

EXERCISE 1: GETTING STARTED

ASSIGNMENT:

In this exercise you will open Autodesk 3ds Max Design and become familiar with the basic tools and the working environment.

LEARNING OBJECTIVES:

- Introduction to the working environment
- Introduction to the VIZ toolbars
- Introduction to basic shape creation using standard primitives
- Intro to basic selection and manipulation tools: Select, Move, Copy, Rotate
- Introduction to working with modifiers

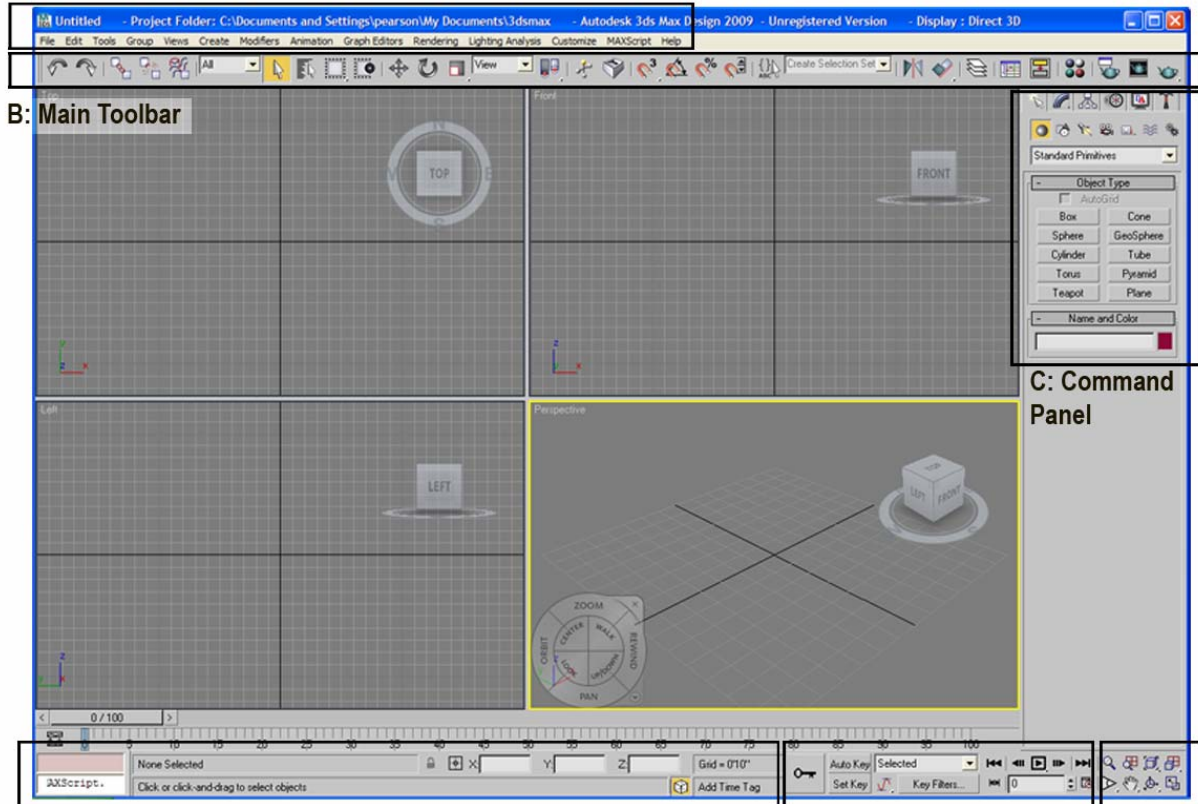
PROCEDURE:

1. Open Autodesk 3ds Max Design
2. The standard Max window will appear as shown above. *Depending on how the program is configured, there may be other floating toolbars visible in your screen. You should close any extra open toolbars by clicking on the red X. You can also go ahead and close any open tool palettes that might be active.*
3. Your screen should display the four default viewports visible as shown in figure 1.01.
4. If only one viewport is visible, use the the **maximize viewport toggle** [or click ALT+W] from the **viewport navigation tools** in the lower right corner to display the four default viewports as shown in figure 1.01.



5. For the first part of this exercise, we will take a look at the different components that make up the working environment. The key areas we will discuss are labeled in figure 1.01

