



Create a 3D Lighthouse

Tutorial by Philemon Yalamu (C) 2018

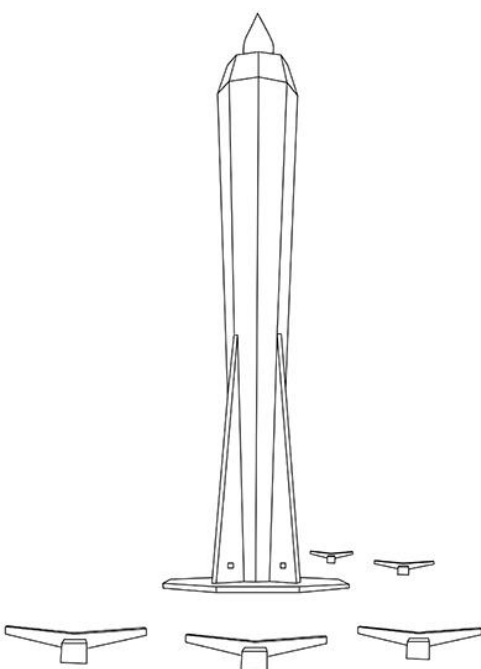
In this tutorial, I'm going to take you through a modeling exercise in Cinema 4D on how to create a light house. There is one specific memorial lighthouse known by locals as Kalibobo. I won't get into the details of creating it but, will go through a quick rundown on one way you can model your objects. The idea here is to give a clean start to those of you getting into Cinema 4D on how to model objects using polygon primitives. I will be using Cinema 4D Studio version 17 and all demonstrations will be done on windows. This tutorial is written in courtesy of Howard Bagiro, an up and coming designer and one of my mentees (*one who designed the font I used on the header name **Kalibobo***). If you want the font, or other custom fonts based on contemporary themes, please go to the website by following the link below or search Kumul Fonts on Google:

<http://www.artech.com.pg/projects/kumul-fonts.html>

Note: For this tutorial, you must have Cinema 4D installed on your computer in order to follow along. You can download a demo version on Maxon's website by following the link below;

<https://www.maxon.net/en/try/demo-download/>

1: Understanding the object to be modeled:



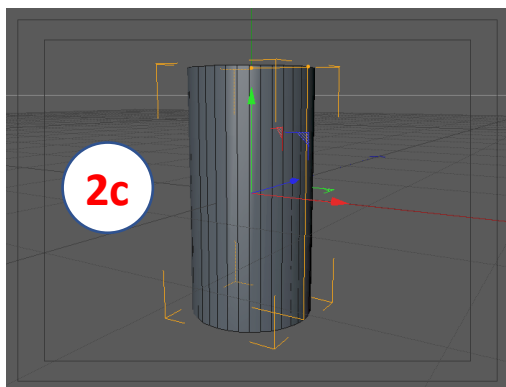
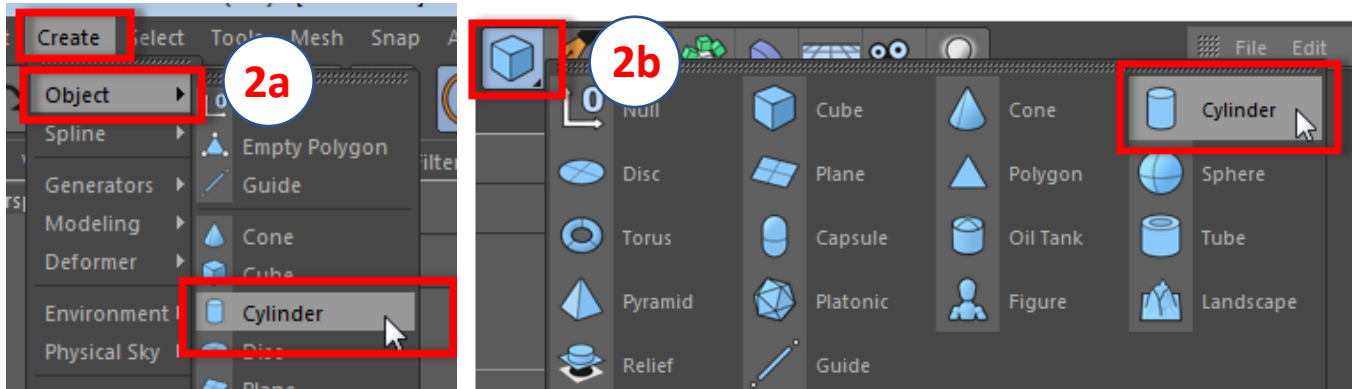
It is essentially vital for you to understand your figure or object before you start constructing the 3D model of it. One approach is to look at your model in the form of shapes. Everything we see around us is made up of shapes. When put together, these shapes create form and those form are classified into different categories in which we give names to such as this one "Kalibobo" (*figure 1*) which we are going to model.

This is a quick trace I made to give us the idea of our object and the shapes that constitute it. Do Note that the model is drawn based on an image and I may not get some information correct such as the number of sides/ faces etc..

The first thing we may identify is that, the main shape (*the longer figure*) has roughly around 8 corners or faces. This will become the base of our entire model and the first thing to work on. The rest would be built upon it.

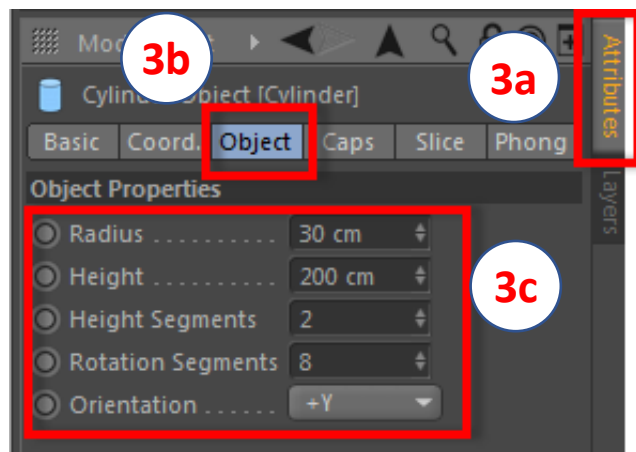
2: Create the Polygon Object:

Let's begin by creating a polygon object to model our main shape. We are going to start with a cylinder as our base. Now, go to **Create** Menu (figure 2a) click and go down to object, then select cylinder. Alternatively, you can also use the shortcut menu of toolbars (figure 2b) below the main menu to create this.;



Following the above, we will create a cylinder (figure 2c). Next, we are going to convert that cylinder into the shape of our lighthouse. Since we have already understood the basic shape of our lighthouse, especially the main body which has roughly around 8 sides/ faces, we will now modify the properties of this cylinder to be similar or equivalent to that of the object (Kalibobo lighthouse).

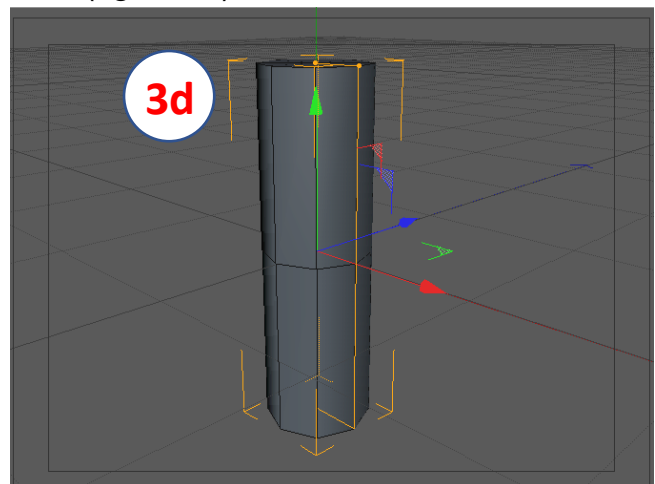
3: Modifying the Polygonal cylinder:



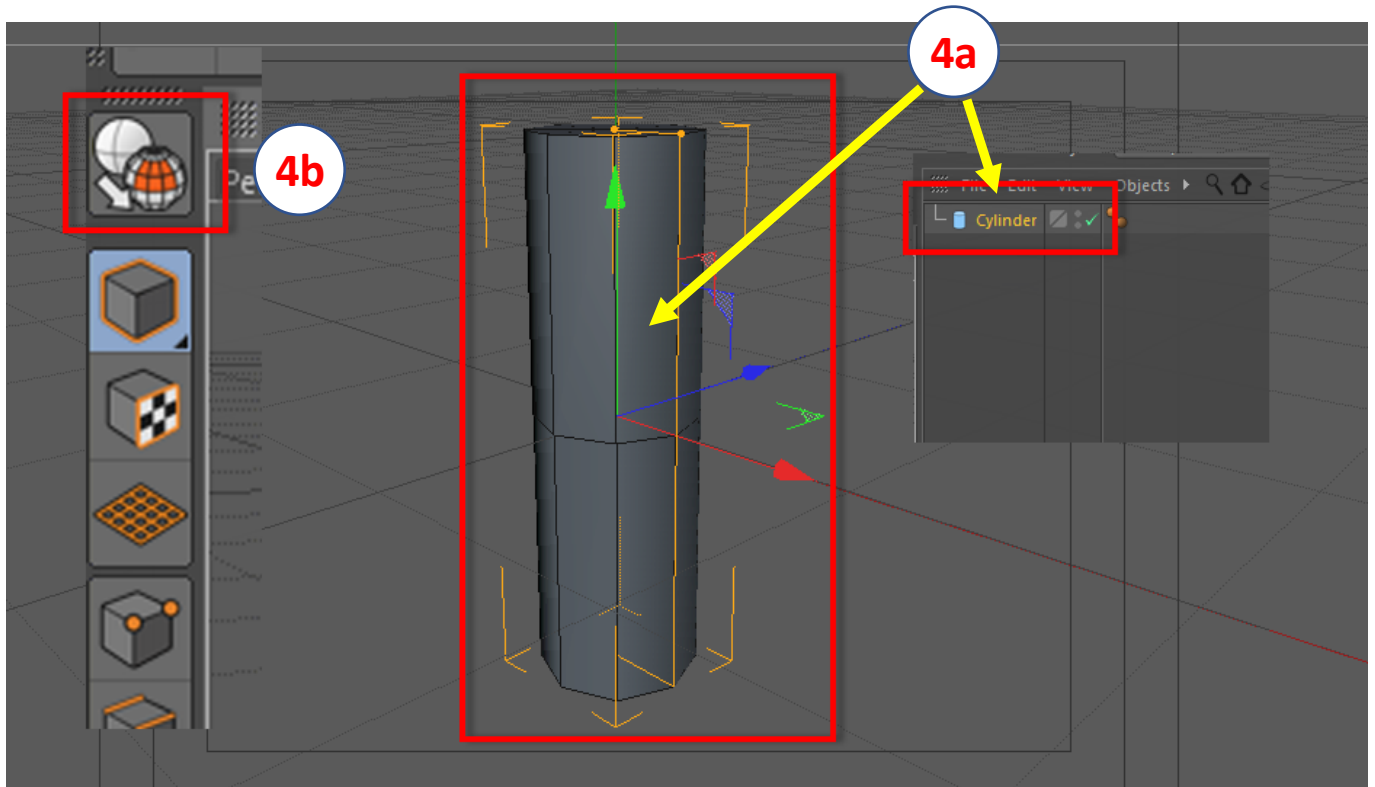
With the object selected (Figure 2c), Go to the **Attributes manager** (figure 3a) [by default, if you're in standard or startup mode, it will be located on the right side of the window, below the Objects Manager]. Within the attributes manager, choose the **Object** tab (figure 3b) and adjust the properties of the cylinder to those as shown (figure 3c).

