Course: 3D Design
Title: Mesh Modeling – Snowman
Dropbox File: Snowman.zip
Blender: Version 2.41
Level: Beginning
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Mesh Modeling – Snowman

In this tutorial we will model a simple snowman. Open a new Blender file. If your Blender default file has a cube object, select it and delete it from the scene.

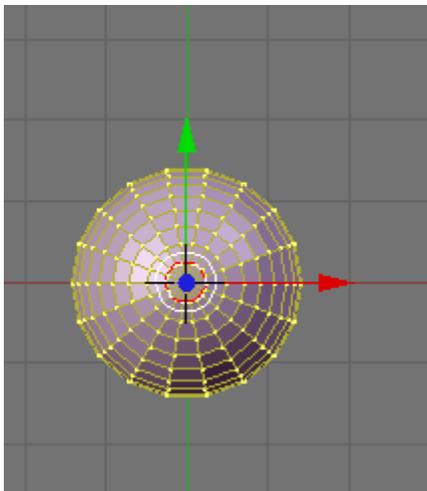Make sure that the Transform Widget system is turned on.
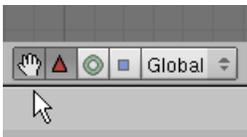

Make sure you are in the Top View (NUM7).

Place your 3D cursor in the center of the 3D viewport. Press Space / Add / Mesh / UV Sphere. Use 18 Segments and 18 Rings.
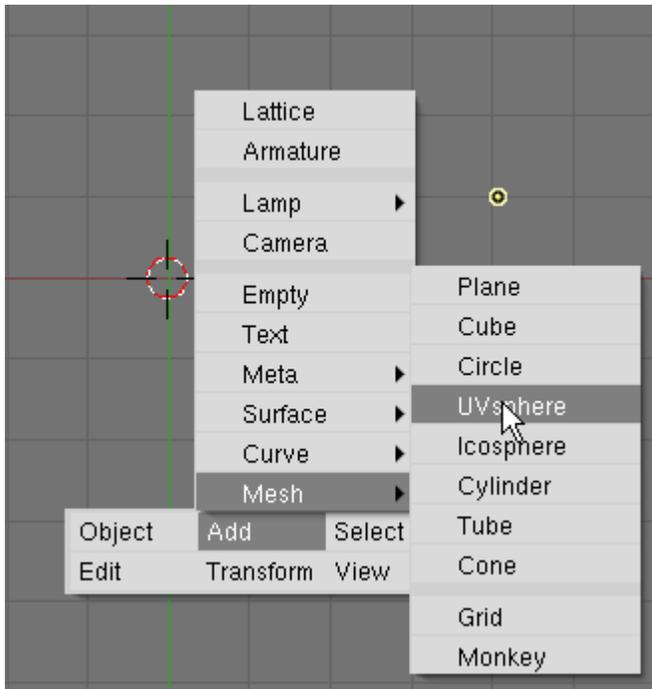
The Sphere is added to the scene. Blender automatically switches to Edit Mode and all of the vertices are selected.


Press the AKEY to deselect the vertices. Press the TAB Key to exit Edit Mode. Switch to the Front View (NUM1). Make sure you are in Wireframe mode (ZKEY). (Note: it is a good idea to always model in wireframe mode).
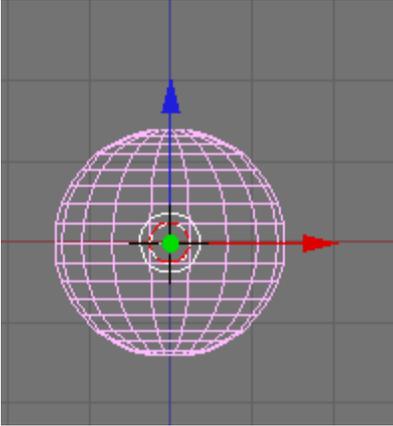
The sphere should still be selected (in Object Mode). Press the NKEY (Transform Properties). Rename the Sphere Snowman Base.
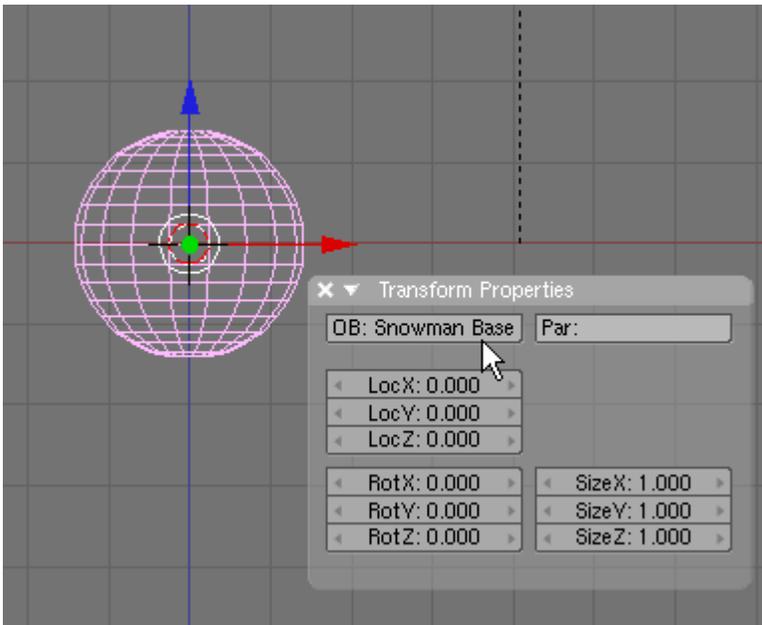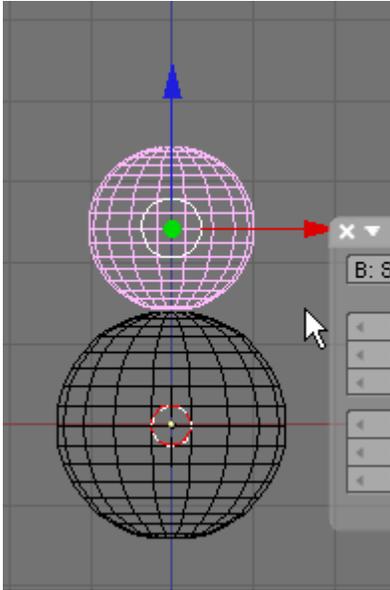

Press SHIFT-D (Duplicate). This creates a duplicate of the object and places it automatically in grab mode. Move this new object up on top of the Snowman Base. In the Transform Properties Panel name this object Snowman Middle.
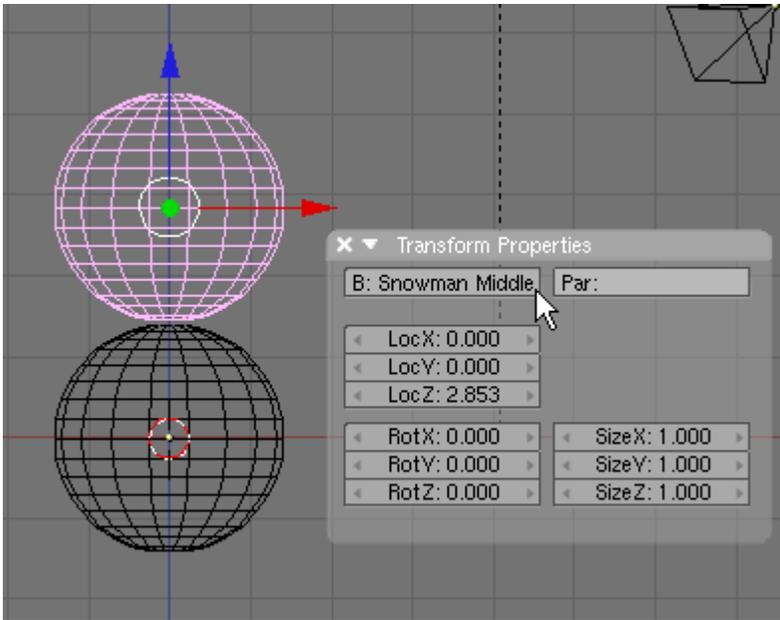
Press the SKEY (Scale) and scale the Snowman Middle down a bit as shown below.
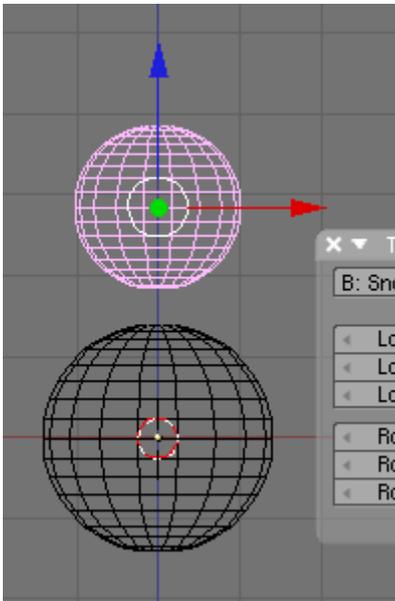
LMB click the Blue Transform Widget Arrow and move the Snowman Middle down on top of the Snowman Base.

Press SHIFT-D (Duplicate). Move the duplicate sphere up above the Snowman Middle. Name this object Snowman Head. Press the SKEY (Scale) and scale it down a bit then use the Blue Transform Widget Arrow to set it on top of the Snowman Middle.
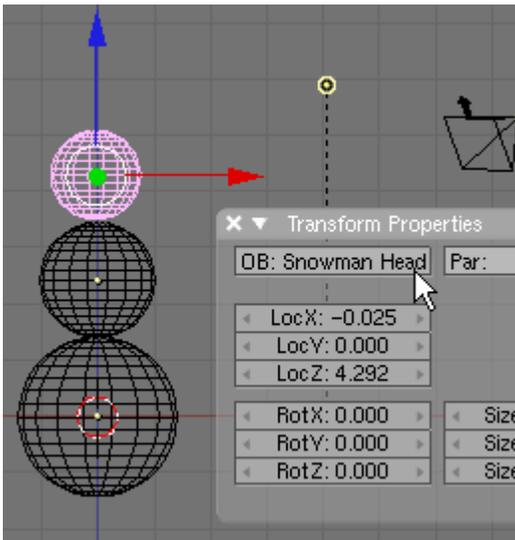

Now that we have some objects in the scene we will split our 3D viewport so that we can see the model in perspective. Click in the 3D viewport and then move your cursor to the top of the screen until the cursor becomes a double arrow icon. RMB click and choose Split Area.

A vertical line will appear. Place it in the center of the display.
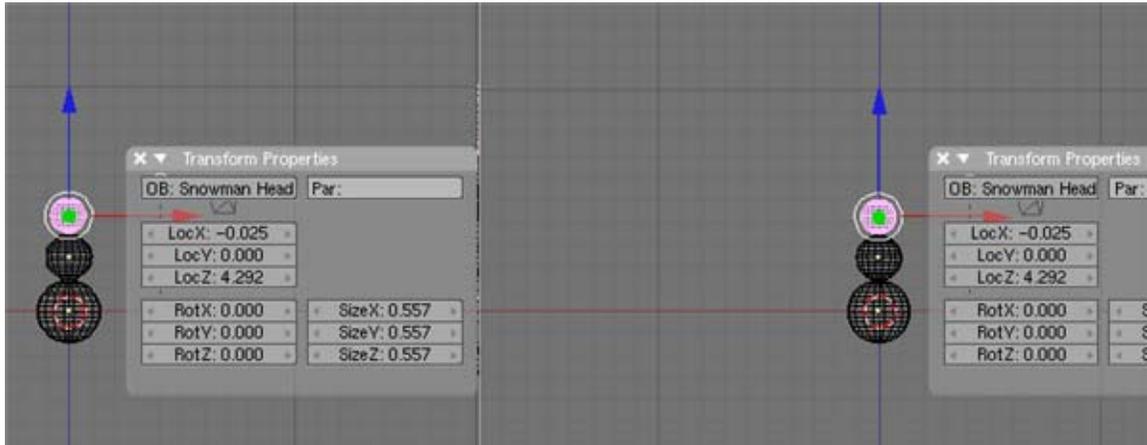
Click in the right window and change the view to Perspective (NUM5). Remove the Transform Properties Panel in the Perspective view by clicking on the X in the upper left corner of the panel. Zoom in on the Perspective view and adjust your display to center the snowman. Press the ZKEY to display a shaded view in the Perspective viewport.
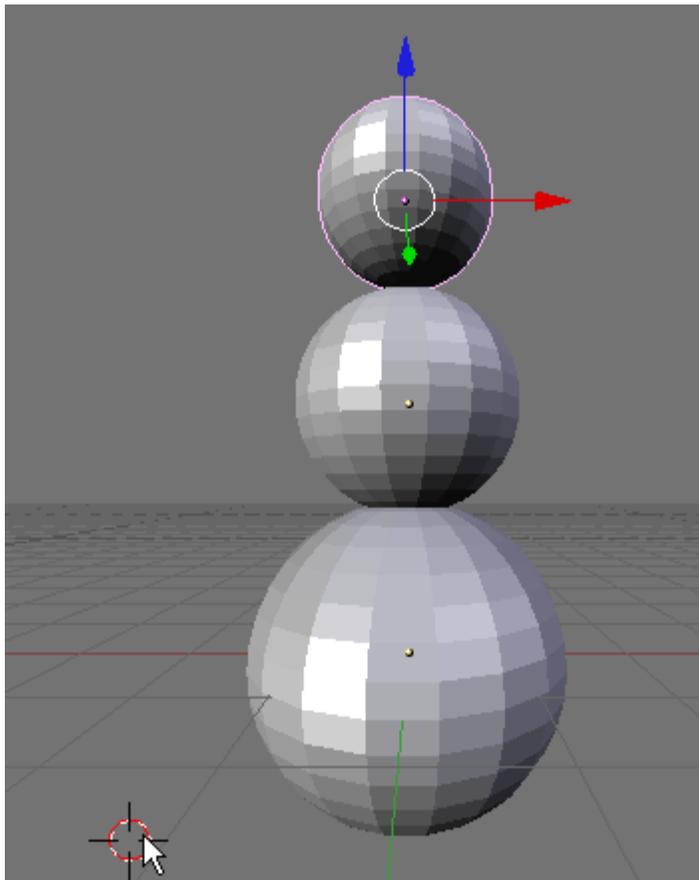
Press F9 (Editing) if not already displayed. Next we will smooth out these objects. With the Snowman's Head selected press the Set Smooth button located in the Link and Materials Panel.


