Derby

Car

Contents:

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

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

Wheels:

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

Change the dimensions to
30mm X direction,
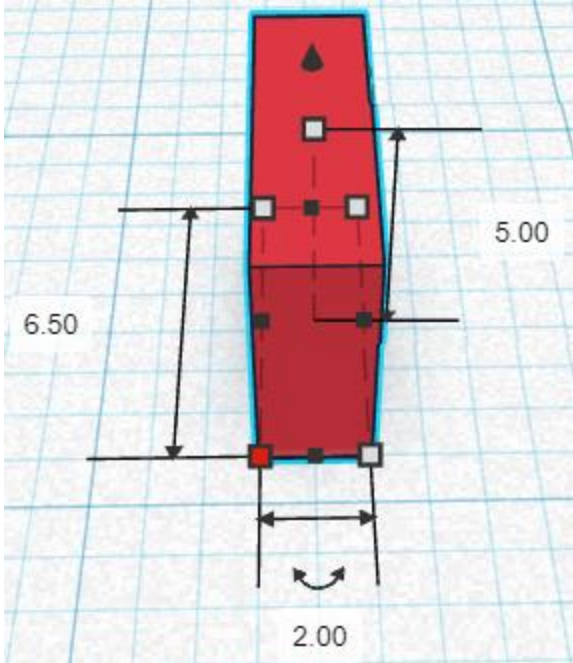30mm Y direction, and
6mm Z direction.
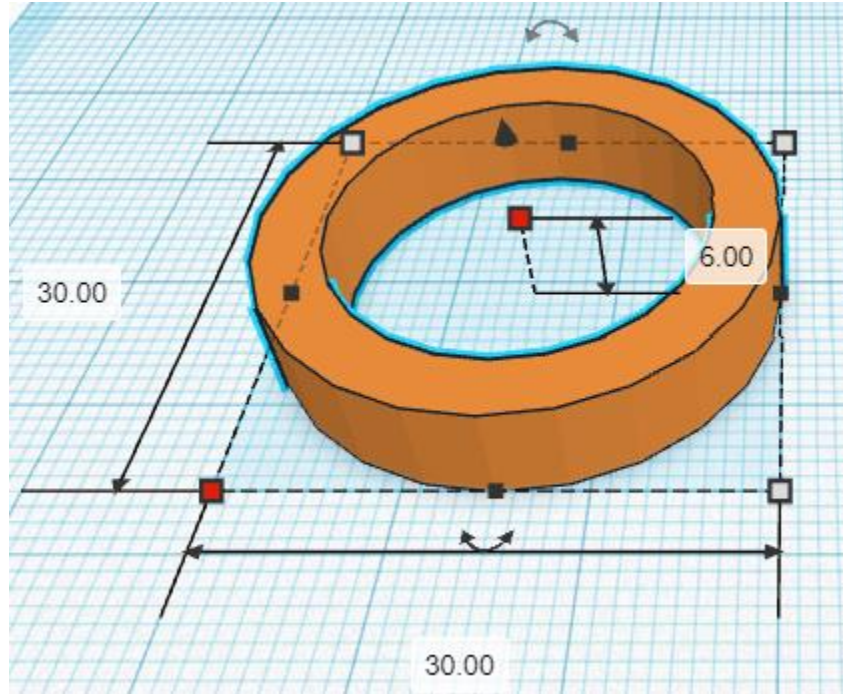
Bring in a Wedge, located in Basic Shapes in the center 4 shapes down.
From now on this will be called the **Spoke.**

Change the dimensions to
2mm X direction,
18mm Y direction, and
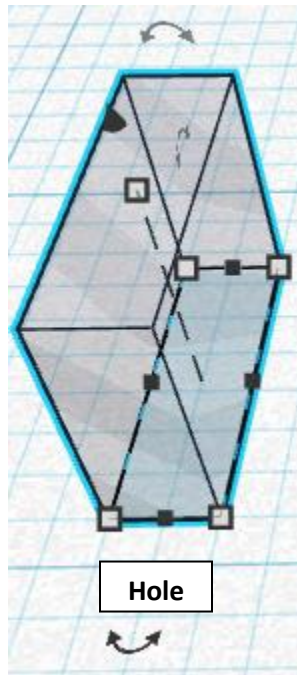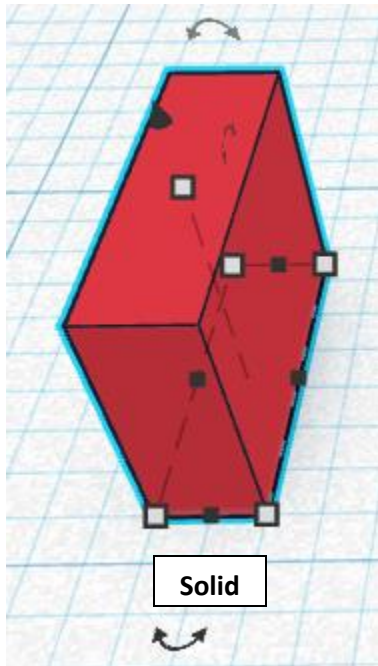11mm Z direction.
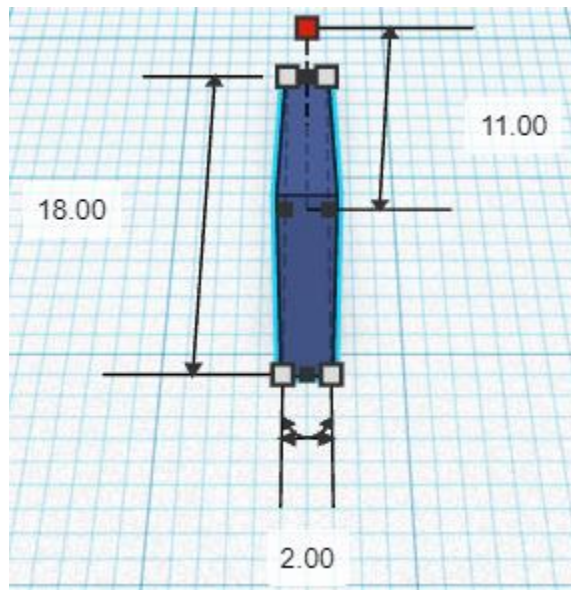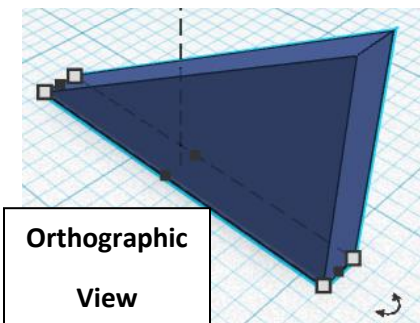
Orthographic

View

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

Change the dimensions to
2mm X direction,
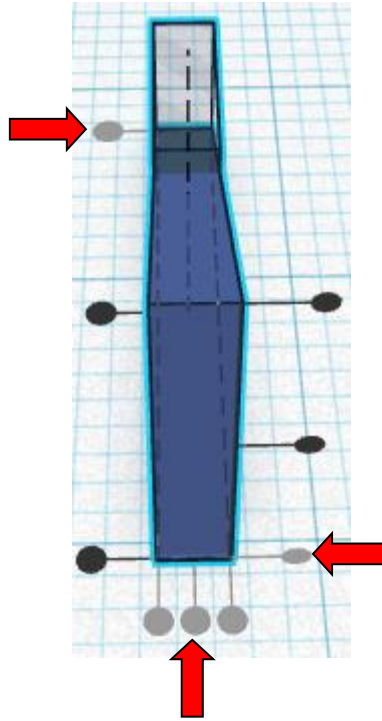6.50mm Y direction, and
5mm Z direction.

5.00

6.50

2.00

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

Solid

Hole
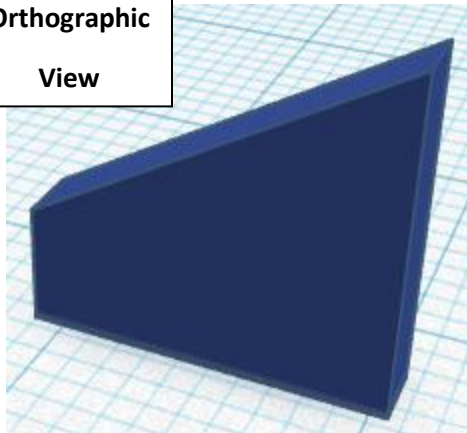
Align <u>Spoke</u> and <u>Spoke Cutoff</u>

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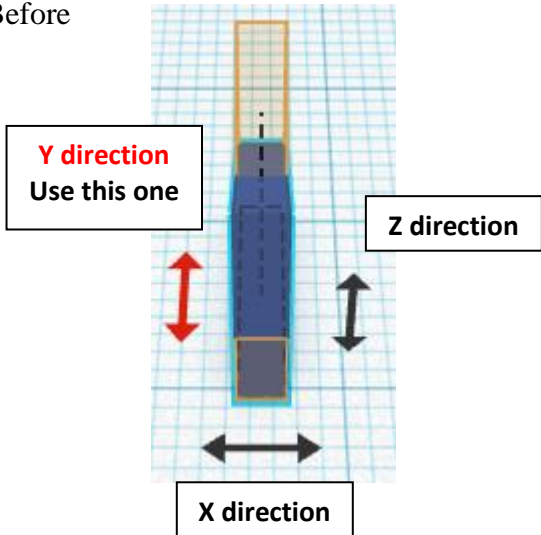

Orthographic

View

Group <u>Spoke</u> and <u>Spoke Cutoff</u>
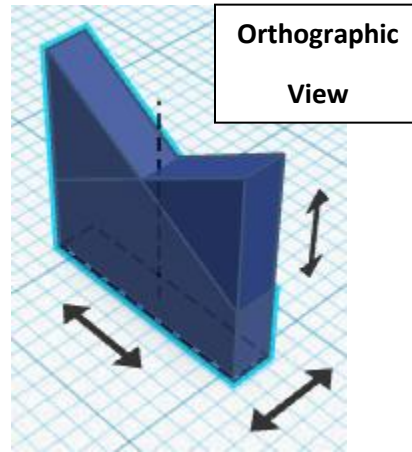From now on this will be called the **Upper Spoke**

Duplicate Upper Spoke 1 time
From now on this Duplicate will be called the **Lower Spoke**

Flip Lower Spoke in Y direction.

Before

Y direction
Use this one

Z direction

X direction

After

Orthographic

View

Move Lower Spoke   (Must be in home view for this to work!)
move forward in negative Y direction 18mm

Hint: Select Lower Spoke and push down arrow key 18 times.
        Or
        Select Lower Spoke and hold shift and push down arrow key 1 time.
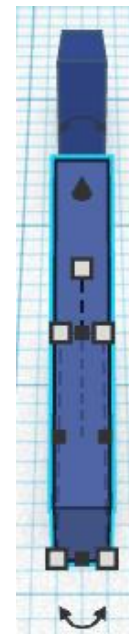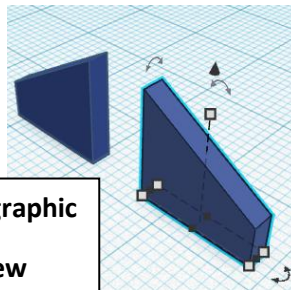   Then release shift and push down arrow key 8 times.
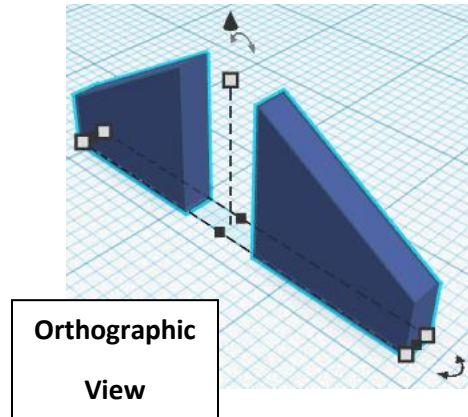
Before

18mm
down
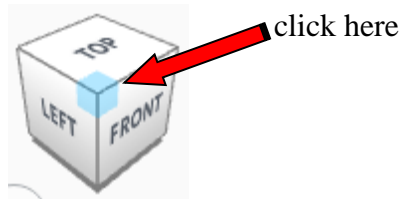
Orthographic

View

After

6

Group Upper Spoke and Lower Spoke
From now on this will be called the **Spoke Set**

Orthographic

View

Duplicate Spoke Set 1 time

Go to TOP LEFT FRONT view for rotations
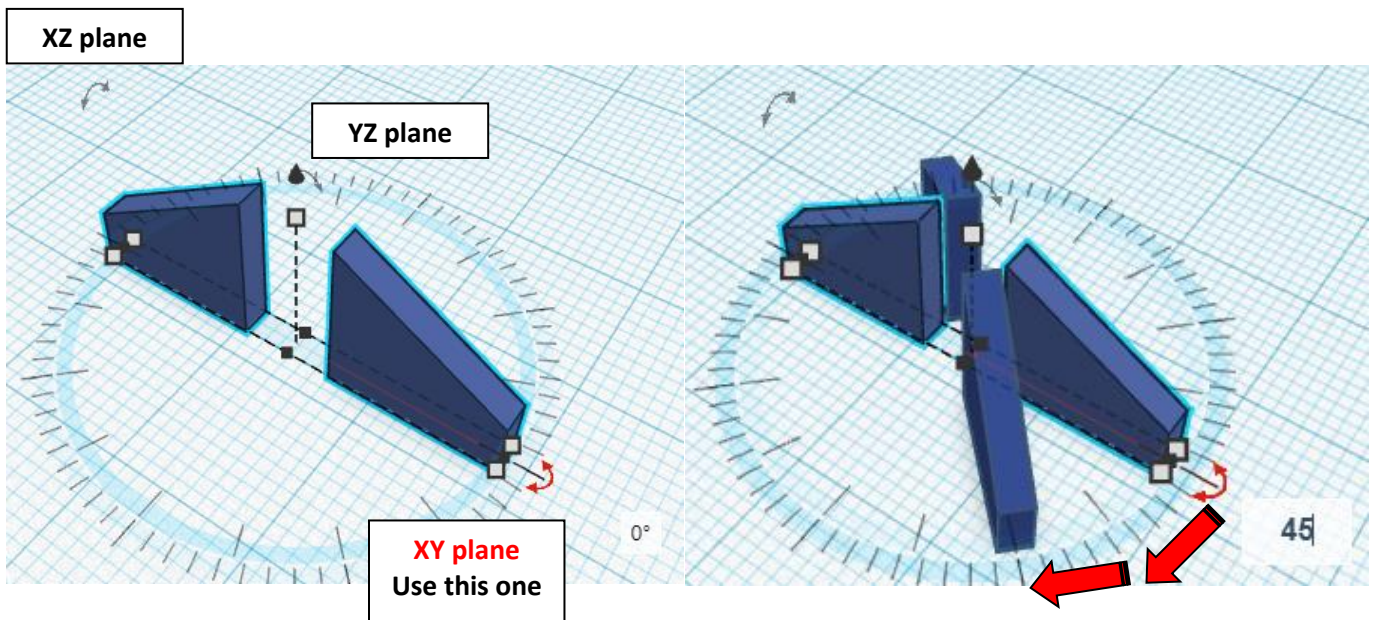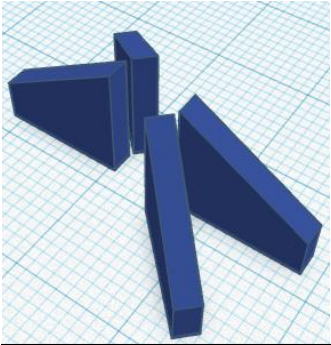

click here

Rotate the Spoke Set clockwise 45 degrees in XY plane.

Before   After

XZ plane

YZ plane

XY plane
Use this one

0°

45

Immediately Duplicate <u>Spoke Set</u> 2 times

1st duplicate	**2nd duplicate**	**3rd duplicate**
Rotated 45 degrees	**Rotated 45 degrees more**	**Rotated 45 degrees more**

Group <u>Spoke Sets</u>
From now on this will be called the **Spokes**

Bring in a Cylinder, located in Basic Shapes on the left 2 shape down.
From now on this will be called the **Wheel Center.**
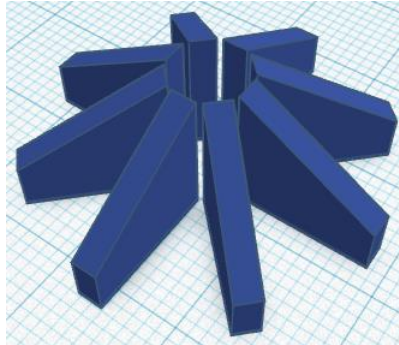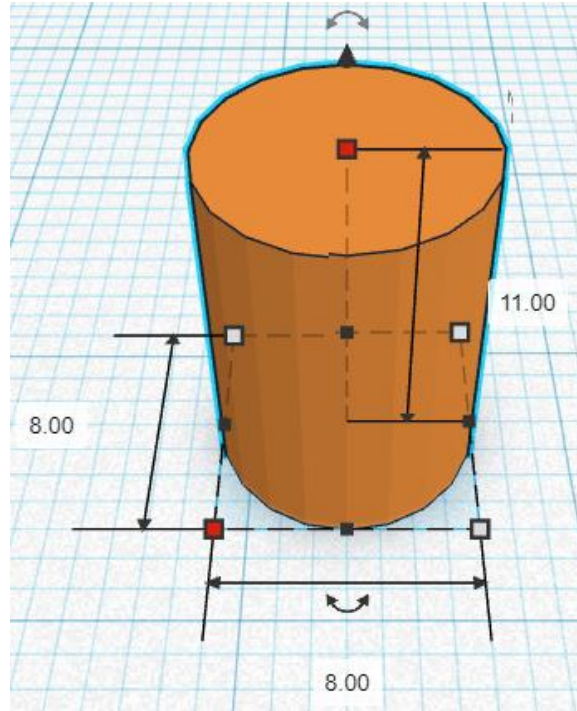
Change the dimensions to
8mm X direction,
8mm Y direction, and
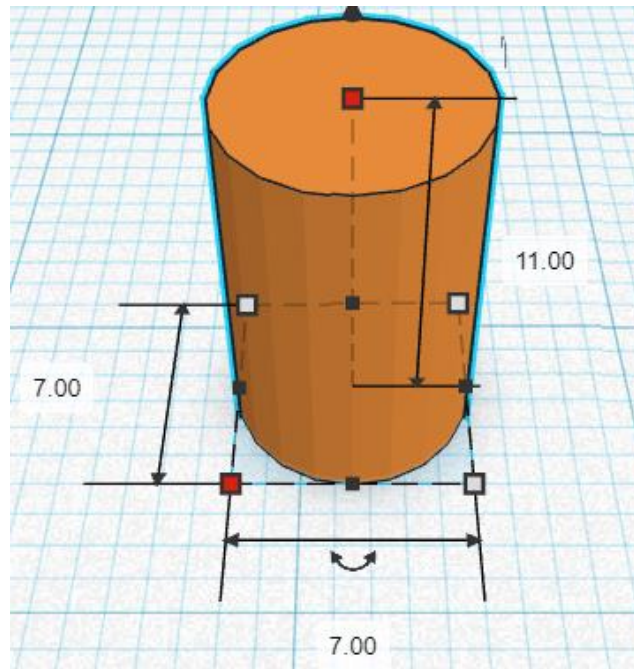11mm Z direction.

11.00

8.00

8.00

Bring in a Cylinder, located in Basic Shapes on the left 2 shape down.
From now on this will be called the **Wheel Center Cutout.**

Change the dimensions to
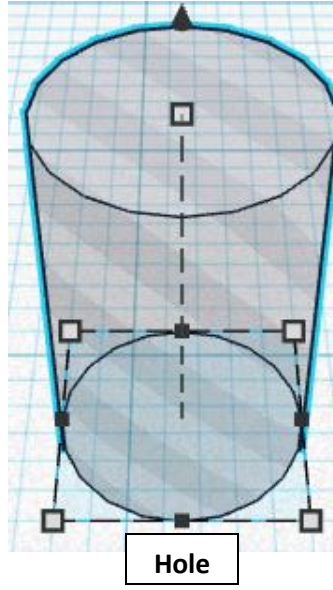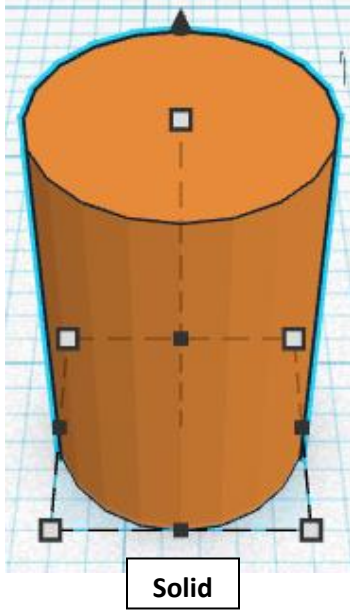8mm X direction,
8mm Y direction, and
11mm Z direction.

11.00

7.00

7.00

9

Change <u>Wheel Center Cutout</u> to **Hole** by selecting <u>Wheel Center Cutout</u> and typing "h".

Solid	Hole

Align <u>Tire</u> and <u>Spokes</u> and <u>Wheel Center</u> and <u>Wheel Center Out</u>

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

Group Tire and Spokes and Wheel Center and Wheel Center Out
From now on this will be called the **Wheel**

Duplicate Wheel 4 times

Move the Wheels apart in a line so that they are ready to be printed.

(I know what you are thinking, cars only have 4 wheels, why did we make 5 wheels? Because you are going to change one of the wheels into the steering wheel.)

Steering Wheel:

Take one of the Wheels and change the dimensions.
From now on this will be called the **Steering Wheel.**

Change the dimensions to
14mm X direction,
14mm Y direction, and
27mm Z direction.

