

9

WORKING WITH PERSPECTIVE DRAWING

Lesson overview

In this lesson, you'll learn how to do the following:

- Understand perspective drawing.
- Use and edit grid presets.
- Draw and edit objects in perspective.
- Edit grid planes and content.
- Create and edit text in perspective.
- Attach symbols to perspective.



This lesson takes approximately an hour and a half to complete. If needed, remove the previous lesson folder from your hard disk and copy the Lesson09 folder onto it.



In Adobe Illustrator CS6, you can easily draw or render artwork in perspective, using the Perspective Grid. The Perspective Grid allows you to approximately represent a scene on a flat surface, as it is naturally perceived by the human eye. For example, you can render a road or a pair of railway tracks, which seem to meet or vanish in the line of vision.

Getting started

In this lesson, you'll explore working with the Perspective Grid, adding content to it, and editing on the Perspective Grid.

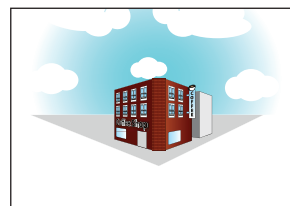
Before you begin, you'll restore the default preferences for Adobe Illustrator. Then, you'll open the finished art file for this lesson to see what you'll create.

1 To ensure that the tools and panels function exactly as described in this lesson, delete or deactivate (by renaming) the Adobe Illustrator CS6 preferences file. See "Restoring default preferences" on page 3.

2 Start Adobe Illustrator CS6.

● **Note:** If you have not already done so, copy the Lesson09 folder from the Lessons folder on the *Adobe Illustrator CS6 Classroom in a Book* CD onto your hard disk. See "Copying the Classroom in a Book files" on page 2.

3 Choose File > Open, and open the L9end.ai file in the Lesson09 folder, located in the Lessons folder on your hard disk.



4 Choose View > Zoom Out to make the finished artwork smaller, if you want to leave it on your screen as you work. (Use the Hand tool [🖱️] to move the artwork where you want it in the window.) Leave the file open for reference, or choose File > Close.

5 Choose File > Open. Navigate to the Lesson09 folder, located in the Lessons folder on your hard disk. Open the L9start.ai file.



6 Choose File > Save As. In the Save As dialog box, navigate to the Lesson09 folder and name the file **city.ai**. Leave the Save As Type option set to Adobe Illustrator (*.AI) (Windows) or the Format option set to Adobe Illustrator (ai) (Mac OS), and then click Save. In the Illustrator Options dialog box, leave the Illustrator options at their default settings and then click OK.

● **Note:** In Mac OS, when opening lesson files, you may need to click the round, green button in the upper-left corner of the Document window to maximize the window's size.

Understanding perspective

In Illustrator CS6, you can easily draw or render artwork in perspective, using a feature set that works based on established laws of perspective drawing. Perspective in drawing is an approximate representation, on a flat surface, of an image as it is seen by the eye.




Objects drawn in perspective are characterized primarily by the following:

- They are drawn smaller as their distance from the observer increases.
- The perspective objects are foreshortened, which means that an object or distance appears shorter than it actually is, because it is angled toward the viewer.

Understanding the Perspective Grid

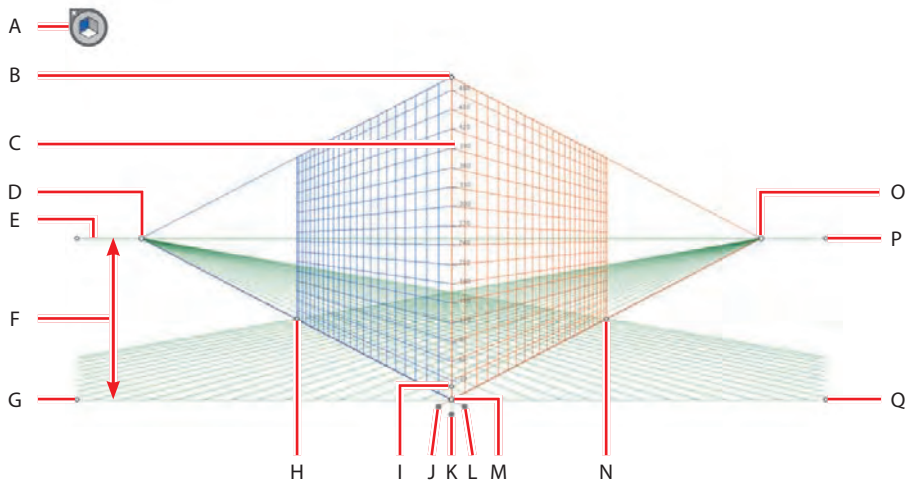
The Perspective Grid allows you to approximately represent a scene on a flat surface, as it is naturally perceived by the human eye. For example, you can render a road or a pair of railway tracks, which seem to meet or vanish in the line of vision. The Perspective Grid allows you to create and render artwork in perspective.

