Pencil Case Project

Contents:

Pencil Case:

Bottom Cylinder:

Bring in a Twisted Polygon, located in All, (things in All move each time that TinkerCad adds items to All), this was last seen on page 6, on the bottom right.
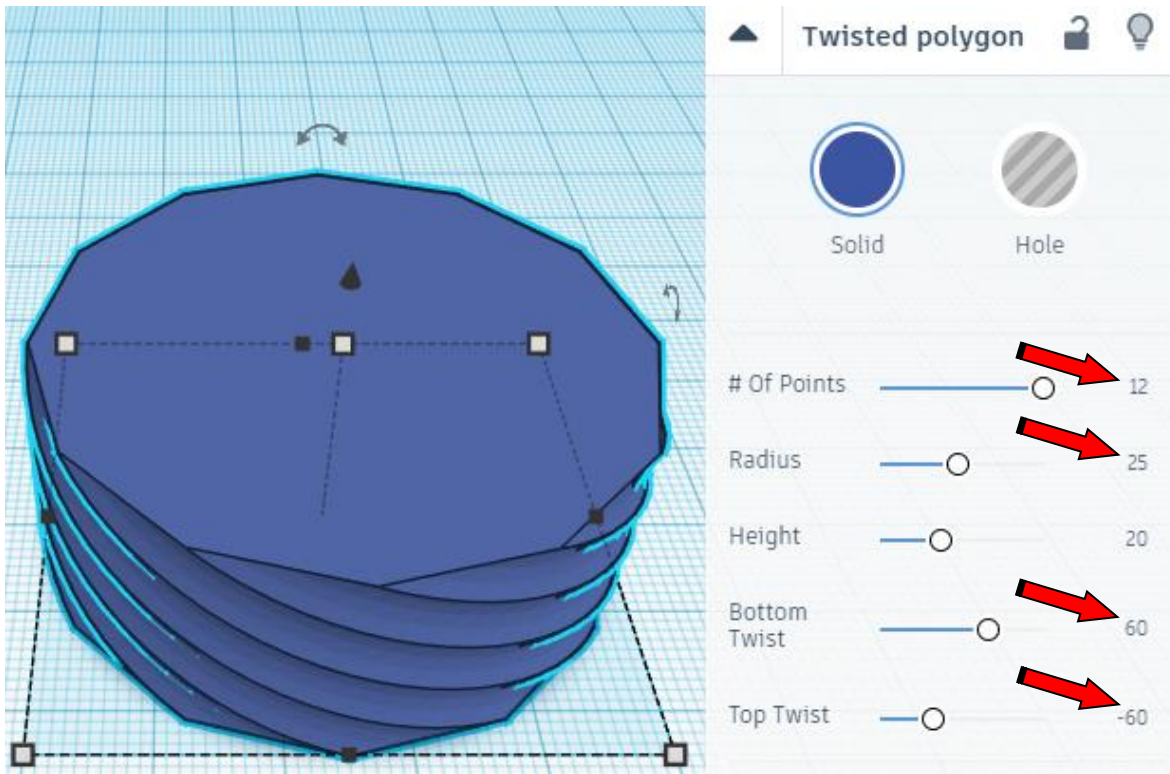From now on this will be called the **Bottom Cylinder**

Select **Bottom Cylinder**.
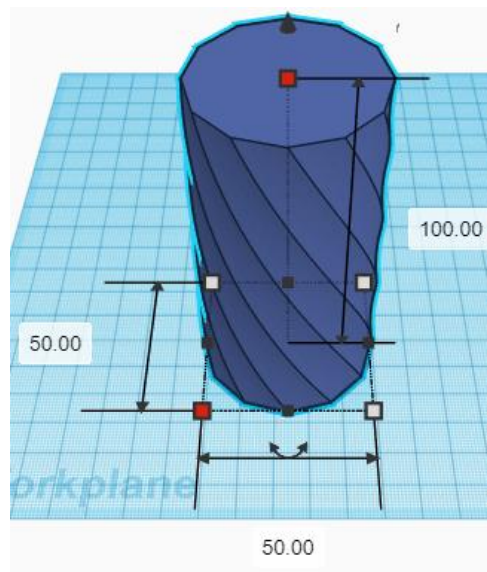
Change # Of Points to 12
Change Radius to 25
Change Bottom Twist to 60
Change Top Twist to -60

Change the dimensions to
50mm X direction,
50mm Y direction, and
100mm Z direction.

Bring in an ISO Metric Thread, located in Featured, (things in Featured move each time that TinkerCad adds items to Featured), this was last seen on page 1, on the right 3 shapes down.
From now on this will be called the **Bottom Thread**

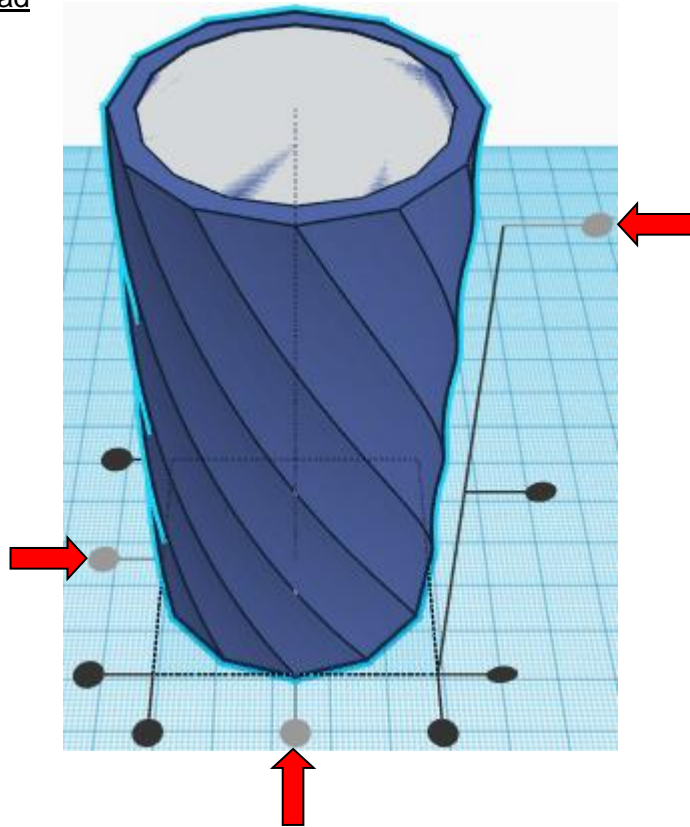Select **Bottom Thread**.