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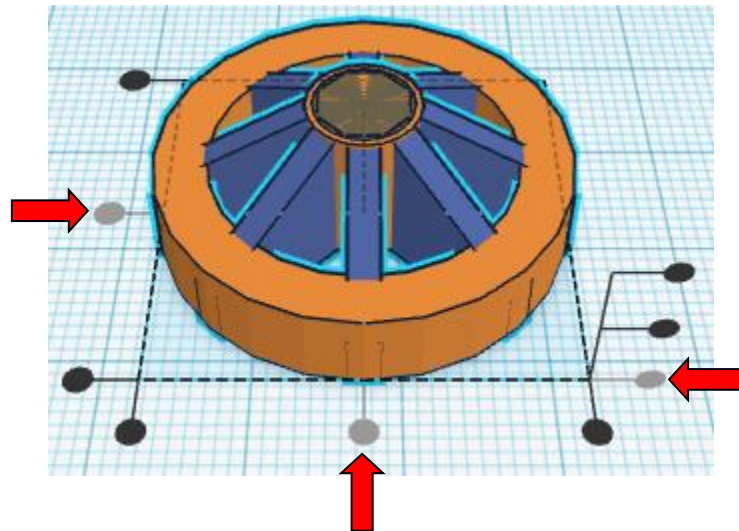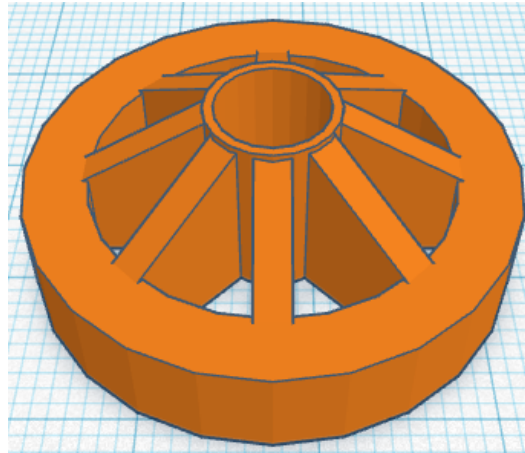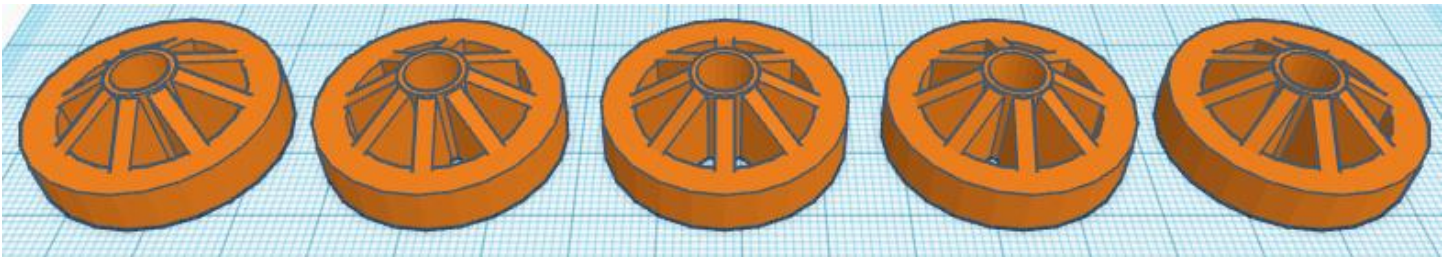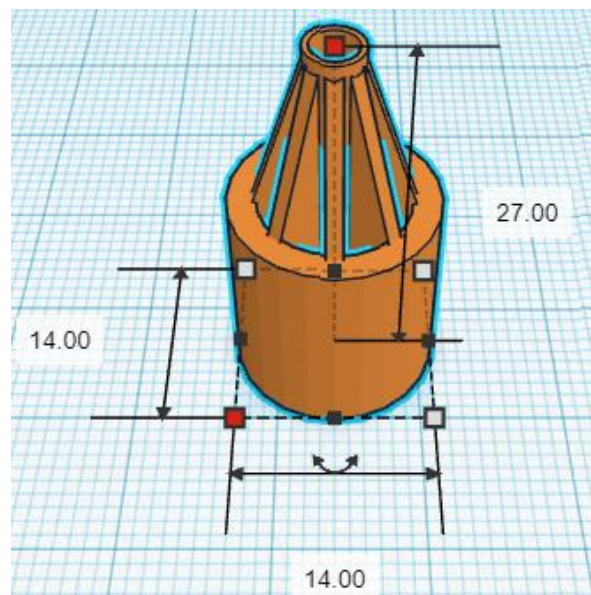From now on this will be called the **Steering Wheel Top Cutout.**

Change the dimensions to
20mm X direction,
20mm Y direction, and
15mm Z direction.
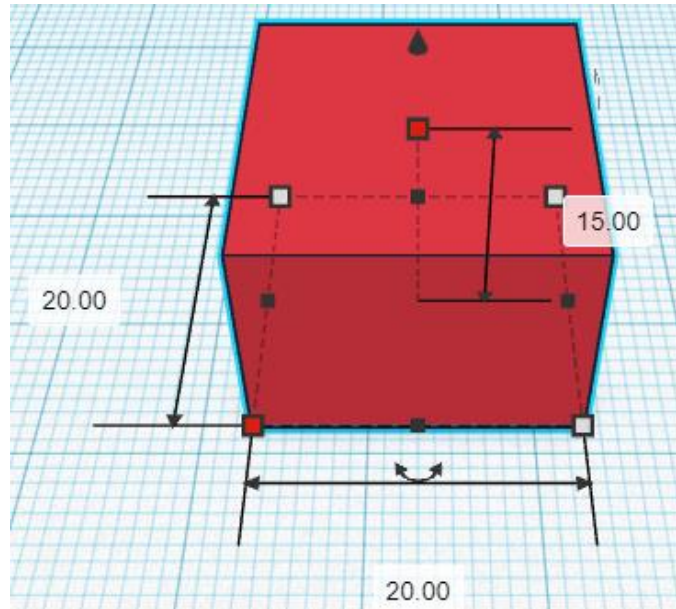
Change Steering Wheel Top Cutout to **Hole** by selecting Steering Wheel Top Cutout and typing "h".

Solid

Hole

Align Steering Wheel and Steering Wheel Top Cutout

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

Group Steering Wheel and Steering Wheel Top Cutout
From now on this will be called the **Steering Wheel**

Bring in a Cylinder, located in Basic Shapes on the left 2 shape down.
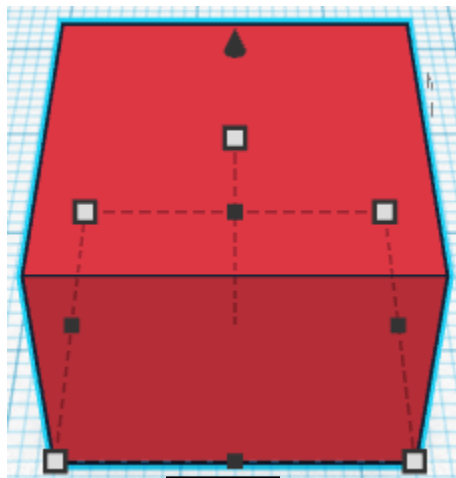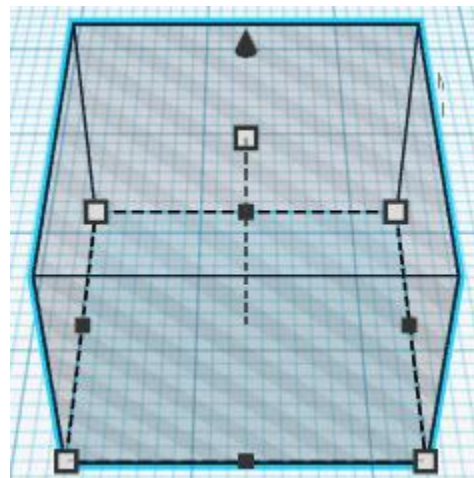From now on this will be called the **Steering Wheel Center 1 Cutout.**

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

Bring in a Cylinder, located in Basic Shapes on the left 2 shape down.
From now on this will be called the **Steering Wheel Center 2 Cutout.**

Change the dimensions to
7mm X direction,
7mm Y direction, and
9mm Z direction.

Align Steering Wheel Center 1 Cutout and Steering Wheel Center 2 Cutout

centered in X direction,
centered of Y direction, and
bottom of Z direction.
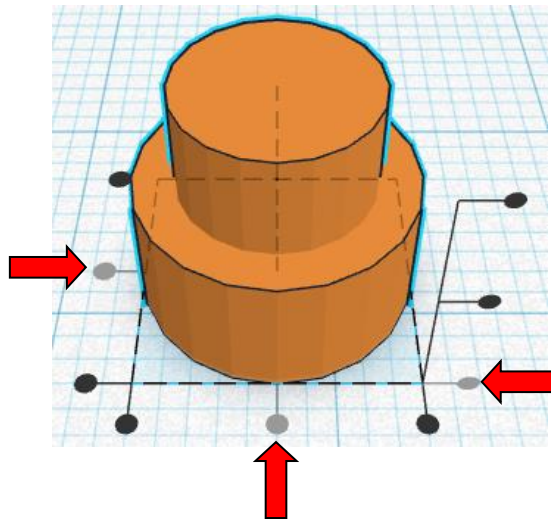
Group Steering Wheel Center 1 Cutout and Steering Wheel Center 2 Cutout
From now on this will be called the **Steering Wheel Center Cutout**

Change <u>Steering Wheel Center Cutout</u> to **Hole** by selecting <u>Steering Wheel Center Cutout</u> and typing "h".
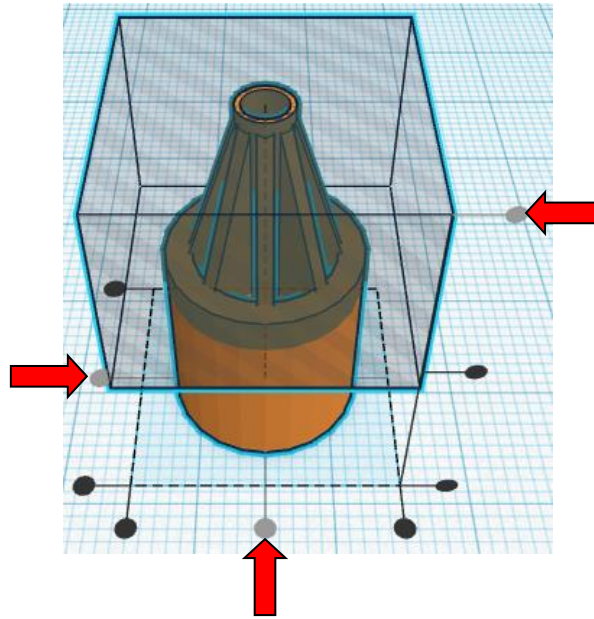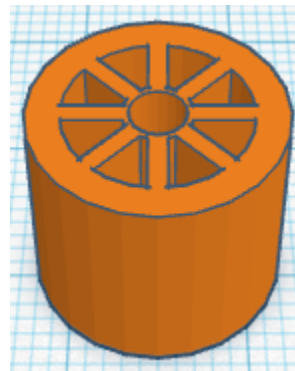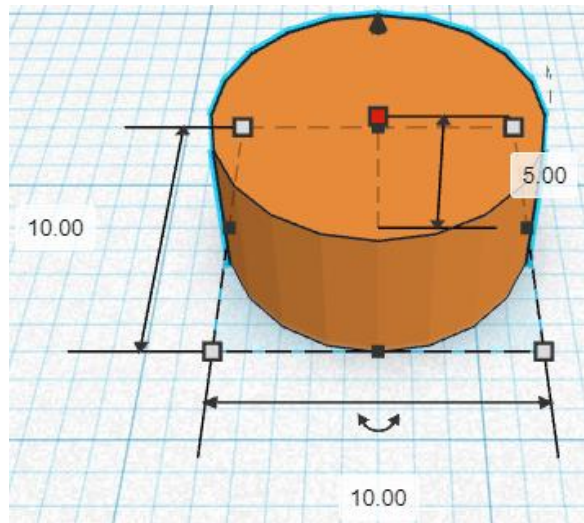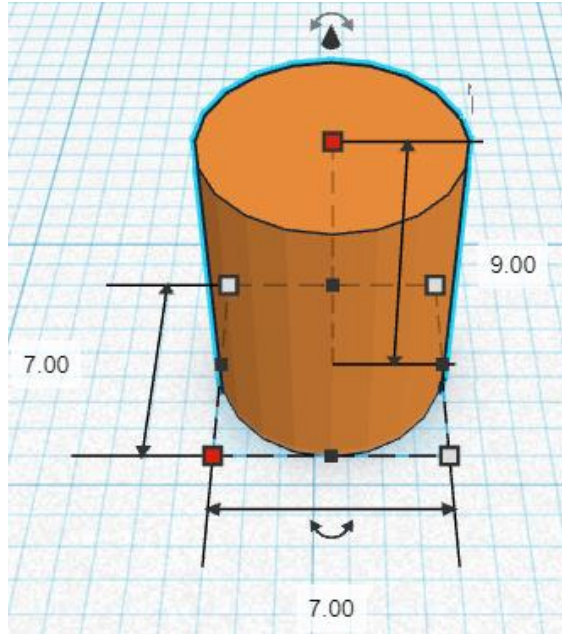

Solid

Hole

Align <u>Steering Wheel</u> and <u>Steering Wheel Center Cutout</u>

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

Group <u>Steering Wheel</u> and <u>Steering Wheel Center Cutout</u>
From now on this will be called the **Steering Wheel**
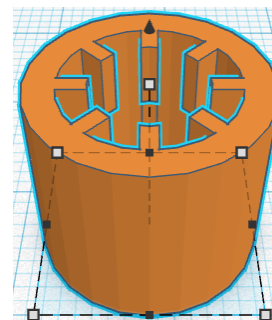
Move the Steering Wheel to the side ready to be printed,

Car Body:

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

Change the dimensions to
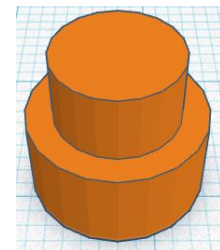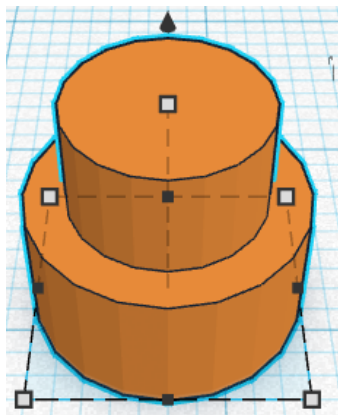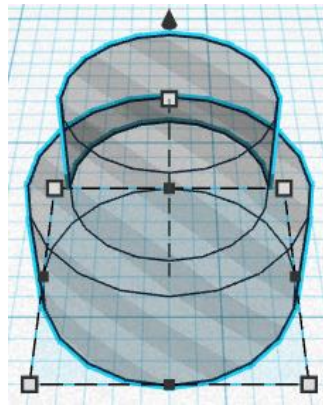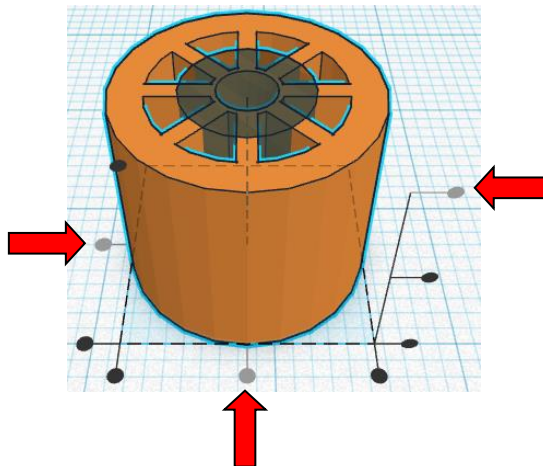140mm X direction,
60mm Y direction, and
50mm Z direction.
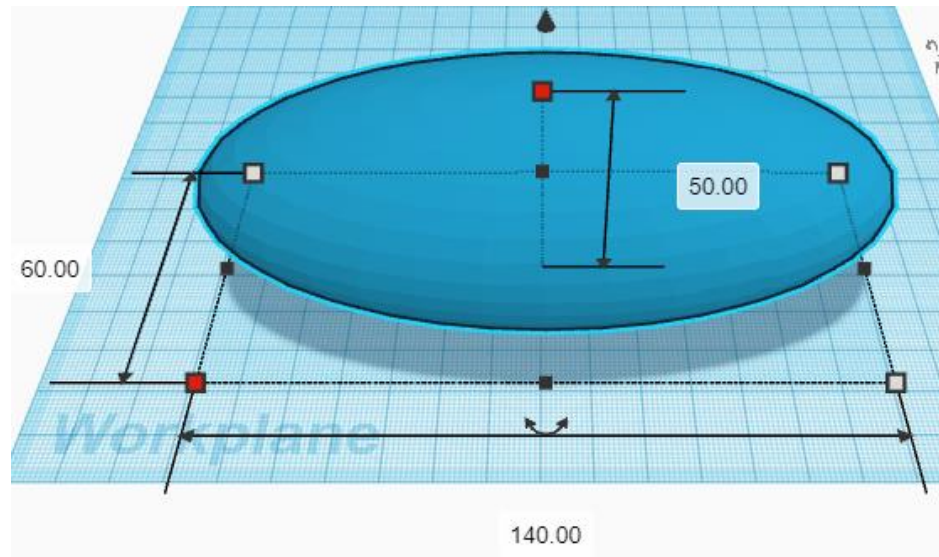
Bring in a Box, located in Basic Shapes on the right 1 shape down.
From now on this will be called the **Car Body Cutout.**

Change the dimensions to
40mm X direction,
30mm Y direction, and
40mm Z direction.
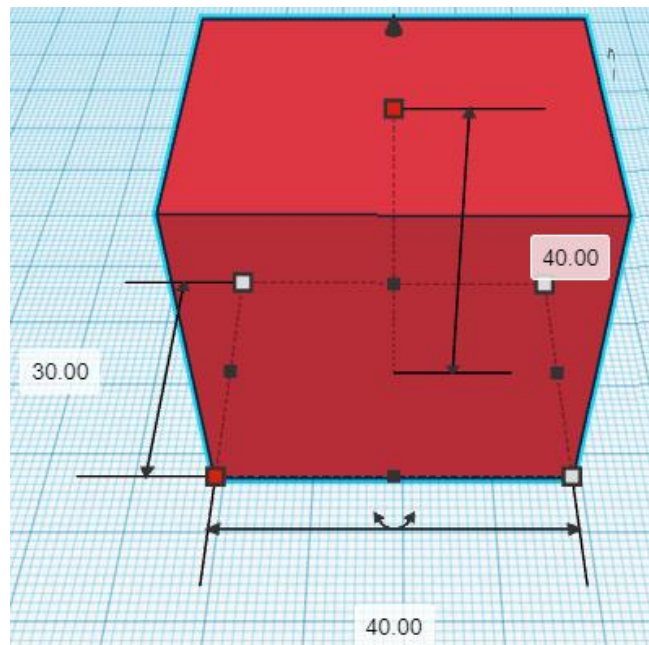
Change Shape settings to:

Radius from 0 to 5

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

Solid
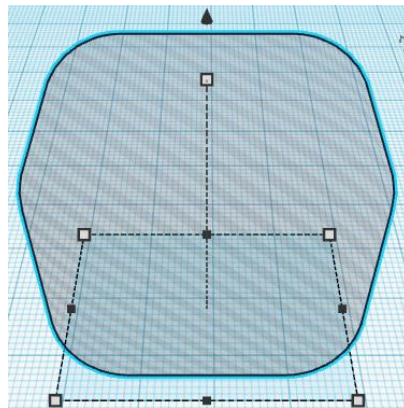
Hole

Align Car Body and Car Body Cutout
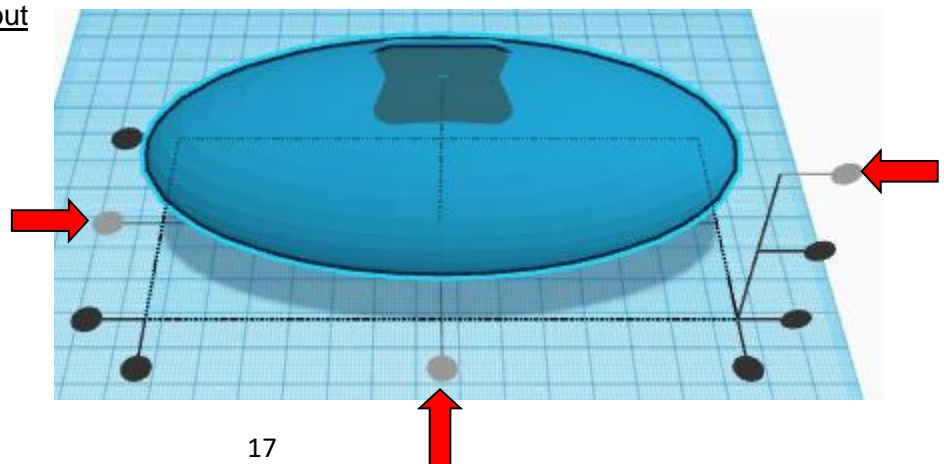
centered in X direction,
centered of Y direction, and
top of Z direction.

Move Car Body Cutout   (Must be in home view for this to work!)
move up in positive Z direction 16mm
and
move right in positive X direction 5mm

Hint: Select Car Body Cutout and hold control and push up arrow key 16 times.
       Or
       Select Car Body Cutout and hold control and hold shift and push up arrow key 1 time.
       Then release shift and push up arrow key 6 times.
       and
       Select Car Body Cutout and push right arrow key 5 times.