A: Pull Down Menus



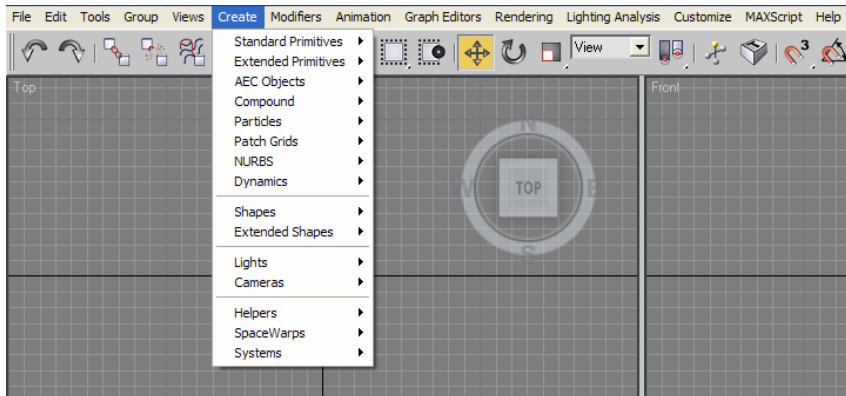
D: Status Bar

E: Animation Tools

F: Viewport Navigation Tools

Figure 1.01

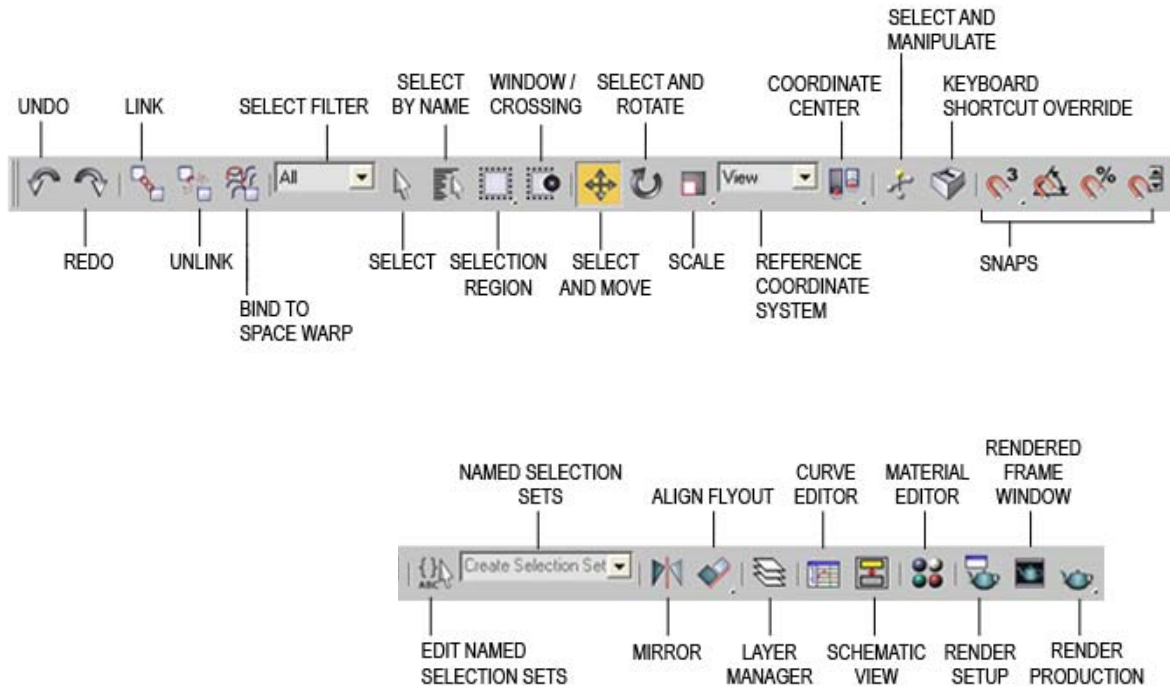
A. Pull Down Menus



File	Contains command for opening, saving, importing and external referencing files.
Edit	Contains undo commands, copy (clone) functions, and selection tools.
Tools	Contains transform type in tools and the display floater. Some of the other tools contained include the mirror, array and the measure distance commands.
Group	Contains tools for creating and editing groups of objects.
Views	Contains tools for viewport display options.
Create	Contains command that allow you to create 2d and 3d geometry, cameras, lighting, helpers and systems.
Modifiers	Categorizes the type of modifiers available by sub-menus.
Animation	Contains common features used in creating animations.
Graph Editors	Contains advanced controls for animations
Rendering	Contains functions for rendering, environment control, and advanced lighting.
Lighting Analysis	Provides commands for invoking the Lighting Analysis Assistant Feature as well as addig light sources and lighting analysis tools.
Customize	Contains features for setting up the user interface and customizing the drawing units
MAX Script	Contains tools for working with the MAXscript programming language
Help	Contains user reference, tutorials, and online support tools.

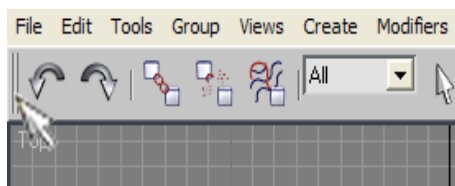
A note about help: The VIZ help menu is a very well developed and useful tool. You should familiarize yourself with this feature, and refer to it often when exploring new techniques and tools.

B. Main Toolbar

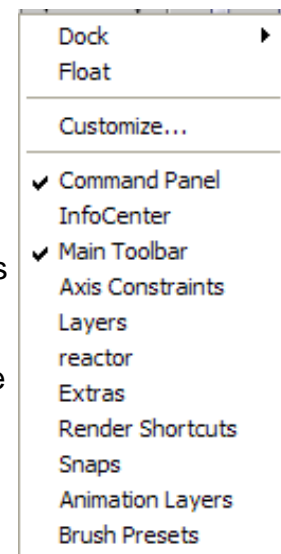


OTHER TOOLBARS

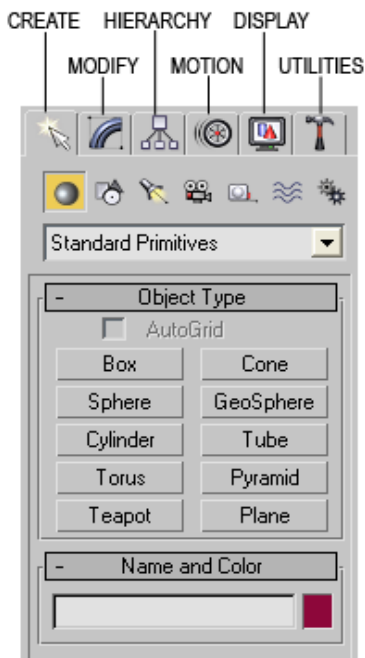
VIZ has several other toolbars that may or may not be visible depending on the configuration of your program. To access the other tool bars, right click on the double vertical line as shown below. Hidden toolbars that can also be activated by right-clicking on the titlebar of an open toolbar and selecting the desired toolbar from the shortcut menu.



The dialog box to the right will appear after right clicking. You may check any toolbars that you wish to have open. All toolbars also have the option to be docked or floating depending on personal preference. Toolbars that are docked will remain embedded in the main toolbar. Toolbars that are floating can be freely moved around the screen as desired. This VIZ toolbar configuration is very similar to other Autodesk products, including autoCAD. Many of these extra toolbars will not be necessary for this course.

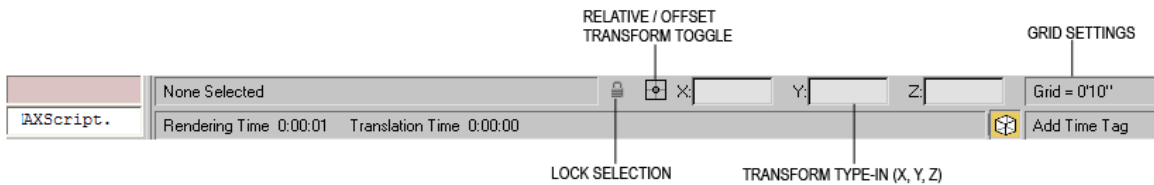


C. Command Panel



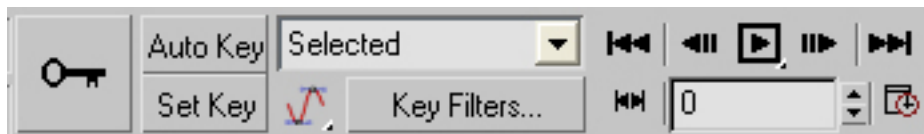
The command panel contains six different tabs, each with an entirely different appearance, containing nearly all of the tools that you will use for creating and editing objects in VIZ. Think of the command panel as a single entry point for nearly all of the tasks that you will perform.