Once you set the parameters of the cube, it should give you a figure with **2** height segments, **8** rotation segments and has a radius of **30** and a height of **200**.

You are ready to move onto the next stage.

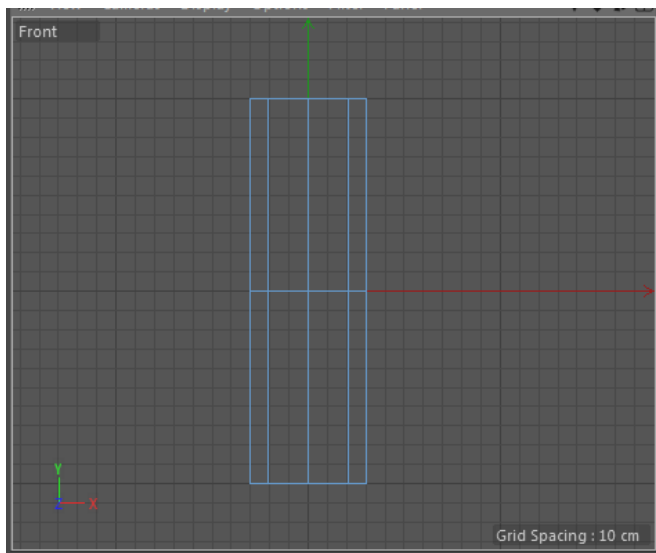


4: Make the object editable:



In order for us to modify this object, we must first make it editable. Follow the diagram above by first selecting the object (**4a**) either by clicking it on the workspace window or the Objects manager, then click the **make editable** icon (**4b**) or you can also use the shortcut key on your keyboard (by pressing just letter **C** on your keyboard) to make it editable.

5: Switch to Front View:

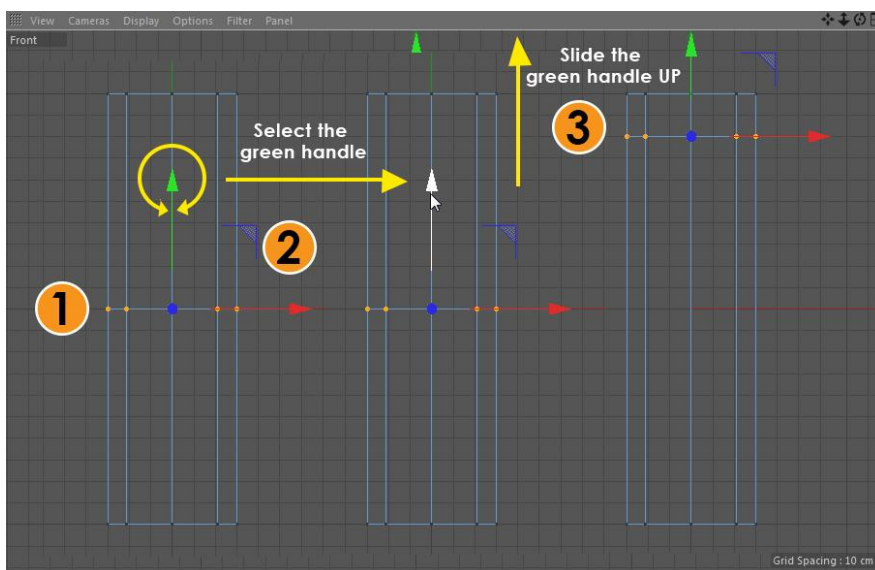
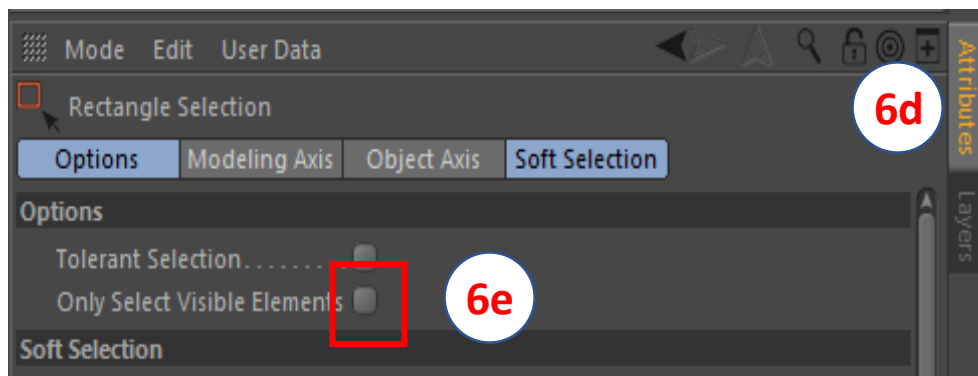
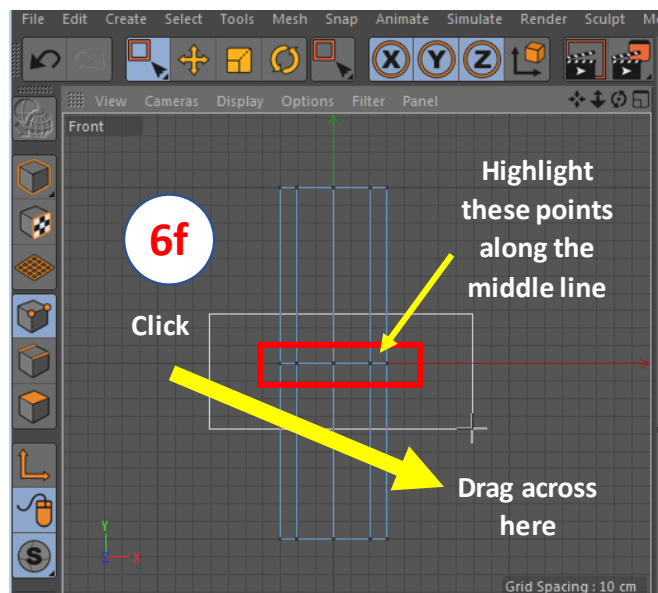
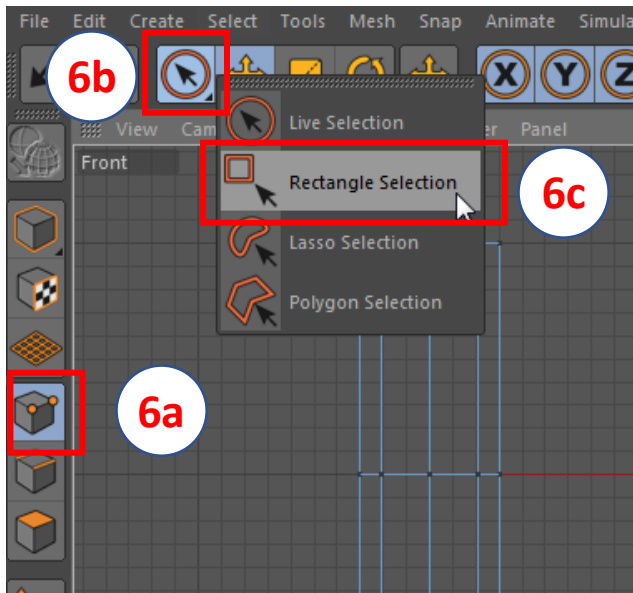


Switch to the right view by pressing shortcut key **F4** on your keyboard. Note that F4 is a single key not F and 4.

By the way, the 4 views that we may be going to and from are the Perspective view (**F1**) (which will be our main view), the Top View (**F2**), Right View (**F3**) and the Front View (**F4**). Keep these shortcuts in mind because we will use them regularly throughout our tutorial.

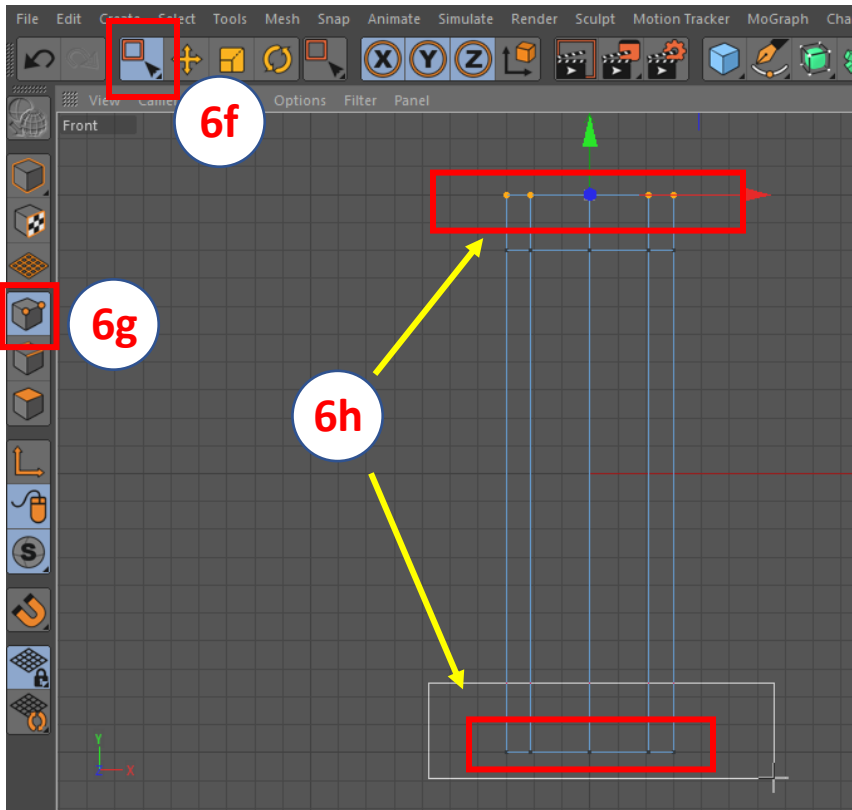
6: Modeling using Point Adjustments:

Within the front view, select the **Point Mode (6a)**, then click the **selection toolsets (6b)** and from the dropdown, select the **Rectangle Selection tool (6c)**. Go to the Attributes Manager (**6d**) and deselect the option “**Only Select Visible Elements (6e)**”. Now, you draw across from left to right (*diagonally*) highlighting the middle sets of points on the model (**6f**).