Before   After

16mm
Up
(hold control)

5mm
Right
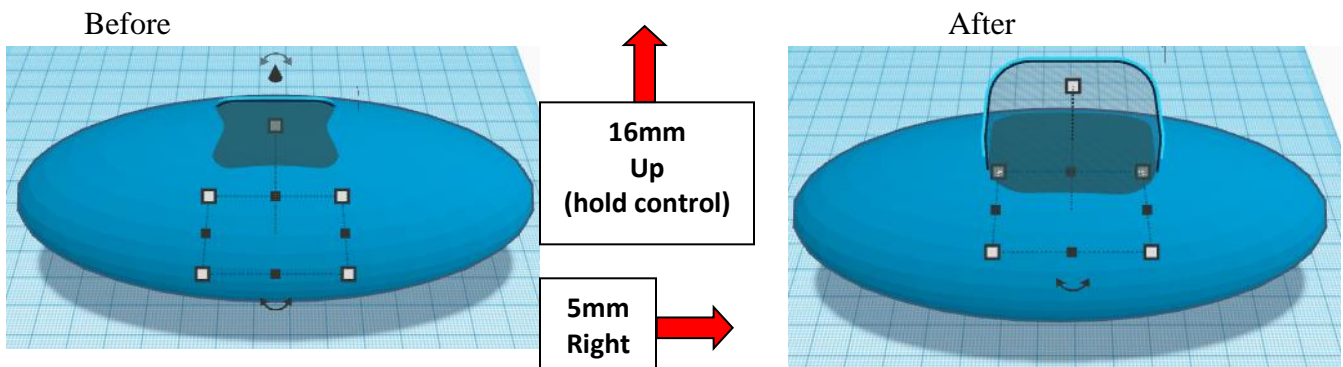
Group Car Body and Car Body Cutout
From now on this will be called the **Car Body**
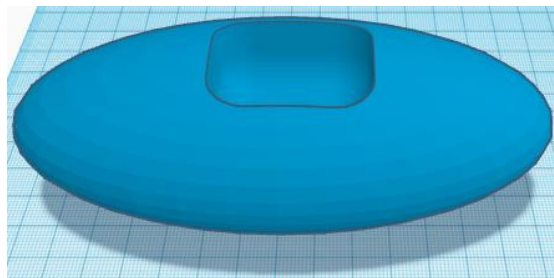
Windshield:

Bring in a Round Roof, located in Basic Shapes on the right 3 shapes down.
From now on this will be called the **Windshield**

Change the dimensions to
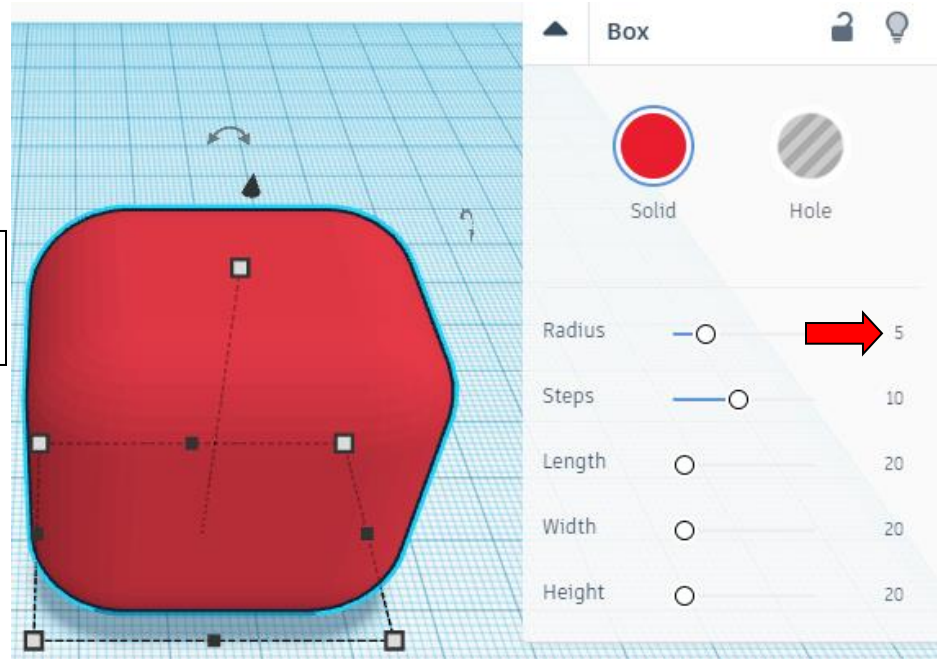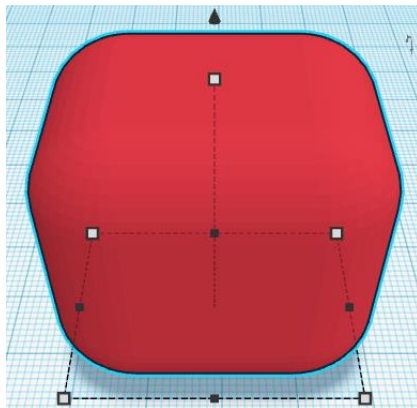30mm X direction,
2mm Y direction, and
16mm Z direction.
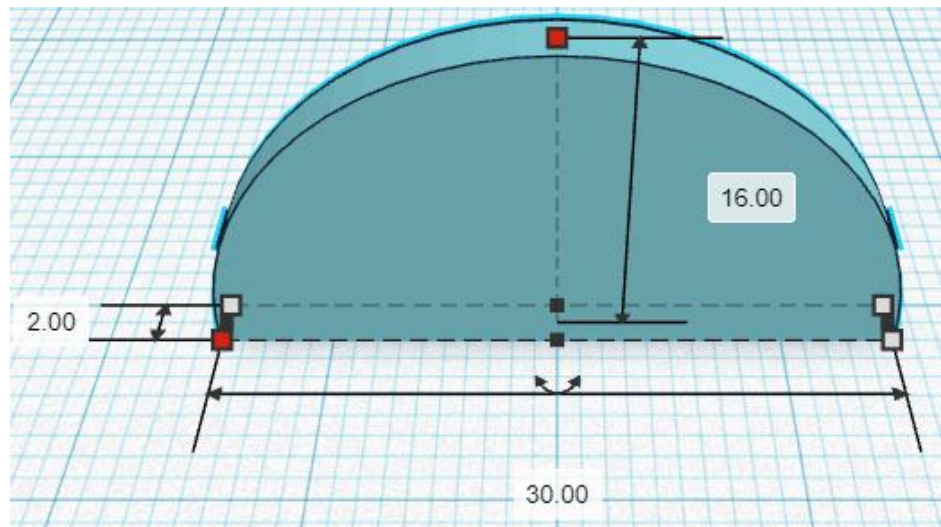
**Duplicate** Windshield 1 time
From now on this duplicate will be called the **Windshield Cutout**

Move Windshield Cutout   (Must be in home view for this to work!)
move forward in negative Y direction 1mm
and
move down in negative Z direction 2mm

Hint: Select Windshield Cutout and push down arrow key 1 time.
　　　and
　　　Select Windshield Cutout and hold control and push down arrow key 2 times.

Before

1mm
forward

2mm
down
(hold control)

After
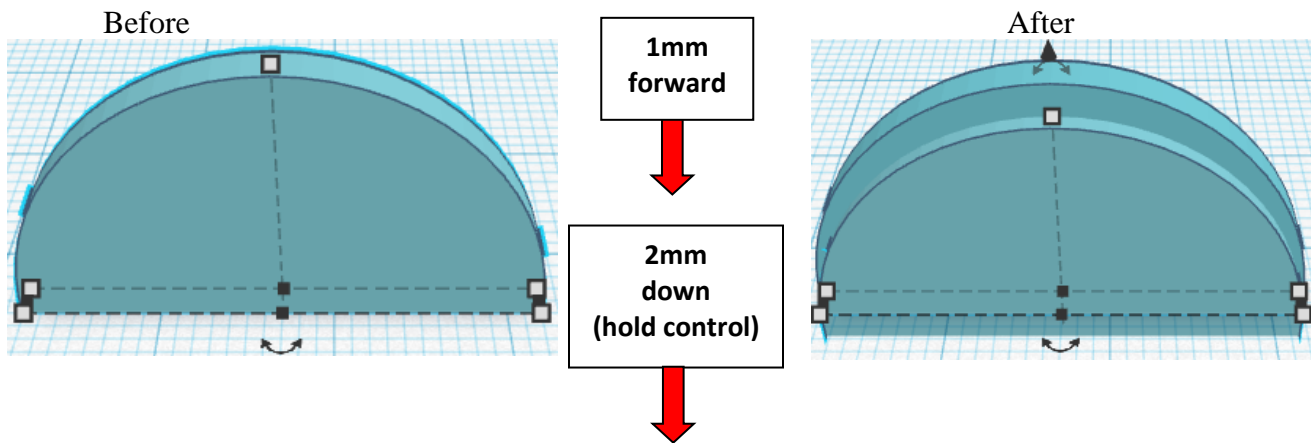
Change <u>Windshield Cutout</u> to **Hole** by selecting <u>Windshield Cutout</u> and typing "h".

Solid

Hole
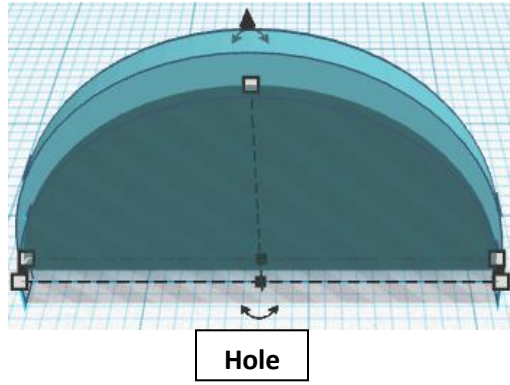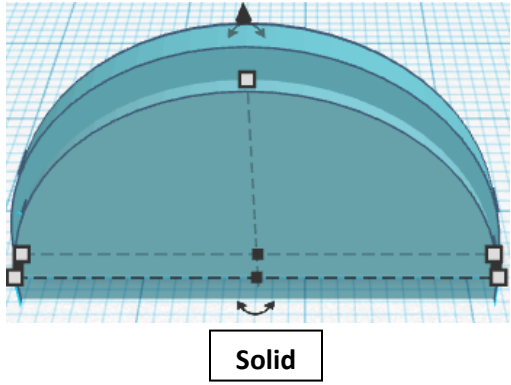
Group <u>Windshield</u> and <u>Windshield Cutout</u>
From now on this will be called the **Windshield**

Go to TOP LEFT FRONT view for rotations

click here
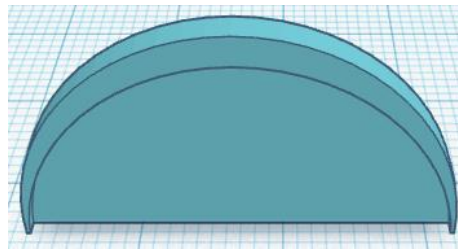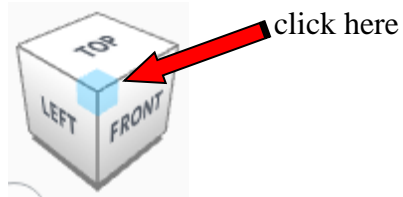
Rotate the <u>Windshield</u> clockwise 90 degrees in XY plane.

Before

XZ plane

YZ plane

XY plane
Use this one

0°

After

90°
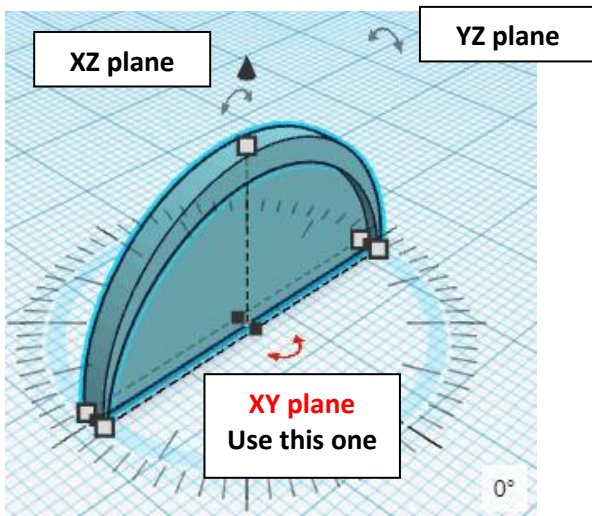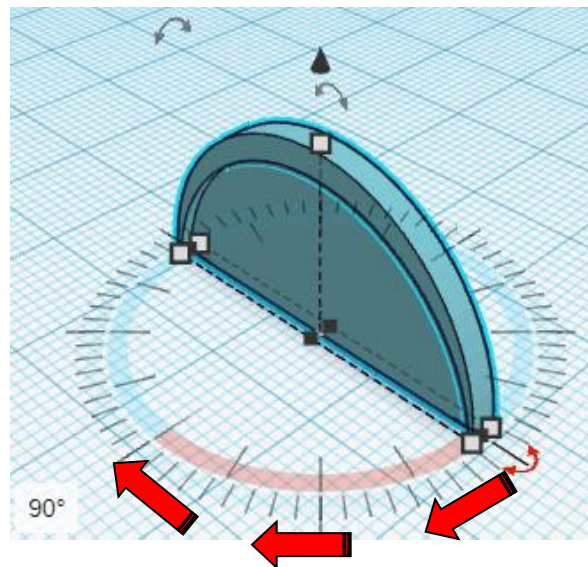
Go to TOP LEFT FRONT view for rotations click here
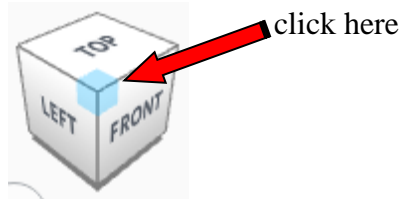
Rotate the <u>Windshield</u> clockwise 30 degrees in XZ plane.

Before   After
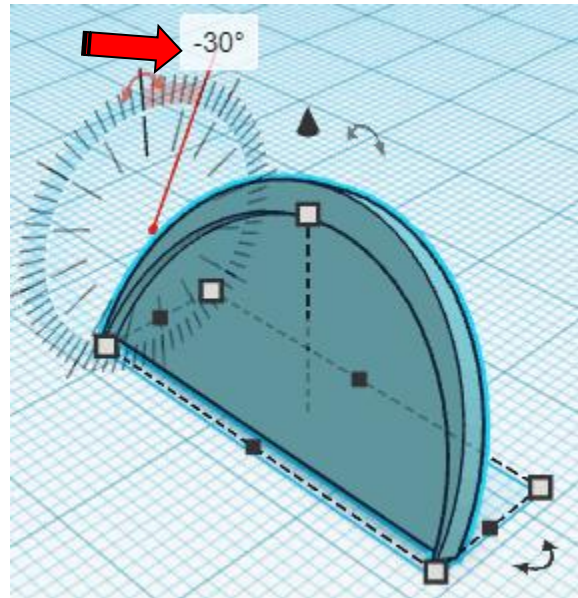
Align <u>Car Body</u> and <u>Windshield</u>

centered in X direction,
centered of Y direction, and
top of Z direction.
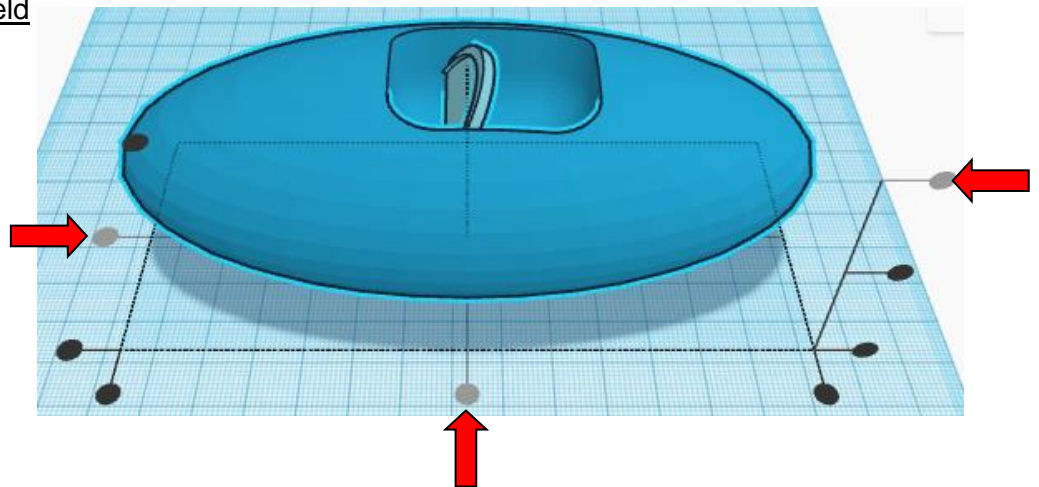
Move Windshield   (Must be in home view for this to work!)
move up in positive Z direction 10mm
and
move left in negative X direction 14mm

Hint: Select Windshield and hold control and push up arrow key 10 times.
        Or
        Select Windshield and hold control and hold shift and push up arrow key 1 time.
        and
        Select Windshield and push left arrow key 14 times.
        Or
        Select Windshield and hold shift and push up arrow key 1 time.
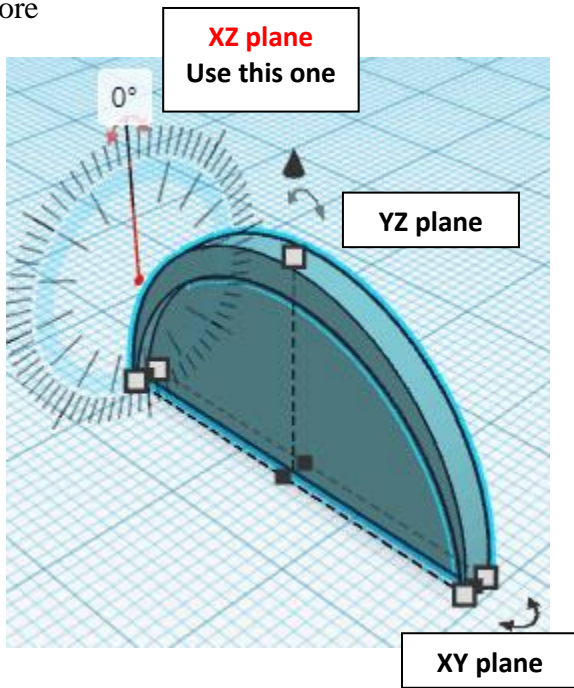   Then release shift and push up arrow key 4 times.

Before   After

10mm
Up
(hold control)

14mm
Left
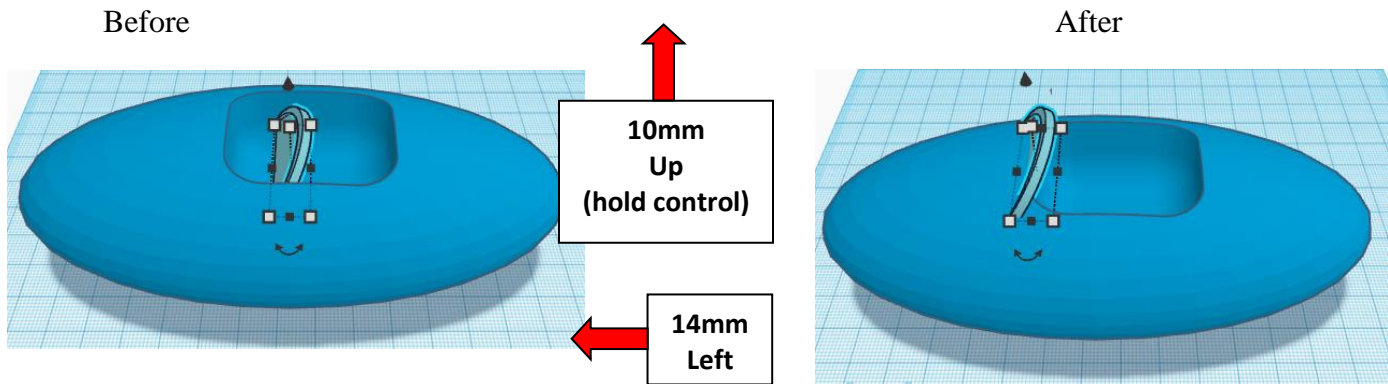
Group Car Body and Windshield
From now on this will be called the **Car Body**
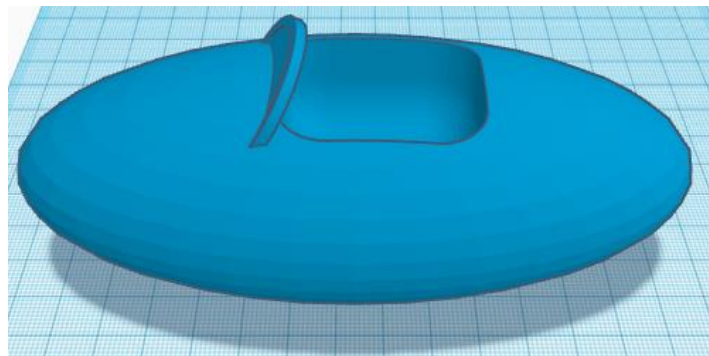
Side Mirrors:

Bring in a Paraboloid, located in Basic Shapes on the right 5 shapes down.
From now on this will be called the **Side Mirror**

Change the dimensions to
8mm X direction,
8mm Y direction, and
8mm Z direction.
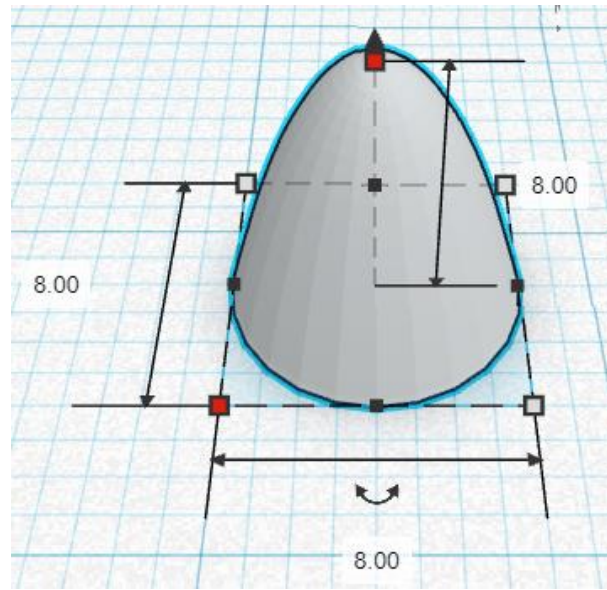
Go to TOP LEFT FRONT view for rotations   click here
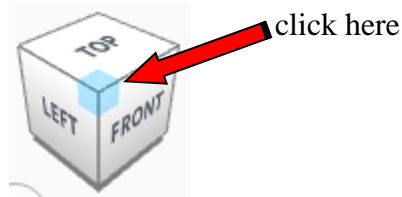
Rotate the Side Mirror counter-clockwise 90 degrees in XZ plane.