D. Status Bar



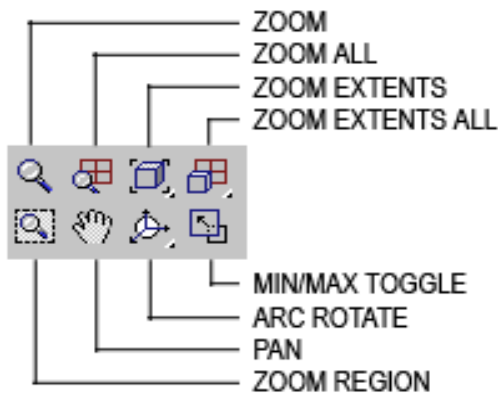
The Status Bar helps users keep track of what is currently selected and the location (x, y, z) of these objects.

E. Animation Tools



The Animation tools are used to control creating animations in Viz.

F. Viewport Navigation Tools



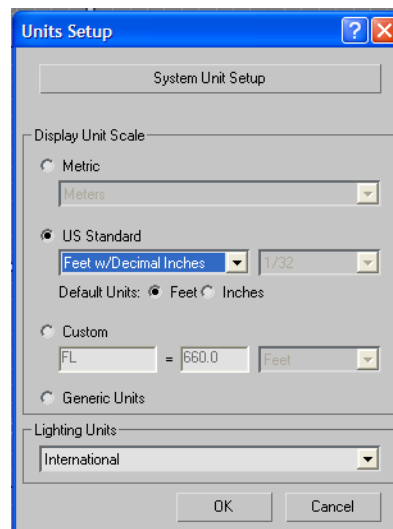
Viewport Navigation Tools give the user control over the display in the active viewports. These tools are similar to navigation tools in autoCAD.

CREATING OBJECTS

6. From the pulldown menu select **Customize, Units Setup**

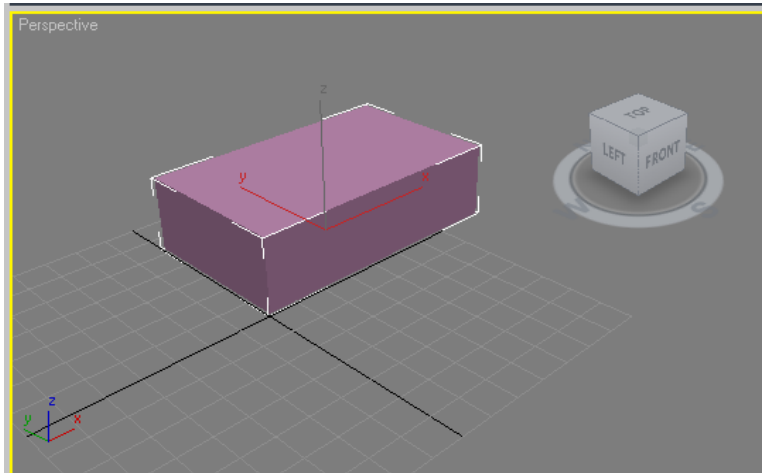
7. Set the units to **US Standard**, feet w/ decimal inches. **Click OK.**

Note, this will be the default units setting for the most of the exercises in this course. You may also use “feet with fractional inches” if you prefer. Be sure to check this setting each time you begin a new exercise. Your computer may not be set up to maintain this setting.



8. In the **command panel**, select **create, geometry, standard primitives**, and then click on the **box** tool. You will notice that a new set of commands have appeared after the box tool was selected. These are called rollouts, and are unique to each tool that is selected. We will use the rollouts to define the parameters of the box.

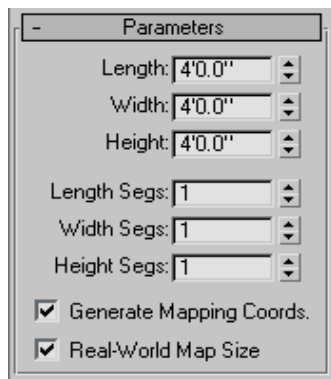
9. Click and drag a box in the perspective viewport as shown in figure 1.02



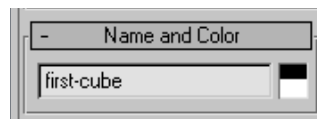
To create a box, click and drag to define the size of the base, release and drag upward to set the height.

Figure 1.02

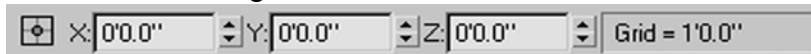
10. In the **parameters rollout** set the **length, width and height all to be 4'-0"**.
11. In the **Name and Color rollout**, change the name to **"first-cube"**



Note: you may enter the length, width and height numerically with the keyboard, or use the arrow spinners



12. From the main toolbar, click on the **select and move tool** icon.
13. Using the **transform type-in tool** located at the bottom of the screen in the **status bar**, change the X and Y coordinate readouts to both equal 0.



14. Your box will move to be centered on the 0,0 origin as shown in figure 1.03.

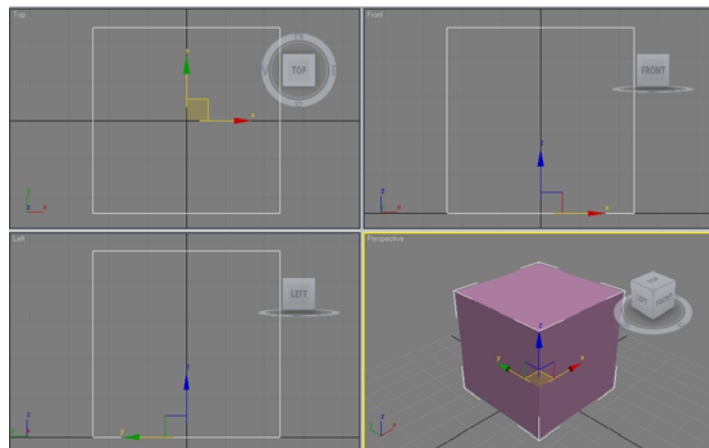
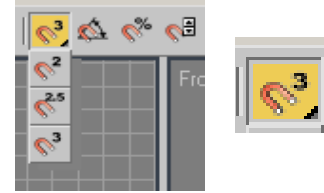