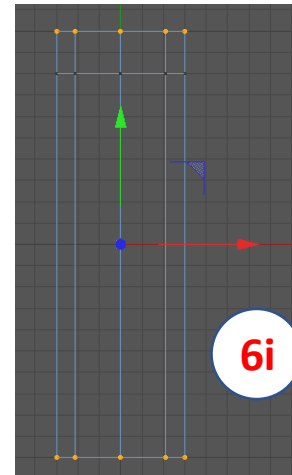


The next step is to adjust the points to get the shape of the object (*lighthouse*) by dragging and scaling the points.

With the middle-sets of points selected, drag the green handle (**1 & 2 left**) upward (**3 left**) so the points are positioned towards the top.



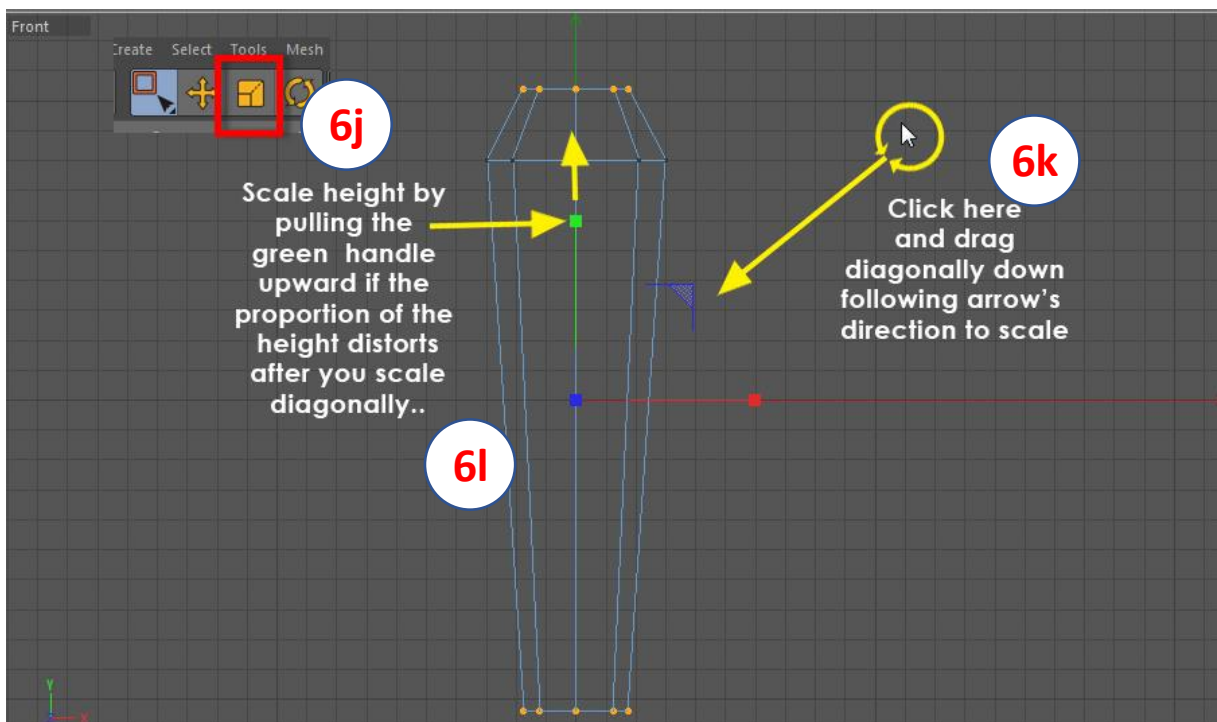
Now do the same thing you did to select the middle points. With the Point mode (6g) selected and the rectangle selection tool (6f) selected, highlight the points at the top and bottom ends of the model (6i below).

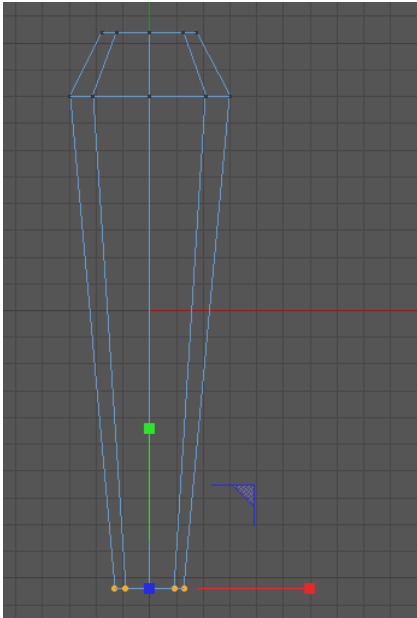


If you do well, you should have both the top and bottom sets of points selected (6i).

Next, select the scale tool (6j). Then, following the direction of the arrow, drag your mouse diagonally to scale the top and bottom points inwards. DO NOT Click on any of those handles (Red, Green or Blue) instead, click from anywhere outside and scale diagonally inward. Make sure the points are still selected when you scale. You should see the object taking shape. Continue doing the same and if the top gets too close to the middle points, use the green handle to scale it upward as shown below (6l).

Continue repeating steps in figures 6k and 6l until you get a desired shape.





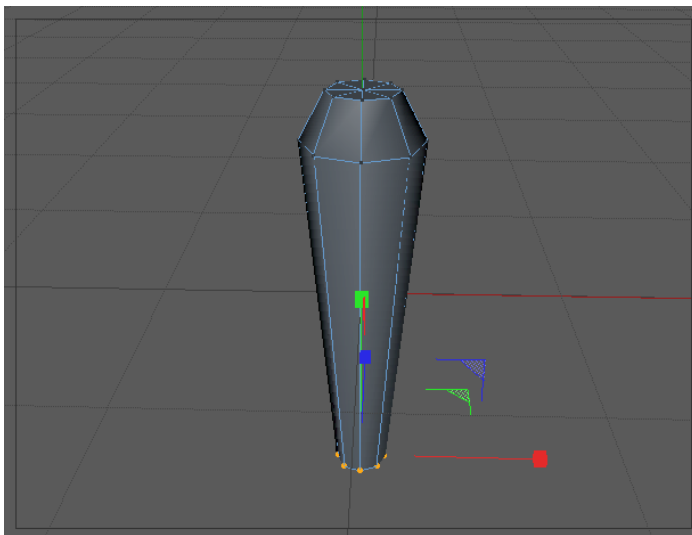
Let's scale the bottom end a little smaller.

First, use the scale tool (6j), select only the bottom sets of points by highlighting them. Once they're highlighted, click anywhere away from the handles and drag diagonally downwards like what we did in (6k).

IMPORTANT: DO NOT Scale the handles individually as this is a 3D object and you may only scale one side of the model.

If you do well, you should have something like the one opposite. Do note that size of the bottom is smaller than the top and the middle. has a much larger diameter than the top and bottom.

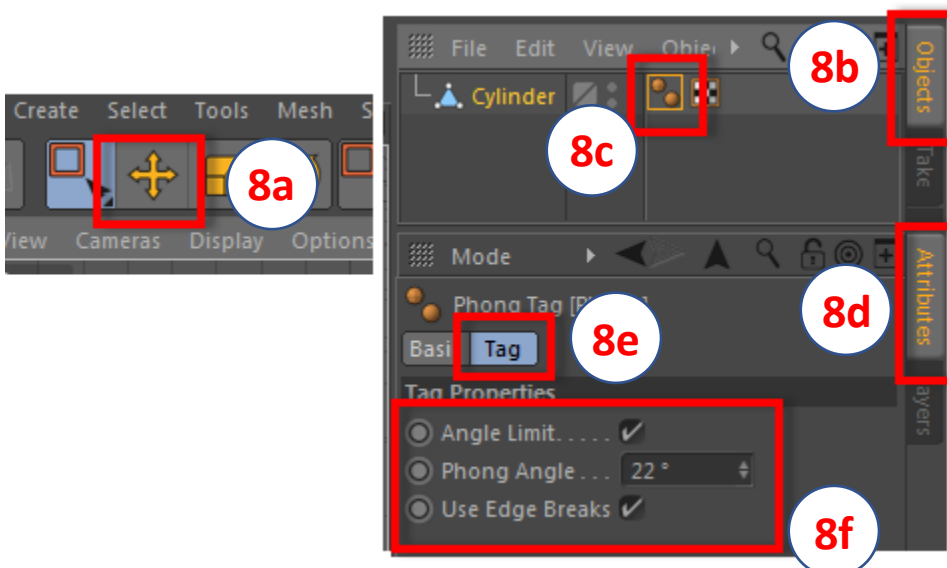
7: Switch to Perspective View:



Go back to Perspective view by pressing **F1** key on your keyboard. Note that **F1** is a single key and not **F** and **1**. You would realise that our model is a little too smooth.

To refine it, we're going to reduce the phong angle of the object. The phong angle is what makes the object smooth or sharp. You would notice once you adjust the phong angle that the object would be a little edgy or sharp with refined edges that it is now.

