



# Snowman Project



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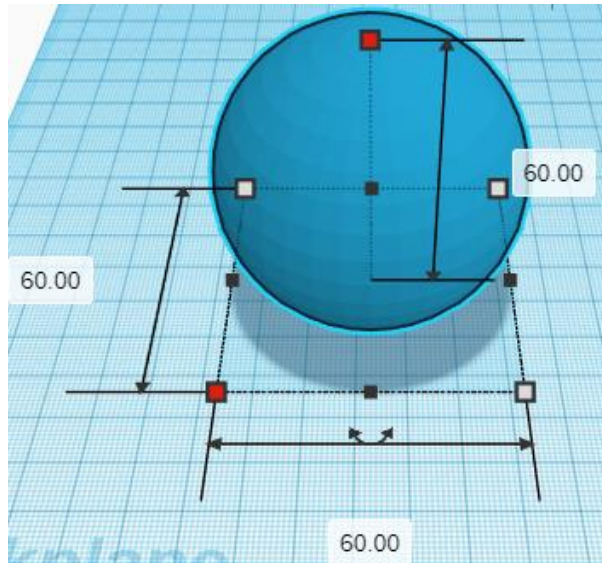
# Snowman:

## Body and Head:

Bring in a Sphere, located in Basic Shapes on the left 3 shapes down.

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

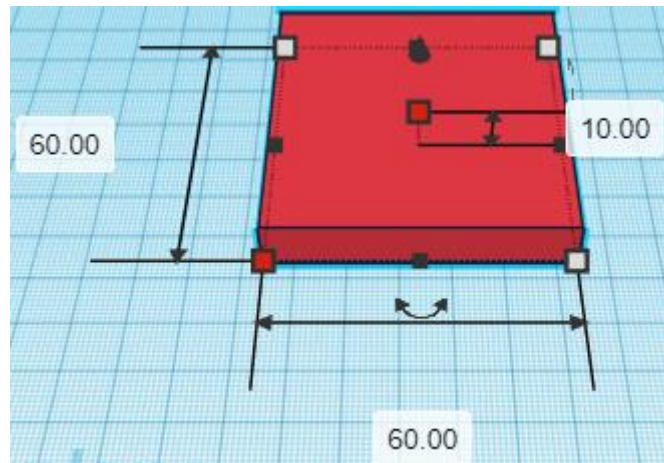
Change the dimensions to  
60mm X direction,  
60mm Y direction, and  
60mm Z direction.



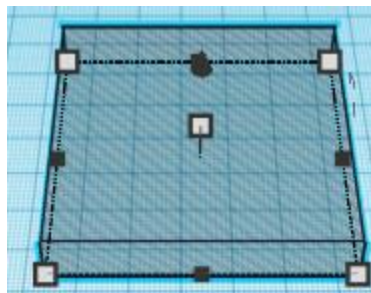
Bring in a Box, located in Basic Shapes on the left 2 shapes down.

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

Change the dimensions to  
60mm X direction,  
60mm Y direction, and  
10mm Z direction.

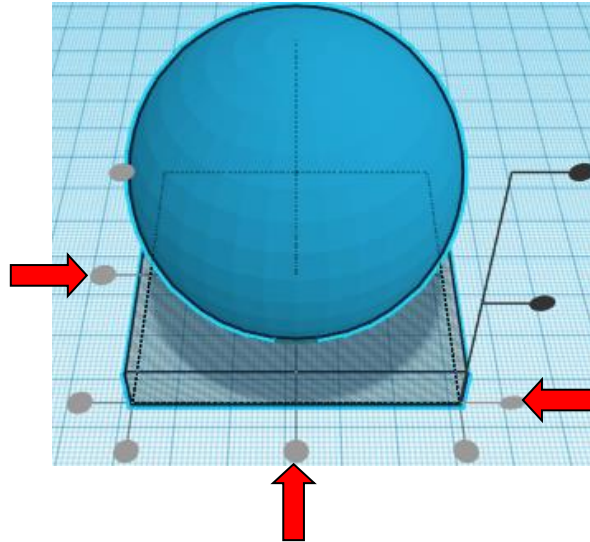


Change Body Cutout to **Hole** by selecting Body Cutout and typing "h".



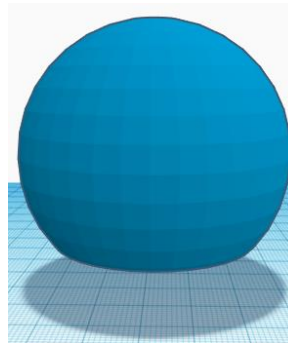
**Align Body and Body Cutout**

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



**Group Body and Body Cutout**

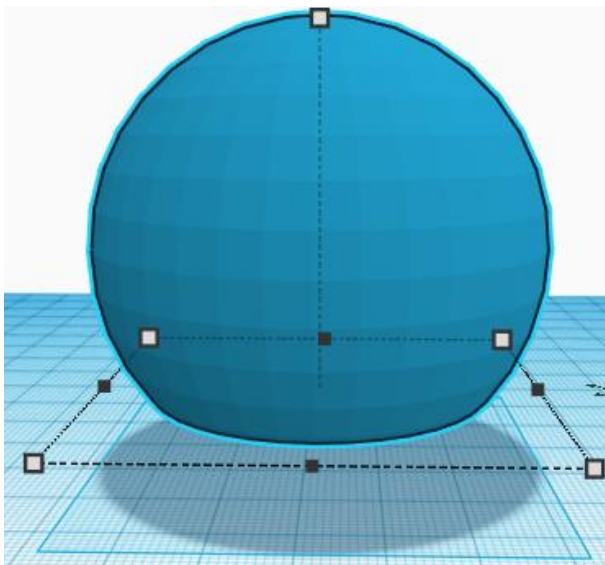
From now on this will be called the **Body**



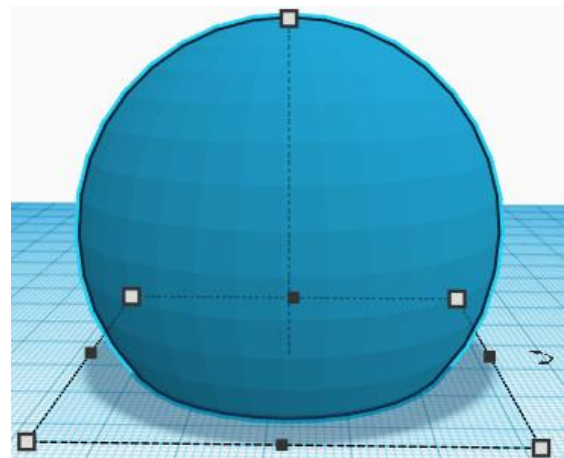
**Set on Workplane:**

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

Before

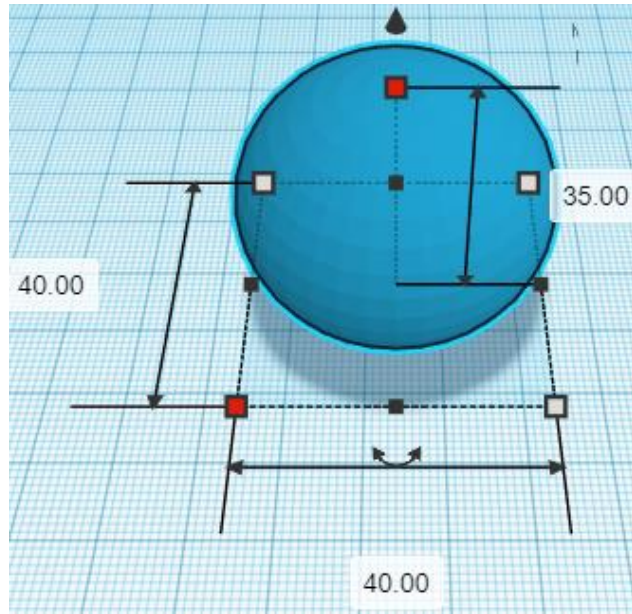


After



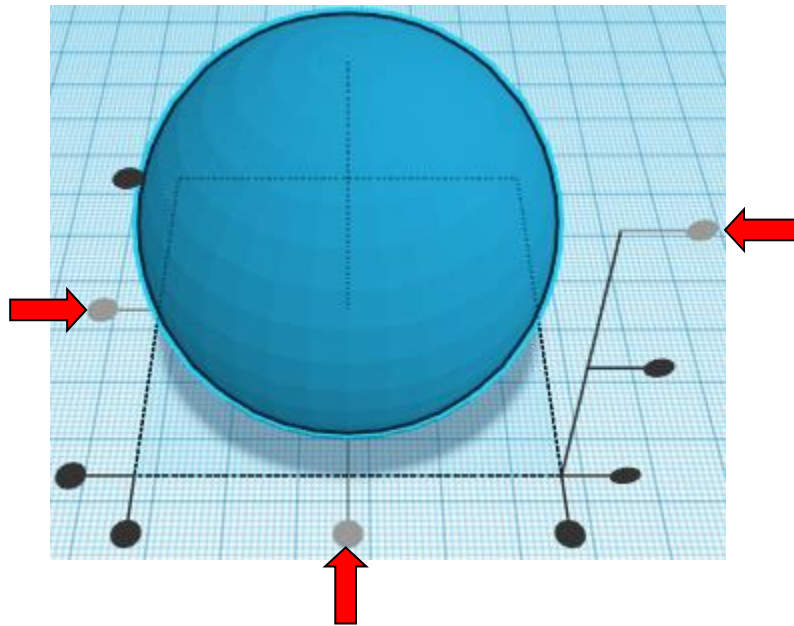
Bring in a Sphere, located in Basic Shapes on the left 3 shapes down.  
From now on this will be called the **Head**

Change the dimensions to  
40mm X direction,  
40mm Y direction, and  
35mm Z direction.



**Align Body and Head**

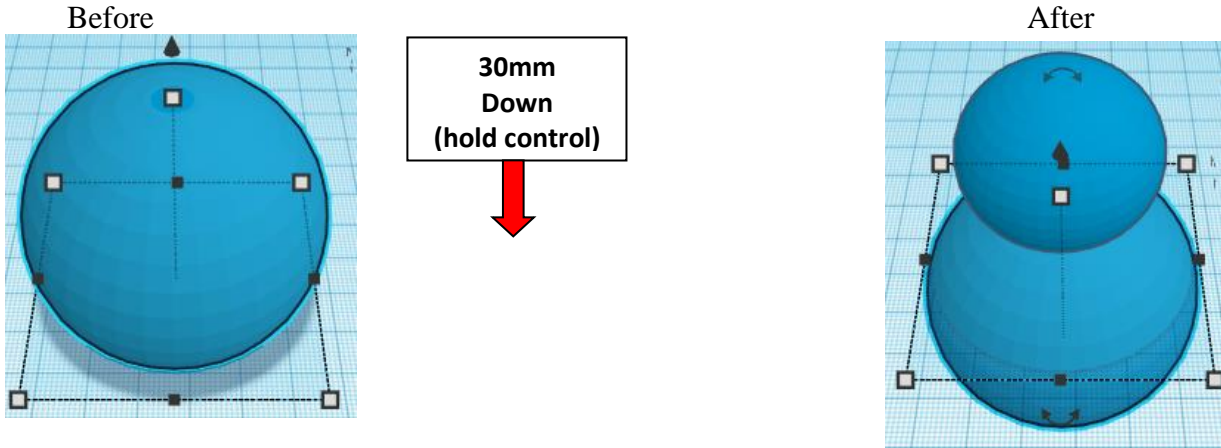
centered in X direction,  
centered of Y direction, and  
top of Z direction.



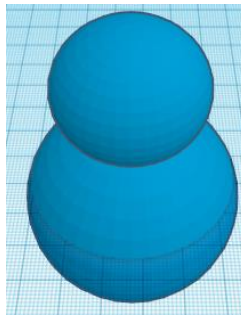


**Move Body** (Must be in home view for this to work!)  
move down in negative Z direction 30mm

**Hint:** Select Board and hold control and push down arrow key 30 times.  
Or  
Select Board and hold control and hold shift and push down arrow key 3 times,

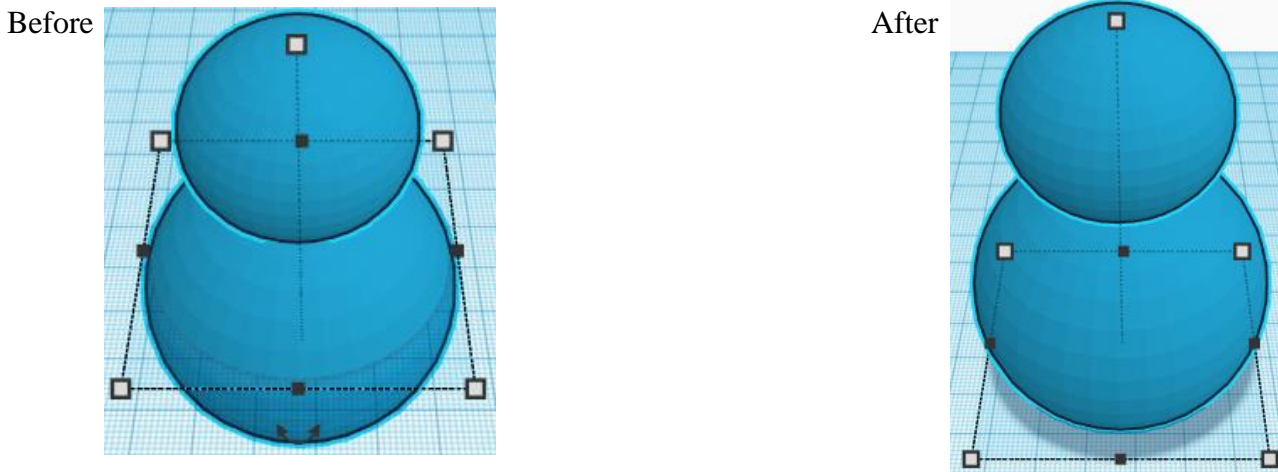


**Group Body and Head**  
From now on this will be called the **Snowman**



**Set on Workplane:**

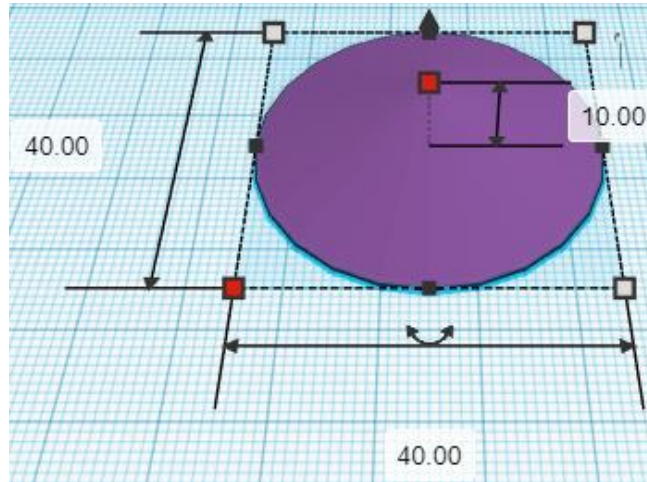
Select the Snowman and type "d" to set the body on the work plane.