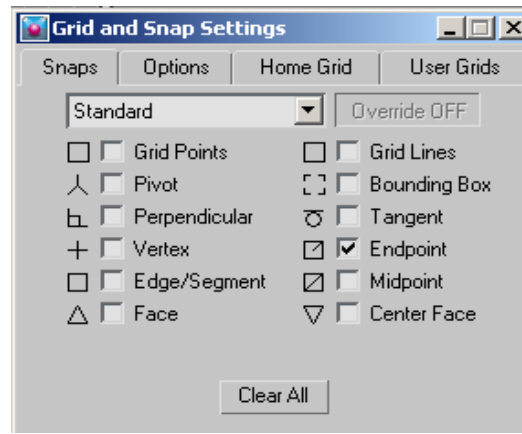
Figure 1.03

15. In the **command panel**, select **create, geometry, standard primitives**, and then click on the **pyramid** tool. Click and drag to create the pyramid.
16. In the parameters rollout, set the **width = 4'-0"**, **depth = 4'-0"** and **height = 6'-0"**

17. Select the **3d snap tool** from the main toolbar flyout.
Note: Flyouts are a way of embedding multiple tools within one toolbar icon. Any tool icon that has a small black triangle in the lower right corner is a flyout that contains other options for this tool.



18. Right click on the 3d snap tool to open the **Grid and Snap Settings dialog box**.
19. verify that only endpoint is selected and close the dialog box.



20. Click on the **select and move tool** in the **main toolbar**. Notice that the pyramid is white in each viewport, indicating that it has been selected.
21. In the **perspective viewport**, use the snaps to help you move the pyramid shape on top of the box shape as shown in figure 1.04 and 1.05. As you hover the move tool over an endpoint, a cyan colored square will become visible. This indicates that you will snap to that endpoint. Verify that you have placed the object correctly by checking the pyramid location in all viewports.

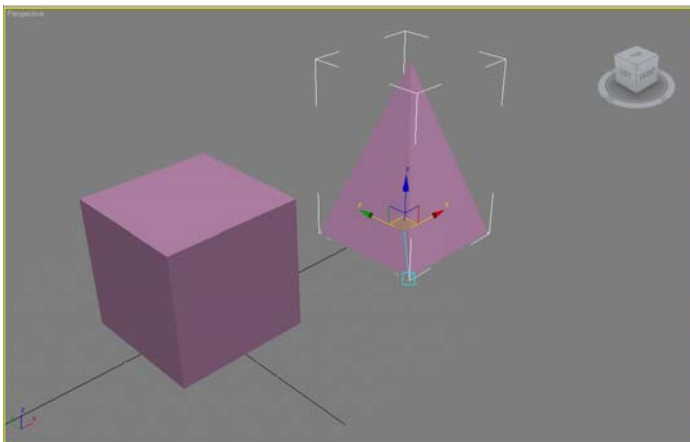


Figure 1.04

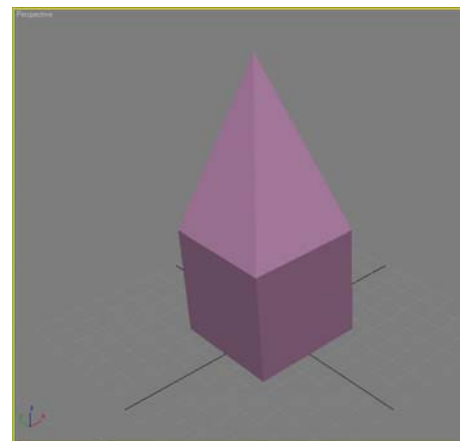
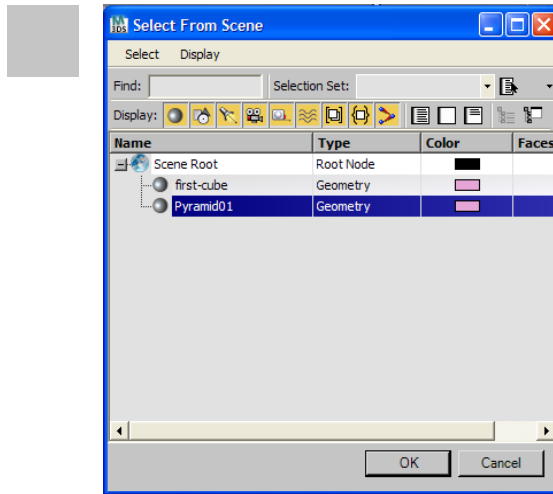


Figure 1.05

22. Using the **select by name tool**, select the **pyramid01** shape. Close the dialog box by clicking select.



23. In the **command panel**, select the **modify tab**.
24. Change the pyramid 01 name to **“my pyramid”** and change the color to something that contrasts with the box.
26. Change the **height = 8'-0”**

Note: when you create an object you can set the initial parameters for the object directly in the create tab. After the initial creation, however, if you want to change the object you must use the modify tab.

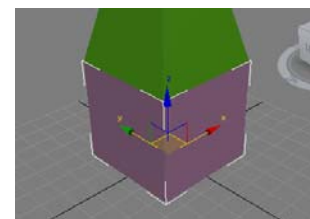
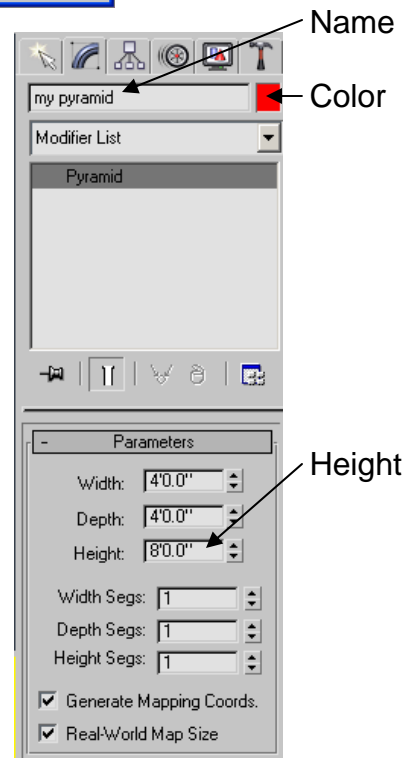
Saving Files: These exercises will not instruct you when to save your file. **It is recommended to save your work often** as well as after completing majors tasks.