8: Adjust the Phong Angle:

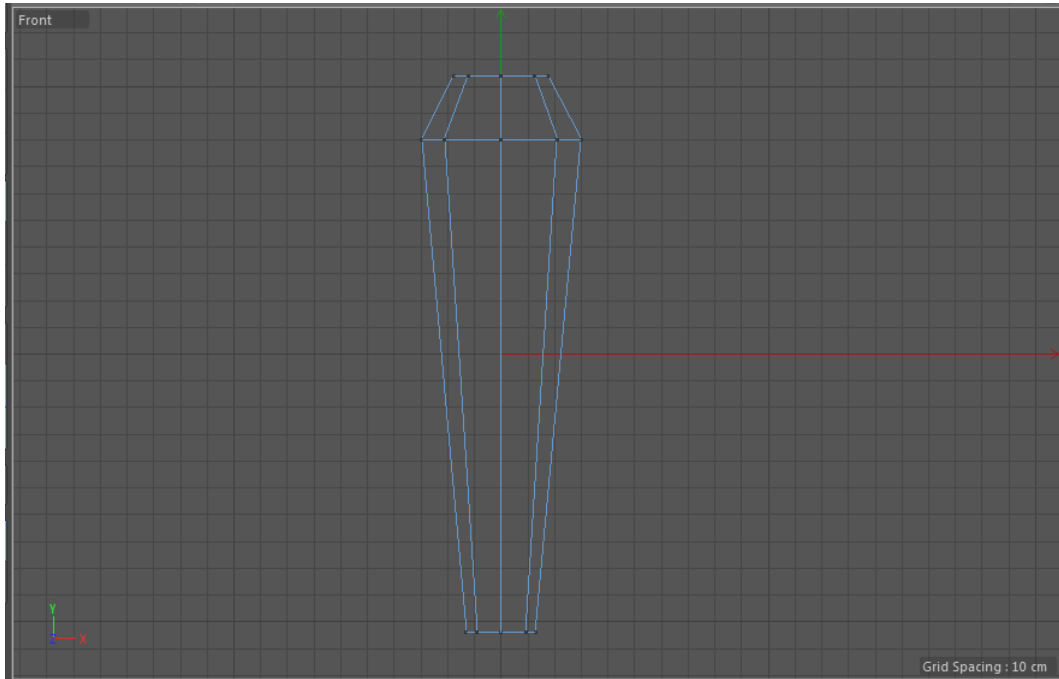


Get the **move tool** (8a), then go to the **Objects** manager (8b) & click the **Phong** tag (8c). Then go to the **Attributes** manager (8d), under the **tag** tab (8e) adjust the Phong angle to **22** (8f).

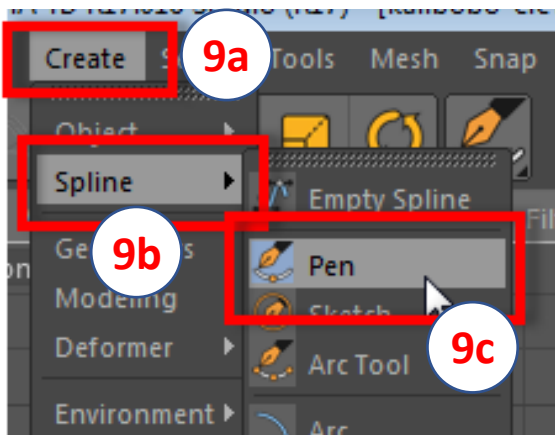
This should change the look of your model.

9: Adding the base:

Switch to the Front view by pressing the key **F4** on your keyboard.



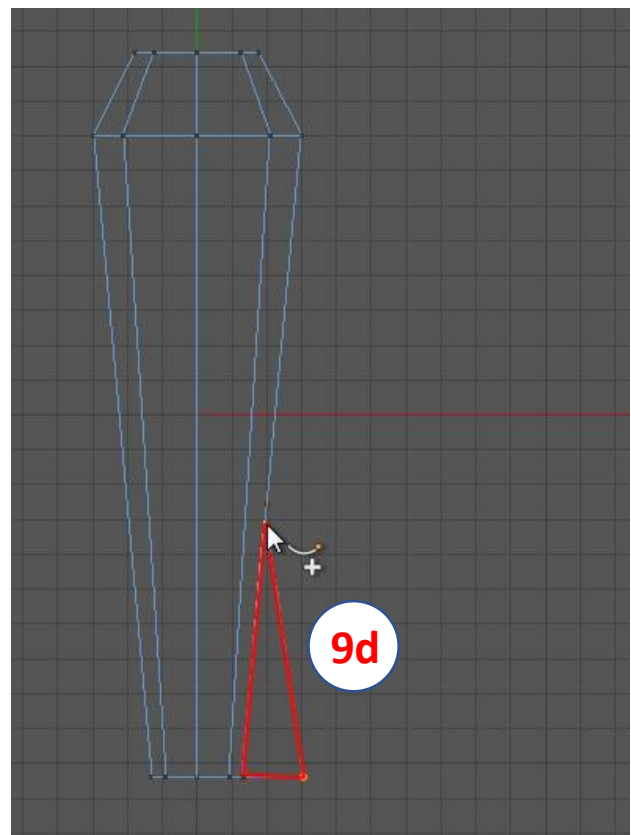
We are going to draw a spline for our base support for the lighthouse using the pen tool. Go to the Main menu, select **Create (9a)**, down to **Spline (9b)** and Choose **Pen (9c)**.



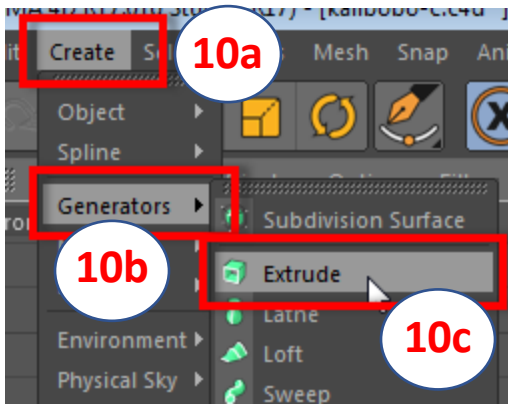
With the pen tool, draw a spline for the base of the lighthouse.

The spline should be in the shape of a triangle, similar or closer to the base support of the lighthouse (**9d**).

With this base, we will then extrude it to give it depth and later duplicate to give the 4 support sides. Let's move on...



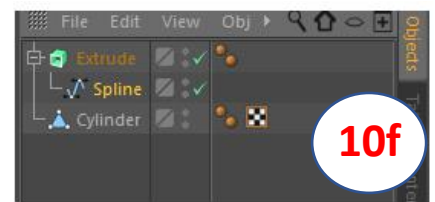
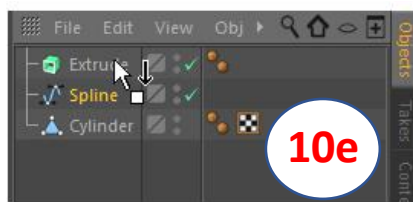
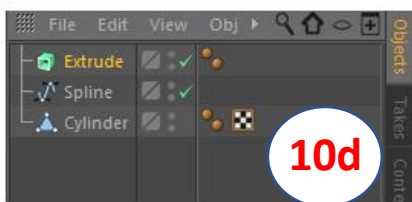
10: Extruding the base support:



Next, we're going to use an extrude nurbs to extrude the spline we just created.

Go to the main menu, under **Create (10a)**>Choose **Generators (10b)** and click on **Extrude (10c)**.

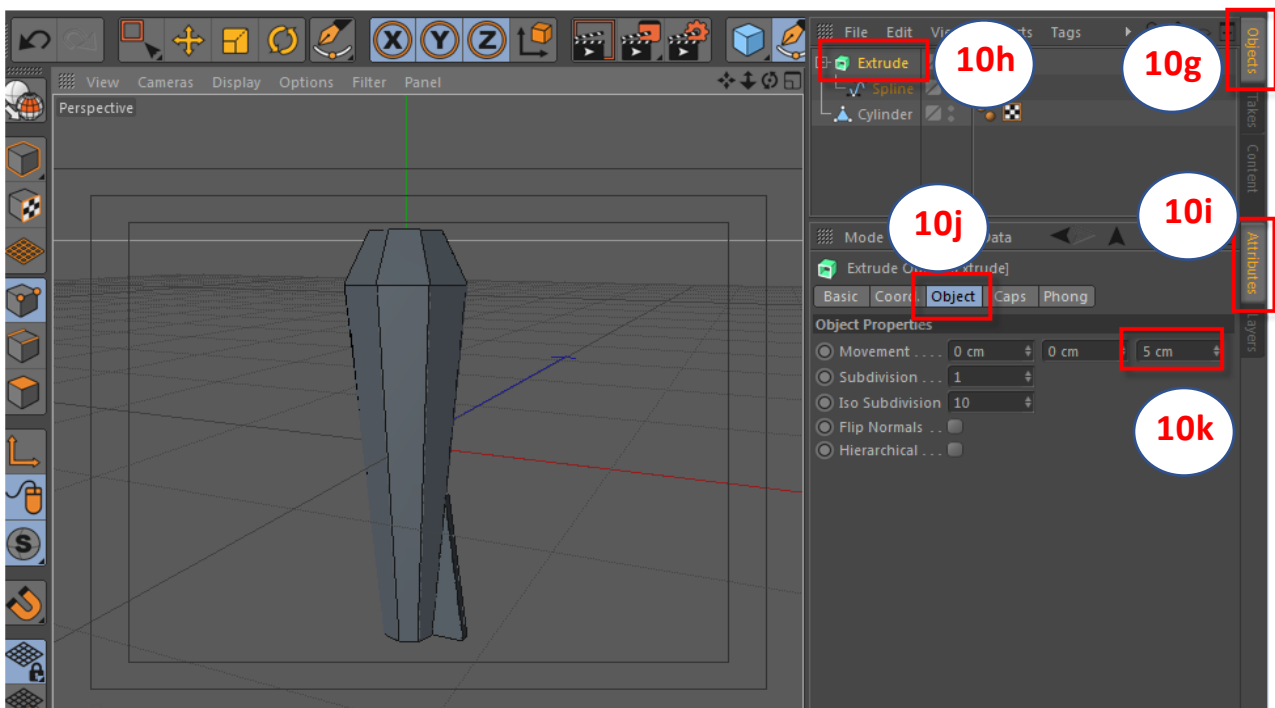
This will add an extrude nurbs to the Object Manager (10d). Drag the spline onto the Extrude Nurbs (10e) and make it a child of the Nurbs (10f).



Drag spline onto the **Extrude Nurbs** and make it a **child** of the nurbs

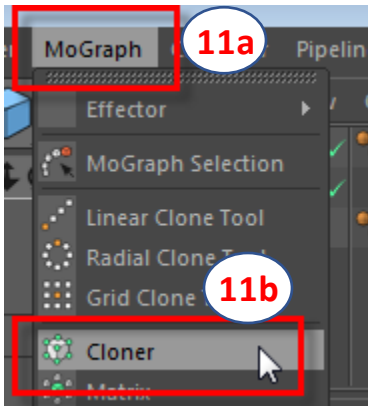
Go back to the perspective view by pressing **F1** on your keyboard, remember it's **F1** not F and 1. You should now see a base support for the lighthouse being created. We just need to do few tweaks to get the depth of the base to reasonable size.

Go to the **Objects manager (10g)** and select the **Extrude nurbs** object (10h). Under the **Attributes manager (10i)**, select the **Object tab (10j)** and adjust the Z-axis of **Movement to 5 (10k)** or any number you think suits your liking.

