

Chapter 4

Pallettes

The Tools, Info and Help palettes are the standard palettes included in the 3D World application. All other palettes are plug-in palettes that can be loaded when 3D World is launched or while the application is running. *See [Installing Plug-ins on page 1-6 for further details.](#)*

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INTRODUCTION

To open a palette, select its name from the Palettes menu. The Palettes menu lists of all the available palettes.



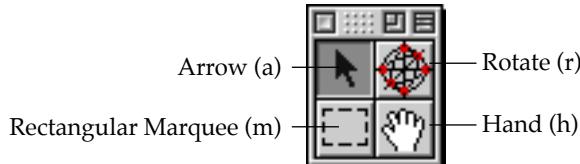
The Tools palette displays automatically the first time 3D World is launched. The status and position of all palettes is remembered each time the application is opened. To return palettes and preferences to their default settings, hold down the Command and Option keys while launching the application. Close a palette by clicking on the top left corner of the palette window.

The Window Toolbar is displayed at the bottom of each document window and the Window Toolbar controls are also discussed in this section of the manual.

Note: If any palette is moved to within 5 pixels of the edge of the screen, the palette will snap to the edge of the screen.

TOOLS PALETTE

The tools built-in to the 3D World Tool palette are the Arrow, Rotate, Rectangular Marquee and Hand tools.



The rest of the tools are plug-ins that can be loaded when 3D World is launched or while the application is running. *See [Installing Plug-ins on page 1-6](#) for further details.*

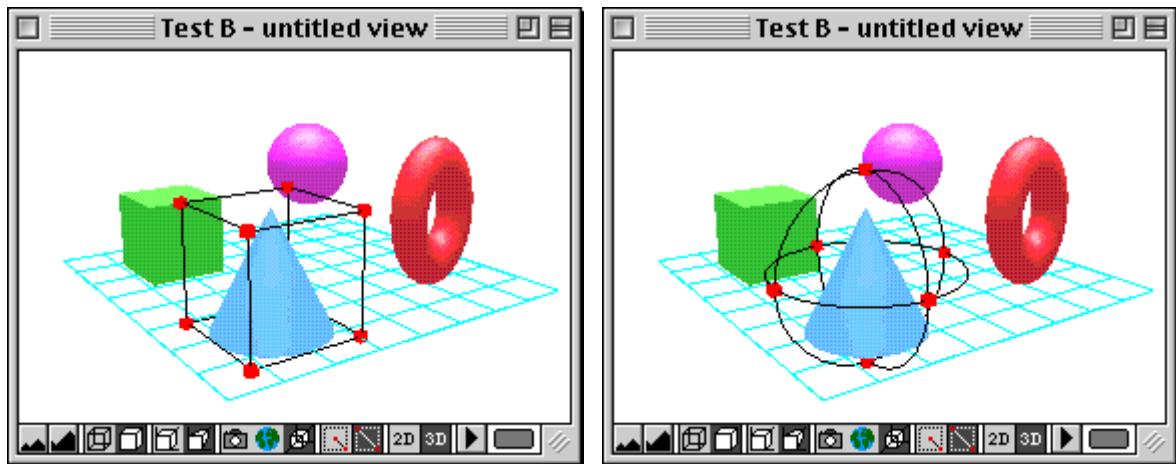
Select the tool to use by clicking on its icon in the Tools palette. After a tool has been used, the currently selected tool reverts to being the Arrow tool, unless the default tool is changed in the Preferences dialog. *See [Preferences on page 3-21](#) for further details.* You can, however, double-click on any tool to lock it in so that it will not change after you use it, but will remain selected.



Both the Arrow and Rotation tools can be used for selecting and moving objects. You can also click and drag on the grid with either tool to move the entire scene in the window. *See [Manipulating The Grid on page 4-10](#) for further details.*

Select

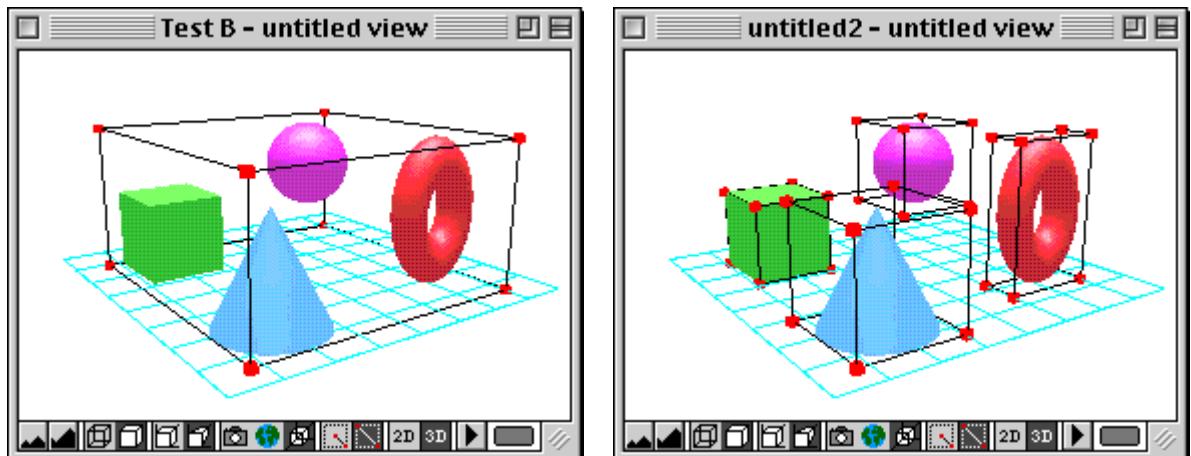
When an object is selected, it is surrounded by a bounding frame with handles at the points where the bounding lines intersect:



To temporarily hide an object's bounding frame, hold down the Option key and click on the arrow or rotate tool. The item is still selected, but the bounding frame and handles do not display. To re-display, click on the arrow or rotate tool again.

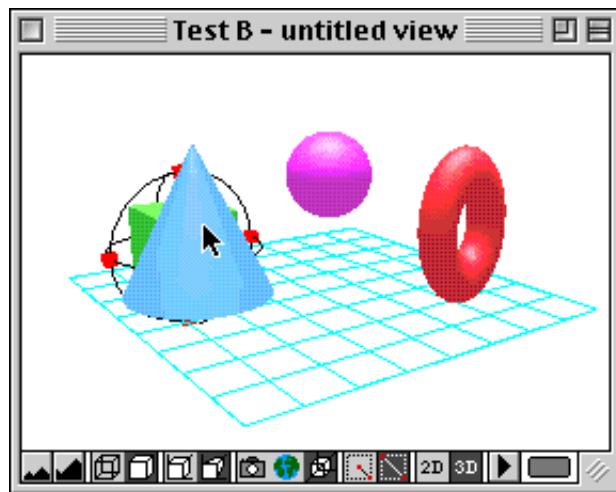
To add objects to a selection, hold down the Shift key and click on the additional objects. To deselect one object in a selection, hold down the Shift key and click on the object. If you click on an object that is part of a group, the entire group will be selected and the bounding frame will surround all of the items in the group.