Change Diameter to 46
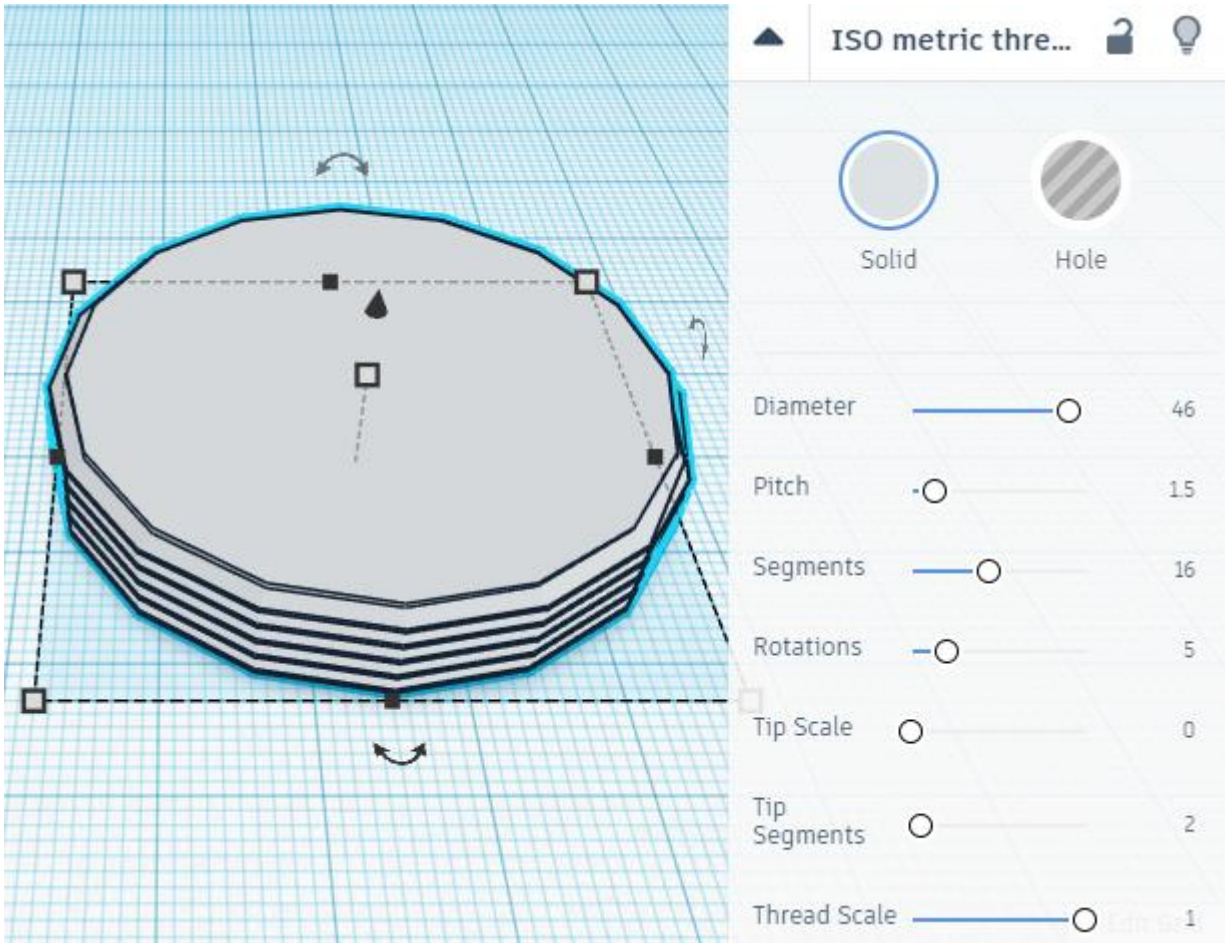
Change the dimensions to
45mm X direction,
45mm Y direction, and
20mm Z direction.
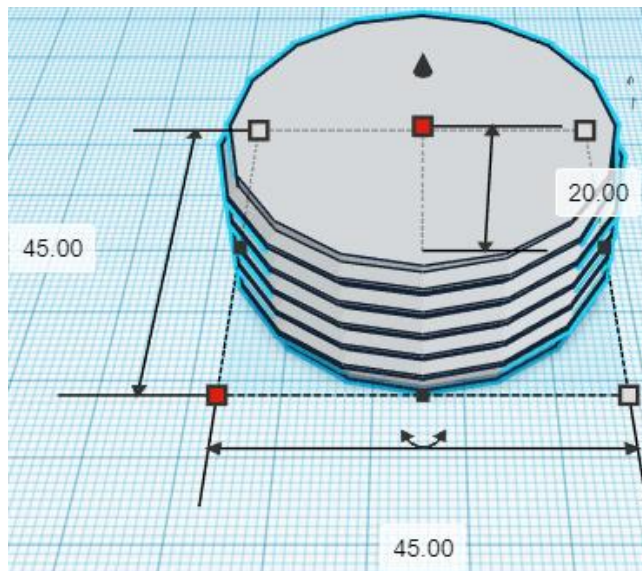
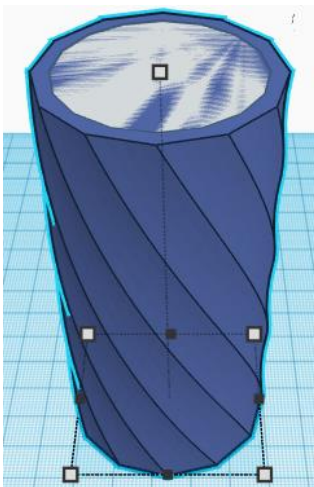**Align** <u>Bottom Cylinder</u> and <u>Bottom Thread</u>

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

Move <u>Bottom Cylinder</u>   (Must be in home view for this to work!)
move down in negative Z direction 14mm

Hint: Select <u>Cylinder Cutout</u> and hold control and push down arrow key 14 times.
Or
Select <u>Cylinder Cutout</u> and hold control and hold shift and push down arrow key 1 time,
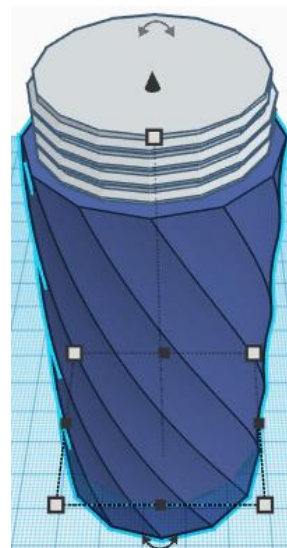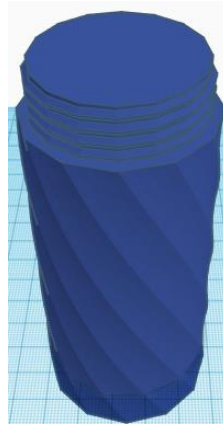then release shift and push down arrow key 4 more times.

Before   After

14mm
Down
(hold control)

Group Bottom Cylinder and Bottom Thread
From now on this will be called the **Bottom Cylinder**

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

Change the dimensions to
40mm X direction,
40mm Y direction, and
110mm Z direction.
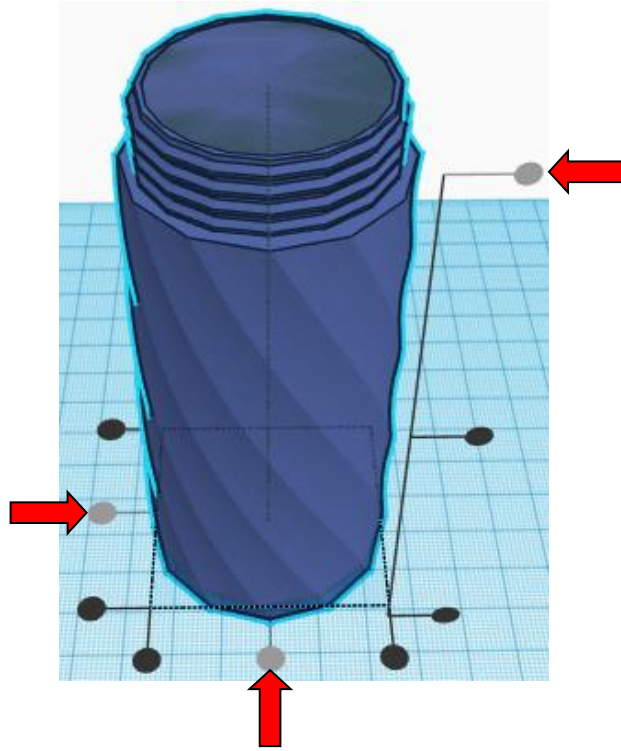
110.00

