

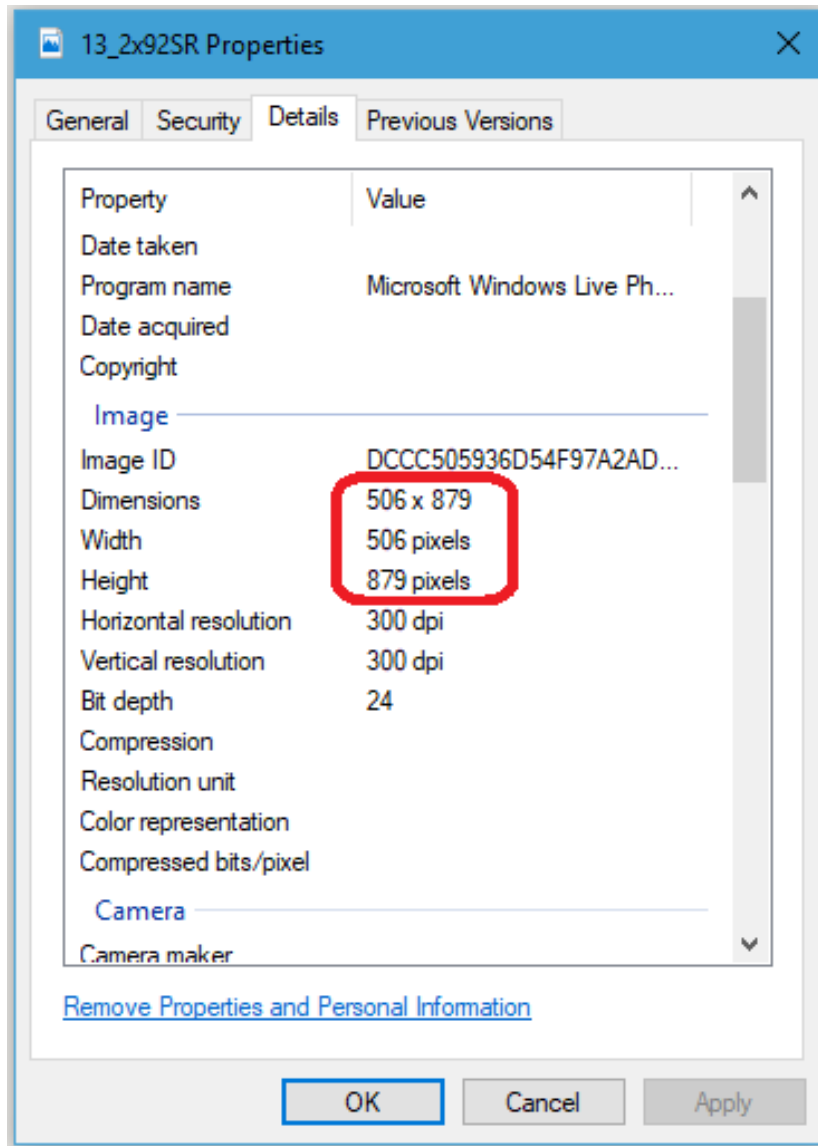
How to Model Bullets in 3DS Max

This article will give instructions in a simple way to create a bullet with casing in almost any 3D application. However this is only a modelling tutorial. We'll not be applying any material and rendering the bullet. Use a reference image....

Part 1 of 4:

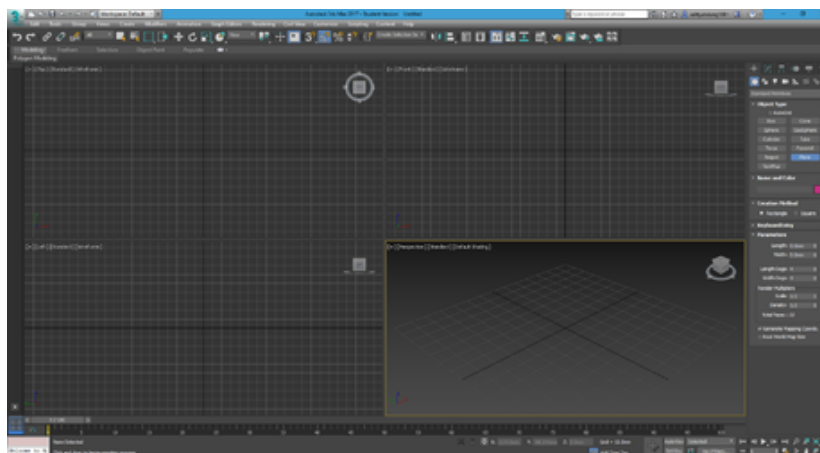
Set up your Work

1. **Use a reference image.** This is required for modelling. Go to the web and download an image showing the schematic of a bullet with its case.



2.

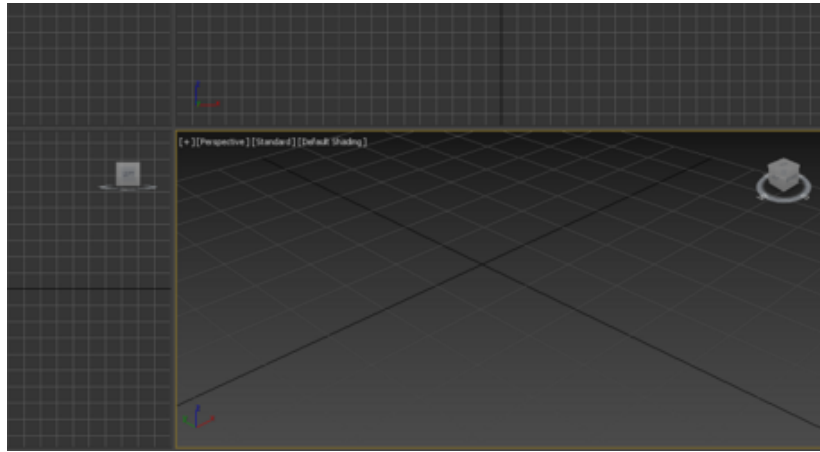
Check the dimensions of your reference image. Right click on the reference image. Then, click properties and go to the details tab.



3.

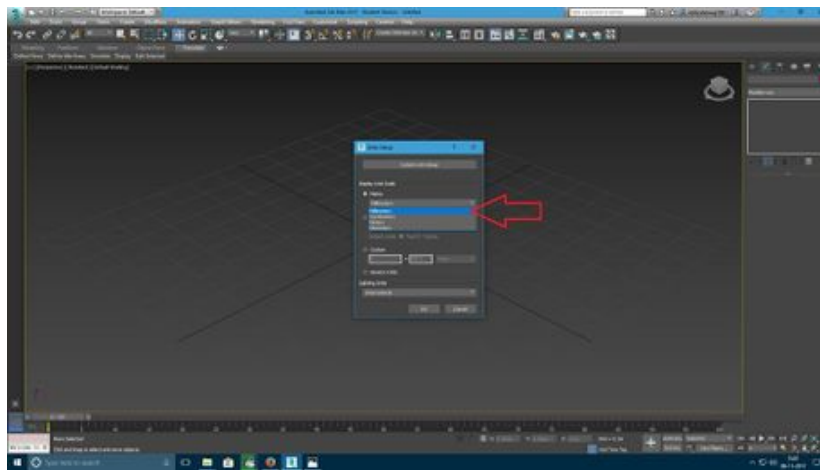
Start 3DS Max.

4.



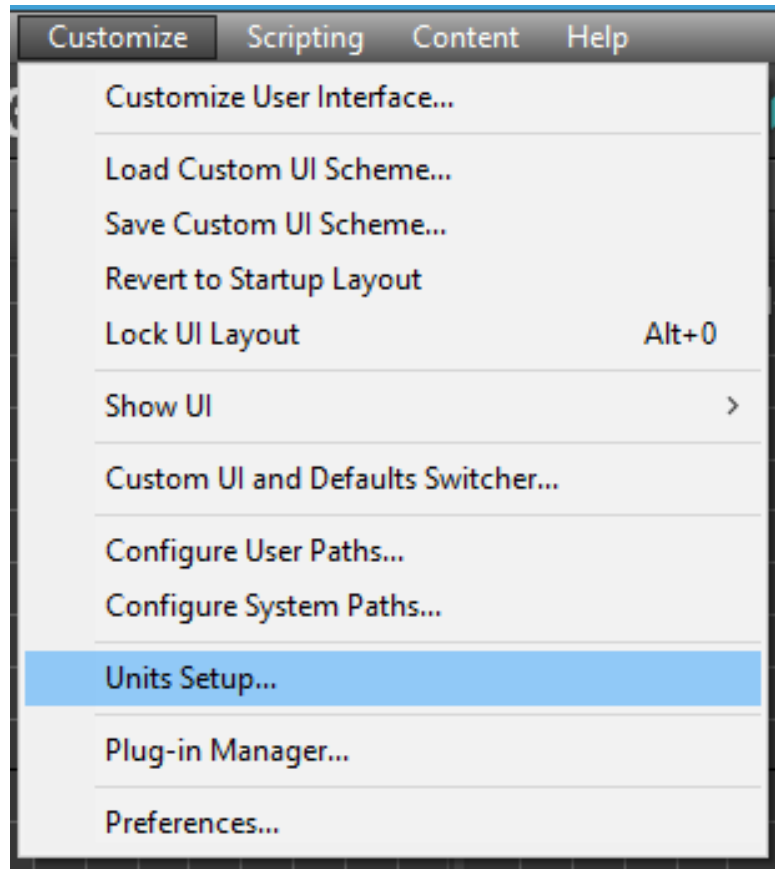
Change your view to Perspective for easy editing. Click on the bottom right window, then press **Alt + W** on keyboard to maximize your perspective view..

5.

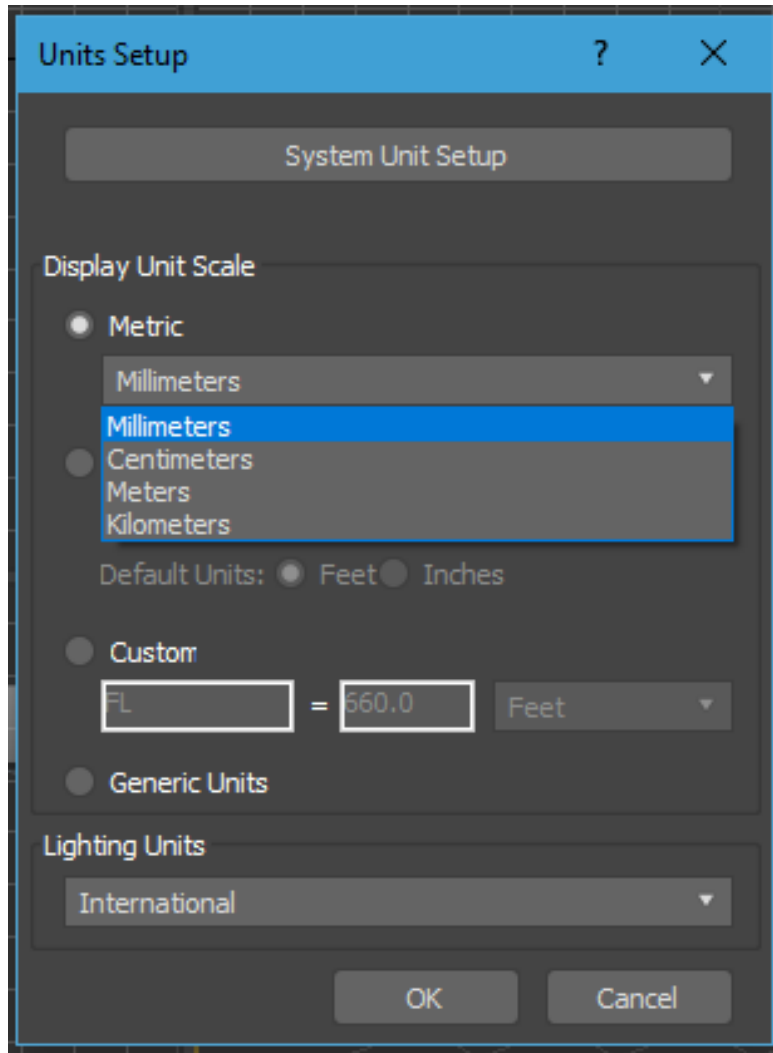


Change the unit setup in 3DS Max.

