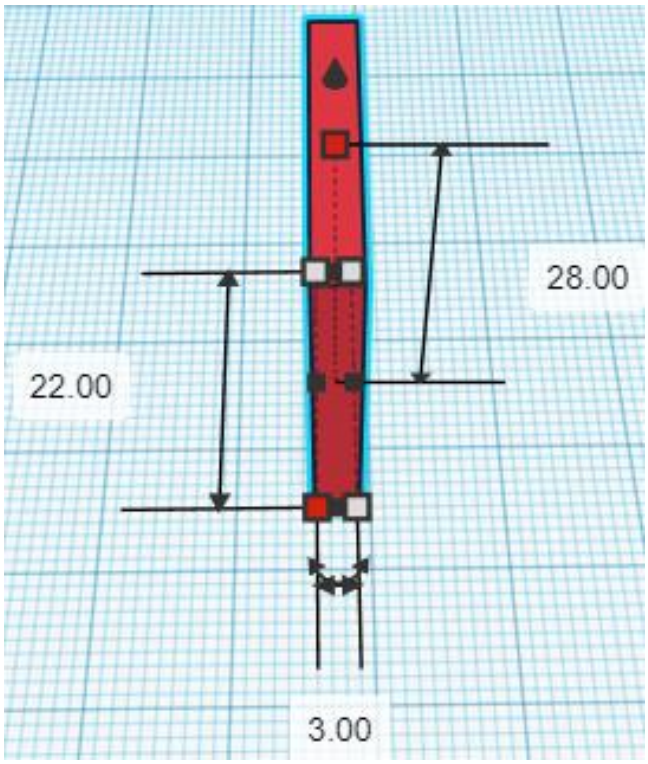
centered in X direction,
centered of Y direction, and
top of Z direction.



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

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

Change the dimensions to
3mm X direction,
22mm Y direction, and
28mm Z direction.

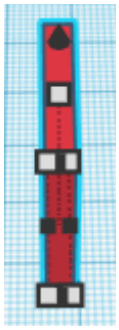


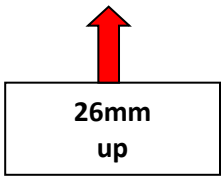
Duplicate Side Cutout 1 time

Move Side Cutout (Must be in home view for this to work!)
move back in positive Y direction 26mm

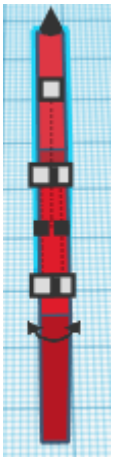
Hint: Select Side Cutout and push up arrow key 26 times.
Or
Select Side Cutout and hold shift and push up arrow key 2 times. Then release shift and push up 6 times.

Before





After



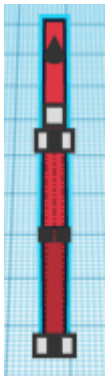
Group both Side Cutouts
From now on this will be called the **Side Cutout Set**.

Duplicate Side Cutout Set 1 time

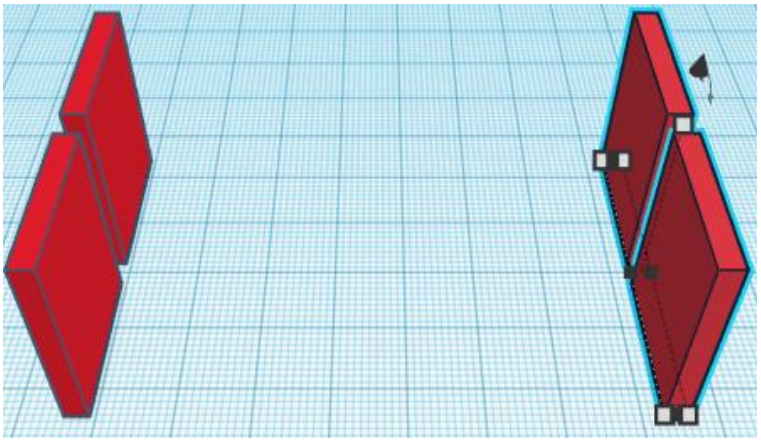
Move Side Cutout Set (Must be in home view for this to work!)
move right in positive X direction 77mm

Hint: Select Side Cutout Set and push right arrow key 77 times.
Or
Select Side Cutout Set and hold shift and push right arrow key 7 times. Then release shift and push up 7 times.

Before



After

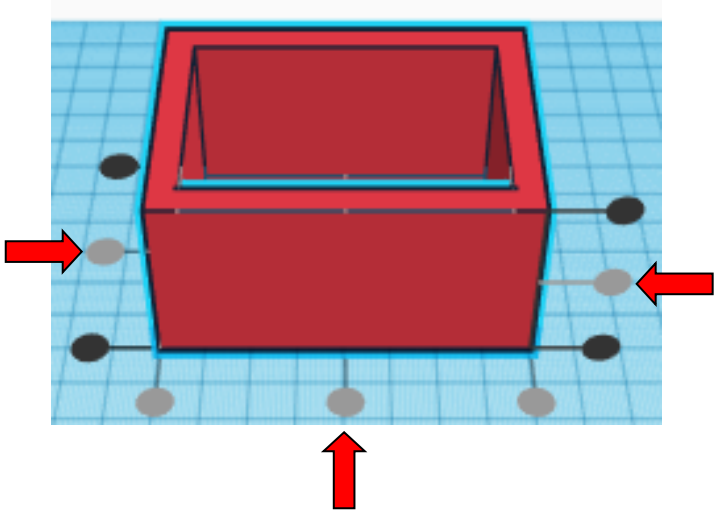


Group both Side Cutout Sets
From now on this will be called the **Side Cutout Set**.

Change Side Cutout Sets to **Hole** by selecting Side Cutout Sets and typing “h”.

Align Base and Side Cutout Sets

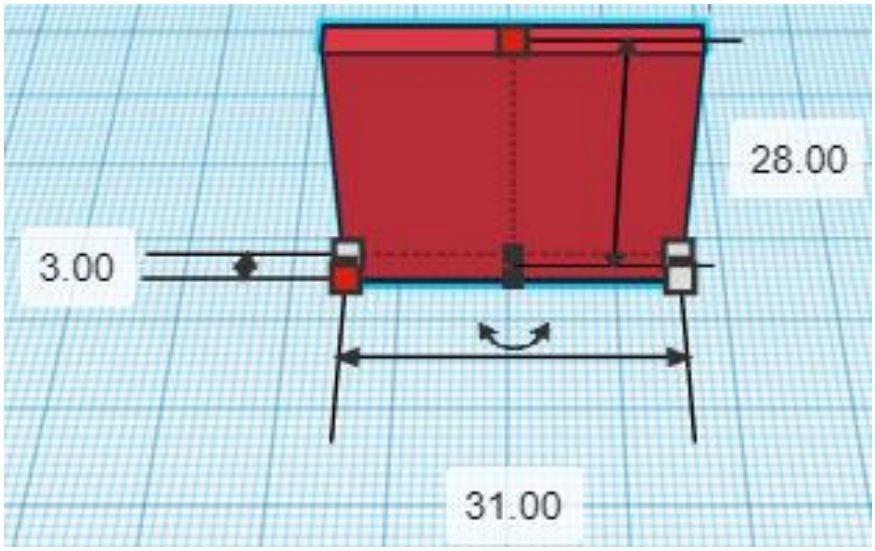
centered in X direction,
centered of Y direction, and
centered of Z direction.



Group Base and Side Cutout Sets
From now on this will be called the **Base**.

Bring in a Box, located in Basic Shapes on the left 2 shapes down.
From now on this will be called the **Front/Back Cutout**.

Change the dimensions to
31mm X direction,
3mm Y direction, and
28mm Z direction.

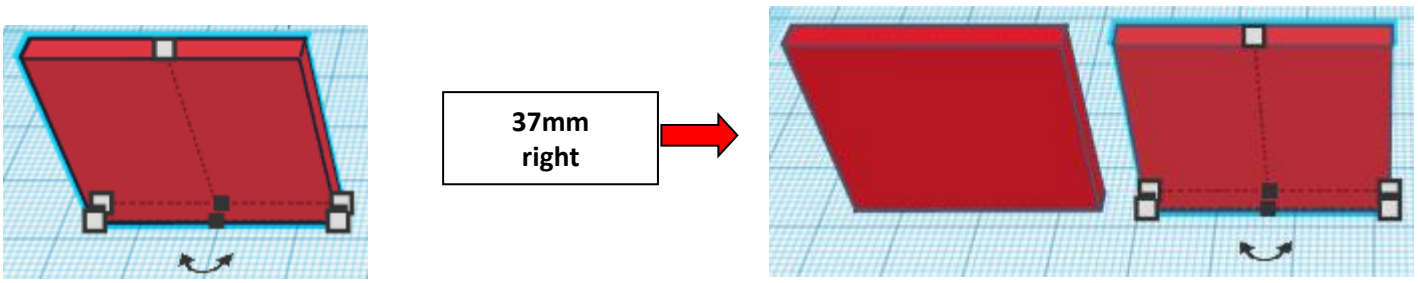


Duplicate Front/Back Cutout 1 time

Move Front/Back Cutout (Must be in home view for this to work!)
move right in positive X direction 37mm

Hint: Select Front/Back Cutout and push right arrow key 37 times.
Or
Select Front/Back Cutout and hold shift and push right arrow key 3 times. Then release shift and push right 7 times.

Before After



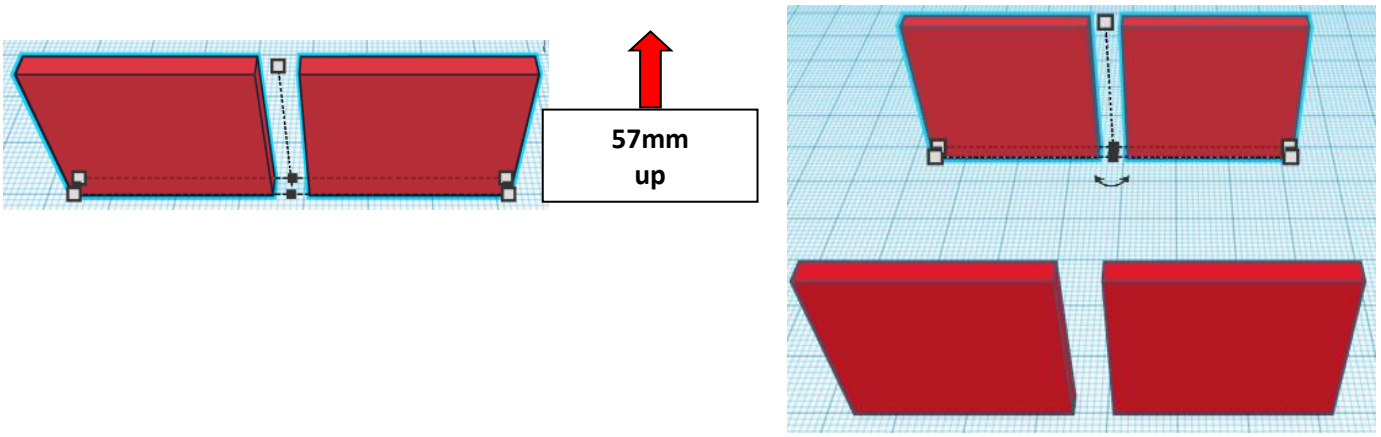
Group both Front/Back Cutout
From now on this will be called the **Front/Back Cutout Set**.

Duplicate Front/Back Cutout Set 1 time

Move Front/Back Cutout Set (Must be in home view for this to work!)
move back in positive Y direction 57mm

Hint: Select Front/Back Cutout Set and push up arrow key 57 times.
Or
Select Front/Back Cutout Set and hold shift and push up arrow key 5 times. Then release shift and push up 7 times.

Before After

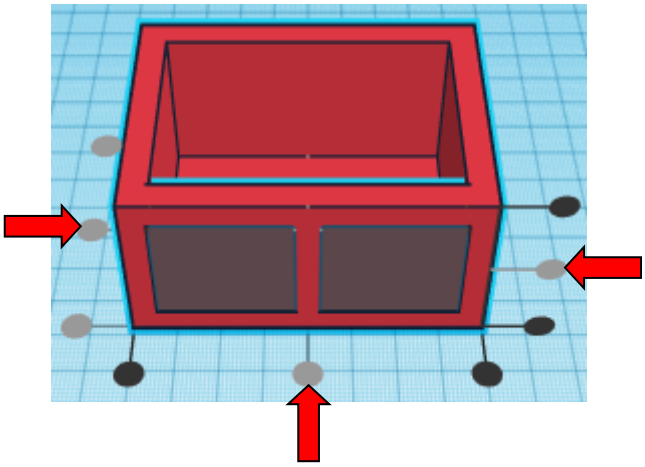


Group both Font/Back Cutout Sets
From now on this will be called the **Front/Back Cutout Set**.

Change Front/Back Cutout Set to **Hole** by selecting Front/Back Cutout Set and typing “h”.

Align Base and Front/Back Cutout Set

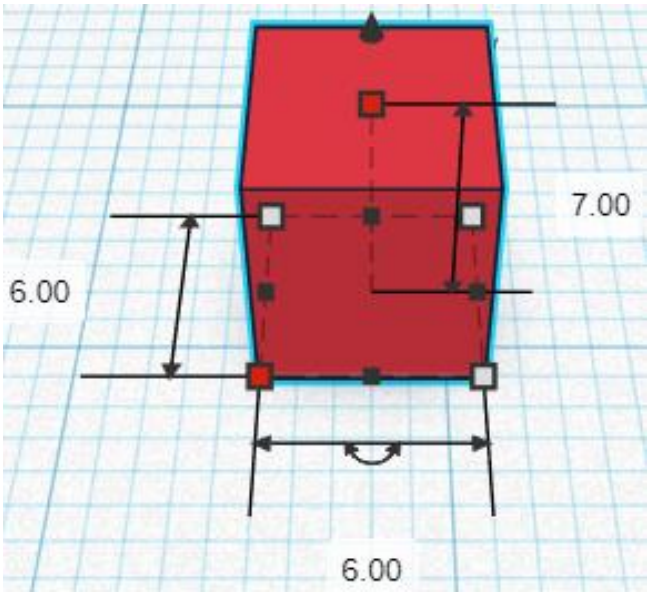
centered in X direction,
centered of Y direction, and
centered of Z direction.



Group Base and Front/Back Cutout Set
From now on this will be called the **Base**.

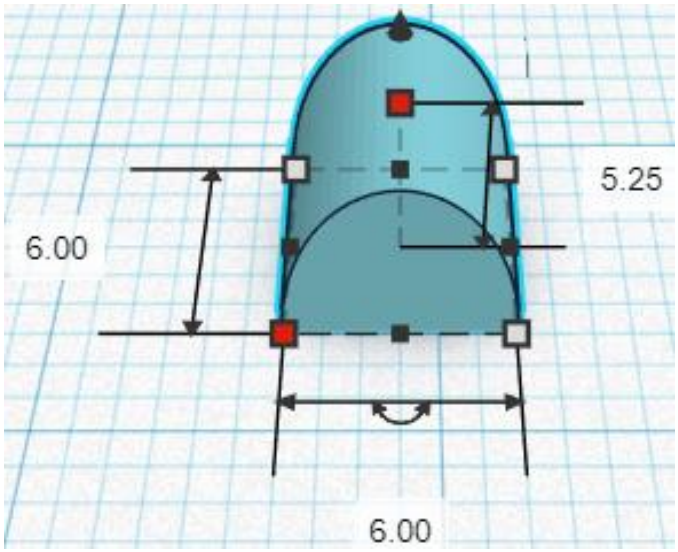
Bring in a Box, located in Basic Shapes on the left 2 shapes down.
From now on this will be called the **Right Hinge**.