Before   After
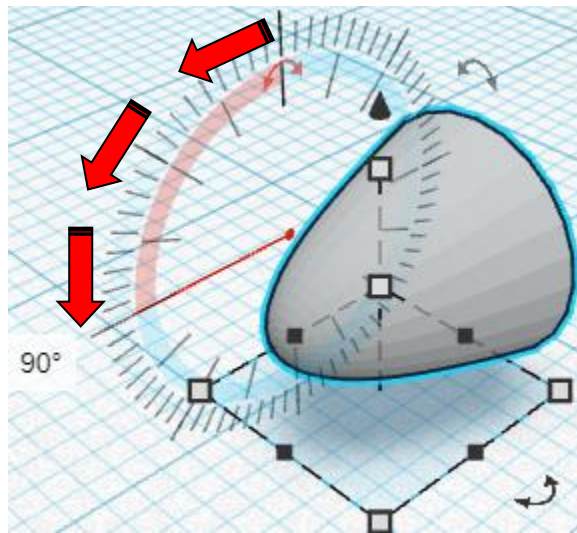
Duplicate Side Mirror 1 time
From now on this duplicate will be called the **Left Side Mirror**

Move Left Side Mirror   (Must be in home view for this to work!)
move forward in negative Y direction 35mm

Hint: Select Left Side Mirror and push down arrow key 35 time.
        Or
        Select Left Side Mirror and hold shift and push down arrow key 3 times.
        Then release shift and push down arrow key 5 times.
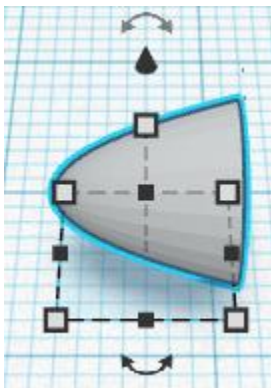
Before   After

35mm down

Group Side Mirror and Left Side Mirror
From now on this will be called the **Side Mirrors**

Align Car Body and Side Mirrors

centered in X direction,
centered of Y direction, and
top of Z direction.
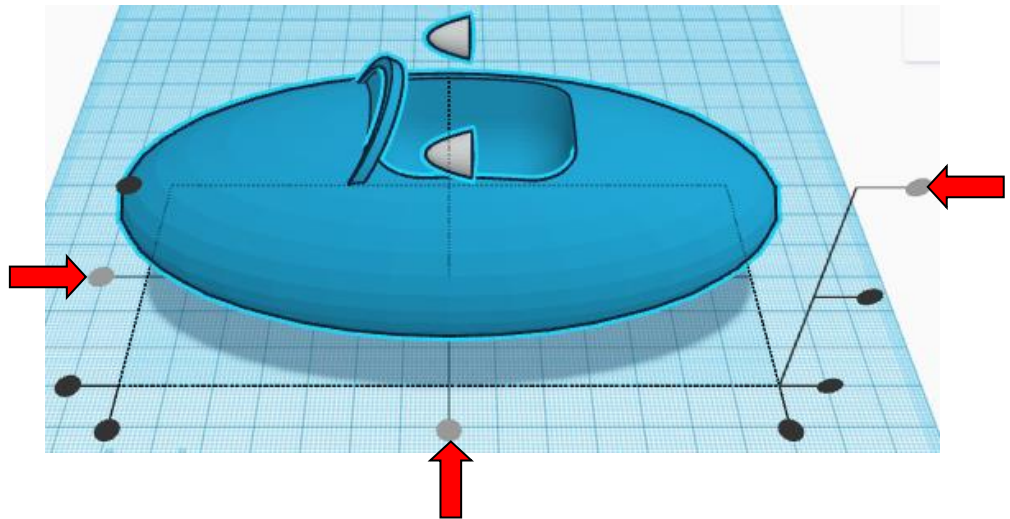
Move Side Mirrors   (Must be in home view for this to work!)
move down in negative Z direction 10mm
and
move left in negative X direction 15mm

Hint: Select Side Mirrors and hold control and push down arrow key 10 times.
       Or
       Select Side Mirrors and hold control and hold shift and push down arrow key 1 time.
       and
       Select Side Mirrors and push left arrow key 15 times.
       Or
       Select Side Mirrors and hold shift and push left arrow key 1 time.
       Then release shift and push left arrow key 5 times.

Before   After

10mm
Down
(hold control)

15mm
Left

Orthographic
View
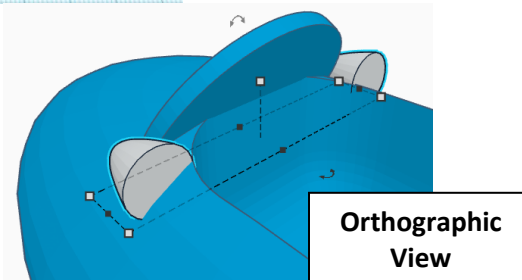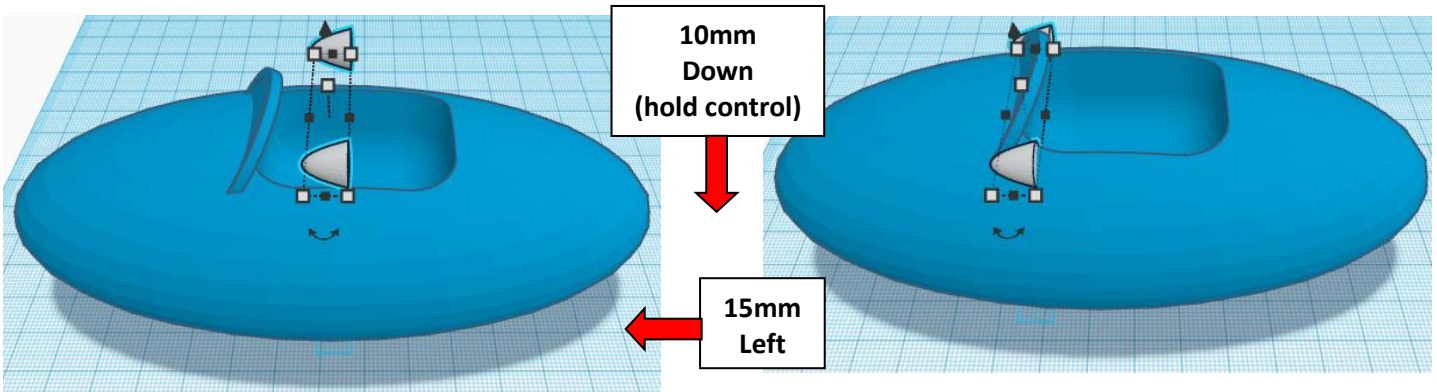
Group <u>Car Body</u> and <u>Side Mirrors</u>
From now on this will be called the **Car Body**
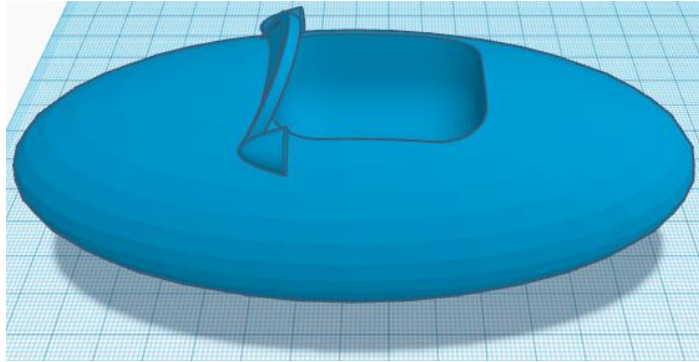
Headlights:

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

Change the dimensions to
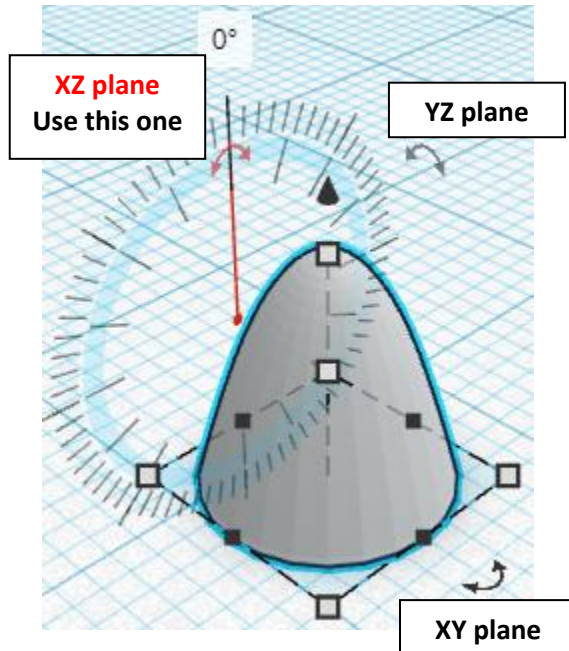8mm X direction,
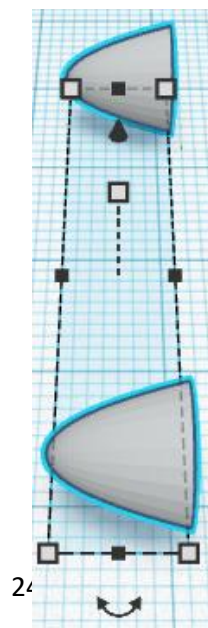8mm Y direction, and
8mm Z direction.
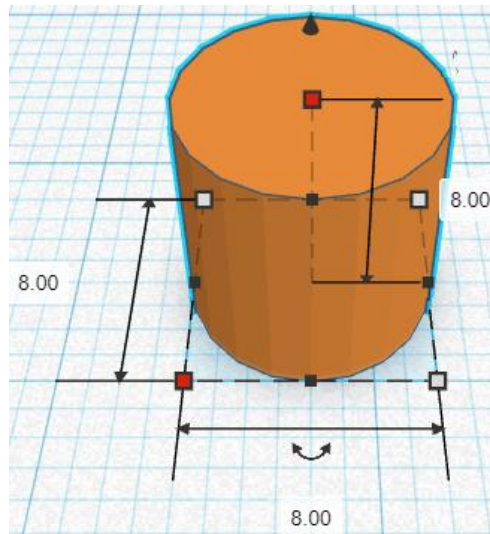
Bring in a Diamond, located in Basic Shapes on the right 8 shapes down.
From now on this will be called the **Headlight**

Change the dimensions to
12mm X direction,
12mm Y direction, and
10mm Z direction.

Go to TOP LEFT FRONT view for rotations click here
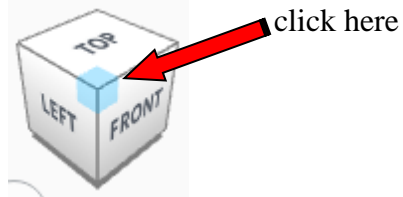
Rotate the Headlight counter-clockwise 90 degrees in XZ plane.

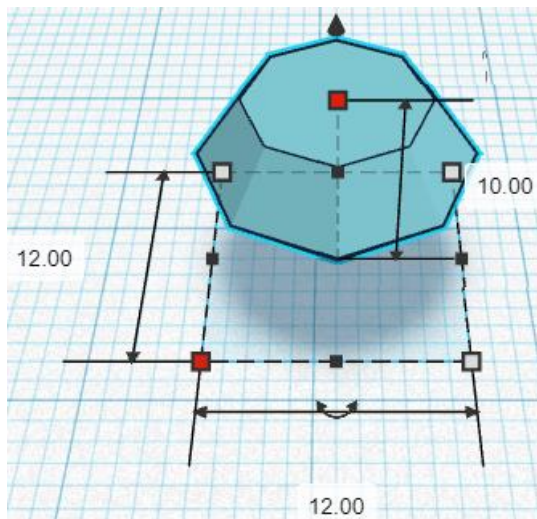Before   After
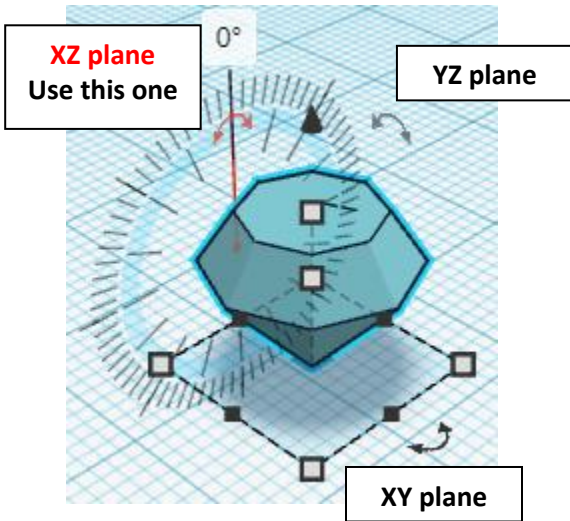
Align Headlight and Headlight Support

right in X direction,
centered of Y direction, and
bottom of Z direction.
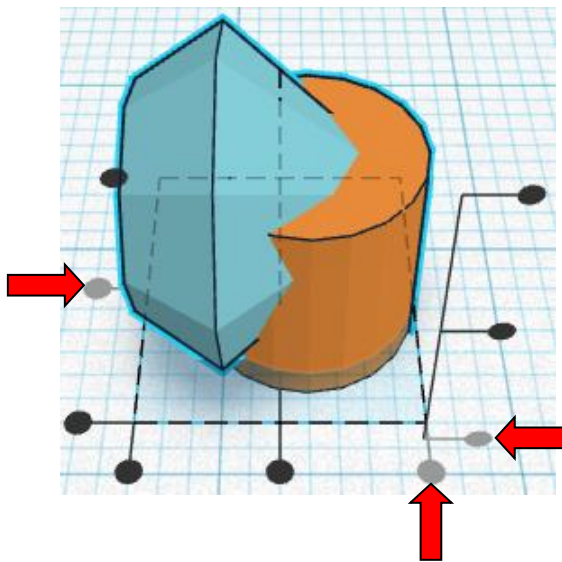
Move Headlight   (Must be in home view for this to work!)
move up in positive Z direction 2mm

Hint: Select Headlight and hold control and push up arrow key 2 times.
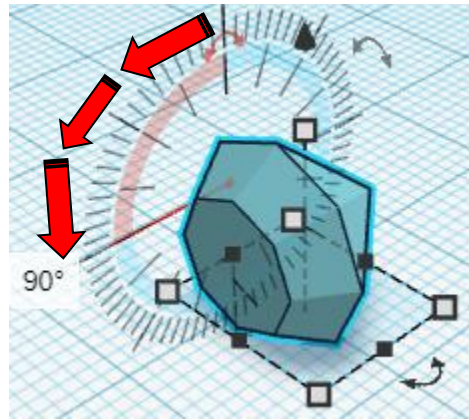

Before   2mm   After
                                     Up
                                (hold control)

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

Duplicate Headlight 1 time
From now on this duplicate will be called the **Left Headlight**

Move Left Headlight   (Must be in home view for this to work!)
move forward in negative Y direction 25mm

Hint: Select Left Side Mirror and push down arrow key 25 time.
         Or
         Select Left Side Mirror and hold shift and push down arrow key 2 times.
         Then release shift and push down arrow key 5 times.

Before   After

25mm
down

Group Headlight and Left Headlight
From now on this will be called the **Headlights**

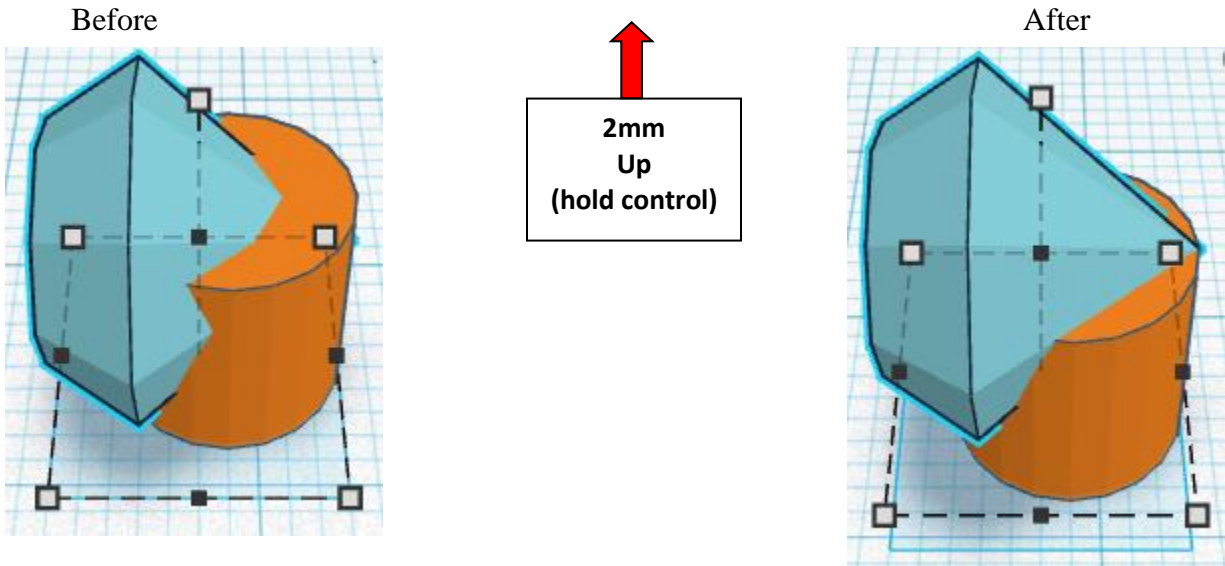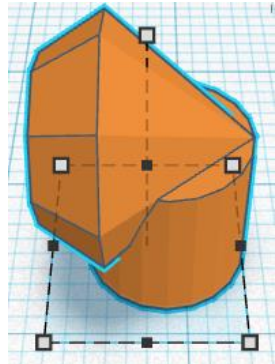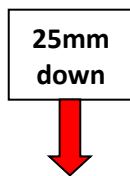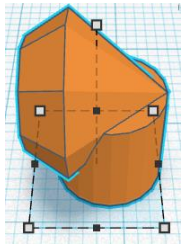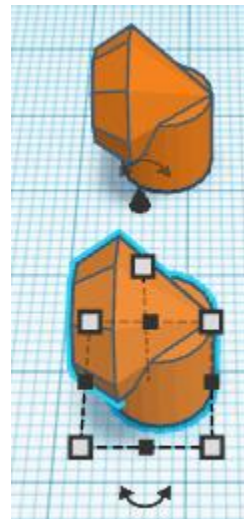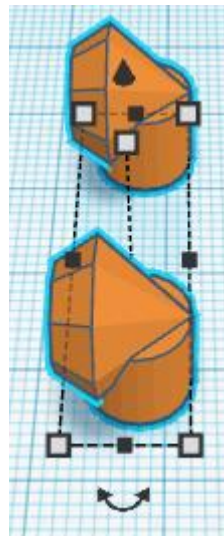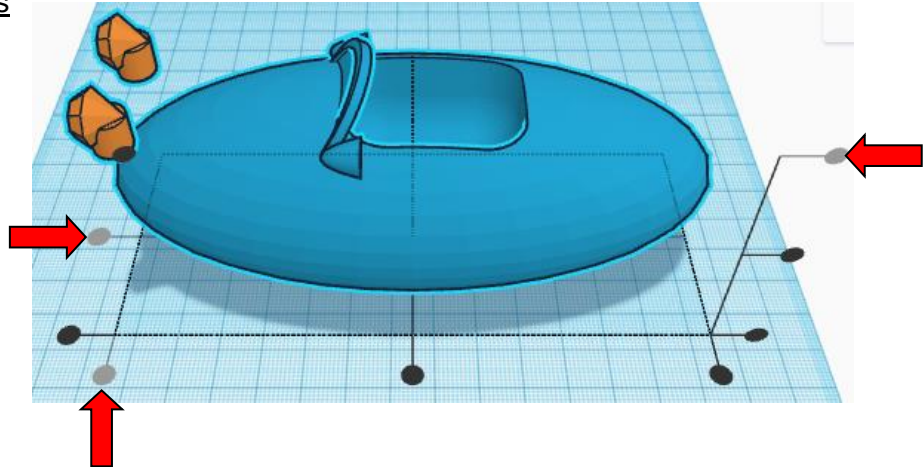**Align** Car Body and Headlights

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

Move Headlights   (Must be in home view for this to work!)
move down in negative Z direction 12mm
and
move left in positive X direction 13mm

Hint: Select Headlights and hold control and push down arrow key 12 times.
      Or
      Select Headlights and hold control and hold shift and push down arrow key 1 time.
      Then release shift and push down arrow key 2 times.
      And
      Select Headlights and push left arrow key 13 times.
      Or
      Select Headlights and hold shift and push left arrow key 1 time.
      Then release shift and push left arrow key 3 times.

Before

**12mm
Down
(hold control)**

After

**13mm
Left**
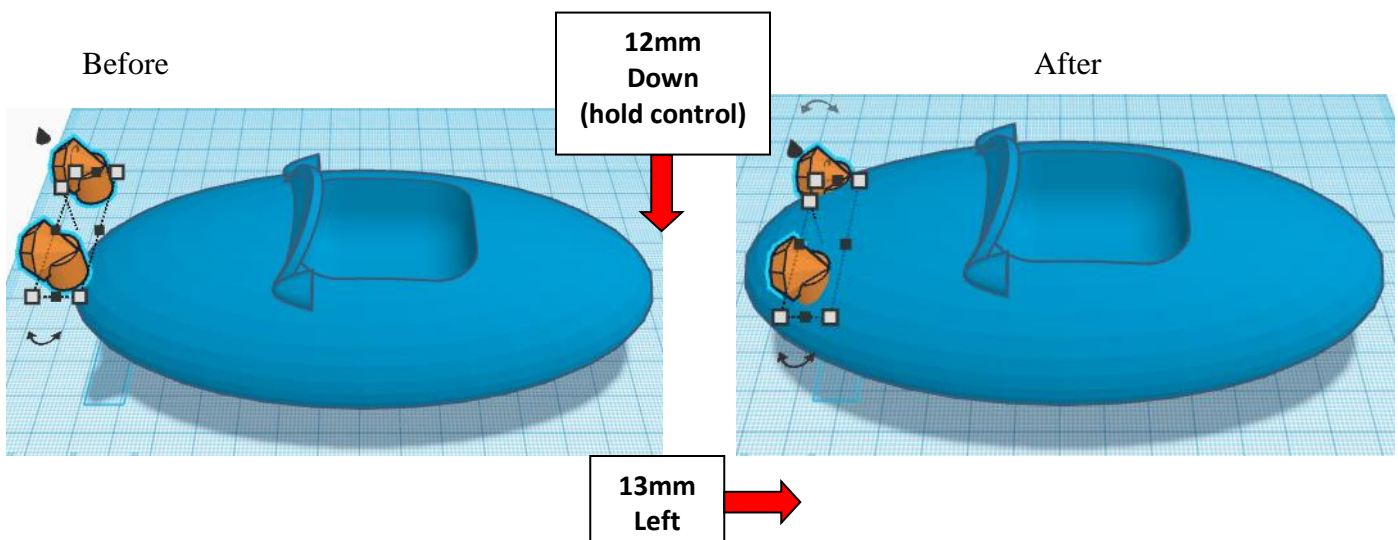
Group Car Body and Headlights
From now on this will be called the **Car Body**
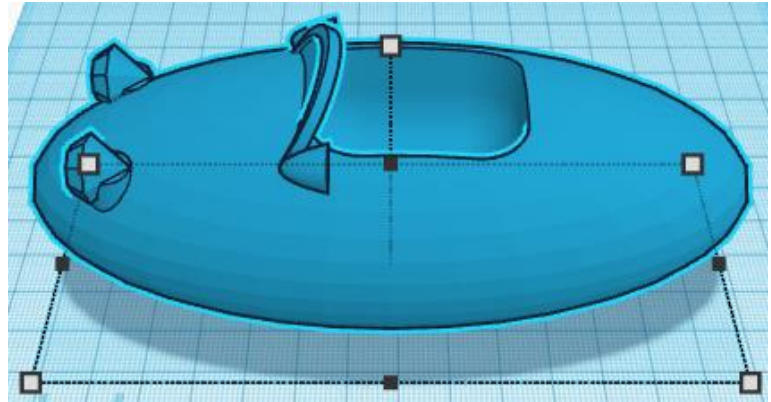
Seat:

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

Change the dimensions to
26mm X direction,
5mm Y direction, and
8mm Z direction.