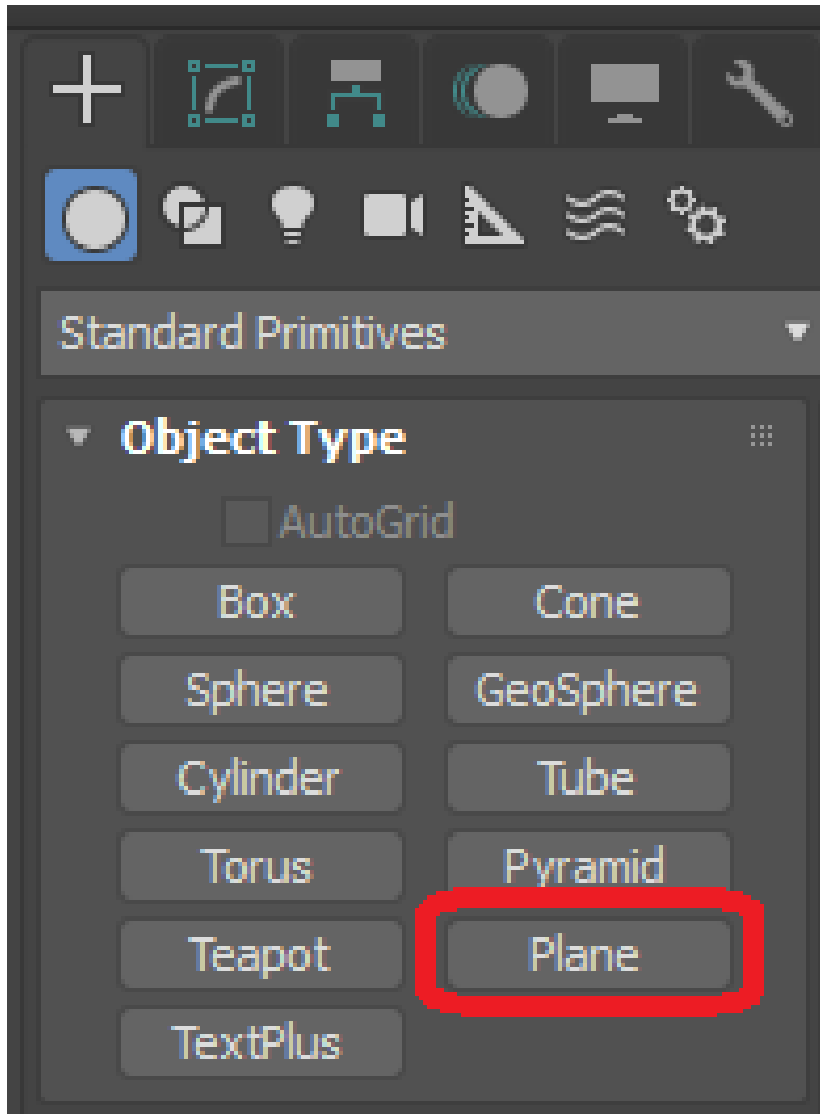
1. Go to Customize > Units Setup.



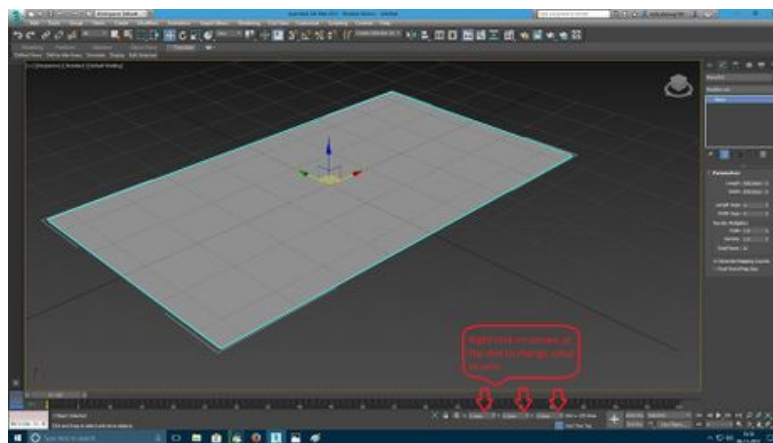
2. Change the Display Unit Scale to Metric and choose "millimeters" from drop down.



6. **Create a plane.** Go to the "Create" tab, then click on "plane" in standard primitives.

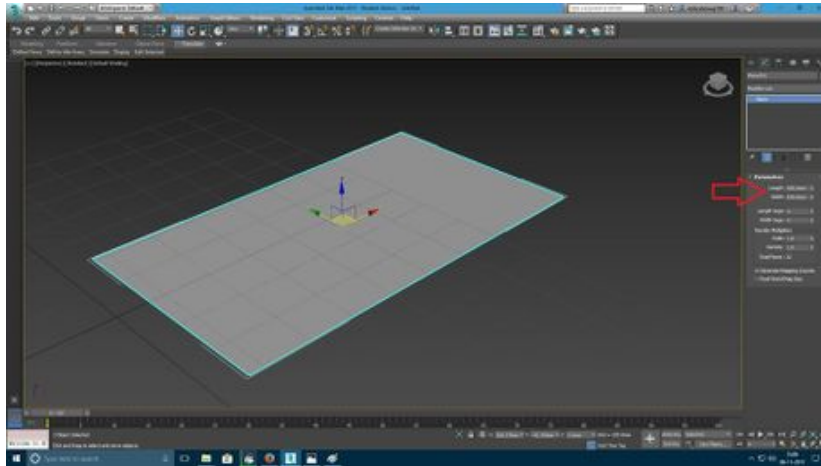


1. Click and drag in the viewport, then center it in x, y & z axis.



2. Right click on the up-down arrows in the x, y & z field to position the plane at zero.

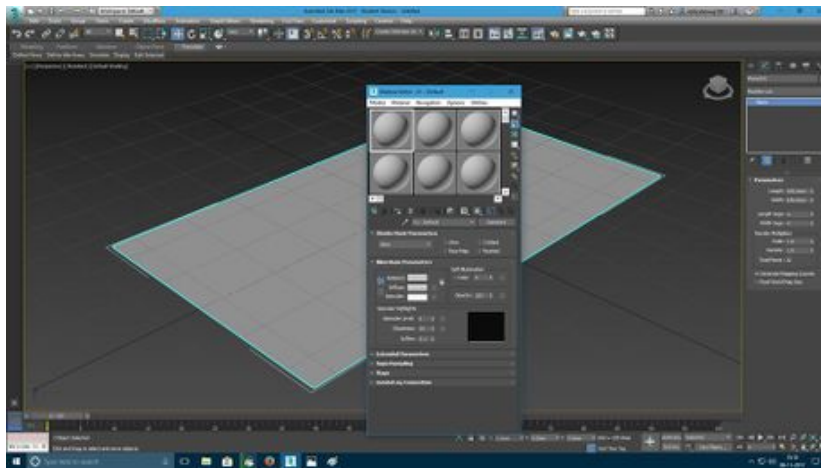
7.



Modify the length and width of your plane from the modify panel.

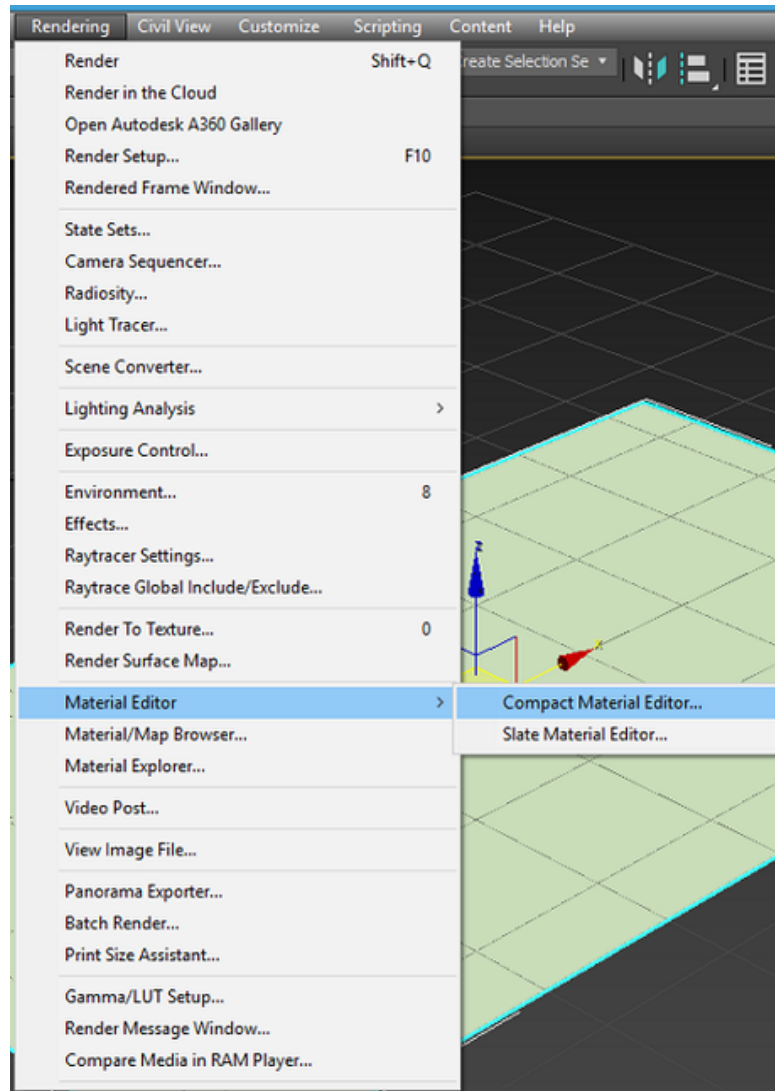
1. Divide your reference image length and width pixel count by 10 (eg: 506 pixels will be 50.6mm) and change the length and width parameters of plane in mm. This will allow you to use the image without altering the aspect ratio of the picture.

8.

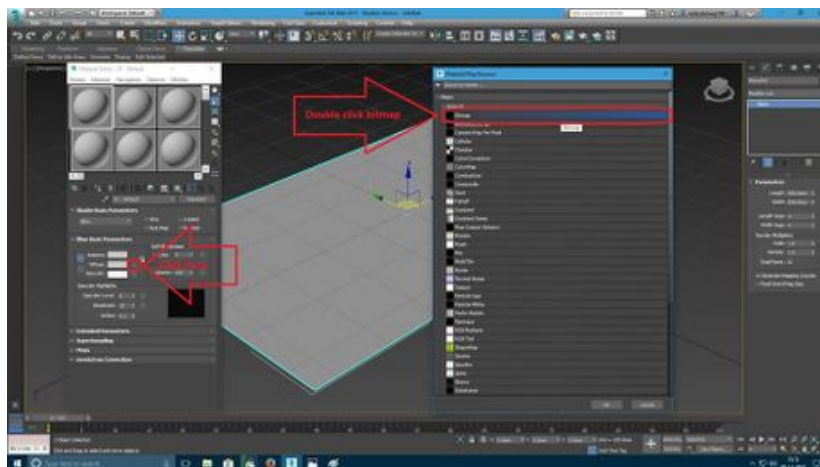


Open the compact material panel.

1. Click rendering in toolbar.
2. Click material editor and choose Compact material editor.

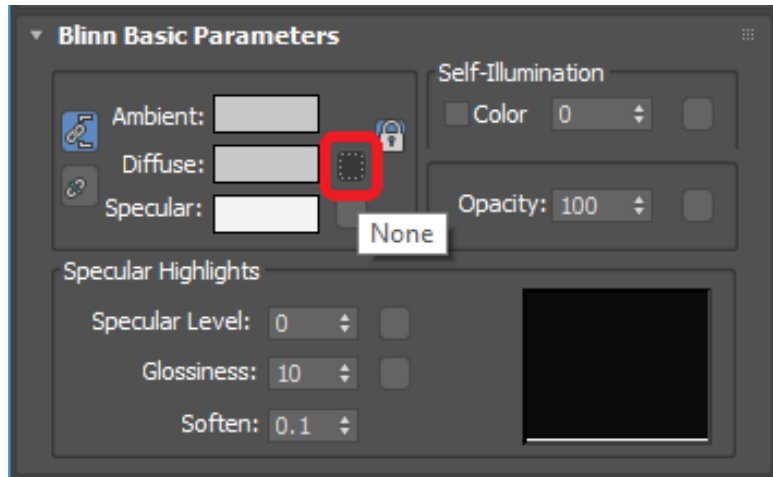


9.