- 1 Choose Reset Essentials from the workspace switcher in the Application bar.
- 2 Choose View > Fit Artboard In Window.
- 3 Select the Perspective Grid tool () in the Tools panel.

The default two-point Perspective Grid appears on the artboard.

The figure below shows the Perspective Grid and its parts. As you go through this lesson, you will learn about each part. It may be helpful to refer back to the Perspective Grid options shown in this figure as you progress through the lesson.

Note: If you don't see "Reset Essentials" in the workspace switcher in the workspace switcher menu, choose "Essentials" before choosing "Reset Essentials."



- | | |
|----------------------------------|---|
| A. Plane Switching Widget | J. Right grid plane control |
| B. Vertical grid extent | K. Horizontal grid plane control |
| C. Perspective Grid ruler | L. Left grid plane control |
| D. Left vanishing point | M. Origin |
| E. Horizon line | N. Extent of grid |
| F. Horizon height | O. Right vanishing point |
| G. Ground level | P. Horizon level |
| H. Extent of grid | Q. Ground level |
| I. Grid cell size | |

Working with the Perspective Grid

In order to begin working with content in perspective, it is helpful to see and set up the Perspective Grid the way you want.

Using a preset grid

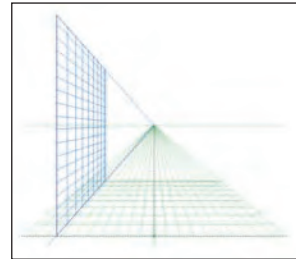
To begin the lesson, you'll work with the Perspective Grid, starting with some Illustrator presets.

You use the Perspective Grid to draw and snap content in perspective, although the grid is non-printing. The Perspective Grid, by default, is set up as a two-point perspective, and you can easily change that using presets. A grid in Illustrator can have up to three points of perspective.

► **Tip:** You can show the Perspective Grid without selecting the Perspective Grid tool, by choosing View > Perspective Grid > Show Grid.

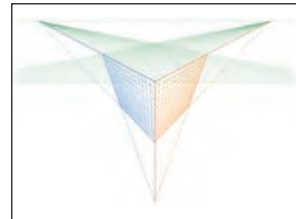
- 1 Choose View > Perspective Grid > One Point Perspective > [1P-Normal View]. Notice that the grid changes to a one-point perspective.

A one-point perspective can be very useful for drawing roads, railway tracks, or buildings viewed so that the front is directly facing the viewer.

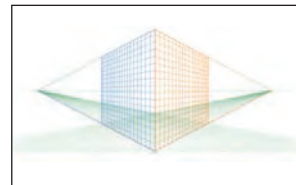


- 2 Choose View > Perspective Grid > Three Point Perspective > [3P-Normal View]. Notice that the grid changes to a three-point perspective.

Three-point perspective is usually used for buildings seen from above or below. In addition to showing vanishing points for each wall, there is now a point showing those walls receding into the ground or high in space.




- 3 To return the grid back to a two-point perspective, choose View > Perspective Grid > Two Point Perspective > [2P-Normal View].

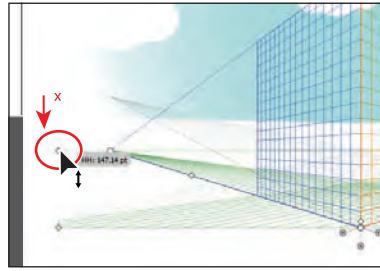


Editing the Perspective Grid

Next, you'll learn how to edit the Perspective Grid. To edit the grid, you can either select the Perspective Grid tool or edit using the Define Grid command. You can make changes to the grid if you have content on the grid, although it may be easier to establish the grid settings before you add content. You can create only one grid per Illustrator document.

- 1 With the Perspective Grid tool () selected, drag the horizon line point down below the bottom of the blue sky to move the horizon down, as shown in the figure. The measurement label should show approximately 147 pt.

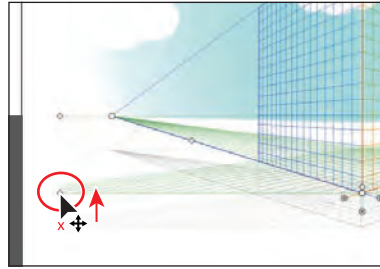
The location of the horizon line indicates the observer's eye level.



Note: Throughout this section, a red X in the figures shows where to drag from.

- 2 With the Perspective Grid tool, drag the left ground level point up, to move the whole Perspective Grid. Drag until the horizon line you adjusted in the previous step is lined up with the bottom of the blue sky.

The ground level point allows you to drag the Perspective Grid to different parts of the artboard or to a different artboard altogether.