For this exercise save your work as **“yourname-exercise1.max”**

COPY AND INSTANCE

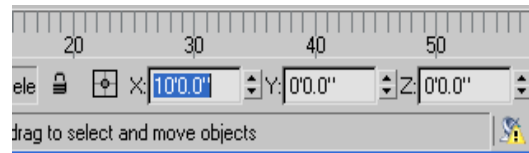
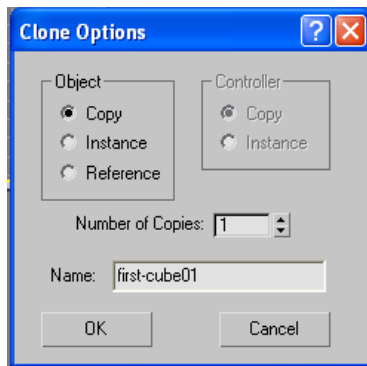
27. Click on the **select and move tool** in the **main toolbar**.
28. Select the box shape. You will see the move gizmo appear when the object is selected.
29. Activate the top viewport.

Note: if the top viewport is not currently the active viewport, you can activate it by right-clicking in the viewport. This allows you to change viewports without deselecting the object you are working on.



Move Gizmo as seen in perspective viewport

30. In the top viewport you will copy the box object to the right, **constrained to the x axis**. Hovering over the x axis (red arrow) on the move gizmo, your transform will be constrained to the x axis when it is highlighted yellow.
31. Hold down shift and click to drag a copy to the right.
32. In the **clone options dialog box**, select **copy**. **Select OK**.
33. Using the **transform type-in** in the **status bar** at the bottom, enter an x coordinate of **10'-0"**. Make sure you are working is **absolute mode** as indicated by the closed box to the left of the transform tool. (clicking on the box allows you to toggle between absolute mode and offset mode) You have now created a copy of the box located exactly 10'-0" apart on center as shown in figure 1.06



34. Select the new box you just created. (It may still be selected)
35. Create another copy constrained to the **X axis** to the right of the new object.
36. In the clone options dialog box, select **instance**. *An instance will link the properties of these two objects to each other.*
37. Use the **transform type-in** to set its location to an **x coordinate of 20'-0"**.
38. Use the **zoom extents all** tool to zoom all of the viewports to the new objects.



39. You should now have 3 box objects as shown in figure 1.07.

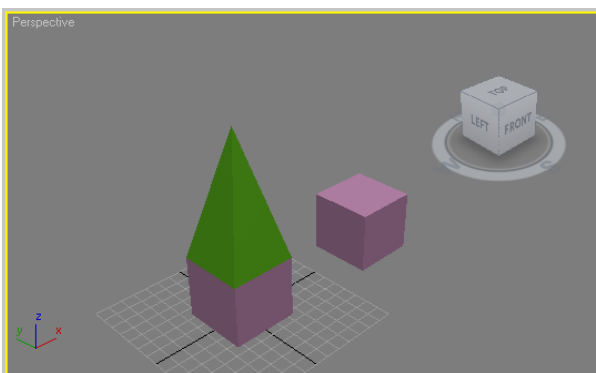


Figure 1.06

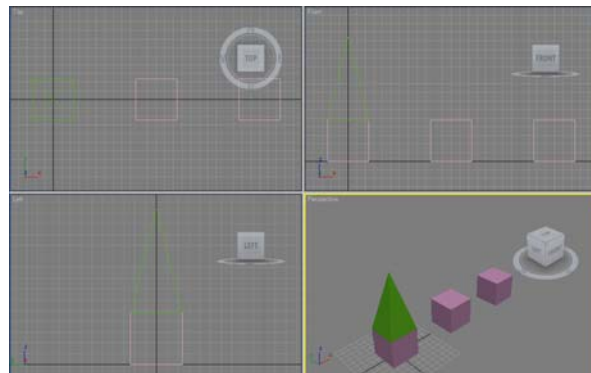


Figure 1.07

MODIFIERS

40. Using the **select by name tool** in the main toolbar, select the first box copy you created named **“first-cube01”**.
41. In the **command panel**, select the **modify tab**.
42. Expand the **modifier list pulldown** and select a **bend** modifier.
43. In the **bend parameters**, set the **angle = 40** and the **direction = 30**. Your shape will look like figure 1.08.
44. You will notice that the bend modifier is applied to both box objects because they were created as an instance, even though you only selected one of the objects.

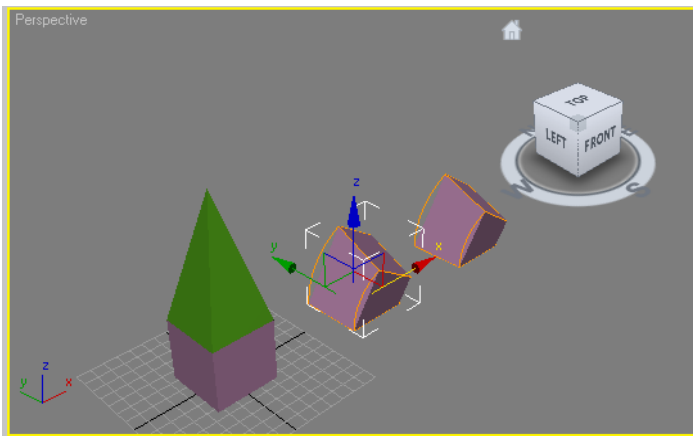
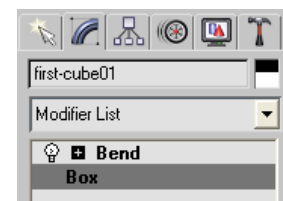
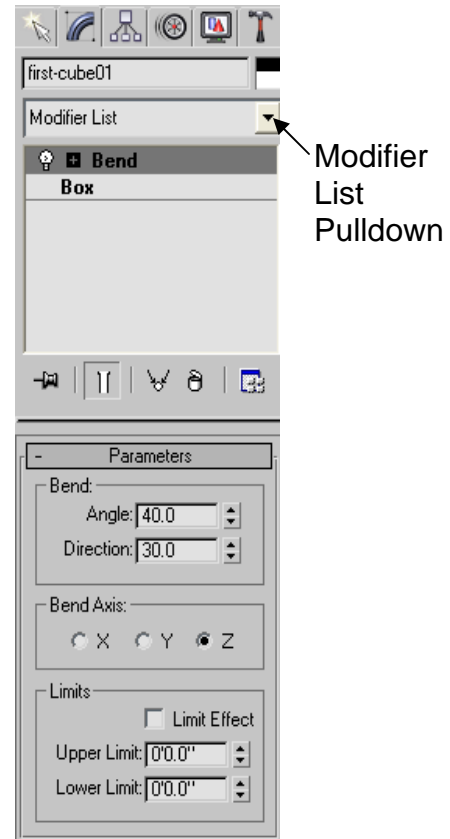