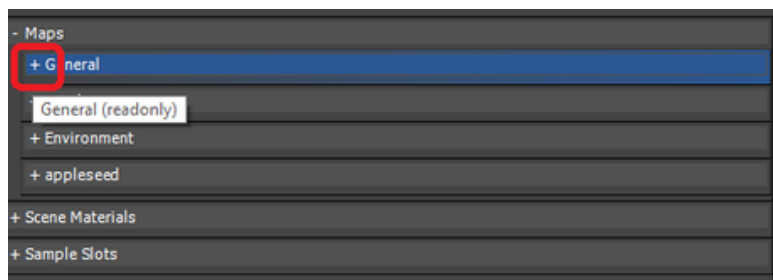


Add your reference image to the plane.

1. Click on the empty field near diffuse color.



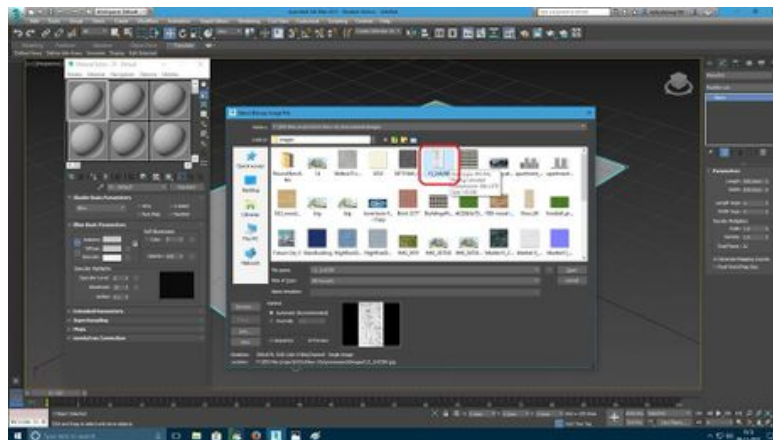
2. Click the "+" on General to open options in the Material/Map Browser.



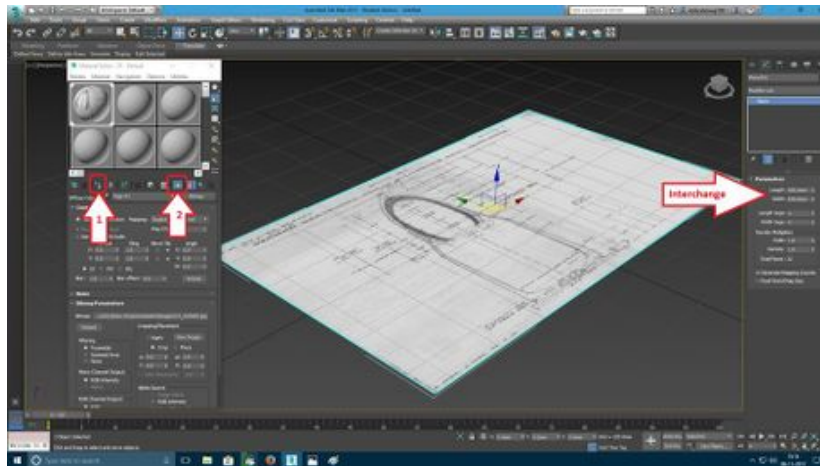
3. Double click on bitmap.

4. Wait for material browser to open.

5. Navigate to the folder and double click your reference image.

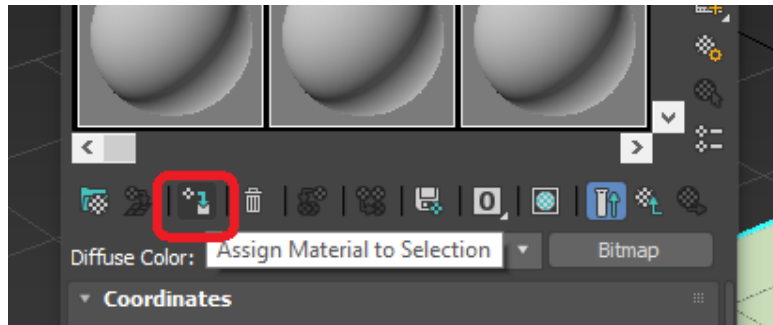


10.

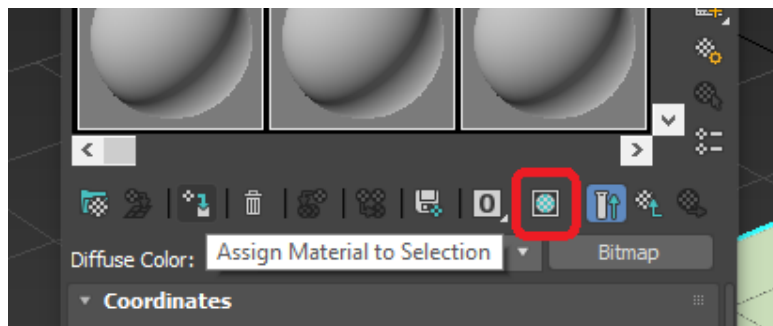


Apply the image to your plane.

1. Click on Assign material to selection.



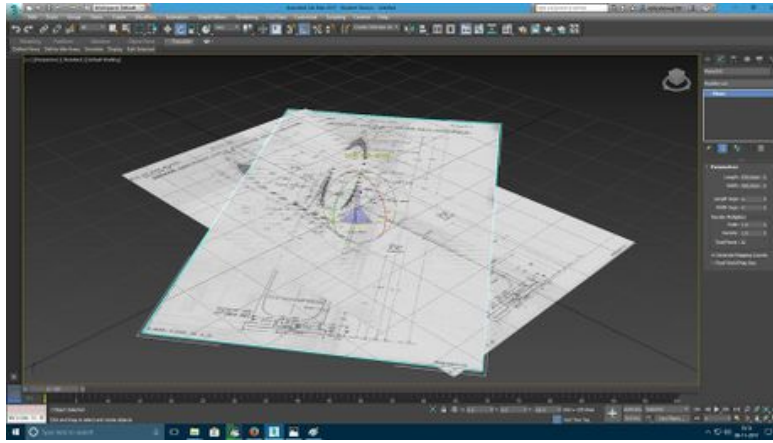
2. Click on Show shaded material in viewport.



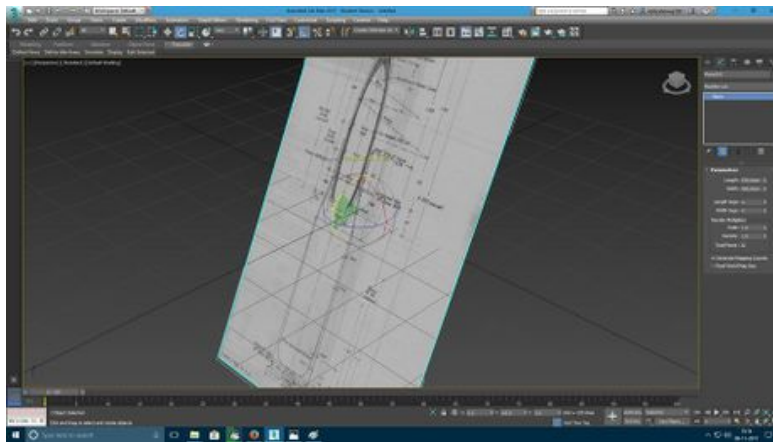
3. Interchange length and width of the plane, if the image gets stretched as shown above.

11. Align the plane to start modeling.

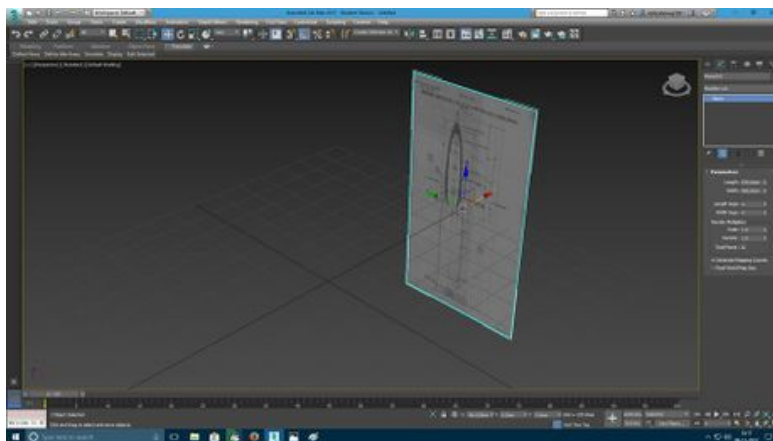
1. Select rotate tool (keyboard shortcut **R**).
2. Select angle snap to rotate in 5 degree increments for ease (keyboard shortcut **A**).
3. Rotate 90 degrees on the z-axis.



4. Rotate 90 degrees on y-axis.



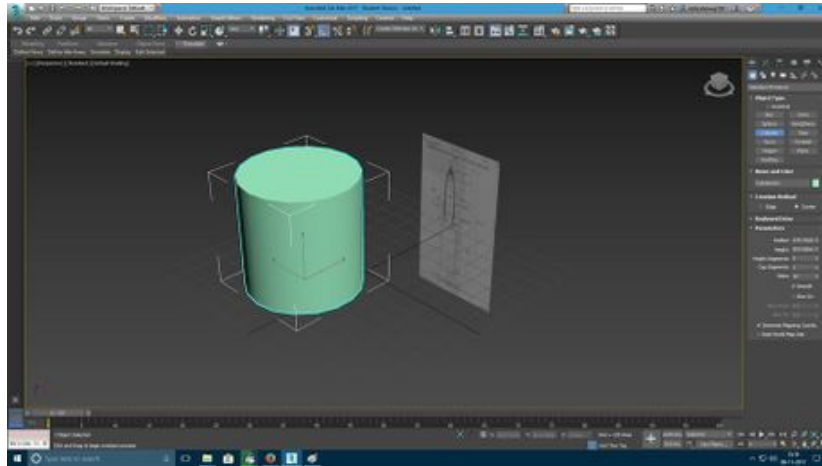
5. Select move tool (keyboard shortcut W), then move the plane back on its x-axis.



Part 2 of 4:

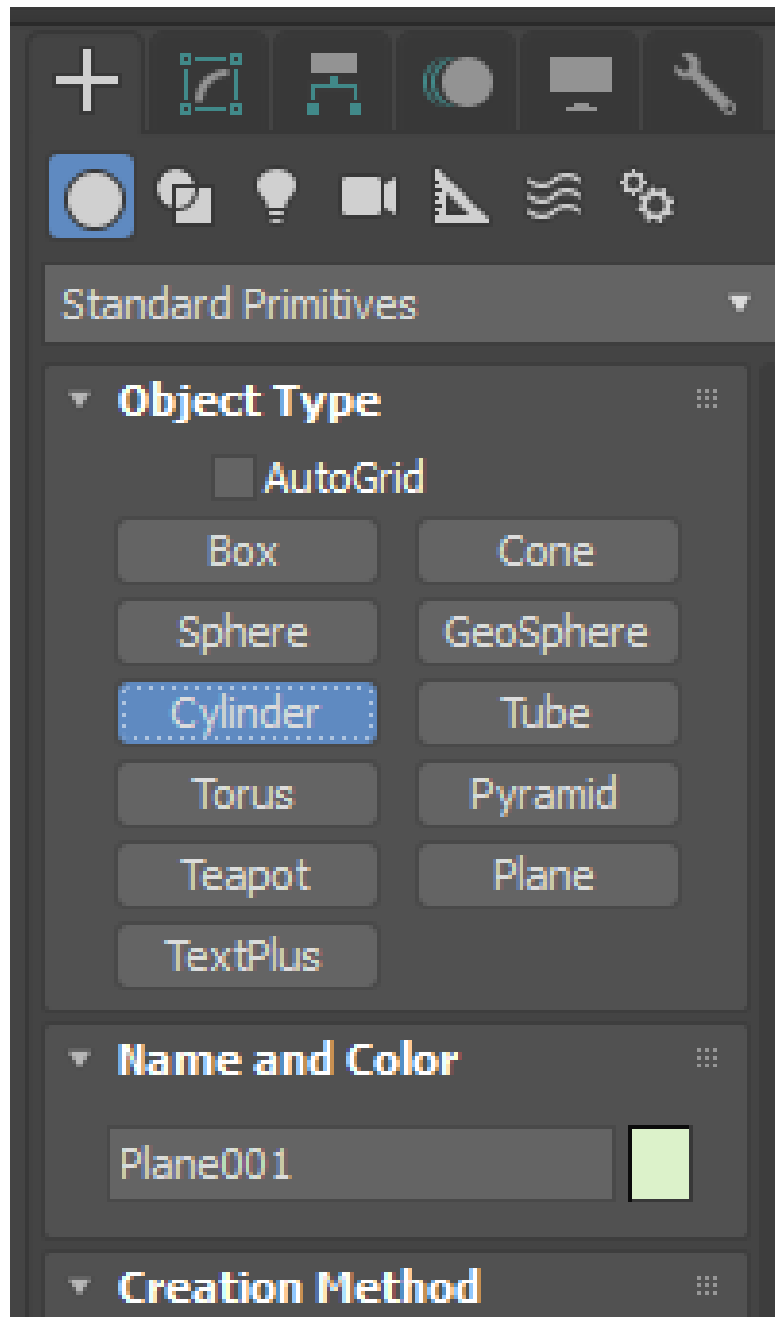
Start modelling the Bullet Case

1.