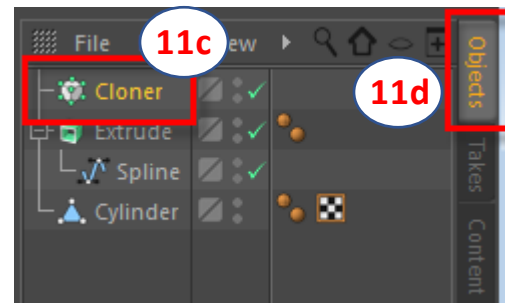


11: Cloning the base to make copies:

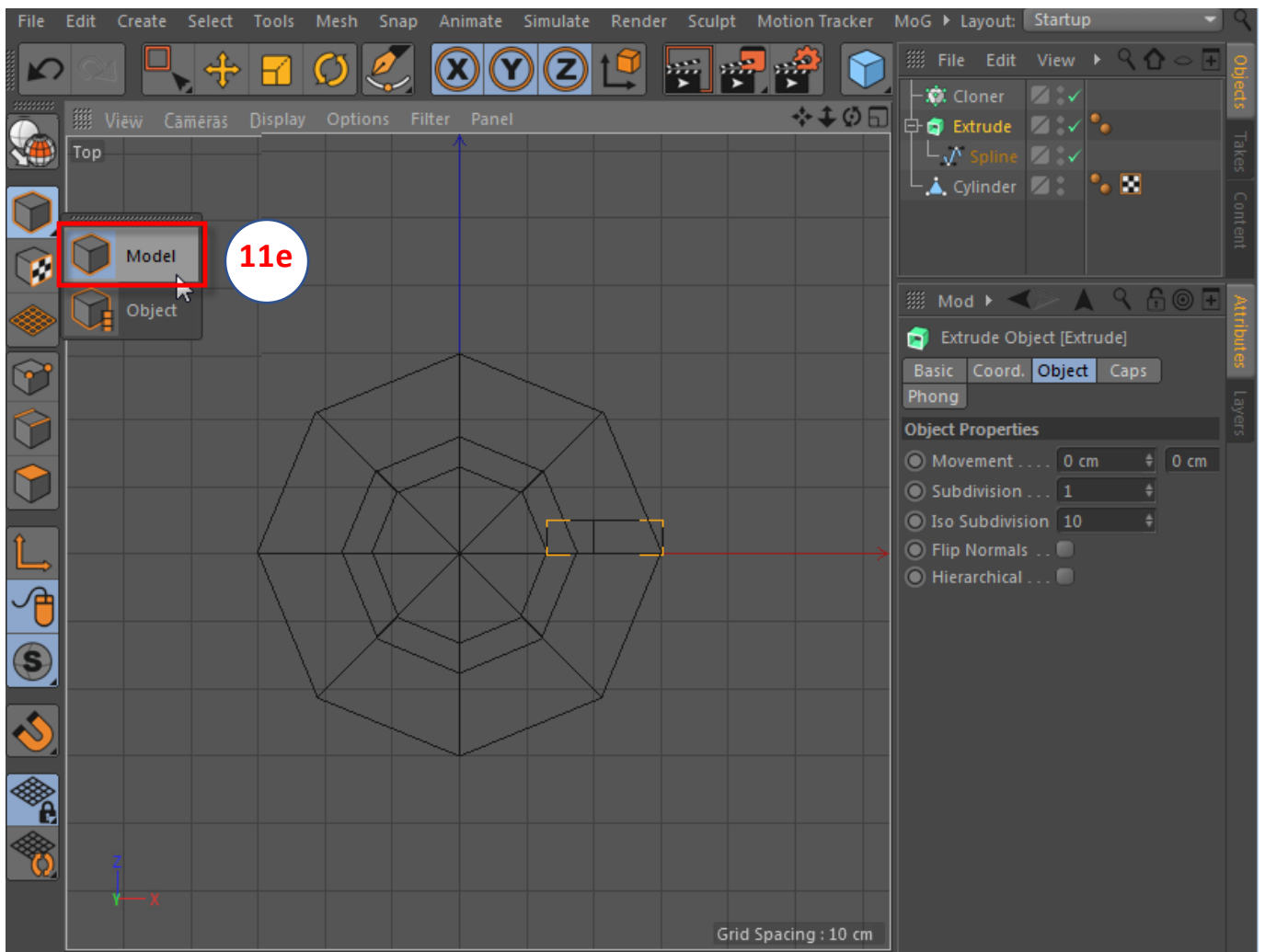
We have already created our first base. We will now clone (*make copies*) of this to give all sides of the lighthouse. To do this, we are going to use the MoGraph Cloner. Let's go ahead and add a MoGraph Cloner to our Objects Manager.



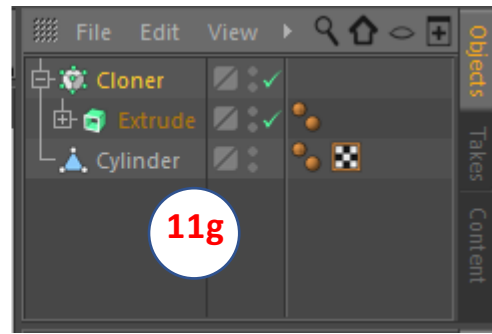
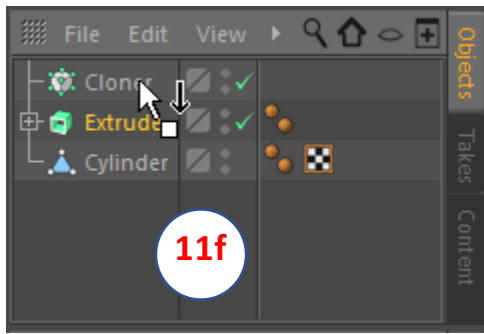
Go to the main menu, choose MoGraph (11a), move your cursor to Cloner (11b) and select it by clicking (left) on it. This will add a cloner object (11c) to the Objects manager (11d).



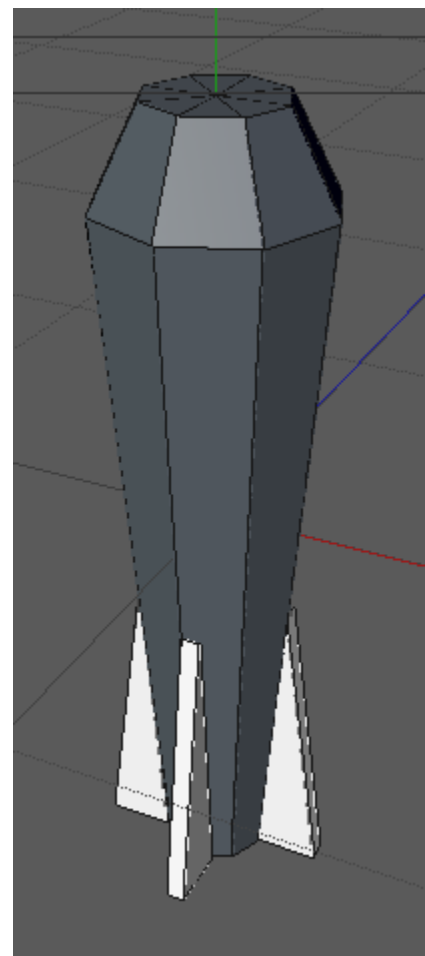
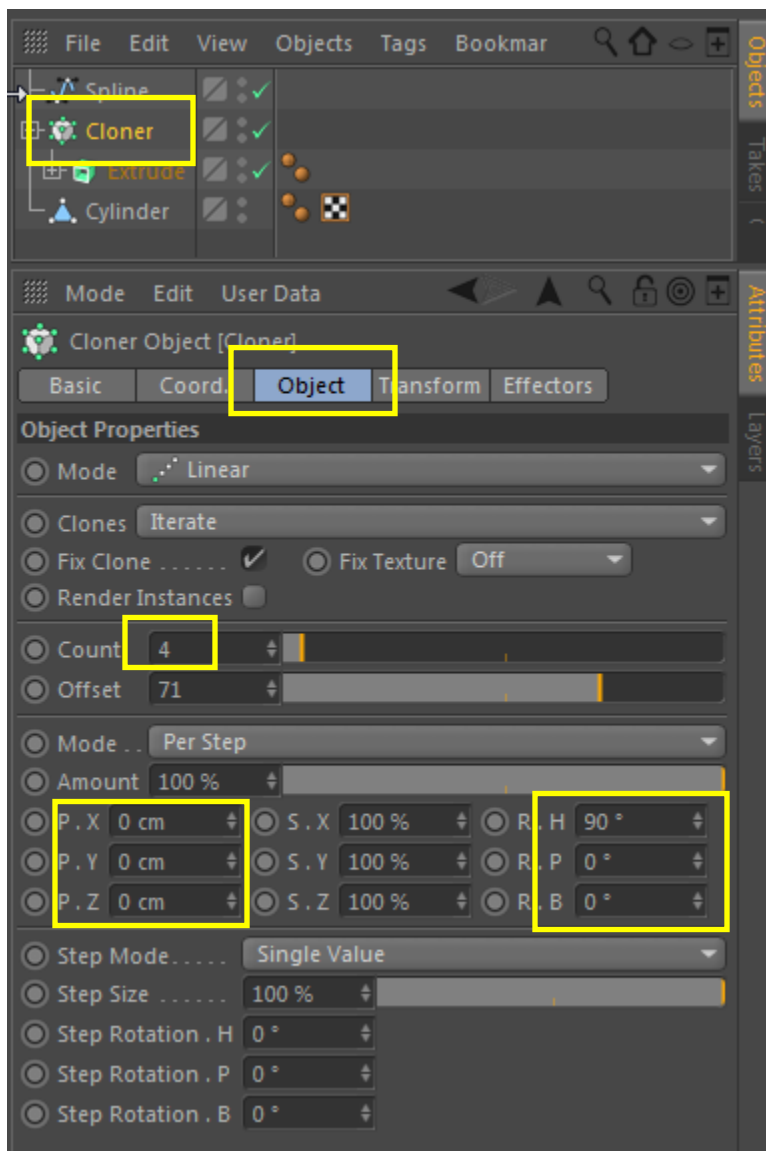
At this stage, we should now switch to the **Top View**. Press **F2** to access top view. Also, we should change the tool to the model tool (11e).