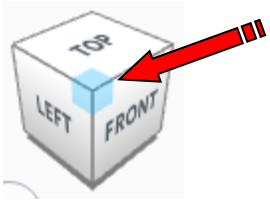
Change the dimensions to
6mm X direction,
6mm Y direction, and
7mm Z direction.



Bring in a Round Roof, located in Basic Shapes on the left 5 shapes down.
From now on this will be called the **Round Hinge**.

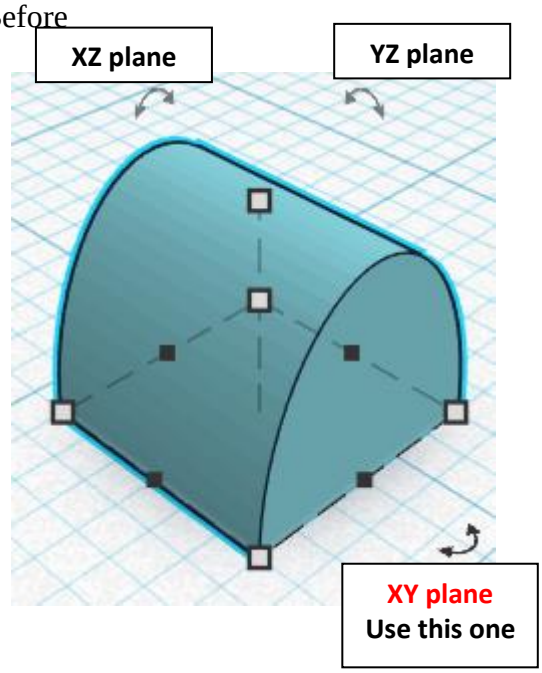
Change the dimensions to
6mm X direction,
6mm Y direction, and
5.25mm Z direction.



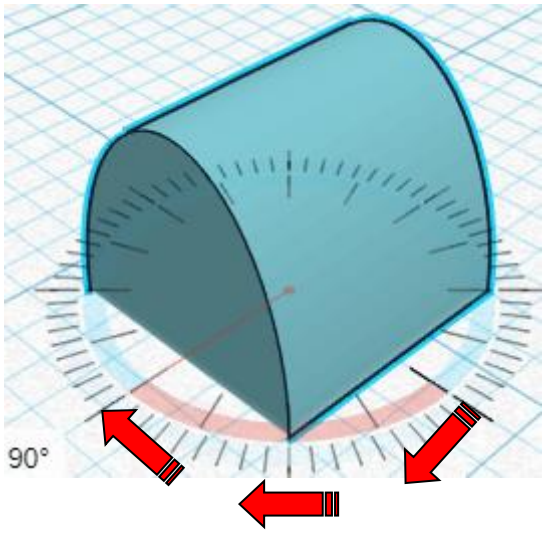
Go to TOP LEFT FRONT view for rotations  click here

Rotate the Round Hinge clockwise 90 degrees in XY plane.

Before

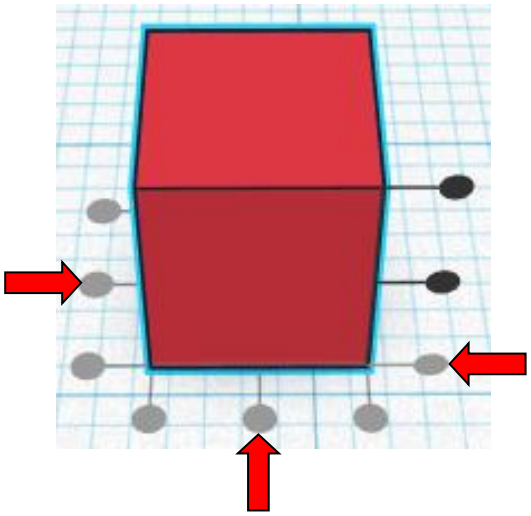


After



Align Right Hinge and Round Hinge

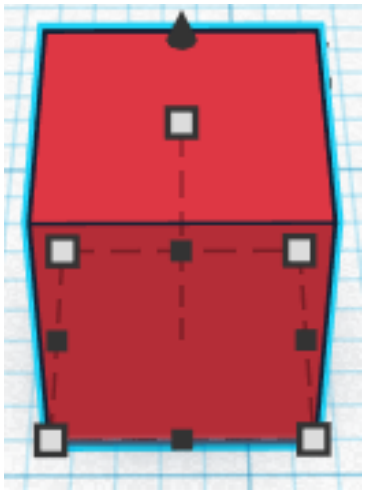
centered in X direction,
centered of Y direction, and
bottom of Z direction.



Move Right Hinge (Must be in home view for this to work!)
move down in negative Z direction 7mm

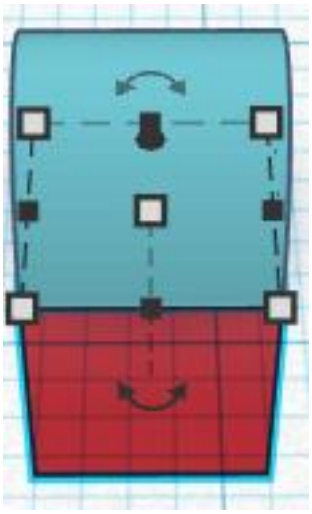
Hint: Select Right Hinge and hold control and push down arrow key 7 times.

Before



7mm down (hold control)

After

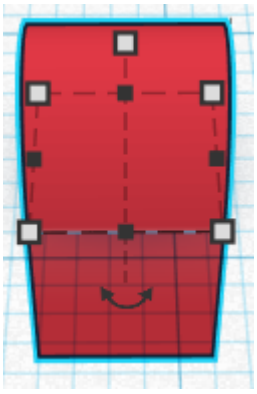


Group Right Hinge and Round Hinge
From now on this will be called the **Right Hinge**

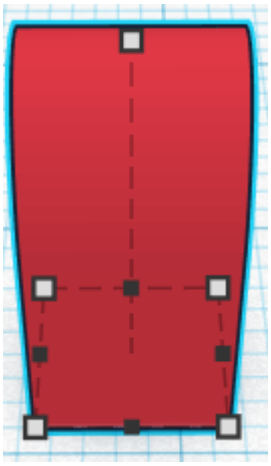
Set on Workplane:

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

Before

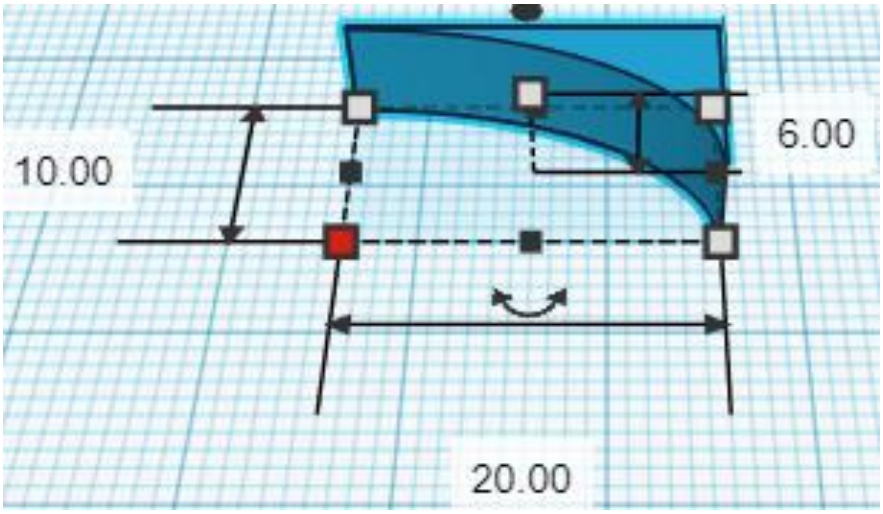


After



Bring in a MetaFillet, located in All, (things in All move each time that TinkerCad adds items to All), this was last seen on page 11, on the bottom left.
From now on this will be called the **Hinge Support**

Change the dimensions to
20mm X direction,
10mm Y direction, and
6mm Z direction.

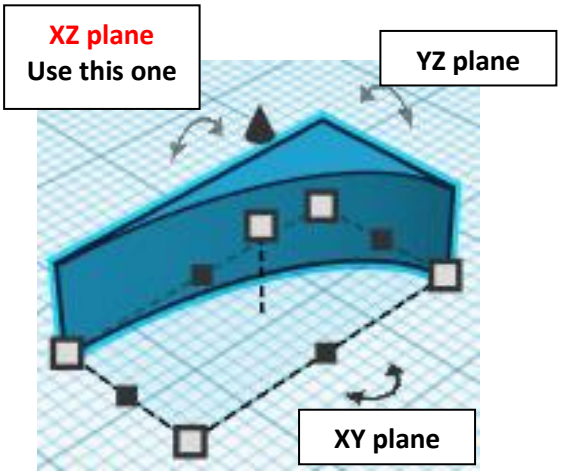


Go to TOP LEFT FRONT view for rotations 

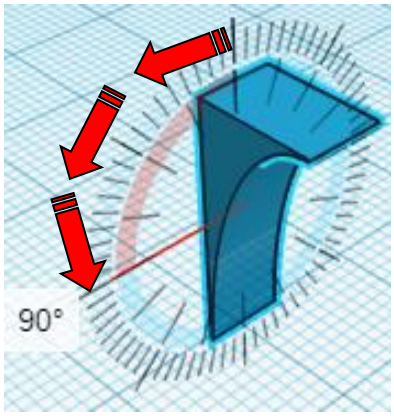
click here

Rotate the Hinge Support counter-clockwise 90 degrees in XZ plane.

Before

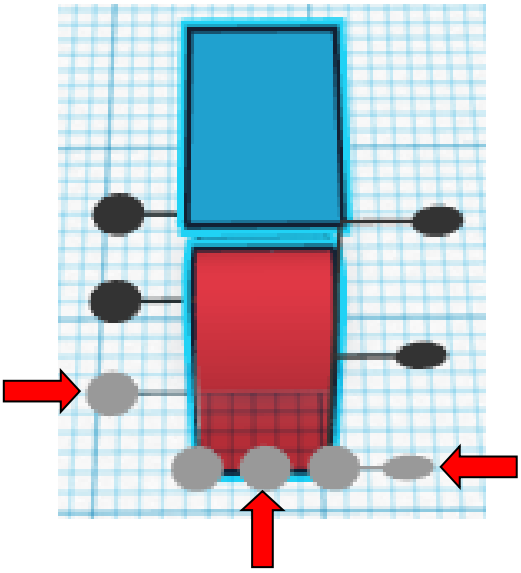


After



Align Right Hinge and Hinge Support

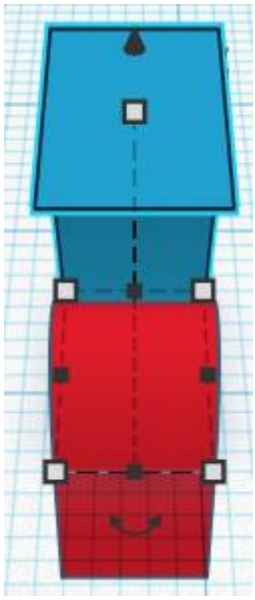
centered in X direction,
front of Y direction, and
bottom of Z direction.

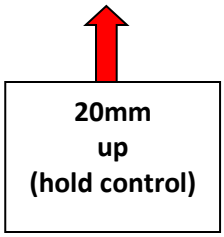


Move Right Hinge (Must be in home view for this to work!)
move up in positive Z direction 20mm

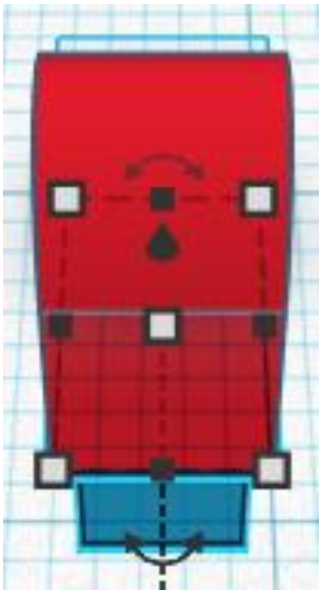
Hint: Select Right Hinge and hold control and push up arrow key 20 times.
Or
Select Right Hinge and hold control and hold shift and push up arrow key 2 times.

Before





After

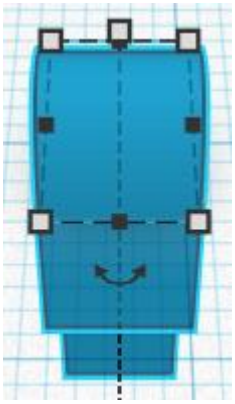


Group Right Hinge and Hinge Support
From now on this will be called the **Right Hinge**

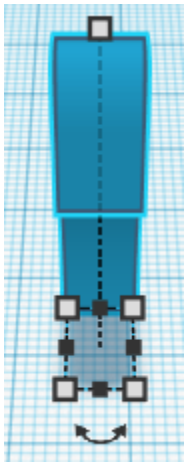
Set on Workplane:

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

Before

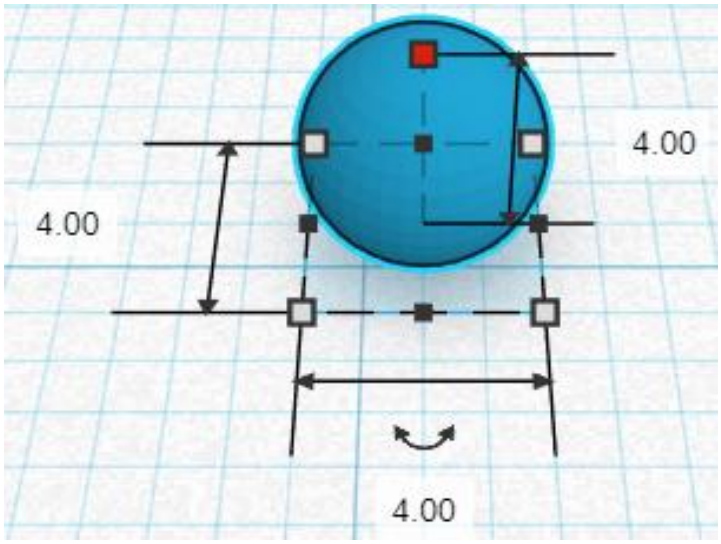


After



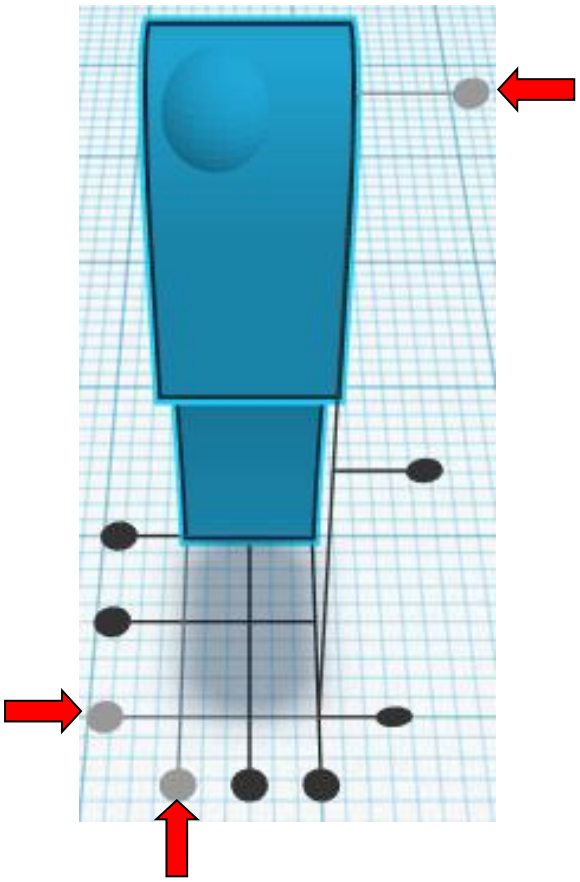
Bring in a Sphere, located in Basic Shapes on the left 3 shapes down.
From now on this will be called the **Hinge Ball**

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



Align Right Hinge and Hinge Ball

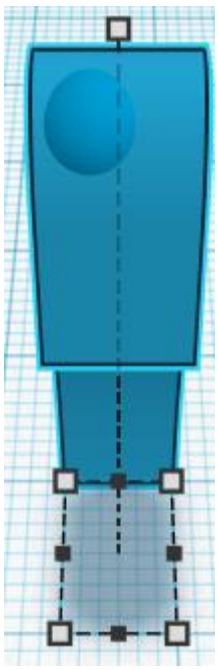
left in X direction,
front of Y direction, and
top of Z direction.