Select the Snowman's Middle and press the Set Smooth button. Select the Snowman's Base and press the Set Smooth button. The 3 spheres should now appear smooth in the shaded Perspective viewport.
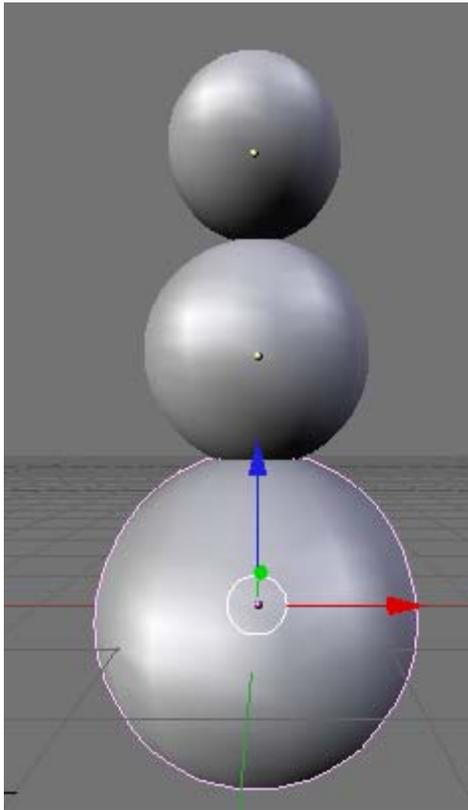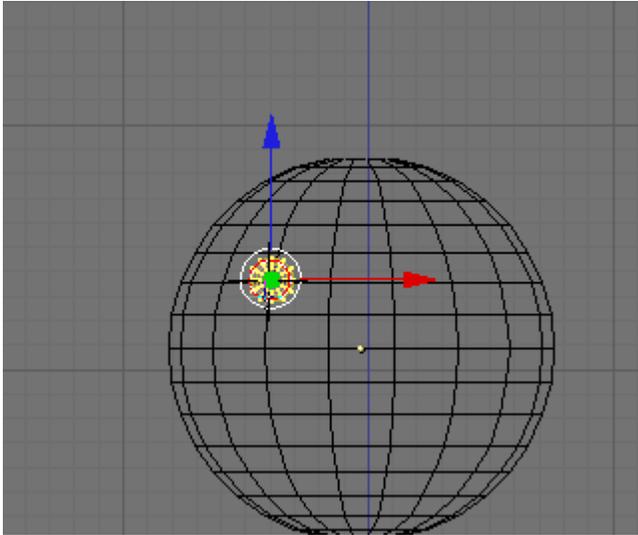

In the front viewport, zoom in on the snowman's head. Place your 3D cursor on the head in the position where the right eye might be.
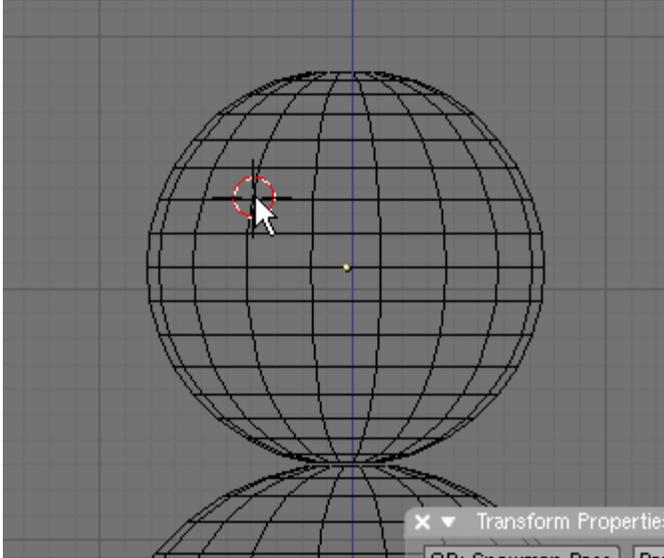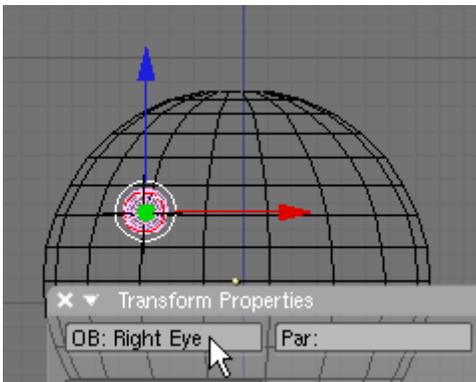
Press Space / Add / Mesh / UV Sphere. Choose 12 Segments and 12 Rings.
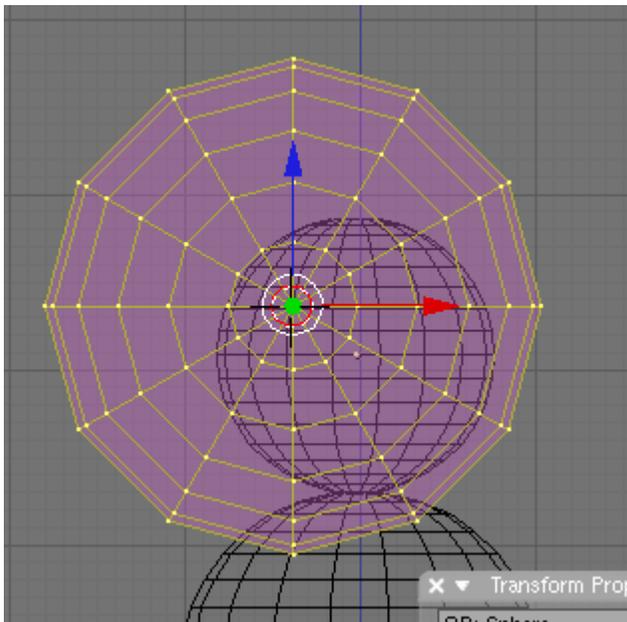
The sphere is created and is in Edit Mode with all of the vertices selected. Press the SKEY (Scale) and scale it down to eye size.
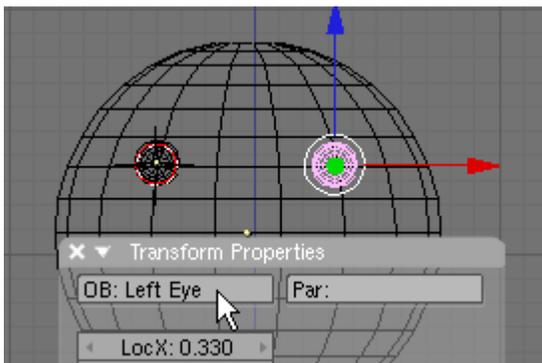
Press the AKEY to deselect the vertices. TAB to Object Mode. Name this object Right Eye.
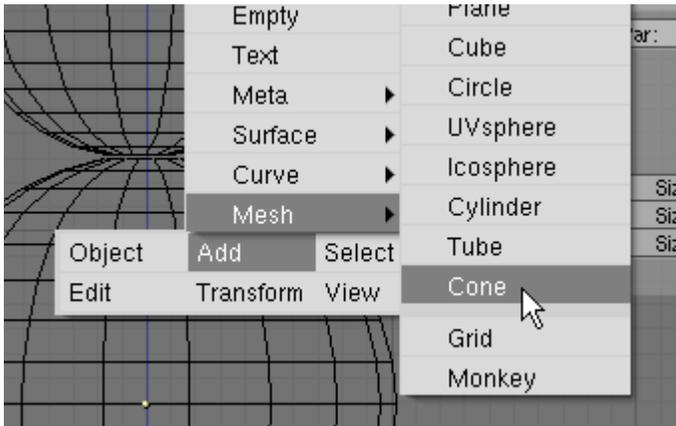

(Note: you cannot see this object in the perspective viewport because it is really somewhere inside of the snowman's head)
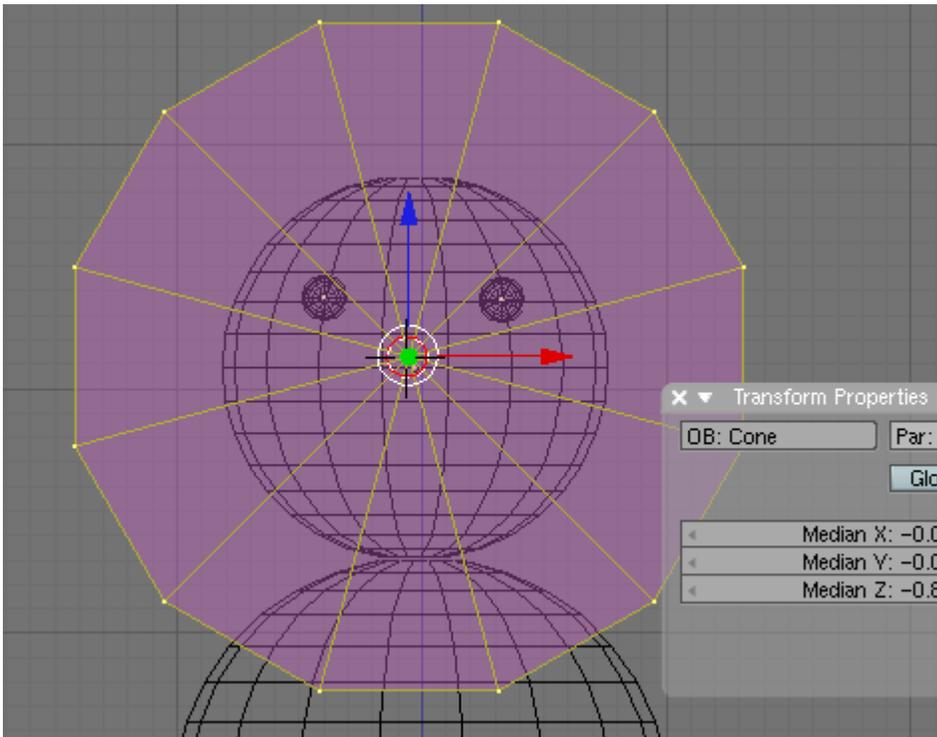
Press SHIFT-D (Duplicate) Move the duplicate eye to the right and place it where the left eye should be. Name this object Left Eye.
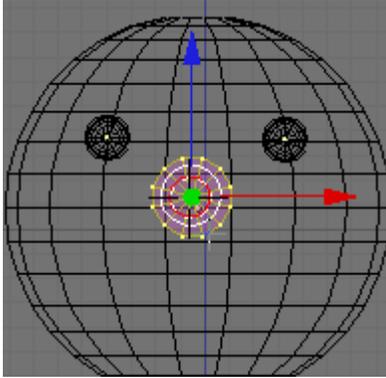
Place your 3D cursor where the snowman's nose should be. Press Space / Add / Mesh / Cone. Choose 12 Vertices.


The cone is created in the scene and is in Edit Mode with all of the vertices selected.


Press the SKEY (Scale) and scale down the cone as shown below.