Duplicate Seat 1 time
From now on this duplicate will be called the **Seat**

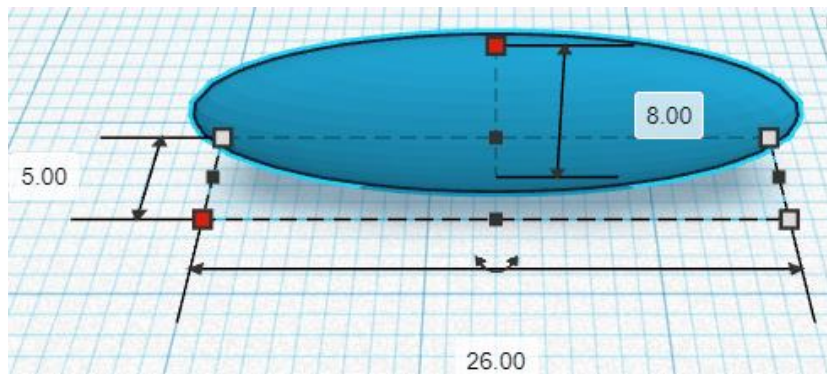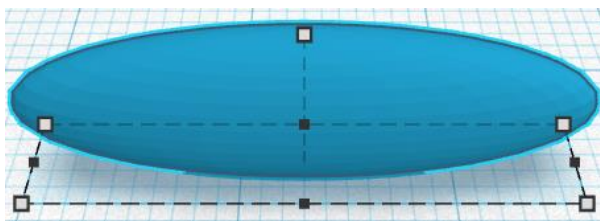**Move** Seat   (Must be in home view for this to work!)
move forward in negative Y direction 4mm
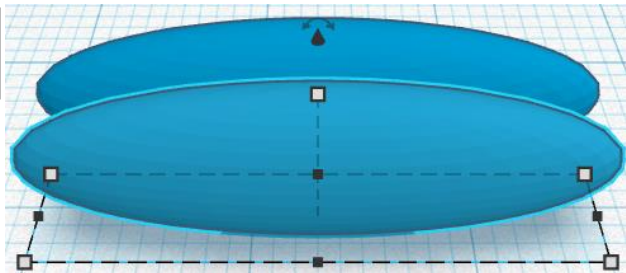
Hint: Select Seat and push down arrow key 4 time.

Before   After

4mm
down

Immediately Duplicate <u>Seat</u> 3 times

1st duplicate

Moved down 4 mm

2nd duplicate

Moved down 4 mm

3rd duplicate

Moved down 4 mm

4th duplicate

Moved down 4 mm
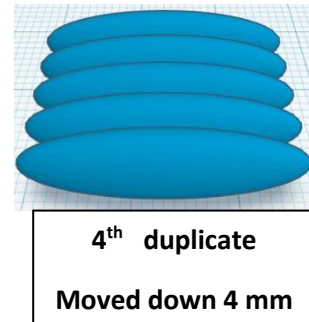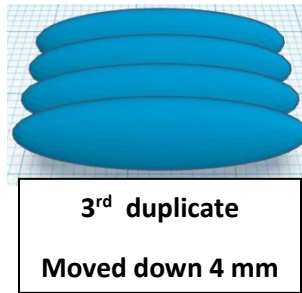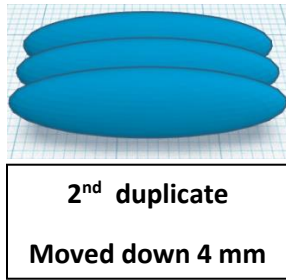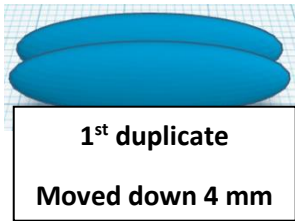
Group <u>Seats</u>
From now on this will be called the **Seat**
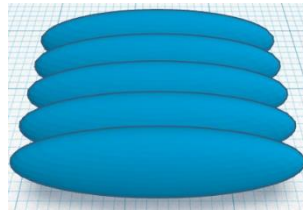
Bring in a Box, located in Basic Shapes on the right 1 shape down.
From now on this will be called the **Seat End**
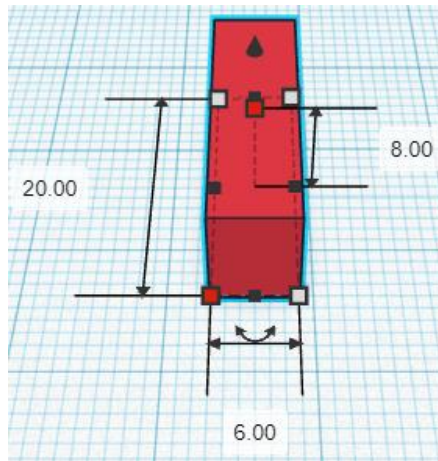
Change the dimensions to
6mm X direction,
20mm Y direction, and
8mm Z direction.

Change Shape settings to:

Radius from 0 to 5

Box		
Solid	Hole	
Radius	─○	5
Steps	──○	10
Length	○	20
Width	○	20
Height	○	20
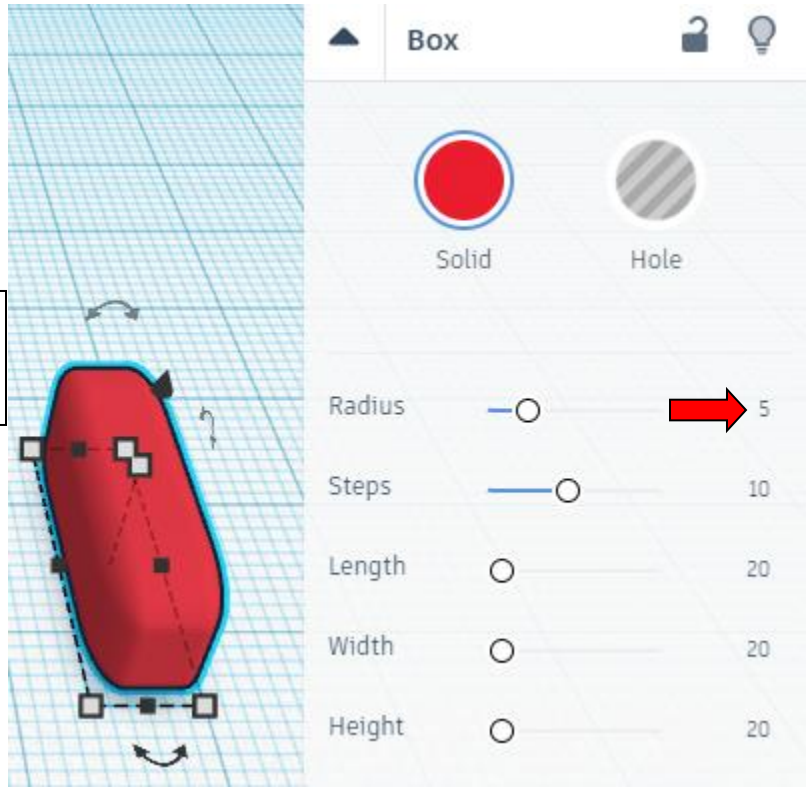
Align Seat and Seat End

left in X direction,
centered of Y direction, and
bottom of Z direction.
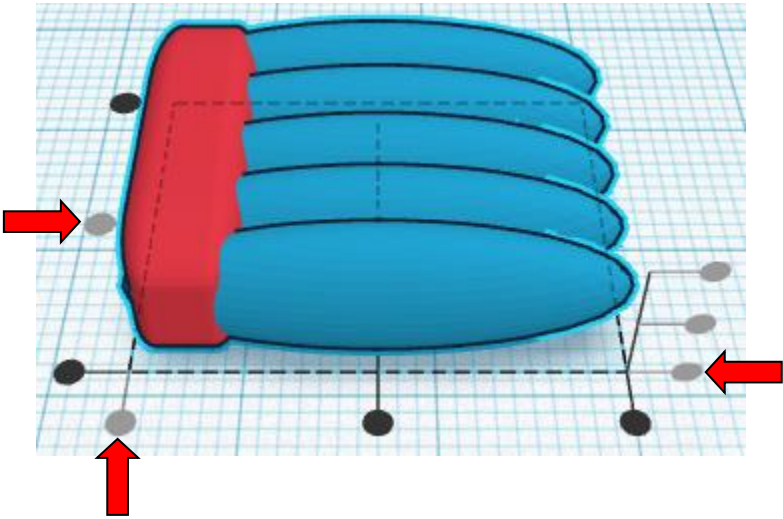
Group Seat and Seat End
From now on this will be called the **Seat**

Duplicate Seat 1 time
From now on this duplicate will be called the **Seat Back**

Go to TOP LEFT FRONT view for rotations click here
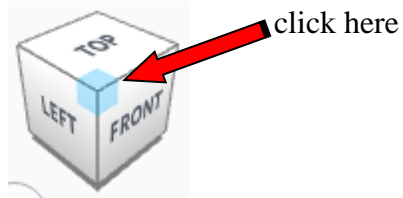
Rotate the Seat Back clockwise 90 degrees in XZ plane.

Before   After

0°

XZ plane
Use this one

YZ plane

XY plane

-90°
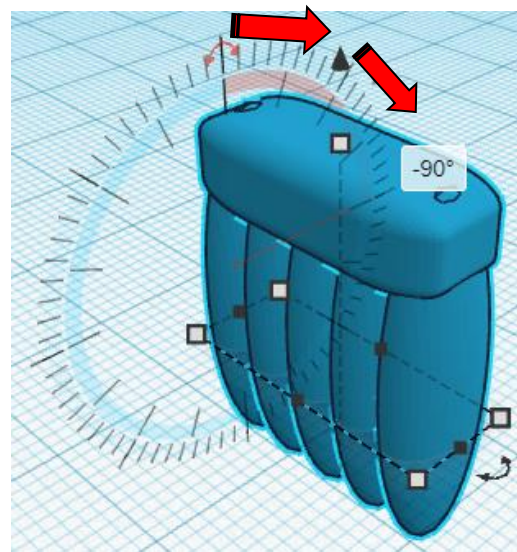
Align Seat and Seat Back

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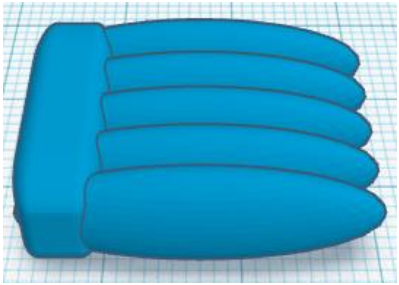bottom of Z direction.

Group <u>Seat</u> and <u>Seat Back</u>
From now on this will be called the **Seat**
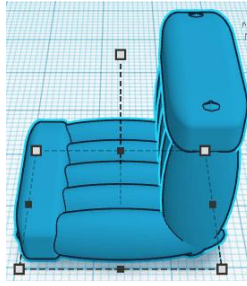
Align <u>Car Body</u> and <u>Seat</u>

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

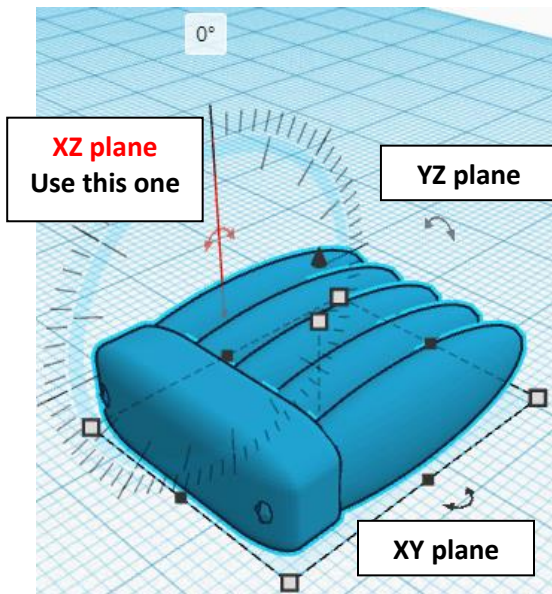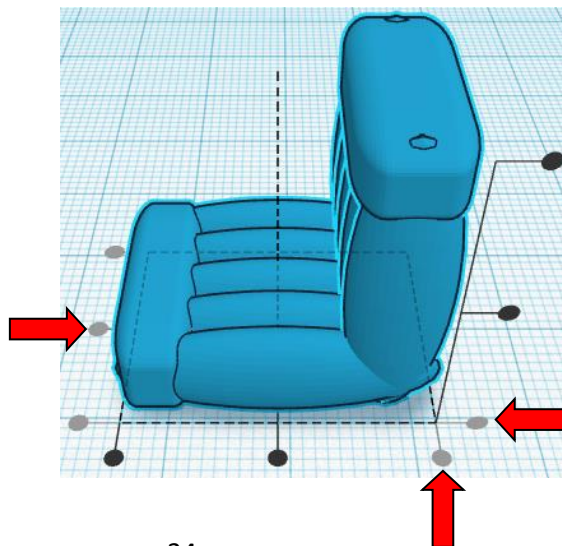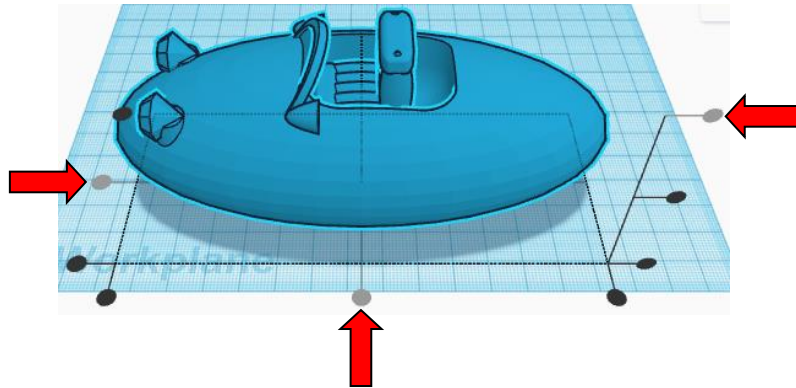**Move** <u>Seat</u>   (Must be in home view for this to work!)
move down in negative Z direction 9mm
and
move right in positive X direction 13mm

Hint: Select <u>Seat</u> and hold control and push down arrow key 9 times.
        And
        Select <u>Seat</u> and push right arrow key 13 times.
        Or
        Select <u>Seat</u> and hold shift and push right arrow key 1 time.
        Then release shift and push right arrow key 3 times.

Before   After

9mm
Down
(hold control)
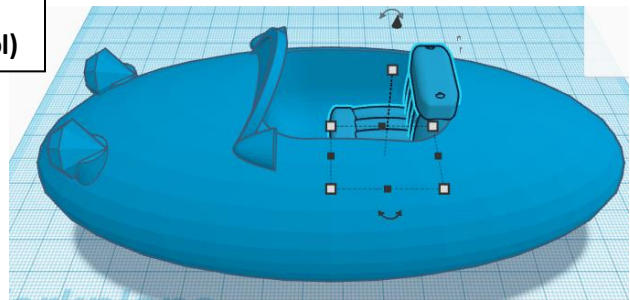
13mm
right

Group <u>Car Body</u> and <u>Seat</u>
From now on this will be called the **Car Body**
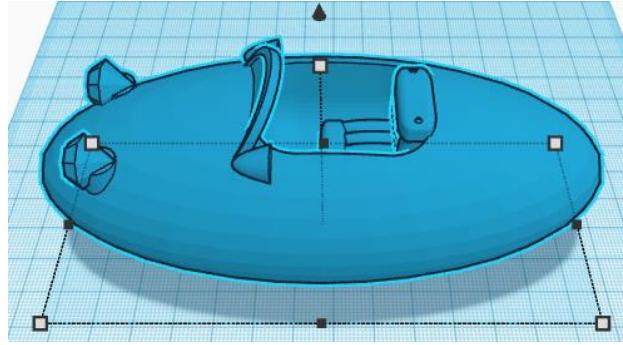
Axles:

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

Change the dimensions to
8mm X direction,
8mm Y direction, and
64mm Z direction.

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

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

Align Axle and Axle End

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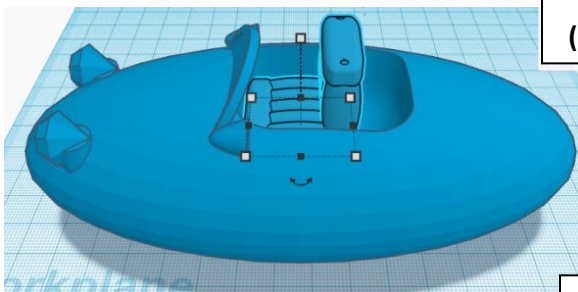centered of Y direction, and
bottom of Z direction.

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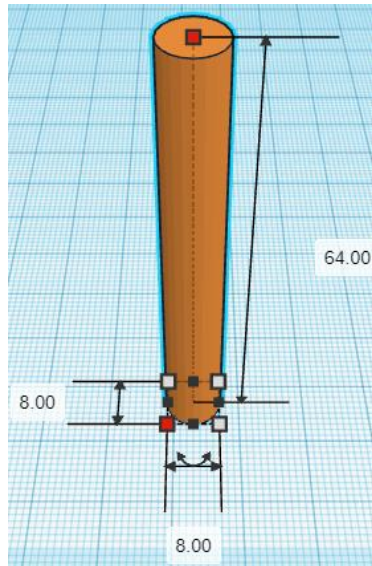From now on this will be called the **Axle**

Bring in a Cone, located in Basic Shapes in the center 3 shapes down.
From now on this will be called the **Wheel Lock**

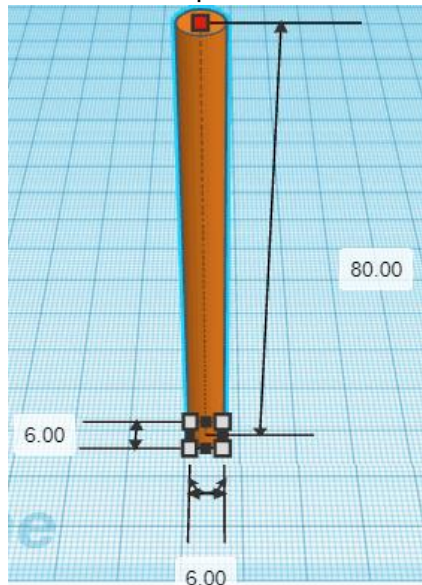Change the dimensions to
7mm X direction,
7mm Y direction, and
20mm Z direction.

20.00

7.00

7.00

37

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

Change the dimensions to
18mm X direction,
18mm Y direction, and
18mm Z direction.
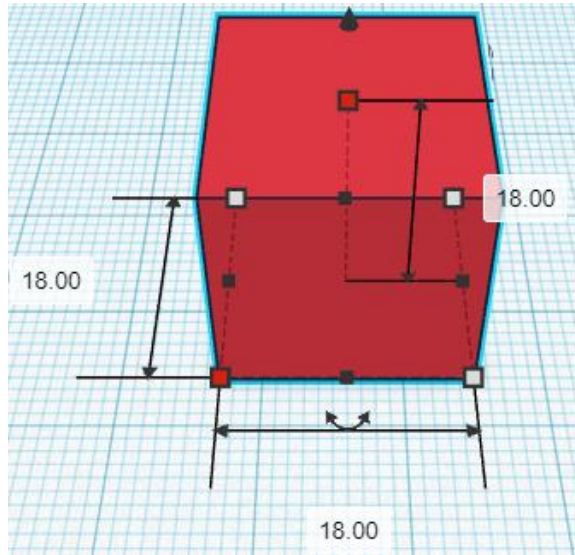
Change Wheel Lock Cutout to **Hole** by selecting Wheel Lock Cutout and typing "h".

Solid

Hole

Align Wheel Lock and Wheel Lock Cutout

centered in X direction,
centered of Y direction, and
top of Z direction.
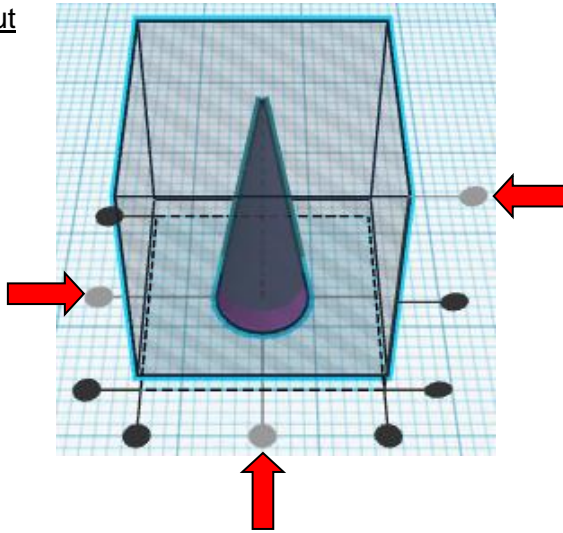
Group Wheel Lock and Wheel Lock Cutout
From now on this will be called the **Wheel Lock**
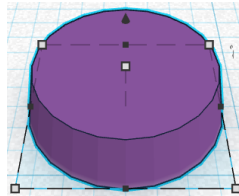
Align Wheel Lock and Axle

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

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

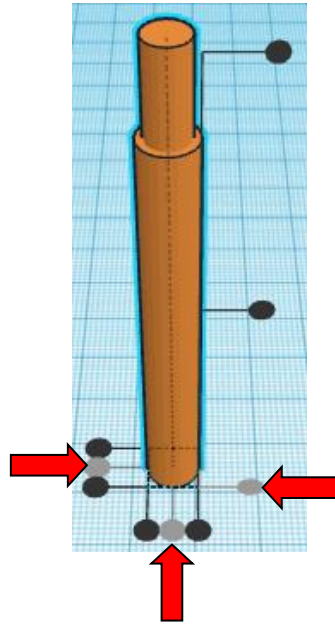Bring in a Box, located in Basic Shapes on the right 1 shape down.
From now on this will be called the **Axle Cutout.**
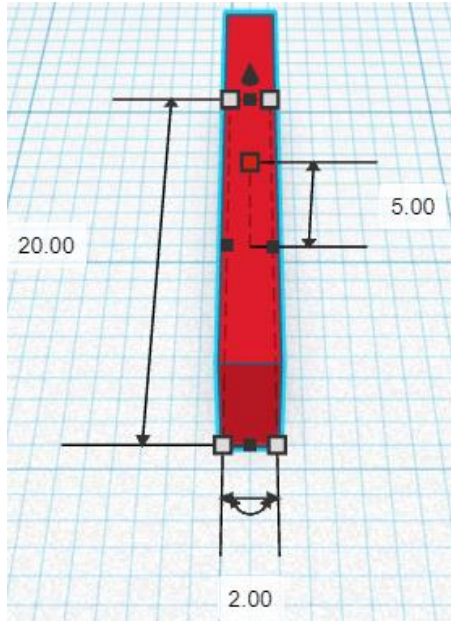
Change the dimensions to
2mm X direction,
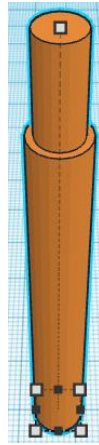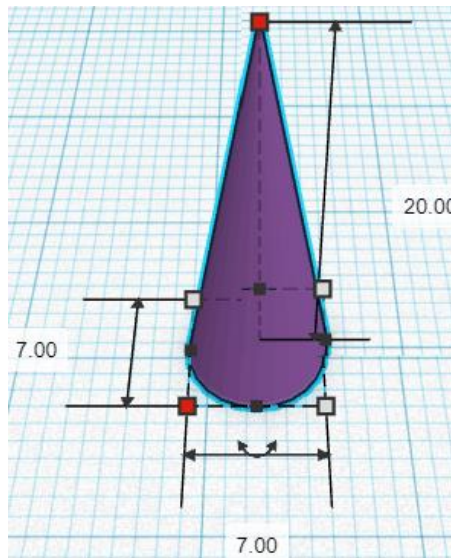20mm Y direction, and
5mm Z direction.