## Hat:

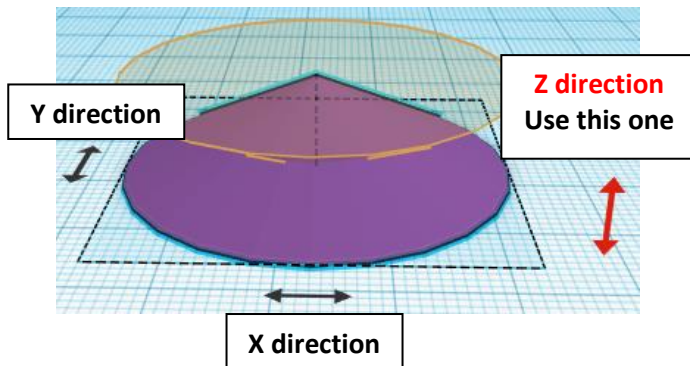
Bring in a Cone, located in Basic Shapes on the right 4 shapes down.  
From now on this will be called the **Hat Brim**

Change the dimensions to  
40mm X direction,  
40mm Y direction, and  
10mm Z direction.

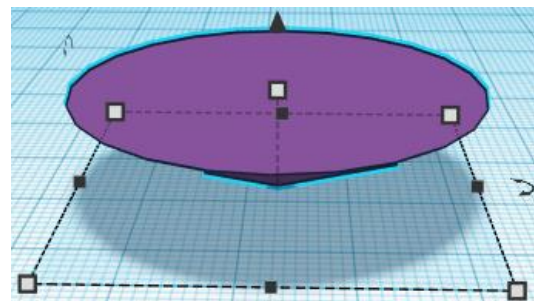


**Flip** Hat Brim in Z direction.

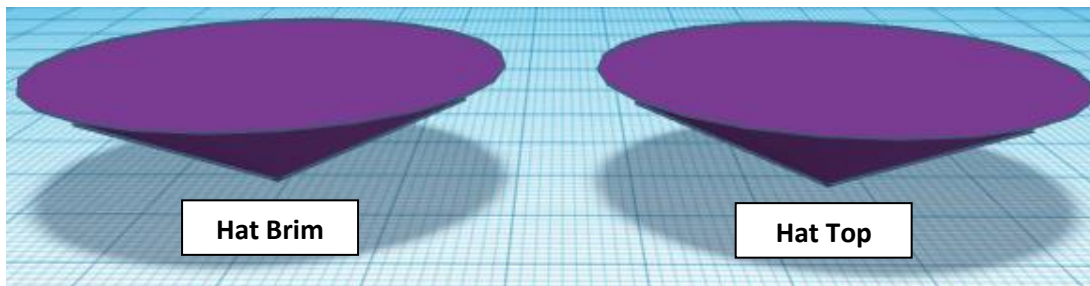
Before



After

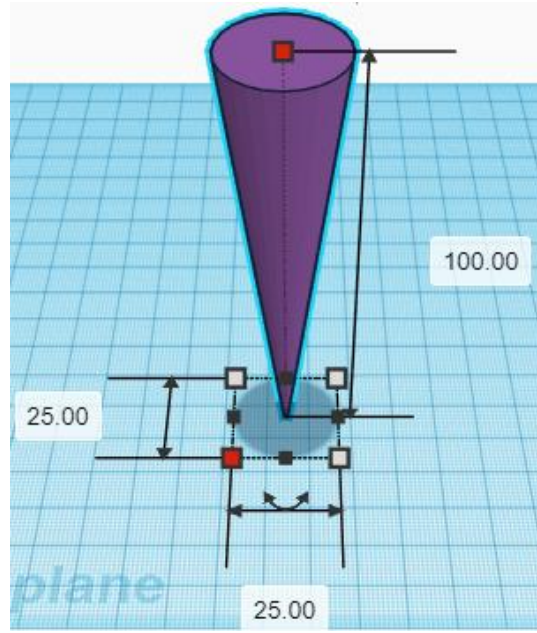


**Duplicate** Hat Brim 1 time  
Set duplicate to the side of the hat brim.  
This duplicate will now be called the **Hat Top**.



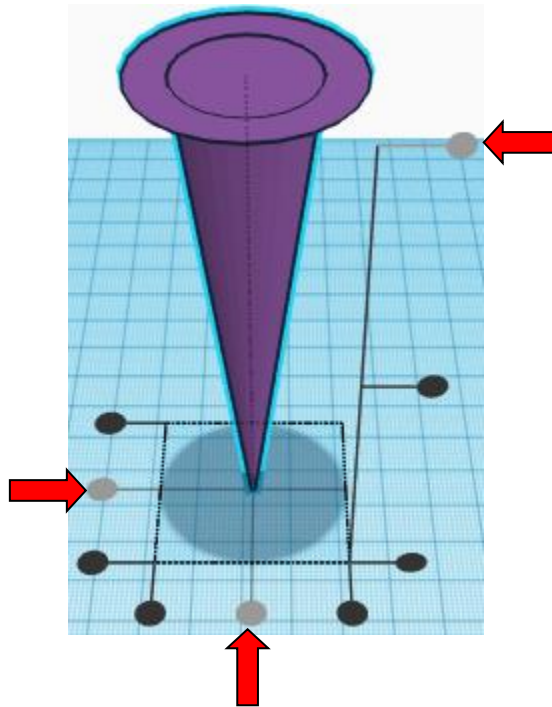
**Change the dimensions** of the Hat Top to

25mm X direction,  
25mm Y direction, and  
100mm Z direction.



**Align Hat Brim and Hat Top**

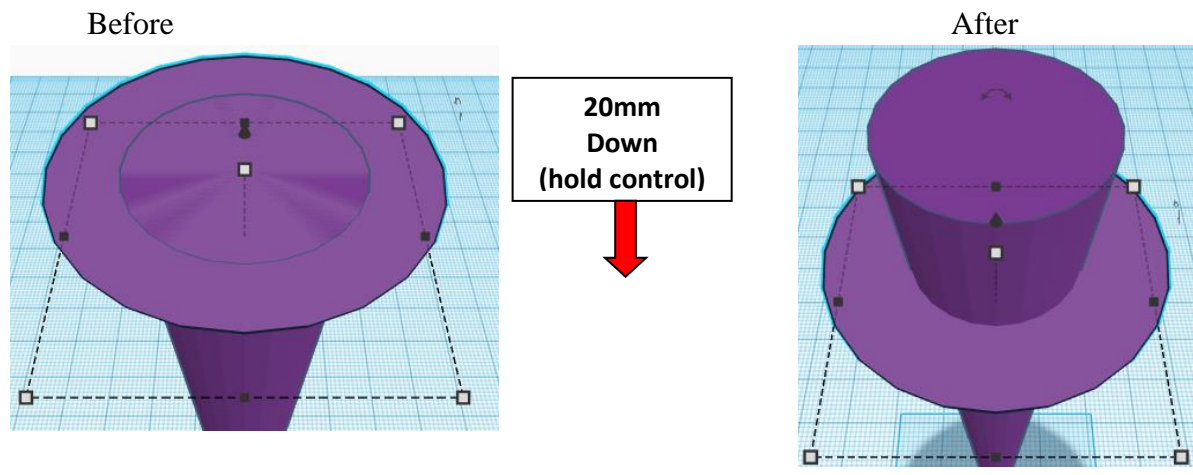
centered in X direction,  
centered of Y direction, and  
top of Z direction.



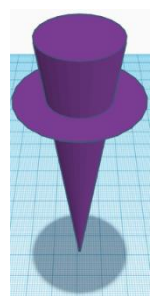


**Move Hat Brim** (Must be in home view for this to work!)  
move down in negative Z direction 20mm

**Hint:** Select Hat Brim and hold control and push down arrow key 20 times.  
Or  
Select Hat Brim and hold control and hold shift and push down arrow key 2 times,

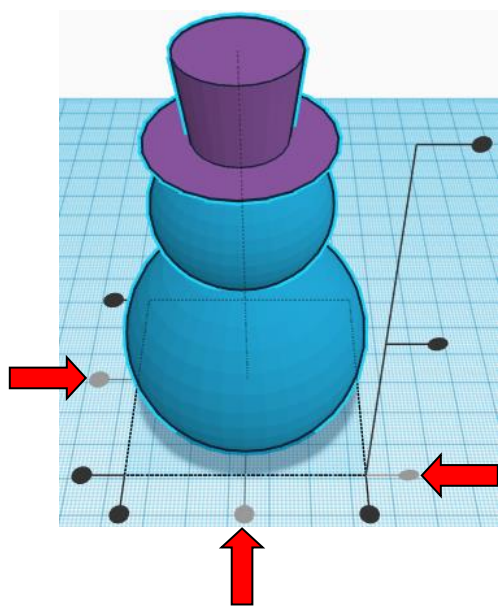


**Group Hat Brim and Hat Top**  
From now on this will be called the **Hat**



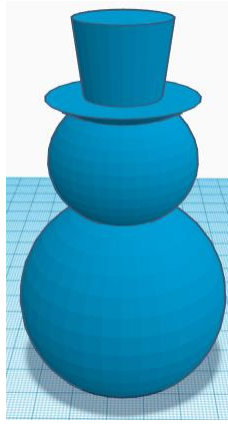
**Align Hat and Snowman**

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



**Group Hat and Snowman**

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

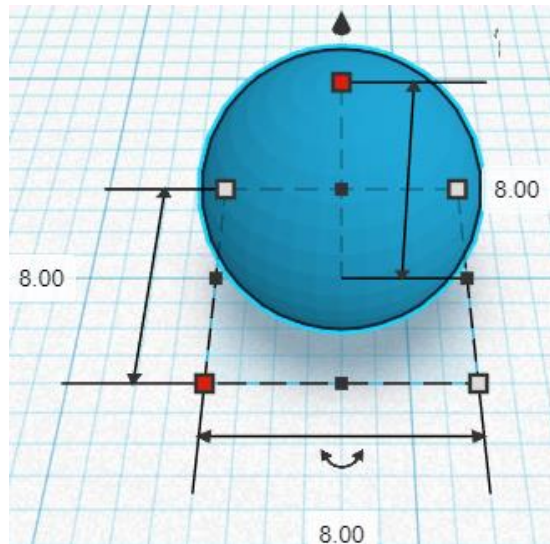


**Buttons:**

Bring in a Sphere, located in Basic Shapes on the left 3 shapes down.

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

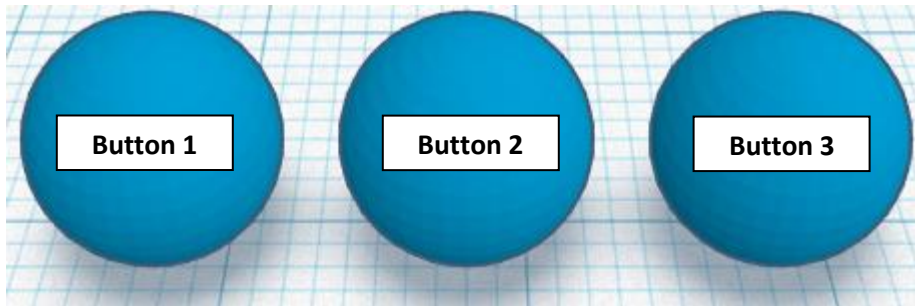
Change the dimensions to  
8mm X direction,  
8mm Y direction, and  
8mm Z direction.



**Duplicate Button 2 times**

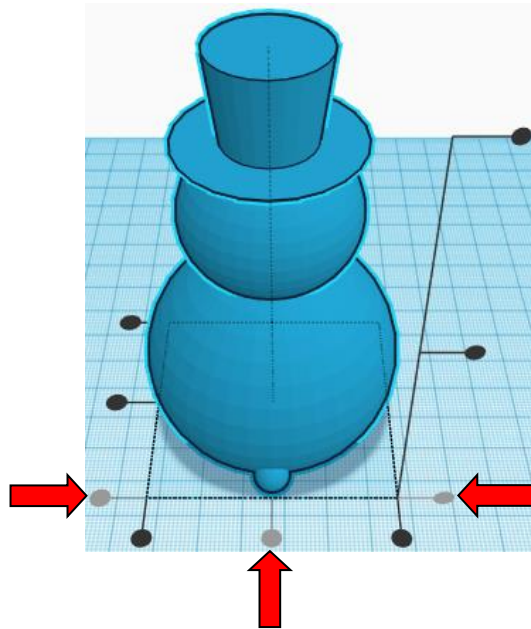
Set duplicates to the side of the hat brim.