Press the AKEY to deselect the vertices. TAB out of Edit Mode. Switch to Side View (NUM3). LMB click the Red Transform Widget Arrow and move the nose to the left so that the point sticks out of the snowman's head as shown below. Name this object Nose.
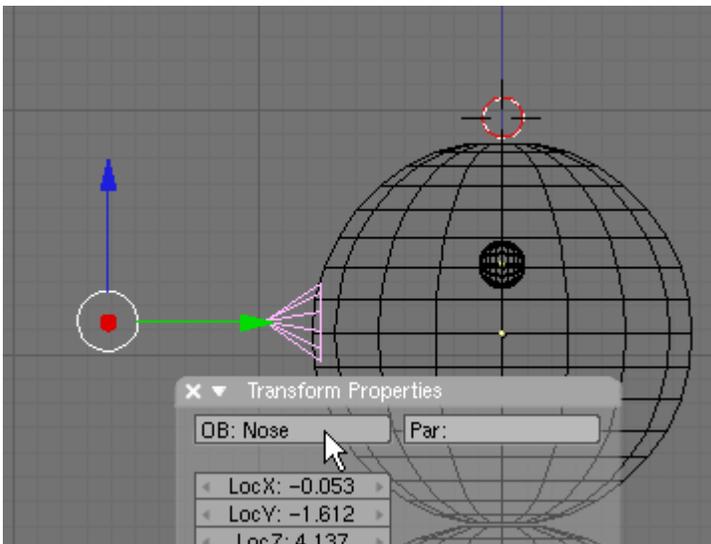

Switch to Front View (NUM1). Select the Right Eye Object only. Now hold the SHIFT KEY down and RMB select the Left Eye Object (adding to the selection). Press CTRL-P (Parent). Choose Make Parent.
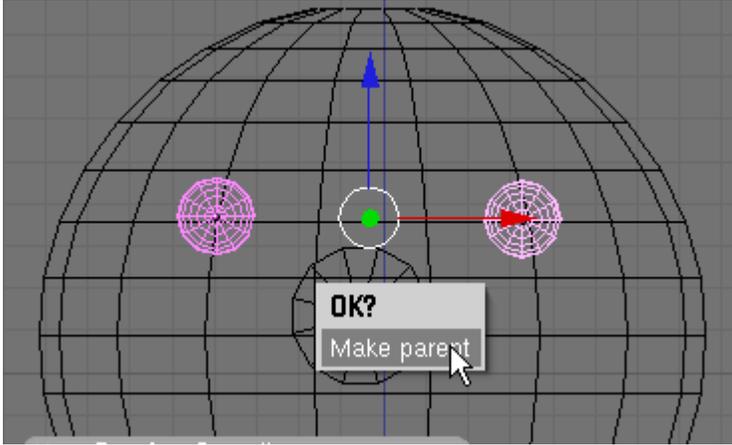
The Left Eye (the one chosen last) is now the parent of the Right eye. Any transformation (Move, scale, rotate) applied to the Left Eye will automatically be applied to the Right Eye. Select the Left Eye (the parent).
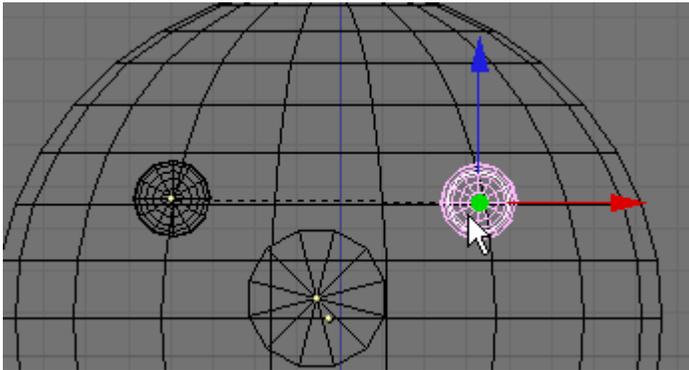
Switch to Side View (NUM3). LMB click the Red Transform Widget Arrow and move it to the left so that the eyes are partially outside of the snowman's head as shown below. Note that when moving the left eye the right eye followed (as all children should).
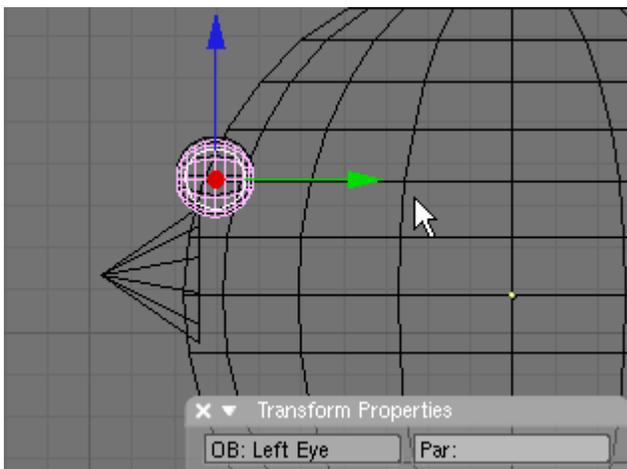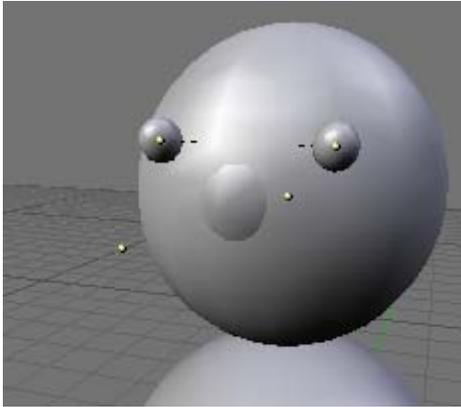

Zoom in and adjust the Perspective viewport to clearly see the snowman's head.
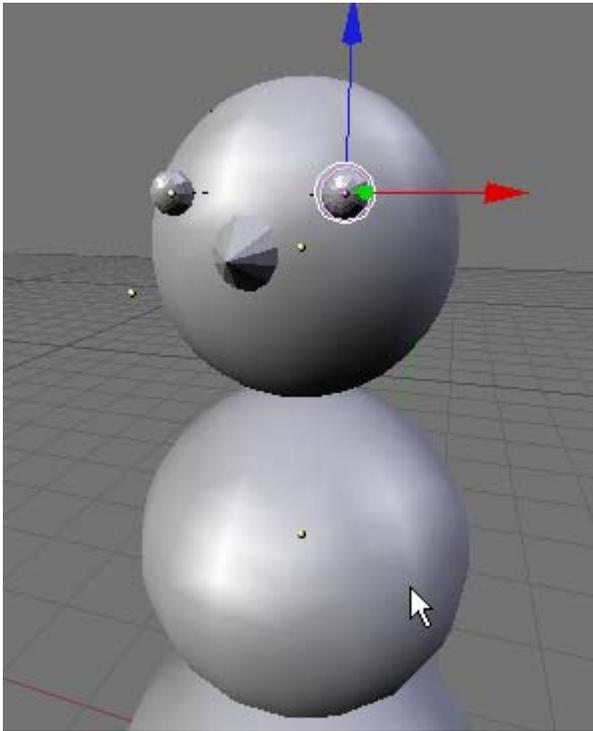
With the left eye still selected press the Set Smooth button in the Links and Materials Panel.


Note that the right eye did not smooth. Parenting only applies to transforms. Select the left eye and press Set Smooth. Select the Nose and press the Set Smooth button.
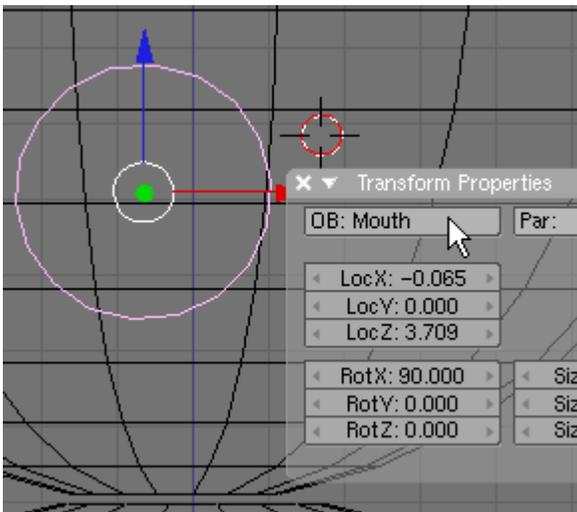
Switch to the Front View (NUM1). Place your 3D cursor where the center of the snowman's mouth should be. Press Space / Add / Mesh / Cylinder. Choose 18 Vertices.
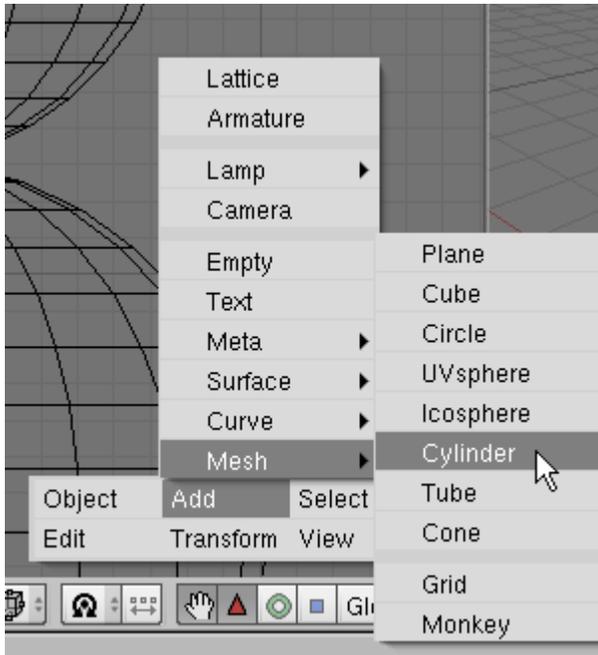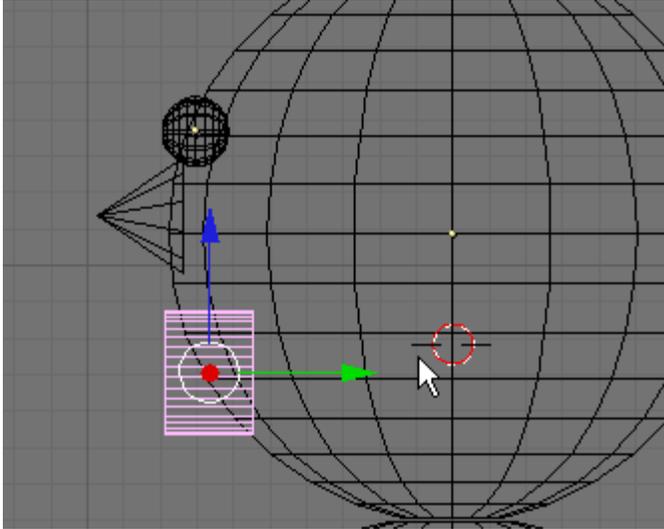

Press the SKEY (Scale) and scale it down a bit as shown below.
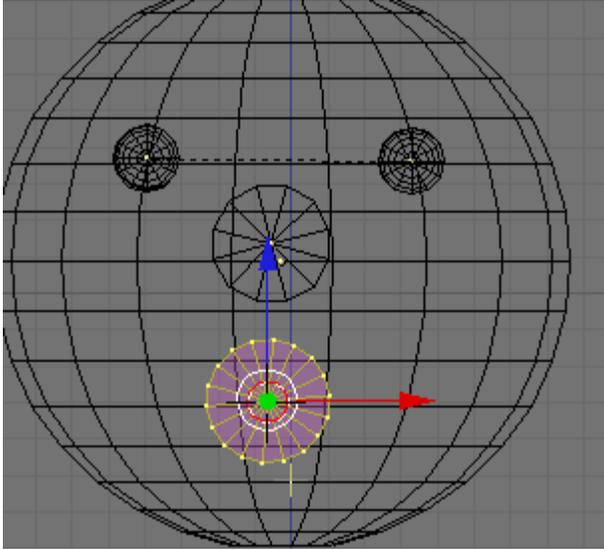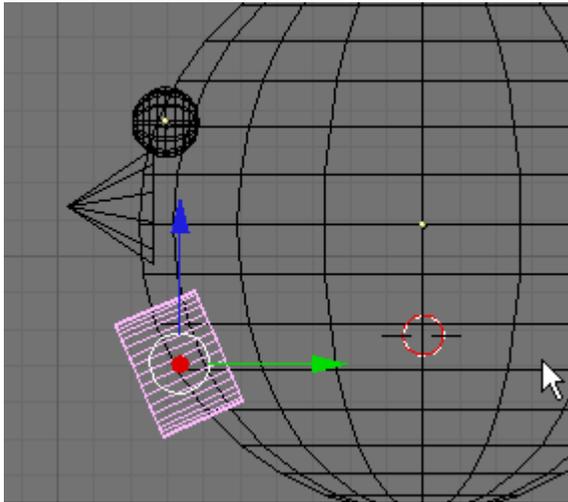
Press the AKEY to deselect the vertices. TAB out of Edit Mode. Name this object Mouth.

Switch to Side View (NUM3). LMB click the Red Transform Widget Arrow and move the mouth so that it is partially outside of the snowman's head as shown below.

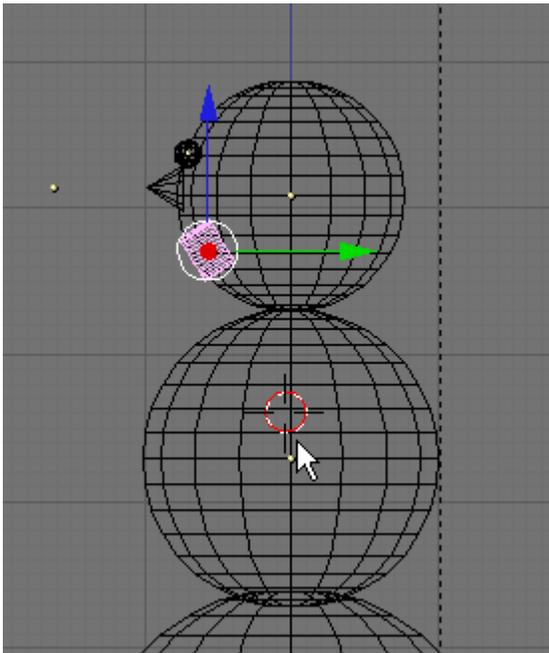Press the RKEY (Rotate) and rotate the mouth a bit as shown below.