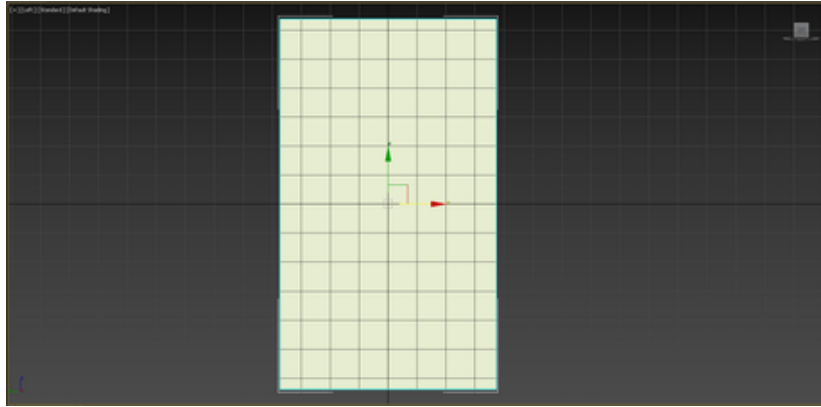
Add a new cylinder for bullet casing.

1. Go to the "Create" tab.
2. Click on cylinder in standard primitives.



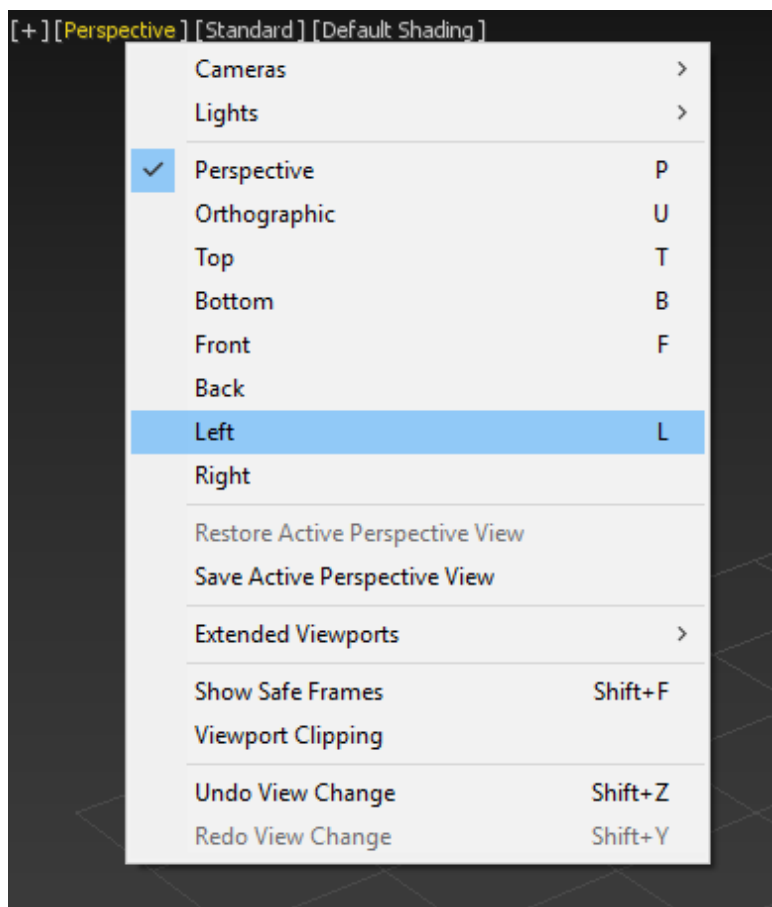
3. Click and drag in the viewport.
4. Center it on the x, y & z axis. Do not worry about its dimensions.

2.



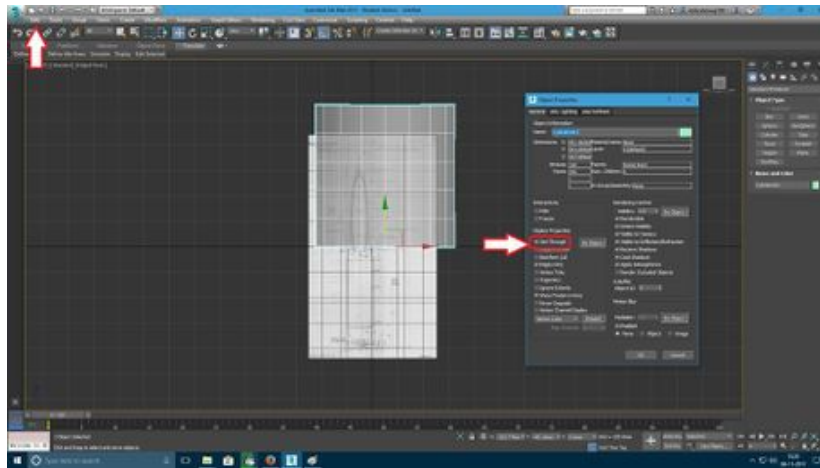
Change view to aid your modeling.

1. Click on the "Perspective" tab at top left of viewport.



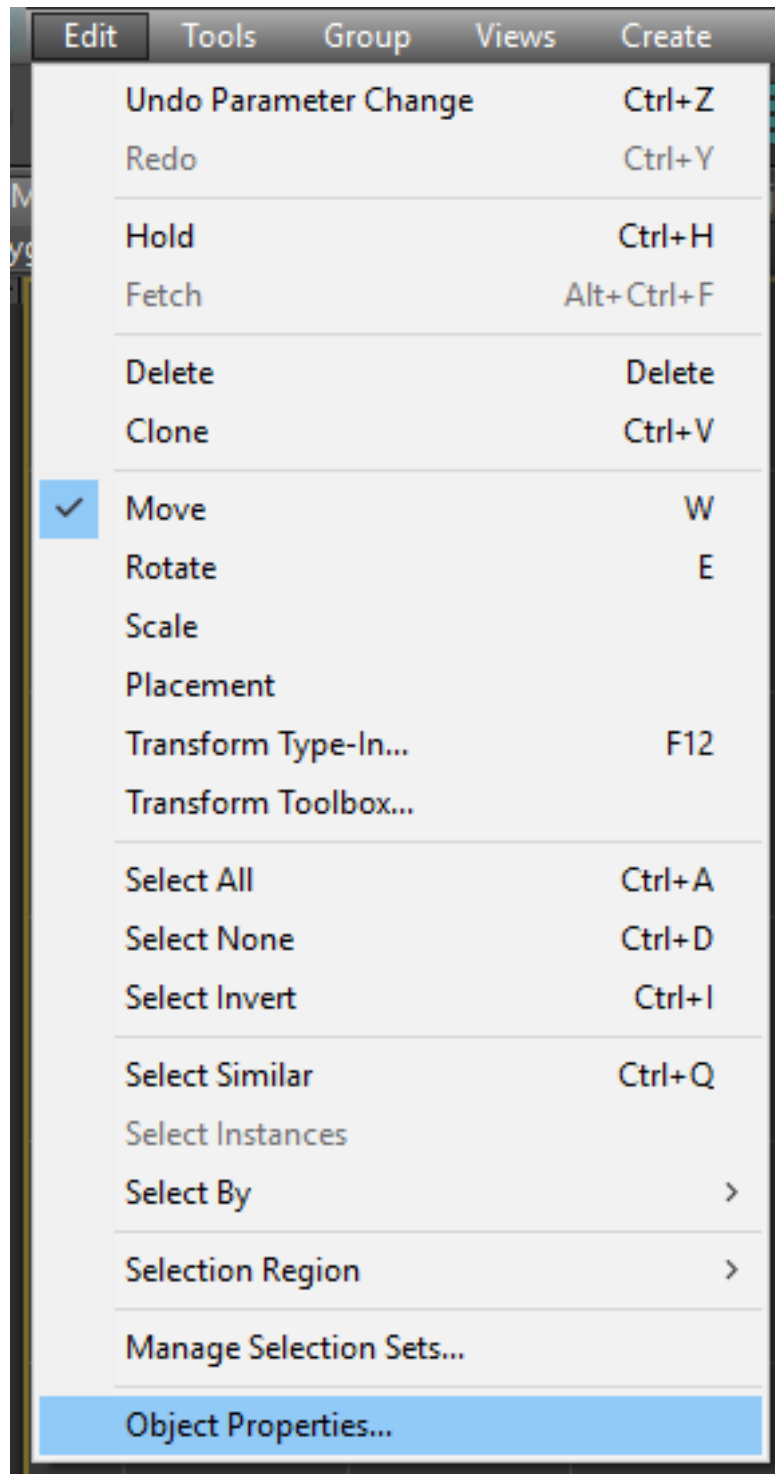
2. Select Left view in the drop down menu.

3.

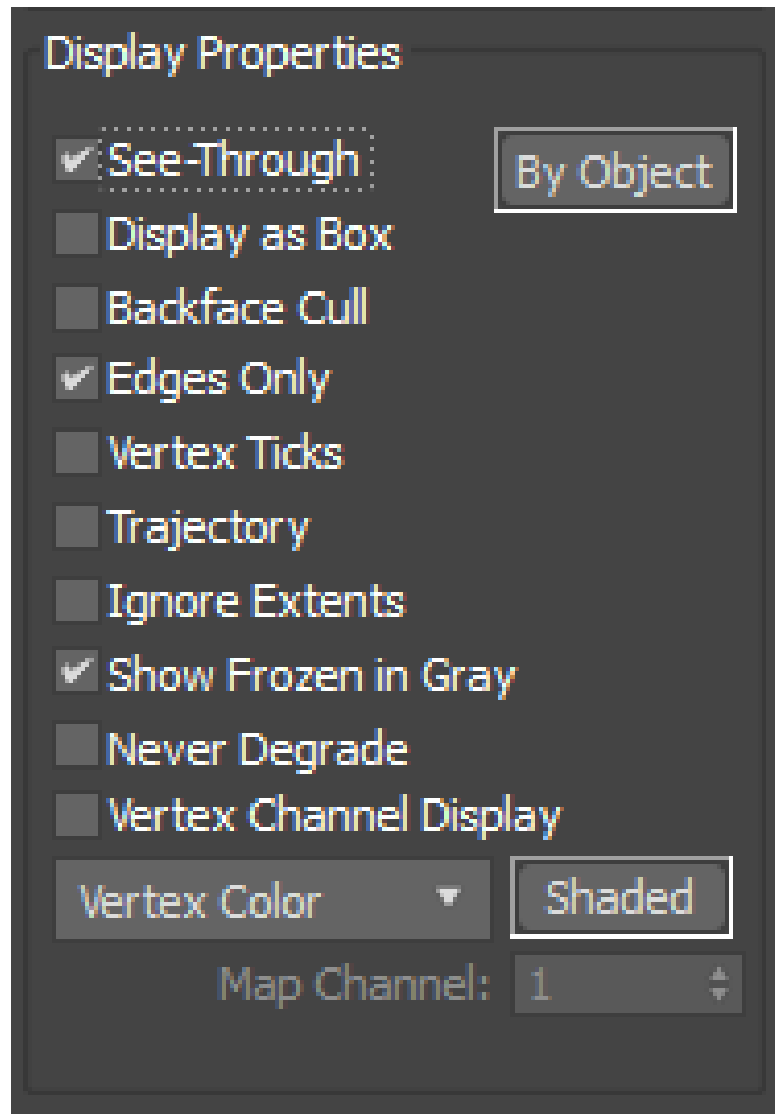


Turn the cylinder transparent to allow us to see our image.