40.00

40.00
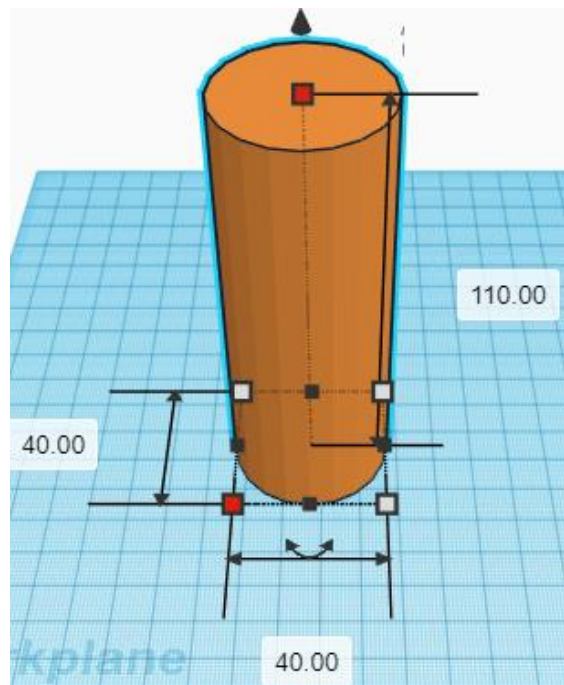
Change Bottom Cylinder Cutout to **Hole** by
selecting Bottom Cylinder Cutout and typing "h".
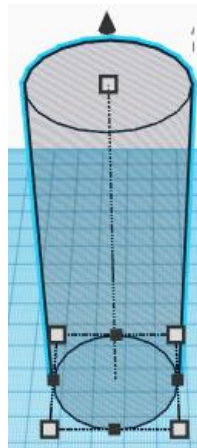
Align <u>Bottom Cylinder</u> and <u>Bottom Cylinder Cutout</u>

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

Group <u>Bottom Cylinder</u> and <u>Bottom Cylinder Cutout</u>
From now on this will be called the **Bottom Cylinder**
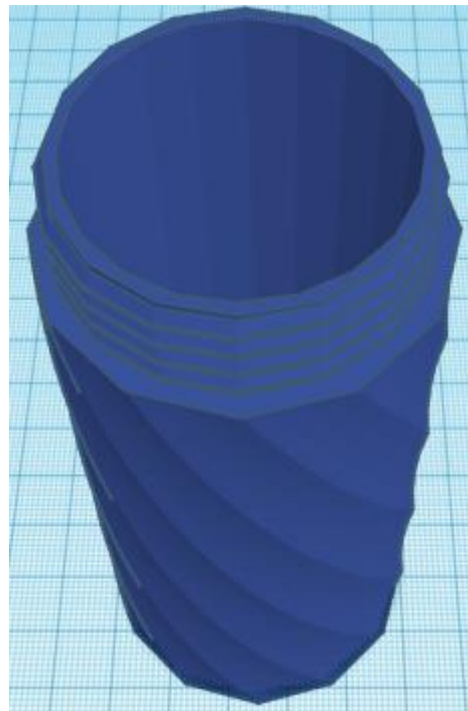
Set on Workplane:

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

Before   After

| Front View |

| Front View |

Top Cylinder:

Bring in a Twisted Polygon, located in All, (things in All move each time that TinkerCad adds items to All), this was last seen on page 6, on the bottom right.
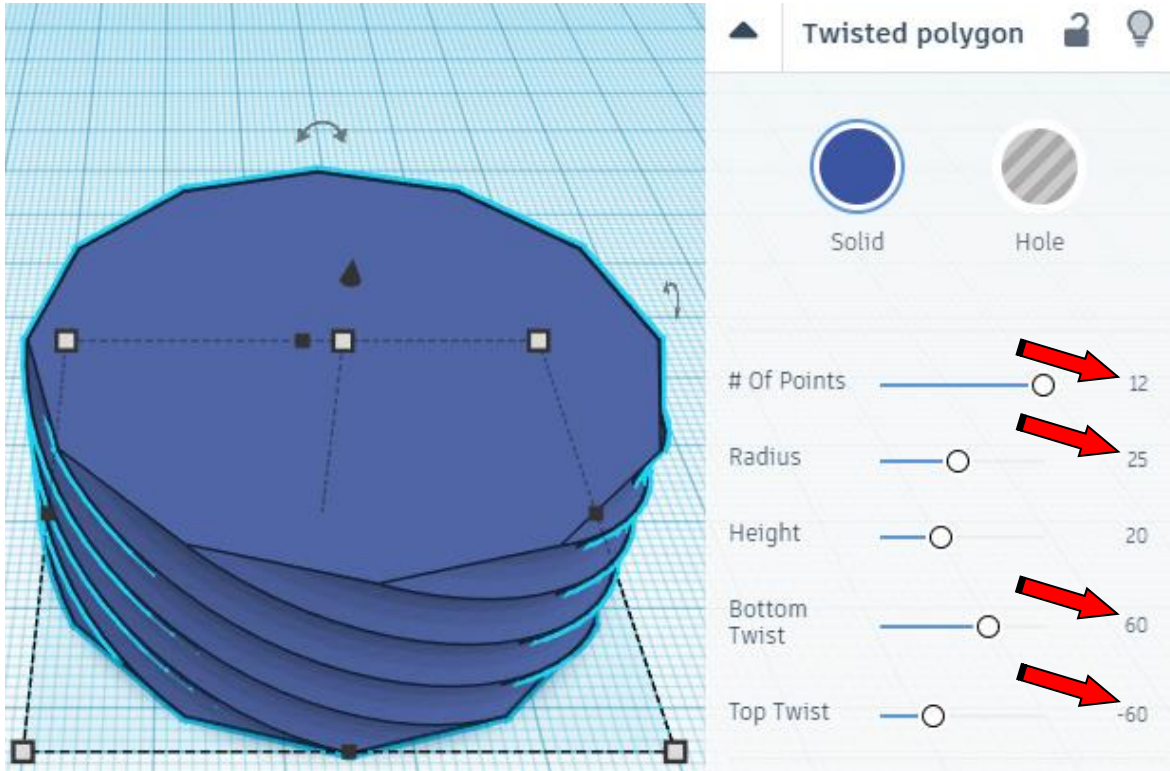From now on this will be called the **Top Cylinder**