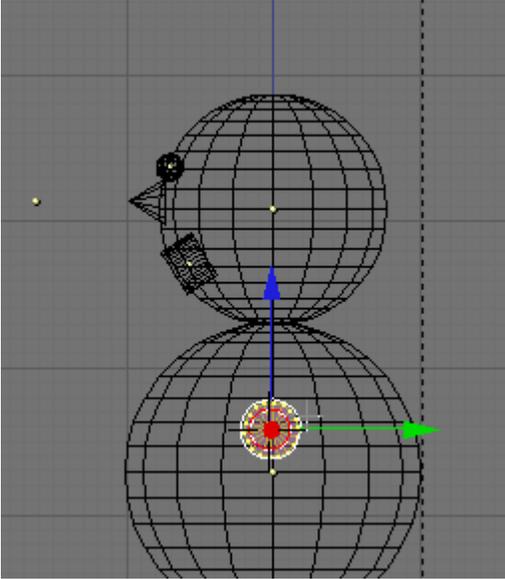Press the GKEY (Grab) and position the face of the mouth slightly outside of the snowman's head.
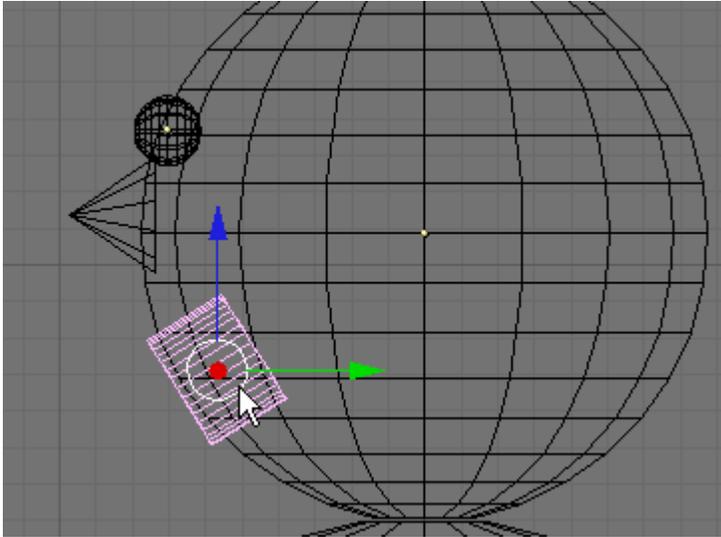
Press the Set Smooth button in the Links and Materials panel to smooth the mouth out a bit.
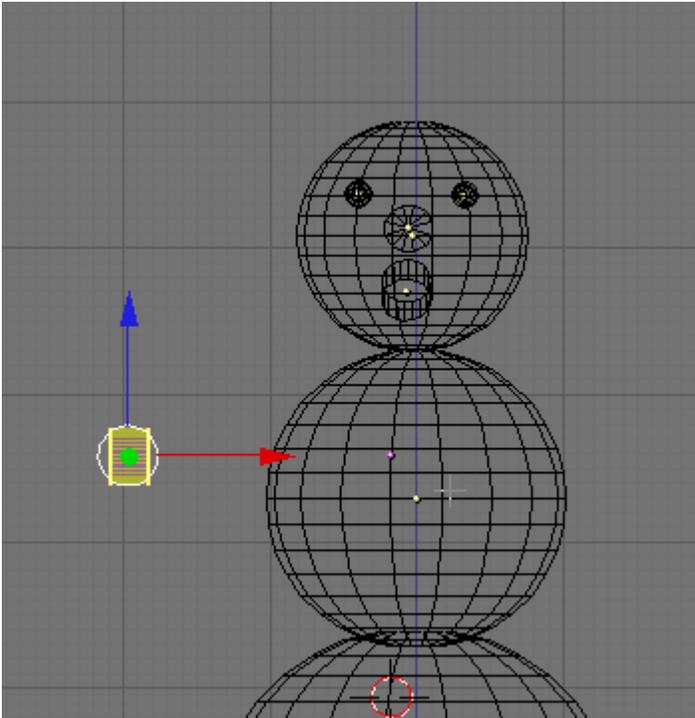
Zoom out of side view a bit and place your 3D cursor where the snowman's arms might be.
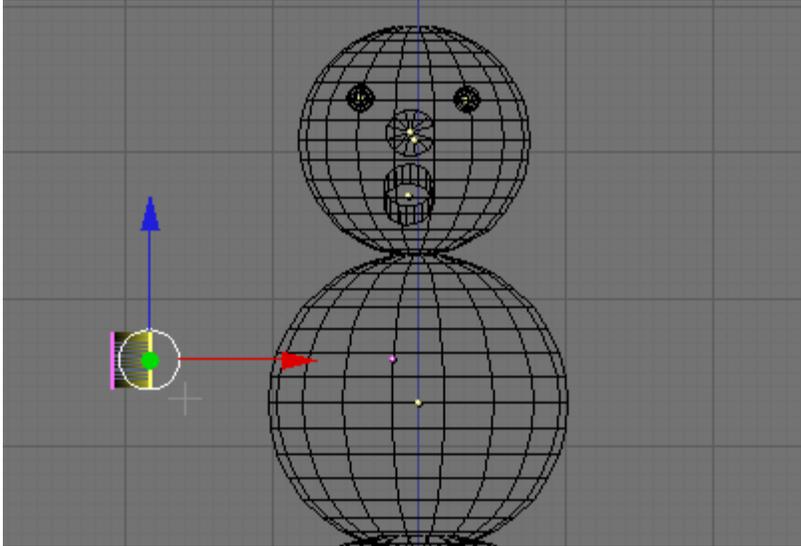

Press Space / Add / Mesh / Cylinder. Choose 18 Segments. Press the SKEY and scale it down as shown.

Switch to Front View. LMB click the Red Transform Widget Arrow and move the cylinder to the right side of the snowman as shown below.


Press the AKEY to deselect the vertices. Press the BKEY (BOX Select) and drag a box around the right row of vertices selecting them.

LMB click the Red Transform Widget Arrow and move the vertices to the other side of the snowman as shown below.
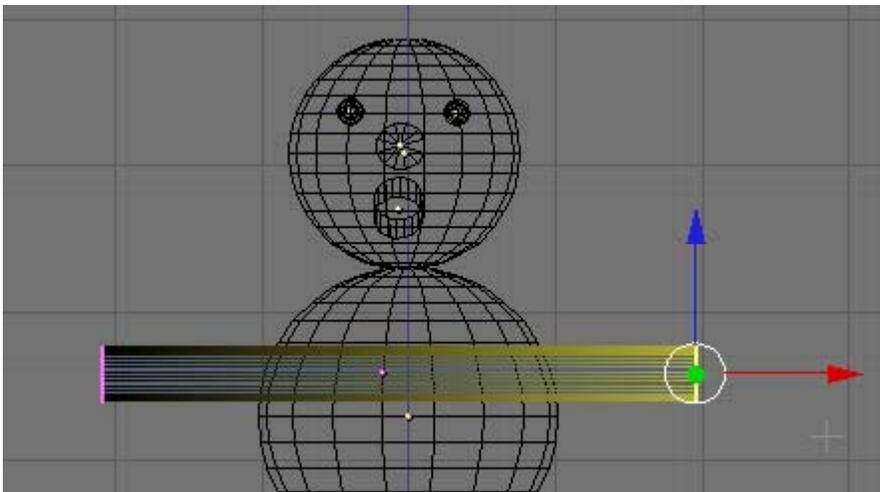

Press the AKEY to deselect the vertices. TAB out of Edit Mode. Name this object Arms. Press the Set smooth button in the Link and Materials Panel.
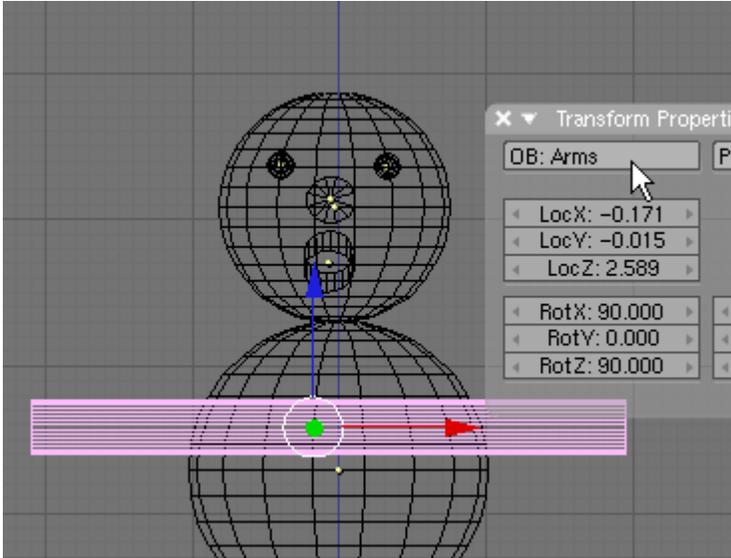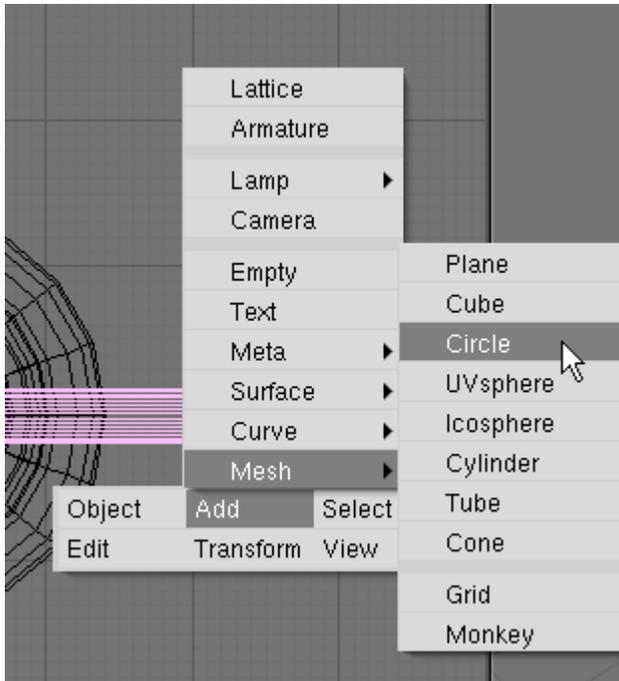
Next we will make a hat. Switch to Top View (NUM7). Switch off the Transform Widget
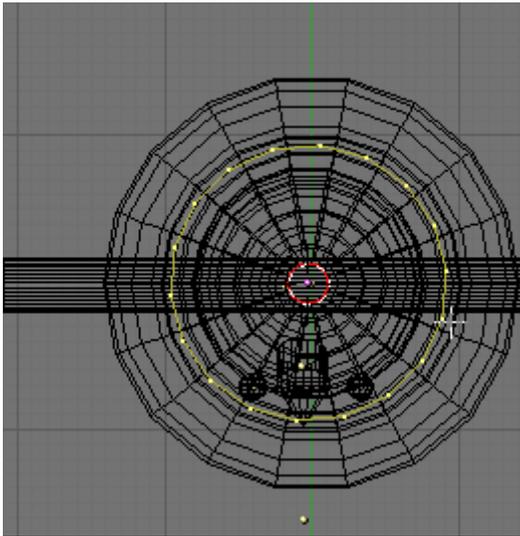

Mode. . (Note: we are turning this off to make the placement of the 3D cursor easier without selecting the widget. Place your 3D cursor on the top middle of the snowman.
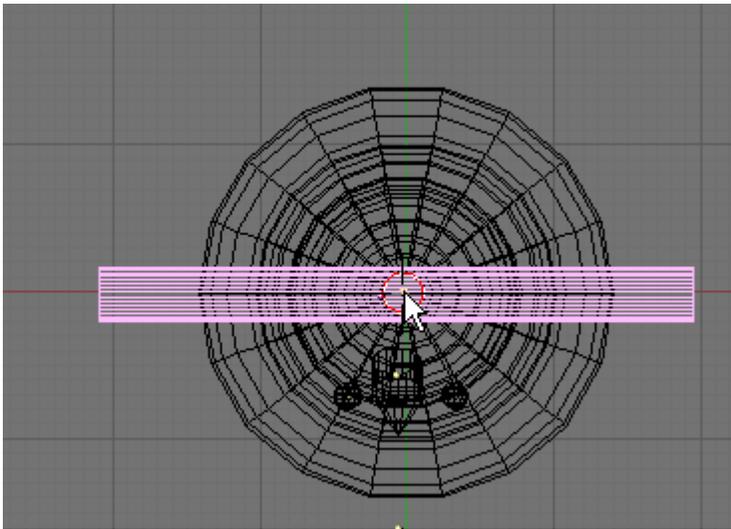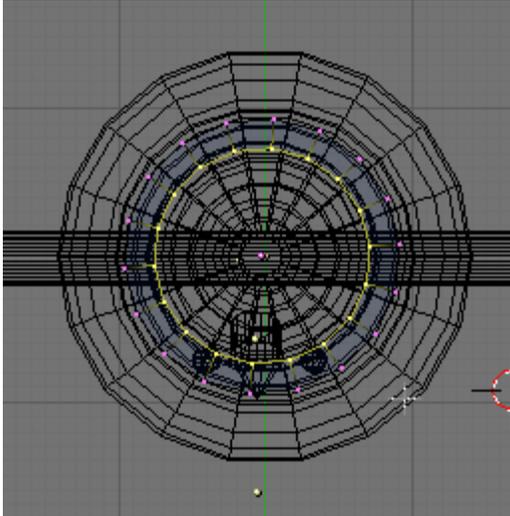

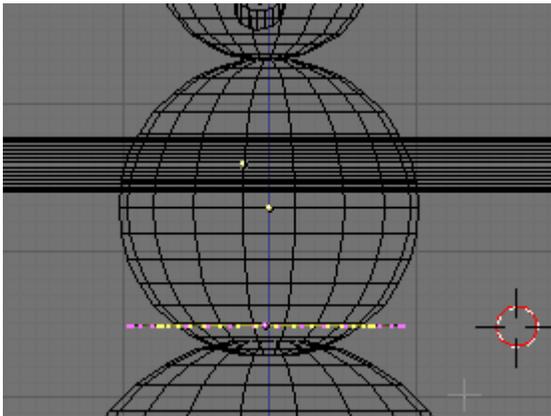Press Space / Add / Mesh / Circle. Choose 18 Vertices.