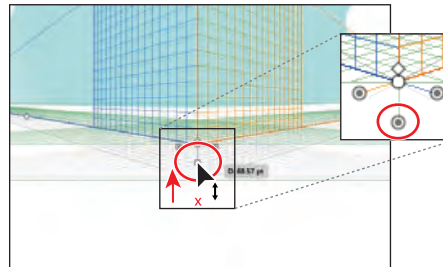


Note: The gray lines in some of these figures indicate the initial position of the Perspective Grid, before it was adjusted.

Note: As you drag the Perspective Grid by the ground level point, notice that you can move it in any direction. Make sure that it is still more or less centered horizontally on the artboard.

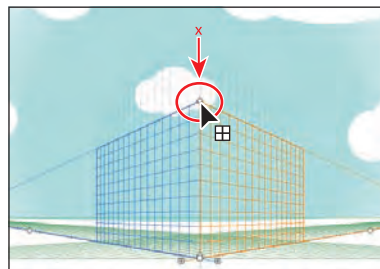
- 3 With the Perspective Grid tool, drag the horizontal grid plane control point up about 68 pt so that it's closer to the horizon line.

Tip: The location of the ground level in relation to the horizon line will determine how far above or below eye level the object will be viewed.



- 4 With the Perspective Grid tool, click and drag the Vertical Grid Extent point (the top point in the grid) down to shorten the vertical extent.

Making the vertical extent shorter can be a way to minimize the grid if you are drawing objects that are less precise, as you will see later in the lesson.



- 5 Choose File > Save. Changes you make to the Perspective Grid are saved with this document only.

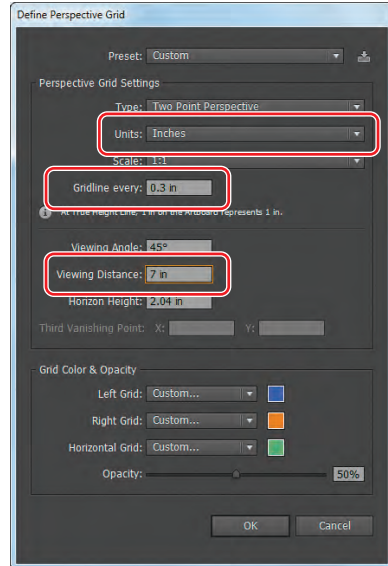
Setting the grid up for your drawing is an important step. Next, you will access these changes using the Define Grid menu.

► **Tip:** To learn more about the Define Perspective Grid dialog box, search for “Define grid presets” in Illustrator Help.

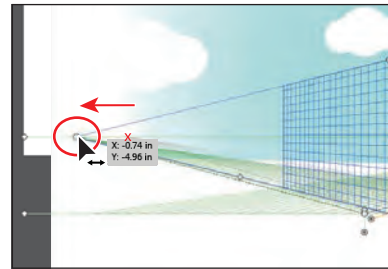
► **Tip:** After setting the Define Perspective Grid settings, you can save them as a preset to access later. In the Define Perspective Grid dialog box, change the settings and then click the Save Preset button.

- 6 Choose View > Perspective Grid > Define Grid.
- 7 In the Define Perspective Grid dialog box, change the Units to Inches, change the Gridline Every value to .3 in and change the Viewing Distance to 7 in.

The Viewing Distance is the distance between the observer and the scene. Notice that you can change the Scale of the grid, which you might want to do if real-world measurements are involved. You can edit settings, like Horizon Height and Viewing Angle, which you can also edit on the artboard, using the Perspective Grid tool. Leave the Grid Color & Opacity settings at their defaults. When you have finished making changes, click OK.

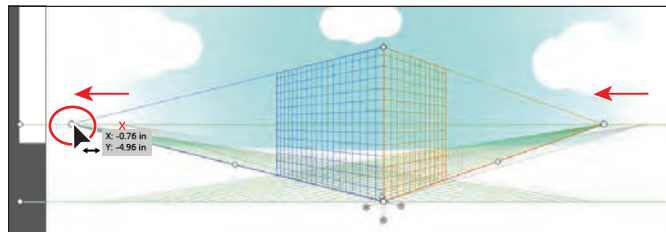


- 8 With the Perspective Grid tool, drag the left vanishing point about $-.75$ in to the left, until it reaches the left horizon line point. Notice that this changes only the left (blue) grid on the two-point Perspective Grid.
- 9 Choose Edit > Undo Perspective Grid Edit.



You are able to undo most changes made to the Perspective Grid.

- 10 Choose View > Perspective Grid > Lock Station Point. This locks the left and right vanishing points so that they move together.
- 11 With the Perspective Grid tool, drag the left vanishing point about $-.75$ in to the left again, until it reaches the left horizon line point. Notice that this now changes both grids on the two-point Perspective Grid.



- 12 Choose File > Save.

13 Choose View > Perspective Grid > Lock Grid.

This command restricts the grid movement and other grid editing features of the Perspective Grid tool. You can only change the visibility and the grid plane position, which you will work with later in this lesson.