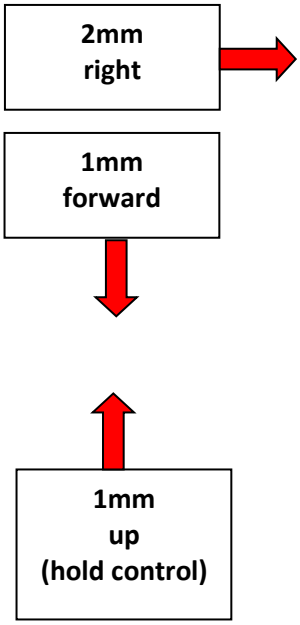


Move Right Hinge (Must be in home view for this to work!)
move right in positive X direction 2mm
and
move forward in negative Y direction 1mm
and
move up in positive Z direction 1mm

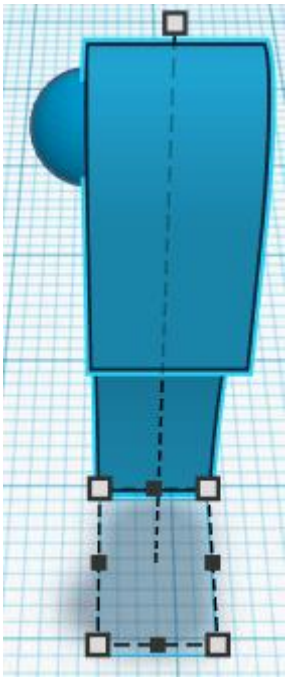
Hint: Select Right Hinge and push right arrow key 2 times.
Then select Right Hinge and push down arrow key 1 time.
Then select Right Hinge and hold control and push up arrow key 1 time.

Before





After

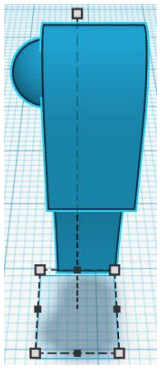


Group Right Hinge and Hinge Ball
From now on this will be called the **Right Hinge**

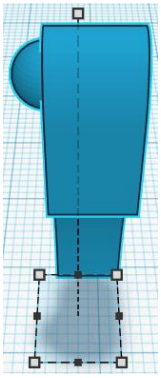
Set on Workplane:

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

Before



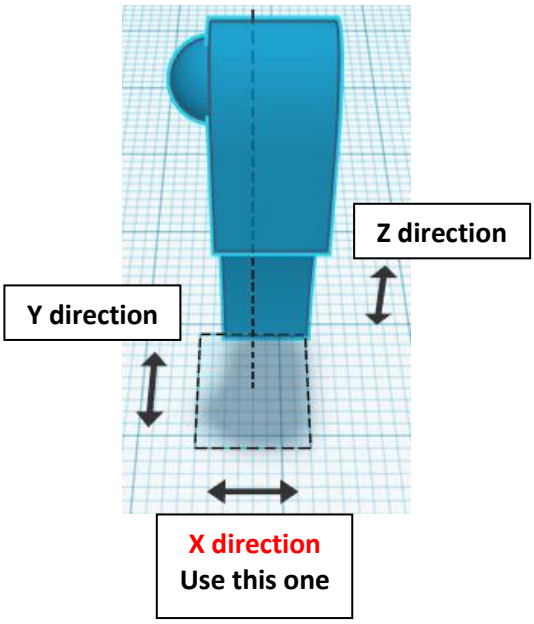
After



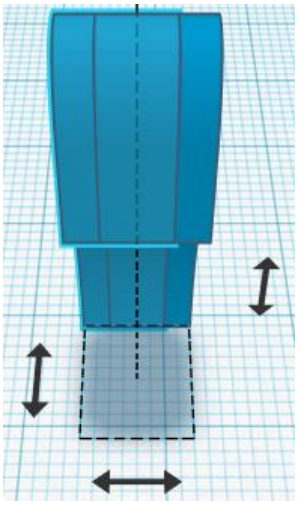
Duplicate Right Hinge 1 time

Flip Right Hinge in X direction.

Before



After

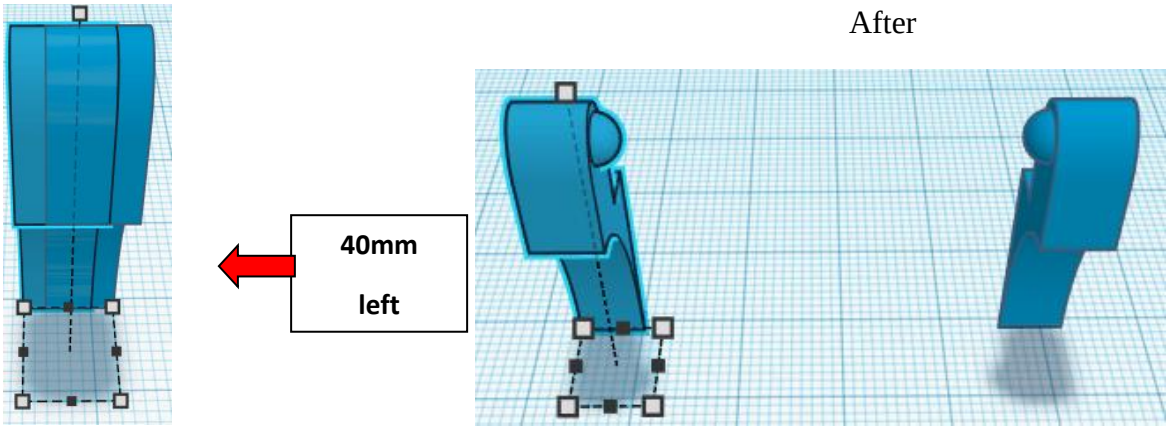


From now on this new flipped part will be called the **Left Hinge**

Move Left Hinge (Must be in home view for this to work!)
move left in negative X direction 40mm

Hint: Select Left Hinge and push left arrow key 40 times.
or
Select Left Hinge and hold down shift and push left arrow key 4 times.

Before

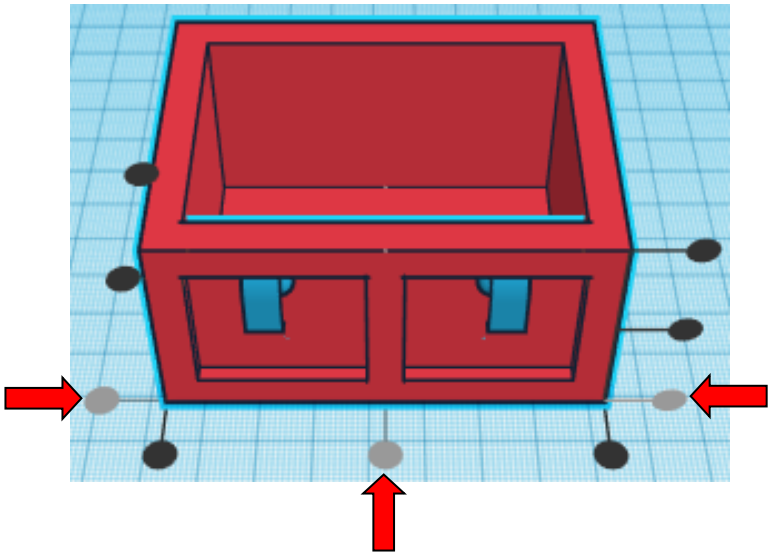


After

Group Left Hinge and Right Hinge
From now on this will be called the **Bottom Hinge Set**

Align Bottom Hing Set and Base

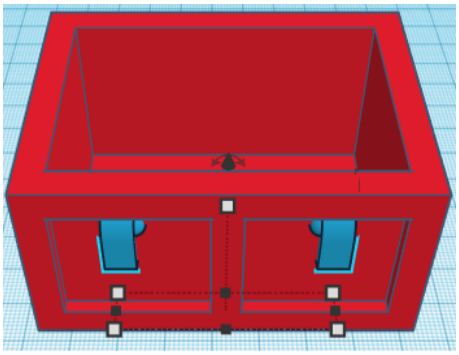
centered in X direction,
front of Y direction, and
bottom of Z direction.

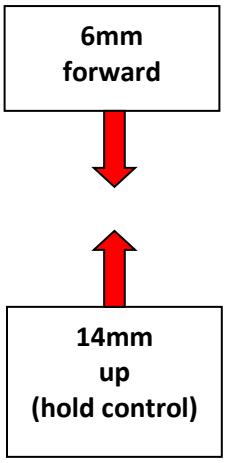


Move Bottom Hing Set (Must be in home view for this to work!)
move forward in negative Y direction 6mm
and
move up in positive Z direction 14mm

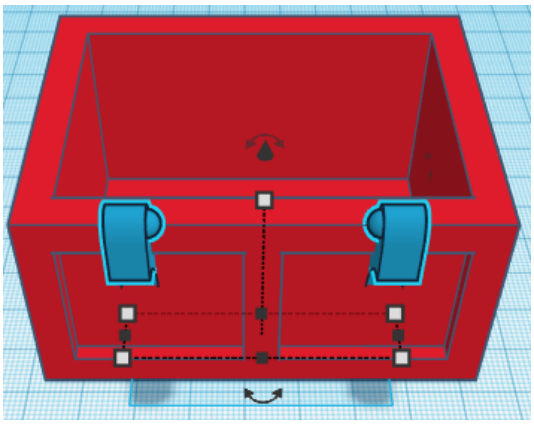
Hint: Select Right Hinge and push down arrow key 6 times.
Then select Right Hinge and hold control and push up arrow key 14 time.

Before





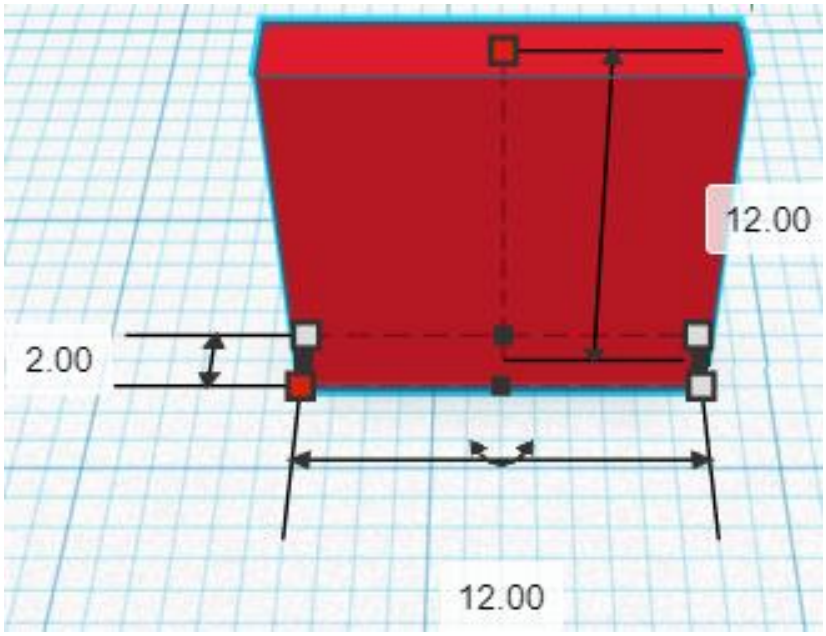
After



Group Bottom Hing Set and Base
From now on this will be called the **Base**

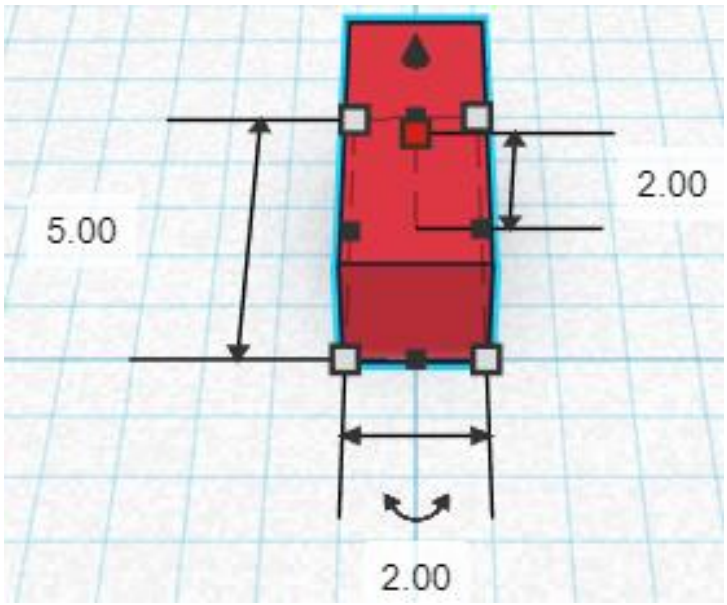
Bring in a Box, located in Basic Shapes on the left 2 shapes down.
From now on this will be called the **Lock**

Change the dimensions to
12mm X direction,
2mm Y direction, and
12mm Z direction.



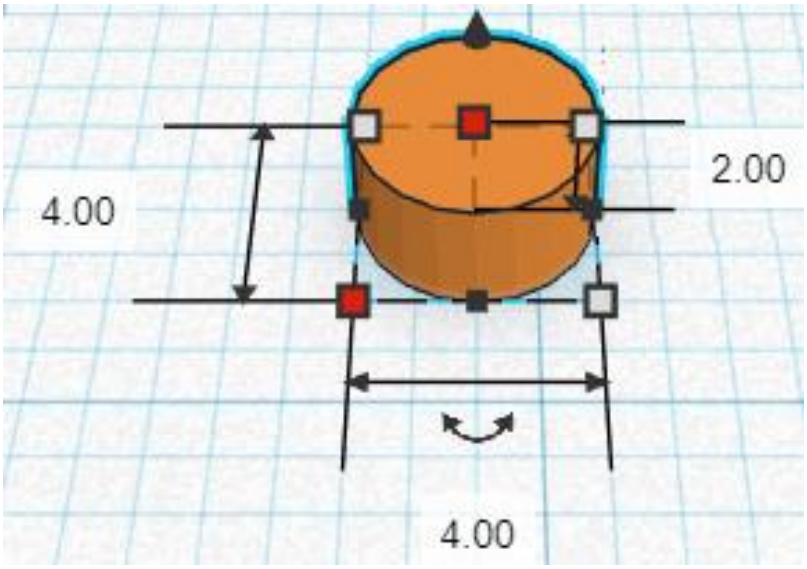
Bring in a Box, located in Basic Shapes on the left 2 shapes down.
From now on this will be called the **Key Hole Box**

Change the dimensions to
2mm X direction,
5mm Y direction, and
2mm Z direction.