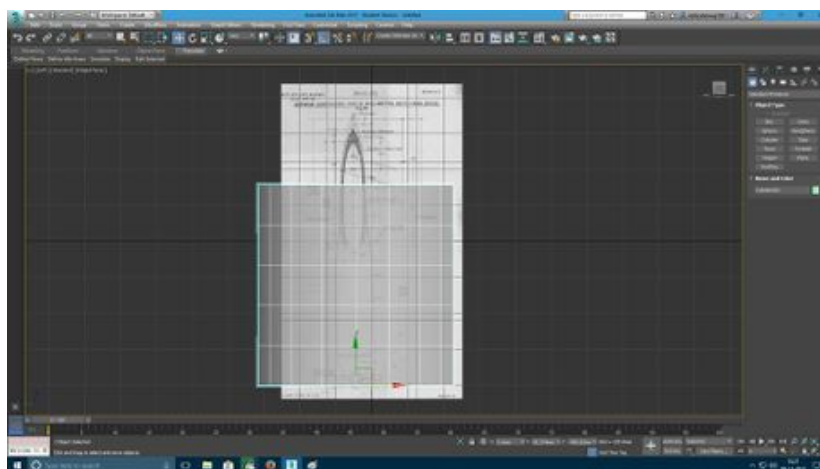
1. Click on Edit in the toolbar.
2. Click Object Properties and wait for window to open.



3. Select the "See through" option in display properties and then click OK.

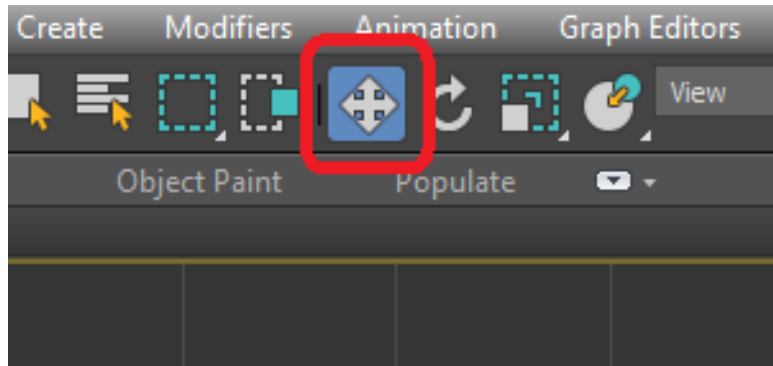


4.

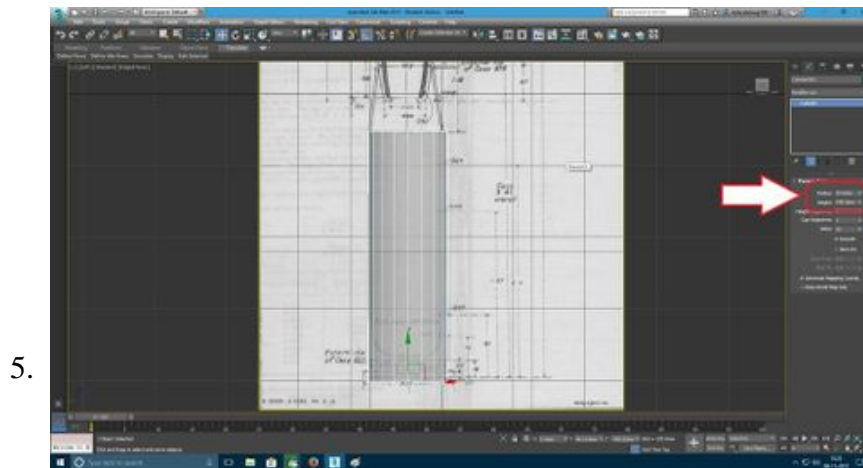


Position your cylinder.

1. Select "Move tool" from toolbar (keyboard shortcut W).

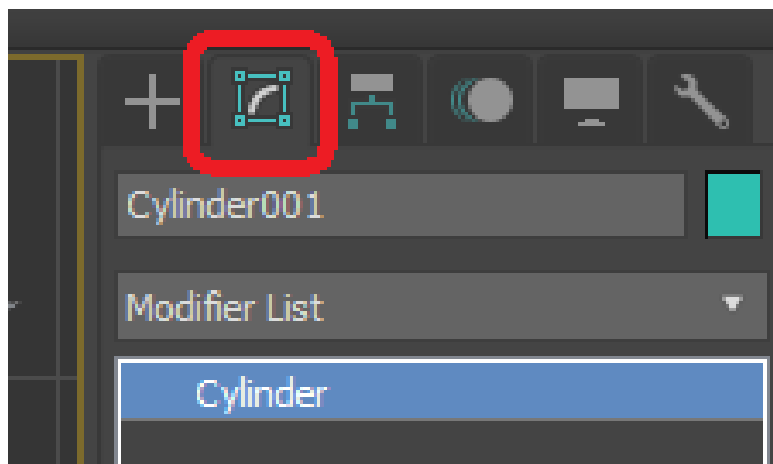


2. Align the bottom of cylinder with the bottom of bullet in reference image.
3. Align the cylinder center axis with the center axis of bullet in reference image.

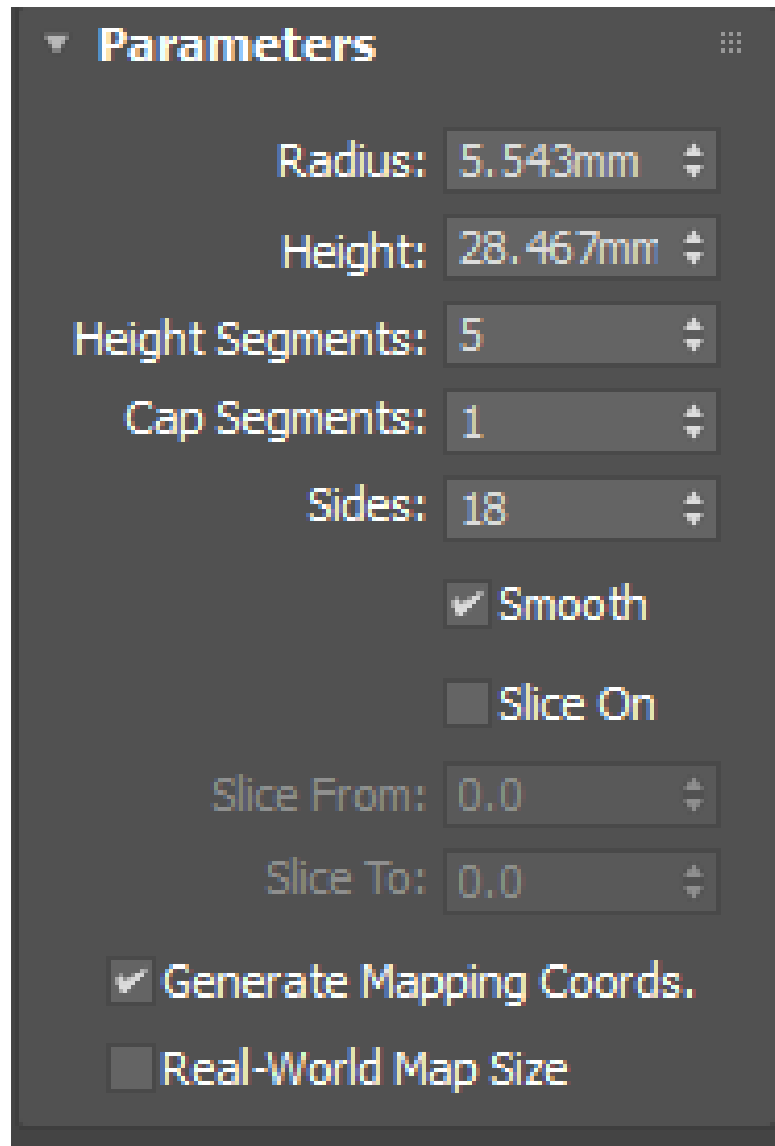


Change dimensions of cylinder roughly to size of bullet casing.

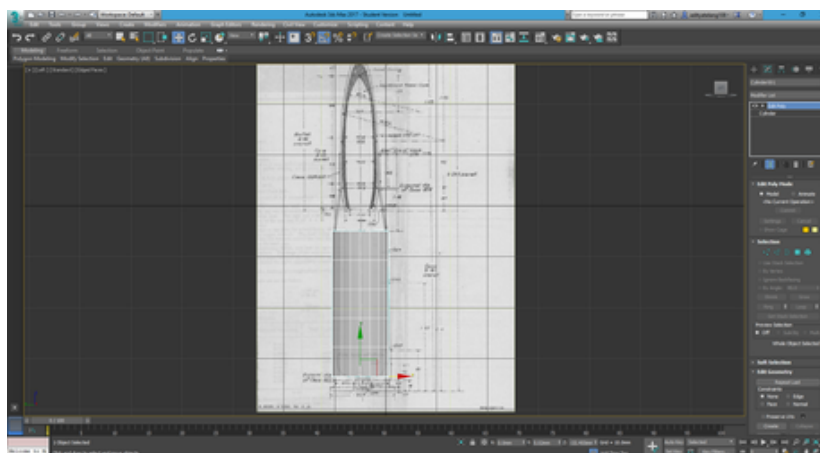
1. Go to Modify panel.



2. Match height and radius of the cylinder to the bullet casing of reference image.

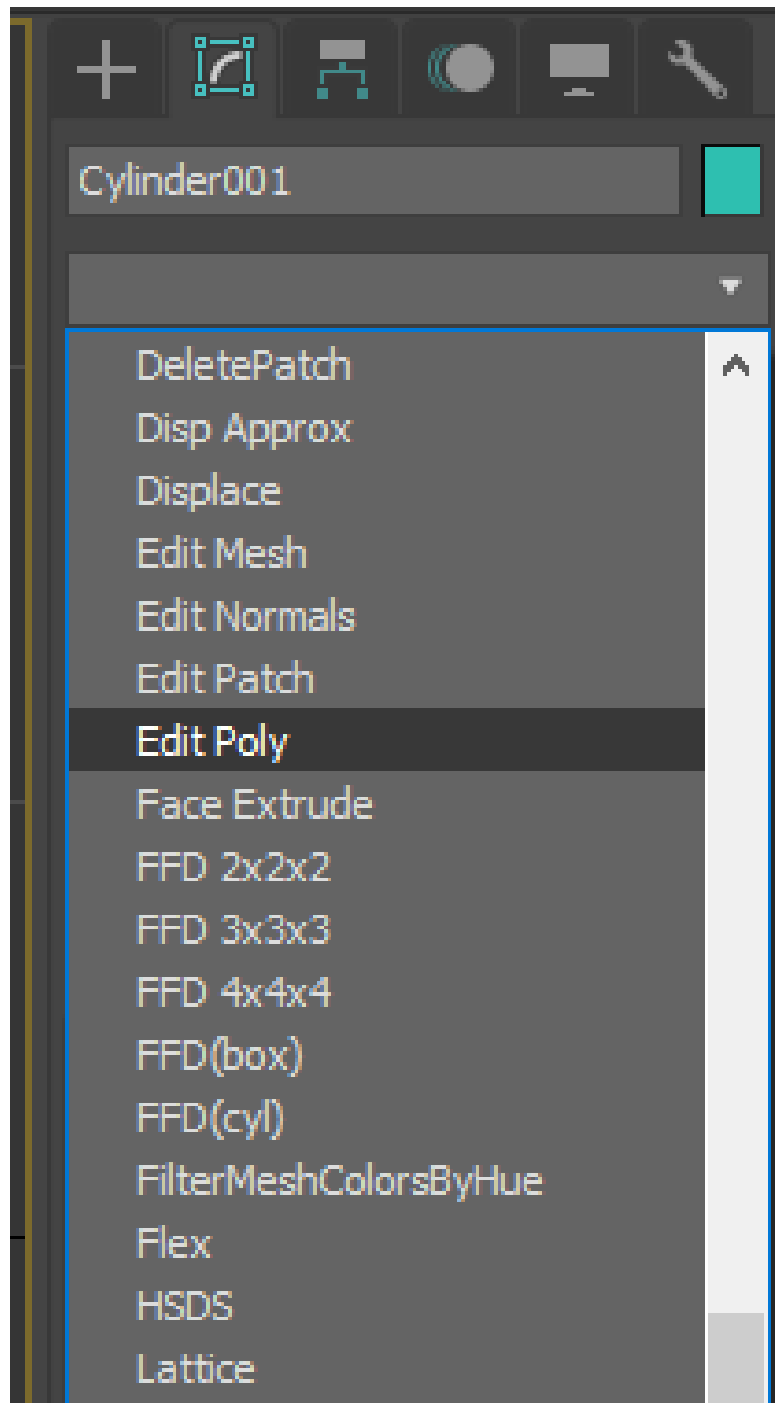


6.