Select **Top Cylinder**.
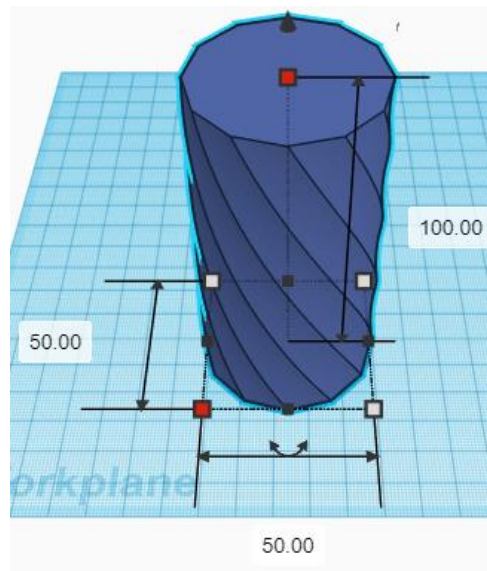
Change # Of Points to 12
Change Radius to 25
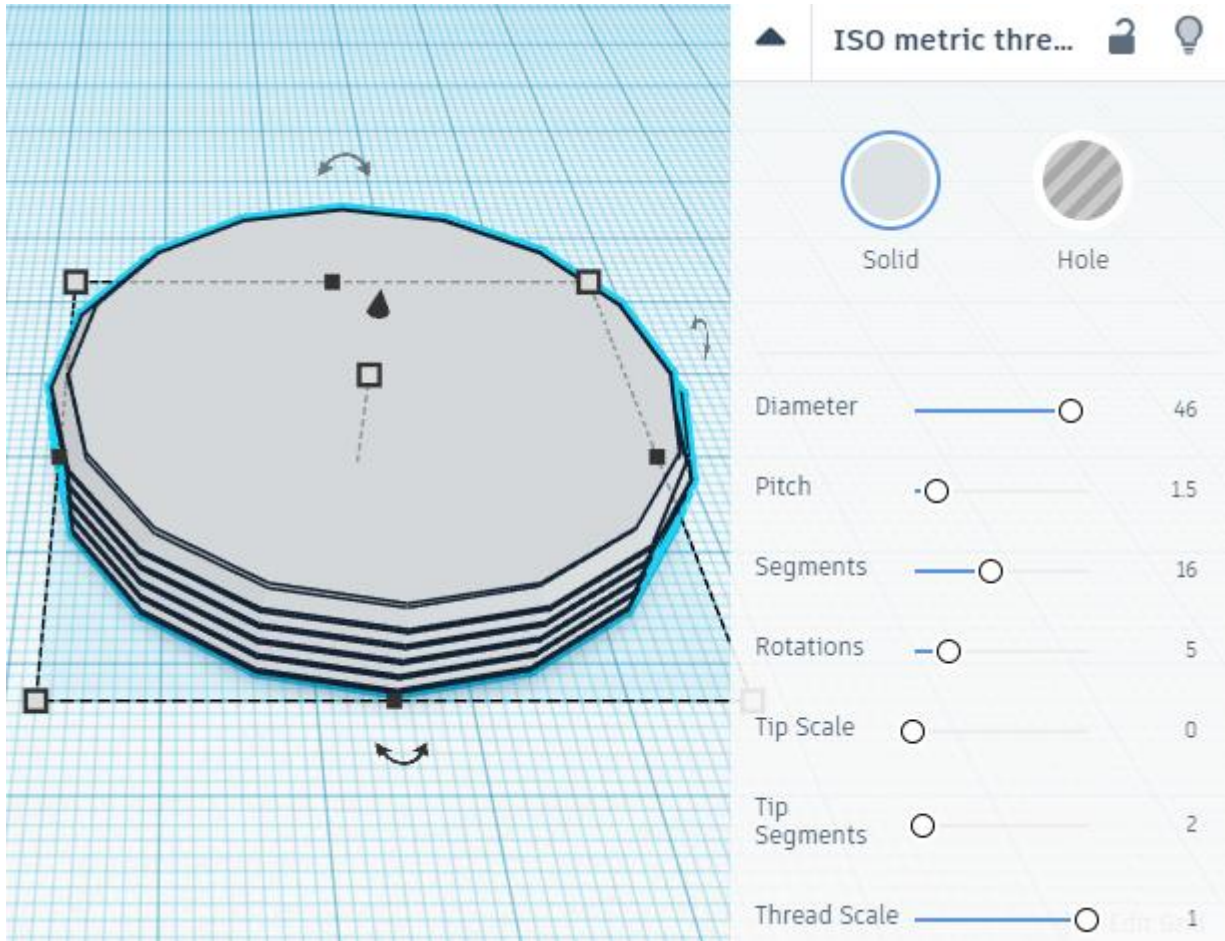Change Bottom Twist to 60
Change Top Twist to -60

Change the dimensions to
50mm X direction,
50mm Y direction, and
100mm Z direction.

Bring in an ISO Metric Thread, located in Featured, (things in Featured move each time that TinkerCad adds items to Featured), this was last seen on page 1, on the right 3 shapes down.
From now on this will be called the **Top Thread**

Select **Top Thread**.

Change Diameter to 46

Solid	Hole

Diameter		46
Pitch		1.5
Segments		16
Rotations		5
Tip Scale		0
Tip Segments		2
Thread Scale		1

Change the dimensions to
47mm X direction,
47mm Y direction, and
20mm Z direction.

47.00

20.00

47.00
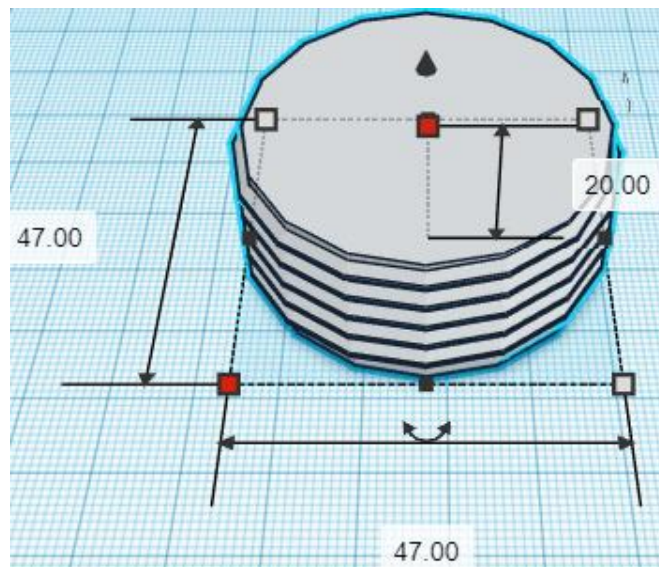
Change Top Thread to **Hole** by
selecting Top Thread and typing "h".
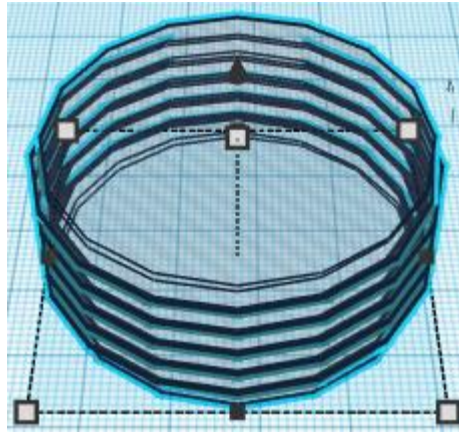
Align Top Cylinder and Top Thread

centered in X direction,
centered in Y direction, and
top in Z direction.
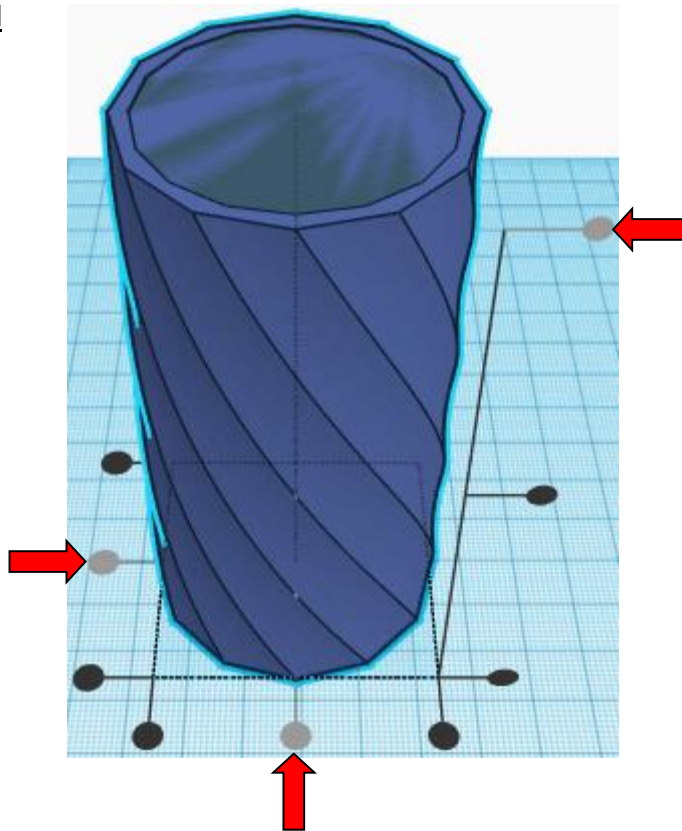
Move Top Cylinder   (Must be in home view for this to work!)
move down in negative Z direction 4mm

Hint: Select Top Cylinder and hold control and push down arrow key 4 times.