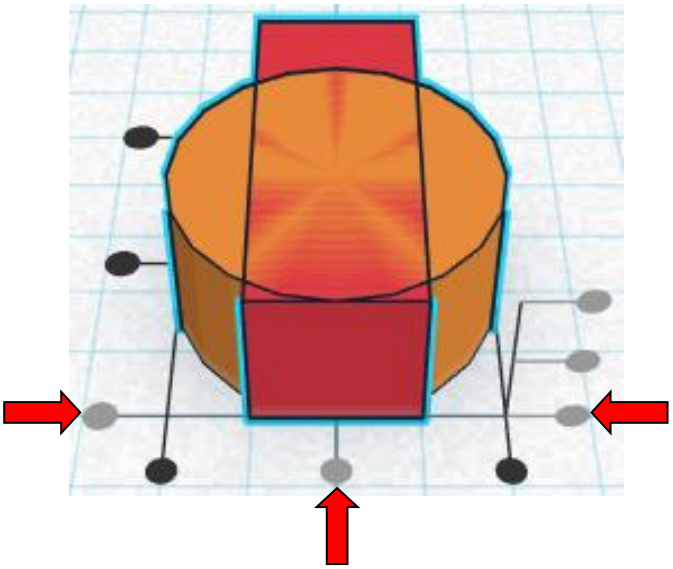
Bring in a Cylinder, located in Basic Shapes on the right 2 shapes down.
From now on this will be called the **Key Hole Cylinder**

Change the dimensions to
4mm X direction,
4mm Y direction, and
2mm Z direction.



Align Key Hole Box and Key Hole Cylinder

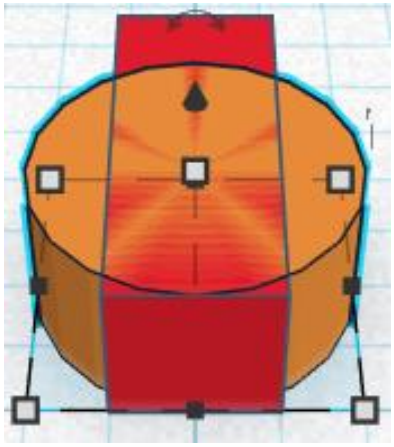
centered in X direction,
front of Y direction, and
bottom of Z direction.

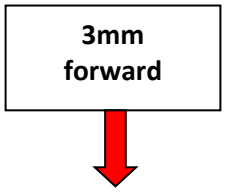


Move Key Hole Cylinder (Must be in home view for this to work!)
move forward in negative Y direction 3mm

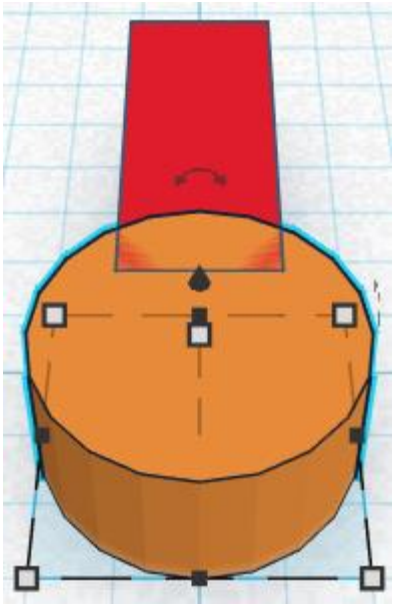
Hint: Select Key Hole Cylinder and push down arrow key 3 times.

Before





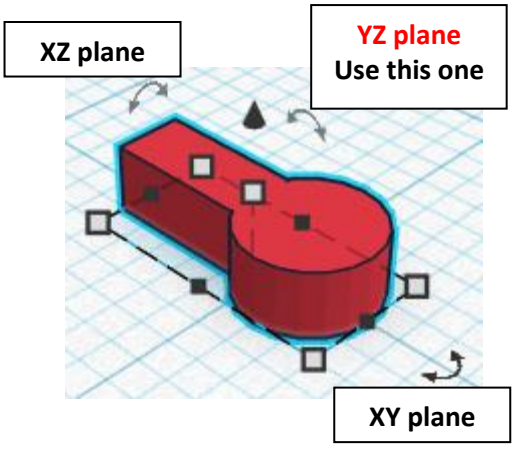
After



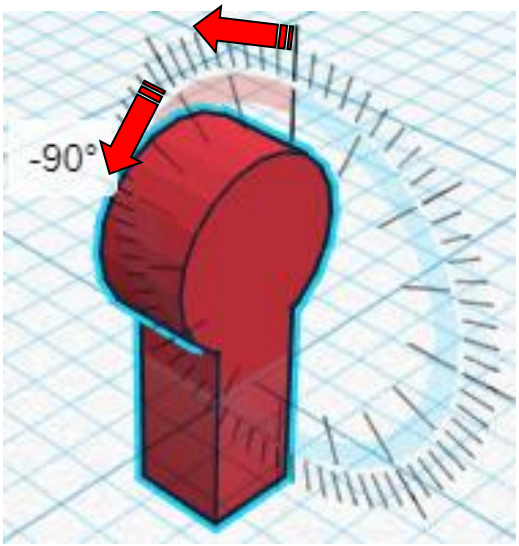
Group Key Hole Cylinder and Key Hole Box
From now on this will be called the **Key Hole**

Rotate the Key Hole counter-clockwise 90 degrees in YZ plane.

Before



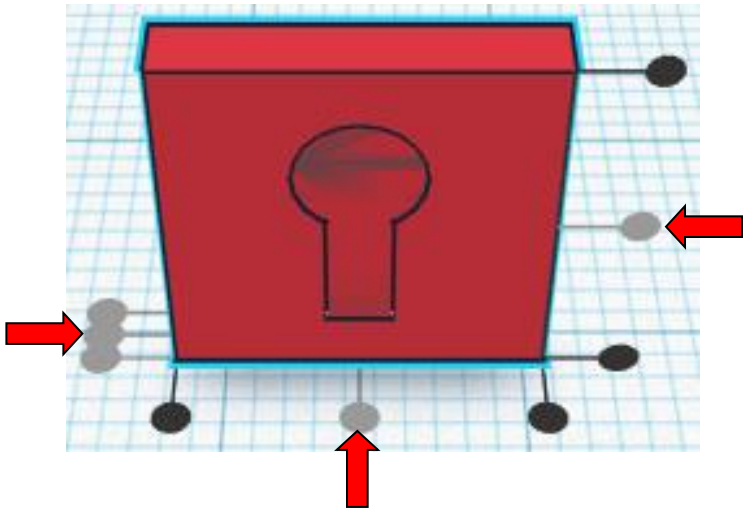
After



Change Key Hole to **Hole** by selecting Key Hole and typing “h”.

Align Key Hole and Lock

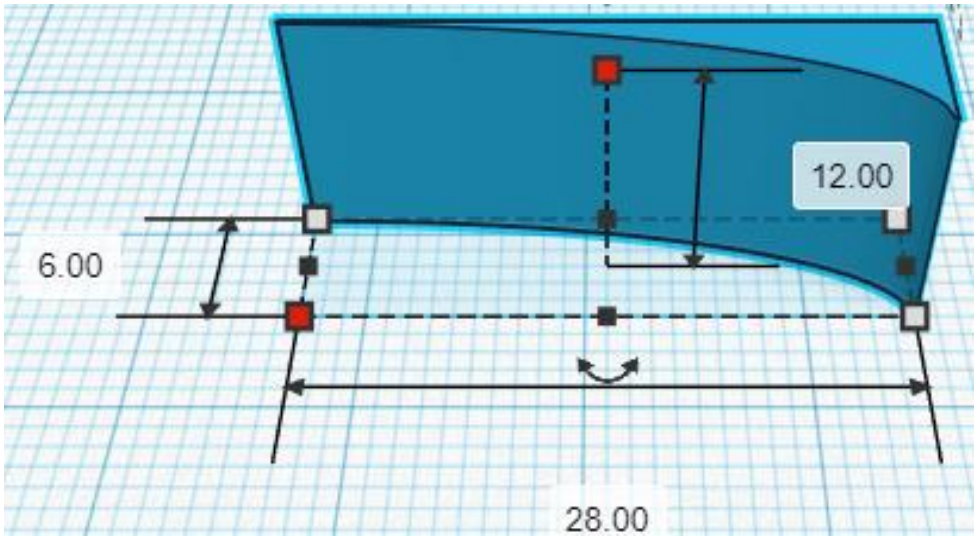
centered in X direction,
centered of Y direction, and
centered of Z direction.



Group Key Hole and Lock
From now on this will be called the **Lock**

Bring in a MetaFillet, located in All, (things in All move each time that TinkerCad adds items to All), this was last seen on page 11, on the bottom left.
From now on this will be called the **Lock Support**

Change the dimensions to
28mm X direction,
6mm Y direction, and
12mm Z direction.

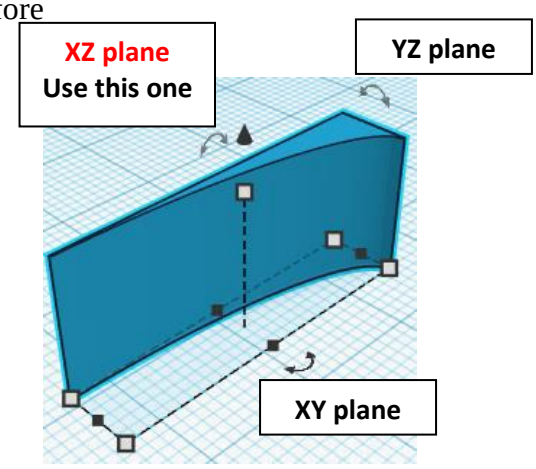


Go to TOP LEFT FRONT view for rotations 

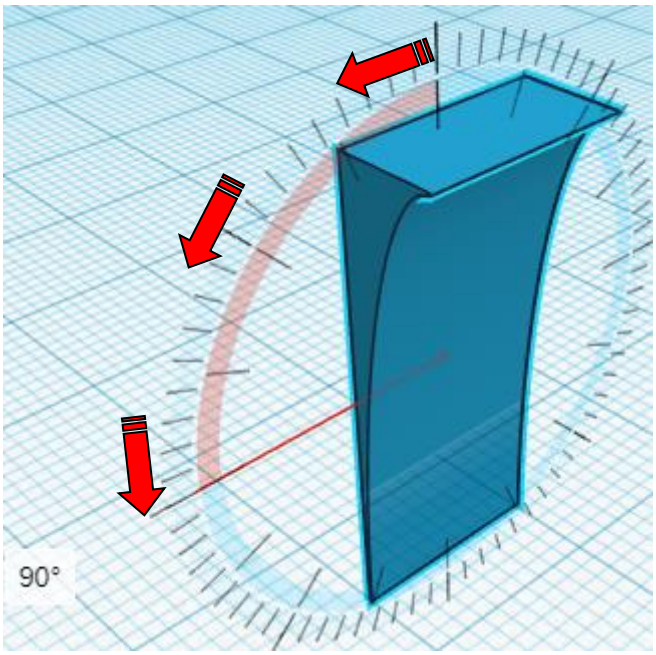
click here

Rotate the Lock Support counter-clockwise 90 degrees in XZ plane.

Before

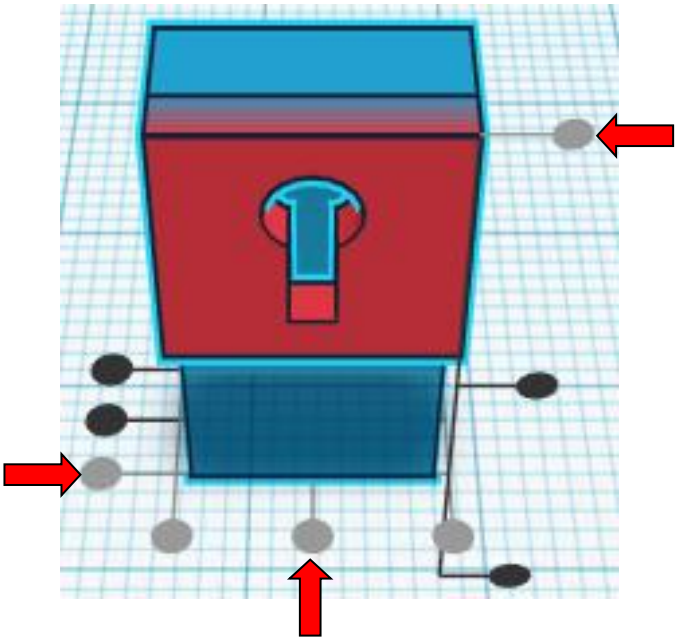


After



Align Lock Support and Lock

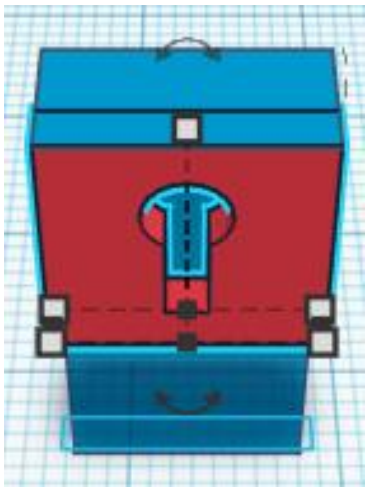
centered in X direction,
front of Y direction, and
top of Z direction.

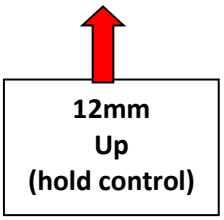


Move Lock (Must be in home view for this to work!)
move up in positive Z direction 12mm

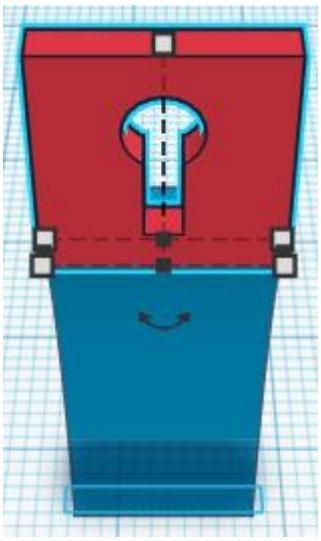
Hint: Select Lock and hold control and push up arrow key 12 times.
Or
Select Lock and hold control and hold shift push up arrow key 1 time.
Then release shift and push up 2 times.

Before





After

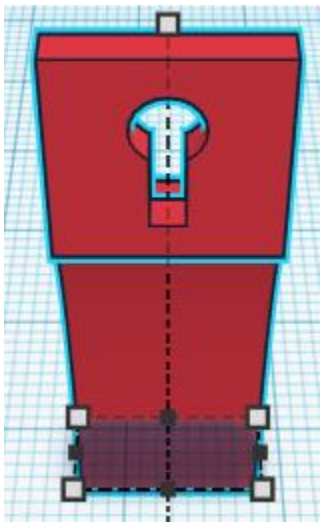


Group Lock Support and Lock
From now on this will be called the **Lock**

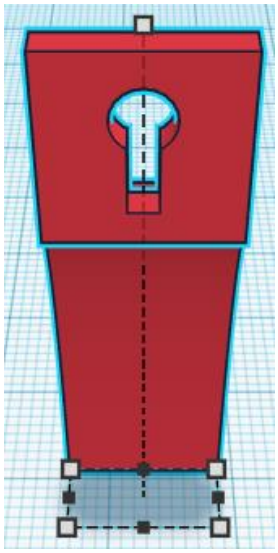
Set on Workplane:

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

Before



After

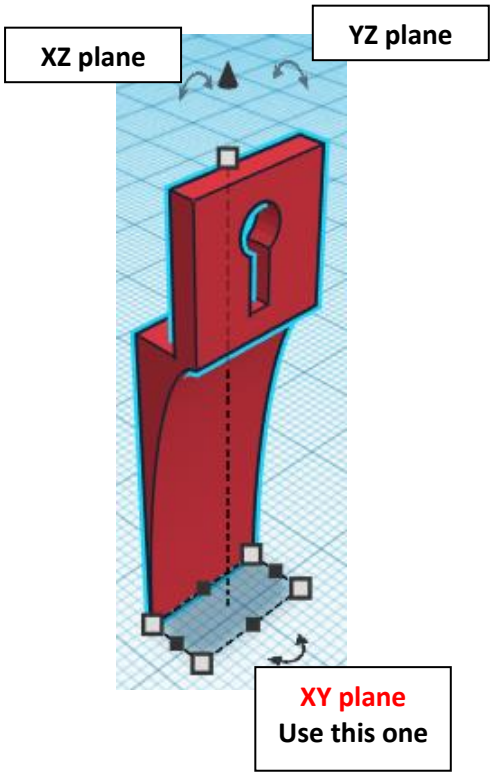


Go to TOP LEFT FRONT view for rotations 

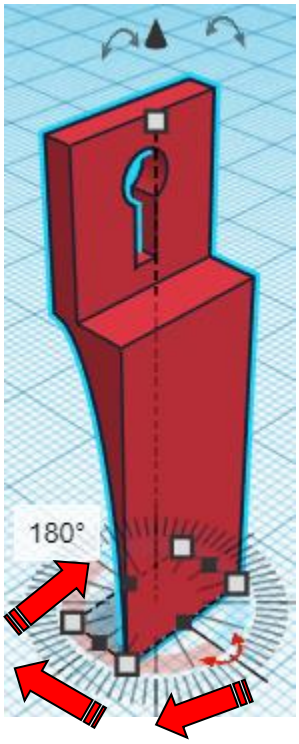
click here

Rotate the Lock clockwise 180 degrees in XY plane.