These objects will now be called the **Button 1, Button 2, and Button 3**



## Align Button 1 and Snowman

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



## Move Button 1 (Must be in home view for this to work!)

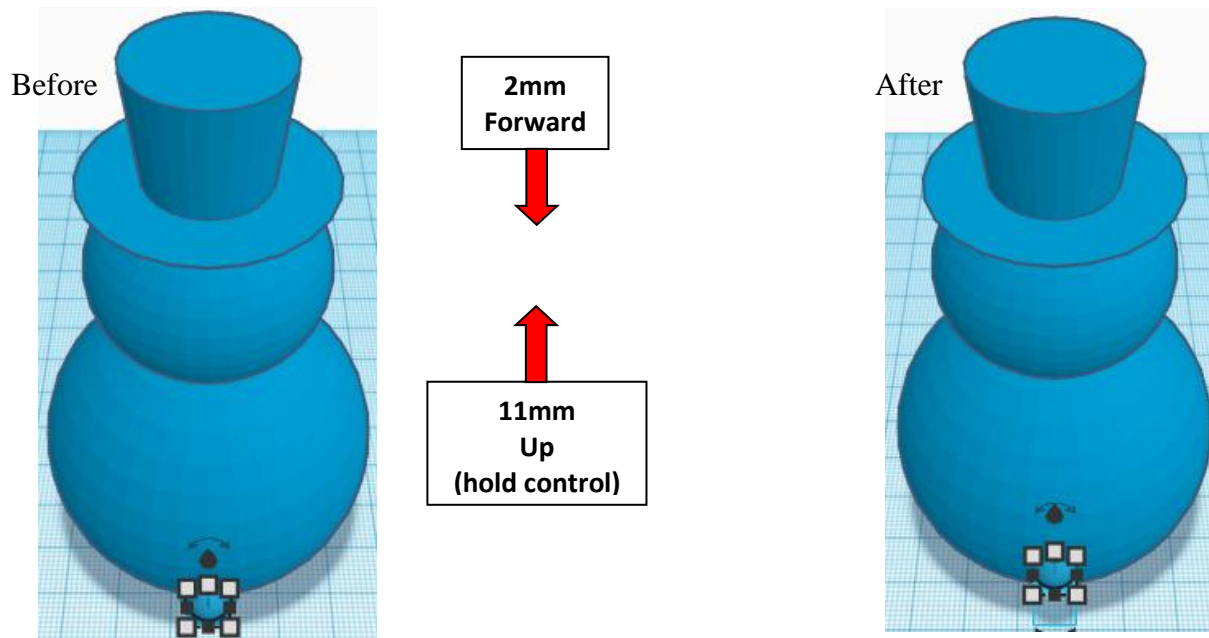
move forward in negative Y direction 2mm

and

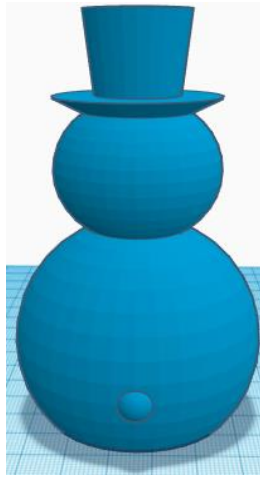
move up in positive Z direction 11mm

**Hint:** Select Button 1 and push down arrow key 2 times.  
and

Select Button 1 and hold control and hold shift and push up arrow key 1 time, then release shift and push up arrow key 1 time.

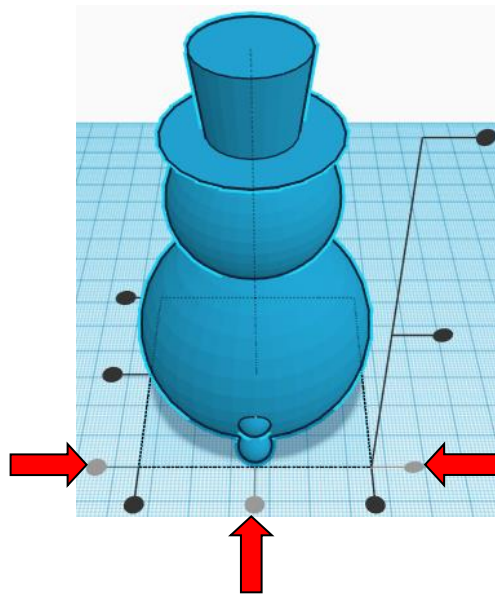


**Group Button 1 and Snowman**  
From now on this will be called the **Snowman**



**Align Button 2 and Snowman**

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

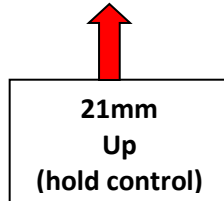
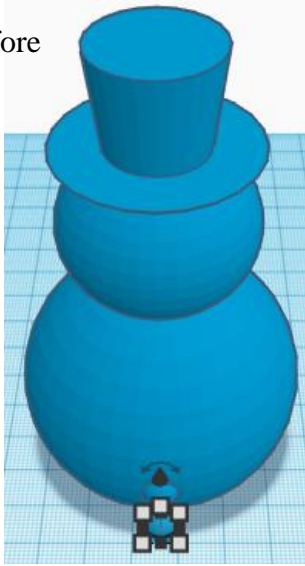




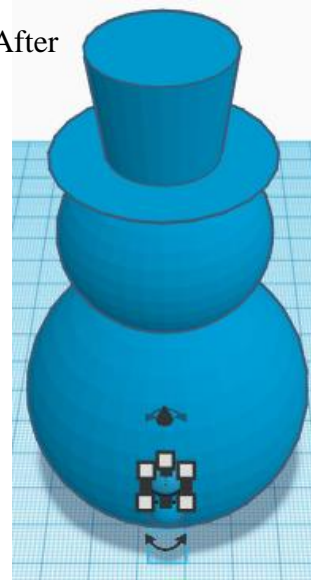
**Move Button 2** (Must be in home view for this to work!)  
move up in positive Z direction 21mm

**Hint:** Select Button 2 and hold control and hold shift and push up arrow key 2 time, then release shift and push up arrow key 1 time.

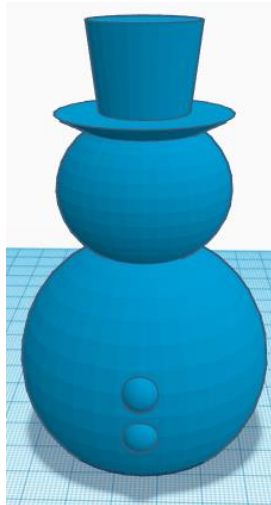
Before



After

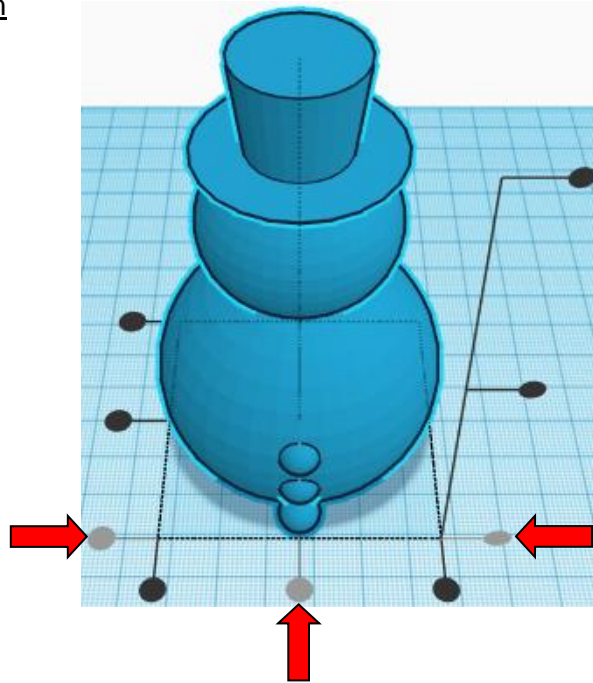


**Group Button 2 and Snowman**  
From now on this will be called the **Snowman**



### Align Button 3 and Snowman

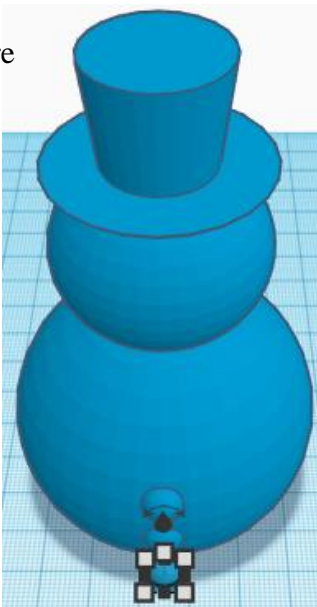
centered in X direction,  
front of Y direction, and  
bottom of Z direction.



**Move Button 3** (Must be in home view for this to work!)  
move back in positive Y direction 4mm  
and  
move up in positive Z direction 31mm

**Hint:** Select Button 3 and push up arrow key 4 times.  
and  
Select Button 3 and hold control and hold shift and push up arrow key 3 times, then release shift and push up arrow key 1 time.

Before

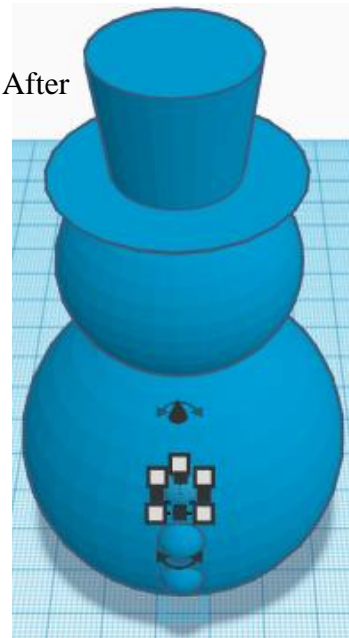


4mm  
Back

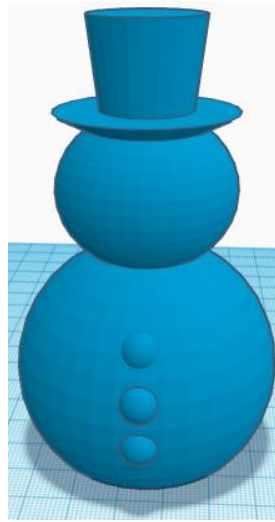


31mm  
Up  
(hold control)

After



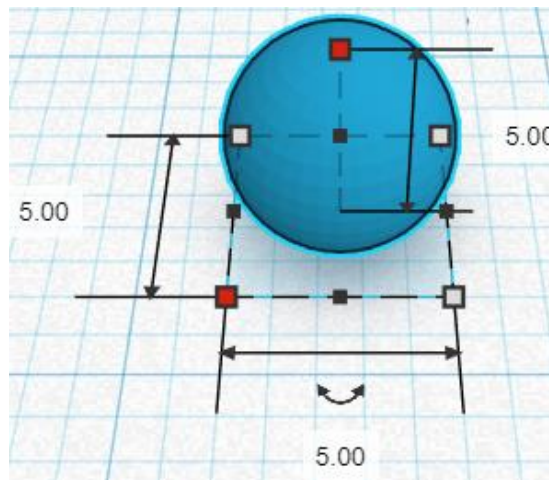
**Group Button 3 and Snowman**  
From now on this will be called the **Snowman**



### **Face:**

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

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

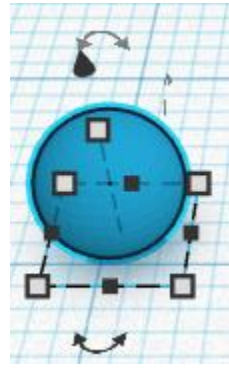


**Duplicate Eye 1 time**  
This duplicate will now be called the **Right Eye**.

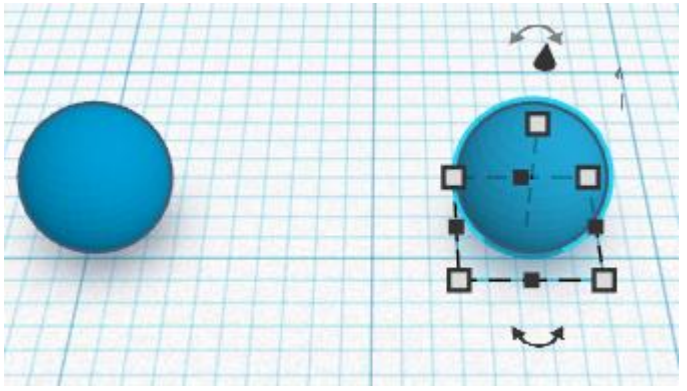
**Move Right Eye** (Must be in home view for this to work!)  
move right in positive x direction 15mm

**Hint:** Select Right Eye and push right arrow key 15 times.  
or  
Select Right Eye and hold shift and push right arrow key 1 time, then release shift and push right arrow key 5 times.

Before



15mm  
Right



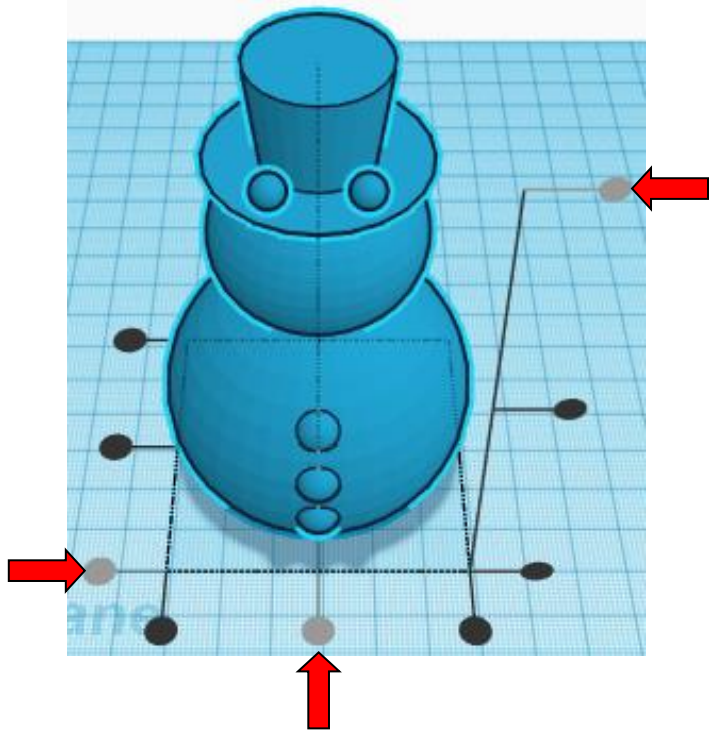
After

**Group Eye and Right Eye**  
From now on this will be called the **Eyes**



**Align Eyes and Snowman**

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

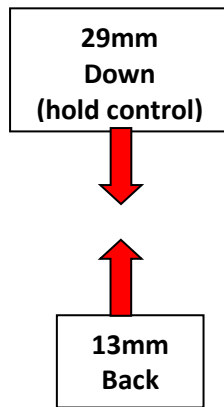
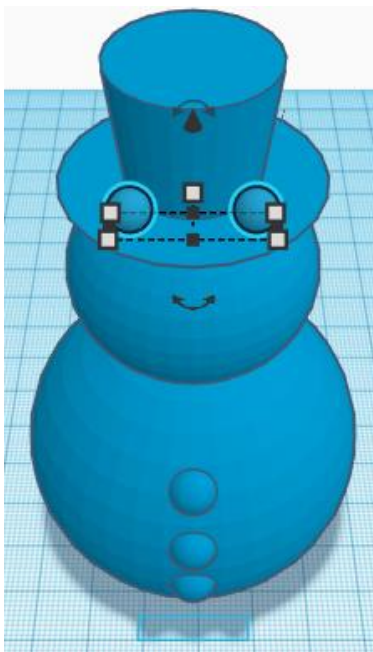




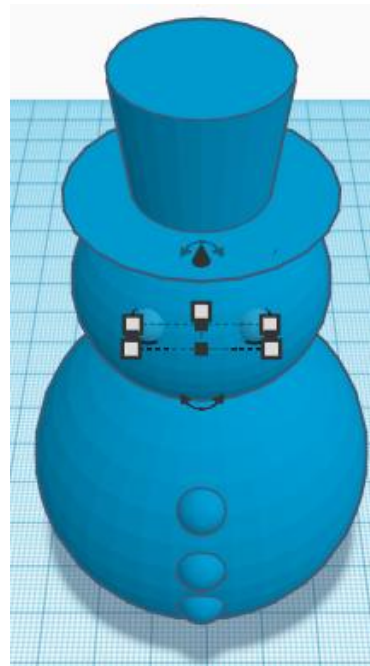
**Move Eyes** (Must be in home view for this to work!)  
move down in negative Z direction 29mm  
and  
move back in negative Y direction 13mm

**Hint:** Select Eyes and hold control and push down arrow key 29 times.  
and  
Select Eyes and push up arrow key 13 times.  
Or  
Select Eyes and hold control and hold shift and push down arrow key 2 times, then release shift and push down arrow key 9 times.  
and  
Select Eyes and hold shift and push up arrow key 1 time, then release shift and push up arrow key 3 times.