Before

After

4mm
Down
(hold control)
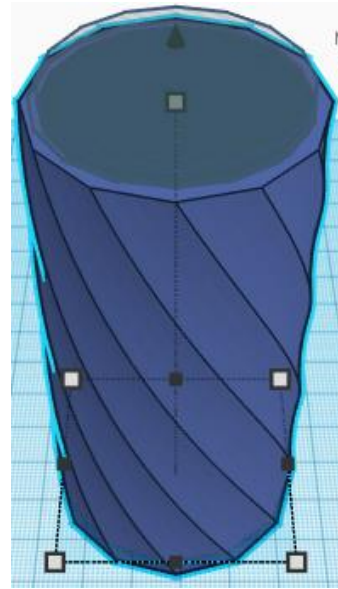
Group Top Cylinder and Top Thread
From now on this will be called the **Top Cylinder**
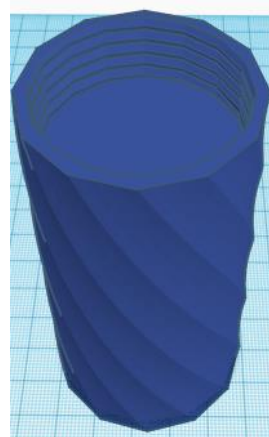
Bring in a Cylinder, located in Basic Shapes on the right 2 shapes down.
From now on this will be called the **Top Cylinder Cutout**.

Change the dimensions to
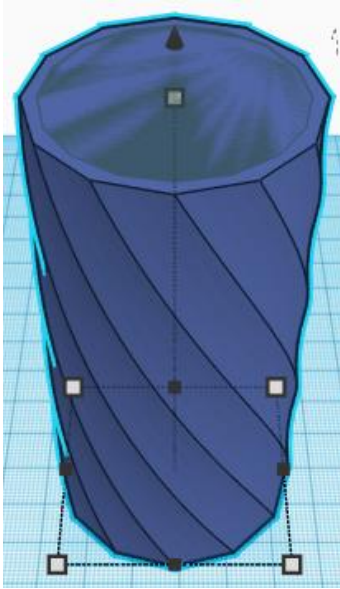40mm X direction,
40mm Y direction, and
96mm Z direction.
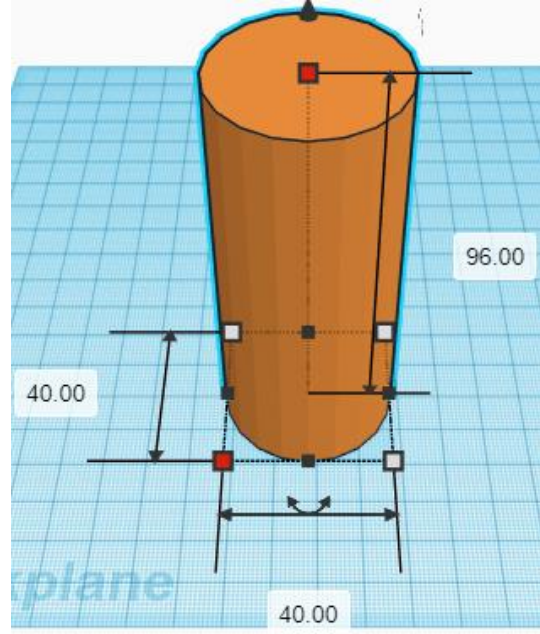
Change Top Cylinder Cutout to **Hole** by
selecting Top Cylinder Cutout and typing "h".
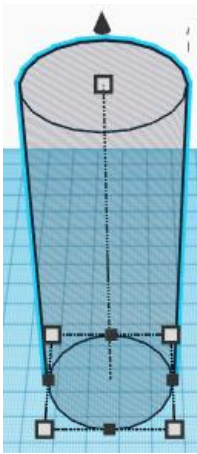
Align Top Cylinder and Top Cylinder Cutout

centered in X direction,
centered of Y direction, and
top of Z direction.
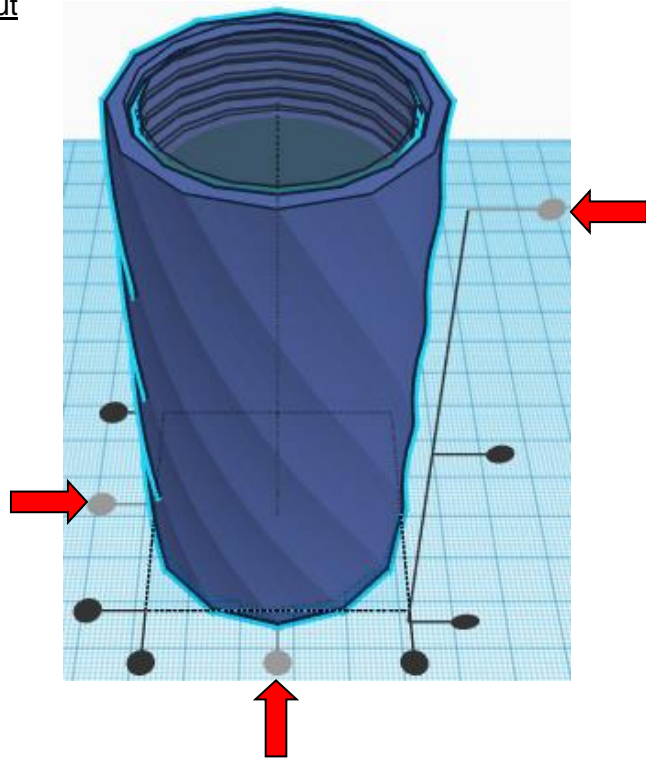
Group Top Cylinder and Top Cylinder Cutout
From now on this will be called the **Top Cylinder**
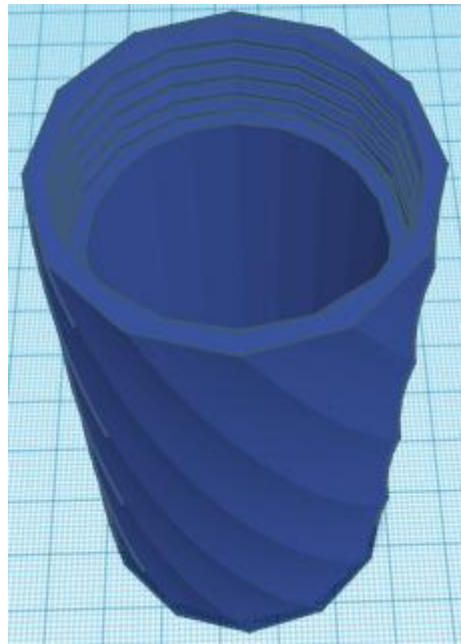
Set on Workplane:

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

Before   After

Front View   Front View

You are done, print, screw together, and enjoy!