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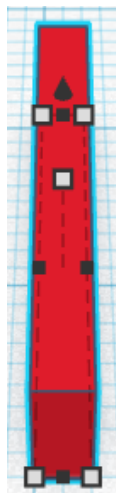
Solid

Hole

Align Axle and Axle Cutout

centered in X direction,
centered of Y direction, and
top of Z direction.
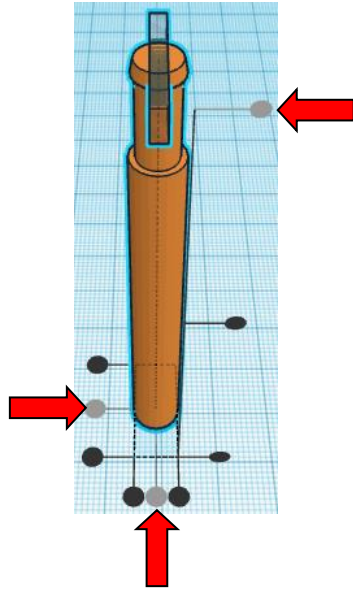
Group Axle and Axle Cutout
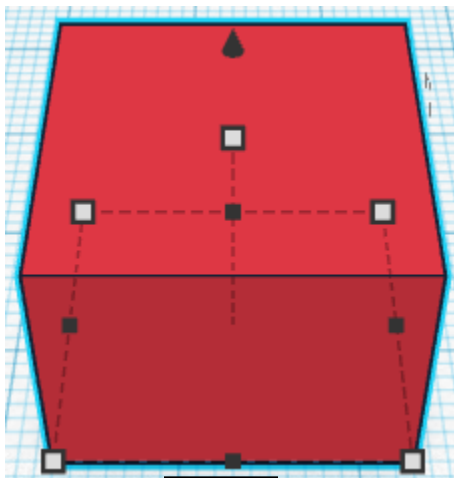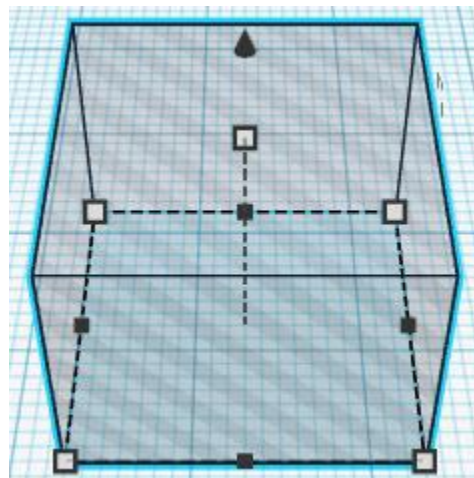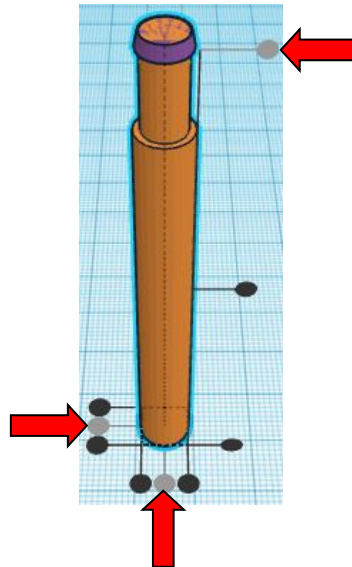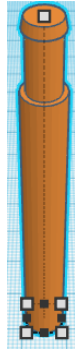From now on this will be called the **Axle**
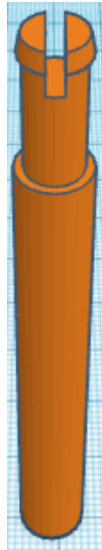
Duplicate Axle 1 time
From now on this Duplicate will be called the **Axle other side**

Flip Axle other side in Z direction.

Before

After

Z direction
Use this one
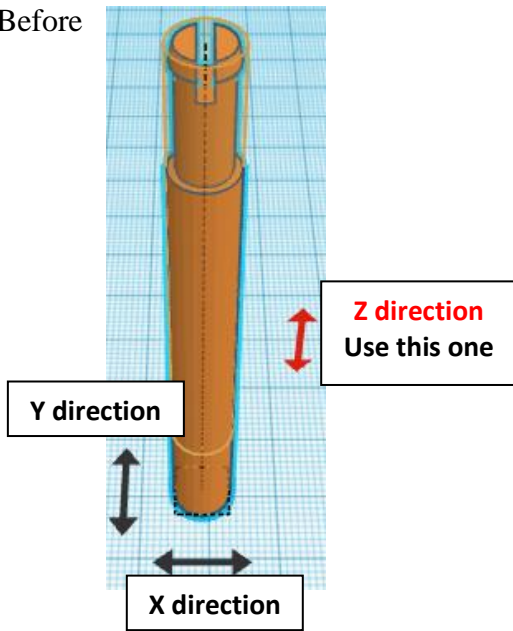
Y direction
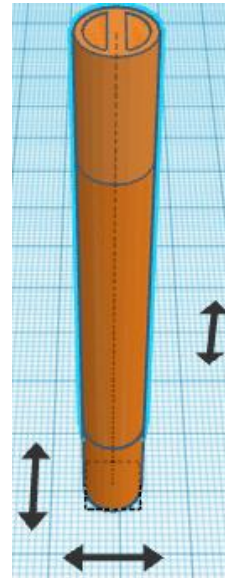
X direction

Move Axle other side (Must be in home view for this to work!)
move down in negative Z direction 15mm

Hint: Select Axle other side and hold control and push down arrow key 15 times.
   Or
   Select Axle other side and hold control and hold shift and push down arrow key 1 time.
   Then release shift and push down arrow key 5 times.

Before

15mm
Down
(hold control)

After

Group <u>Axle</u> and <u>Axle other side</u>
From now on this will be called the **Axle**
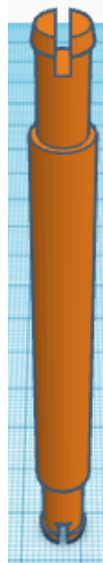
Duplicate <u>Axle</u> 2 time
From now on theses Duplicate will be called the **2nd Axle** and **Steering Column**

Axle	2nd Axle	Steering Column
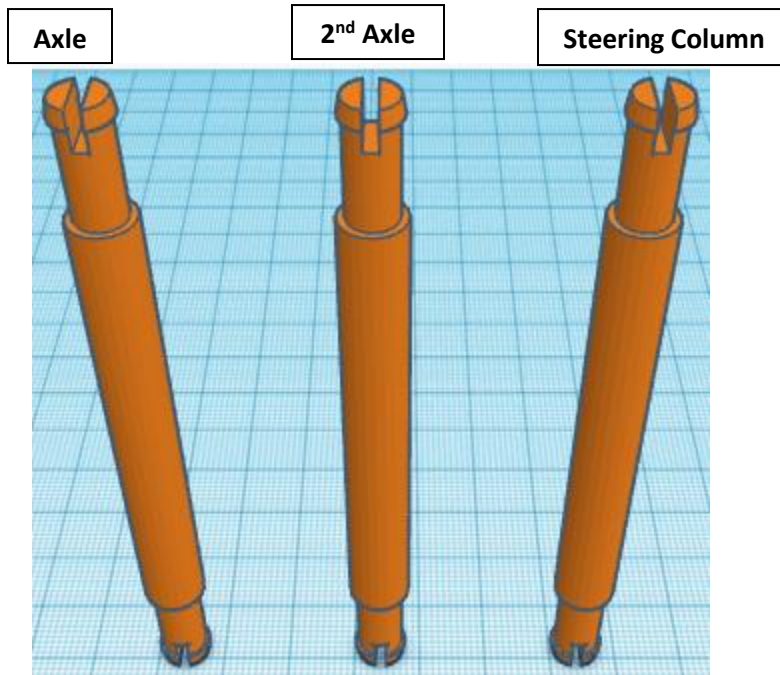
Align <u>Axle</u> and <u>2nd Axle</u>

centered in X direction,
centered of Y direction, and
bottom of Z direction.
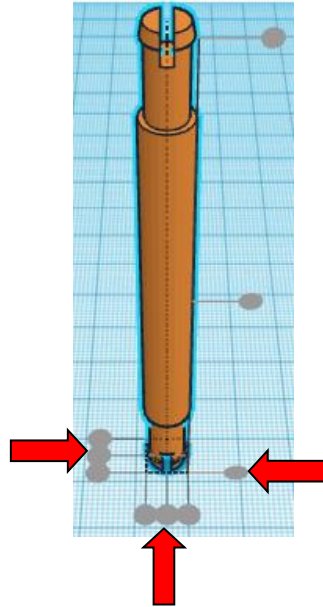
Move <u>2nd Axle</u>   (Must be in home view for this to work!)
move right in positive X direction 86mm

Hint: Select <u>2nd Axle</u> and push down arrow key 86 times.
       Or
       Select <u>2nd Axle</u> and hold shift and push down arrow key 8 time.
       Then release shift and push down arrow key 6 times.

Before   After

**86mm
Right**
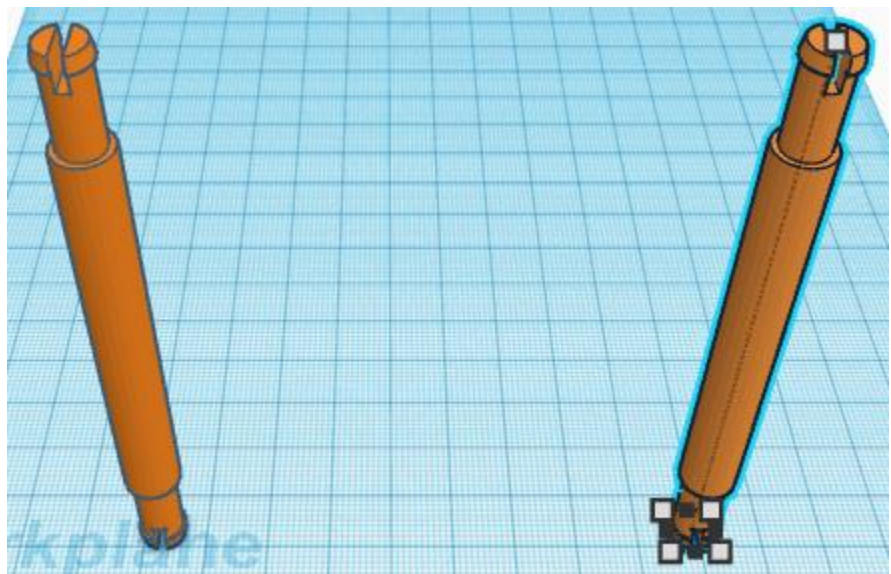
Group Axle and 2nd Axle
From now on this will be called the **Axles**
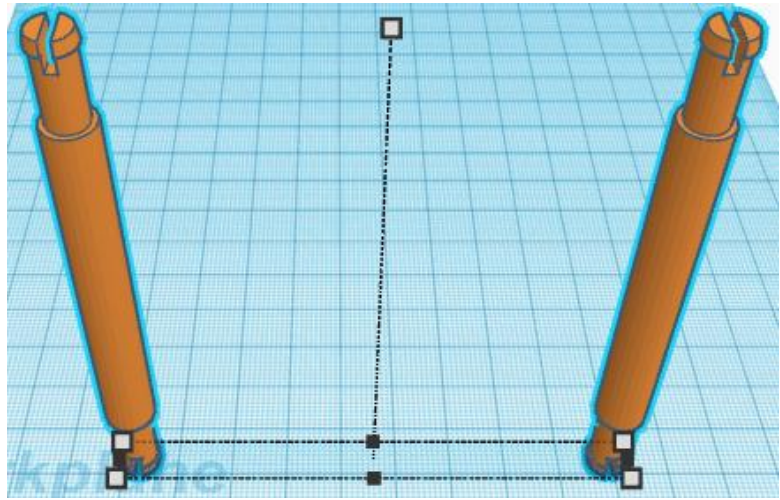
Go to TOP LEFT FRONT view for rotations click here
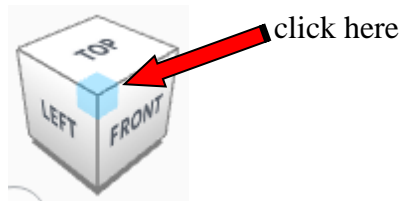
Rotate the Axles clockwise 90 degrees in YZ plane.

Before   After

45
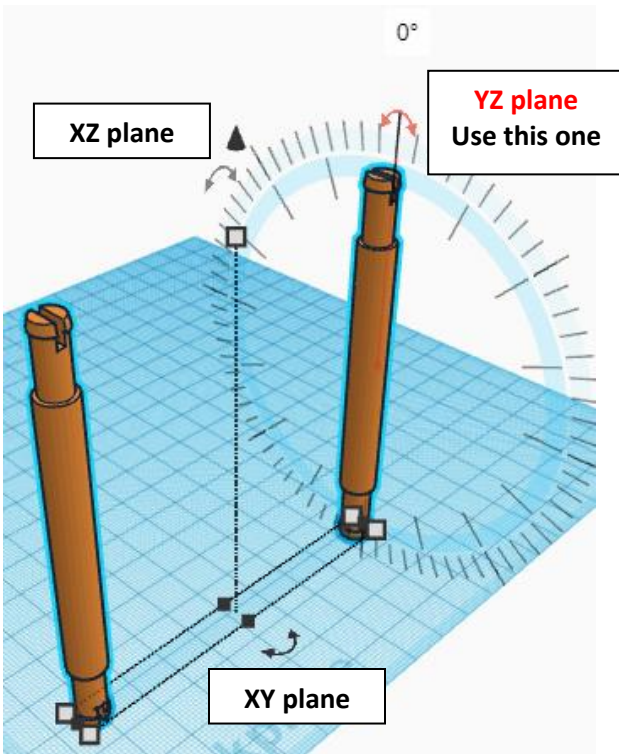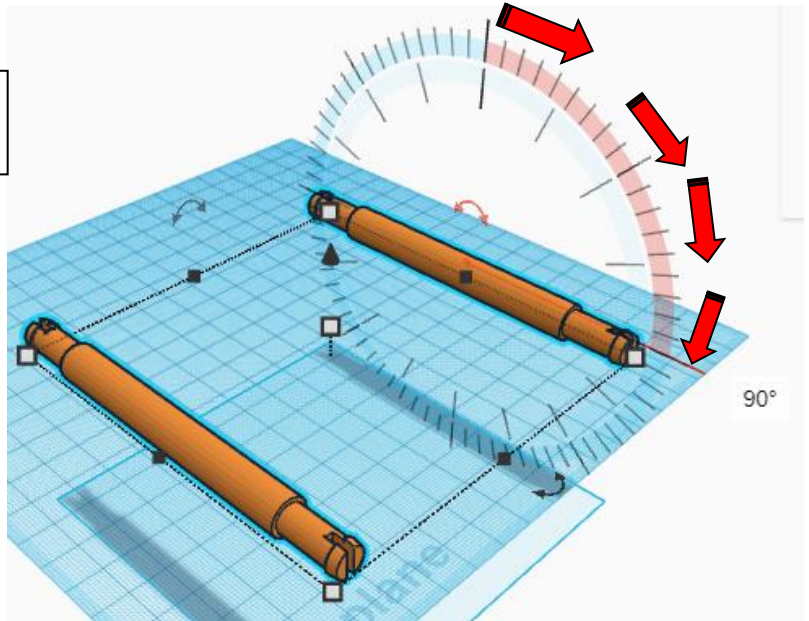
Align <u>Car Body</u> and <u>Axles</u>

centered in X direction,
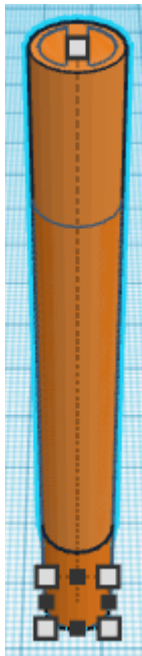centered of Y direction, and
centered of Z direction.
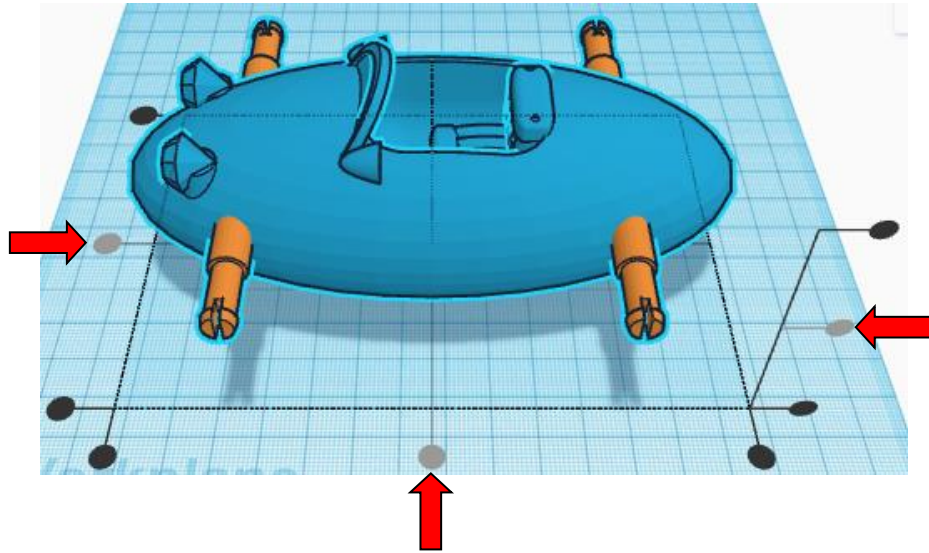
Move <u>Axles</u>   (Must be in home view for this to work!)
move down in negative Z direction 8mm

Hint: Select <u>Axles</u> and hold control and push down arrow key 8 times.

Before

**8mm
Down
(hold control)**

After
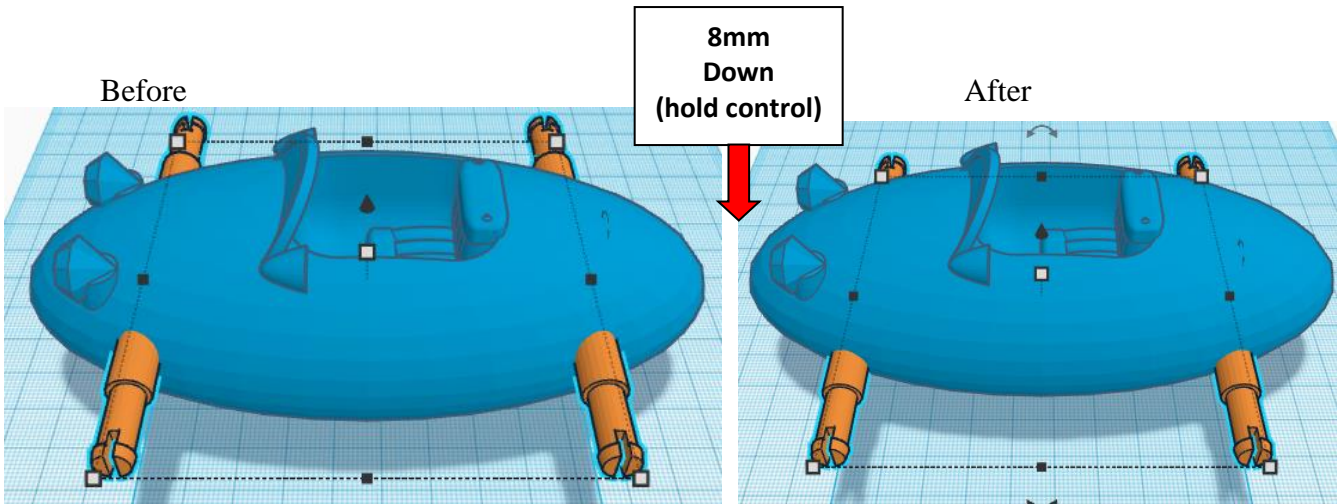
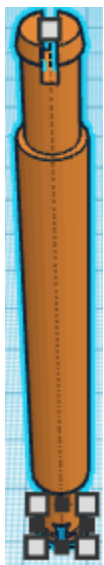**Group** Car Body and Axles
From now on this will be called the **Car**
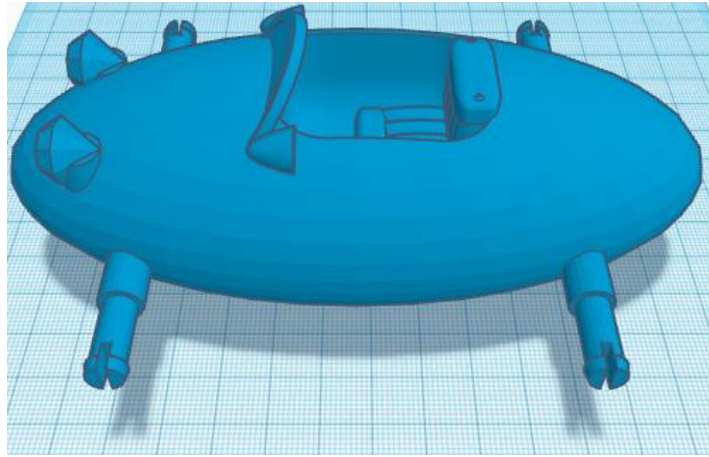
Bring in a Box, located in Basic Shapes on the right 1 shape down.
From now on this will be called the **Car Cutout.**
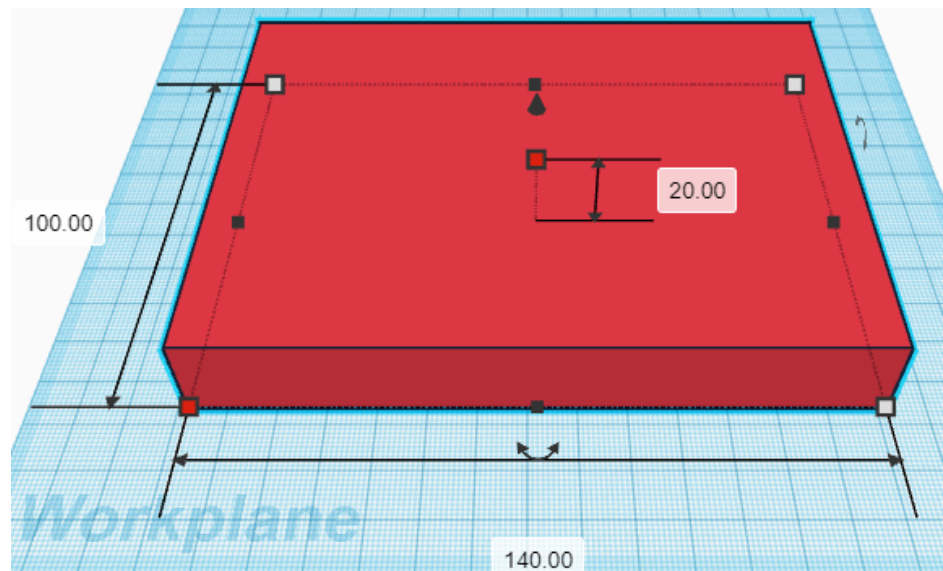
Change the dimensions to
140mm X direction,
100mm Y direction, and
20mm Z direction.