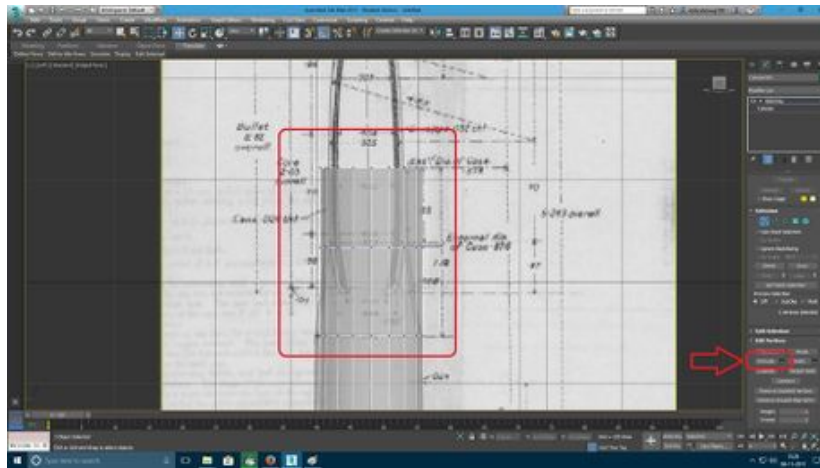


Add Edit poly modifier.

1. Click modifier list from the modifier panel.
2. Select "Edit poly" from the drop down menu.

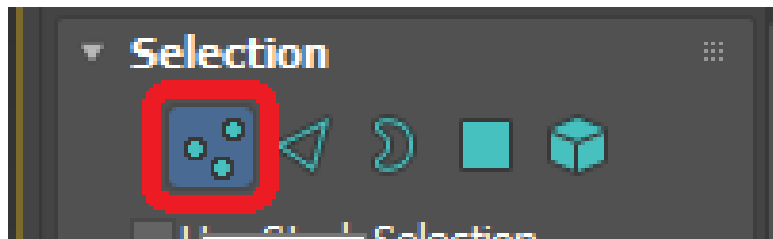


7.

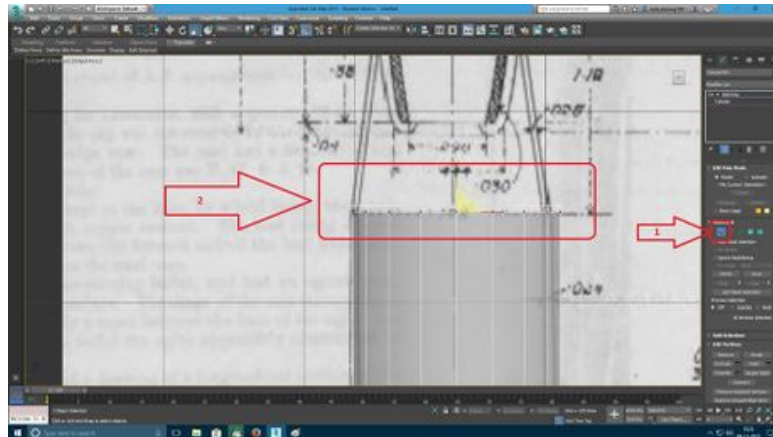


Extrude the vertices to add more height.

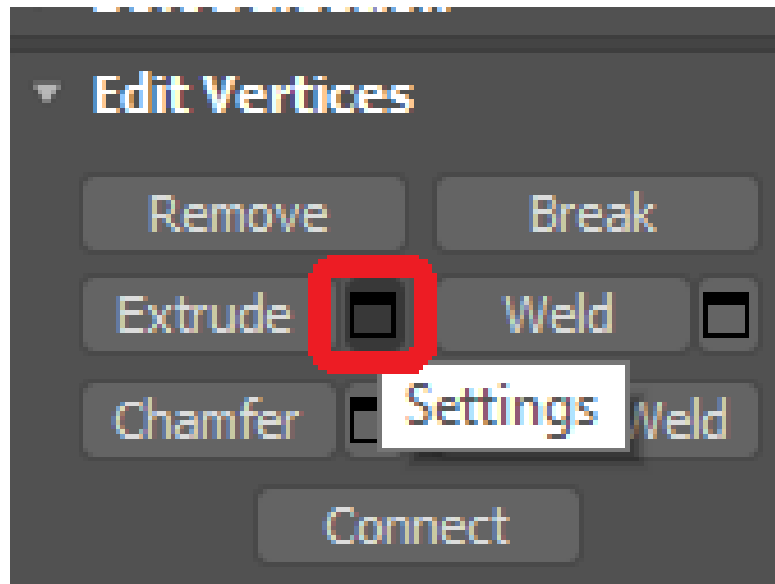
1. Click on vertex button from edit poly modifier.



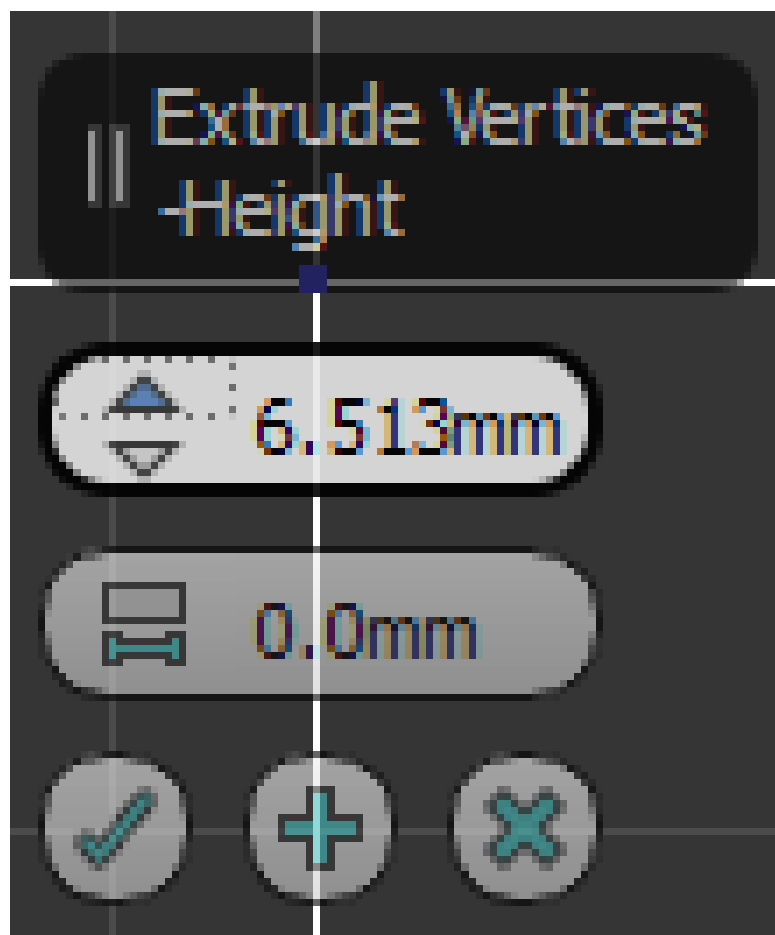
2. Click and drag to select all the top vertices of the cylinder.



3. Click on the small button next to extrude.

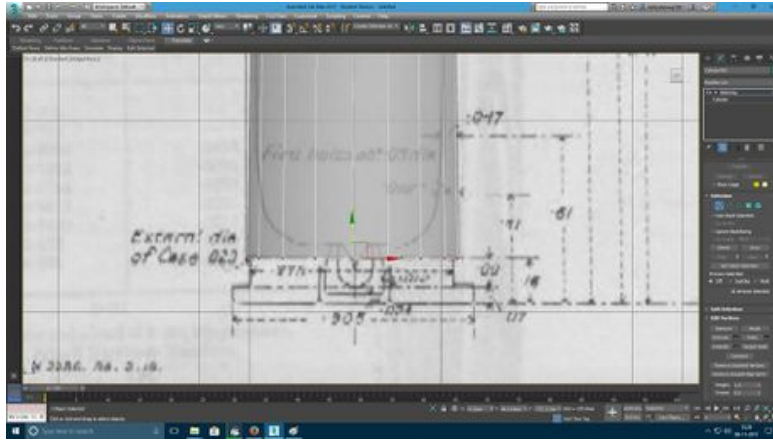


4. Extrude the vertices using setting box opened. Do twice since the bullet casing has two bends at the top.

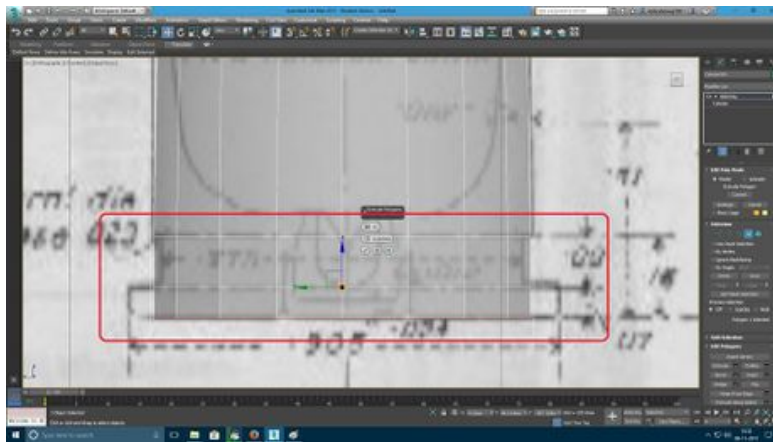


8. **Create bullet case bottom notch.**
 1. Select all the bottom vertices.

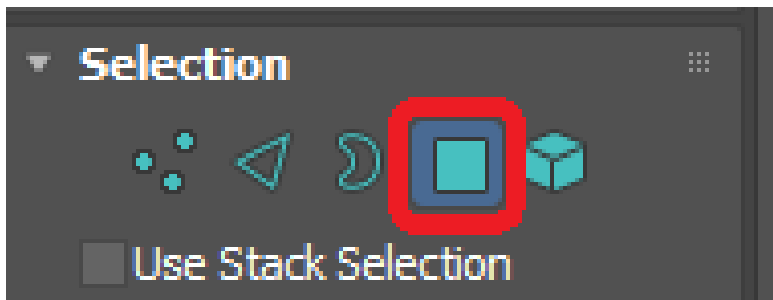
- Align the selected vertices to top part of the notch, on the z axis, as shown below with the reference image.



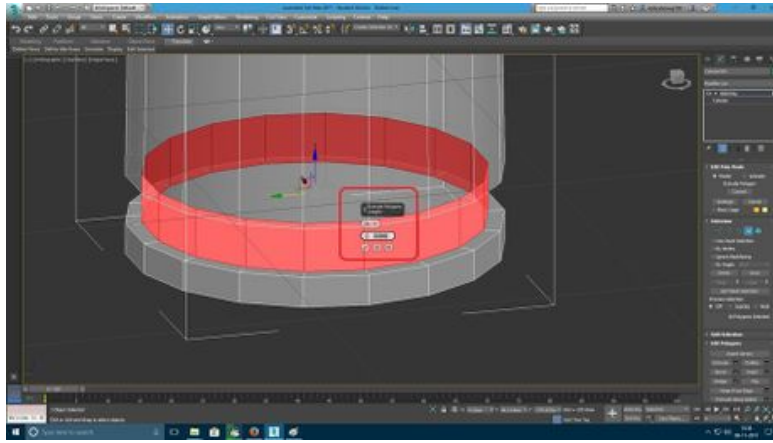
- Extrude again. Do it twice exactly to match the edges for the notch.