Double-click on a group of objects to open a new window in which the grouped items can be edited:



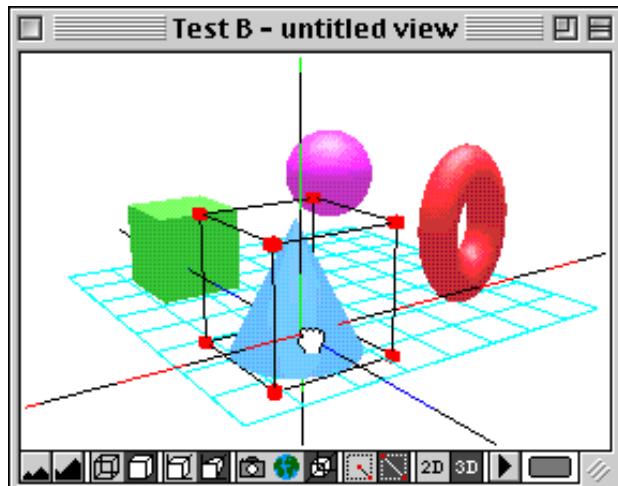
When you close this editing window, any changes you have made will be reflected in the original document window. You can also edit a group by selecting it and choosing Edit Item from the Options menu. *See Edit Item on page 3-31 for further details.*

Hold down the Command key and click the mouse to select an object that is behind another object. Initially, the foremost object will be selected. The second time you click the mouse, the next object back will be selected, and so on:



Move

To move an object, click on it, hold down the mouse button, and drag. Release the mouse button to place the object in its new location. Hold down the Control key and drag up or down to move the object closer or further away. If you hold down the Shift key, lines will display showing the X, Y and Z axes, and movement will be constrained to these axes:



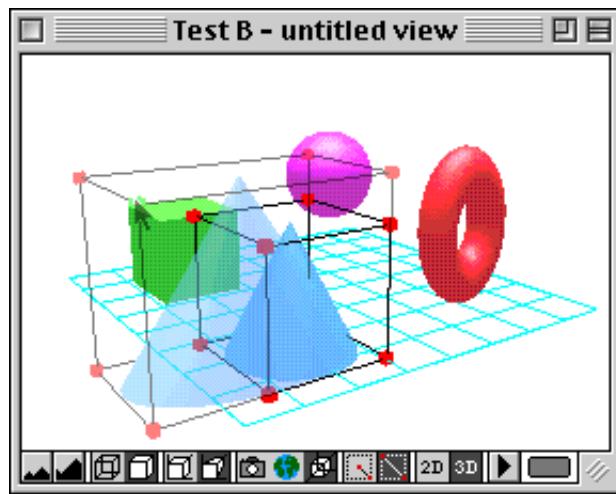
Objects can also be moved by entering coordinate values in the Info Palette. *See Position on page 4-17 for further details.*

- ◆  **Select/Move/Scale**

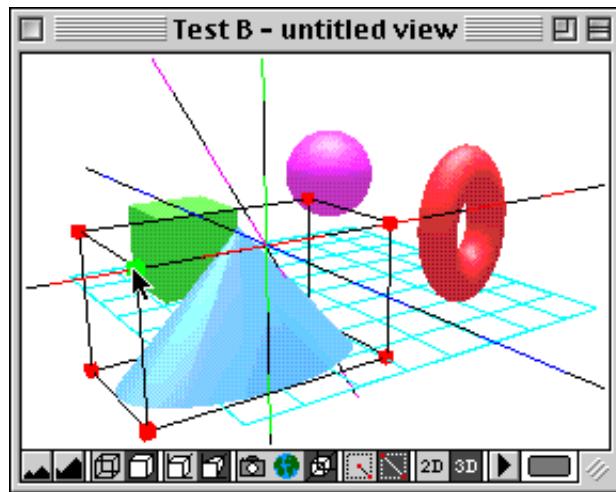
Select an object with the Arrow tool, it will display surrounded by a bounding frame with handles at the corners.

As an alternative to clicking and dragging, you can move an object using the arrow keys by selecting the object and pressing the desired arrow key to move it one pixel. If you hold down the arrow key, the object will move one pixel at a time until it has moved six pixels. It will then begin to move at an accelerated rate. To move objects closer or further away, hold down the Control key while using the up and down arrow keys.

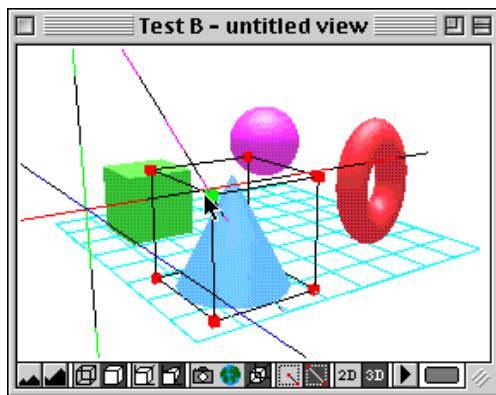
To change the size of an object, move the cursor over one of the handles or lines of the bounding frame. When the cursor changes to a white arrow, click the mouse and drag. The shape or size of the object will change to reflect your actions:



Hold down the Shift key when resizing an object to constrain movement to the X, Y, or Z axes or to maintain the objects proportions. Four constraining lines are displayed. The red line represents the X-axis; the green line the Y-axis; and the blue line the Z-axis. The pink line represents the line along which the object will retain its current proportions:



If, after resizing the object, you hold down the Option and Shift keys and resize the object a second time, the pink line will move to a position which allows you to constrain the object to the proportions it was originally drawn with:

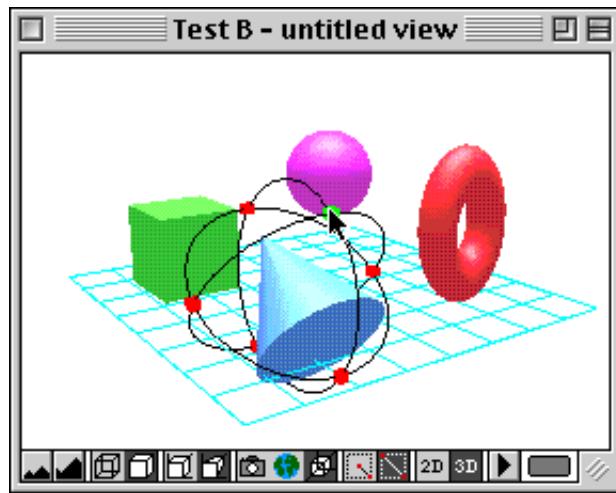


Objects can also be resized via the controls in the Info Palette. *See Size on page 4-18 for further details.*

- ◆  **Select/Move/Rotate**

When an object is selected with the Rotate tool, it displays surrounded by a bounding sphere with six handles.

To rotate the object, move the cursor over one of the handles or lines of the bounding frame. When the cursor changes to a white arrow, click the mouse and drag. The object will rotate to reflect your actions:



Note: holding down the Shift key while rotating an object constrains the rotation to 90°.

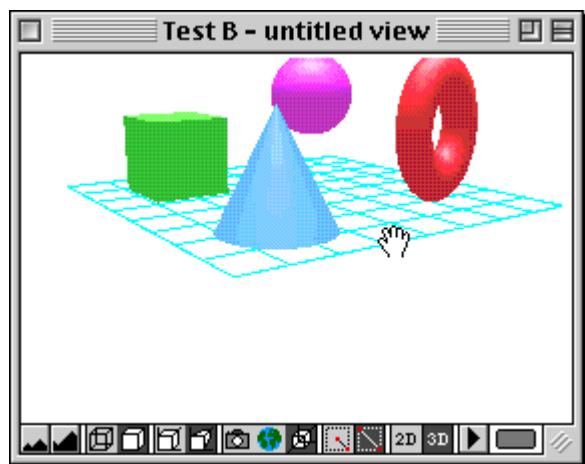
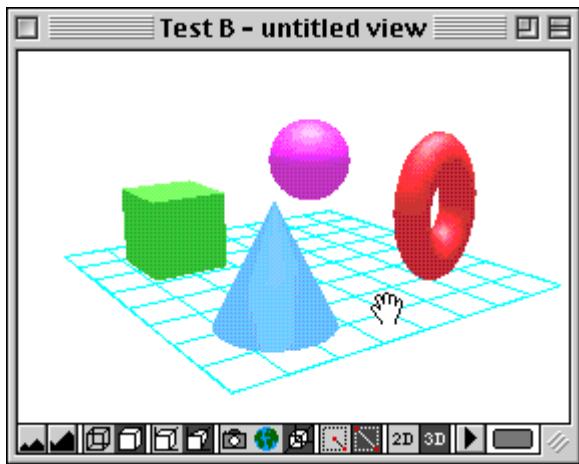
You can also use the arrow keys to rotate objects. If you hold down the arrow key, the object will rotate in 1° increments for 6°, then accelerate to 10° steps. If you hold down the Shift key while using the arrow keys, you can rotate objects in 45° increments. To tilt an object, hold down the Control key and use the left and right arrow keys.