Before

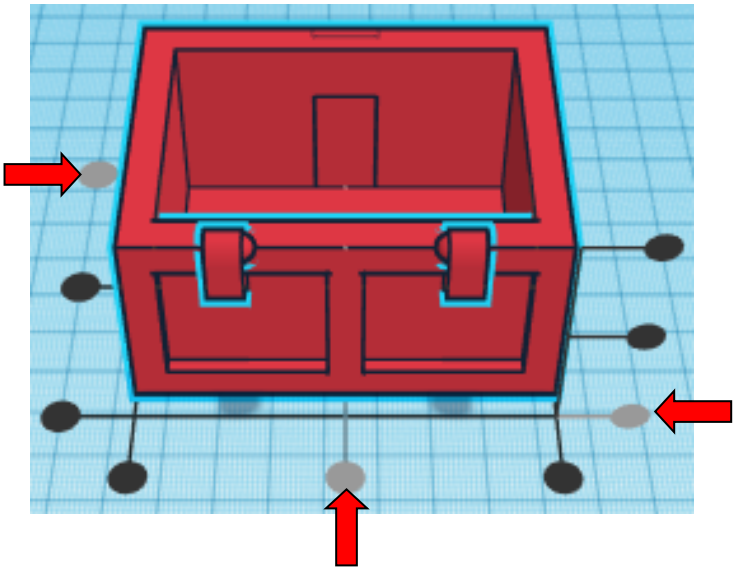


After



Align Base and Lock

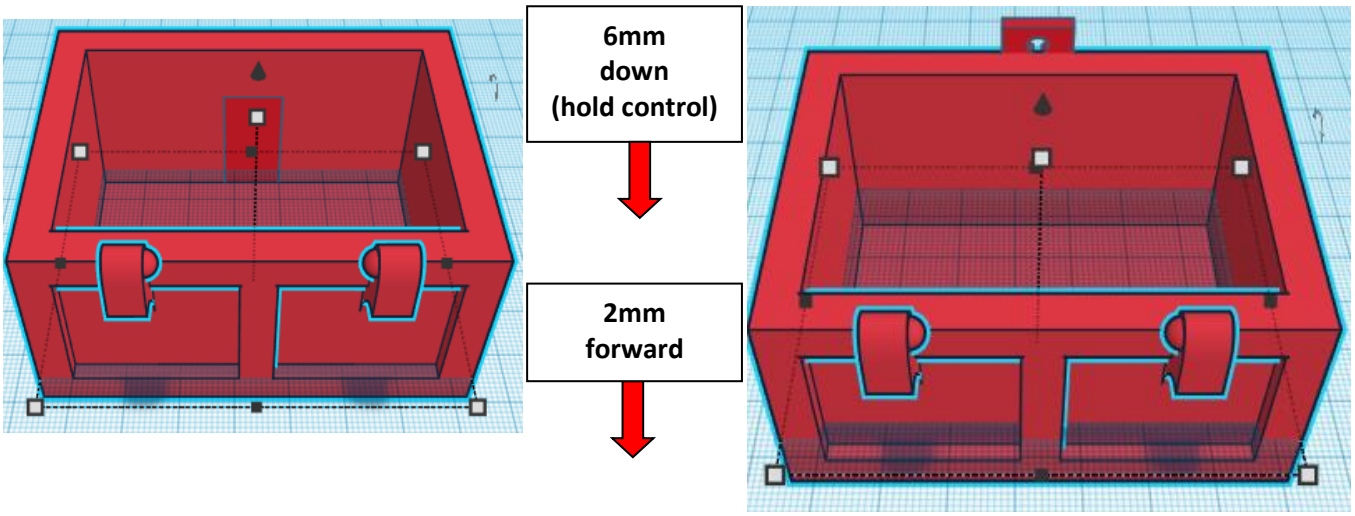
centered in X direction,
back of Y direction, and
bottom of Z direction.



Move Base (Must be in home view for this to work!)
move down in negative Z direction 6mm
and
move forward in negative Y direction 2mm

Hint: Select Base and hold control and push down arrow key 6 times.
Then Select Base and push down arrow key 2 times.

Before



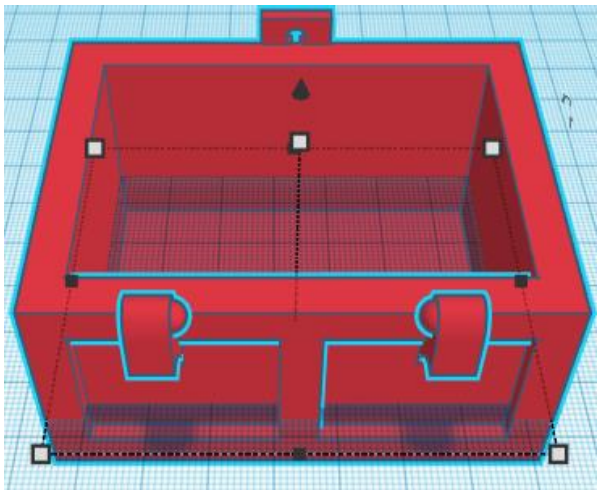
After

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

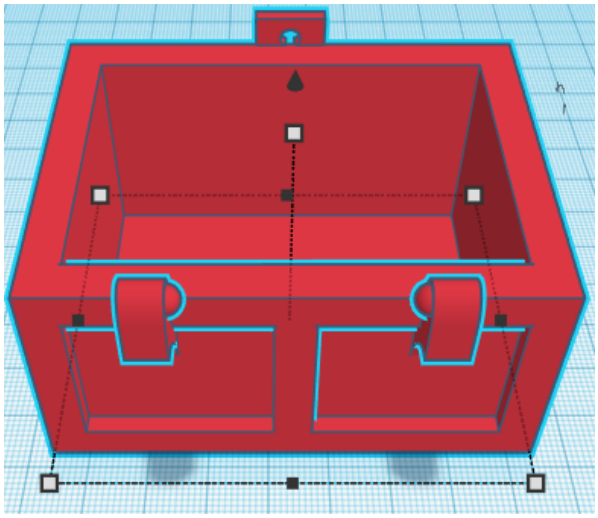
Set on Workplane:

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

Before



After

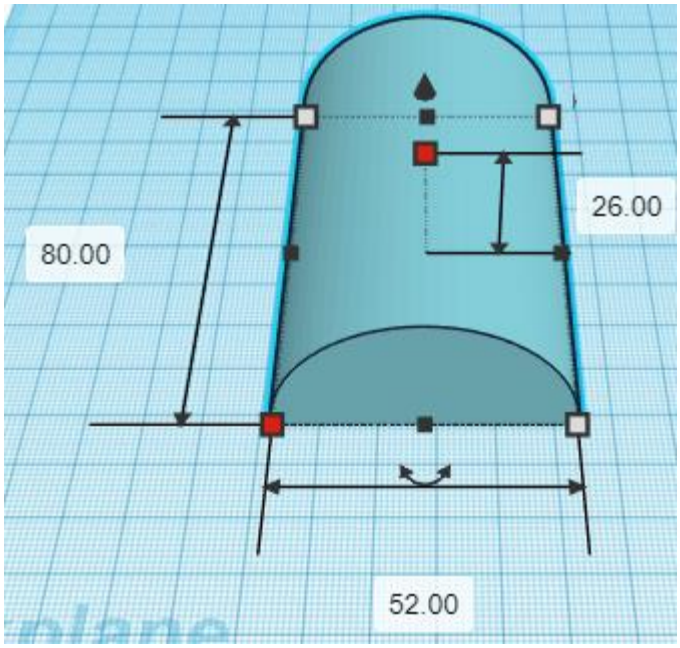


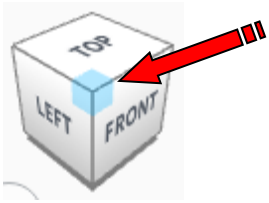
Congratulations, you are done with the Base!

Set it off to the side to make room for the Lid.

Bring in a Round Roof, located in Basic Shapes on the left 5 shapes down.
From now on this will be called the **Lid**

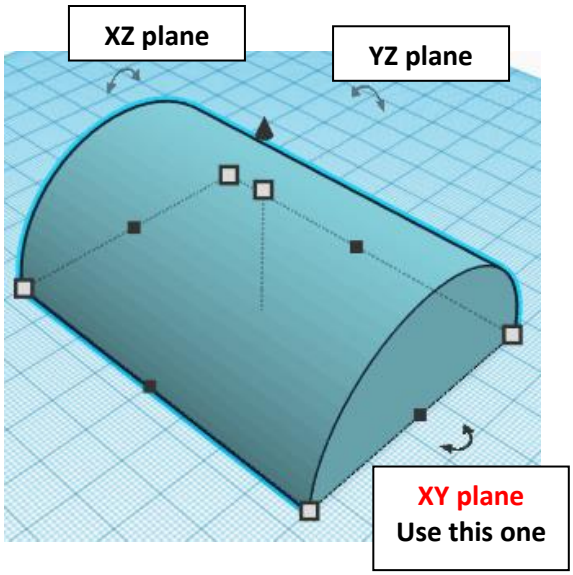
Change the dimensions to
52mm X direction,
80mm Y direction, and
26mm Z direction.



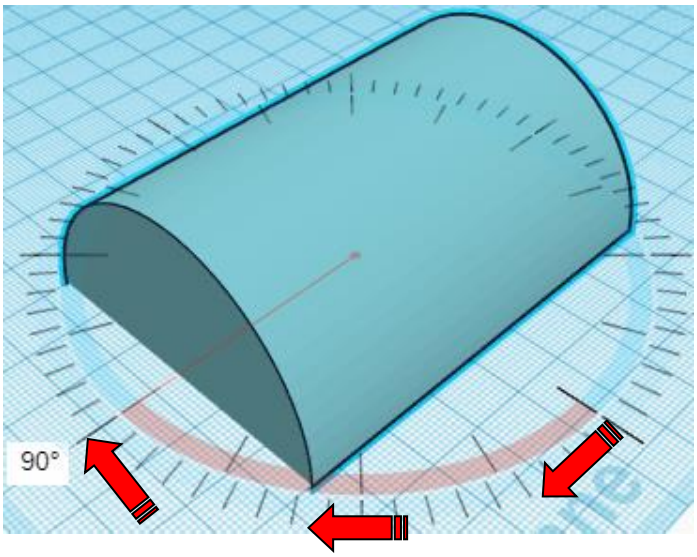
Go to TOP LEFT FRONT view for rotations  click here

Rotate the Lid clockwise 90 degrees in XY plane.

Before

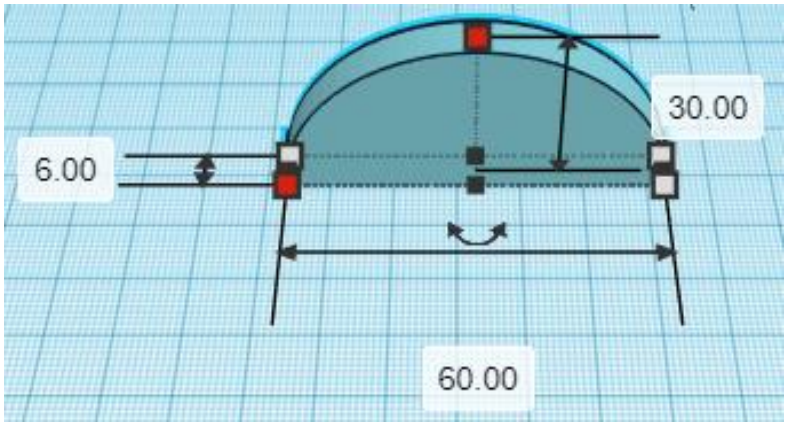


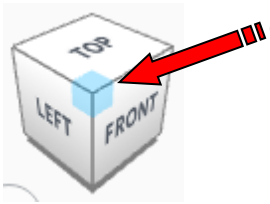
After



Bring in a Round Roof, located in Basic Shapes on the left 5 shapes down.
From now on this will be called the **Lid Accent**

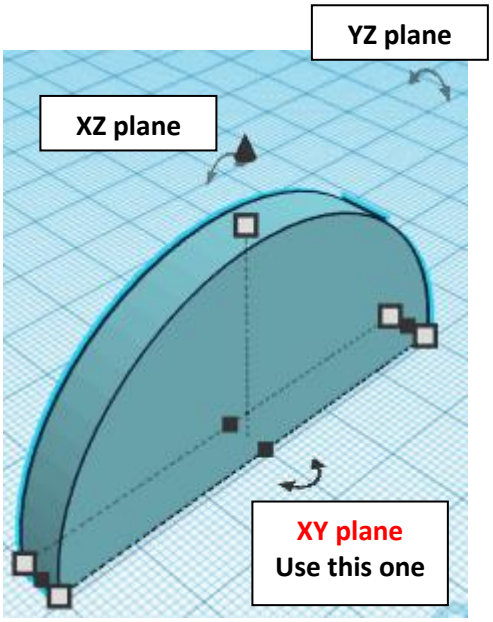
Change the dimensions to
60mm X direction,
6mm Y direction, and
30mm Z direction.



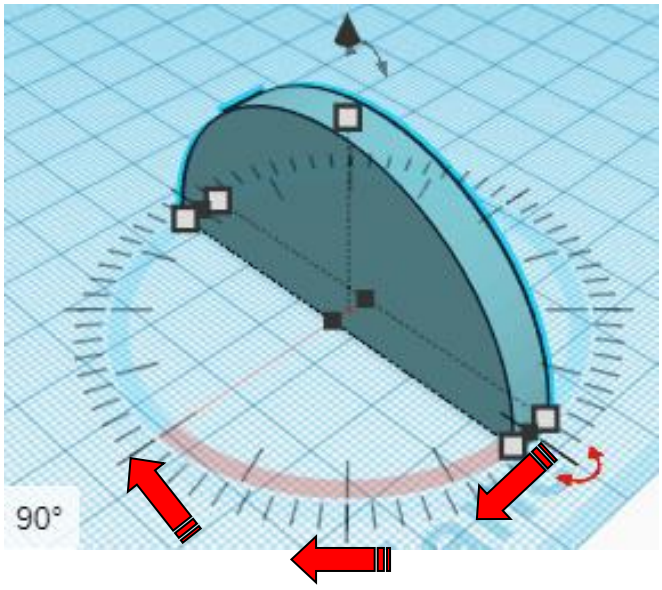
Go to TOP LEFT FRONT view for rotations  click here

Rotate the Lid Accent clockwise 90 degrees in XY plane.