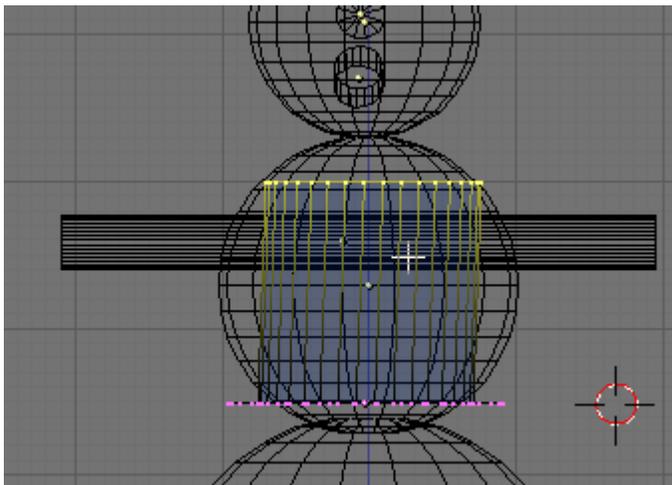Press the SKEY and scale it down as shown below.

Press the EKEY (Extrude) Choose Edges. Before you move your cursor, press the SKEY and extrude the edges inward to form a second circle about the circumference of the head as shown below.
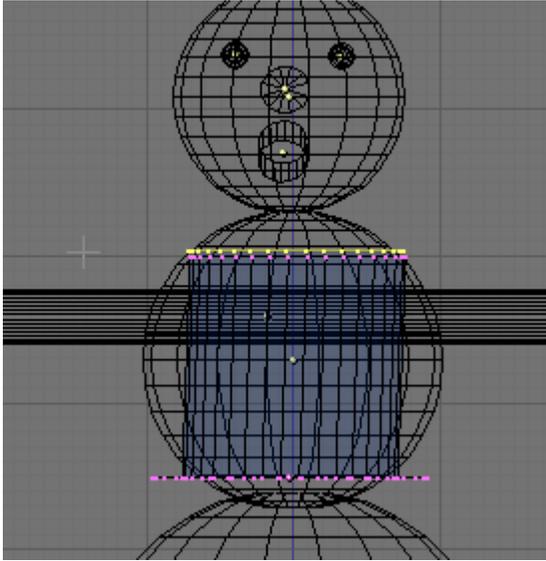
Switch to Front view. Note that the circle object is inside of the snowman.

Press the EKEY (Extrude) Select Edges and extrude them up as shown below.

Press the EKEY (Extrude). Select Edges and extrude them up just a very small amount as shown below.
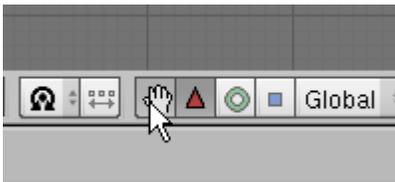

Switch to Top View. Press the EKEY (Extrude). Before you move your cursor, press the SKEY and extrude the edges inward to a small point forming the top of the hat.
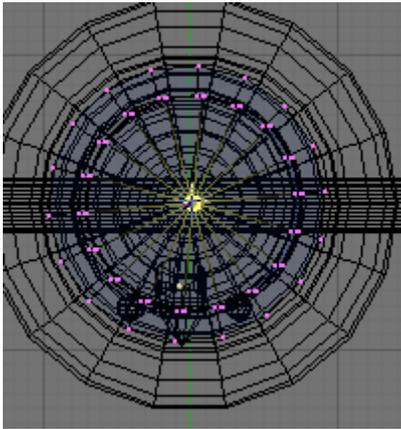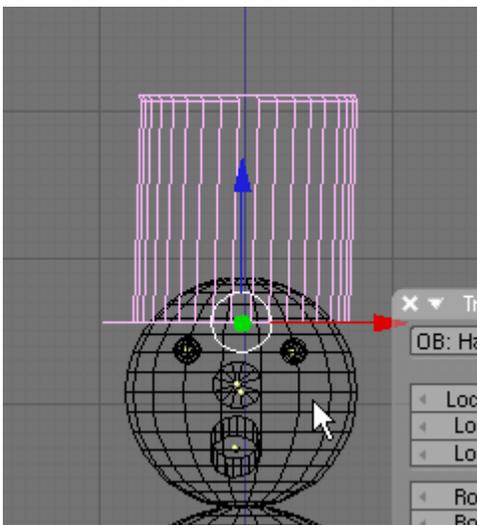

Press the AKEY to deselect the vertices. TAB out of Edit Mode. Name this object Hat.
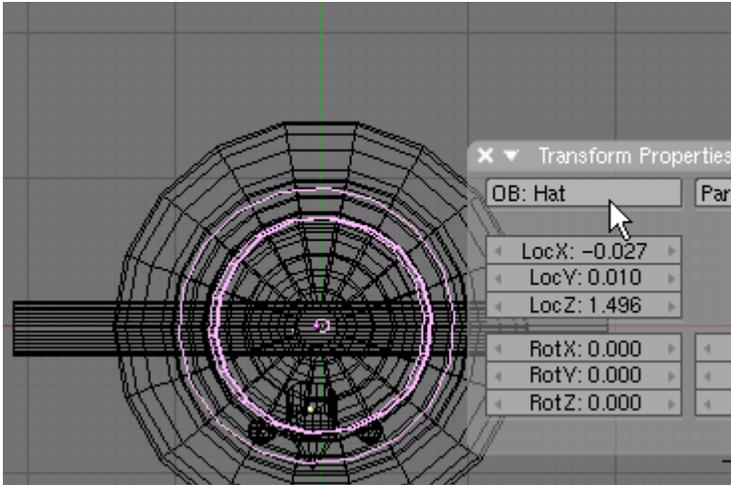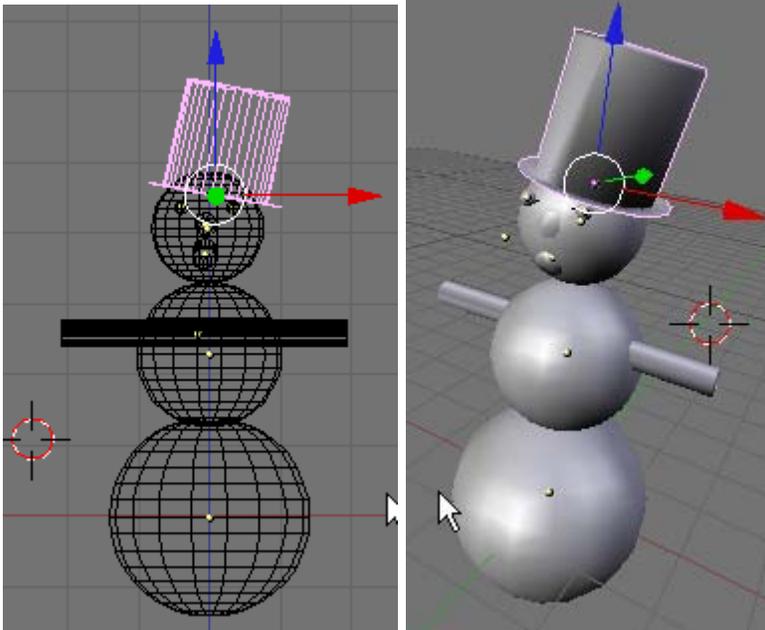
Switch to Front View. Turn on the Transform Widget Mode.

LMB the Blue Transform Widget Arrow and move the hat to the top of the snowman's head. Press the Set Smooth button in the Links and Materials Panel.


Press the RKEY and rotate the hat a bit to the side. (You may have to press the GKEY (Grab) to move it a bit as well).

Save your File F2.

Notice that there is a yellow "dot" sitting out in space in front of the snowman's nose. This is the origin center of the nose object. When you create a mesh in Blender it adds an origin center to the mesh. When you move the mesh the origin center stays behind by default. There is a quick way to get all of these centers back in their proper place.

Press the BKEY (Box Select) and drag selection box around all of the objects (except the lamp and the camera) selecting them all. In the Mesh Panel press the Centre New button.
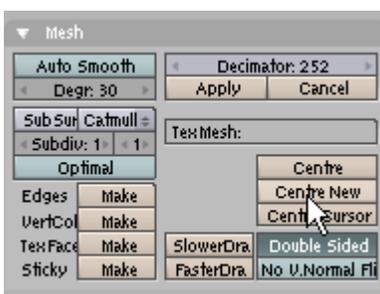

This will create new origin center points for the objects in their current position and remove the old origin center points.