◆ **Manipulating The Grid**

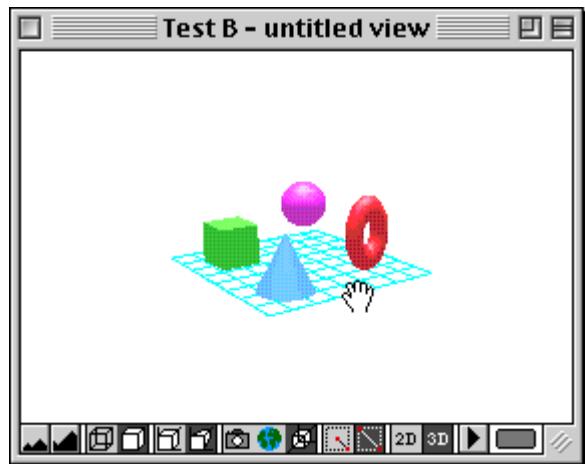
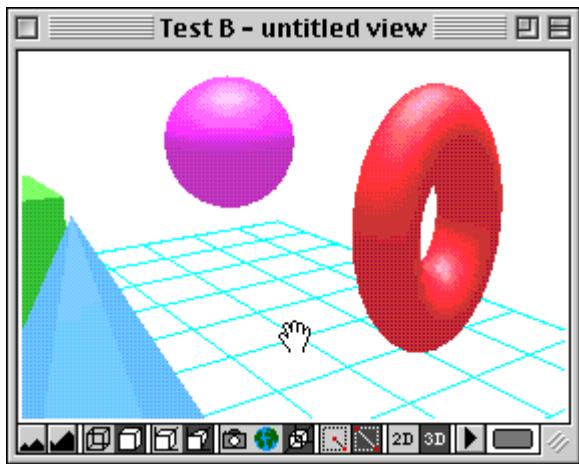
The Arrow and Rotate tools can be used to move and rotate the grid, as well as objects, to easily manipulate your view of a document.

Moving The Grid

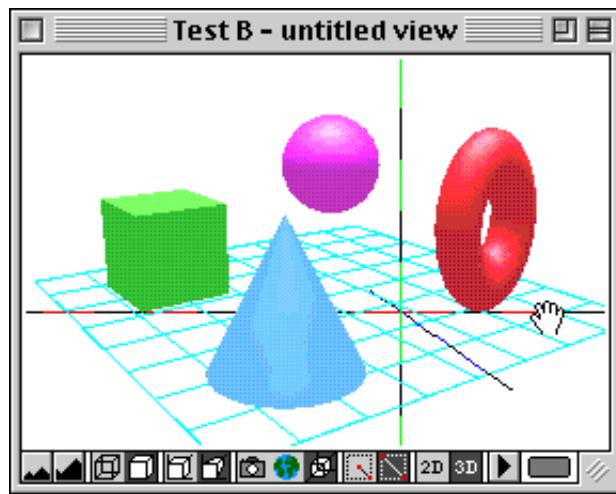
Select the Arrow tool and move the cursor over the grid. Hold down the mouse button, the cursor changes to an open hand. Move the cursor up, down, left or right. The grid will move to reflect your actions:



Hold down the Control key and move the mouse up and down to move the grid closer and further away:

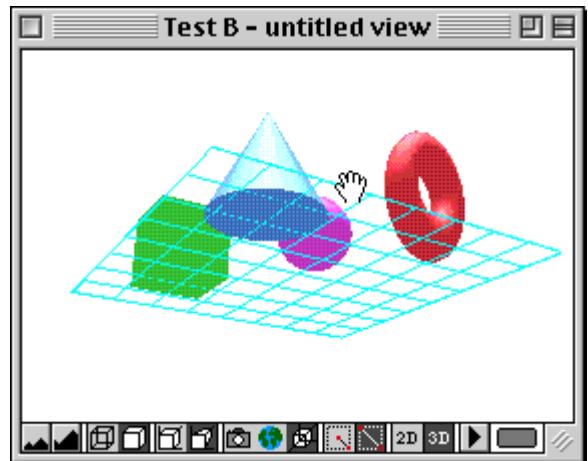
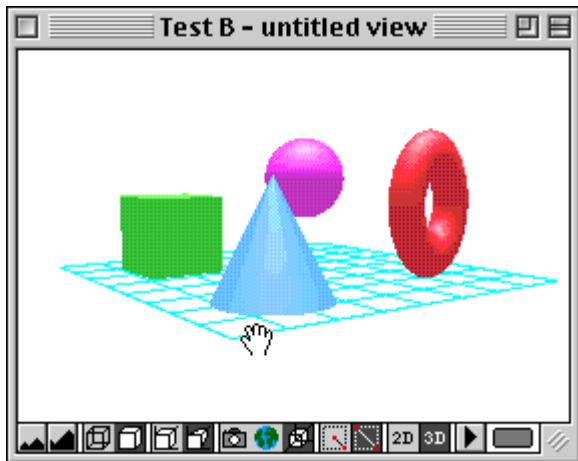


Hold down the Shift key when moving the grid to display, and constrain movement to, the X, Y and Z axes:

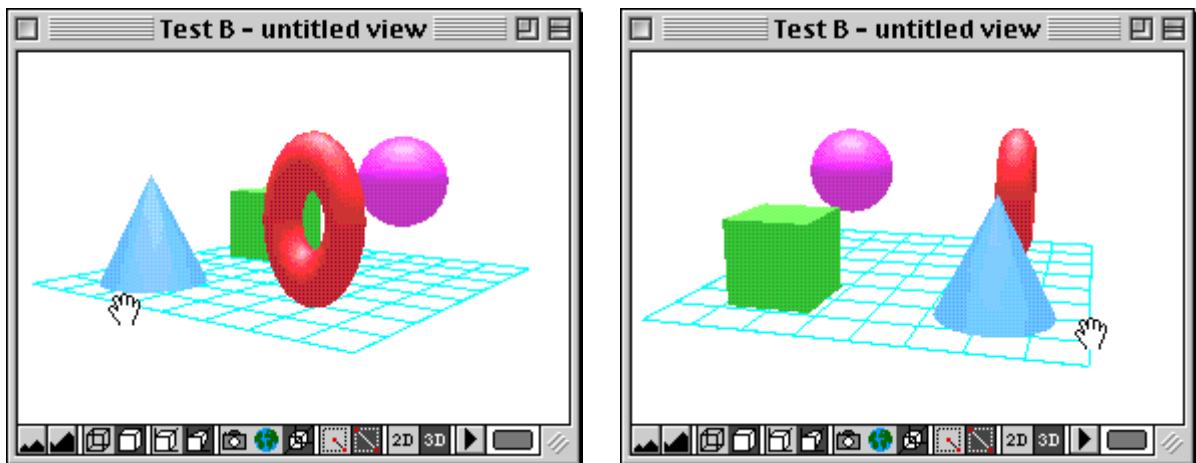


Rotating The Grid

Select the Rotate tool and move the cursor over the grid. Hold down the mouse button, the cursor changes to an open hand. Move the mouse up, down, left or right. The grid moves to reflect your actions:



Hold down the Shift key while rotating the grid to constrain it to its initial plane. It can then only be rotated in that plane:

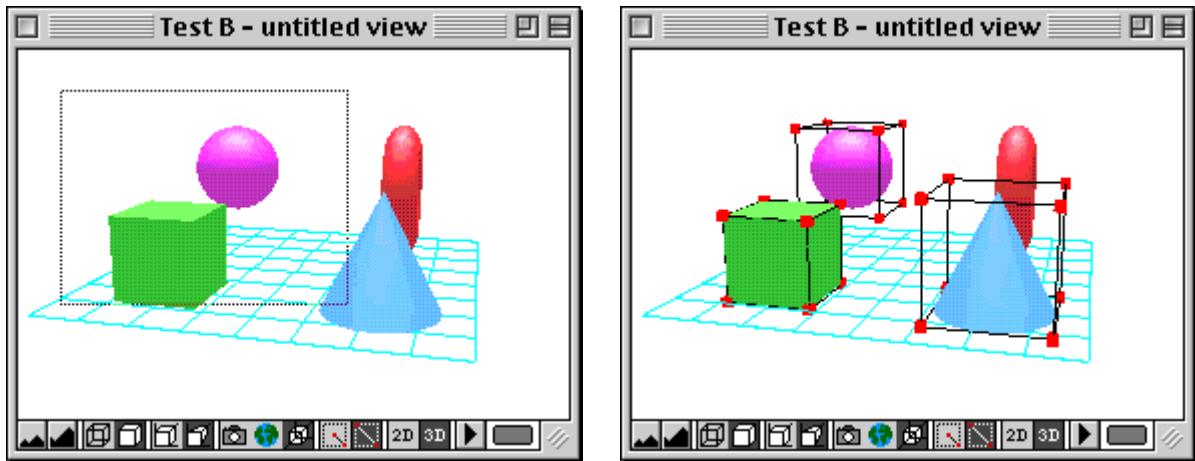


Holding the command key down before grabbing the grid will toggle whether you are rotating or translating the grid.

The arrow keys can be used to move and rotate the grid when nothing is selected in the document window. The grid will either move or rotate depending on which tool is currently selected. Use the control key to move in z dimension.

- ◆  **Rectangular Marquee**

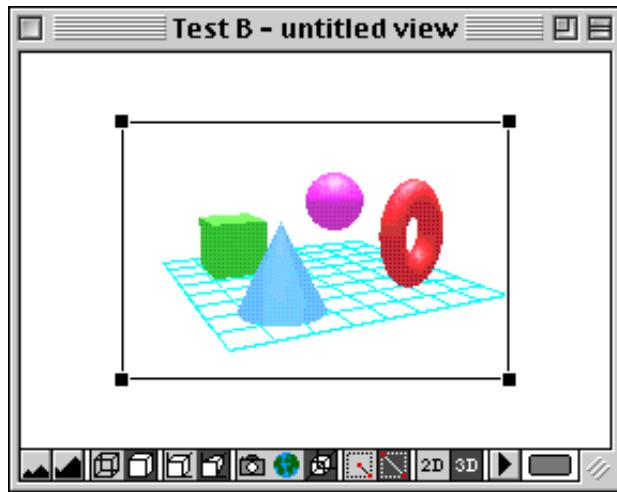
Select the Rectangular Marquee tool, hold down the mouse and drag out a rectangle to select one or several objects. (Note that if any part of an object is inside the marquee, that object will also be selected.)



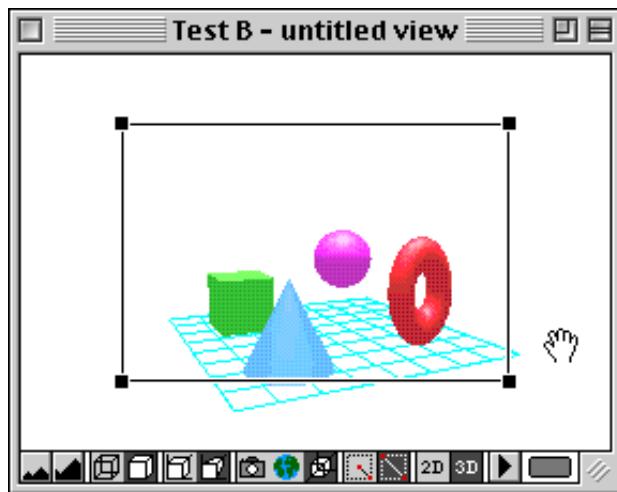
To add objects to a selection, hold down the Shift key and drag a rectangle around the desired objects. To deselect items, hold down the Shift key and drag a rectangle around selected items. You can also add or remove items from a selection by clicking on them with the Arrow tool while holding down the Shift key.

- ◆  **Hand**

Use the Hand tool to change the view of the document by altering the position of the camera. When you select the Hand tool, a frame will appear around the contents of the window. A handle will also appear at each corner of the frame:



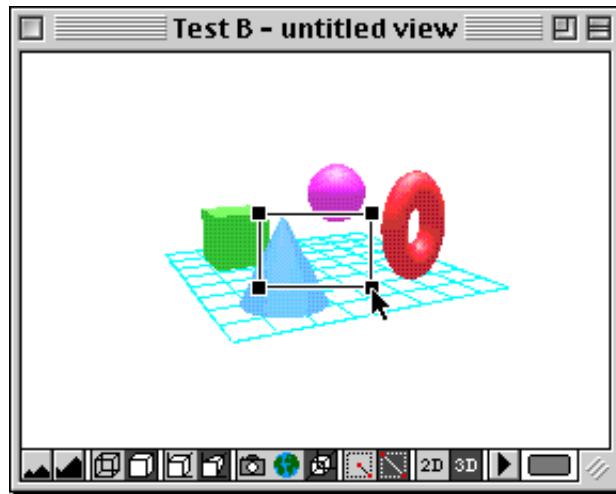
You can either position the view within the frame, or position the frame around the view. To position the view, click outside the frame and drag the mouse. To position the frame, click inside the frame and drag the mouse:



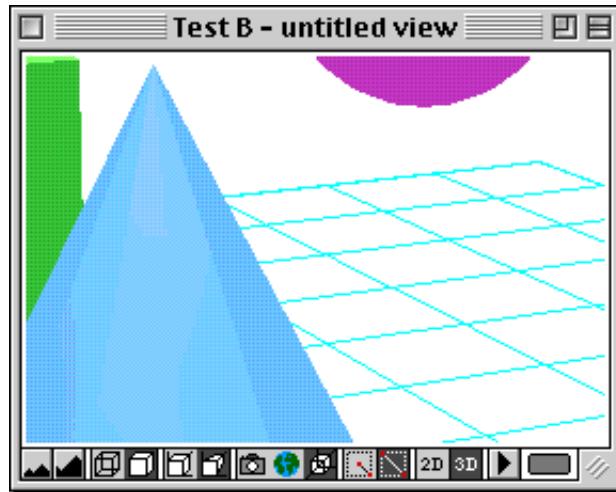
If you are in an elevation or orthogonal view, move the mouse left and right to crab, or up and down to change the camera height.

If you are in a perspective or user defined view, move the mouse left and right to pan the camera, or up and down to tilt the camera. Hold down the Option key and move left and right to crab, up and down to change the height.