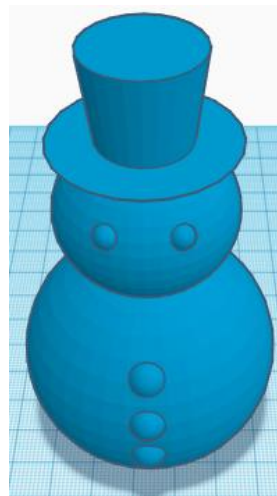
Before



After

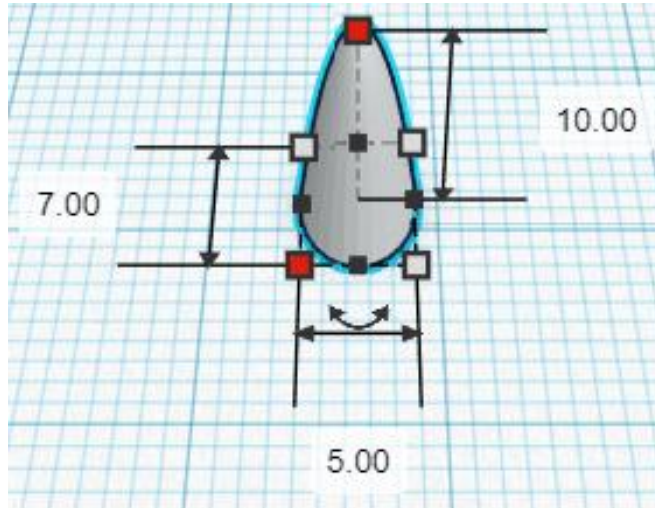


**Group Eyes and Snowman**  
From now on this will be called the **Snowman**

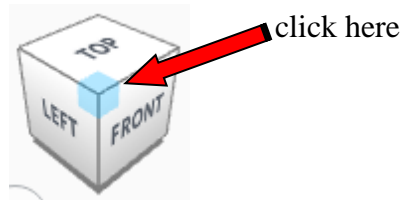


Bring in a Paraboloid, located in Basic Shapes on the left 8 shapes down.  
From now on this will be called the **Nose**

Change the dimensions to  
5mm X direction,  
7mm Y direction, and  
10mm Z direction.

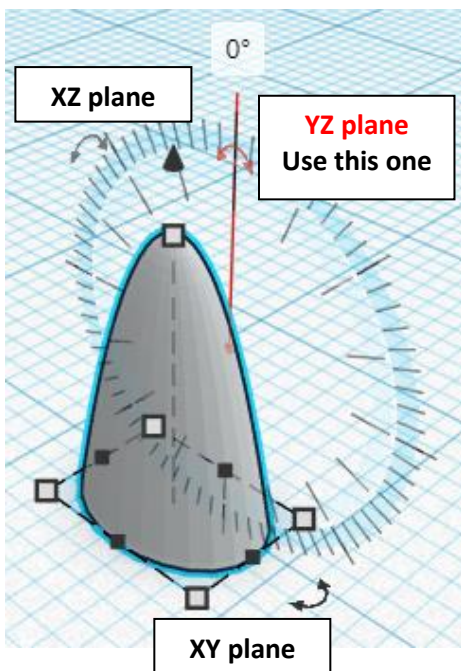


Go to TOP LEFT FRONT view for rotations

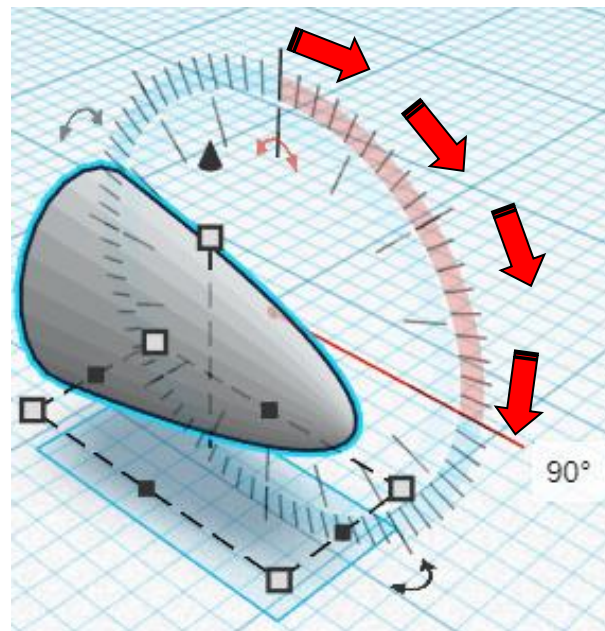


**Rotate** the Nose clockwise 90 degrees in YZ plane.

Before

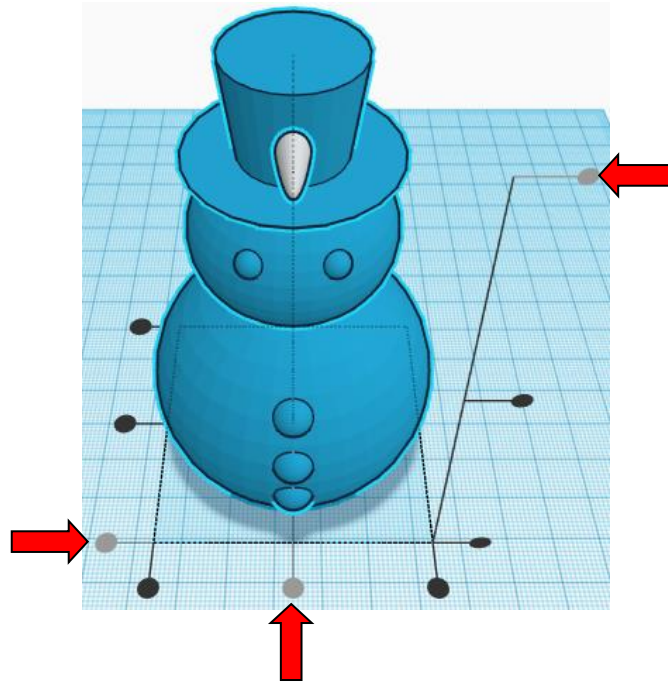


After



**Align Nose and Snowman**

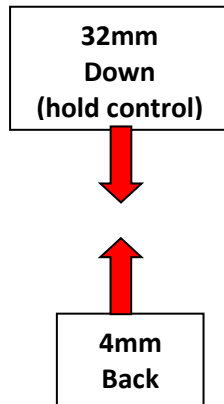
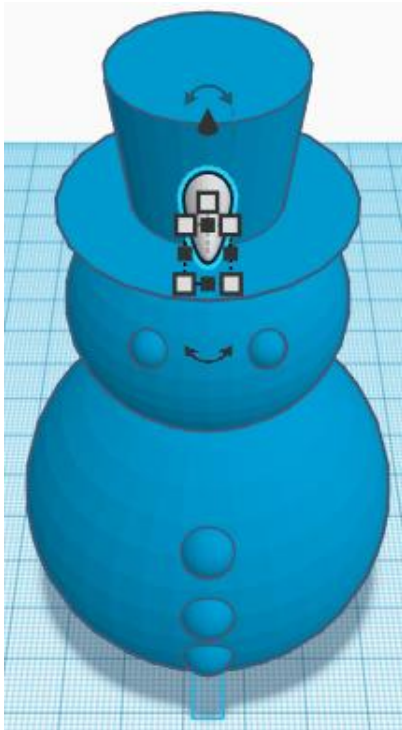
centered in X direction,  
front of Y direction, and  
top of Z direction.



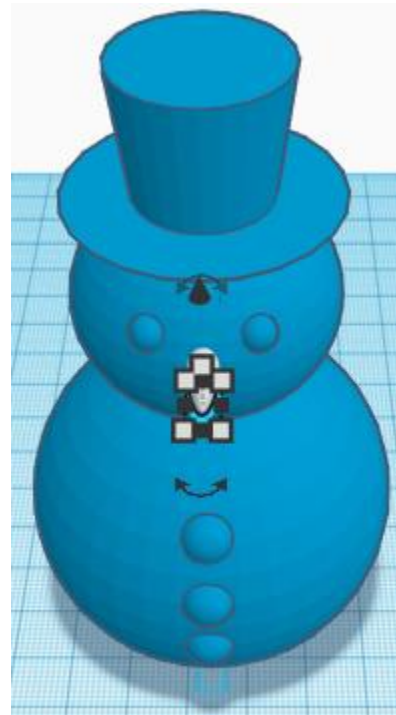
**Move Nose** (Must be in home view for this to work!)  
move down in negative Z direction 32mm  
and  
move back in negative Y direction 4mm

**Hint:** Select Nose and hold control and push down arrow key 32 times.  
and  
Select Nose and push up arrow key 4 times.  
Or  
Select Nose and hold control and hold shift and push down arrow key 3 times, then release shift and push down arrow key 2 times.  
and  
Select Nose and push up arrow key 4 times.

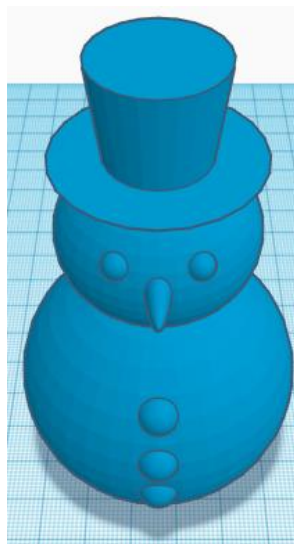
Before



After



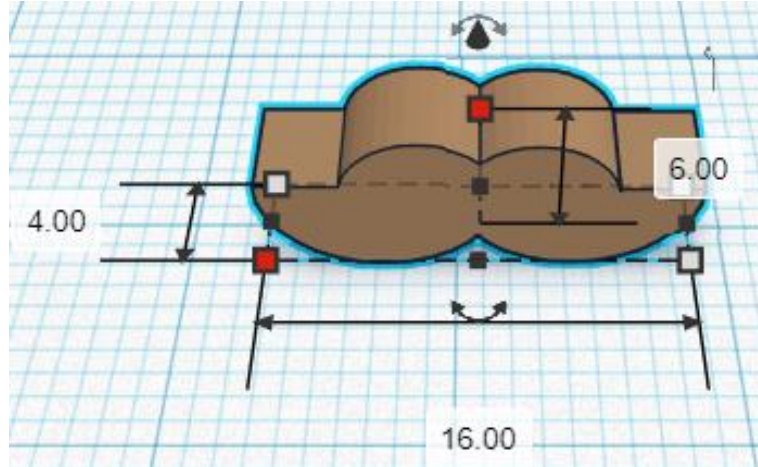
**Group Nose and Snowman**  
From now on this will be called the **Snowman**





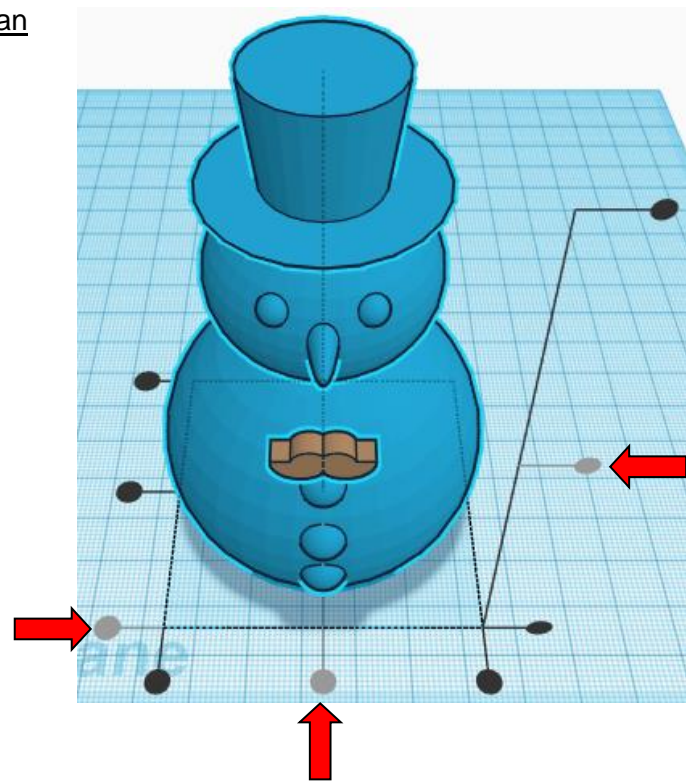
Bring in a Moustache, located in Characters on the left 5 shapes down.  
From now on this will be called the **Moustache**

Change the dimensions to  
16mm X direction,  
4mm Y direction, and  
6mm Z direction.



**Align Moustache and Snowman**

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



**Move Moustache** (Must be in home view for this to work!)

move up in positive Z direction 10mm

and

move back in negative Y direction 11mm

**Hint:** Select Moustache and hold control and push up arrow key 10 times.

and

Select Moustache and push up arrow key 11 times.