Figure 1.08

45. Select the word **box** as shown to the right. You can still edit the original box object's parameters even after you have applied a modifier to the object.



46. In the **box parameters rollout**, change the **height segments to 5**. Notice how the shape changes. The number of segments that an object is composed of will affect the geometry of the modifier applied to that shape.
47. Click back on the bend modifier to return to the top of the stack.
48. In the **modifier list pulldown**, add a **twist** modifier to the stack.
49. In the **twist parameters rollout**, set the **angle = 75**. Your shape will now look like figure 1.09. Your modifier stack should appear as figure 1.10.

Note: The order that the modifiers are applied will affect the overall outcome of the shape. VIZ sees the object with the modifiers applied one at a time in the order shown on the list. You can move the order of the modifiers simply by dragging the name to the desired location within the modifier stack.

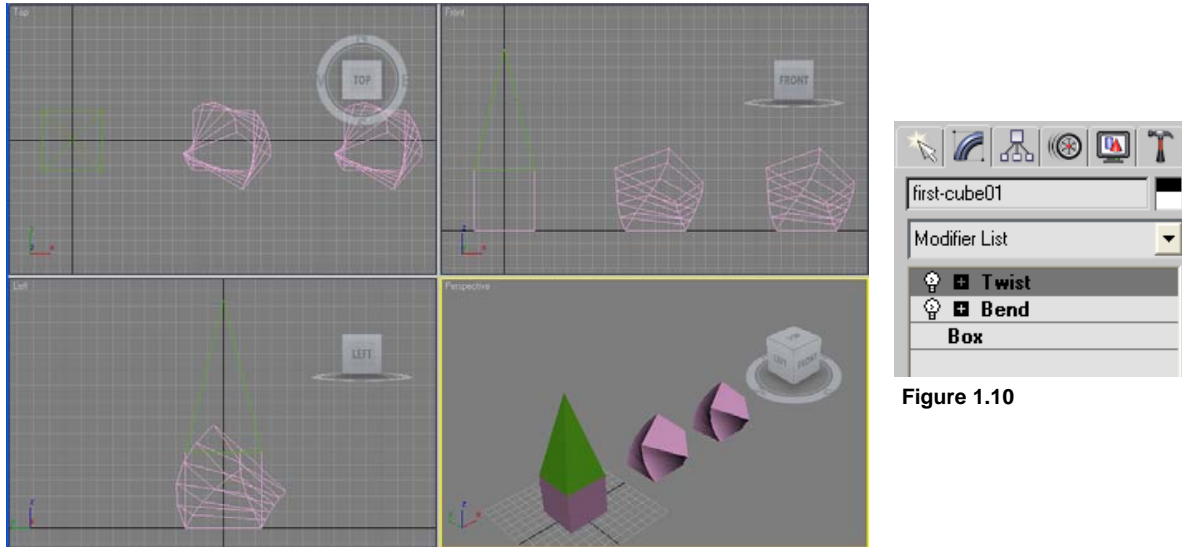


Figure 1.09

50. Select the “**first-cube02**” shape.

51. In the **modify tab**, click on the **make unique** button.



Note: This object is now no longer an instance of the first object. Any changes we now make will be unique to this object.

52. From the **modifier list pulldown**, add a **taper** modifier to the stack.

53. In the **taper parameters**, set the **amount = -0.5**.

54. Your model will now look like figure 1.11.

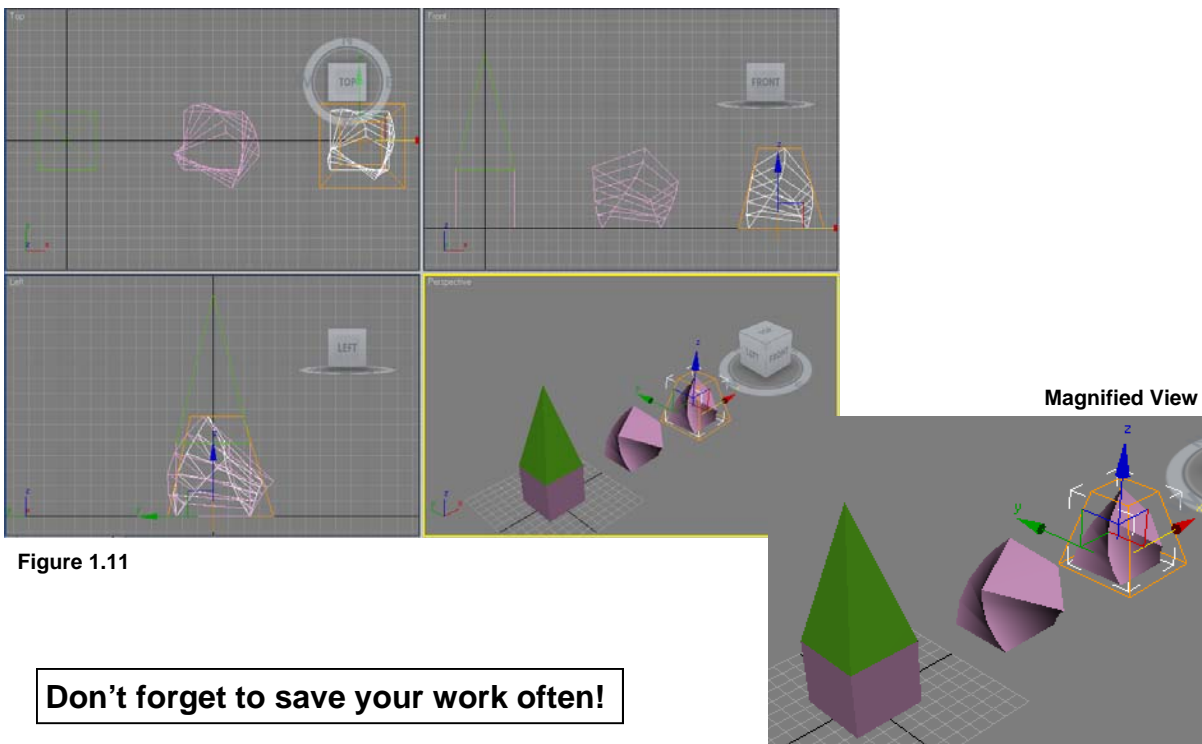


Figure 1.11

Don't forget to save your work often!