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

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

Home view

Aligning:

Z top

Z center

Z bottom

Y back

X right

Y center

X center

Y front

X Left

Flip or Mirror and Move:

positive Z

Z direction

positive Y

negative Z

Y direction

positive X

negative Y

negative X

X direction

Rotate:

Counter-Clockwise

Clockwise

XY Plane

0°

Counter-Clockwise

YZ Plane

Clockwise

0°

XZ Plane

Clockwise

Counter-Clockwise

0°
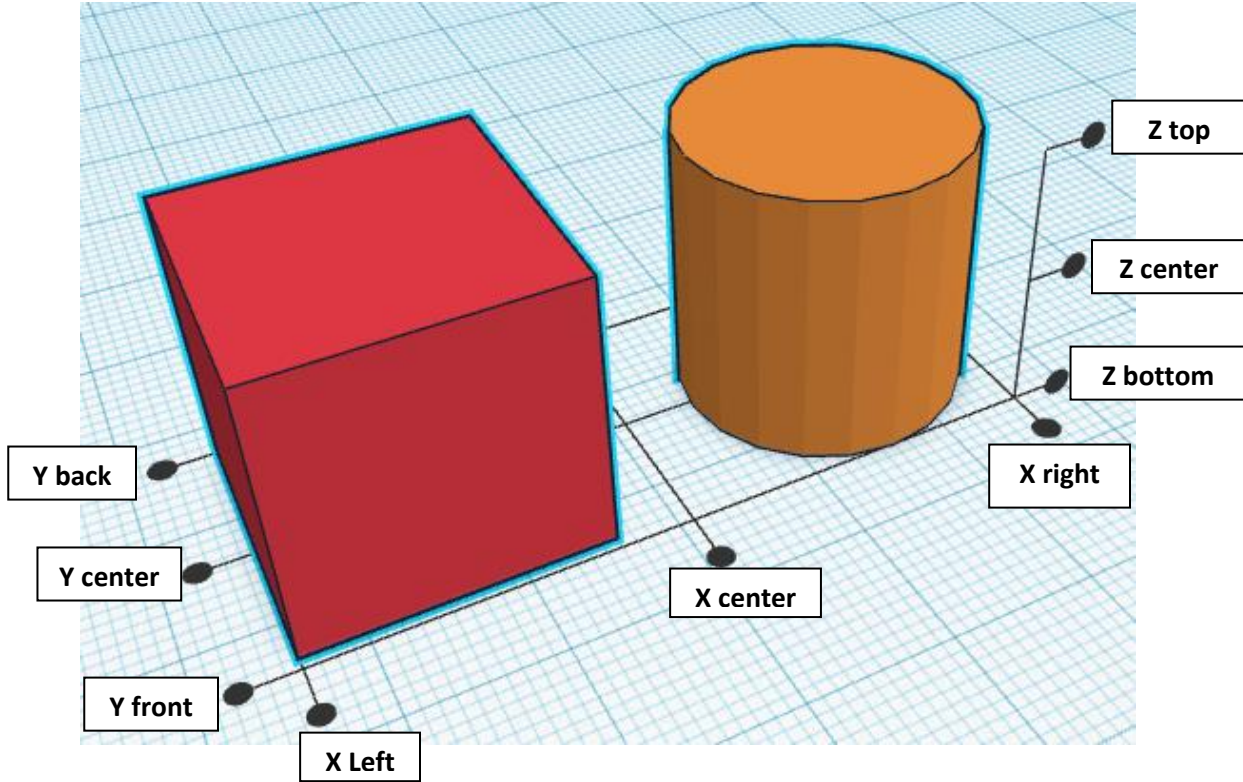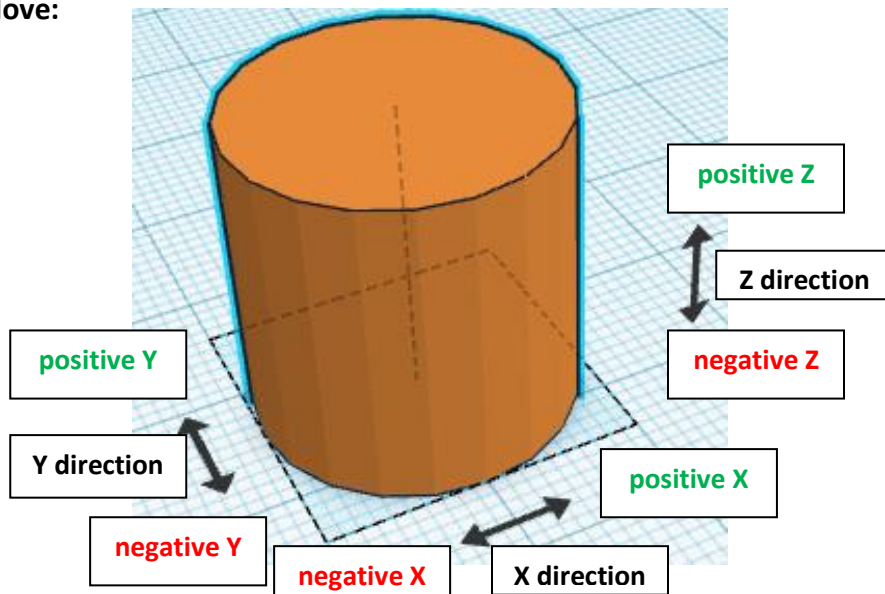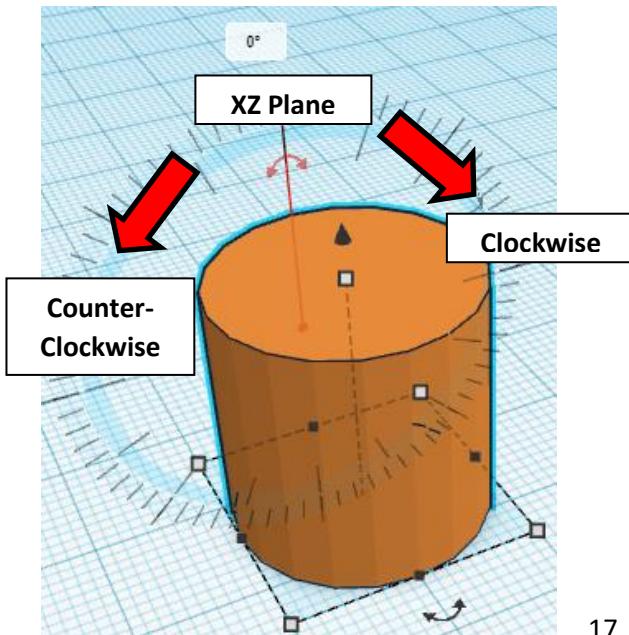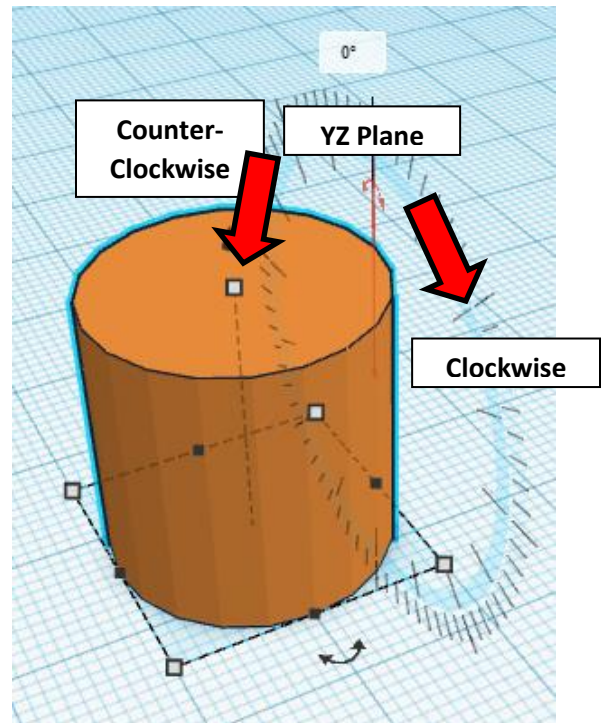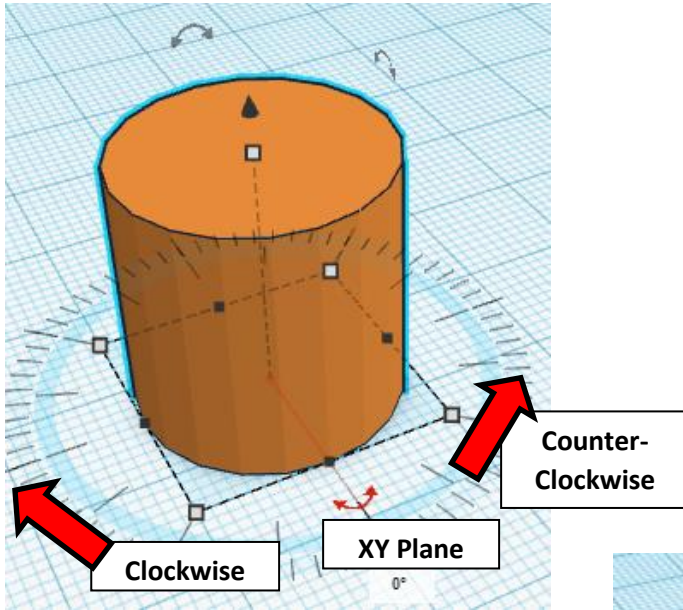
TinkerCAD Tool Guide