To zoom in on an object (note that you are not actually moving the camera, but rather narrowing the focus), click on one of the frame handles and drag it in towards the center of the window:



When you select another tool, the window changes to show the view you have chosen:

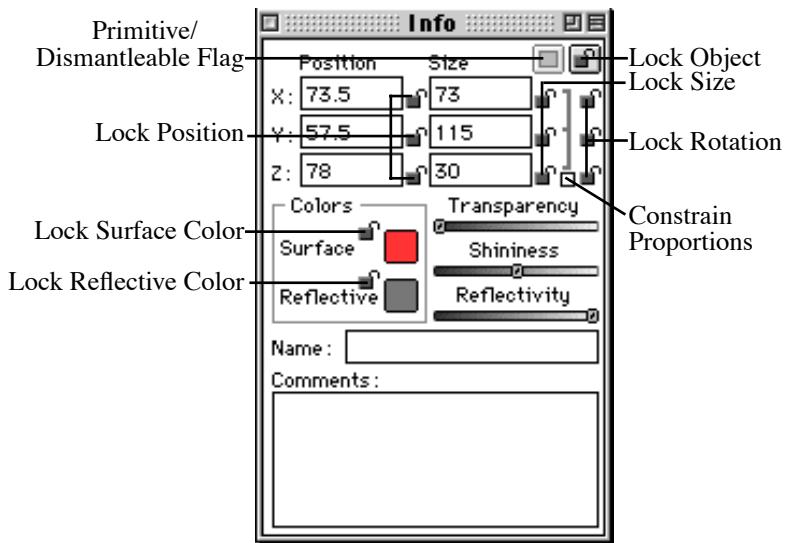


INFO PALETTE

The Info palette displays information about, and provides controls for you to adjust, the characteristics of a selected object or light.

Select Info from the Palettes menu to display the Info Palette. When it is first opened, only the top section of the Info palette will be visible. To extend the palette and display the Comments section at the bottom, click on the button on the left in the top right corner of the palette. To reduce the window, click again.

Note: The controls in the Info Palette will vary depending on whether you have selected a 3D object or a spot/point light in the document window:



◆ Position

The figures displayed in the X, Y and Z Position boxes are the coordinates of the center of the selected object's bounding rectangle when using the Object Coordinate System. If you select items that are grouped together, the coordinates displayed will relate to the group. If you select more than one item and the items are not grouped, no coordinates will display.

To precisely position an object, type in values for the X, Y and Z coordinates, then press Enter. The object will move to reflect your entries.

Lock Position

The padlocks next to the position boxes are used to lock the position of an object. The lock options work the same for groups of objects as for single objects.

Click on the padlock next to the X position coordinate. It will close, which means the object is in a fixed position on the X axis, but can still be moved in the Y and Z axes. Any or all coordinates can be constrained. If an object's position is constrained on all three axes, it cannot be moved. However, you can still change the object's size (unless it has also been constrained).

◆ **Size**

The size boxes display the X, Y and Z dimensions of an object's bounding rectangle when using the Object Coordinate System. If you select items that are grouped together, the dimensions displayed will relate to the group's bounding rectangle. If you select more than one item and the items are not grouped, no dimensions will display. To precisely resize an object, type in values for the X, Y and Z dimensions, then press Enter. The object will be resized to reflect your entries.

Note: Information about the object's size will be grayed out if you have selected a light as light objects have a constant size which cannot be changed.

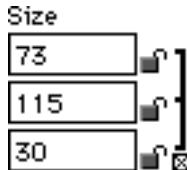
Lock Size

The padlocks next to the size boxes are used to lock the size of an object. The lock options work the same for groups of objects as for single objects.

Click on the padlocks by the size dimensions to constrain an object's size. Click on a closed padlock to open it and unconstrain an object's size. Any or all size dimensions can be constrained. If all are constrained, the size cannot be changed. If just one dimension is constrained, you can change the other dimensions.

Constrain Proportions

The Proportional Constrain checkbox to the bottom right of the dimension fields allows you to constrain the proportions of an object. Select an item and click on the checkbox to turn on Proportional Constrain.



The item can now be resized or moved, but will always maintain its current proportions.

◆ Rotation

Lock Rotation

To the right of the size controls are additional padlocks for the X, Y, and Z axes that are used to constrain the rotation of an object.

Click on the padlock relating to the X axis. It will close, indicating that the object cannot be rotated around the X axis, although it can still be rotated in the Y and Z axes. The rotation of the object can be constrained in any or all of the axes. The X Y and Z axes are determined by the orientation of the object.

◆ Primitive/Dismantleable Flag

This option is only available when an item or group is selected. A Primitive item cannot be ungrouped into component items. Click on the button to toggle between Primitive and Dismantleable. The solid square button represents the Primitive state and the split button the Dismantleable state. An object can also be specified to be Primitive or Dismantleable by selecting

Primitive or Dismantleable from the Options menu. *See Primitive on page 3-33 and Dismantleable on page 3-34 for further details.*

- ◆   **Lock**

To lock a selected object or group of objects, click on the padlock icon in the top right corner of the Info palette, or select Lock from the Options menu. *See Lock on page 3-33 for further details.* This will prevent the object or group from being moved or changed. To unlock an object, click on the Padlock icon a second time, or select Unlock from the Options menu. *See Unlock on page 3-33 for further details.*

- ◆ **Colors**

Surface

The Surface color box shows the color of the selected object.

To change the color of the object, click on the Surface color box to display the Color Picker. Select a color and close the dialog. The color you have chosen will be displayed as the Surface color and applied to the selected object. If a light is selected the Surface color is the color of the light emitted, rather than the color of the light marker, which is set in the Preferences dialog. *See Color Preferences on page 3-22 for further details.* Colors can also be dragged and dropped onto the Surface color box from the Default Color block at the bottom of the document window, from the Reflective color box, the Color Palette etc.

Lock Surface Color

The padlock next to the Surface color box is used to protect the surface color of the object from being changed.

Reflective

The Reflective color box shows the reflective color of the selected object. If light is shining on an object (sun light or spot/point lights), the part of the object that shines displays the reflective

color. This will only be visible if you have selected the Best Shading option via the Renderer Options palette. *See Renderer Options on page D-67 for more details.* This option is not available for lights.

To change the Reflective color of the object, click on the Reflective color box to display the Color Picker. Select a color and close the dialog. The color you have chosen will be displayed in the Reflective color box. Colors can also be dragged and dropped onto the Reflective color box from the Default Color block at the bottom of the document window, from the Reflective color box, the Color Palette etc.

Lock Reflective Color

The padlock next to the Reflective color box is used to protect the surface color of the object from being changed.

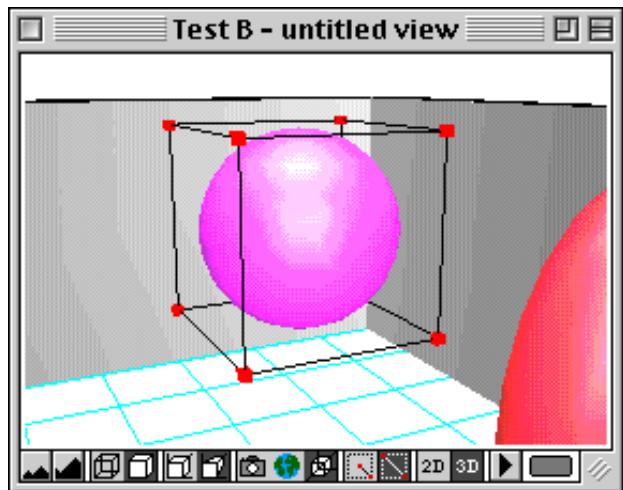
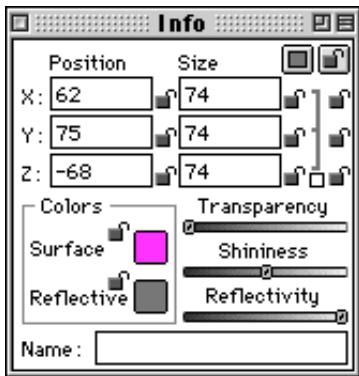
◆ **Transparency/Brightness**

Transparency

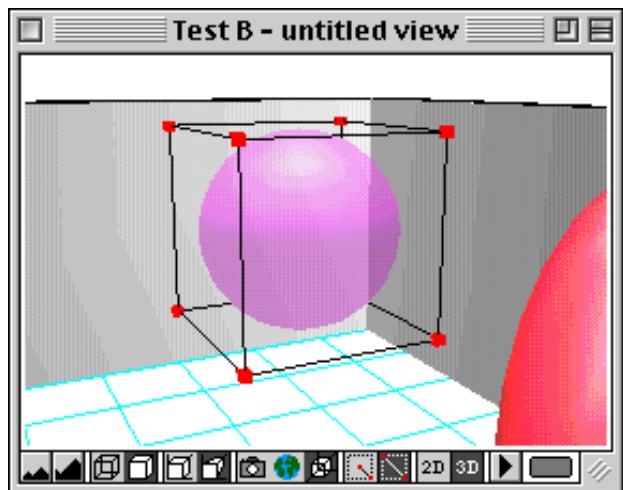
If an object is selected, the first slider control relates to its transparency. Transparent surfaces are not activated unless you have a QuickDraw 3D hardware renderer installed or are using a 3rd party plug-in renderer, that supports transparency. If transparency is applied to an object which is subsequently transferred to a machine with the necessary hardware or software, the object's transparency will become apparent.