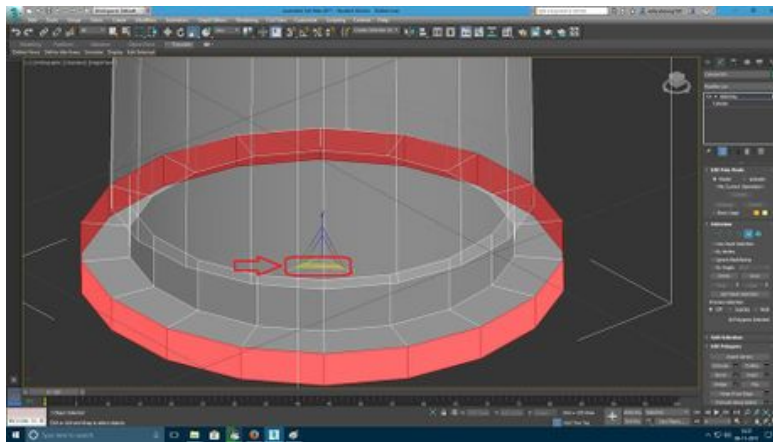
- Click on faces button in modifier panel.



- Then select the ring of faces (one up from bottom) as shown in the picture.
- Extrude the faces negatively. In this image below a value of -5mm is used.

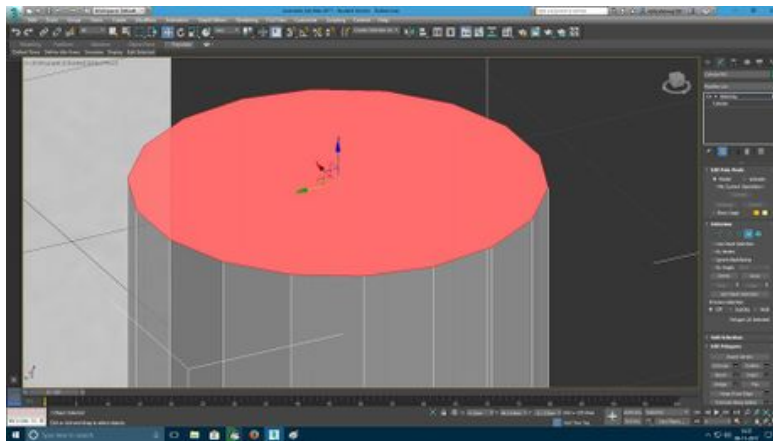


7. Select bottom most ring of faces.
8. Scale them on xy axis by clicking on the select & uniform scale in toolbar (keyboard shortcut **R**).
9. Hover mouse on xy plane of the pivot as shown in the figure. Then click and drag to scale.

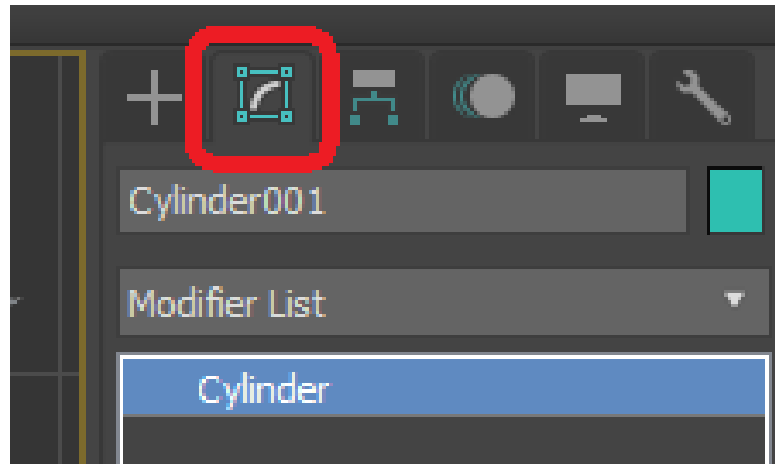


9. Extrude Top border to create thickness.

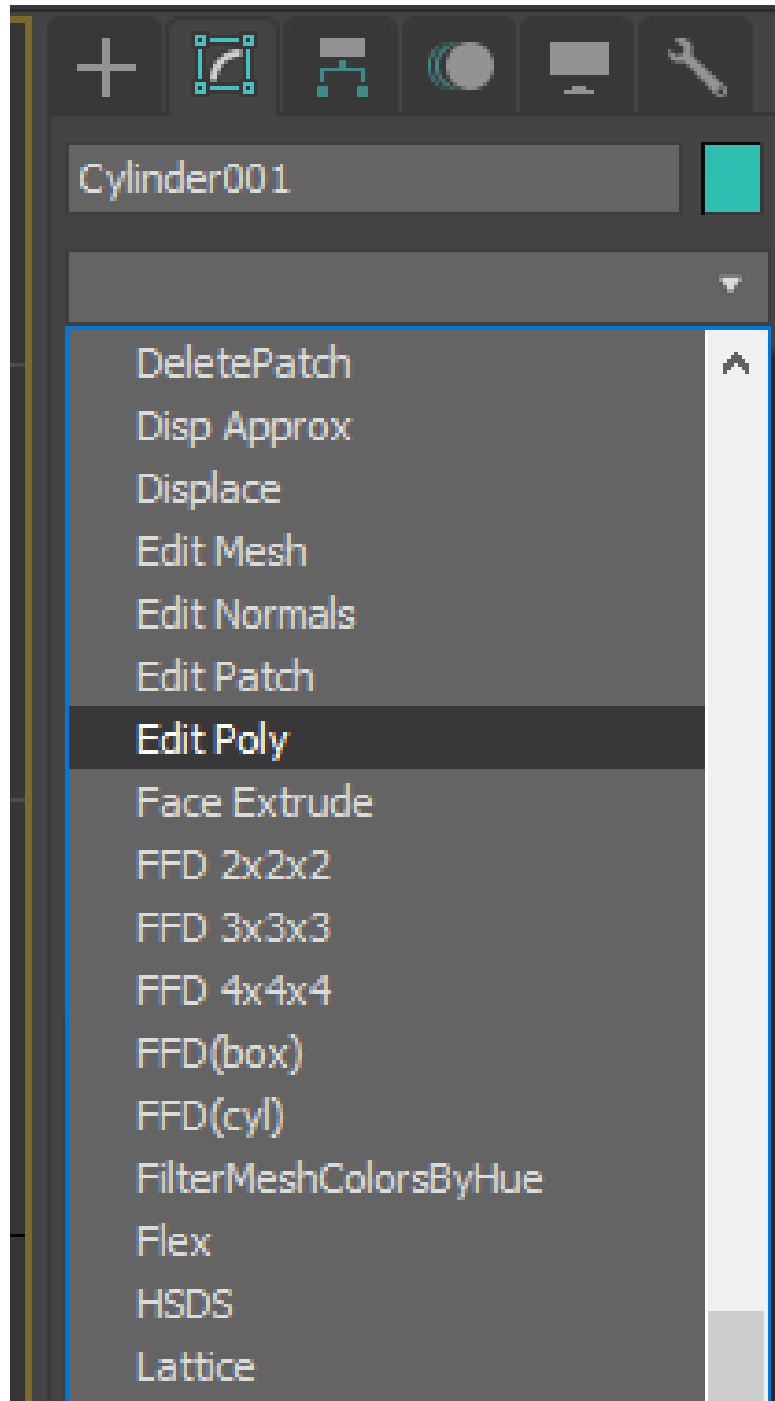
1. Click the face select tool.
2. Select, then delete the top face of cylinder.



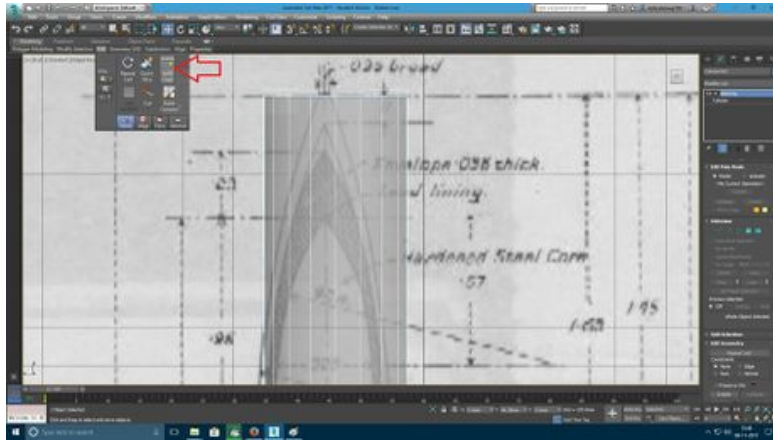
3. Click the border select tool.
4. Select the topmost border.



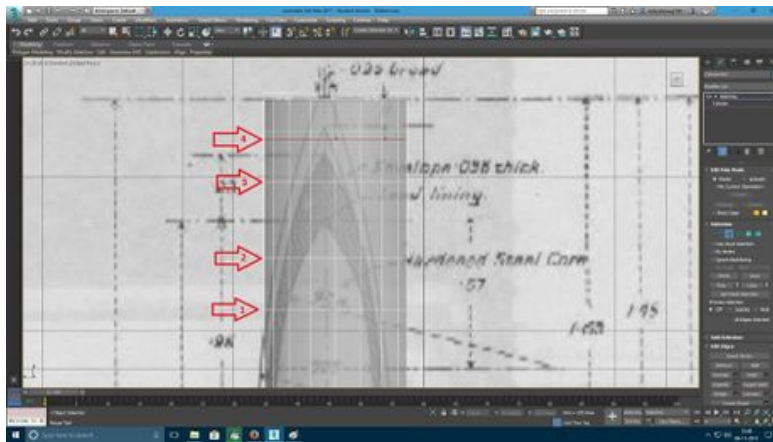
2. Select "Edit poly" from the drop down menu.



3. Then repeat step 3 in Part 2 for see through.
5. **Model the shape of bullet.** Add more loops at the top of the cylinder.
 1. Click on Modeling panel in toolbar.
 2. Click Edit>Swiftloop.

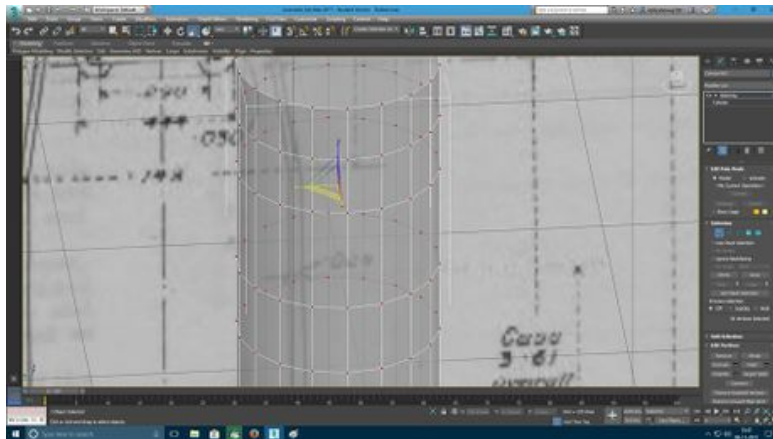


3. Add up to 4 cuts at the top half of the cylinder.



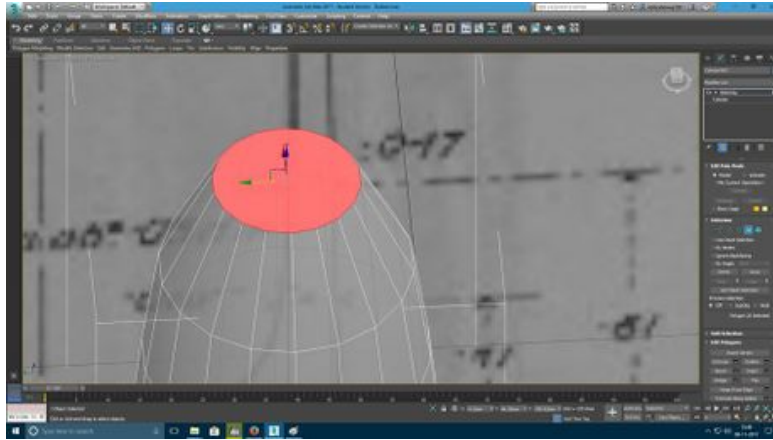
6. Create a round dome shape.