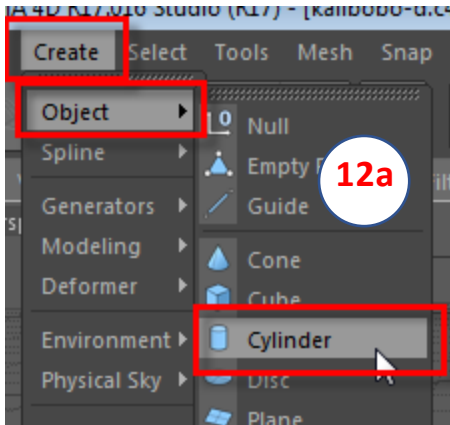
Within the Objects manager, drag the Extrude onto the Cloner (11f) and drop it there to make the Extrude become the child of the Cloner (11g). Then select the cloner in the objects manager.



While the Cloner is selected under the Objects manager, select the objects tab under the Attributes manager and verify the settings as follows. You may need to adjust your settings but the necessary ones have been highlighted here in yellow. Once you do this, click anywhere on the window then press F1 on your keyboard to switch to the perspective view.



12: Modeling the foundation (base):



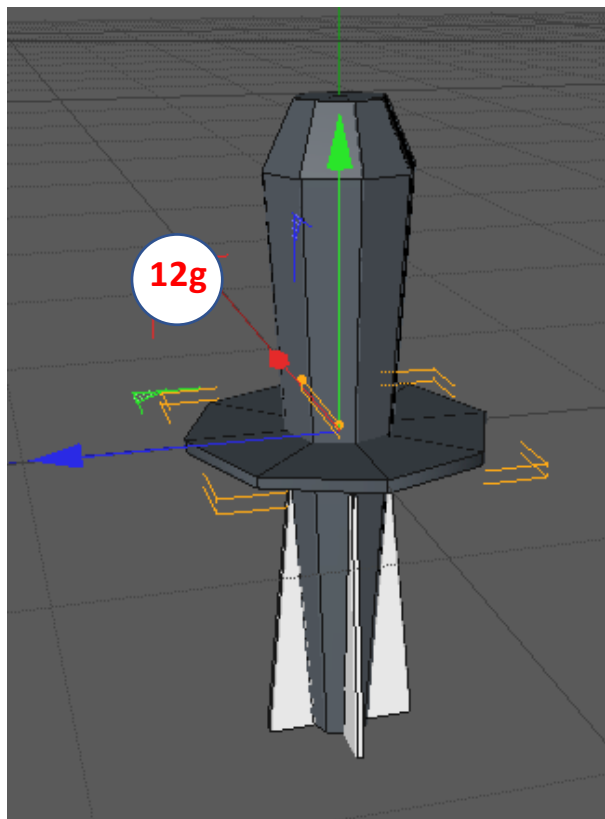
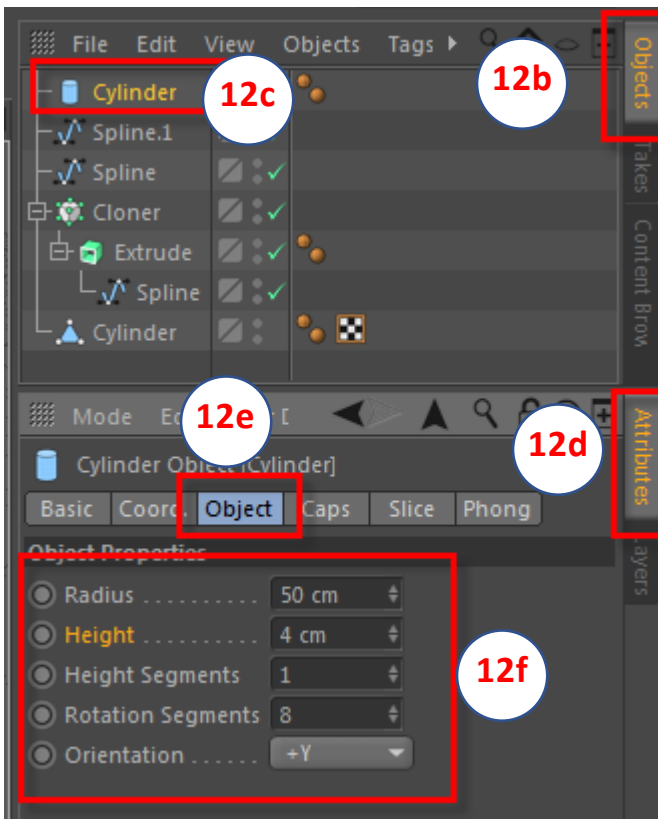
Next, let's create a cylinder.

From the main menu, go to **Create > Object** and select **Cylinder** from the object lists (12a).

This will add a cylinder to your scene.

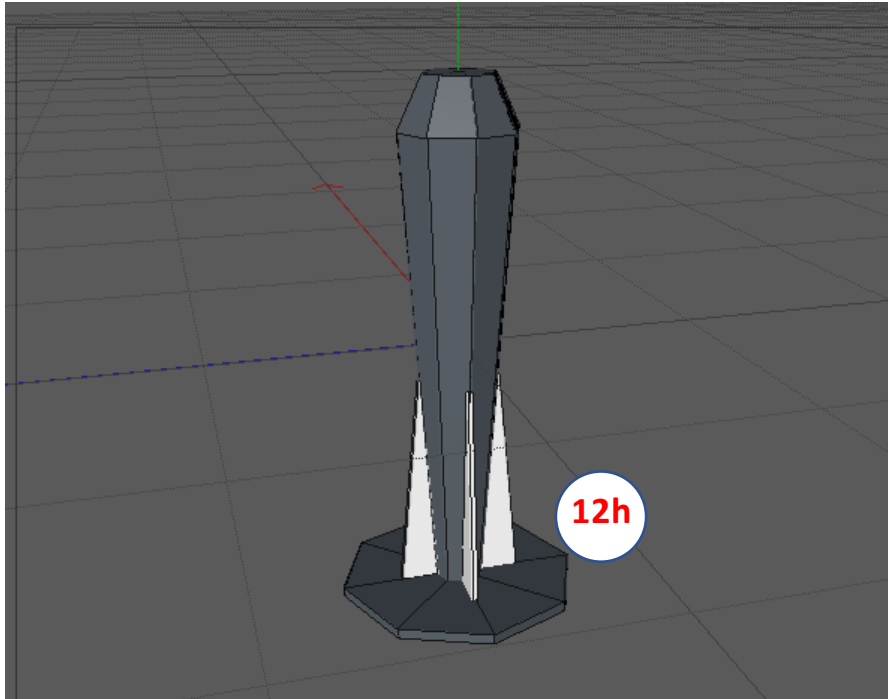
Do Not move the cylinder object, you'll dive straight to adjusting the parameters of the cylinder so we get the base.

Make sure you select the **Cylinder (12c)** in the **Objects manager (12b)**. Under the **Attributes manager (12d)**, select the **Object tab (12e)** and adjust the **parameters (12f)** of the cylinder to match the settings below.



You would see that the cylinder is placed in the middle of the object (12g). Click on the green handle and drag it vertically downwards till it sits with the base of the lighthouse (12h). Do Note that we're in the Model tool and using the move tool, at least.

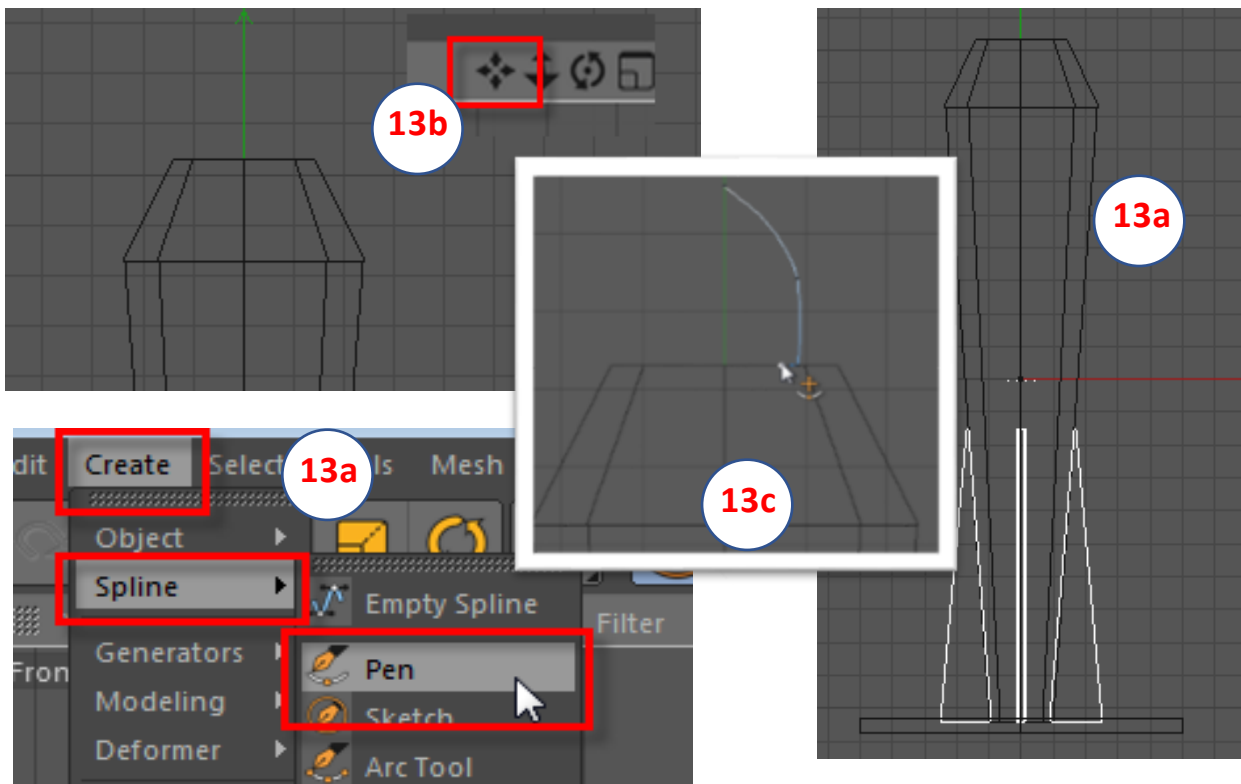
By now, you should be able to see the lighthouse taking shape.

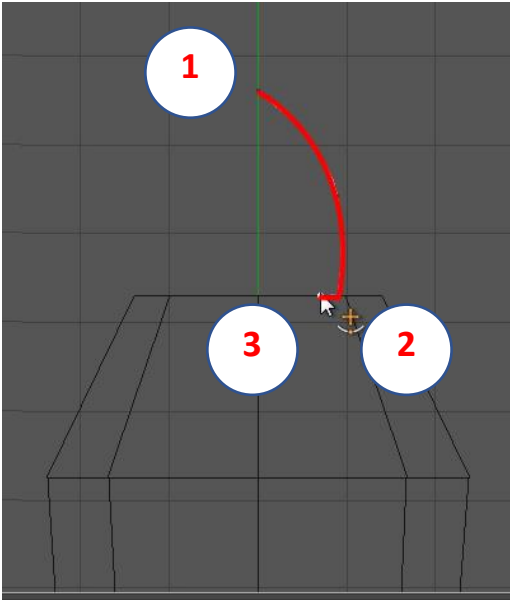


Let's move on to creating the light. The light should be straight forward and fun (*I think*).