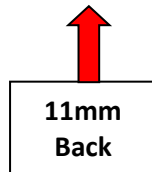
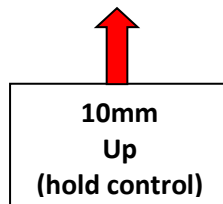
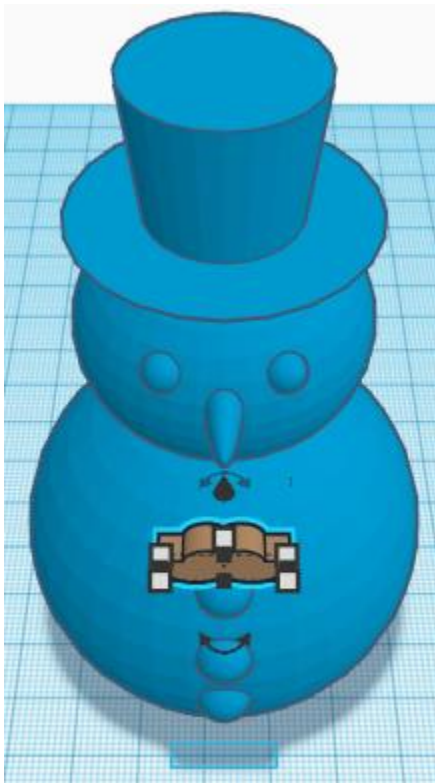
Or

Select Moustache and hold control and hold shift and push up arrow key 1 times.

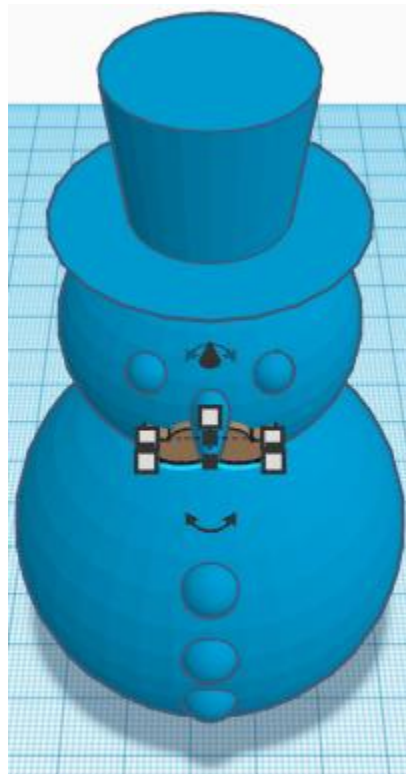
and

Select Moustache and hold shift and push up arrow key 1 times, then release shift and push up arrow key 1 time.

Before

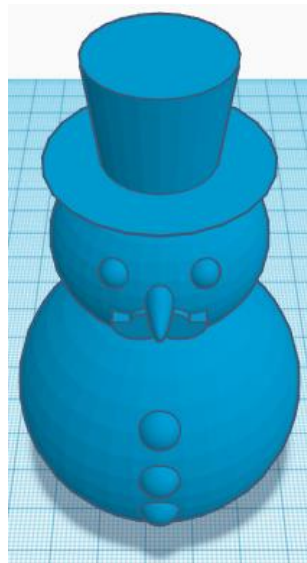


After



**Group Moustache and Snowman**

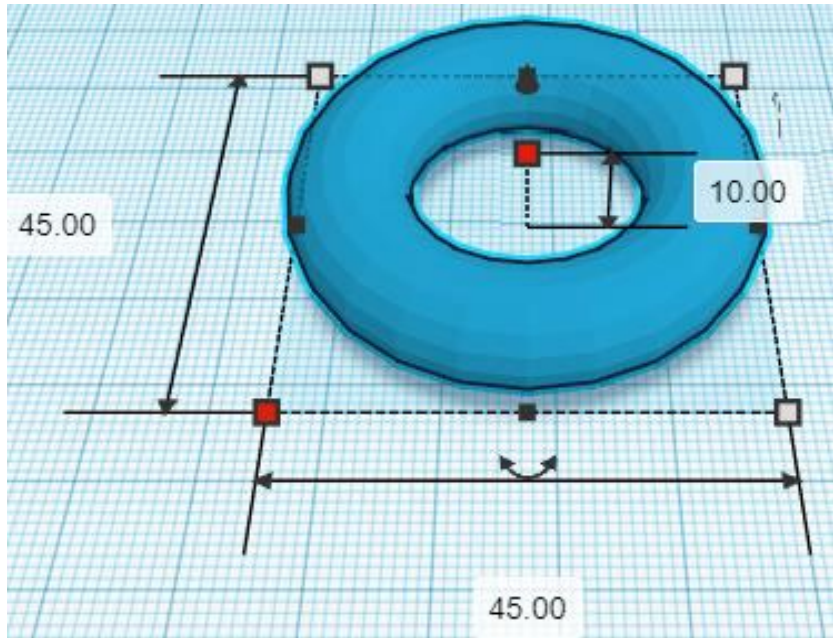
From now on this will be called the **Snowman**



## Scarf:

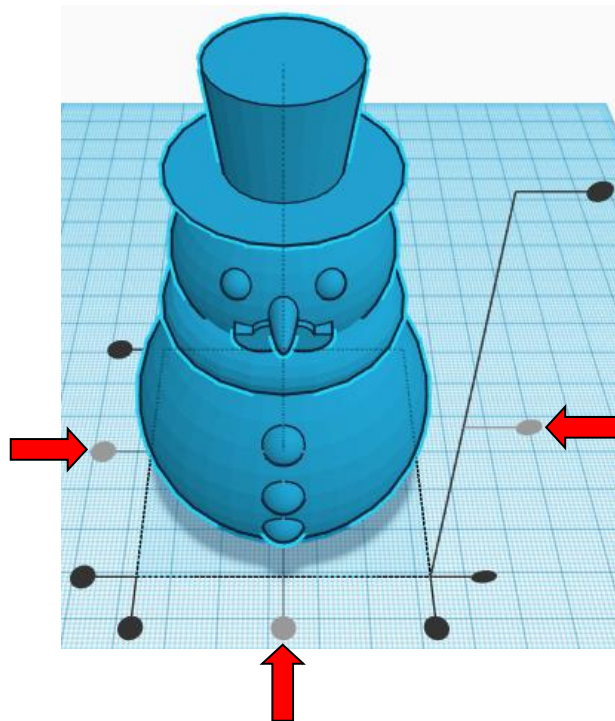
Bring in a Torus, located in Basic Shapes on the right 8 shapes down.  
From now on this will be called the **Scarf**

Change the dimensions to  
45mm X direction,  
45mm Y direction, and  
10mm Z direction.



## Align Scarf and Snowman

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

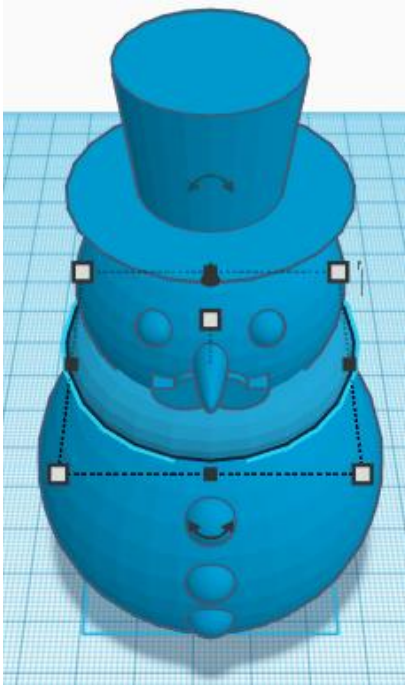





**Move Scarf** (Must be in home view for this to work!)  
move down in negative Z direction 2mm

**Hint:** Select Scarf and hold control and push down arrow key 2 times.

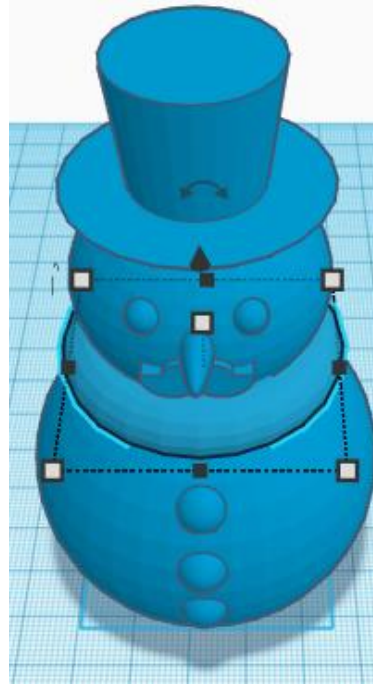
Before



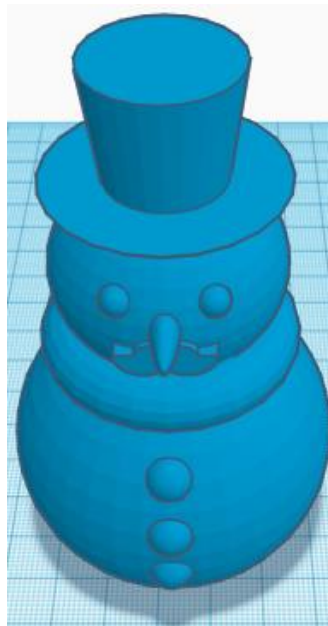
2mm  
Down  
(hold control)



After



**Group Scarf and Snowman**  
From now on this will be called the **Snowman**

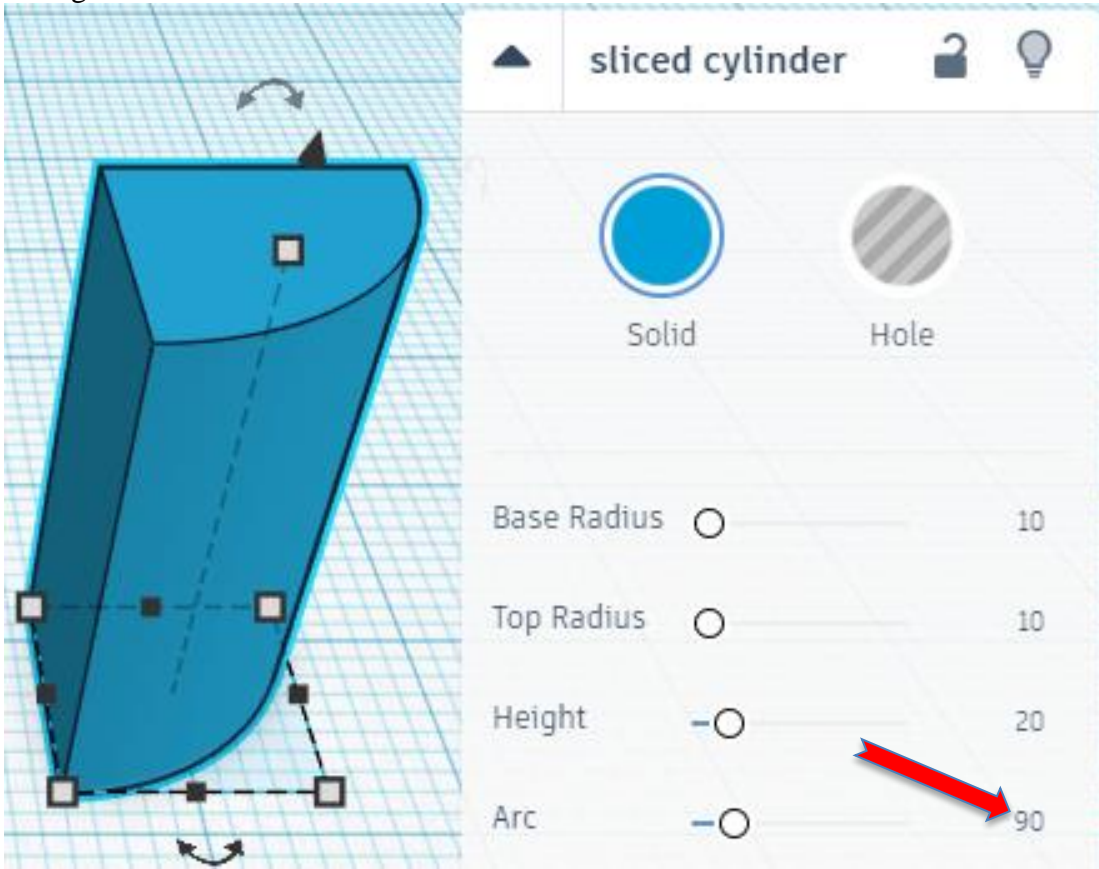




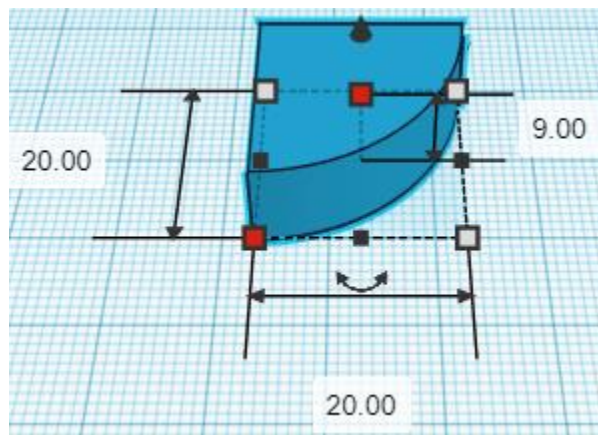
Bring in a Sliced Cylinder, located in All, (things in All move each time that TinkerCad adds items to All), this was last seen on page 6, on the right 3 shapes down.

From now on this will be called the **Scarf end**

Change Arc to 90.

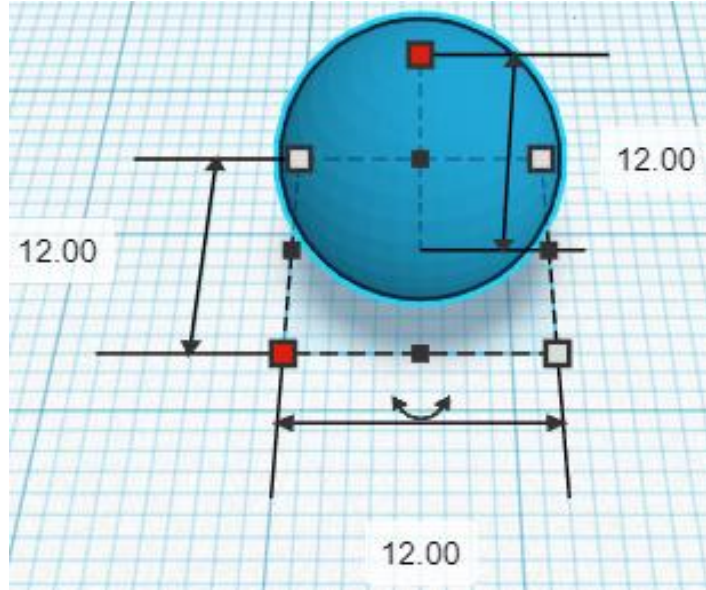


Change the dimensions to 20mm X direction, 20mm Y direction, and 9mm Z direction.