Change the Perspective Viewport to Camera View (NUM0). In the front viewport select the camera. Press the GKEY (Grab) and move the camera up and out a bit to center the snowman in the camera viewport.
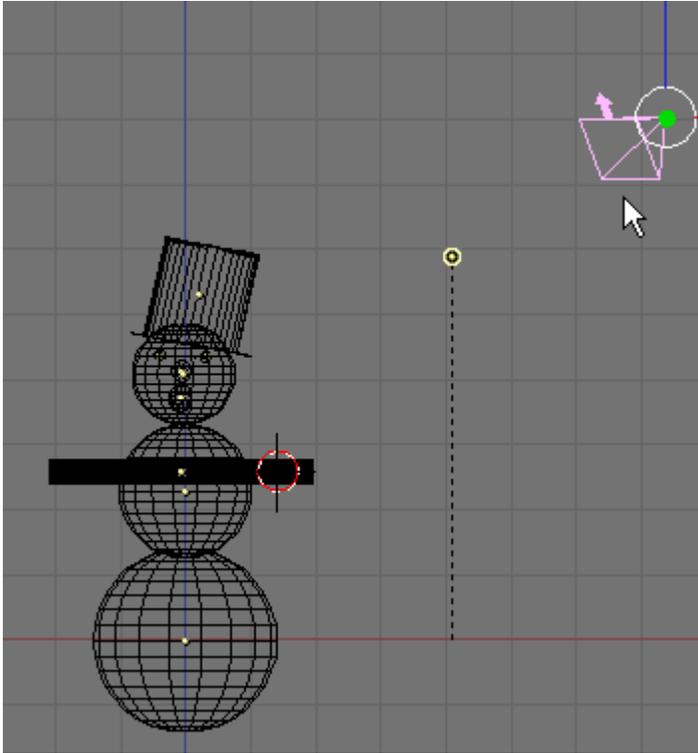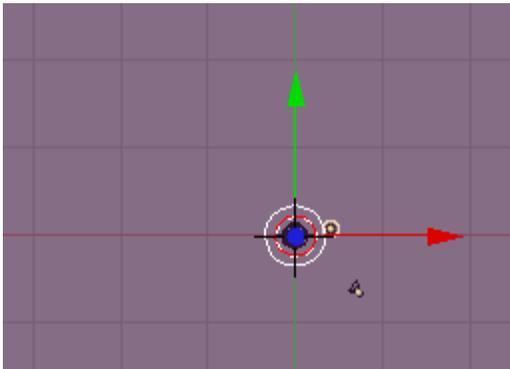
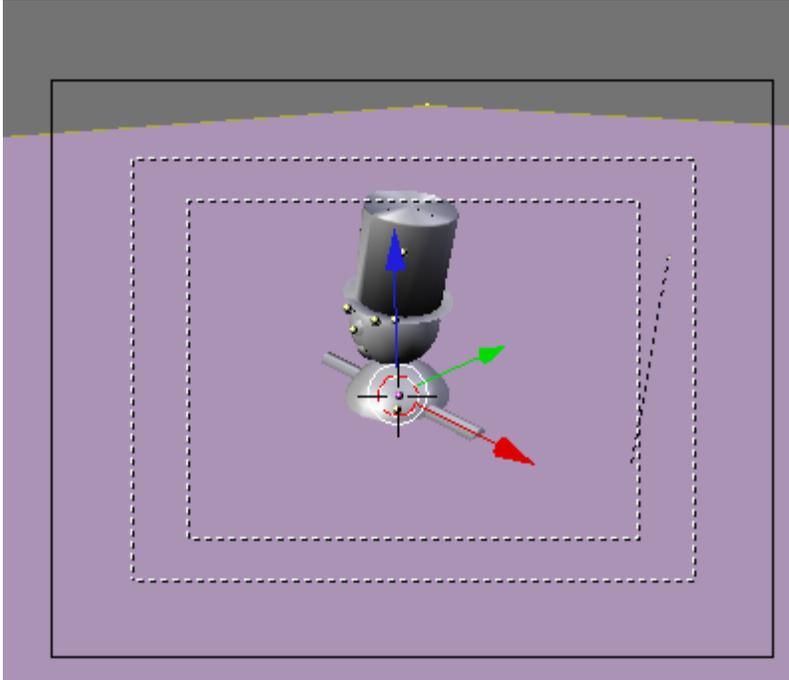The camera view should look something like below.
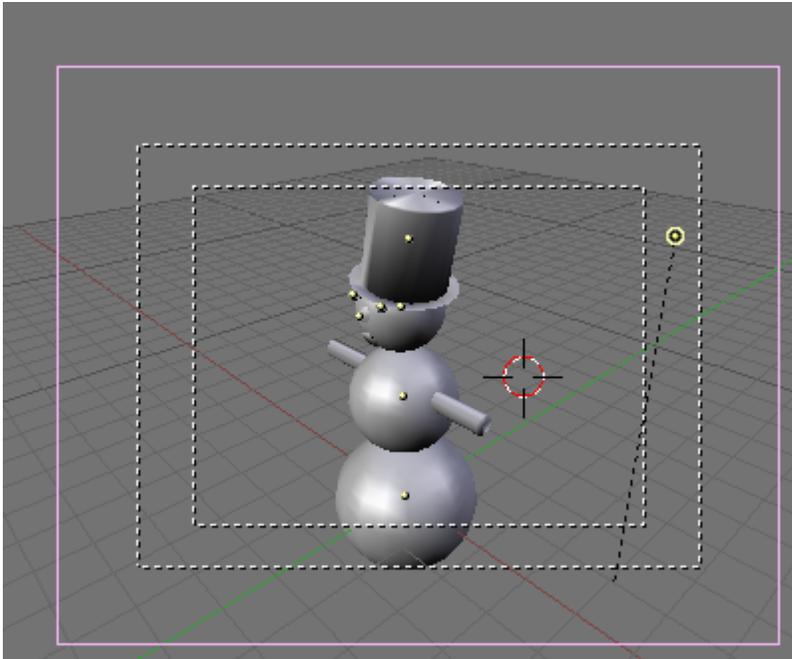
We will now add a ground plane. Switch the Front View to Top View. Zoom out a bit and place your 3D cursor on the snowman. Press Space / Add / Mesh / Plane.
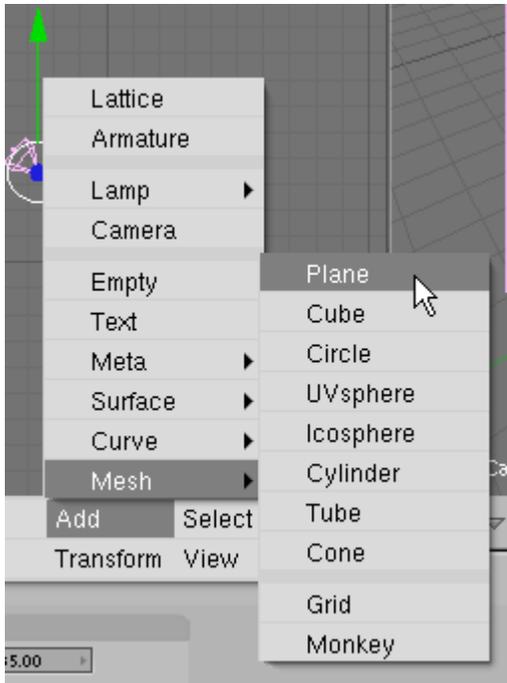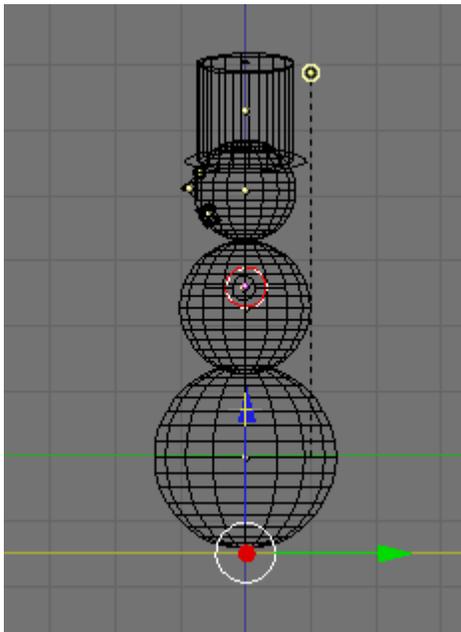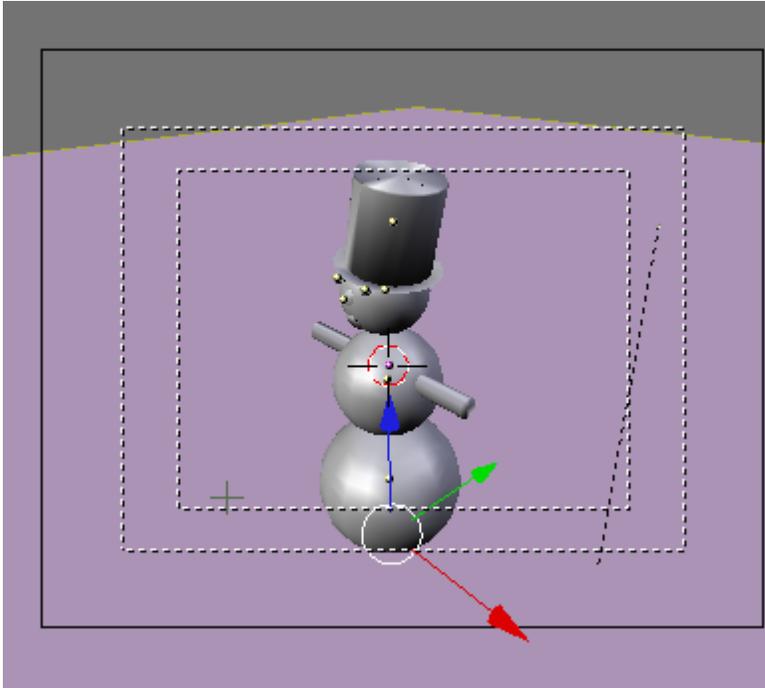
Press the SKEY (Scale) and scale the plane way out so it almost fills the camera viewport. You may have to do this a number of times to get the plane big enough.
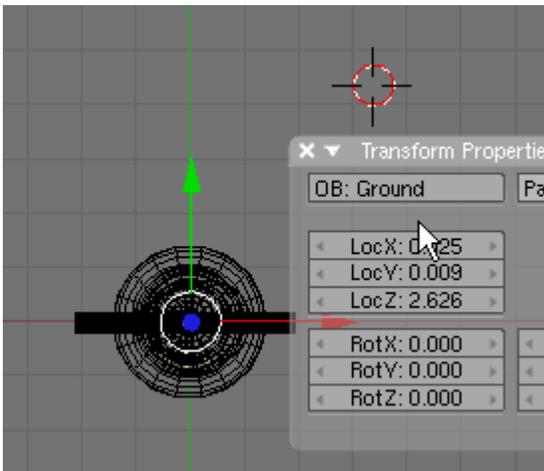
Switch to side view and zoom in. LMB click the Blue Transform Widget Arrow and move the Plane down to the bottom of the snowman.
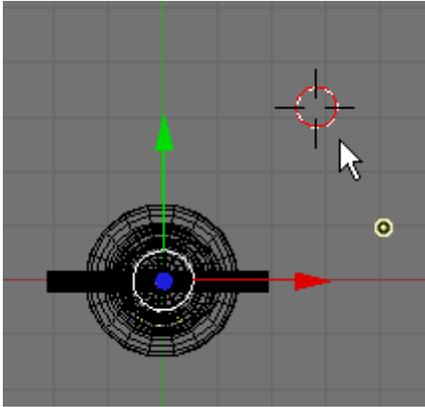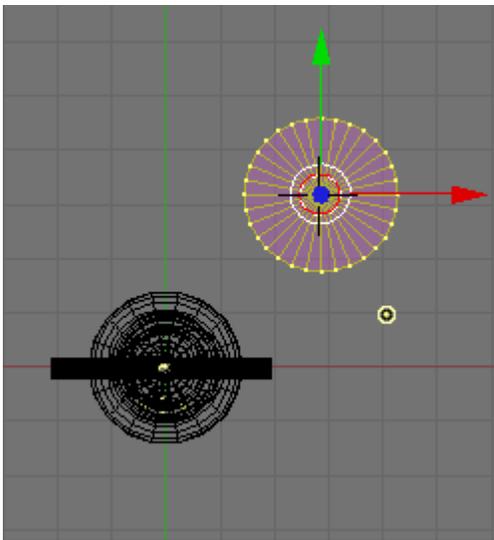
Press the AKEY to deselect the vertices. TAB to exit Edit Mode. Name this object Ground.
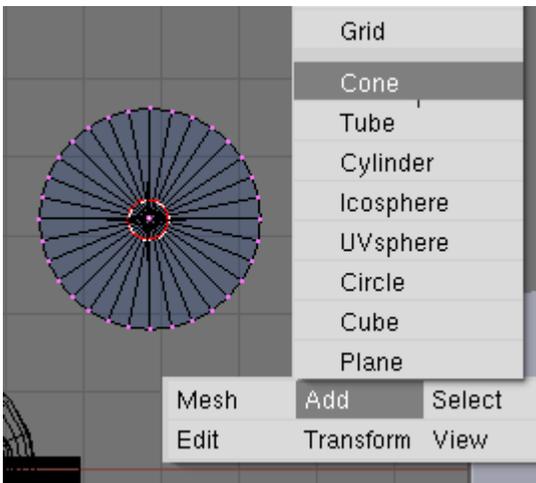

We will add a couple of trees. Switch to top view. Place your 3D cursor to the top and to the right side of the snowman.

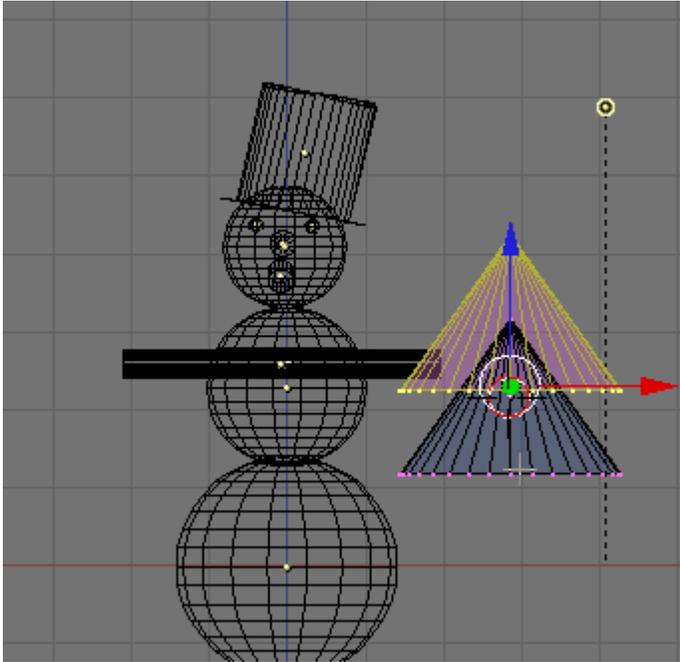Press Space / Add / Mesh / Cone. Choose 32 Vertices.

Press the AKEY to deselect the vertices.
Press Space / Add / Cone. Choose 32 Vertices.

**NOTE: Since we added this cone while still in EDIT MODE it is NOT a separate object.**

Switch to Front View. LMB click the Blue Transform Arrow and move this second cone up a bit as shown below.