Select an object and use the Transparency slider control to adjust its transparency.

- When the transparency slider is to the left of the bar, the selected object is opaque:

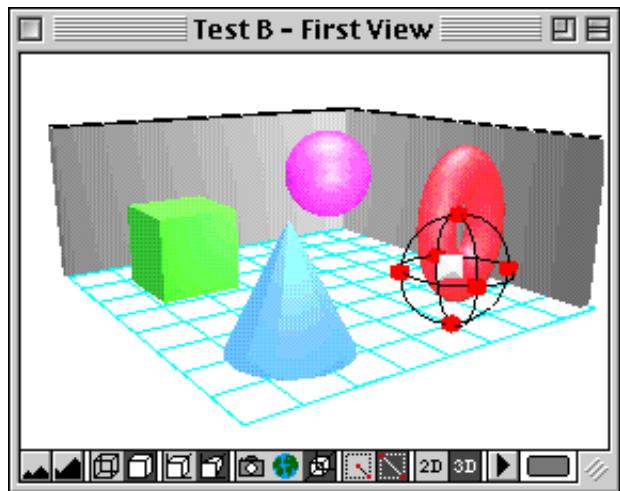
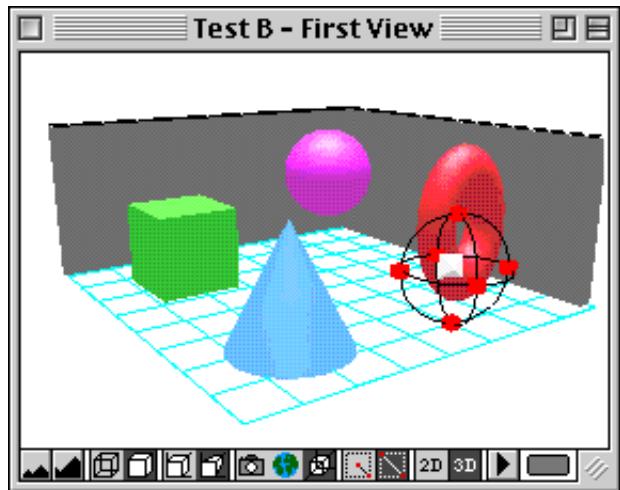


As the slider is moved along the bar, the object becomes more transparent:



Brightness

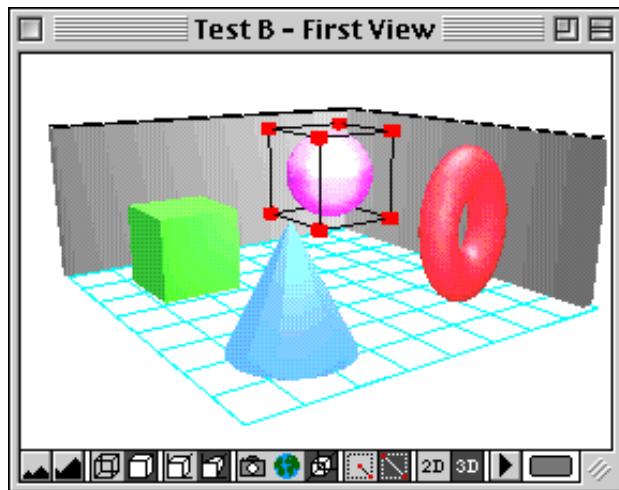
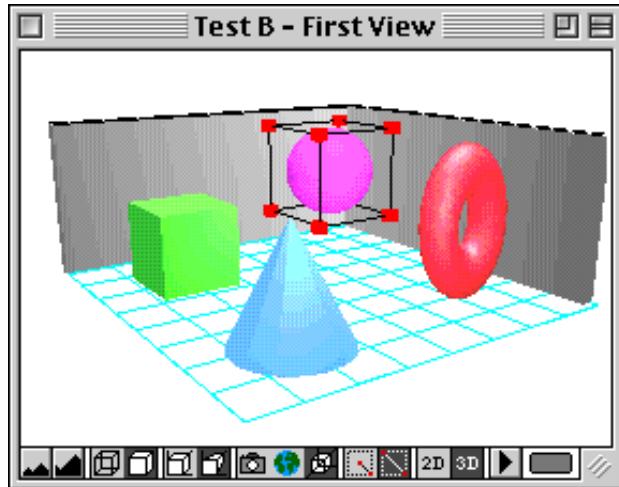
If a light is selected, the first slider control relates to the brightness of the light it emits:



◆ Shininess/Spread

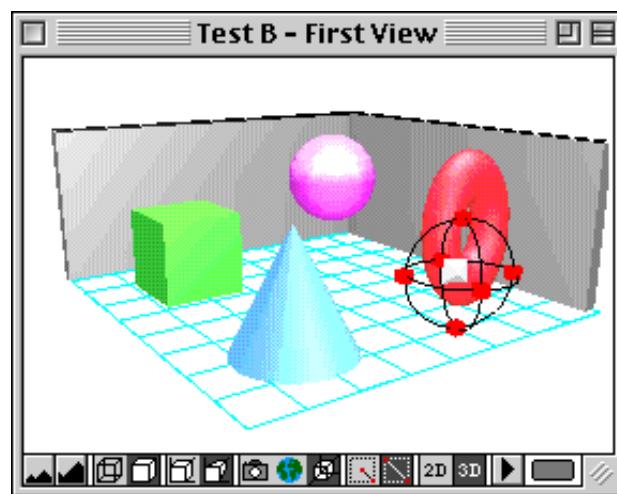
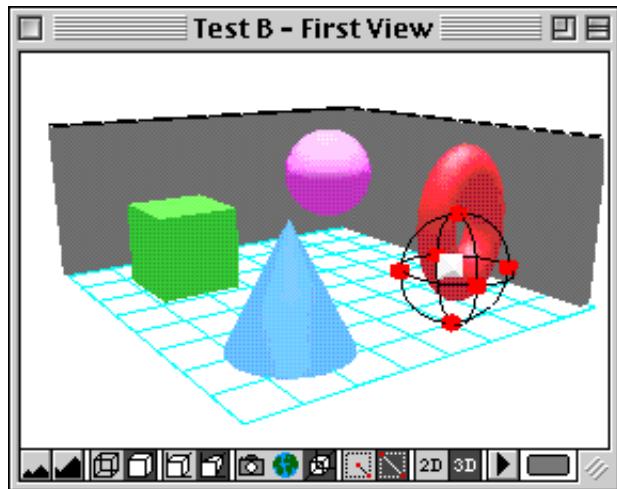
Shininess

If an object is selected, the second slider control relates to its shininess. Use the slider control to adjust the degree of shine you place on an object. Shine is affected by directional light such as sun light or spot/point lights:



Spread

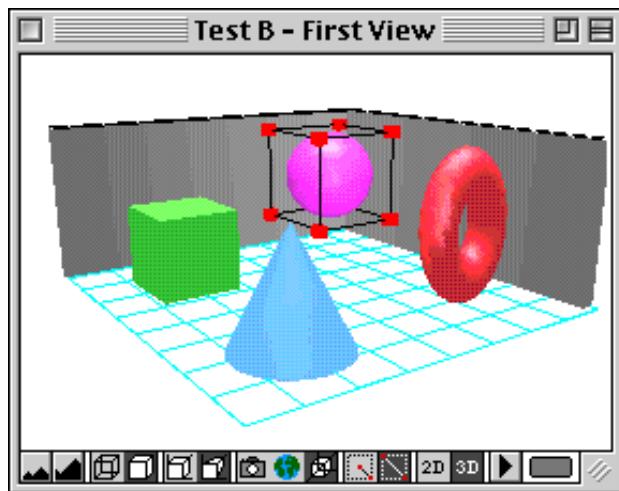
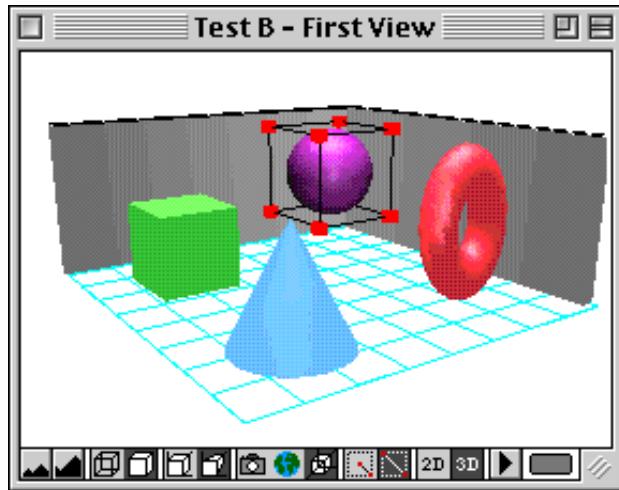
If a spot light is selected, the second slider control allows you to adjust the lens angle of the light and narrow or widen the beam. Note that this option is not available for point lights:



◆ Reflectivity/Sharpness

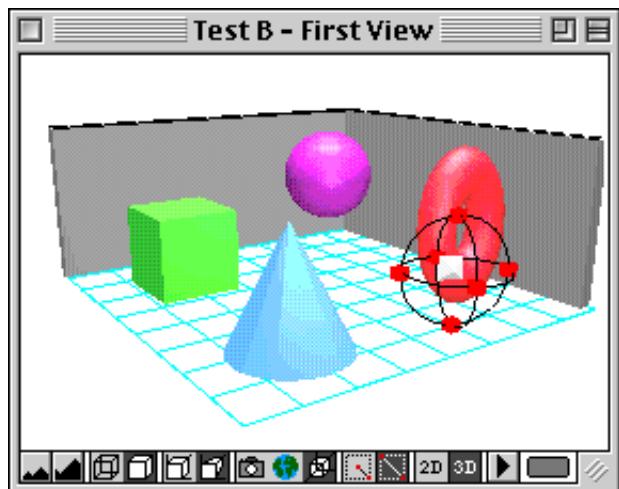
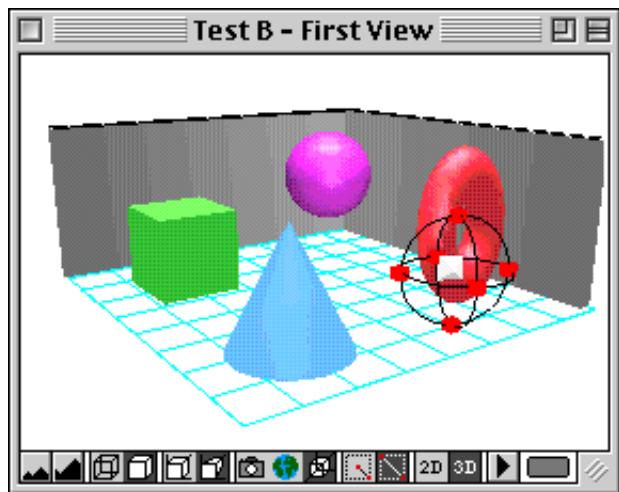
Reflectivity

If an object is selected, the third slider control allows you to adjust its reflectivity, which is the amount of ambient light the object reflects:



Sharpness

If a spot light is selected, the third slider control allows you to adjust the sharpness of the light. Move the slider control to sharpen or unsharp the focus of the light. Note that this option is not available for point lights:



- ◆ **Name**

The Name box provides a space to enter a name for an object or group of objects. This name will be displayed whenever the object or group is selected.

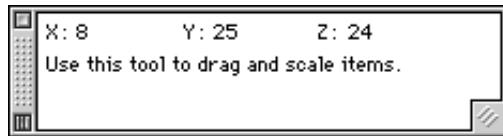
- ◆ **Comments**

The Comments box provides a space to enter details about an object or group of objects (such as a description). These comments will be displayed whenever the object or group is selected.

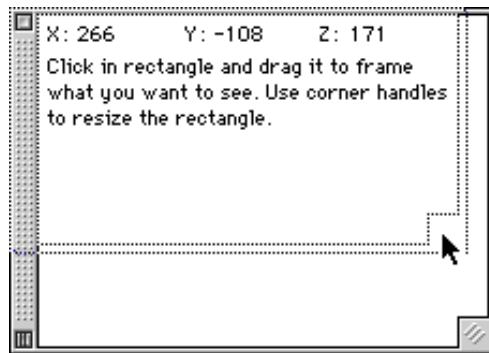
THE HELP PALETTE

The Help palette displays coordinate values that show the position of the cursor and help messages or information relevant to the tool selected or the cursor position.

Select Help from the Palettes menu to display the Help palette:



To resize the Help palette, click on the resize box in the bottom right corner of the palette and, holding down the mouse button, drag to resize the palette. Release the mouse button when the palette reaches the desired size.



WINDOW TOOLBAR

The Window toolbar is displayed at the bottom of each window:



Selecting an option affects only that window, regardless of how many other views are open.

- ◆  **Zoom Out**

Use the Zoom Out button to widen the focus of the camera's view and make objects appear to be farther away. Position the cursor over the Zoom Out icon and click once to zoom out slightly. Hold the mouse button down to continue zooming out.

- ◆  **Zoom In**

Use the Zoom In button to narrow the focus of the camera's view and make objects appear to be closer. Position the cursor over the icon and click once to zoom in slightly. Hold the mouse button down to continue zooming in.

- ◆  **Wire Frame**

Select this option to view objects in wire frame mode. Working in this mode is usually faster than working in solid fill mode as there is less information to be updated after each change.

- ◆  **Solid Fill**

When the Solid Fill option is selected, objects are displayed with filled surfaces. Although working in this mode may be slower than working in wire frame mode, it offers a better representation of your 3D models.

- ◆  **Orthographic**

Select the Orthographic option to see an orthogonal view of the document rather than a perspective view. In an orthogonal view, all parallel lines display as parallel.

- ◆  **Perspective**

Select the Perspective option to see a perspective view of the document rather than an orthogonal view. In a perspective view, parallel lines converge. If extended, they would converge at a point (the vanishing point).

- ◆ **Coordinate Systems**

Select the Camera, World or Object icon to specify a coordinate system. The system you choose will affect the way new objects are drawn and existing objects are manipulated. Since the bounding rectangle of a shape is drawn according to the coordinate system, changing the

shape or size of the bounding rectangle will have different effects on the object when using the different coordinate systems.

The grid is drawn according to the World Coordinate System. Holding down the Shift key constrains movement to the X, Y or Z axes. When moving or resizing an object, holding down the Shift key makes the axes visible. The X-axis is red and runs left to right; the Y-axis is green and runs top to bottom; and the Z-axis is blue and runs in/out. These constraining lines will be in different positions depending upon which coordinate system is being used.