● **Note:** When you select a tool other than the Perspective Grid tool, you cannot edit the Perspective Grid. Also, if the Perspective Grid is locked, you can edit it by choosing View > Perspective Grid > Define Grid.

Now that the grid is locked into the correct position, you will begin creating your cityscape by adding content to it.

Drawing objects in perspective

To draw objects in perspective, use the line group tools or rectangle group tools (except for the Flare tool) while the grid is visible. Before you begin drawing using any of these tools, you need to select a grid plane to attach the content to, using the Plane Switching Widget or keyboard shortcuts.

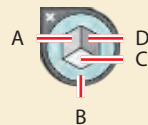
The Plane Switching Widget

When you select the Perspective Grid, a Plane Switching Widget also appears in the upper-left corner of the Document window, by default. You can use this widget to select the active grid plane.

In the Perspective Grid, an active plane is the plane on which you draw an object to project the observer's view of that portion of the scene.

You can change the position of the widget and other options by double-clicking the Perspective Grid tool in the Tools panel.

—From Illustrator Help



- A Left Grid(1)
- B No Active Grid(4)
- C Horizontal Grid(2)
- D Right Grid(3)

► **Tip:** The numbers in parentheses (Left Grid(1), for instance) refer to the keyboard shortcut assigned to that grid plane.

- 1 Click the Layers panel icon (☰) to expand the Layers panel. Click the eye icon (👁) to the left of the Background layer to hide its contents on the artboard. Click to select the layer named Left face so that the new content you create is on that layer. Click the Layers panel icon to collapse the panel.
- 2 Select the Rectangle tool (▭) in the Tools panel.
- 3 Select the Left Grid in the Plane Switching Widget.


Whichever grid plane is selected in the widget is the grid plane on the Perspective Grid to which you'll add content.



● **Note:** With practice, you'll develop the habit of checking which grid plane is active before drawing or adding content.

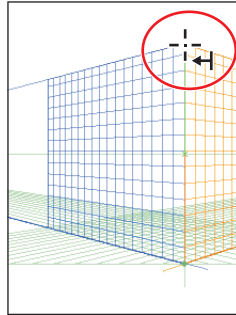
● **Note:** You may want to zoom in for the next steps.

● **Note:** Depending on the zoom level, your grid may not match the figures exactly and that's okay.

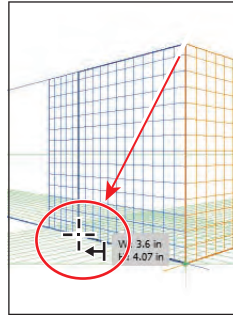
- 4 Position the pointer over the top of the Perspective Grid, where the two planes meet. Notice that the cursor () has an arrow pointing to the left, indicating that you are about to draw on the left grid plane. Drag down and to the left, to the bottom orthogonal line, as shown in the figure, so that the gray measurement label shows an approximate width of 3.6 in. Note that it's okay if your measurements are a little different from those shown.

When drawing on the grid plane, objects snap to the grid lines, by default.

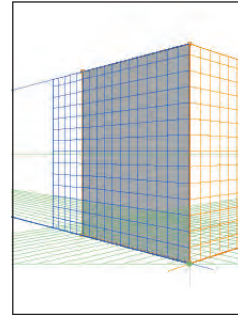
- 5 With the rectangle selected, change the Fill color in the Control panel to a medium gray (C=0 M=0 Y=0 K=40 will appear in the swatch tool tip).



Start drawing.




Create the rectangle.




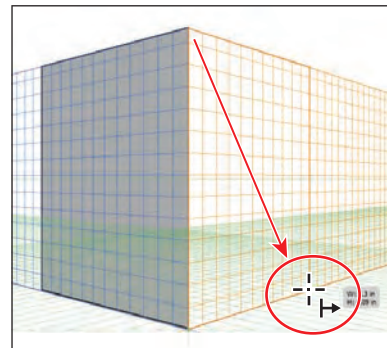
Change the Fill color.

Next, you will draw another rectangle to create the other side of a building.

► **Tip:** You can turn off grid snapping by choosing View > Perspective Grid > Snap To Grid.

- 6 Press Ctrl++ (Windows) or Command++ (Mac OS) twice to zoom in to the Perspective Grid. Snapping to the grid doesn't work if you are zoomed out too far.
- 7 Click the Layers panel icon () to expand the Layers panel. Click to select the layer named Right face so that the new content you create is on that layer.

- 8 With the Rectangle tool still selected, click Right Grid(3) in the Plane Switching Widget to draw in perspective on the right grid plane. Notice that the cursor () now has an arrow pointing to the right, indicating that you are about to draw on the right grid plane. Position the pointer at the same top point as for the last rectangle you drew, and drag down and to the right. When the measurement label shows a width of approximately 3.3 in and the pointer reaches the bottom of the right grid plane, release the mouse button.