Switch to top view. Press the AKEY to deselect the vertices. Press Space / Add / Cylinder. Choose 32 Vertices. Press the SKEY and scale the cylinder down to the width of a tree trunk.
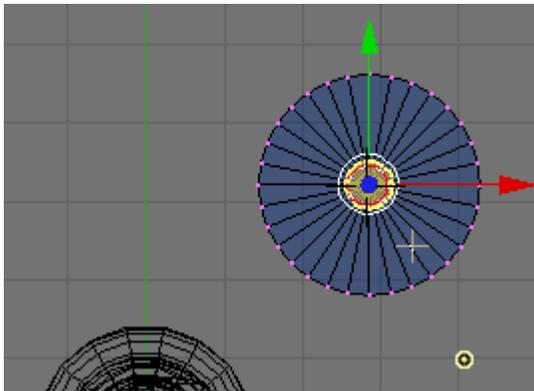

Switch to front view. Press the AKEY to deselect the vertices. Press the BKEY (Box Select) and select the bottom row of the vertices on the cylinder. Use the Blue Transform Widget Arrow to lower them forming a trunk as shown below.
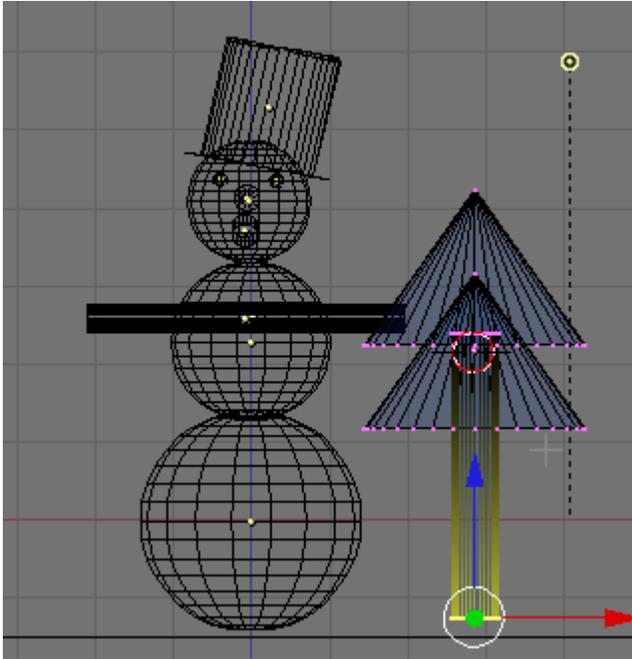
Press the AKEY deselecting the vertices. TAB out of Edit Mode. Name this object Tree.
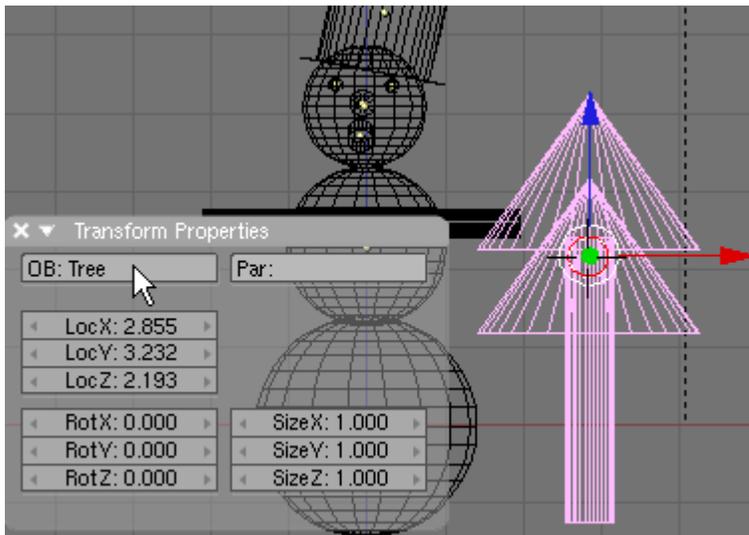
Switch to top view. With the tree selected press SHIFT-D (Duplicate). Move the new tree to the other side of the snowman. Press SHIFT-D again and move the third tree behind the snowman and Scale it up a bit. Arrange the 3 tree so they look something like below in the top and camera views.
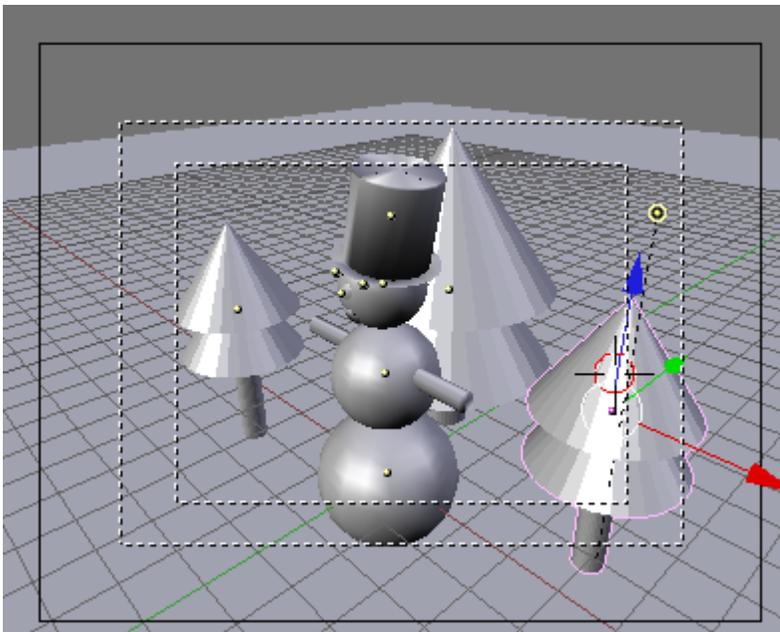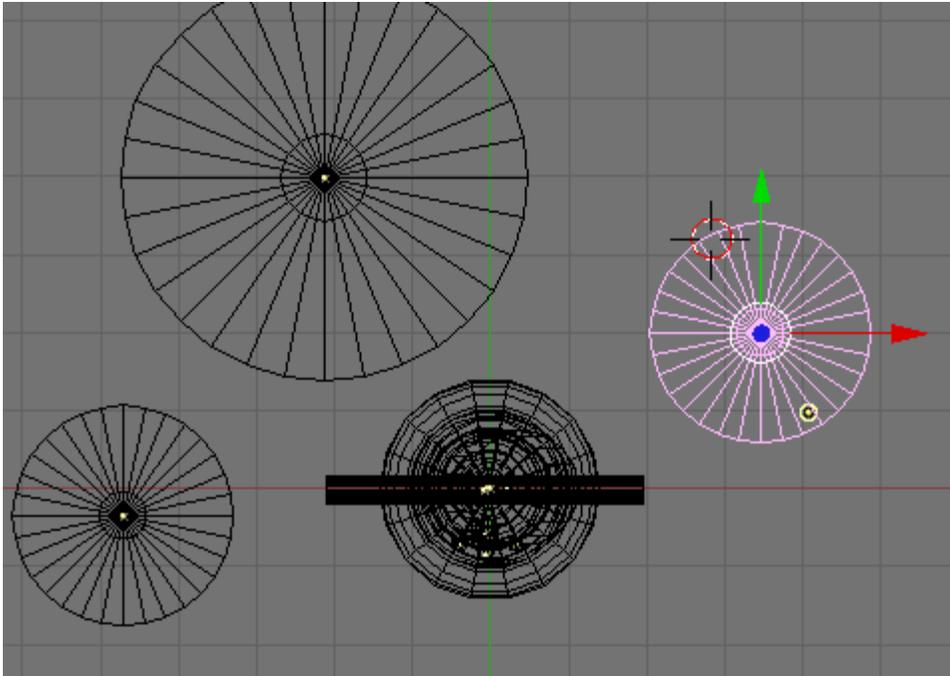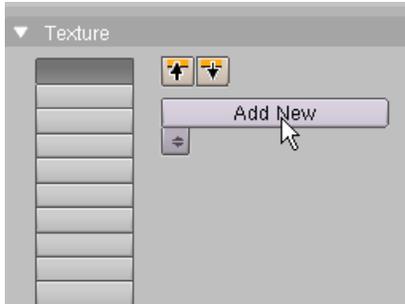
Select each of the 3 trees and press the Set Smooth button.

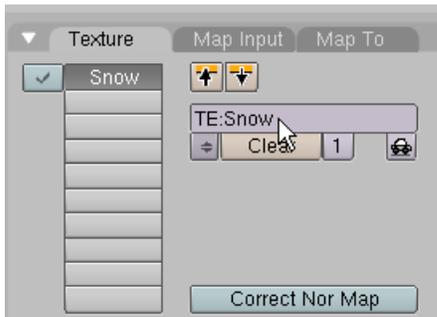**Save your file CTRL-W.**

We will now add some very simple materials. Select the Ground object. Press F5 (Shading). In the Material Panel press the Add New button.
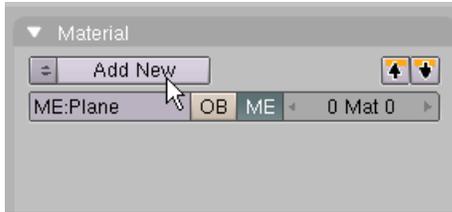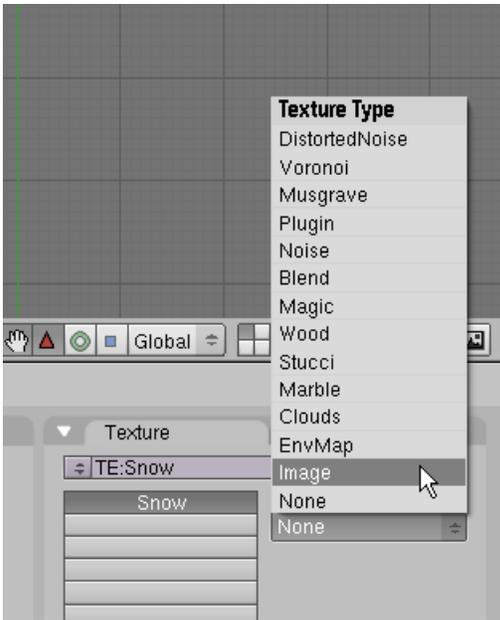
We will be placing an image on the Ground object so in the Texture Panel press Add New.

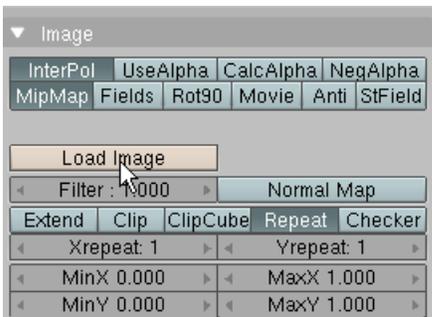In the Texture Panel name this Texture Snow.

Press F6 (Texture). In the Texture Panel press on the dropdown box called Texture Type and choose Image.

In the Image Panel press Load Image.

Select the Snowfall.jpg image. This file is located in the Snowman.zip file. After selecting the image press the Select Image button.

Switch to Front View. Select the Snowman Base. In the Material Panel press the Add New.

In the Material Panel set the Red, Green and Blue sliders to 1 making a white color. Make sure the A (Alpha Transparency) slider is set to 1.
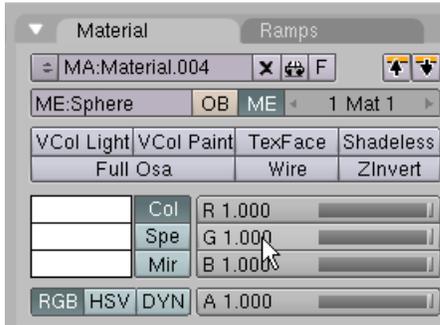
In the Material Panel name this Material White.
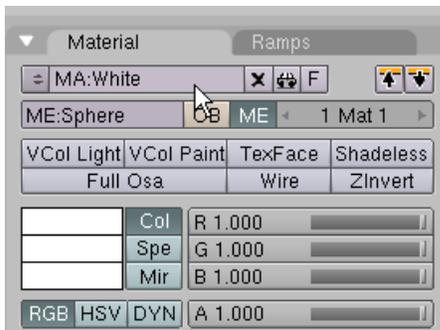
Select the Snowman Middle. We will use the same White material for the snowman Middle. Press the little icon to the left of the Add New button.

Choose White.

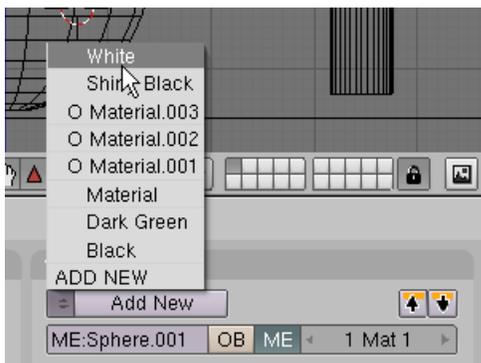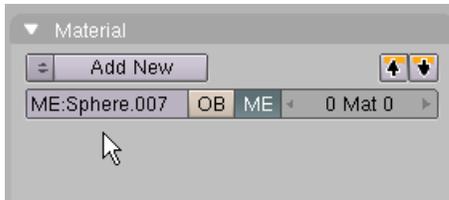Select the Snowman Head follow the same steps to add the White Material to the Snowman Head.

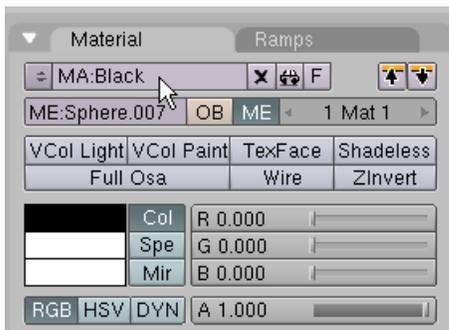Select the Left Eye object. In the Material Panel press the Add New button.

In the Material Panel set the Red, Green and Blue sliders to 0 making a black color. Make sure the A (Alpha Transparency) slider is set to 1.
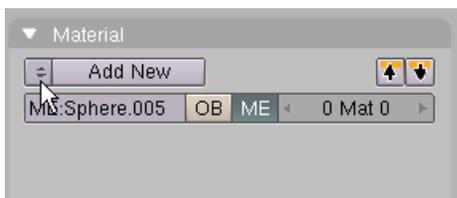
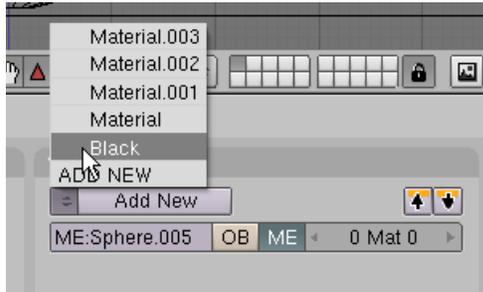In the Material Panel name this Material Black.

Select the Right Eye object.