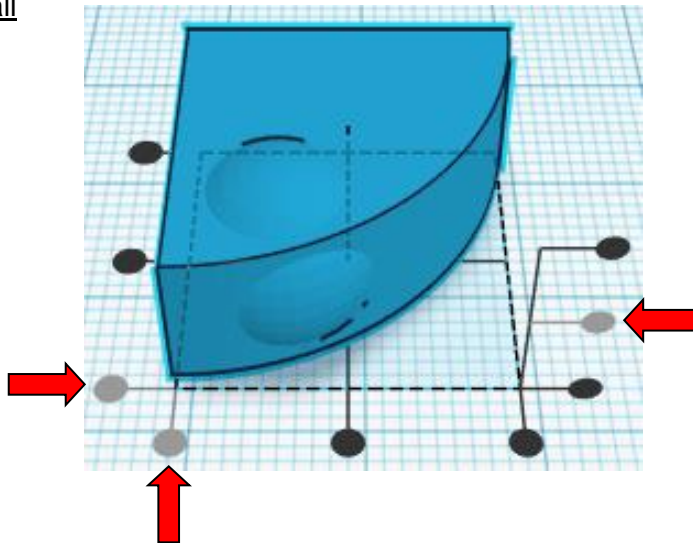
Bring in a Sphere, located in Basic Shapes on the left 3 shapes down.  
From now on this will be called the **Scarf End Ball**

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



**Align Scarf End and Scarf End Ball**

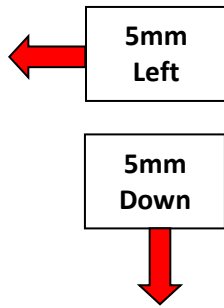
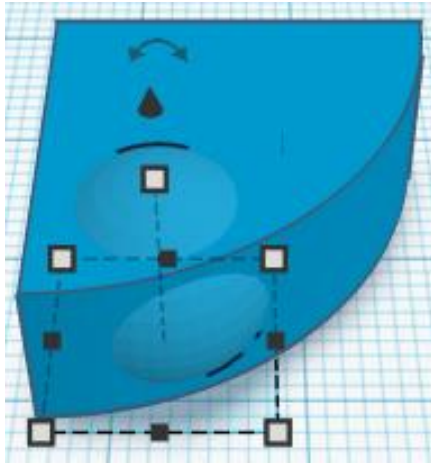
left in X direction,  
forward of Y direction, and  
centered of Z direction.



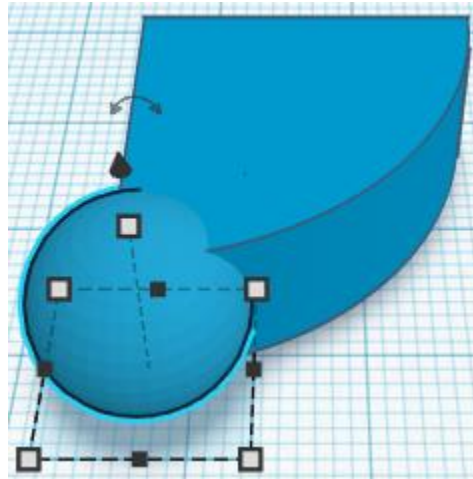
**Move Scarf End Ball** (Must be in home view for this to work!)  
move left in negative X direction 5mm  
and  
move forward in negative Y direction 5mm

**Hint:** Select Scarf End Ball and push left arrow key 5 times.  
and  
Select Scarf End Ball and push down arrow key 5 times.

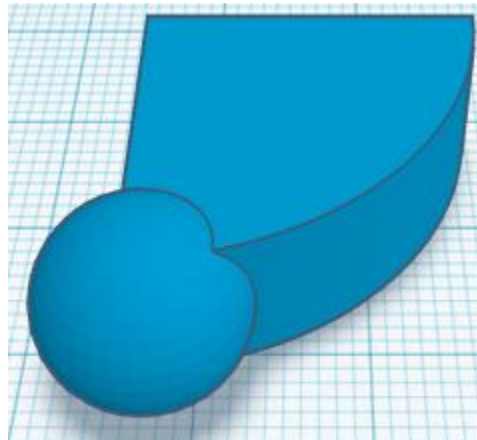
Before



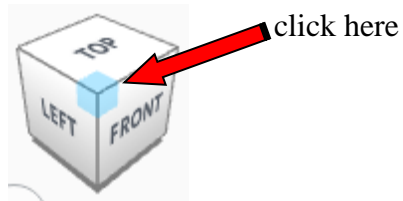
After



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

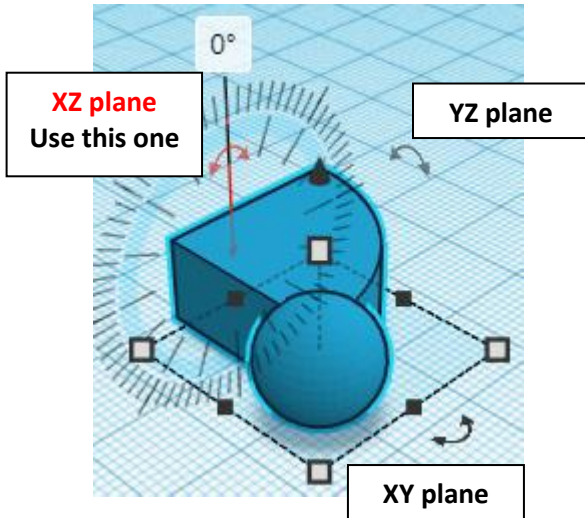


Go to TOP LEFT FRONT view for rotations

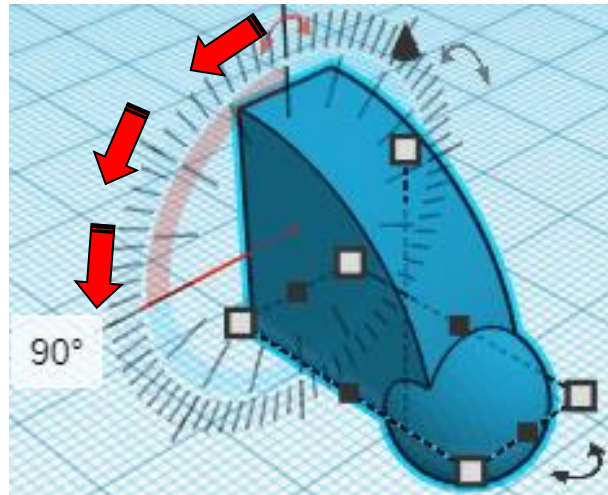


**Rotate** the Scarf End clockwise 90 degrees in XZ plane.

Before



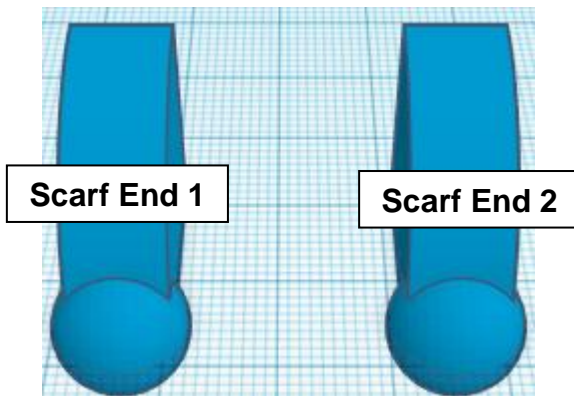
After



**Duplicate** Scarf End 1 times

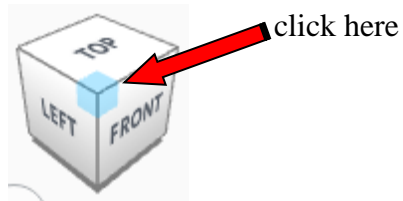
Set duplicate to the side

These objects will now be called the **Scarf End 1**, and **Scarf End 2**



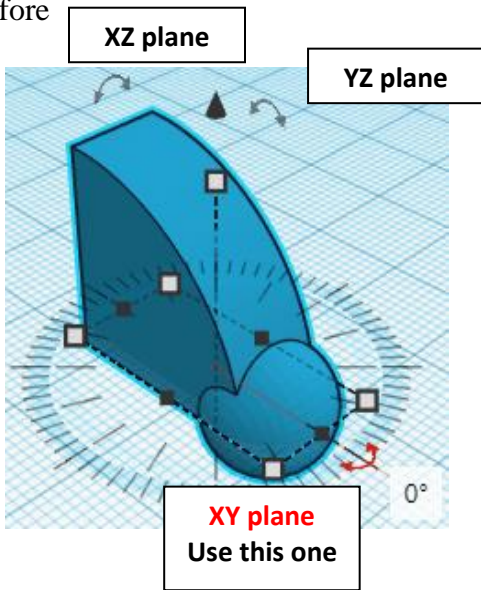


Go to TOP LEFT FRONT view for rotations

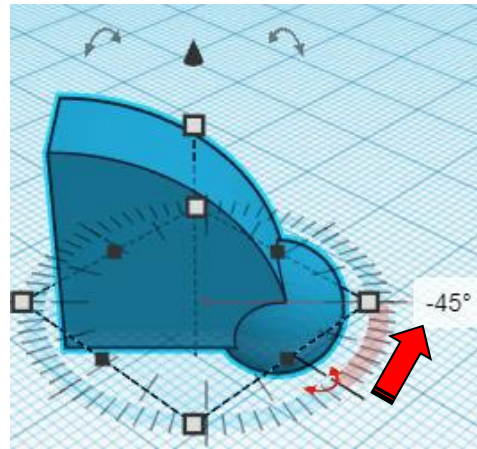


**Rotate** the Scarf End 1 counter-clockwise 45 degrees in XY plane.

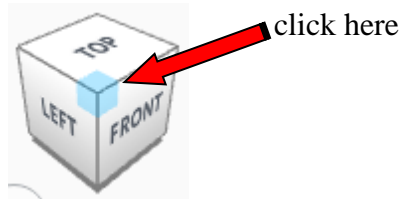
Before



After

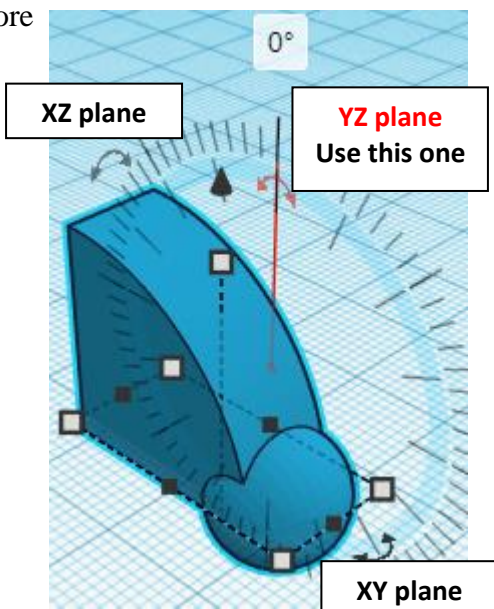


Go to TOP LEFT FRONT view for rotations

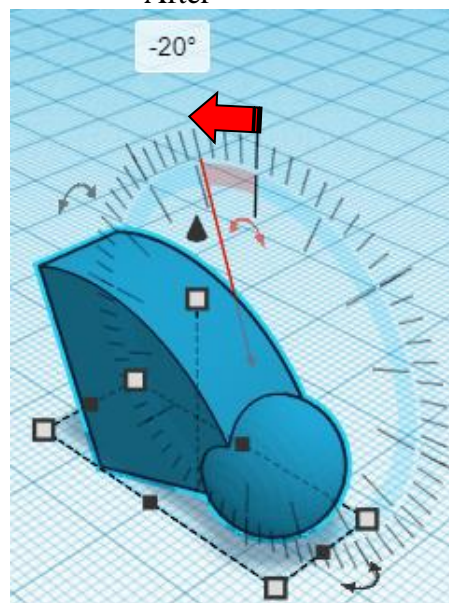


**Rotate** the Scarf End 2 counter-clockwise 20 degrees in YZ plane.

Before



After

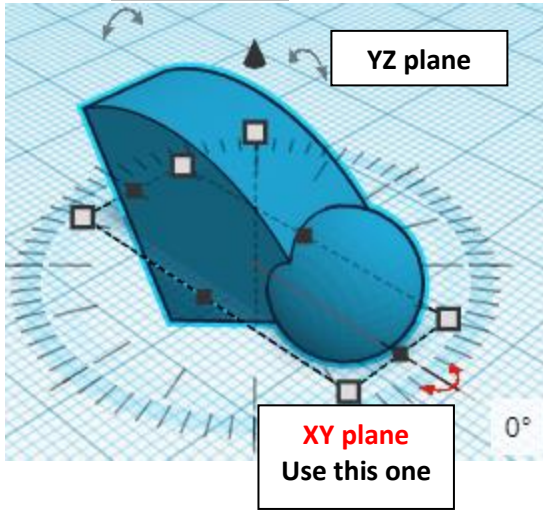




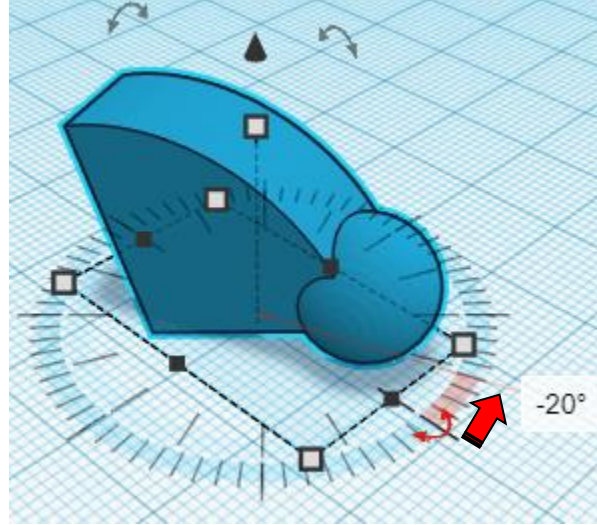
**Rotate** the Scarf End 2 counter-clockwise 20 degrees in XY plane.