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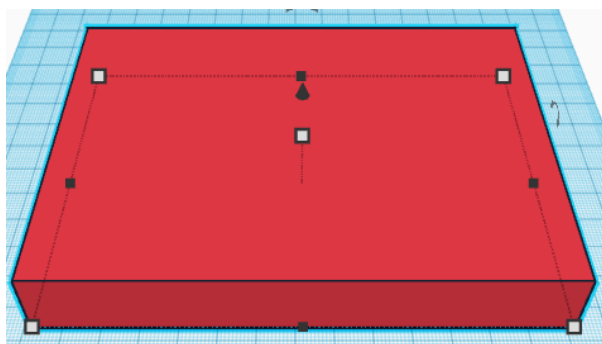
Solid
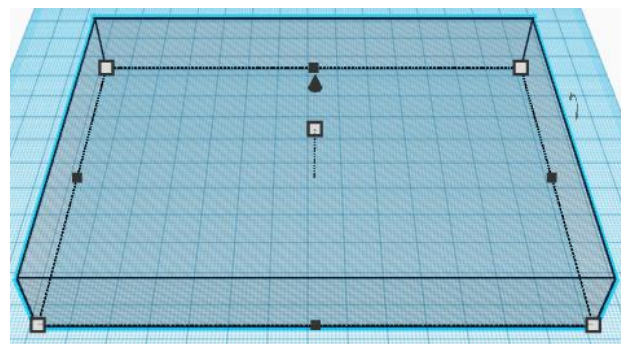
Hole

Align Car and Car Cutout

centered in X direction,
centered of Y direction, and
bottom of Z direction.
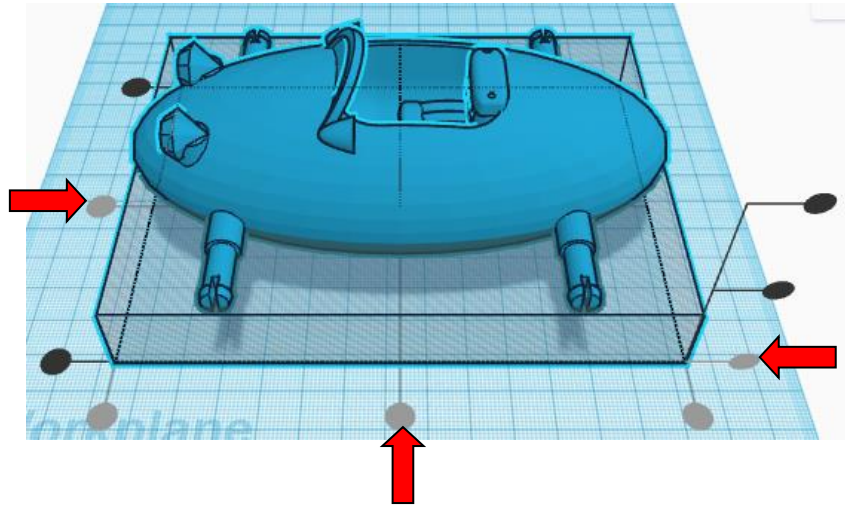
Group Car and Car Cutout
From now on this will be called the **Car**
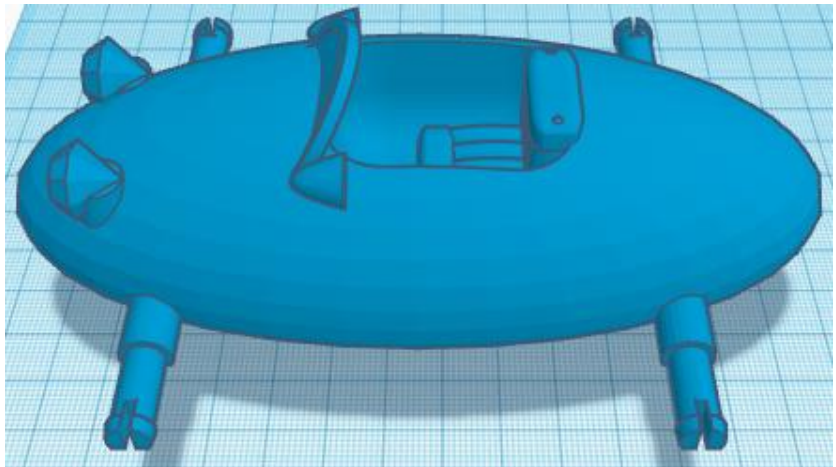
Steering Column:

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

Change the dimensions to
20mm X direction,
20mm Y direction, and
70mm Z direction.
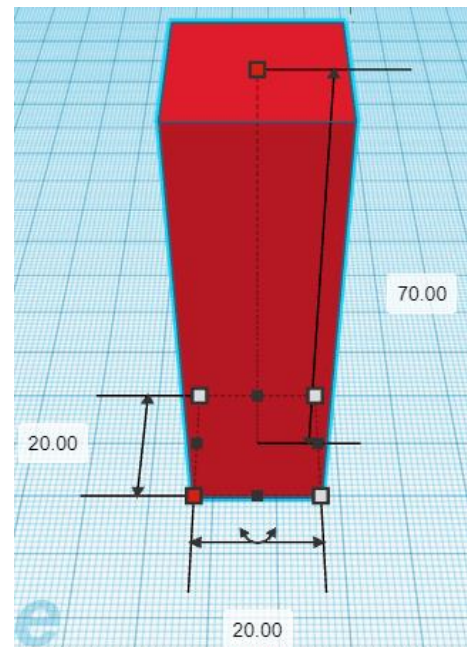
Change Steering Column Cutout to **Hole** by selecting Steering Column Cutout and typing "h".
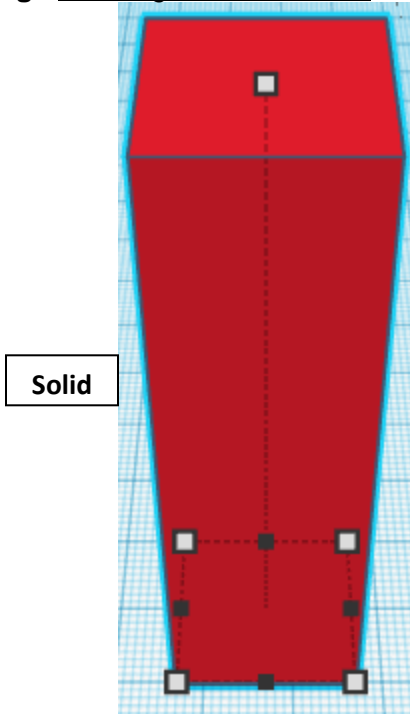
Solid
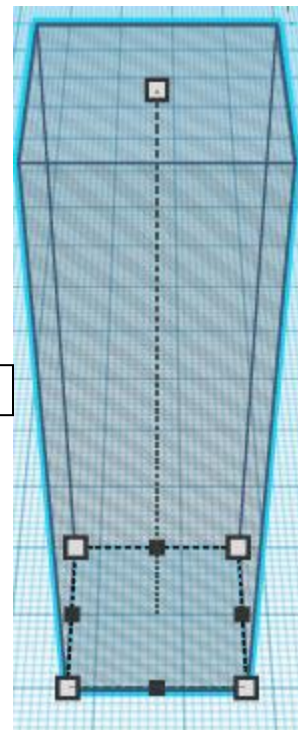
Hole

Align Steering Column and Steering Column Cutout

centered in X direction,
centered of Y direction, and
bottom of Z direction.
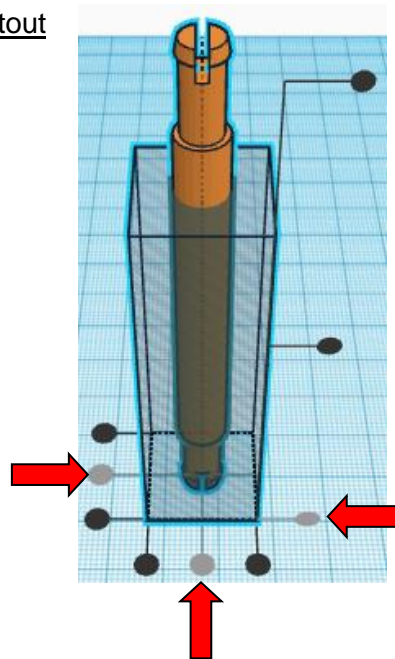
Group Steering Column and Steering Column Cutout
From now on this will be called the **Steering Column**

Go to TOP LEFT FRONT view for rotations


click here
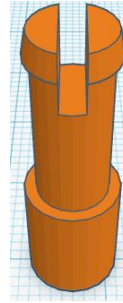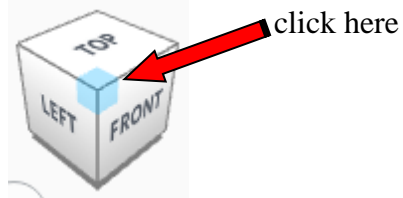
Rotate the Steering Column clockwise 30 degrees in XZ plane.

Before

After
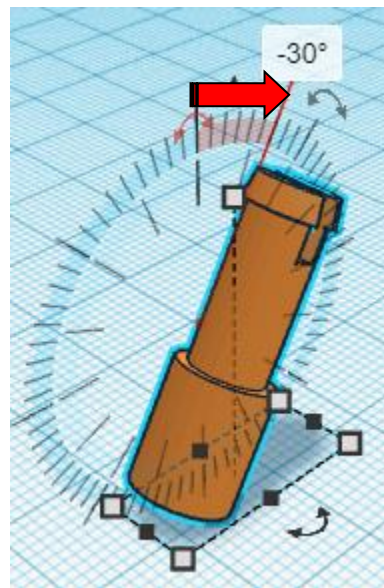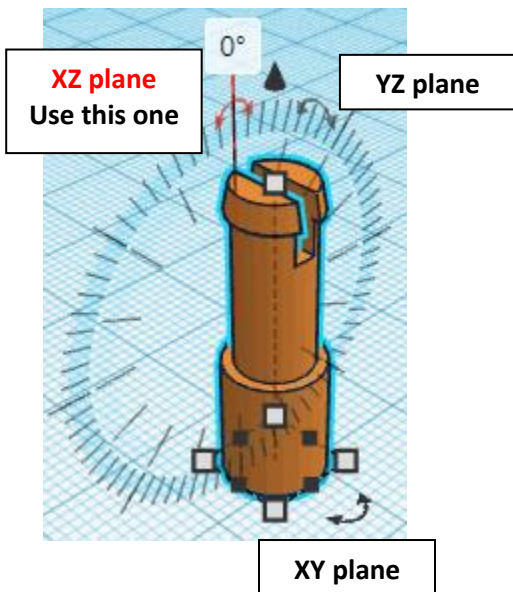
Align Car Body and Steering Column

centered in X direction,
centered of Y direction, and
centered of Z direction.
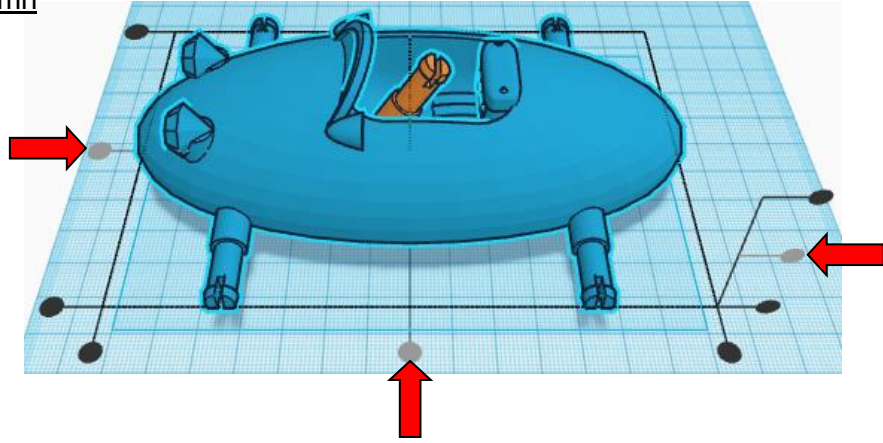
Move Steering Column   (Must be in home view for this to work!)
move down in negative Z direction 7mm
and
move left in negative X direction 10mm

Hint: Select Steering Column and hold control and push down arrow key 7 times.
       And
       Select Steering Column and push left arrow key 10 times.
       Or
       Select Steering Column and hold shift and push left arrow key 1 time.

Before

**7mm
Down
(hold control)**

After

**10mm
Left**
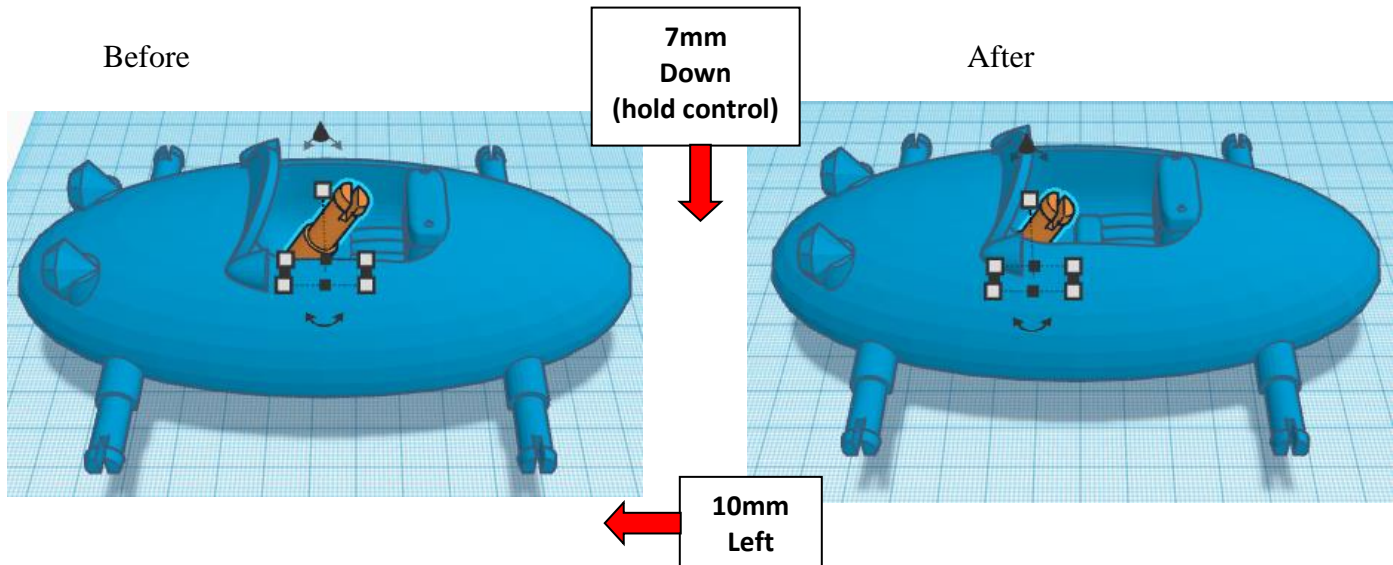
Group <u>Car Body</u> and <u>Steering Column</u>
From now on this will be called the **Car**
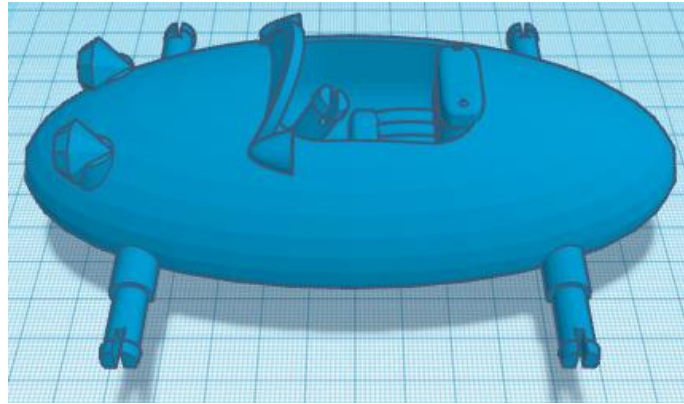
Set on Workplane:

Select the <u>Car</u> and type "d" to set the body on the work plane.
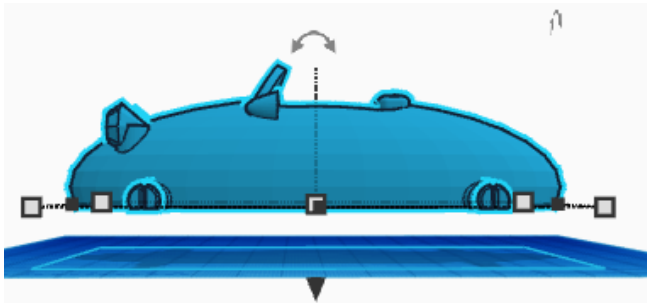
Before   After
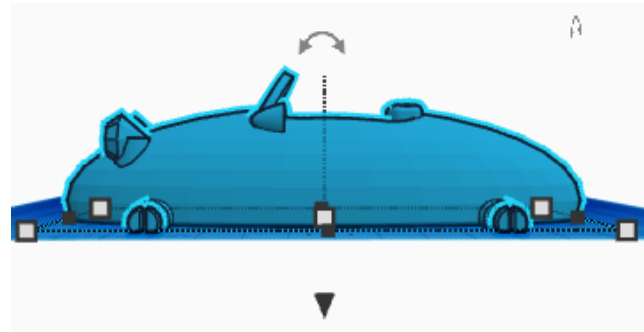
Arrange all:

Grab and move all four Wheels and the Steering Wheel close to the Car but not touching.
Double Check that each item is on the **workplane** by selecting each one in turn and typing "d"
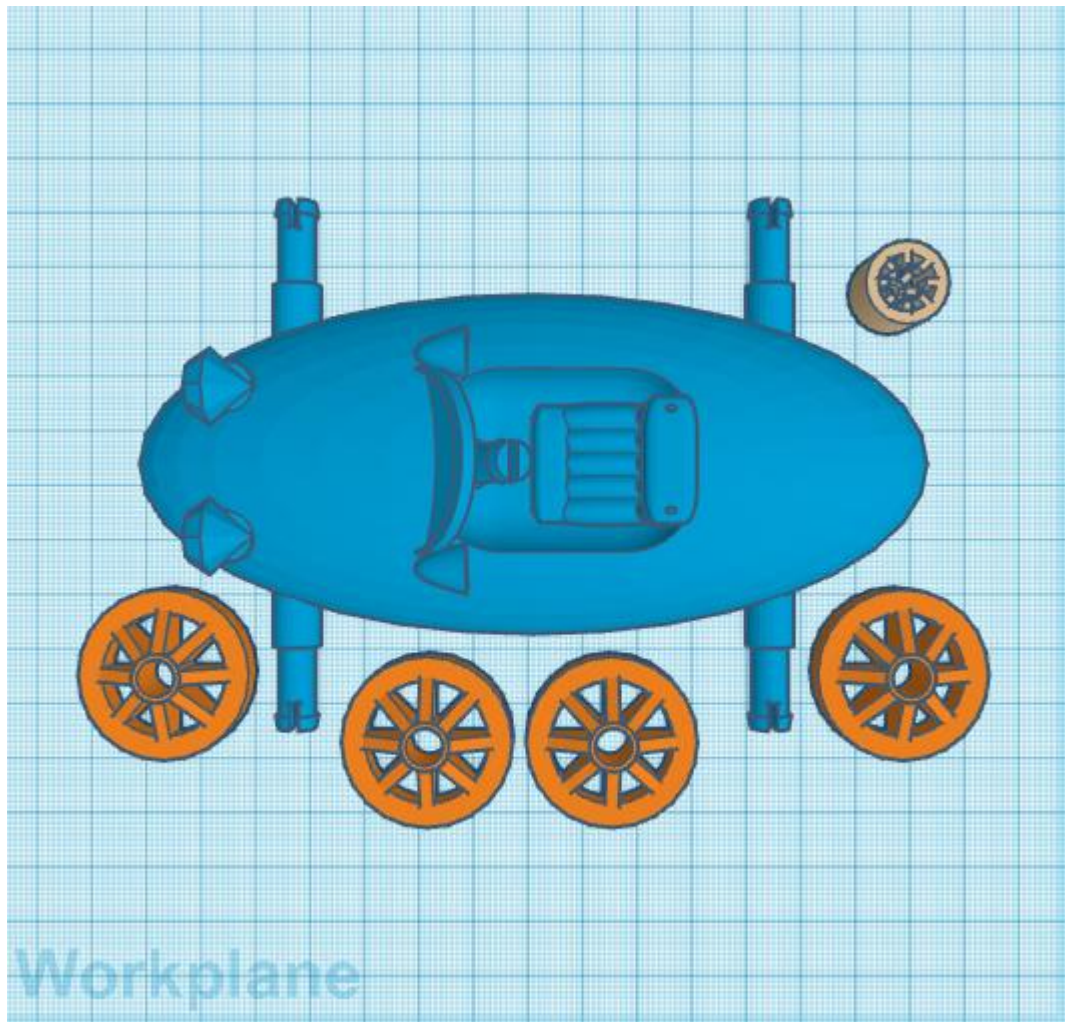
You are done! Print it out and then continue for assembly instructions.