We will use the same Black material for the Right Eye. Press the little icon to the left of the Add New button.
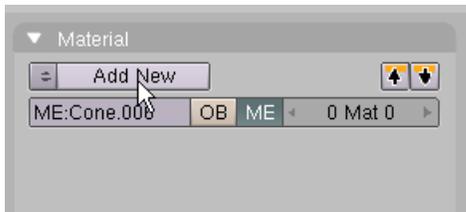
Choose Black.

Select the Nose object and add the same Black Material as above.

Select the Mouth object and add the same Black Material as above.

Select the Arm object and add the same Black Material as above.

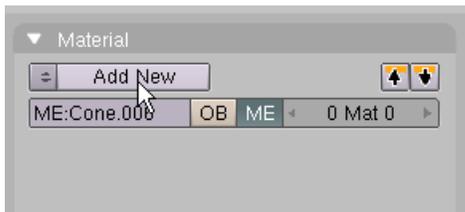Select the Hat object. In the Material Panel press the Add New.

In the Material Panel Set the Red, Blue and Green Sliders to 0. Make sure the A (Alpha Transparency) slider is set to 1. Name this material Shiny Black.
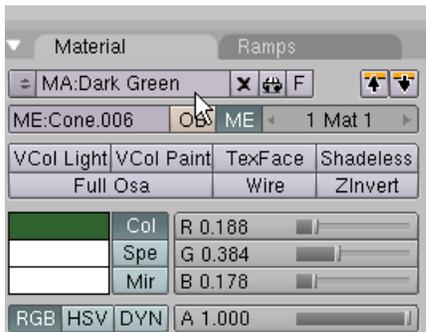

Press the Shaders tab. In the Shaders Panel set the SPECular reflection to 1.5 and the HARDness to 255.
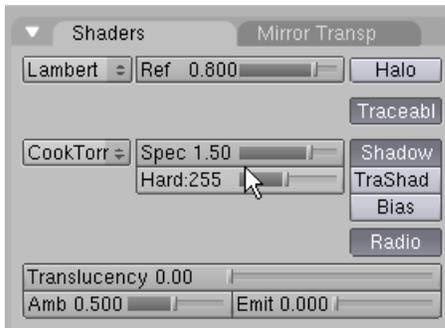
Select one of the Tree objects. In the Material Panel press the Add New button.

In the Material Panel set the Red slider to .188, Green to .384 and Blue to .178 Make sure the A (Alpha Transparency) slider is set to 1. Name this Material Dark Green.
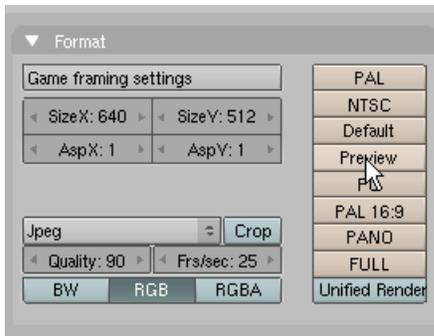

Select the second Tree object and add the same Dark Green Material to it.

Select the third Tree object and add the same Dark Green Material to it.

Save your file CTRL-W.

Press F10 (Scene). In the Format Panel press the Preview preset button. This sets the size of the output file to 340 x 256 pixels (50% of 640 x 512).

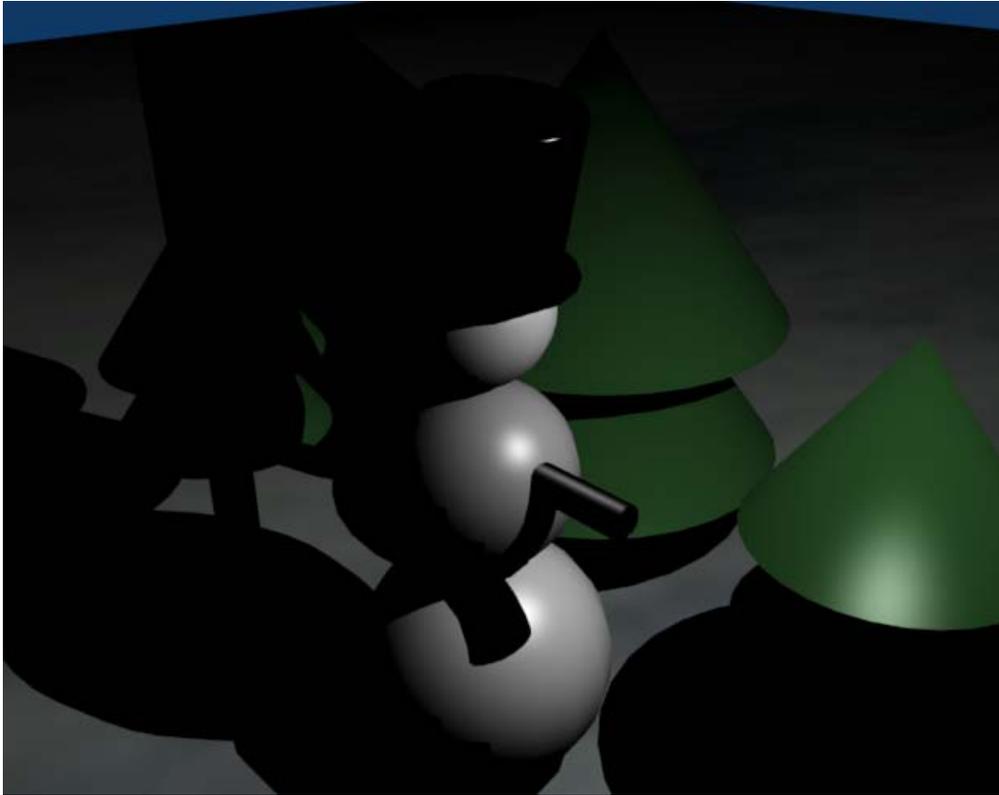In the Format Panel make sure that the File Type is set to JPEG.

Next we need to check the lighting on single rendered frame. In the Render Panel check the 100% button. This will, for now, set the rendered image file to the full 640 x 512 pixels.
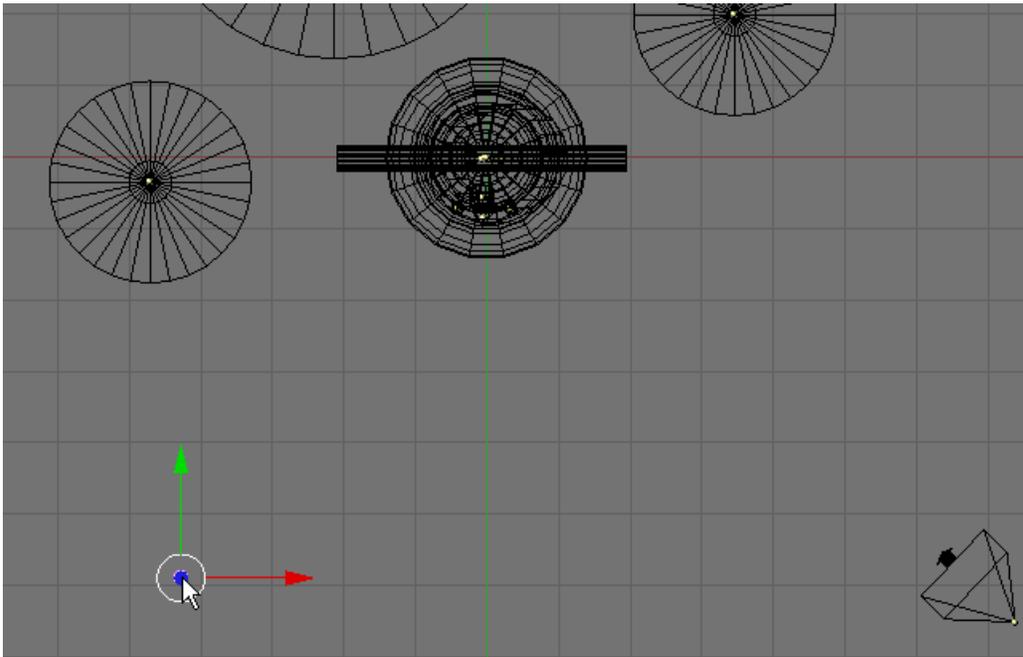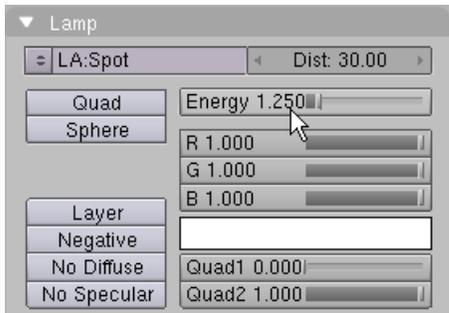

Save your file CTRL-W.

Render a single frame F12.

The scene is very dark and need more lighting. Switch the Front View to Top View (NUM7). Select the Lamp (the small yellow circle). Press the GKEY and move the lamp to the front of the snowman opposite the camera.
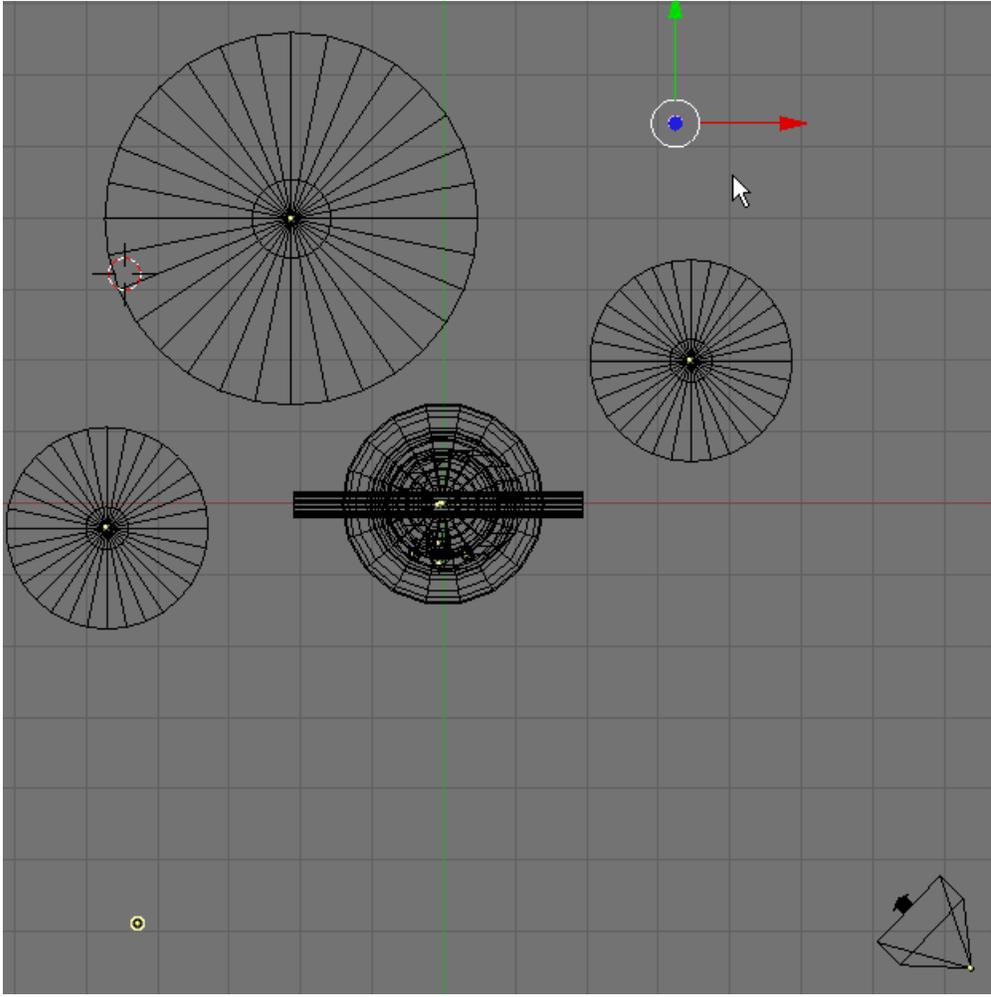

Press F5 (Shading) In the Lamp Panel Set the Energy slider to 1.25.

In the Shadow and Spot Panel press the Ray Shadow button (turning it off).

With the Lamp selected press SHIFT-D (Duplicate). Move the second lamp to the other side of the snowman as shown below
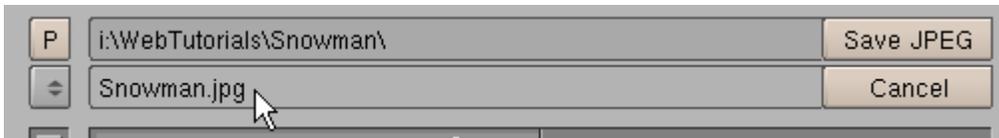
Render F12.

Save your file CTRL-W.

If you would like to save this file as a JPG image file, press F3 (Save Image). Use the file locator to select a destination directory on your computer and name the file Snowman.jpg.

NOTE: You must add the file extension .jpg. Unlike saving a blender file (where Blender automatically adds the .blend extension) when saving an image you must add the appropriate file extension.

After selecting the directory for the file to be saved and naming the file press the Save JPEG button. Blender will place the JPG file in the chosen directory.

A finished copy of this tutorial named SnowmanComplete.blend is located in the Snowman.zip file.