Camera Coordinates

When this option is selected, the X, Y and Z axes relate to the direction and angle of the camera. New objects will be drawn perpendicular to the camera. Object manipulations can be constrained to the axes that relate to the camera.



World Coordinates

When this option is chosen, the X, Y and Z axes relate to the World Coordinates and are the same as the grid axes. New objects will be drawn in relation to the World Coordinate X, Y and Z axes. Manipulated objects can be constrained to these axes.



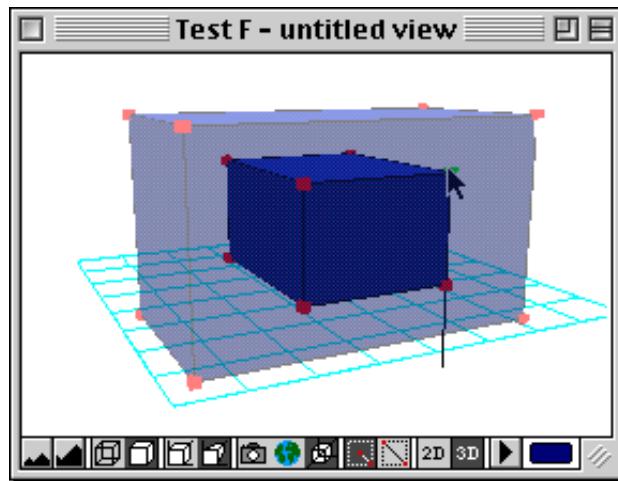
Object Coordinates

This is the default option. When the Object Coordinates option is chosen, the X, Y and Z axes relate to the orientation of a selected object.



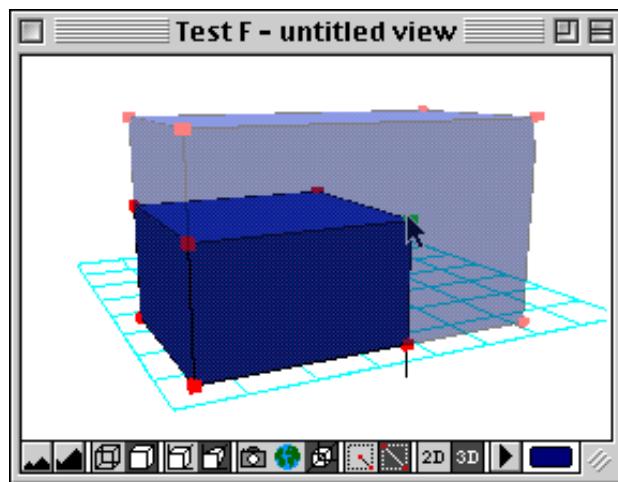
Radius

If Radius mode is selected, objects are drawn from a central point. This is the point at which you first placed the cursor to start drawing an object. When resizing an object, the center of the object will remain in a fixed position:



- ◆  **Diameter**

This is the default mode. When selected, objects are drawn from the point where you initially placed the cursor and began to draw. When resizing an object, the corner opposite the one you are dragging will remain in a fixed position:



- ◆ **2D** **2D**

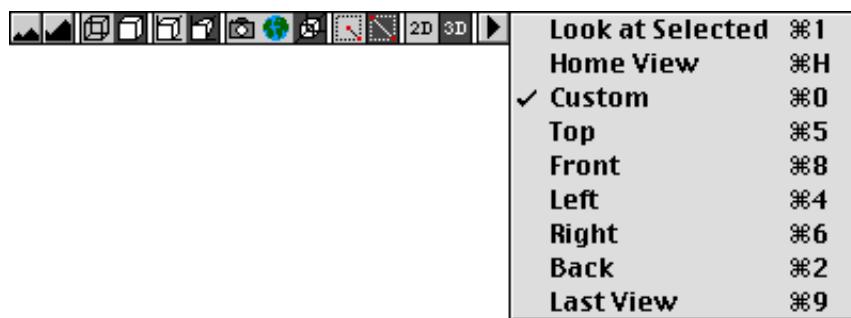
If 2D Mode is selected, objects can only be drawn in 2D. An object will normally be drawn in the X,Y plane, however if you begin drawing while holding down the Control key, the object will be drawn in the X,Z plane. If you release the Control key while continuing to hold down the mouse button, the object can be flipped into the Y,Z plane. Once drawn, the object will be constrained from resizing in the smallest axis until the constrain locked flag is turned off in the Info Palette. *See Lock on page 4-20 for further details.*

- ◆ **3D** **3D**

This is the default mode which allows you to draw objects in 3D. Hold down the Control key and move the mouse up and down to move in and out in the document space.

- ◆ **View**

Use the View popup menu to select a different view, including any that you have saved. When you select a view option, the window will change to display your selection:

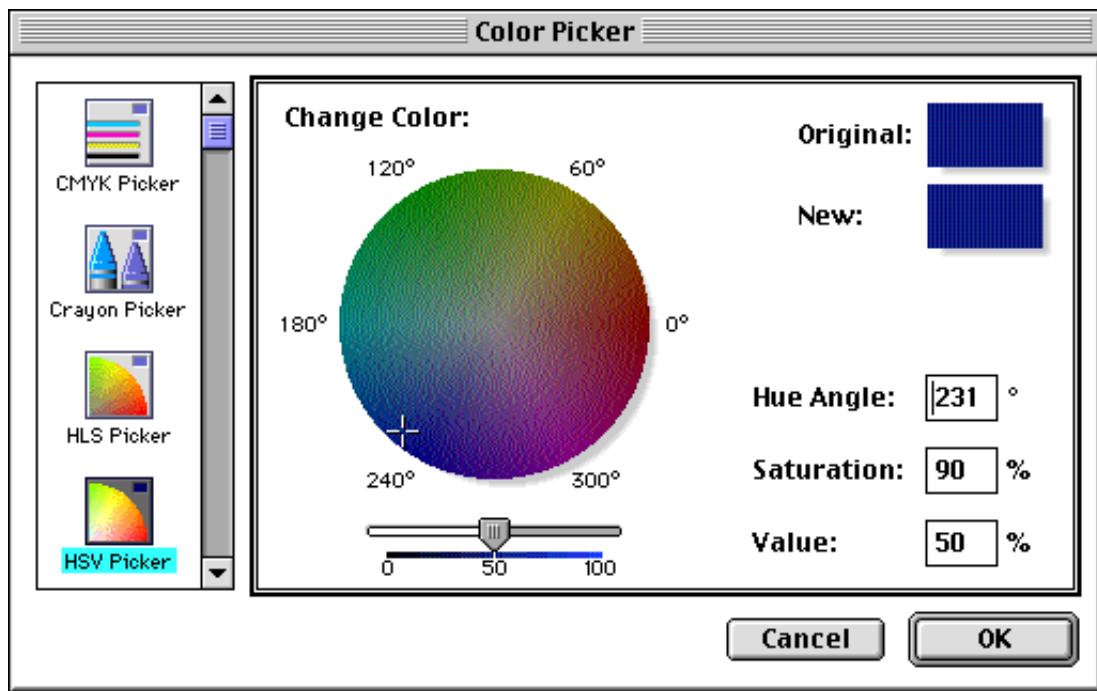


The Command key options and View menu can also be used to choose a view. *See Change View on page 3-28 for further details.*

◆ **Default Color**

The color displayed in the color block at the bottom right of the window toolbar is the currently selected color. Any new items created (except lights and markers) will automatically be this color, even if you are working in wire frame mode.

To change the default color, click on the color block and select a new color from the Color Picker:



To change an object's color, click on the color tool and drag the color over the object. It will be highlighted by a bounding frame to show that it is selected. Release the mouse button to apply the color to the object. You can also select an object, then go to the Color Picker and select a new color, to automatically apply it.

◆ **Window Resize**

To change the size of the window you are working in, click on the Resize Window icon. Hold down the mouse and drag to resize the window.