55. In the **command panel**, select **create, geometry, standard primitives**, and then select **cylinder**.
56. Click and drag a cylinder in the perspective viewport as shown in figure 1.12. You may want to turn off the snaps before completing this task, or be sure that you do not get too close to the other objects so that you don't accidentally snap to a point on another object.
57. In the parameters rollout, set the **radius = 2'-0"** and the **height = 10'-0"**.

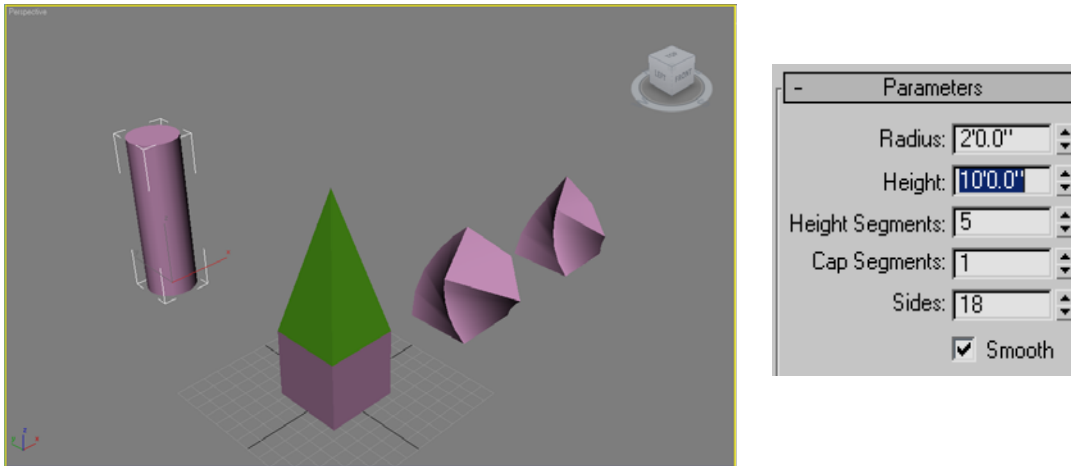


Figure 1.12

58. Select the **select and uniform scale tool** from the **main toolbar**.
59. Uniformly scale the object to **125%** of its original size. You will be scaling in **all three axis uniformly** when the transform gizmo is highlighted as shown in figure 1.13. The transform type-in tool in the status bar will now show and x,y,z scale percentage when you are working with the scale tool. Click and drag until the percentage readout is equal to 125%. You may also enter 125 numerically if that is easier. Entering the percentage in the X coordinates will change all three simultaneously.

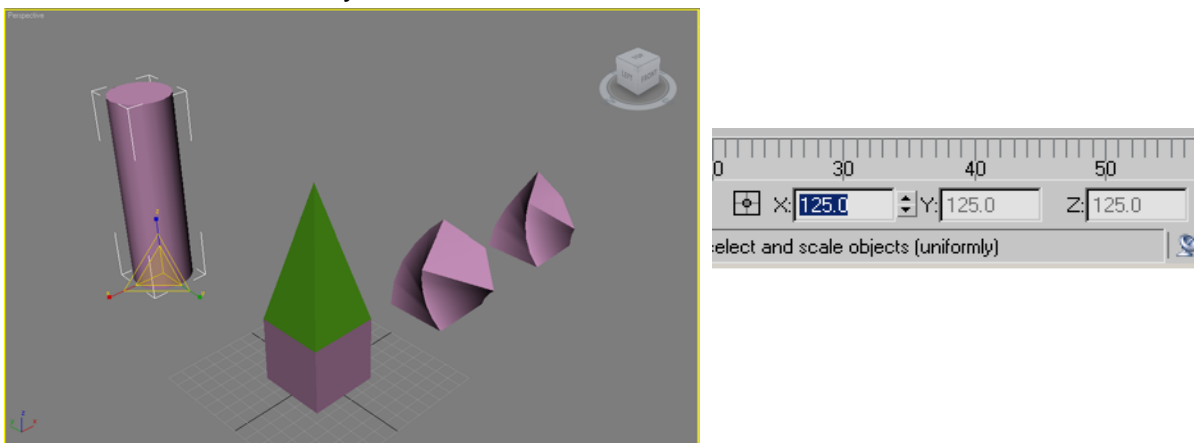

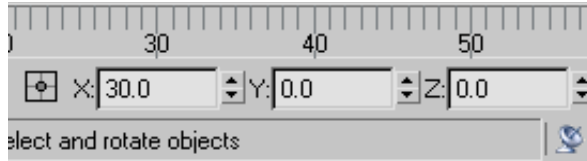


Figure 1.13

60. Select the **select and rotate tool** from the **main toolbar**. 
61. Use the **x spinner** in the **transform type-in tool** to rotate the cylinder **30 degrees**. When the select and rotate tool is active, the transform type-in show degrees for rotation.