- 9 With the rectangle selected, change the Fill color in the Control panel to a light gray (C=0 M=0 Y=0 K=10). Press the Escape key to hide the Swatches panel.
- 10 Click the X in the upper-left corner of the Plane Switching Widget to hide the Perspective Grid and to see your artwork.
- 11 Choose View > Fit Artboard In Window.

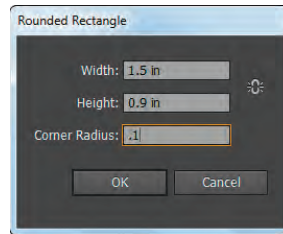
► **Tip:** You can also choose View > Perspective Grid > Hide Grid to hide the grid.

Next, you will draw a rectangle that will serve as a window for the building. But first, you must show the grid again to continue drawing in perspective.

- 12 Press Shift+Ctrl+I (Windows) or Shift+Command+I (Mac OS) to show the grid.

► **Tip:** You can also show the Perspective Grid by selecting the Perspective Grid tool or by choosing View > Perspective Grid > Show Grid.

- 13 Select the Rounded Rectangle tool (◻) by holding down the mouse button on the Rectangle tool (◻) in the Tools panel. Position the pointer over the center of the rectangle you just created. Click once to open the Rounded Rectangle dialog box. Change the Width to **1.5 in** and the Height to **.9 in**. Change the Corner Radius to **.1 in**, and then click OK. This will be a window in the building.



- 14 Press Ctrl++ (Windows) or Command++ (Mac OS) three times to zoom in.
- 15 Select the Selection tool (⬮), and drag the rectangle down and to the left to position it at the bottom, left of the light gray rectangle.

If you use the Selection tool to drag an object that was drawn in perspective, it maintains its original perspective but it doesn't change to match the Perspective Grid.

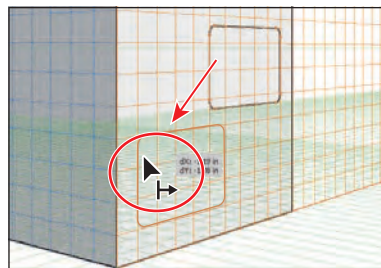
- 16 Choose Edit > Undo Move to return the rectangle to its original position.

Selecting and transforming objects in perspective


You can select objects in perspective using the Perspective Selection tool. The Perspective Selection tool uses the active plane settings to select the objects.

Next, you will move and resize the rectangle you just drew.

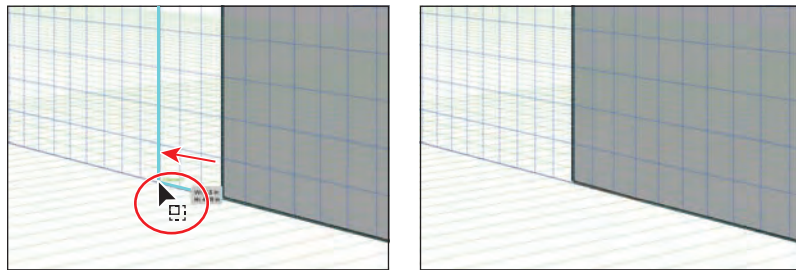
- 1 Select the Perspective Selection tool (⬮) by holding down the mouse button on the Perspective Grid tool in the Tools panel. Drag the rounded rectangle down and to the left, to the lower-left corner of the light gray rectangle. See the figure for placement help. Notice that it snaps to the grid as you drag it.



► **Tip:** When drawing in perspective, you can still use the usual keyboard shortcuts for drawing objects, such as Shift-drag.

- 2 With the rectangle still selected, change the Fill color in the Control panel to the window gradient. Press the Escape key to hide the Swatches panel.
- 3 With the Perspective Selection tool still selected, click the darker gray rectangle on the left grid plane to select it. Notice that the left grid plane is now selected in the Plane Switching Widget. 
- 4 Select the Zoom tool (🔍) in the Tools panel, and drag a marquee across the lower-left corner of the darker gray rectangle on the left grid plane.
- 5 Select the Perspective Selection tool (👁️), and then drag the lower-left corner up and to the left, following the bottom grid plane line that leads to the left vanishing point. See the figure below for help. When the measurement label shows a width of about 4.5 in, release the mouse button.

► **Tip:** You can open the Transform panel (Window > Transform) and make the height of both rectangles the same.



● **Note:** The size does not have to match exactly, as long as the shape is snapped to the Perspective Grid. The width of your rectangles may be different than what you see in the figure, and that's okay.