13: Creating the light:

Switch to the Front view (13a) by pressing **F4** on your keyboard. Again, F4 is just one key and not F with 4. Use the navigational move tool (13b) to move the viewport focusing on the top of the lighthouse (13c). Go to the main menu, click on **Create > Spline >** and choose **Pen** (13d).





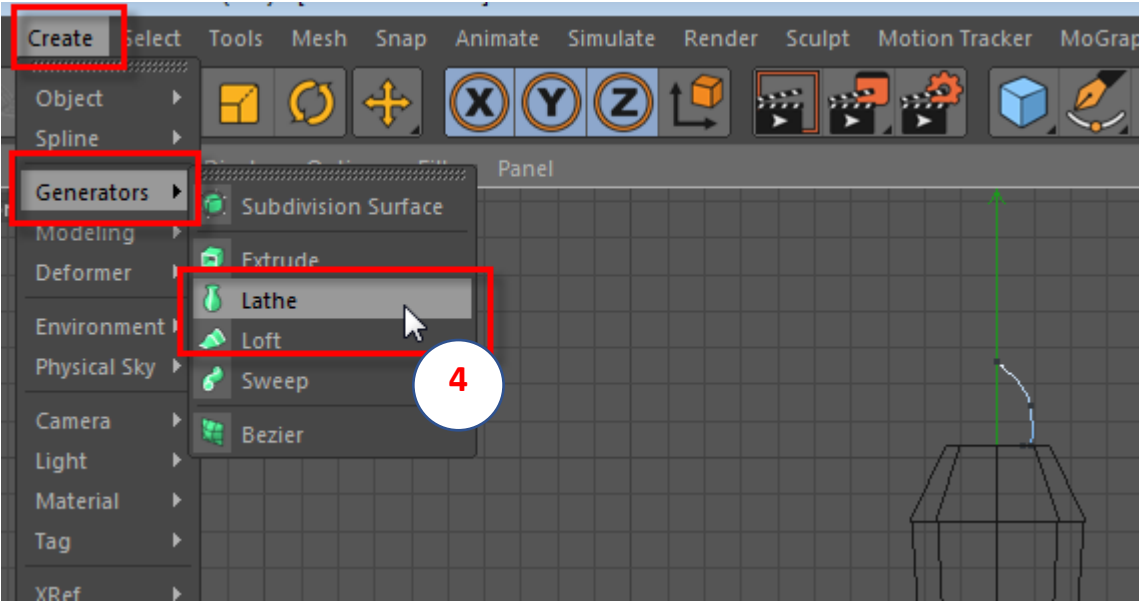
Following the numbers on the left, draw a spline (*line*) to create the shape of the light bulb. It may look incomplete but this is how we can create a light out of just spline or line. You should at least have a line like the one below draw with the pen tool.



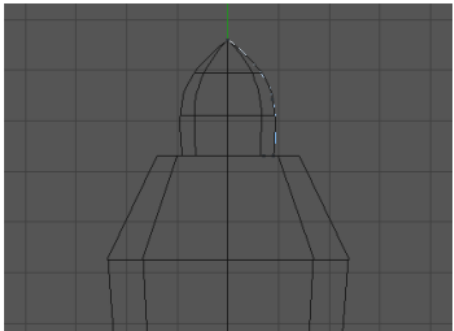
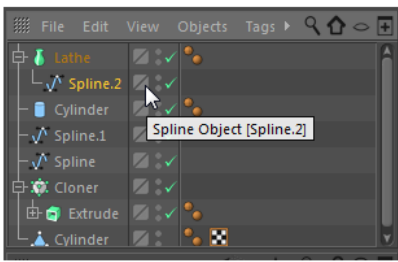
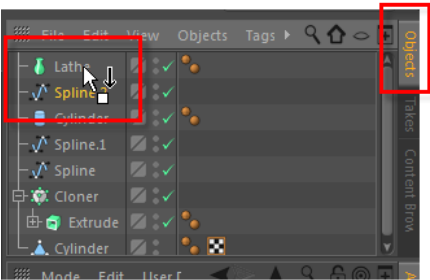
We are going to use the Lathe nurbs to create the light with this spline.

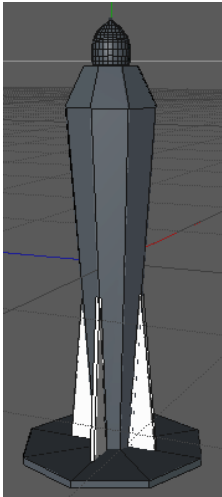
This technique is called **Spline modelling**.

Now, go to the main menu, under **Create > Generate > Lathe (4)**



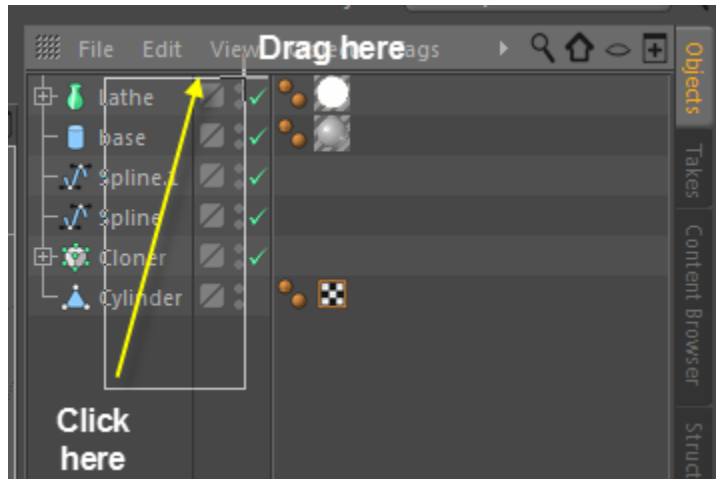
Go to the Objects manager and drag the spline into the Lathe making the spline a child of the Lathe. The result, you would see a light bulb possibly similar to that of the lighthouse. We are done here so we'll have to go back to the perspective view and see how the light looks.



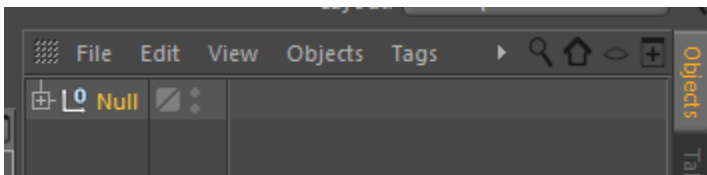


All shapes are in place and the object is now taking shape (*image - left*).

We will group all items/objects into a group (*image - right*) and apply a single material to the model so it gives a single color.



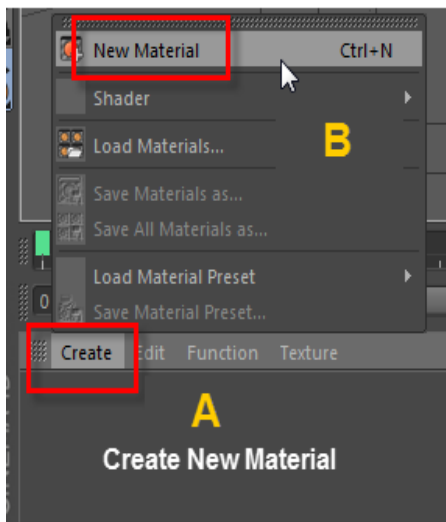
Group the objects together. First, highlight the first object (i.e: Lathe) and while pressing shift, click the last object (i.e: cylinder). Alternatively, you can just click at the bottom of the object lists in the Objects manager, then drag upward diagonally to highlight all of them. You can also access the Group function through the contextual menu by right clicking on the list after they're selected then select Group Objects.



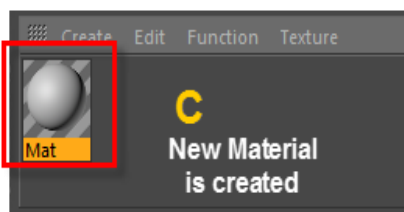
The group objects will be placed into a null object. To access each of the files, you will have to click the little PLUS sign on the left of the new Null object.

You can rename the Null object by double-left clicking the word Null, then type the new name you want to call. For now, we are not interested in that so we'll proceed to the next stage which is to add material to the object.

14: Create and Apply material:

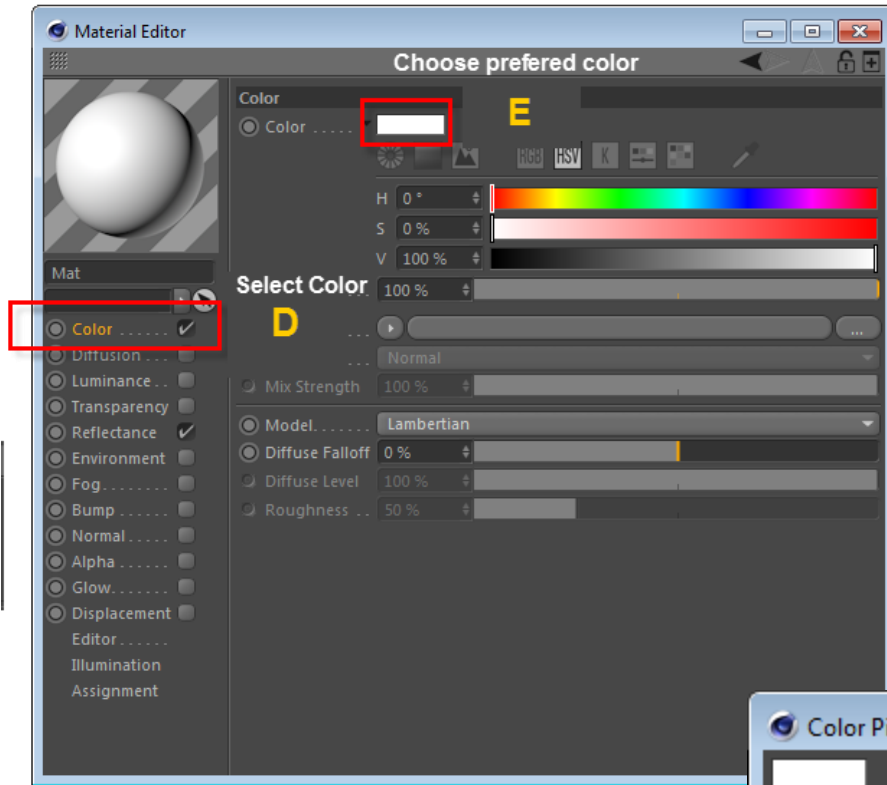


Let's add a material to the object. A material object adds texture to any model you create. For this tutorial, we're going to create a basic one color map for the object so let's go to the Materials manager to do this now.