62. Your shape should now look like figure 1.14.

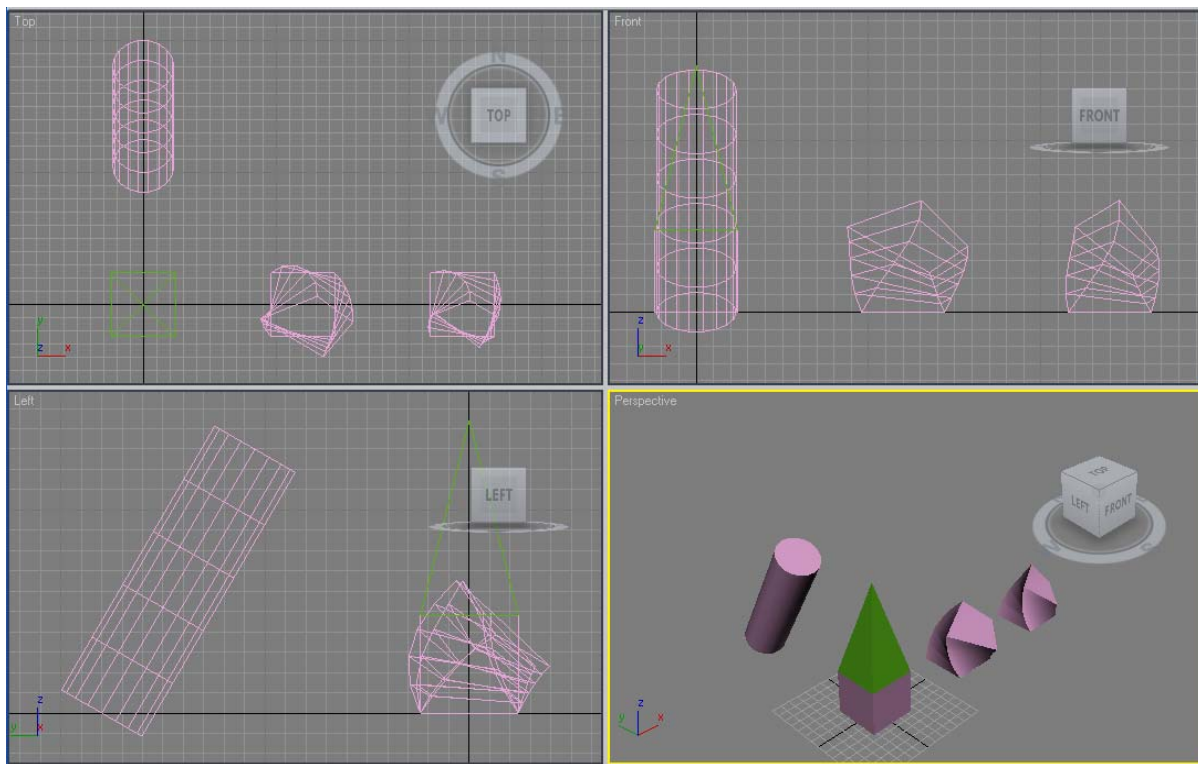
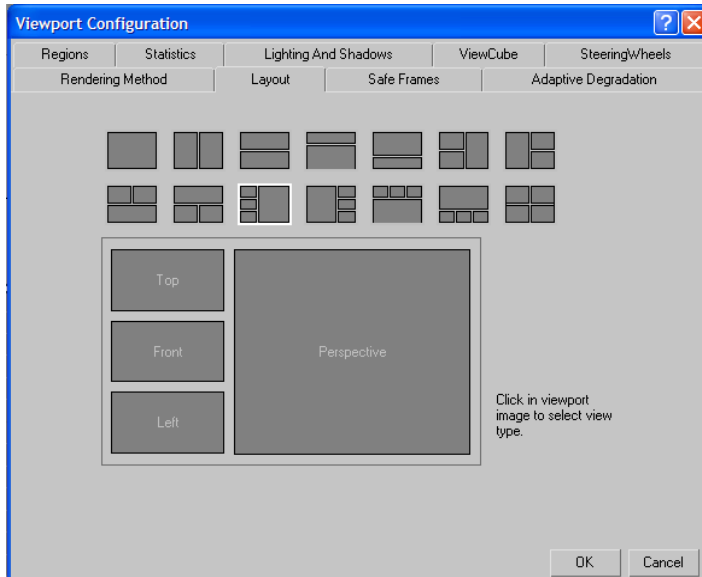


Figure 1.14

VIEWPORT CONFIGURATION

63. From the **pulldown menus**, select **view, viewport configuration**.

63. In the **viewport configuration dialog box**, click on the **layout** tab. You will see the current viewport layout along with a number of predefined layouts.



64. Select the layout with three small rectangles stacked on the left with one large rectangle on the right.

65. click OK.

66. Your desktop will now appear as shown in figure 1.15. VIZ gives you the option to customize the look of the working environment to suite your personal preferences.

67. End of Exercise, save your file as **yourname-exercise1.max**

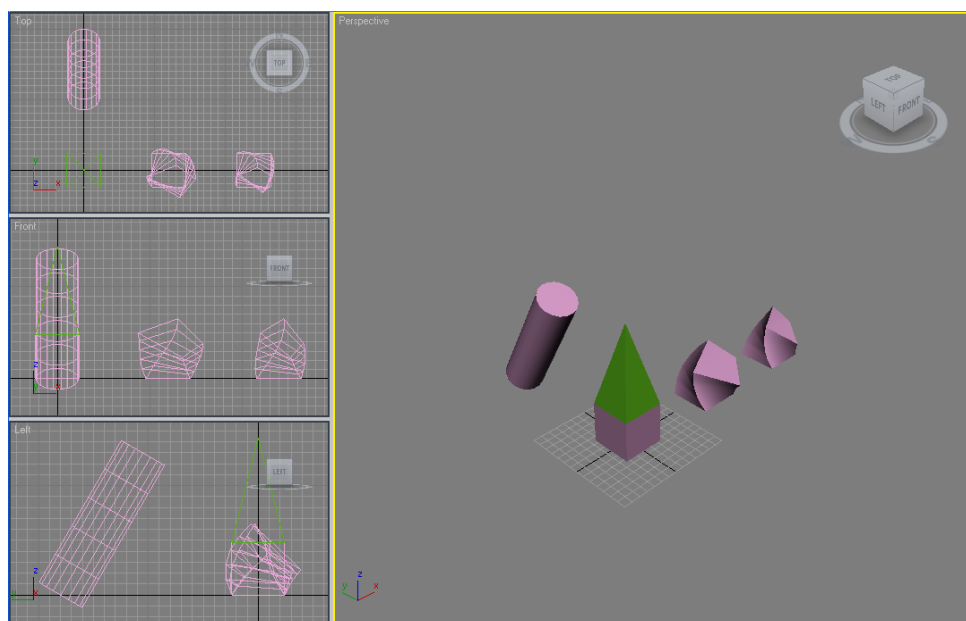


Figure 1.15