Scale objects in perspective

You can scale objects in perspective using the Perspective Selection tool. While scaling objects in perspective, the following rules apply:

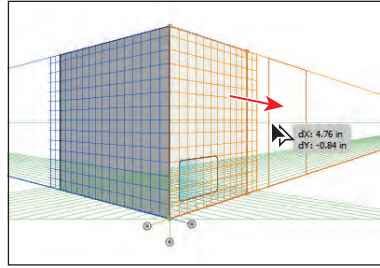
- Scaling is done in the object's plane. When you scale an object, the height or distance is scaled based on the object's plane and not on the current or active plane.
- For multiple objects, scaling is done for objects that are on the same plane. For example, if you select multiple objects on the right and left planes, all the objects that are on the same plane as the object with the bounding box that is used for scaling are scaled.
- Objects that have been moved perpendicularly are scaled on their respective plane and not on the current or active plane.

—From Illustrator Help

Next, you will duplicate an object in perspective, as well as move an object perpendicular to an existing object.

6 Choose View > Fit Artboard In Window.

7 With the Perspective Selection tool, click to select the light gray rectangle on the right grid plan. Holding down Alt+Shift (Windows) or Option+Shift (Mac OS), drag the selected rectangle to the right on the right grid plane. When the measurement label shows a distance (dX) of approximately 4.75 in, release the mouse button and then the modifier keys.



You will use this copy as the face of another building. As with other types of drawings, the Alt or Option key duplicates the object and the Shift key constrains the movement.

With the rectangle copy in place and in perspective, you will now adjust the Perspective Grid so that the grid pattern covers the new shape. You'll do this by editing the grid extent.

8 Select the Perspective Grid tool () in the Tools panel.

9 Press Ctrl++ (Windows) or Command++ (Mac OS) twice to zoom in.

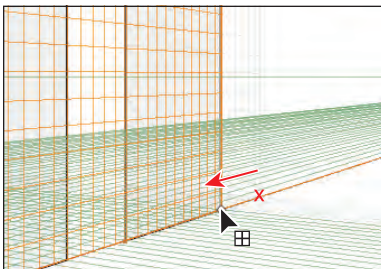
Notice that the grid pattern in the Perspective Grid starts to expand to the right and left the closer you zoom in.

10 Choose View > Perspective Grid > Unlock Grid, which enables you to edit the grid.

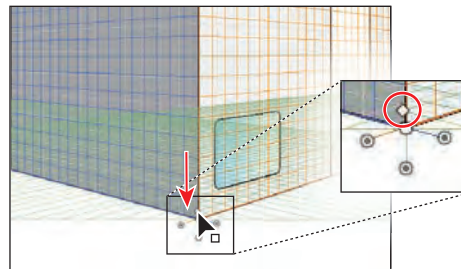
11 With the Perspective Grid tool, position the pointer over the right grid extent widget, indicated by the red X in the figure below, and drag to the left until it reaches the right edge of the copied rectangle.

12 Drag the grid cell widget (circled in the figure) down a bit, until the grid cell size becomes smaller.

Notice that if you drag too far down, the left and right extents of the grid moves away from their accompanying vanishing points. Dragging up would increase the size of the grid cells. Your grid cell size may not match the figure exactly, and that's okay.



Drag the grid extent widget.



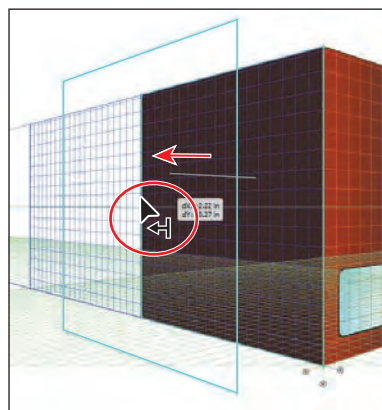
Edit the grid cell size.

● **Note:** Gridlines are set to display on-screen when there is a 1-pixel gap in them. Progressive zooming in will bring into view more gridlines that are closer to the vanishing point. Your grid does not have to match the figures exactly, going forward.

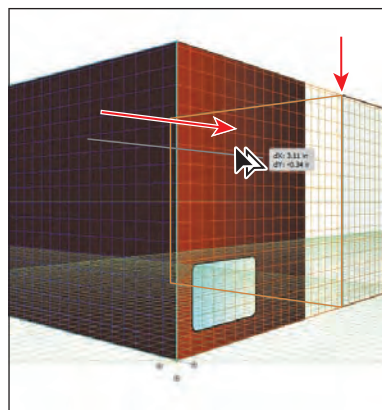
- 13 Choose View > Perspective Grid > Define Grid, and in the Define Perspective Grid dialog box, change the Gridline Every value to .25 in. Click OK. This is the same as dragging the grid cell widget on the grid.
- 14 Select the Selection tool (H), and click to select the darker gray rectangle on the left grid plane. Change the Fill color in the Control panel to the building face 1 color. Click to select the lighter gray rectangle you created (the other face of the same building), and change the Fill color in the Control panel to building face 2.
- 15 Choose File > Save.

Now that the copied rectangle is in place and the grid cells display correctly, you will copy the rectangle on the left grid plane so that it becomes the left face of the newly copied rectangle. Next, you will see how to move an object parallel to its current location.