Before



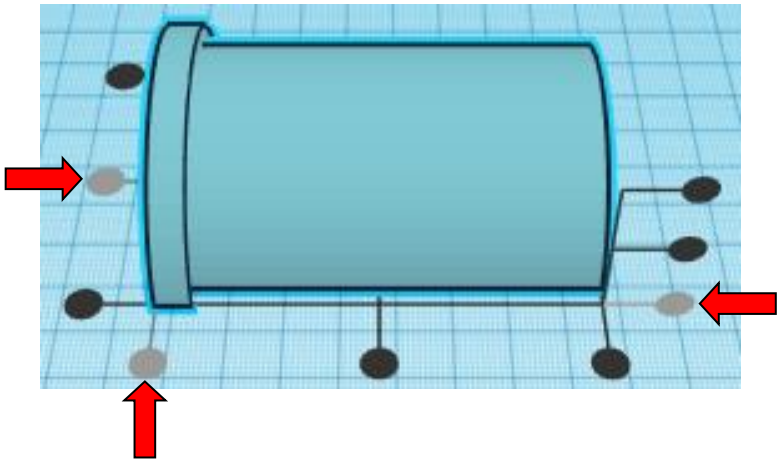
After



Duplicate Lid Accent 2 time
From now on this will be called the **Lid Accent 1, Lid Accent 2,** and **Lid Accent 3**

Align Lid and Lid Accent 1

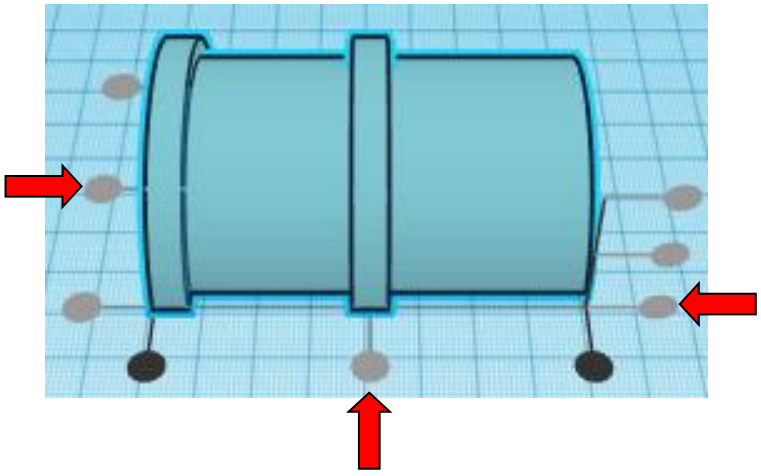
left in X direction,
centered of Y direction, and
bottom of Z direction.



Group Lid and Lid Accent 1
From now on this will be called the **Lid**

Align Lid and Lid Accent 2

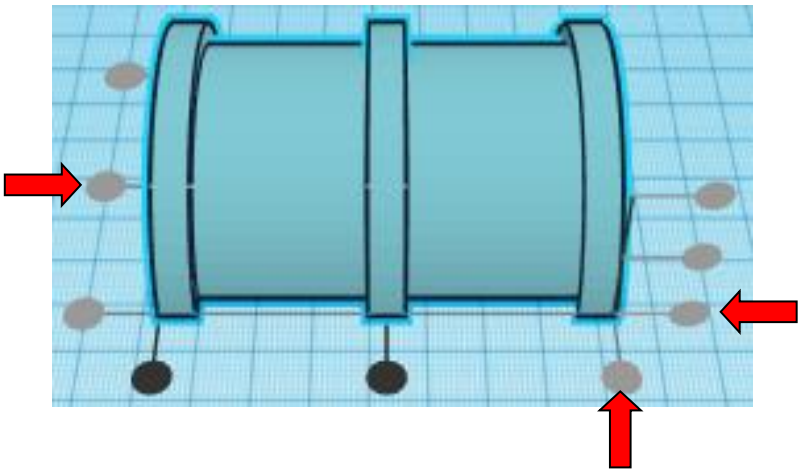
centered in X direction,
centered of Y direction, and
bottom of Z direction.



Group Lid and Lid Accent 2
From now on this will be called the **Lid**

Align Lid and Lid Accent 3

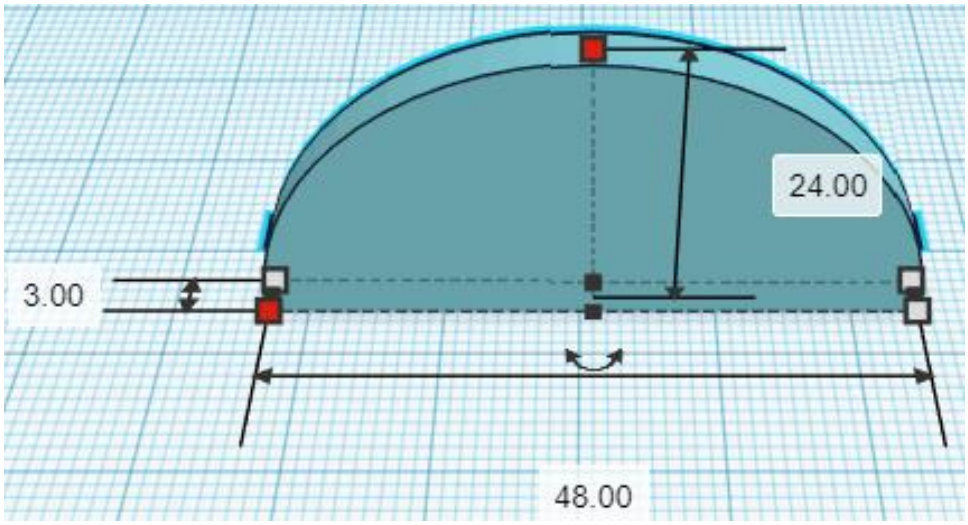
right in X direction,
centered of Y direction, and
bottom of Z direction.



Group Lid and Lid Accent 3
From now on this will be called the **Lid**

Bring in a Round Roof, located in Basic Shapes on the left 5 shapes down.
From now on this will be called the **Lid End Cutout**

Change the dimensions to
48mm X direction,
3mm Y direction, and
24mm Z direction.

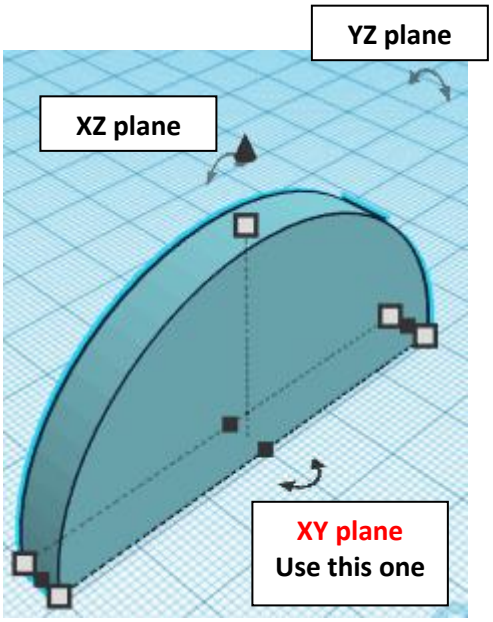


Go to TOP LEFT FRONT view for rotations 

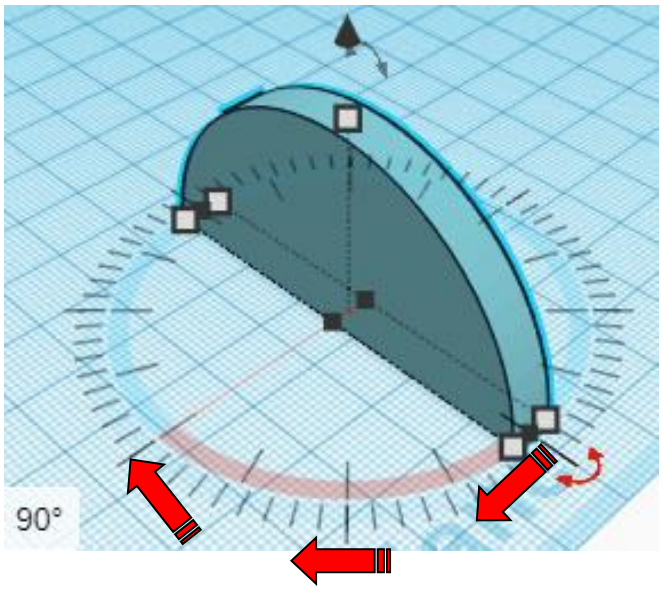
click here

Rotate the Lid End Cutout clockwise 90 degrees in XY plane.

Before



After

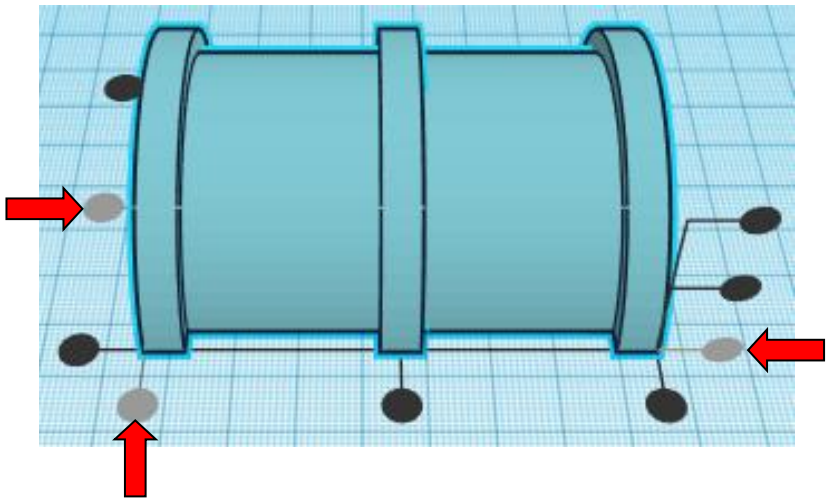


Change Lid End Cutout to **Hole** by selecting Lid End Cutout and typing “h”.

Duplicate Lid End Cutout 1 time
From now on this will be called the **Lid End Cutout Left,** and **Lid End Cutout Right**

Align Lid and Lid End Cutout Left

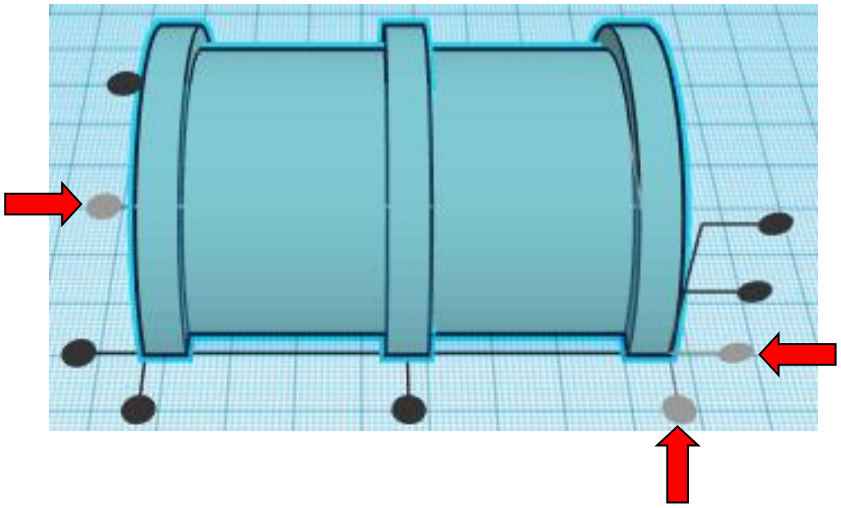
left in X direction,
centered of Y direction, and
bottom of Z direction.



Group Lid and Lid End Cutout Left
From now on this will be called the **Lid**

Align Lid and Lid End Cutout Right

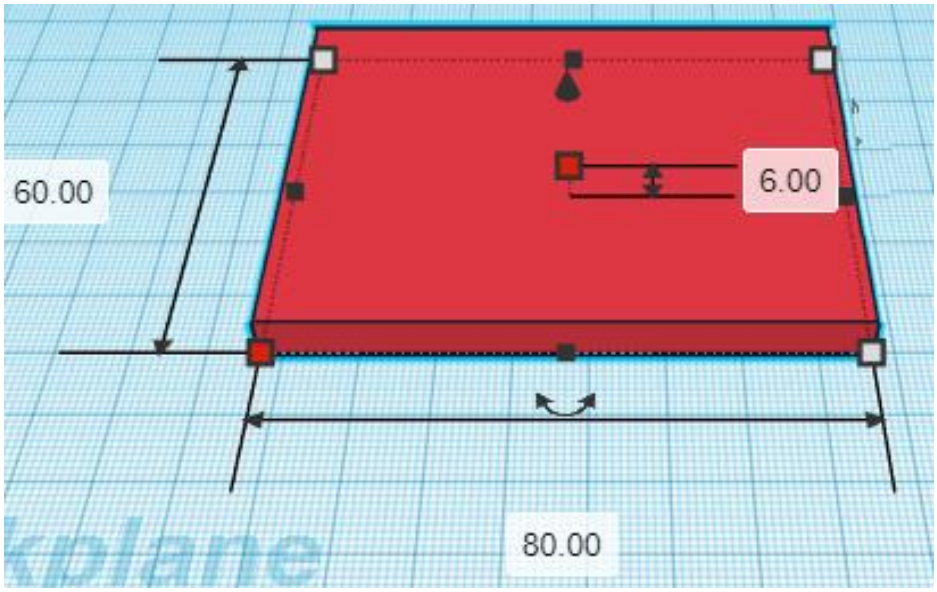
right in X direction,
centered of Y direction, and
bottom of Z direction.



Group Lid and Lid End Cutout Right
From now on this will be called the **Lid**

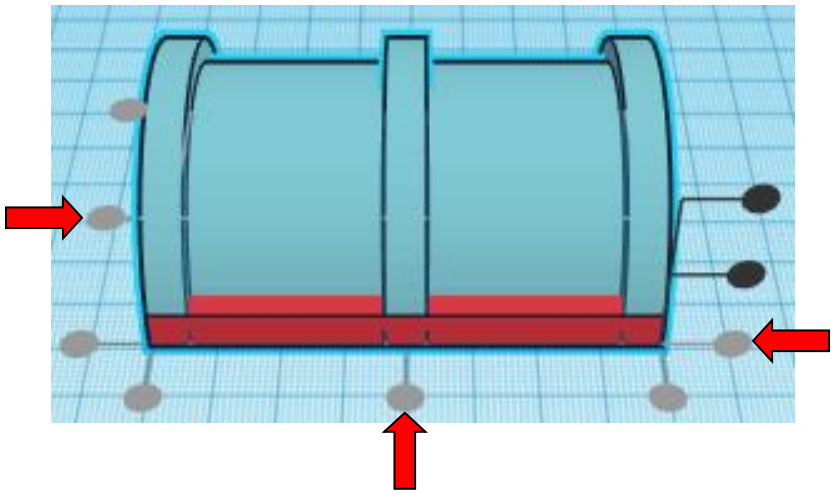
Bring in a Box, located in Basic Shapes on the left 2 shapes down.
From now on this will be called the **Lid Base**.

Change the dimensions to
80mm X direction,
60mm Y direction, and
6mm Z direction.