Assembly Instructions:

Take the Wheel and line it up with the Axle. Apply pressure and push the Wheel onto the Axle.
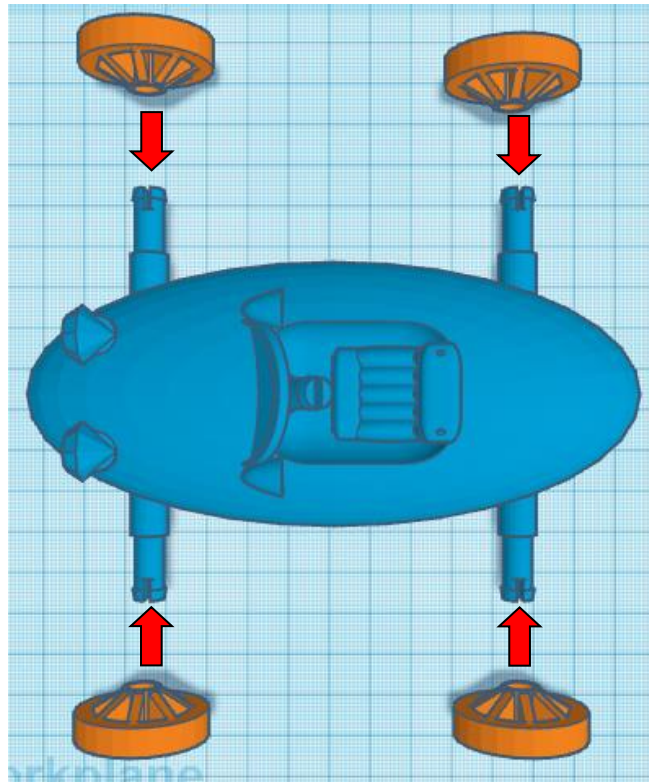
Take the Steering Wheel and line it up with the Steering Column. Apply pressure and push the Steering Wheel onto the Steering Column.
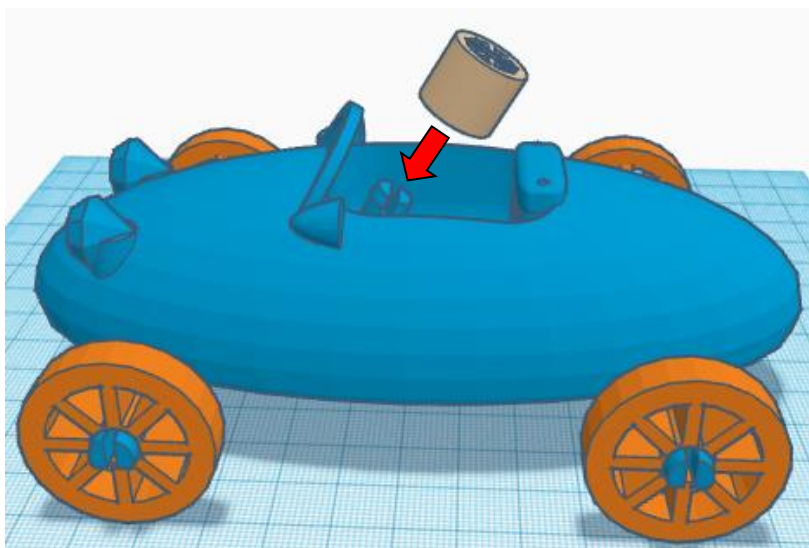
You are done. Enjoy, and I hope your mother enjoys it also.

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

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

Home view

Aligning:

Labels on the image:
- Z top
- Z center
- Z bottom
- Y back
- X right
- Y center
- X center
- Y front
- X Left

Flip or Mirror and Move:

Labels on the image:
- positive Z
- Z direction
- positive Y
- negative Z
- Y direction
- positive X
- negative Y
- negative X
- X direction

55

Rotate:

Counter-Clockwise

Clockwise

XY Plane

0°

Counter-Clockwise

YZ Plane

0°

Clockwise

0°

XZ Plane

Clockwise

Counter-Clockwise

56
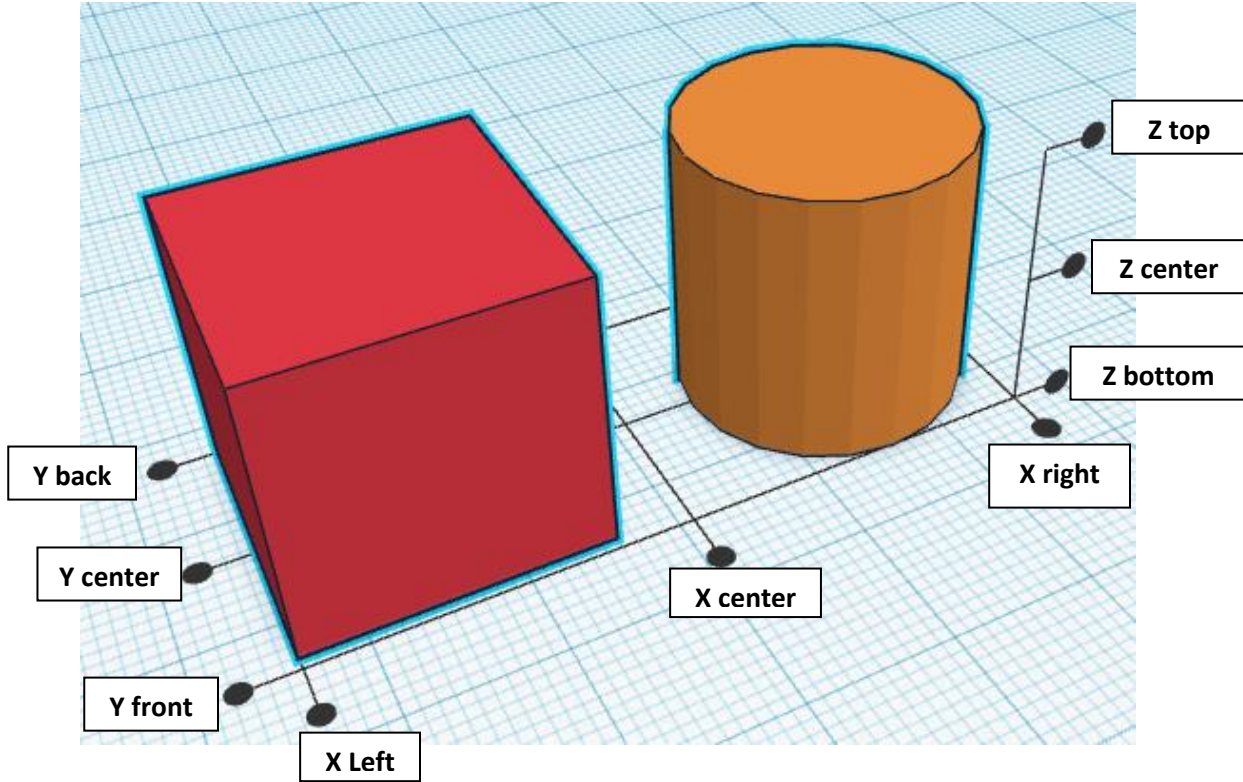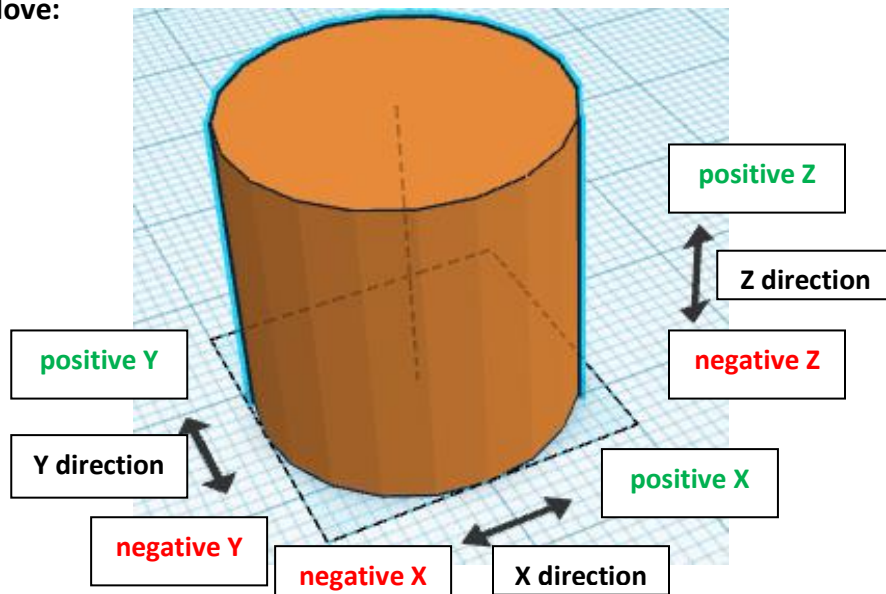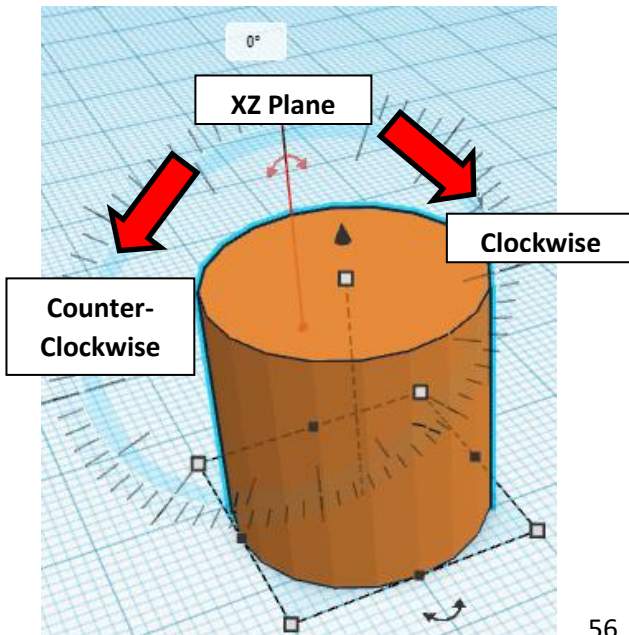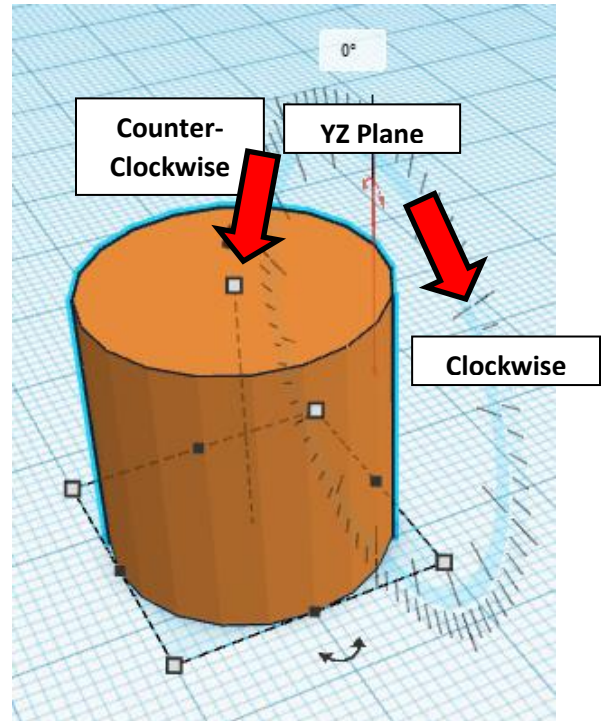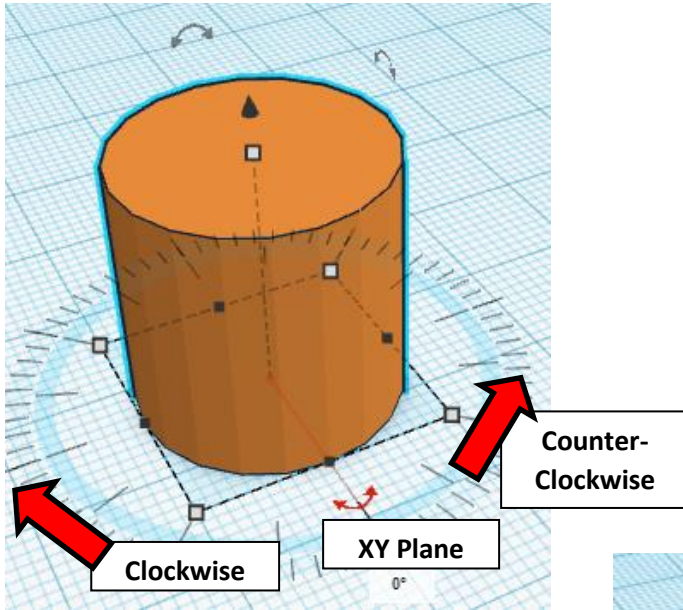
TinkerCAD
Tool Guide

Most used Keyboard Shortcuts:

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

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)

black cone

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.
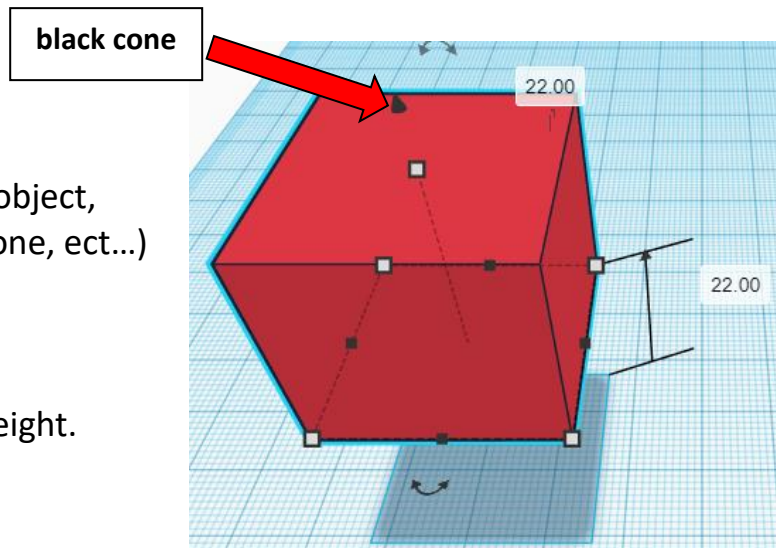
To move object(s) with keyboard:

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 <u>1mm</u> 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 <u>10mm</u> increments.

Using on screen icons:

TinkerCAD main screen:

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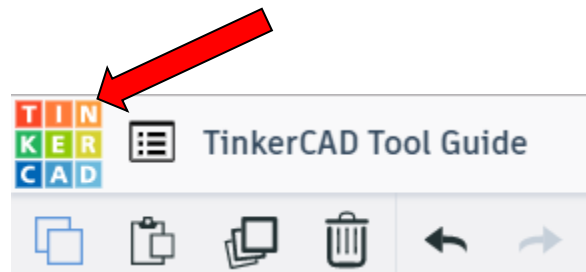
My designs:

Pulls up menu of your designs.
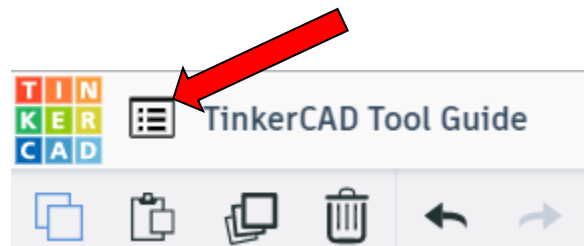
Design name:

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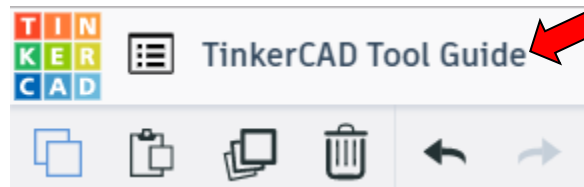
Copy:

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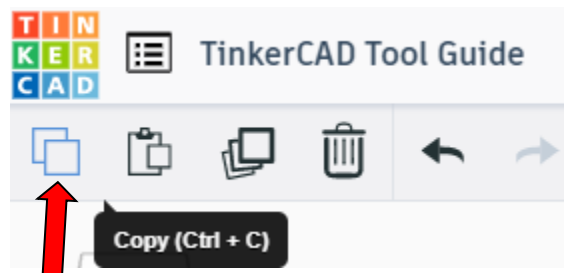
Paste:

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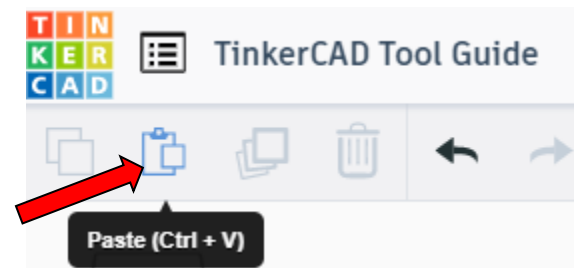
Duplicate:

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.
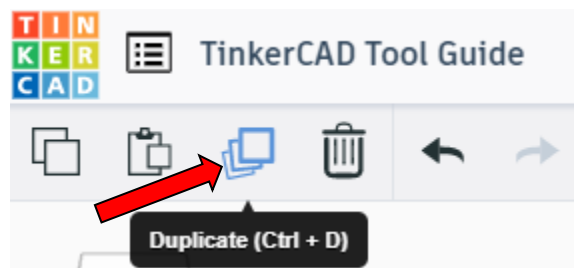
Delete:

Select shape.
Click delete or delete key.

60
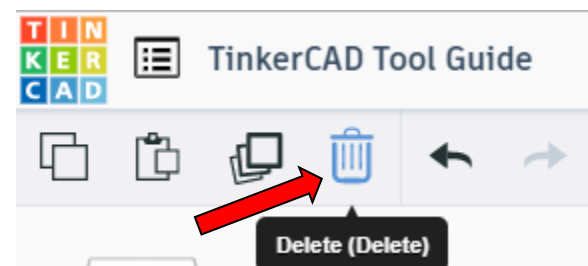
Undo:

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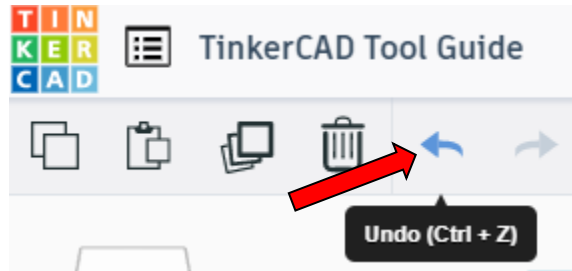
Redo:

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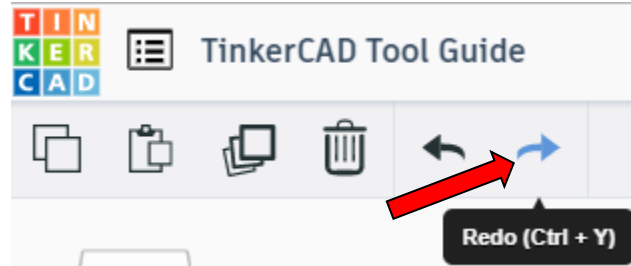
Change View:

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.
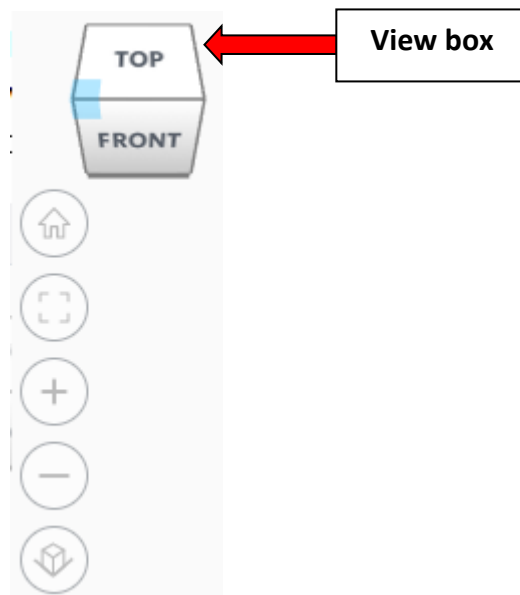
Change view to home view:

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.
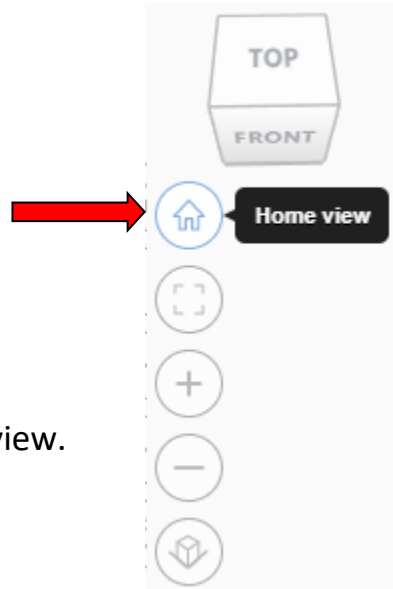
Fit all in view:

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.
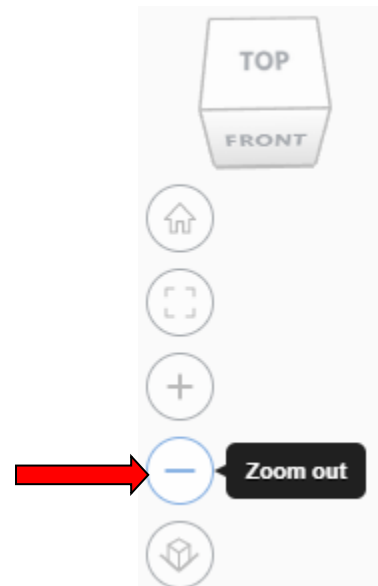
Switching to orthographic and perspective view:

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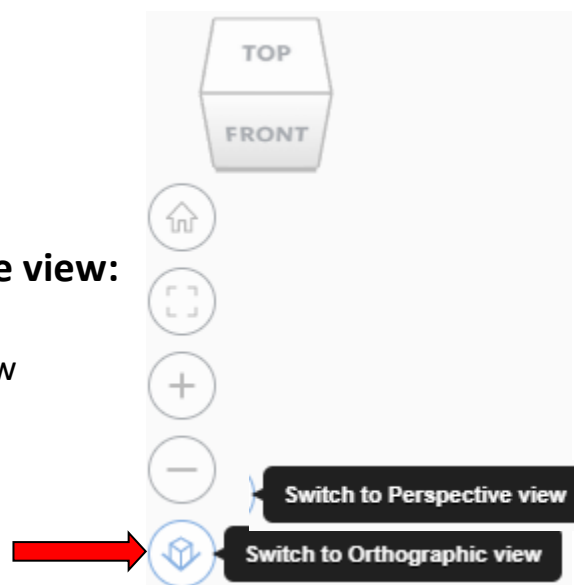
Group:

To combine two or more objects into one object.

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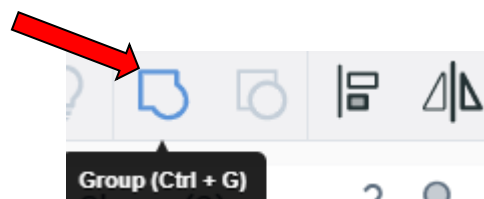
Ungroup:

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)

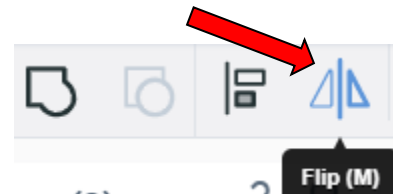|	
Duplicate dragged object(s)	Alt + Drag left mouse button
Select multiple object(s)	Shift + Left mouse button
45° rotation	Shift (Hold while rotating)
Scale in one direction	Alt + Hold side handle
Scale in two directions	Alt + Hold corner handle
Uniform scale	Shift + Hold corner handle
Uniform scale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

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

TOOLS AND COMMANDS

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