- 1 Select the Perspective Selection tool (H) in the Tools panel. Click to select the red-colored rectangle on the left grid plane. Holding down the number 5 key, drag the rectangle to the left a bit. Release the mouse and then the 5 key.
This action moves the object in parallel to its current location.
- 2 Choose Edit > Undo Perspective Move.



- 3 With the Perspective Selection tool selected, hold down the Alt (Windows) or Option (Mac OS) key and the number 5 key and drag the same rectangle to the right. Drag to position it as the left face of the second building. When in position, release the mouse and then the modifier keys.



This duplicates the object and places it at the new location without changing the original object.

- 4 With the new copy still selected, choose Object > Arrange > Send To Back. Change the Fill color of the new object in the Control panel to a medium gray (C=0 M=0 Y=0 K=50 will appear in the tool tip).

Next, you will make a copy of the rounded rectangle “window” and then move it to the left grid plane of the red building by pressing a keyboard shortcut to switch planes while dragging.

► **Tip:** If you were to select the Draw Behind mode, this step would copy the rectangle and place it behind all other objects.

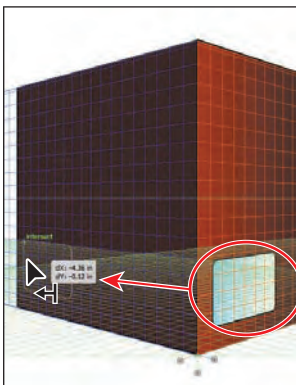
- 5 With the Perspective Selection tool selected, select the blue window on the right face of the building. Choose Edit > Copy and then Edit > Paste In Front.
- 6 With the Perspective Selection tool, drag the copy of the rounded rectangle window to the left. As you drag, press and then release the number 1 key to switch the window to the left grid plane. Drag the window to the lower-left corner of the red rectangle on the left (which is the left side of the red building).
- 7 Choose Edit > Cut.
- 8 Click the Layers panel icon (☰) to expand the Layers panel. In the Layers panel, make sure that the Left face layer is selected. Click the Layers panel icon to collapse the panel again.
- 9 Choose Edit > Paste In Front.

● **Note:** While dragging, you may need to press the number 1 key a few times.

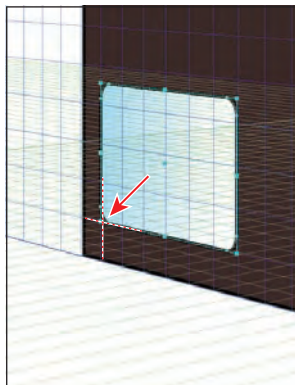
● **Note:** If the rounded rectangle doesn't appear on top of all other objects, choose Object > Arrange > Bring To Front.

- 10 With the rounded rectangle still selected, press the Right Arrow key and then the Up Arrow key. Notice that pressing the arrow keys snaps a side of the rounded rectangle to the Perspective Grid. Using the arrow keys, position the window in the lower-left corner of the red rectangle, as shown in the figure.
- 11 Click to select the original rounded rectangle on the right grid plane so that it is the only thing selected. Position it on the same grid lines (relatively) as the copy, using the arrow keys to snap it to the grid, as shown in the figure.

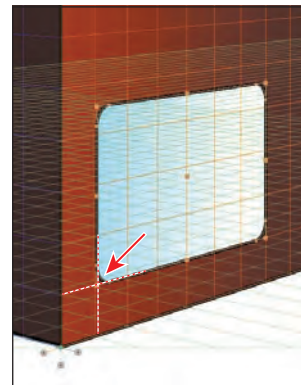
● **Note:** The size of the grid determines the distance an object is moved when pressing the Arrow keys. The larger the grid, the farther the object moves.



Copy and position the rectangle.

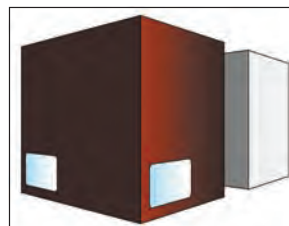


Use the arrow keys to position the left grid rectangle.




Use the arrow keys to position the right grid rectangle.

- 12 Press Ctrl+Shift+I (Windows) or Command+Shift+I (Mac OS) to temporarily hide the Perspective Grid.
- 13 Choose Select > Deselect and then File > Save.




Attaching content to perspective

If you have already created content, Illustrator provides an option to attach the objects to an active plane on the Perspective Grid. You will now add an existing sign for a coffee shop to one of the sides of a building.

- 1 Choose View > Perspective Grid > Show Grid to show the grid.
- 2 Choose View > Fit All In Window to see the two artboards.
- 3 Select the Selection tool () , and click to select the Coffee sign on the artboard on the right. Drag the sign close to the right of the gray building you've created in perspective. After you've placed the sign, click once somewhere on a blank area of the main artboard with the grid. This makes the artboard with the Perspective Grid the active artboard and deselects the sign.
- 4 Choose View > Fit Artboard In Window.
- 5 Press Ctrl++ (Windows) or Command++ (Mac OS) twice to zoom in to the Perspective Grid and artwork.