1. Click on vertices select tool.
2. Select all the newly created vertices along with the top vertices.



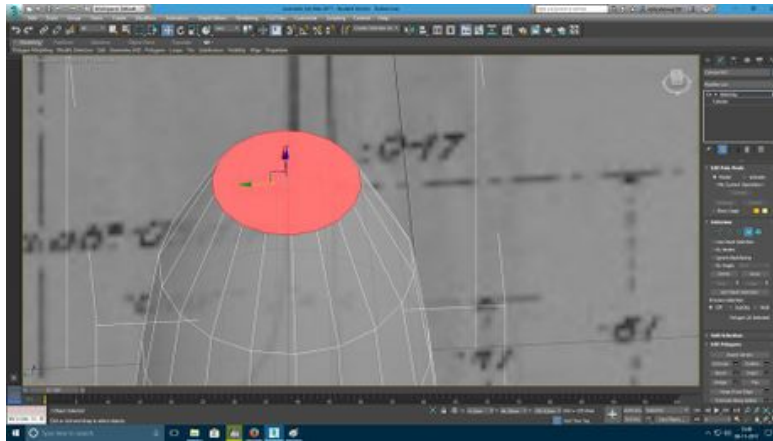
3. Scale the ring of vertices to smaller size on the xy axis.
4. De-select the bottom most ring.
5. Scale it down again on the xy axis.

- Repeat scaling two more times and de-select one ring of vertices from bottom every time you scale down to give it a crude, dome like shape.

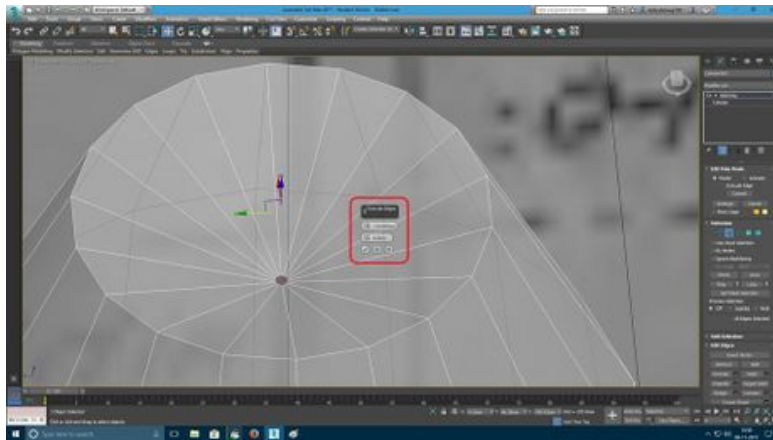


7. Model the bullet point.

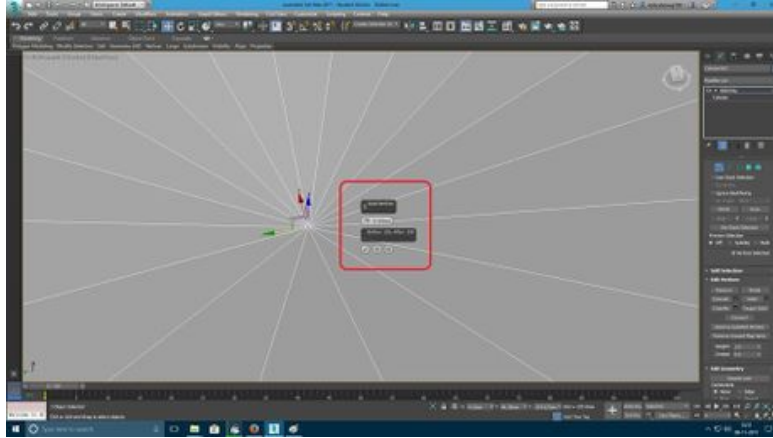
- Click on face select tool.
- Select the top face of bullet.



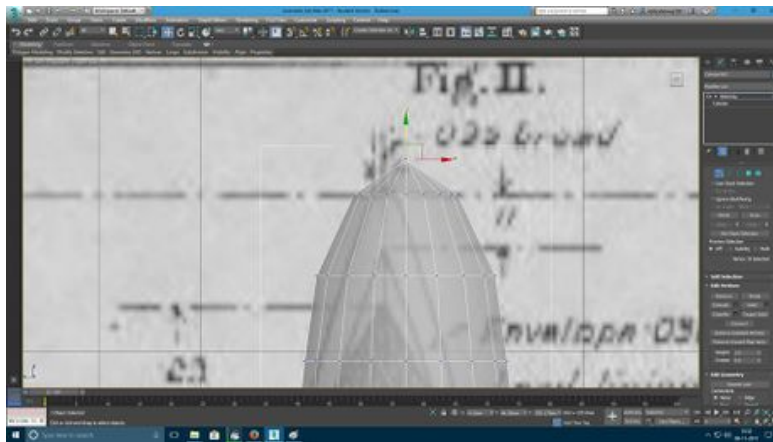
- Delete the top face.
- Select all the top vertices.
- Do a negative extrude as much as possible with a very small gap.



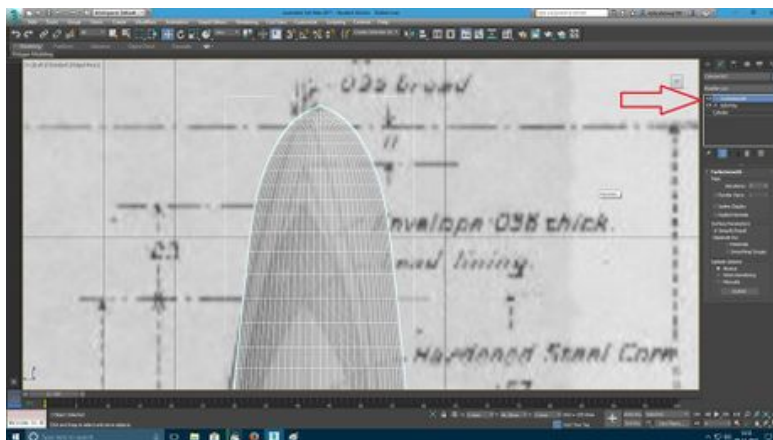
6. Click on the Weld tool in modifiers panel.
7. Weld all these extruded top vertices.



8. Select and pull the new welded vertex to the top using the move tool.



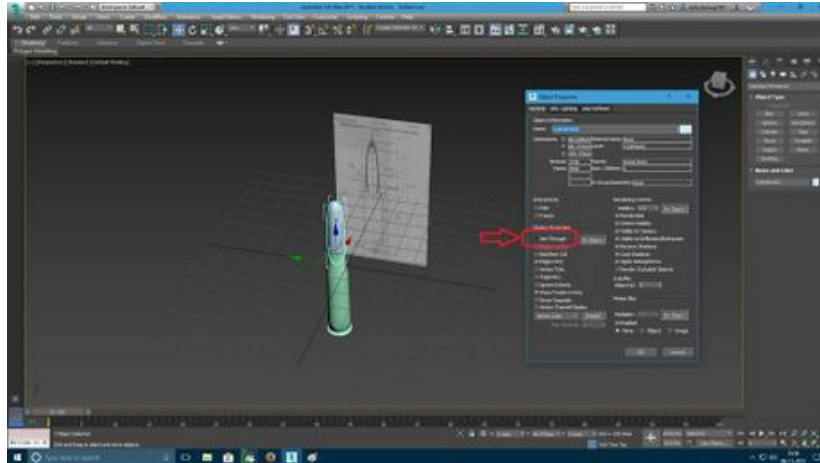
9. Click modifier list from the modifier panel.
10. Select and add "Turbosmooth" from the drop down menu. This will give the bullet a smooth look.



Part 4 of 4:

Add Finishing Touches

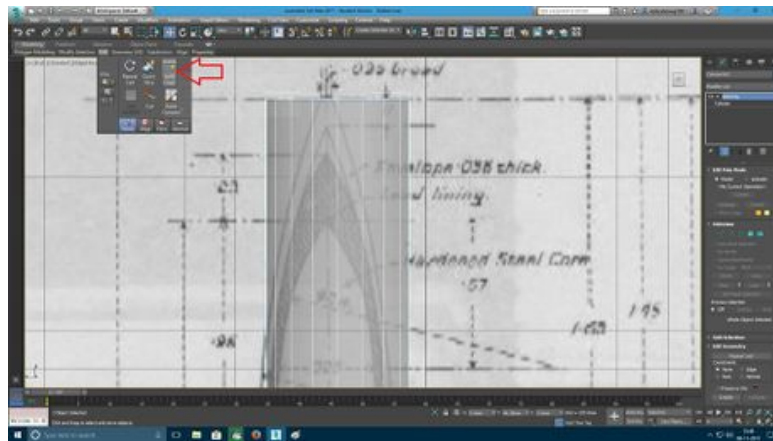
1.



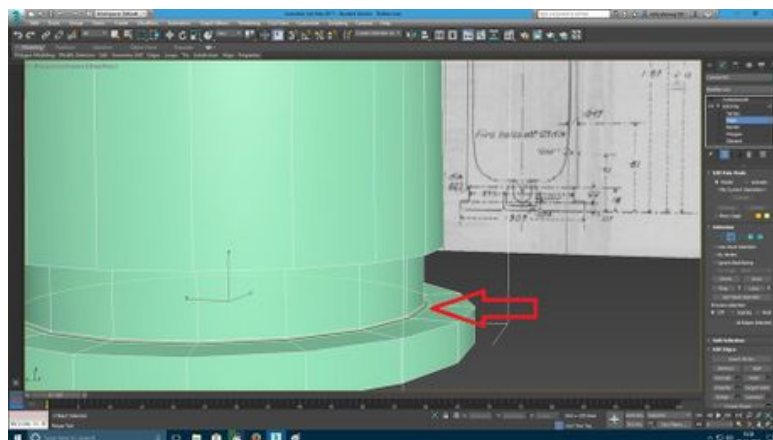
Remove the see-through option from both the cylinders.

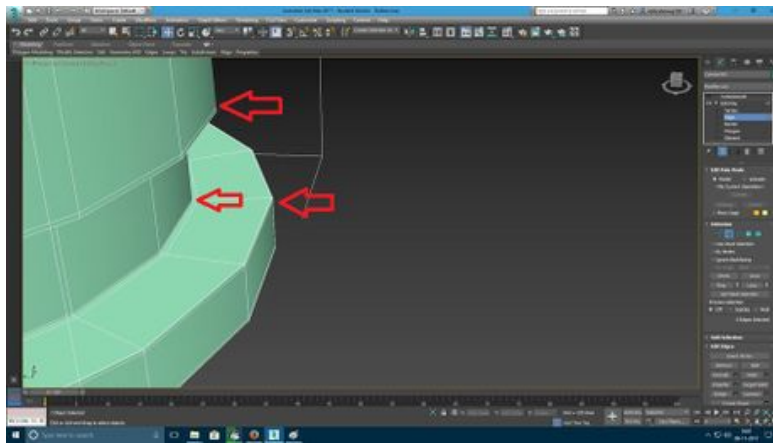
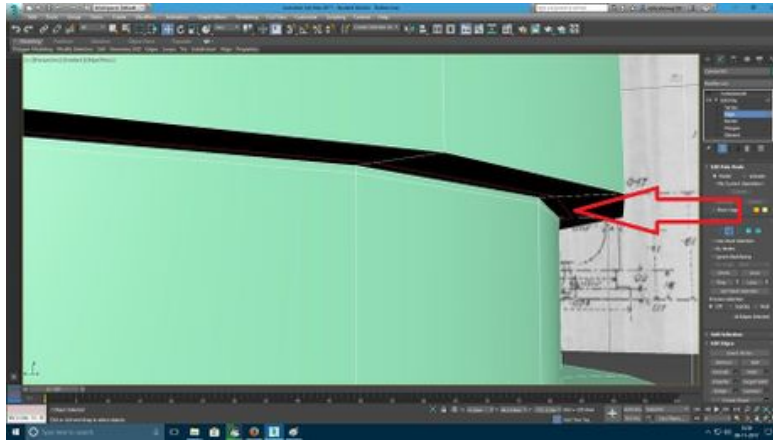
2. Add Loops to edges of the case.

1. Click on Modeling panel in toolbar.
2. Click Edit>Swiftloop.



3. Add loop cuts at all the edges of the case notch and at the bottom.





3. Smooth the case.

1. Click on the modifier list from the modifier panel. Select and add "Turbosmooth" from the drop down menu.

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