Before

XZ plane

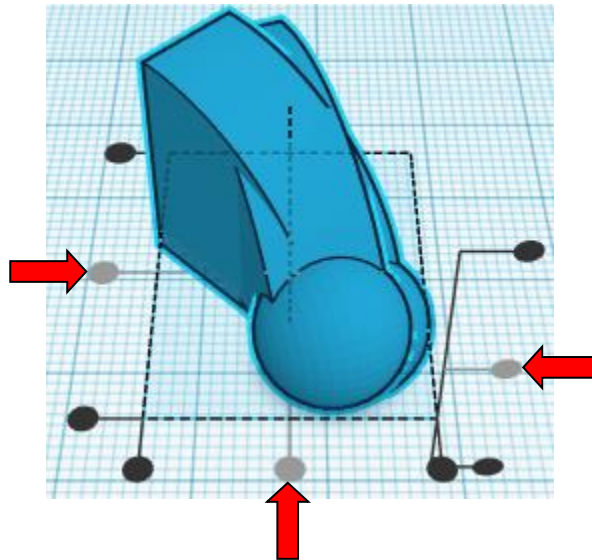


After



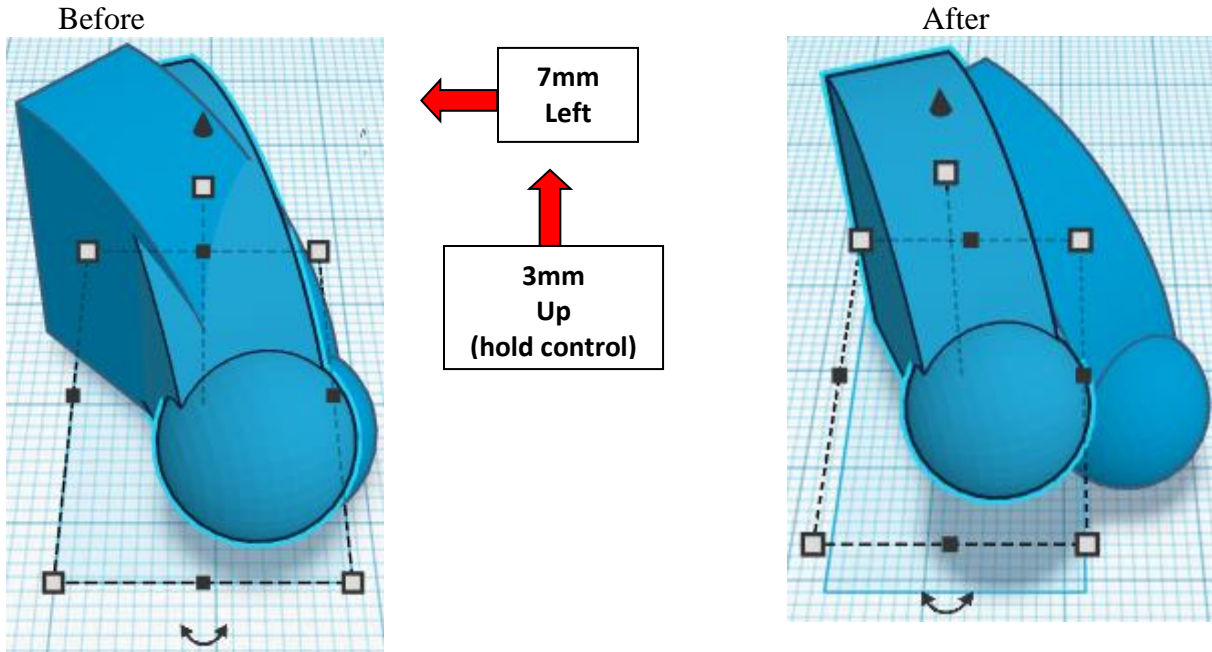
**Align** Scarf End 1 and Scarf End 2

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

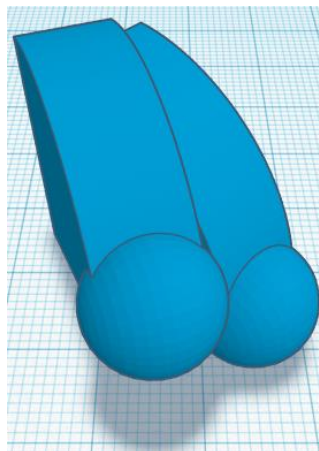


**Move Scarf End 2** (Must be in home view for this to work!)  
move left in negative X direction 7mm  
and  
move up in positive Z direction 3mm

**Hint:** Select Scarf End 2 and push left arrow key 7 times.  
and  
Select Scarf End 2 and hold control and push up arrow key 3 times.

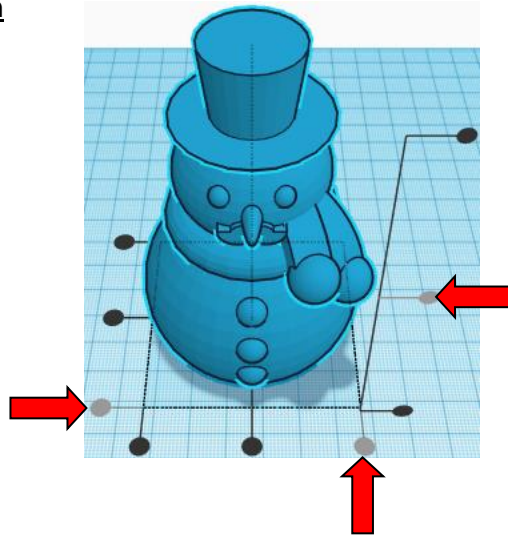


**Group Scarf End 1 and Scarf End 2**  
From now on this will be called the **Scarf Ends**



## Align Scarf Ends and Snowman

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

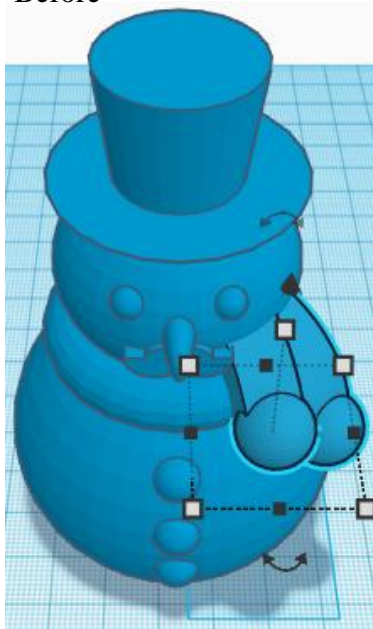


## Move Scarf Ends (Must be in home view for this to work!)

move left in negative X direction 2mm  
and  
move down in negative Z direction 15mm  
and  
move back in negative Y direction 3mm

**Hint:** Select Scarf End 2 and push left arrow key 2 times.  
and  
Select Scarf End 2 and hold control and push down arrow key 15 times.  
and  
Select Scarf End 2 and push up arrow key 3 times.

Before

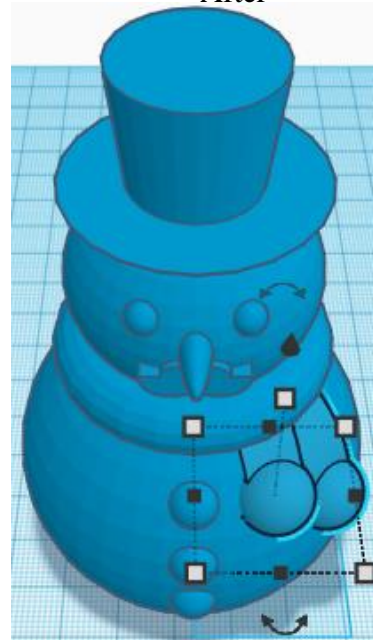


2mm  
Left

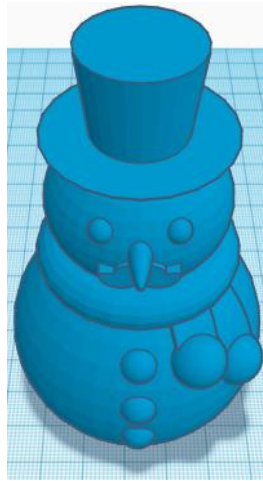
15mm  
Down  
(hold control)

3mm  
Down

After



**Group** Scarf Ends and Snowman  
From now on this will be called the **Snowman**



**You're done!**  
**Try printing in white and painting the snowman.**  
**Comes out really cute!!**

**Enjoy**



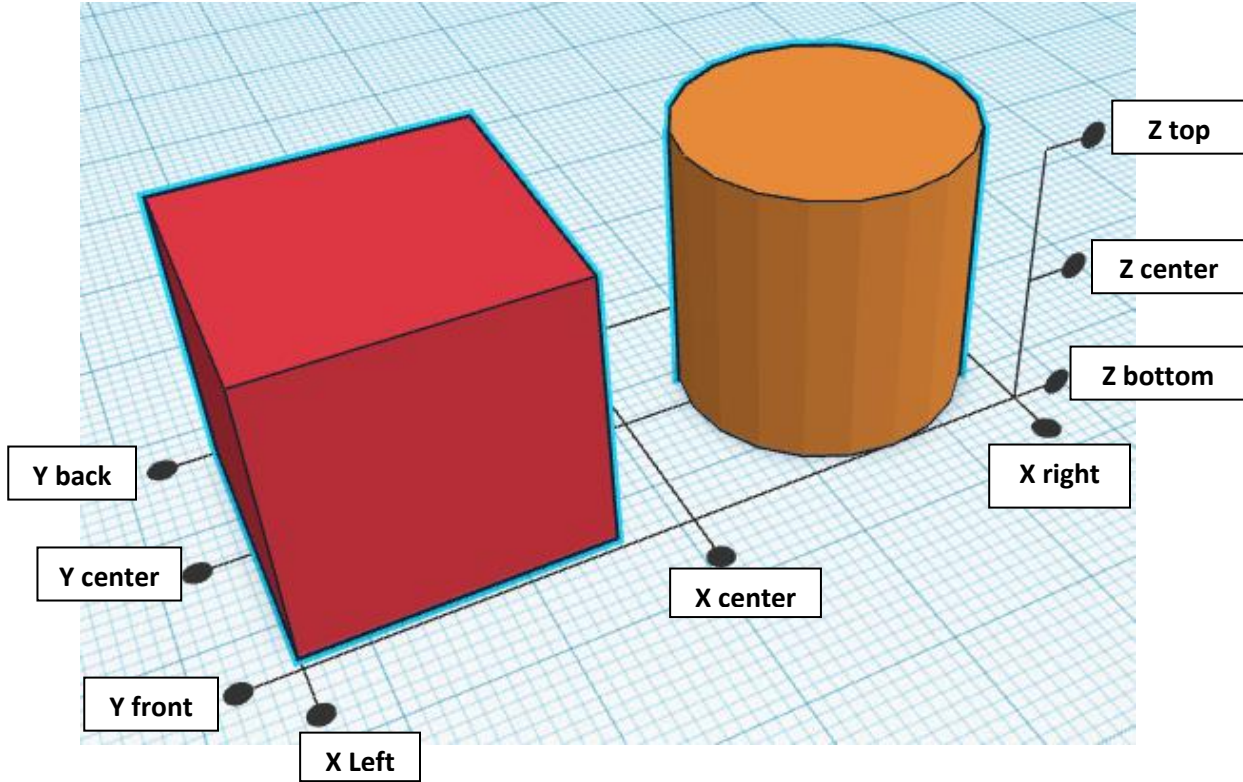


Reference to Aligning, Flip direction, Move direction, and Rotate direction.

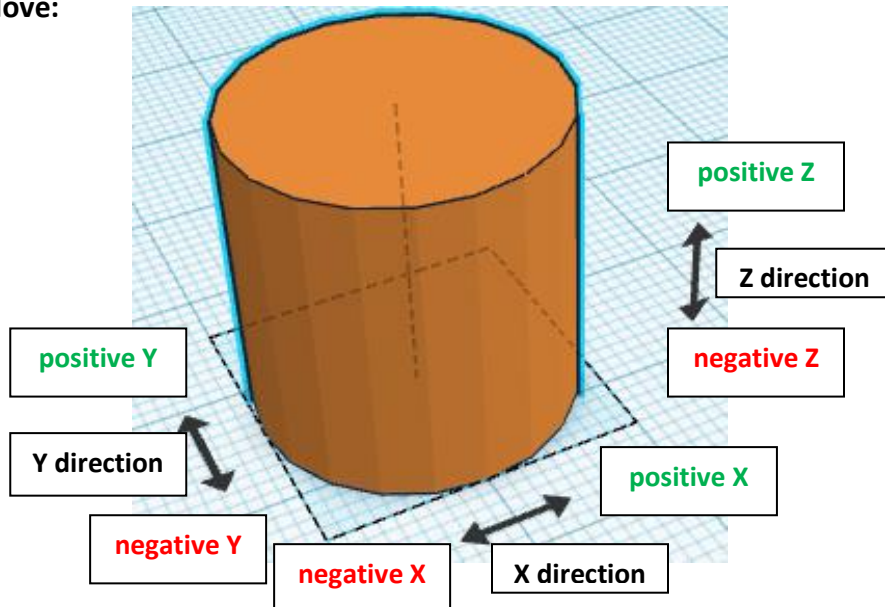
Always be in the "home view" when doing any of these!!!