Align Lid and Lid Base

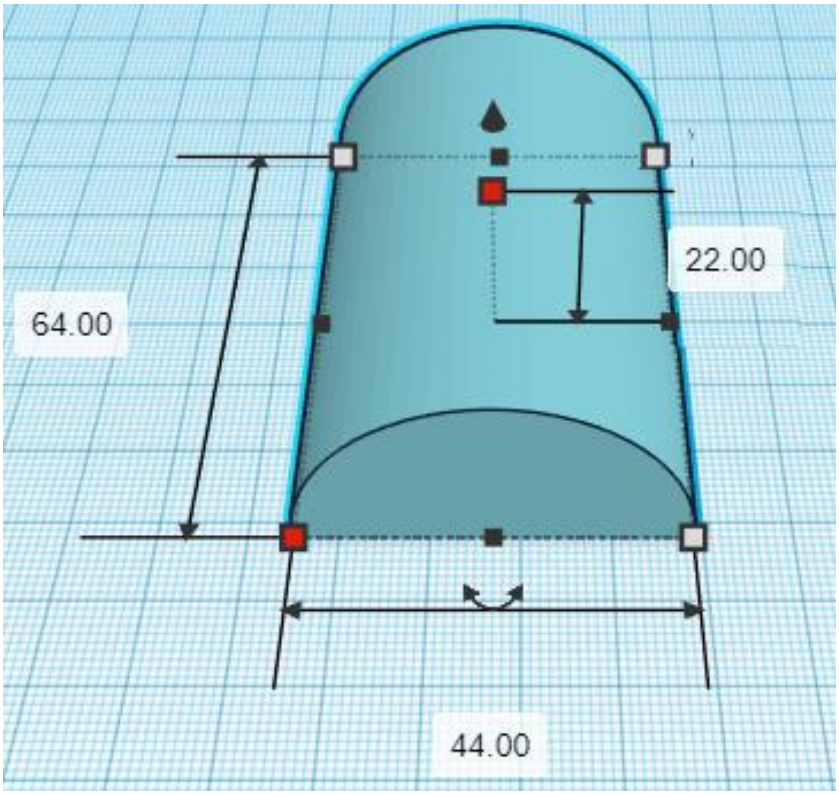
centered in X direction,
centered of Y direction, and
bottom of Z direction.



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

Bring in a Round Roof, located in Basic Shapes on the left 5 shapes down.
From now on this will be called the **Lid Cutout**

Change the dimensions to
44mm X direction,
64mm Y direction, and
22mm Z direction.

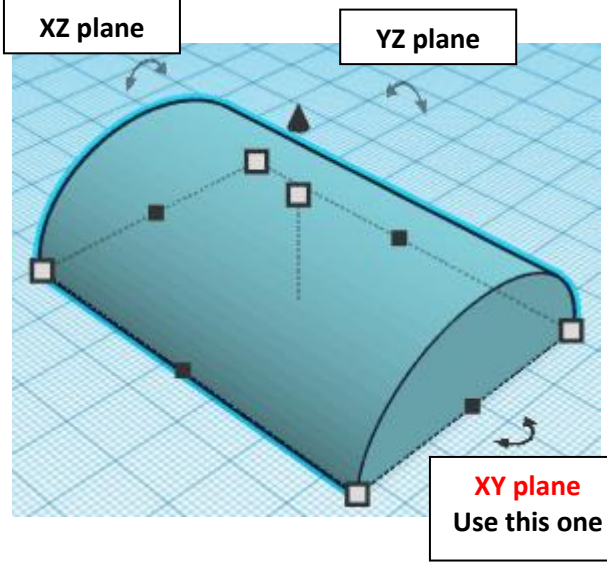


Go to TOP LEFT FRONT view for rotations 

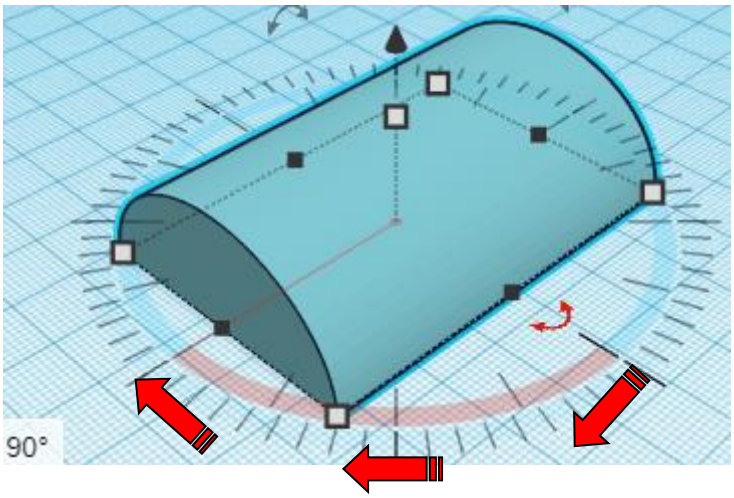
click here

Rotate the Lid Cutout clockwise 90 degrees in XY plane.

Before



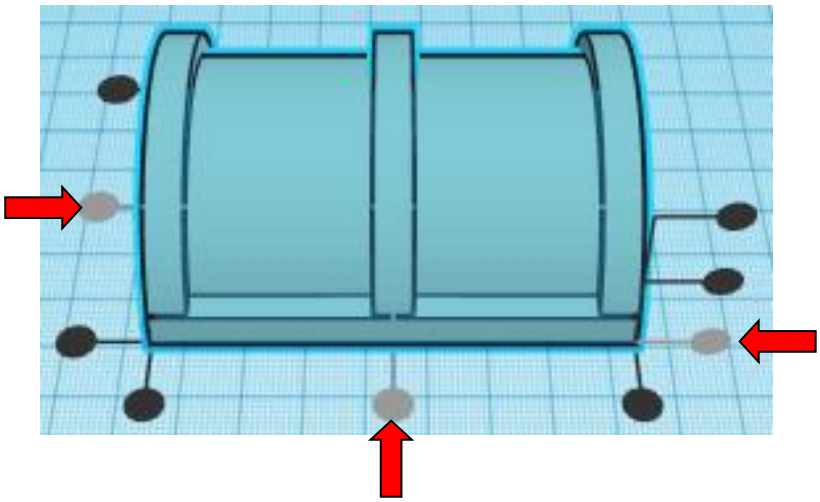
After



Change Lid Cutout to **Hole** by selecting Lid Cutout and typing “h”.

Align Lid and Lid Cutout

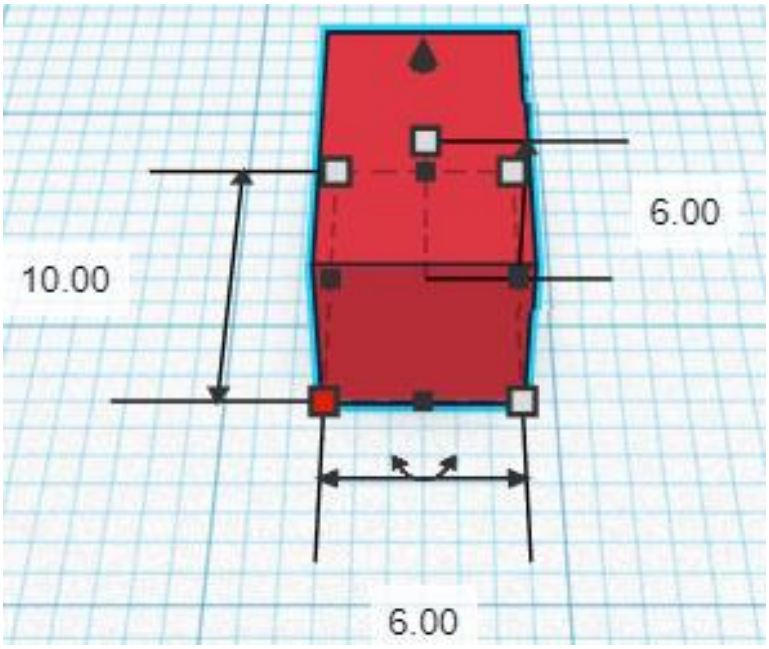
centered in X direction,
centered of Y direction, and
bottom of Z direction.



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

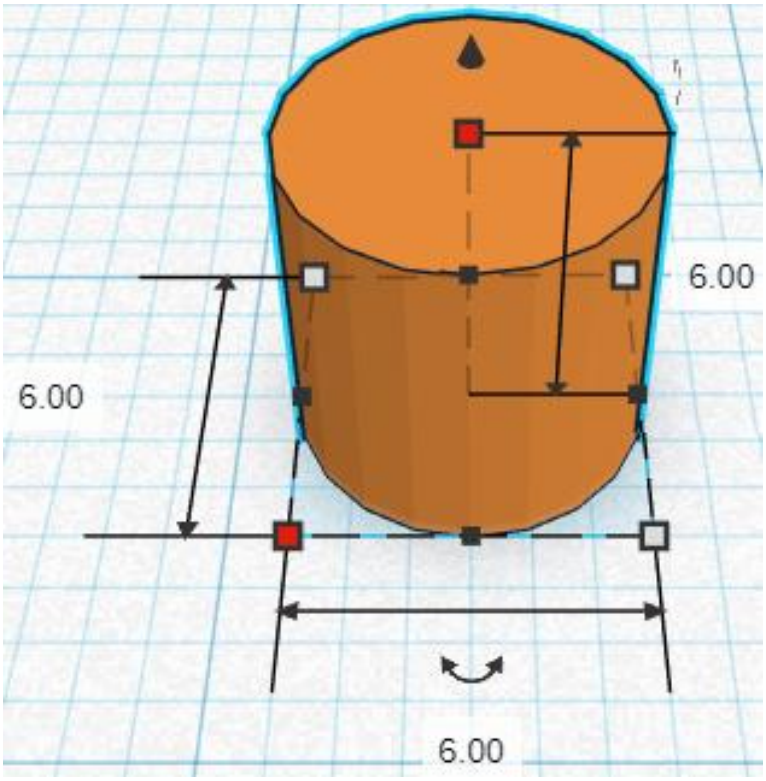
Bring in a Box, located in Basic Shapes on the left 2 shapes down.
From now on this will be called the **Top Hinge**

Change the dimensions to
6mm X direction,
10mm Y direction, and
6mm Z direction.



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

Change the dimensions to
6mm X direction,
6mm Y direction, and
6mm Z direction.

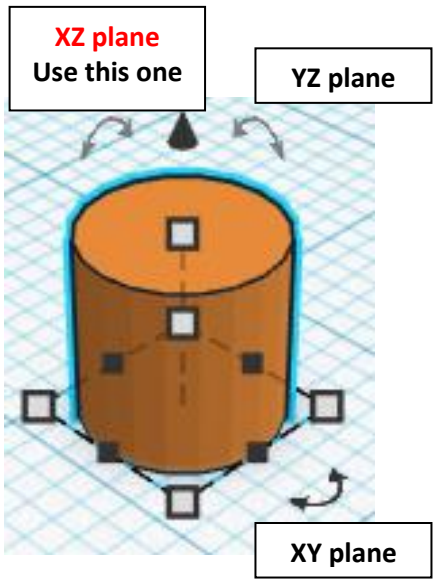


Go to TOP LEFT FRONT view for rotations 

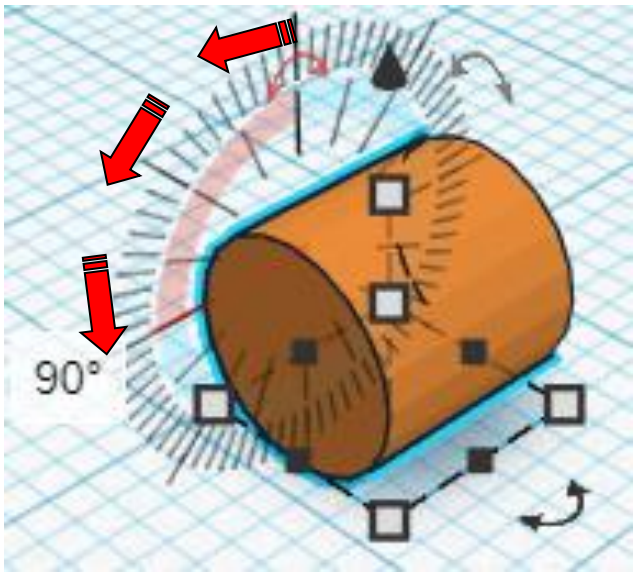
click here

Rotate the Top Hinge Cylinder counter-clockwise 90 degrees in XZ plane.

Before

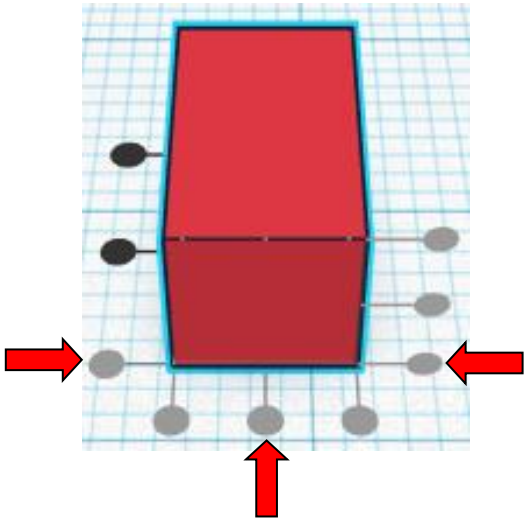


After



Align Top Hinge and Top Hinge Cylinder

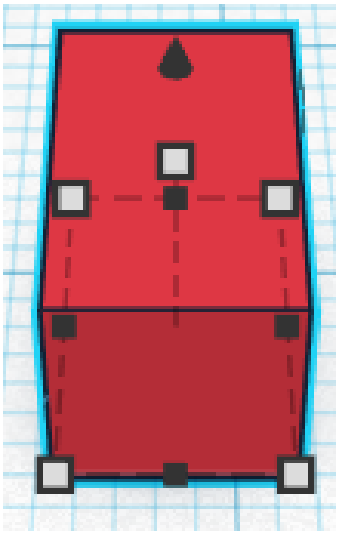
centered in X direction,
forward of Y direction, and
bottom of Z direction.

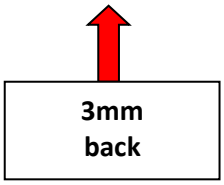


Move Top Hinge (Must be in home view for this to work!)
move back in positive Y direction 3mm

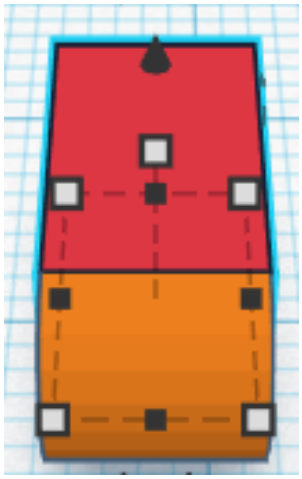
Hint: Select Base and push down up key 3 times.

Before





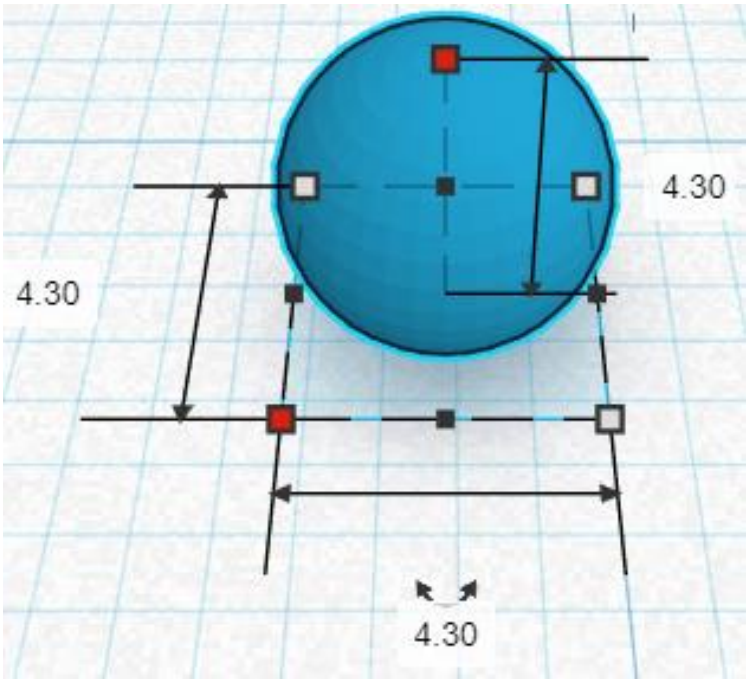
After



Group Top Hinge and Top Hinge Cylinder
From now on this will be called the **Top Hinge**

Bring in a Sphere, located in Basic Shapes on the left 3 shapes down.
From now on this will be called the **Ball Socket**

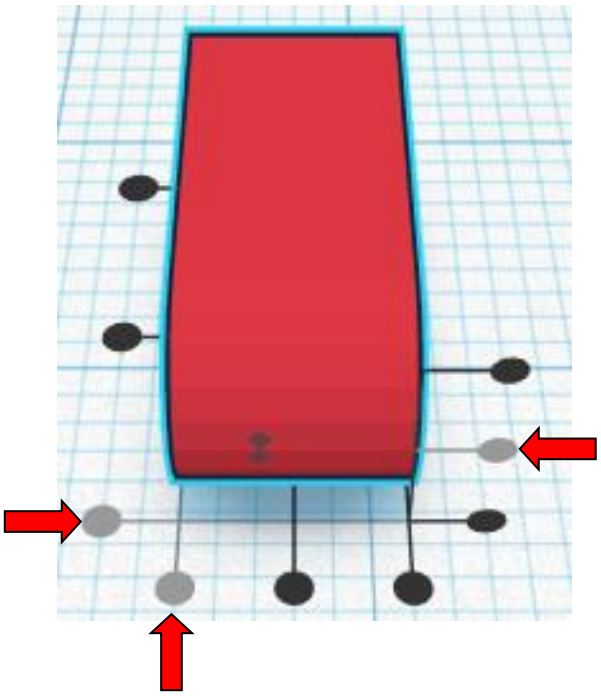
Change the dimensions to
4.3mm X direction,
4.3mm Y direction, and
4.3mm Z direction.