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)

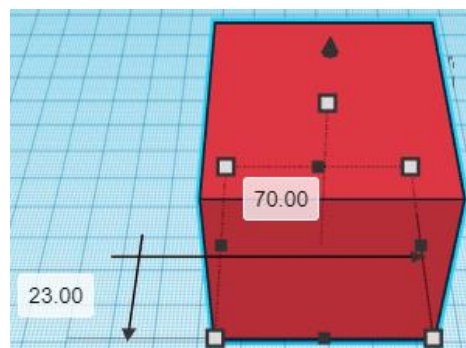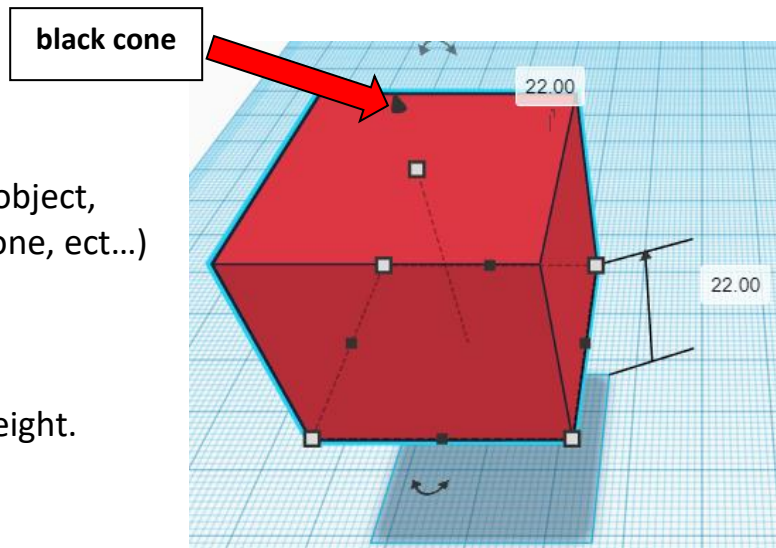Select object with left mouse button.
Notice that several shapes appear on object,
(white squares, black squares, black cone, ect...)

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

black cone

22.00

22.00

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.

Shift

+

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)**

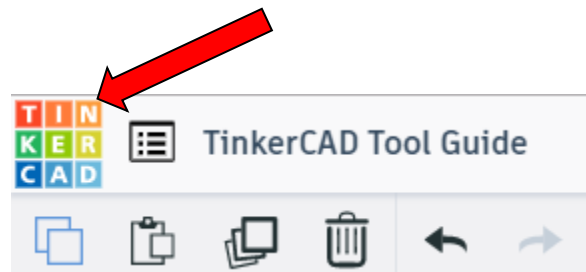Select object with left mouse button.

Hold control button and hold shift button
and use up and down arrow keys to move the object in <u>10mm</u> increments.
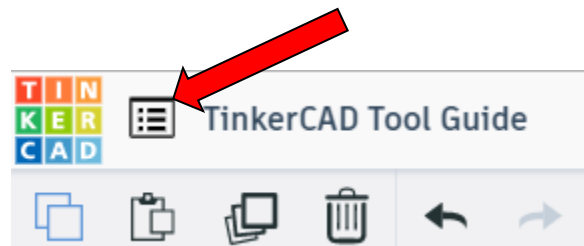
Using on screen icons:

TinkerCAD main screen:

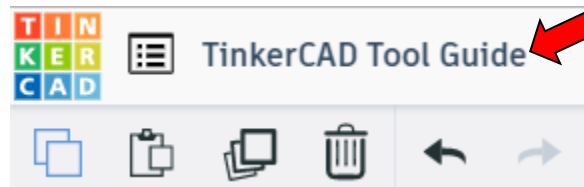(I know this doesn't look
like an icon button, but it is)

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.
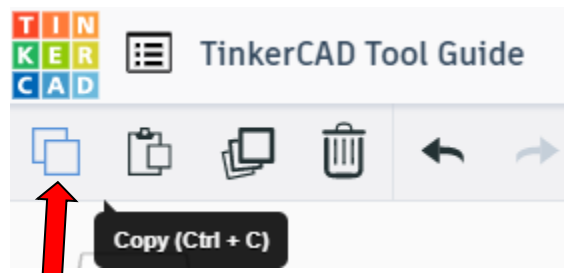
Paste:

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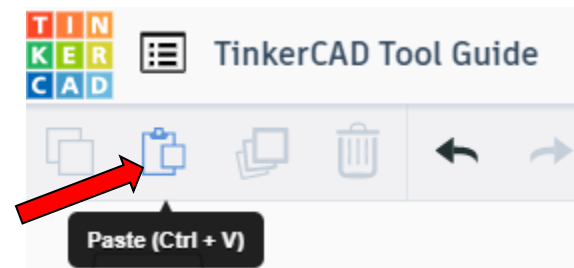
Duplicate:

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.
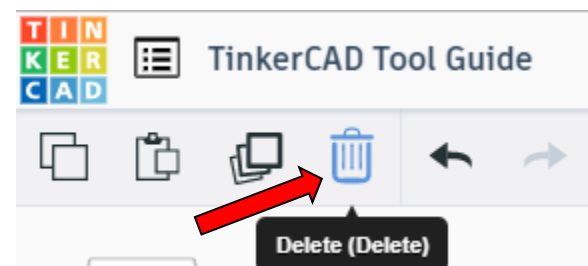
Undo:

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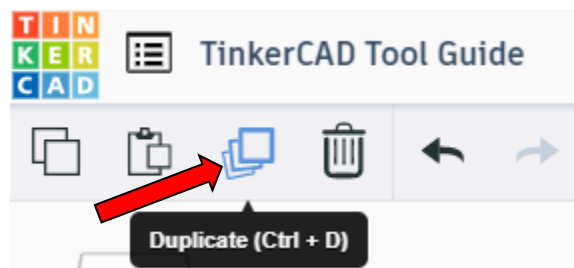This will undo your last command.
This can be repeated.
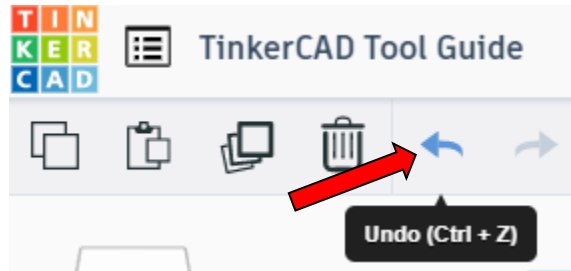
Redo:

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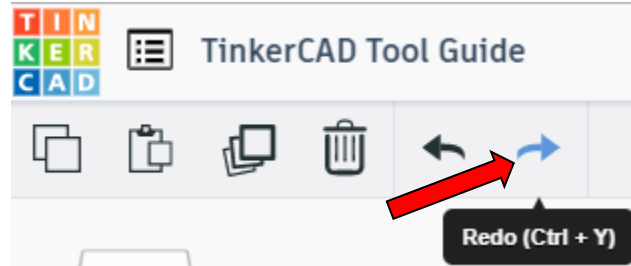
Change View:

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.
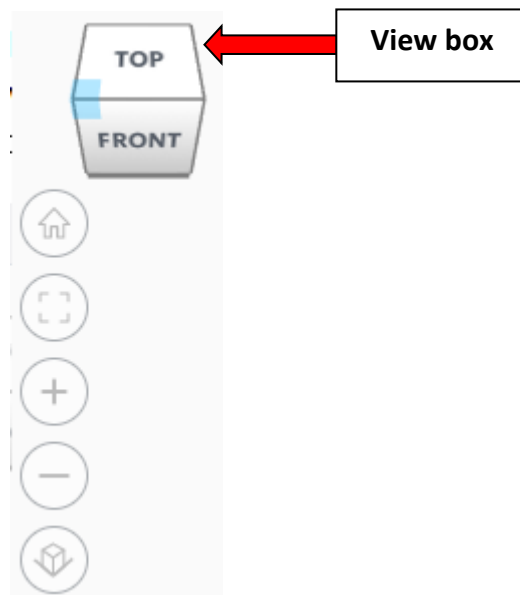
Change view to home view:

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.
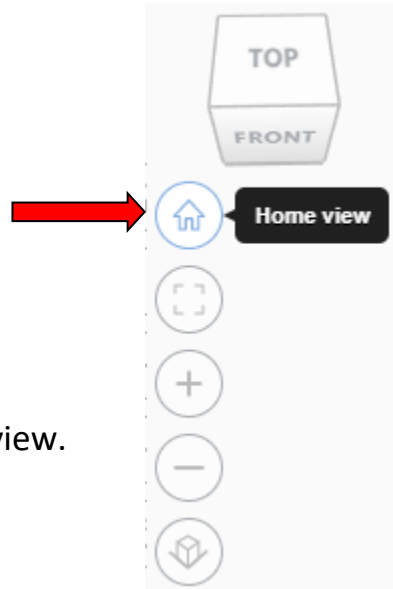
Fit all in view:

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.
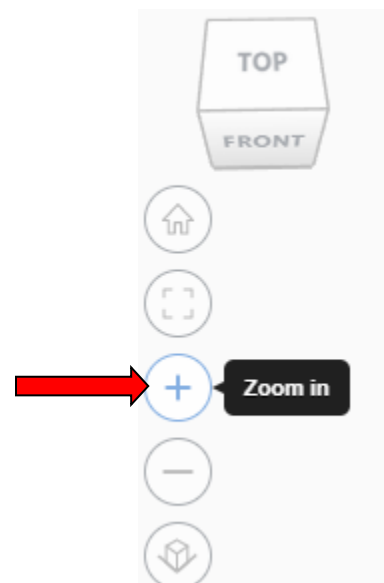
Zoom out:

Click the Zoom out icon or click the "-" key to zoom out.
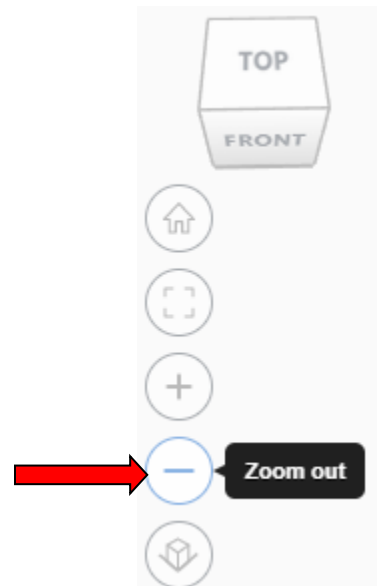
Switching to orthographic and perspective view:

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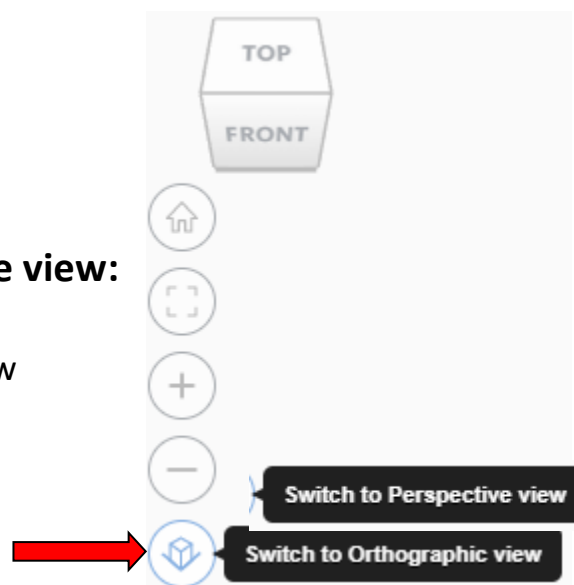
Group:

To combine two or more objects into one object.

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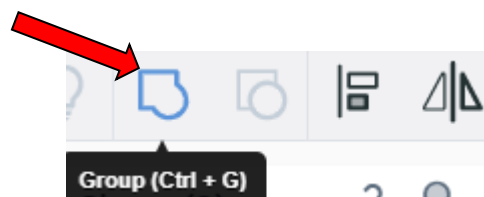
Ungroup:

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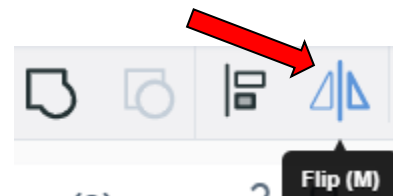
Duplicate dragged object(s)	Alt + Drag left mouse button
Select multiple object(s)	Shift + Left mouse button
45° rotation	Shift (Hold while rotating)
Scale in one direction	Alt + Hold side handle
Scale in two directions	Alt + Hold corner handle
Uniform scale	Shift + Hold corner handle
Uniform scale in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