Aligning:

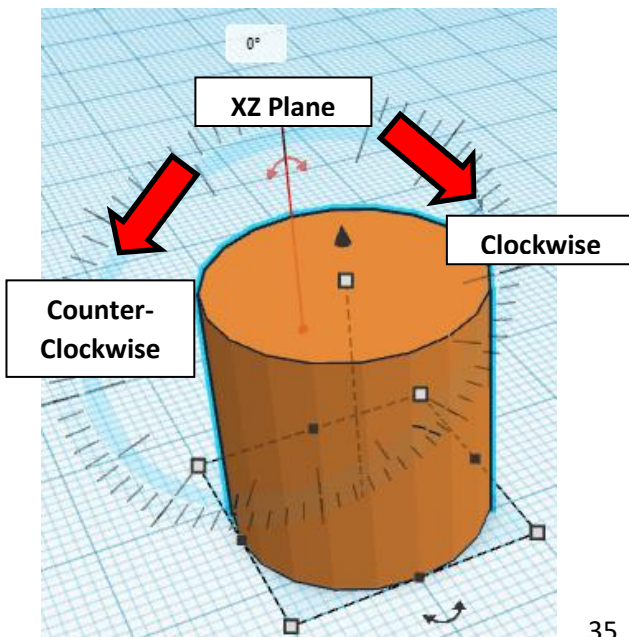
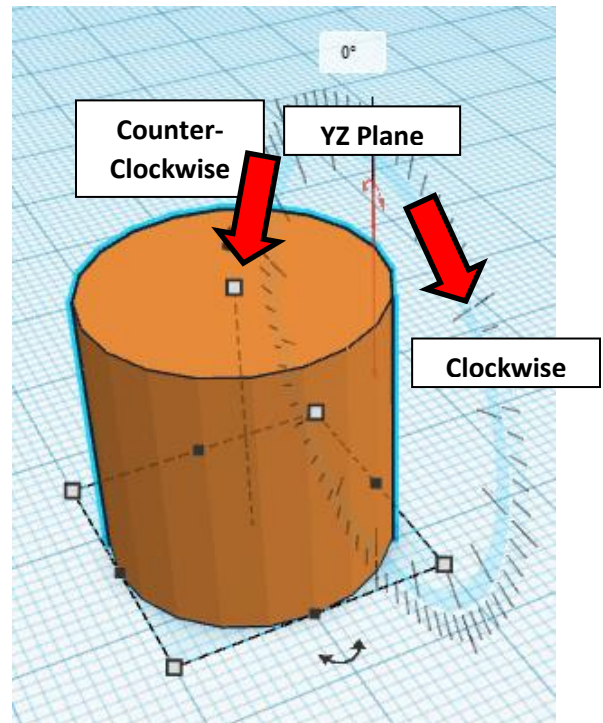
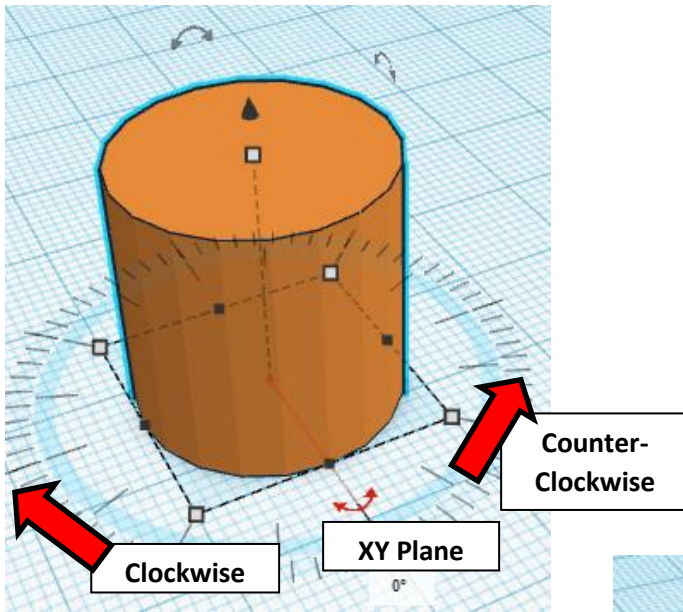


Flip or Mirror and Move:





Rotate:



# Tool Guide

## Most used Keyboard Shortcuts:

Transparency toggle	<b>T</b>	<b>Duplicate</b> object(s) in place.	<b>Ctrl</b> + <b>D</b>
Turn object(s) into <b>Holes</b>	<b>H</b>	<b>Delete</b> object(s)	<b>Del</b>
Turn object(s) into <b>Solids</b>	<b>S</b>	<b>Undo</b> 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>

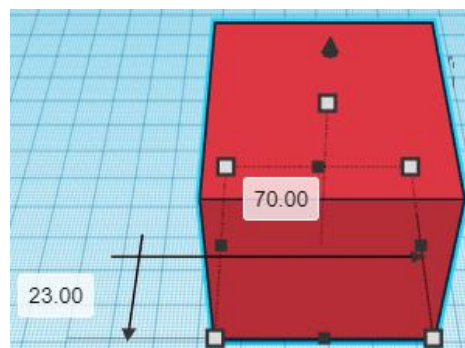
## Moving Object(s):

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.

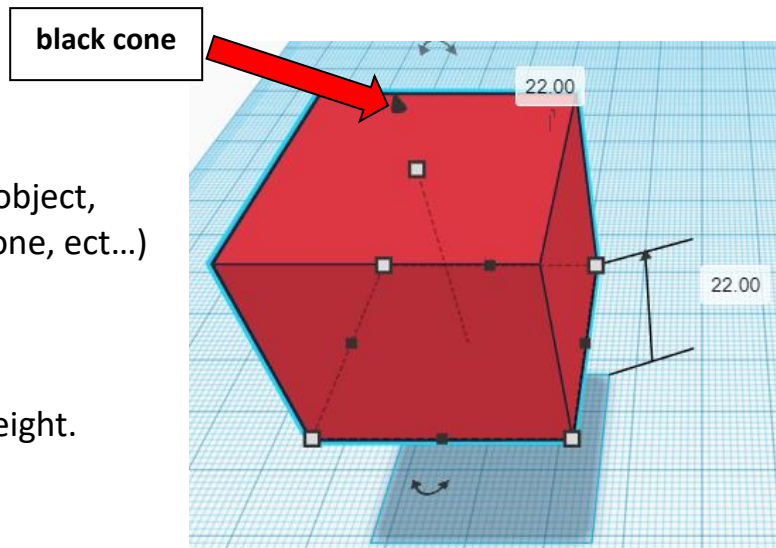


## Moving Object(s) continued:

### 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.

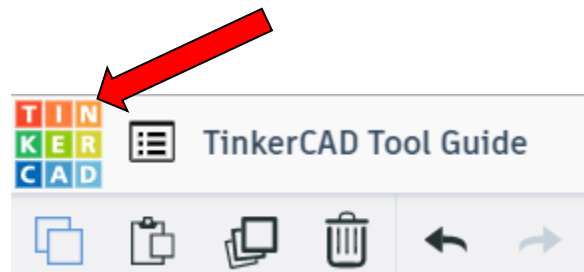


Hold control button and hold shift button and use up and down arrow keys to move the object in 10mm increments.

## Using on screen icons:

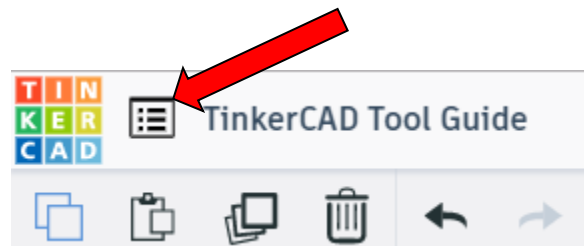
### TinkerCAD main screen:

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



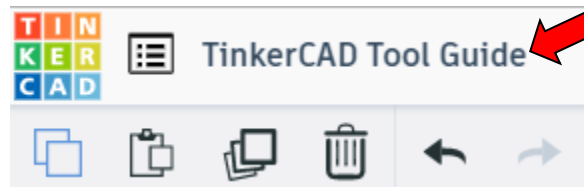
### My designs:

Pulls up menu of your designs.



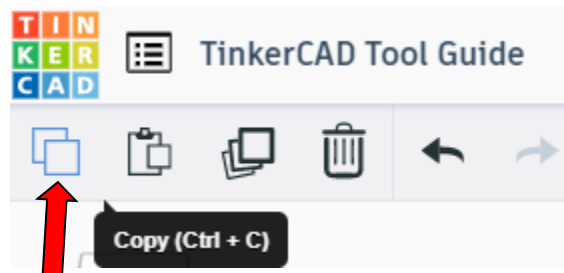
## Design name:

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



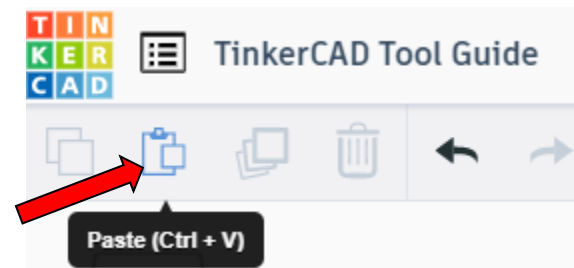
## Copy:

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



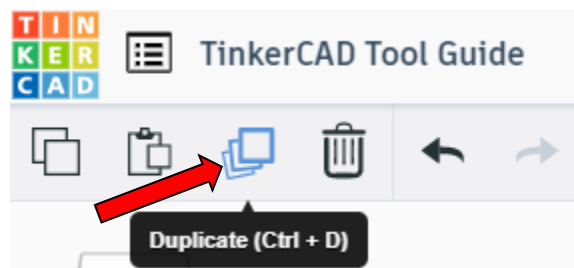
## Paste:

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



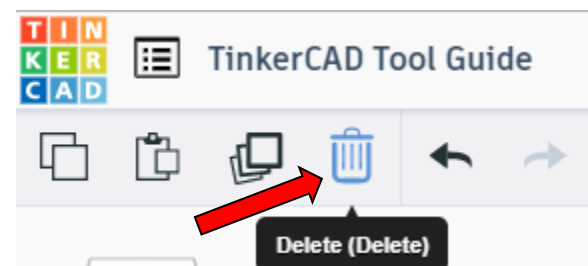
## Duplicate:

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:

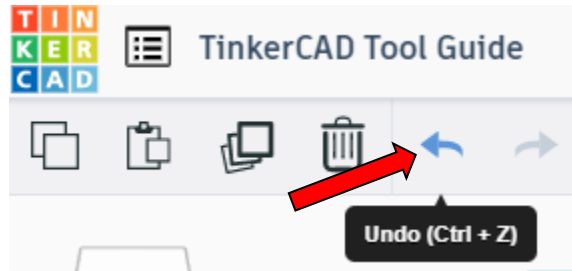
Select shape.  
Click delete or delete key.





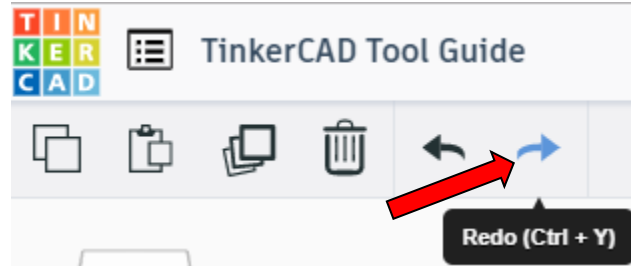
## Undo:

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.



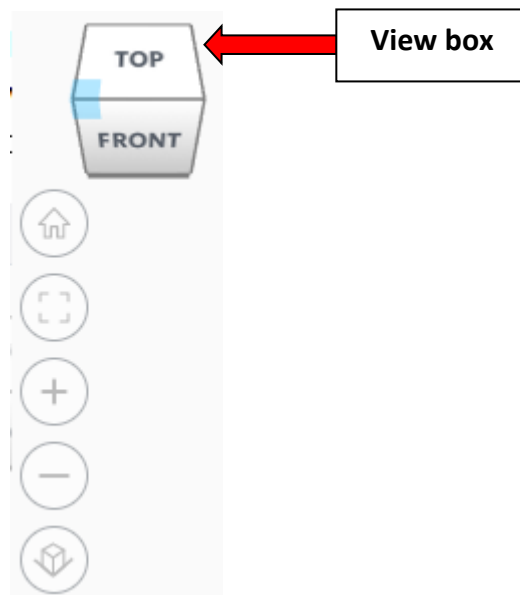
## Change View:

### 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.

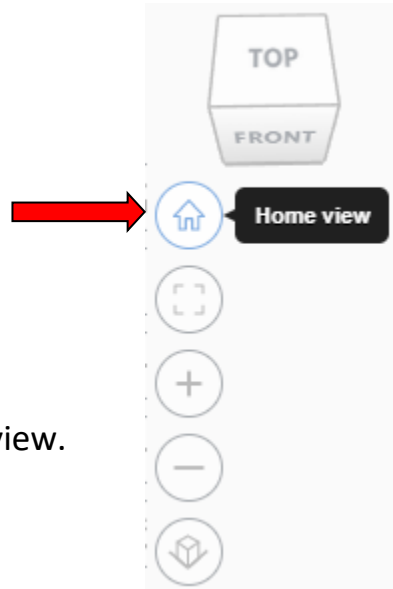


## Change view to home view:

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).



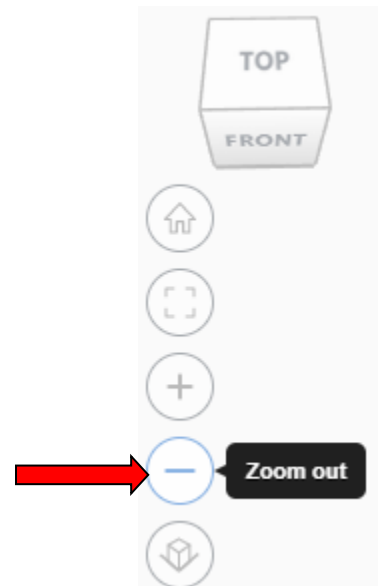
## Zoom in:

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



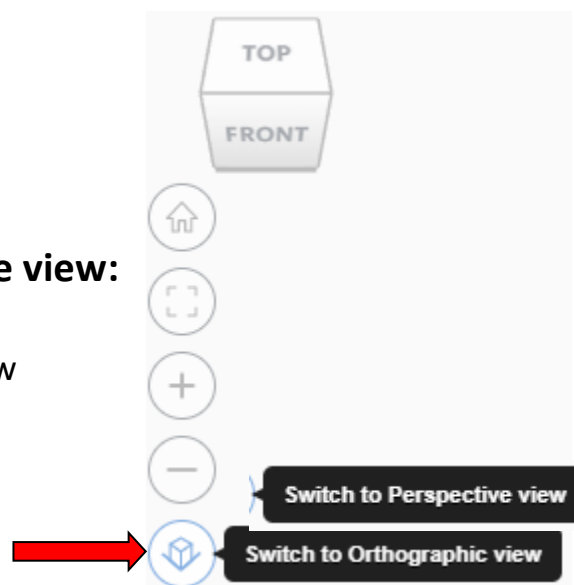
## Zoom out:

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



## Switching to orthographic and perspective view:

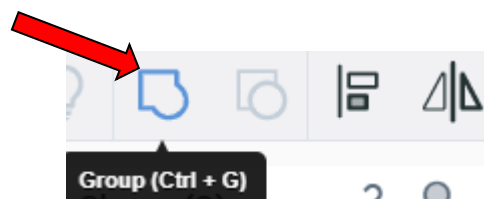
Click the Switch to orthographic/perspective view  
To change to your preferred view.



## 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.

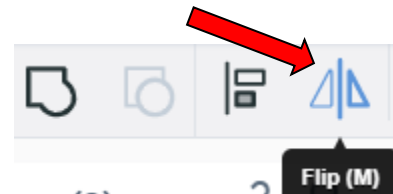
Select the objects to align and click the  
align button or click "L"



## 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 all</b> 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