Change Ball Socket to **Hole** by selecting Ball Socket and typing “h”.

Align Top Hinge and Ball Socket

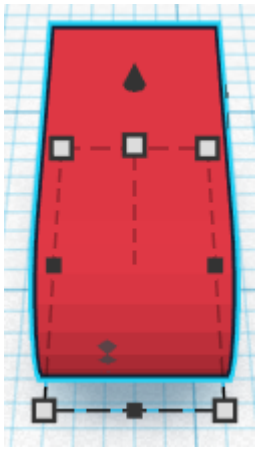
left in X direction,
front of Y direction, and
centered of Z direction.

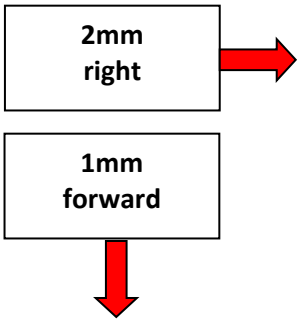


Move Top Hinge (Must be in home view for this to work!)
move right in positive X direction 2mm
and
move forward in negative Y direction 1mm

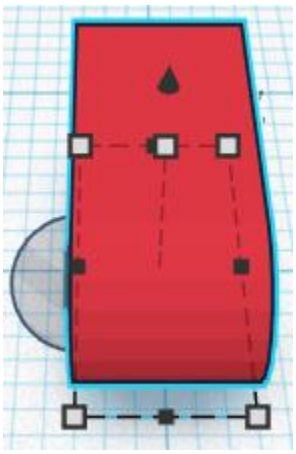
Hint: Select Top Hinge and push right arrow key 2 times.
Then select Top Hinge and push down arrow key 1 time.

Before





After

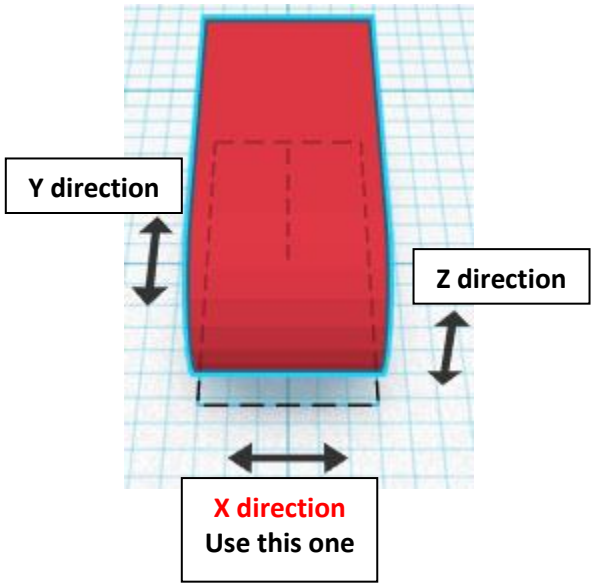


Group Top Hinge and Ball Socket
From now on this will be called the **Top Hinge**

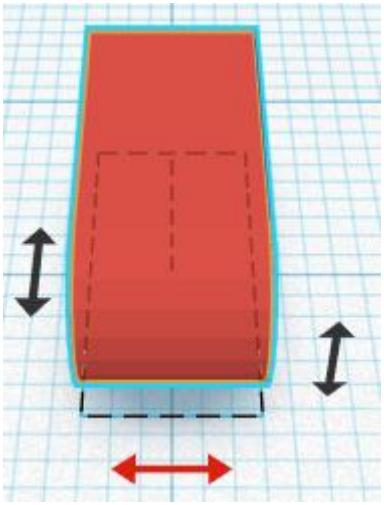
Duplicate Top Hinge 1 time

Flip Top Hinge in X direction.

Before



After

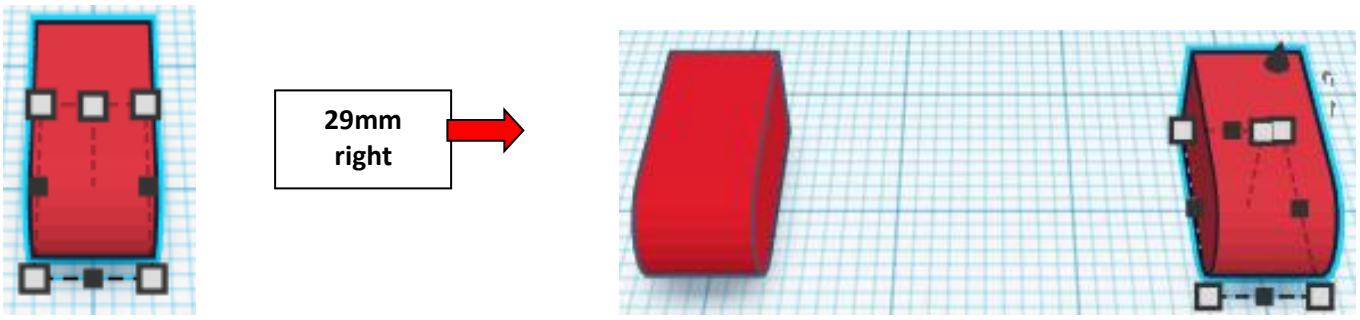


From now on this new flipped part will be called the **Top Right Hinge**
From now on the original part will be called the **Top Left Hinge**

Move Top Right Hinge (Must be in home view for this to work!)
move right in positive X direction 29mm

Hint: Select Top Right Hinge and push left arrow key 29 times.
or
Select Top Left Hinge and hold down shift and push left arrow key 2 times.
The release shift and push left arrow key 9 times.

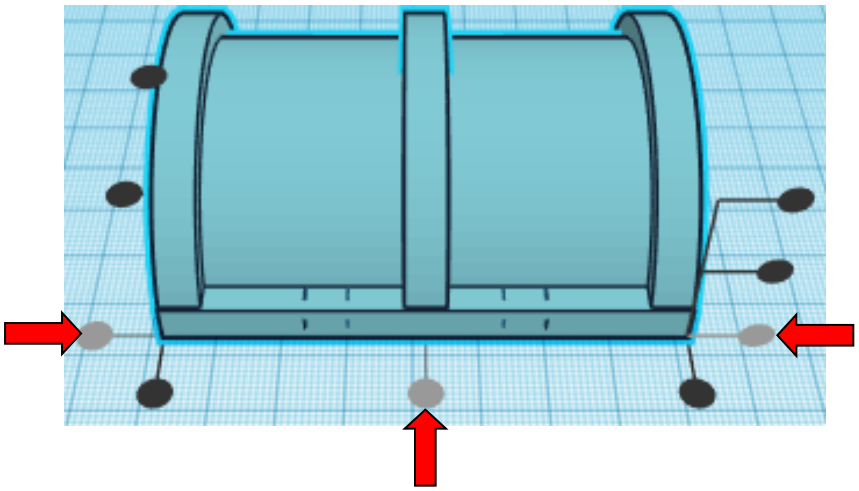
Before After



Group Top Left Hinge and Top Right Hinge
From now on this will be called the **Top Hinge Set**

Align Top Hinge Set and Lid

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

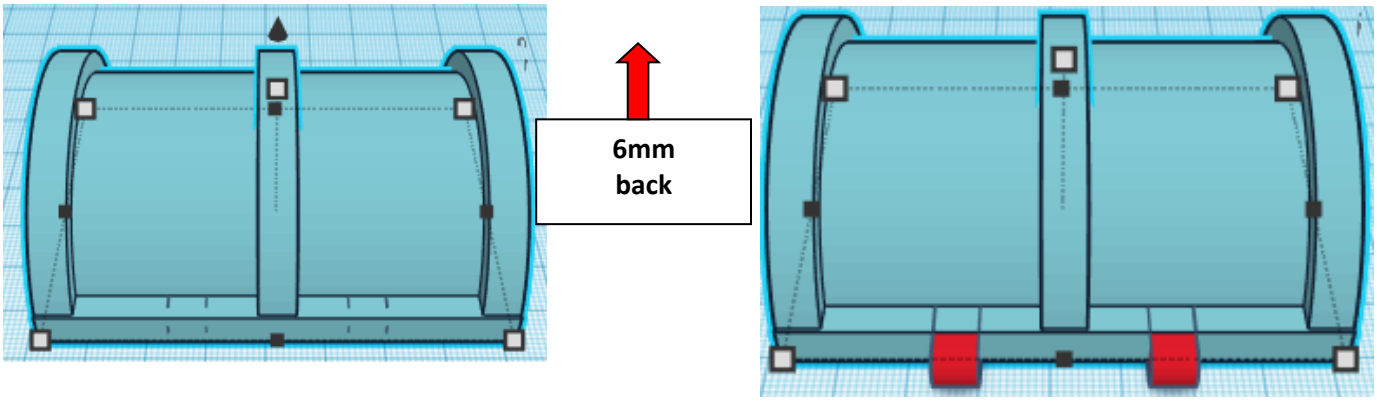


Move Lid (Must be in home view for this to work!)
move back in positive Y direction 6mm

Hint: Select Lid and push right up key 6 times.

Before

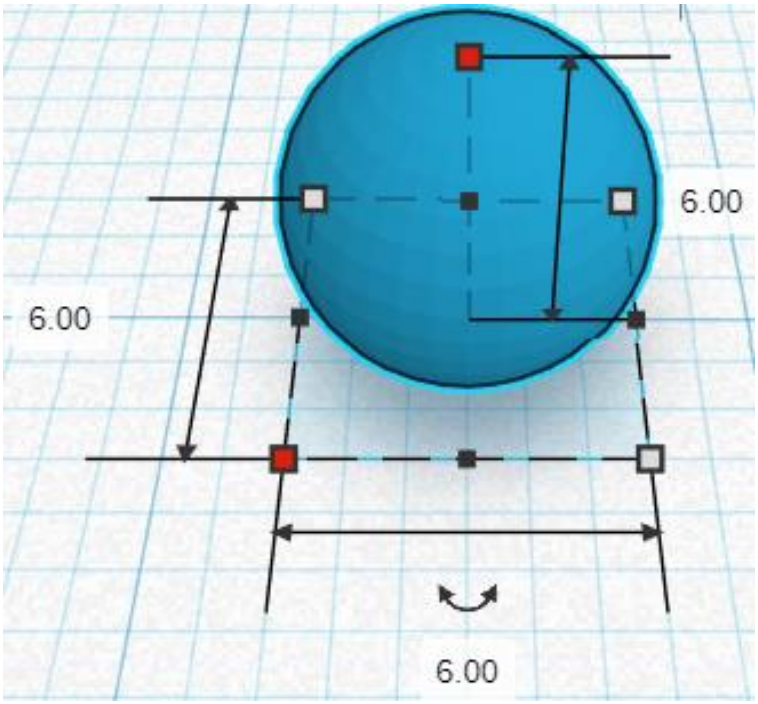
After



Group Top Hinge Set and Lid
From now on this will be called **Lid**

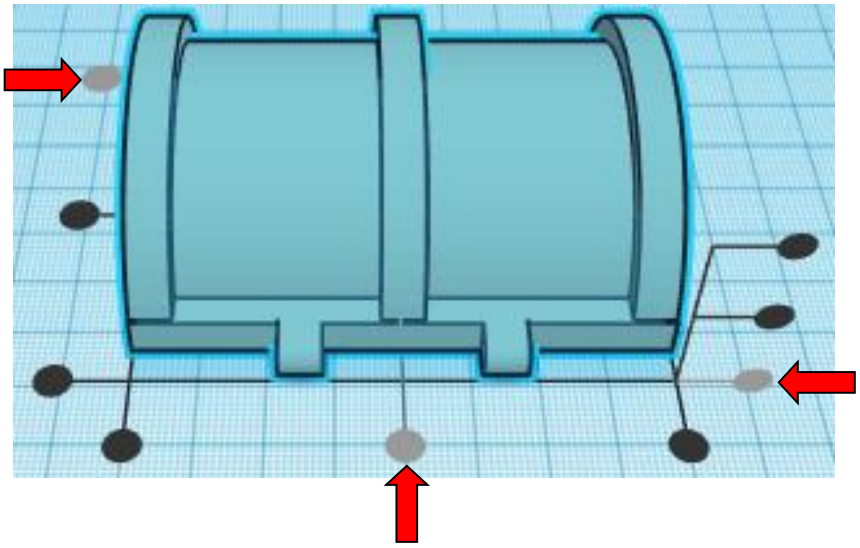
Bring in a Sphere, located in Basic Shapes on the left 3 shapes down.
From now on this will be called the **Lock Ball**

Change the dimensions to
6mm X direction,
6mm Y direction, and
6mm Z direction.



Align Lock Ball and Lid

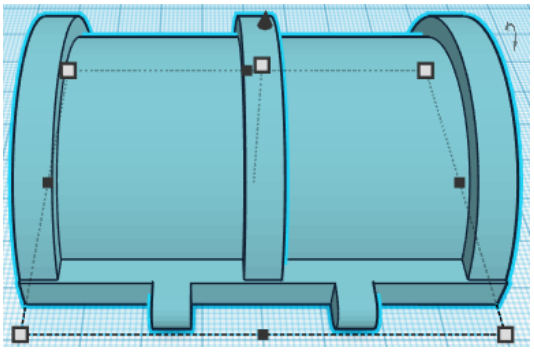
centered in X direction,
back of Y direction, and
bottom of Z direction.

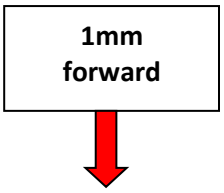


Move Lid (Must be in home view for this to work!)
move forward in negative Y direction 1mm

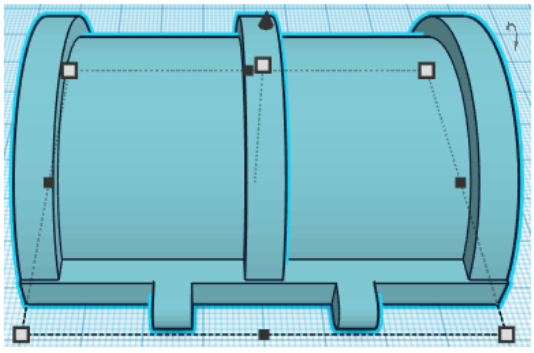
Hint: Select Lid and push right down key 1 time.

Before





After



Group Lock Ball and Lid
From now on this will be called **Lid**

You are done!

Move the Base and Lid close together, (within 140 mm max for most small 3D printers).

Print and snap the Lid hinges onto the Base Hinges.

Enjoy.