In the Material manager (**A**), click the **Create** menu> then click **New Material (B)**.

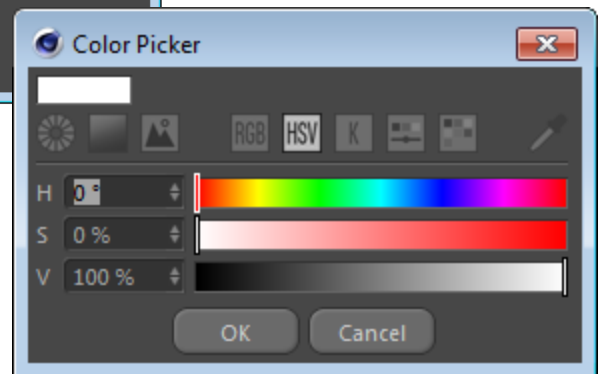
A New material will be created in the material manager. Let's now make that material white for our object. Double click the New material in the material manager (**C**) to get into the Material Editor.



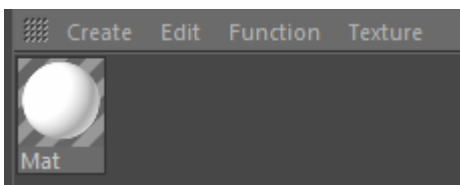
In the material editor, select the color checkbox and click on the color text (**D**) to select it. This will enable you to access the properties of color/ texture so you can add one.

We are going to use just one color as planned.

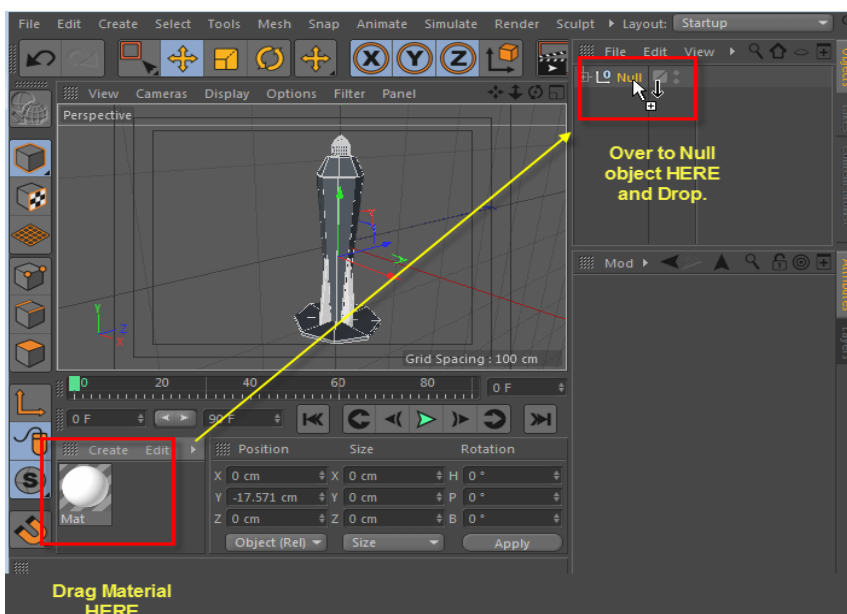
Click the color picker (**E**) and from the pop-up color dialogue, select color white then click the OK button (*below*).



You should now have a material in the material editor that has **white color** (*below image*). Our next step is to apply this material to our object. To do this, we will simply **drag and drop** this material onto the object in the **Objects** manager.

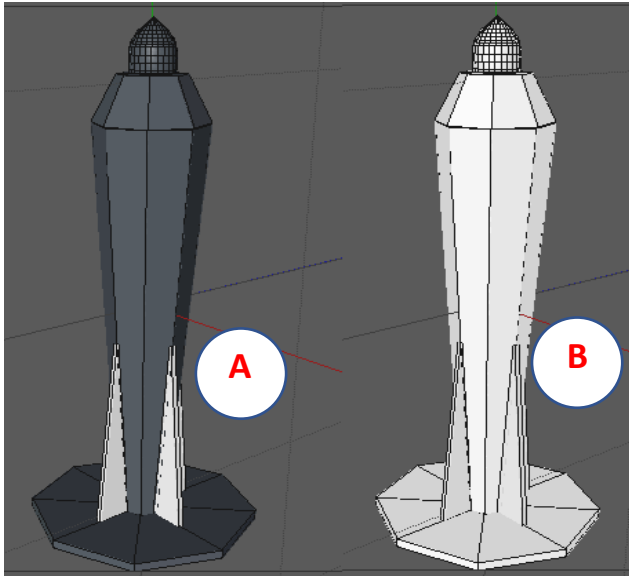


15: Apply material to Object:



In the Material manager, we created a material object. Drag that material and drop it onto the Null object or the grouped objects that we organized in the Objects manager (*image left*).

This will apply the color to the entire object and the object should change color. In this case, the entire object will change to white.



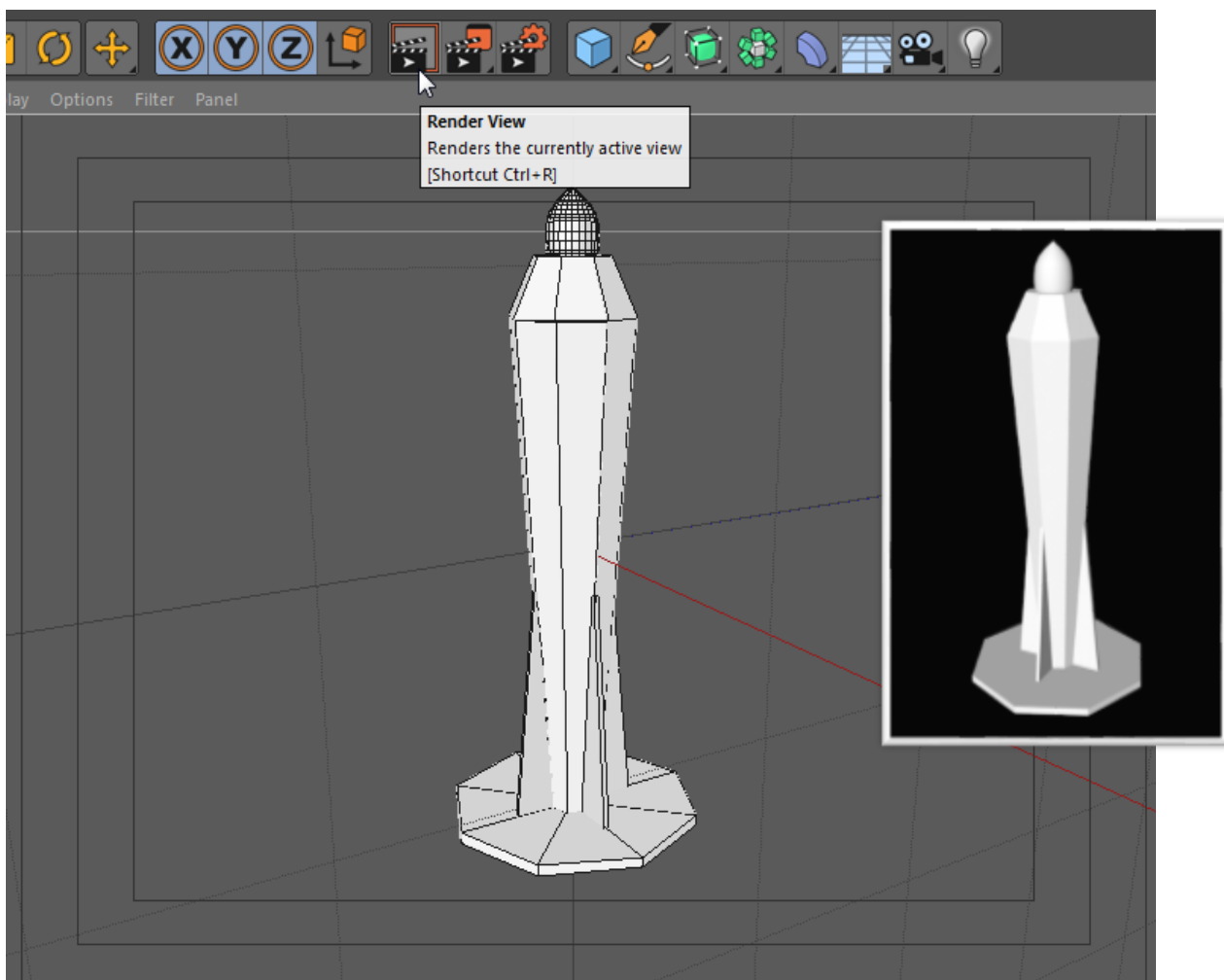
The lighthouse, before (A) and after (B) the material was applied.

Our final step is to render the scene using the default lighting. You can go ahead and add lights to your scene and add details to it. Feel free to explore the details.

16: Render your scene:

Finally, it's time for us to render our scene. We are not going to complicate things here so we'll make it a quick render using the default settings. If you want a better render settings for this, send me an email or message via my accounts at the footer (last page).

Press CTRL + R or press the render view shortcut icon located below the main menu (*figure below*).



17: Wrap Up:

We haven't add lights, floor or put much effort into the details of creating it, but I'm pretty sure what we have gone through may indirectly give you a lot of insights and tips on how you can build your 3D models.

Go ahead, render your scene or even go back and touch up some of the settings to refine it better then share it with me.

18: Dange Ngayam / Mahalo Nui/ Vinaka Vaka Levu/ Xièxiè / Nanri/ Tenk Yu/ Thank You:

Well, this is all I have to share with you in this tutorial. I hope you have learnt something new by following this tutorial. There are other useful tutorials that may be of help for you so please, check out the site www.artech.com.pg and hit the download button where all the free downloads are.

This is the longest tutorial out of my tutorials I have created. The modeling is easy and straightforward but the process of translating this tutorial takes a much longer time than initially expected.

If you have any questions, or if you find some errors while following along, please do not hesitate to contact me by visiting my website www.artech.com.pg and submit a query using my contact page.

With that, I hope to see some of your works soon.

Good Luck & Thank You!!

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