Next, you will add the selected sign to the right side of the red building and put it into perspective along with the rest of the artwork on the main artboard.

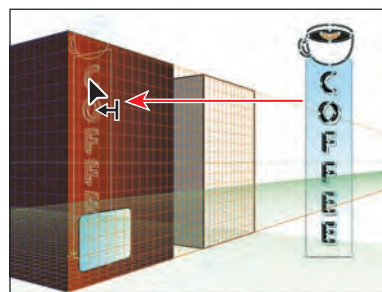
► **Tip:** You can also select the active plane by pressing keyboard shortcuts: 1=Left Grid, 2=Horizontal Grid, 3=Right Grid, and 4=No Active Grid.

- 6 Select the Perspective Selection tool () in the Tools panel. Select the Left Grid(1) in the Plane Switching Widget to make sure that the sign will be added to the left grid plane.




- **Note:** The above step is an important step that can be easily forgotten!

- 7 With the Perspective Selection tool, drag the sign so that the top of the sign aligns with the top of the vertical grid extent.

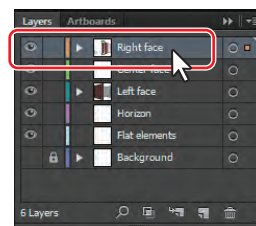


The artwork is added to the grid that is selected in the Plane Switching Widget.

- **Note:** The coffee sign is a group of objects. You can just as easily attach a single object to the Perspective Grid.

- 8 With the sign still selected, choose Edit > Cut.
- 9 Click the Layers panel icon () on the right side of the workspace to expand the Layers panel. Click to select the Right face layer. Choose Edit > Paste In Place. This pastes the sign on the Right face layer.
- 10 Click the Layers panel icon to collapse the panel.

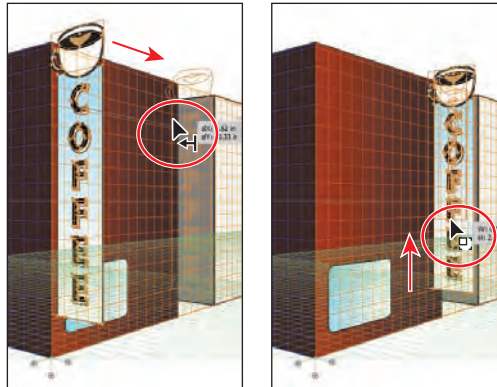
► **Tip:** Instead of dragging the object onto the plane using the Perspective Selection tool, you can also select the object with the Perspective Selection tool, choose the plane using the Plane Switching Widget, and then choose Object > Perspective > Attach To Active Plane.



You will now move the coffee sign perpendicular to its current location, along the right side of the building.

11 With the Perspective Selection tool, hold down the number 5 key and drag the coffee sign to the right until it reaches the right side of the red rectangle, as shown in the figure. Release the mouse button and then the modifier key.

12 With the Perspective Selection tool, hold down the Shift key and drag the bottom, middle point of the sign up to make it smaller. When the measurement label shows a Height of about 2.4 or 2.5 in, stop dragging. Release the mouse button and then the Shift key.



Drag the sign into position. Scale the sign.

Note: If your sign is too close or too far from the red building after resizing, you can drag to position it better, using the Perspective Selection tool.

13 Choose Select > Deselect and then File > Save.

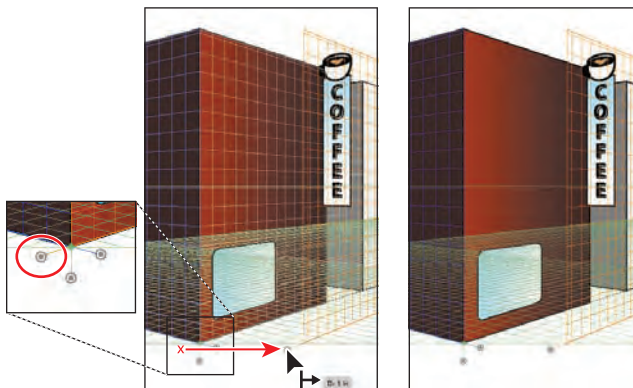
Editing planes and objects together

You can edit the grid planes either before or after there is artwork on them. You can move objects perpendicularly by dragging them, as you've seen, or you can move a grid plane using grid plane controls to move objects perpendicularly.

Next, you will edit the grid planes and the artwork together.

1 With the Perspective Selection tool (⌘) still selected, drag the right grid plane control to the right until D: 1 in (approximately) appears in the measurement label, as shown in the figure. This moves the right grid plane but not the objects on it.

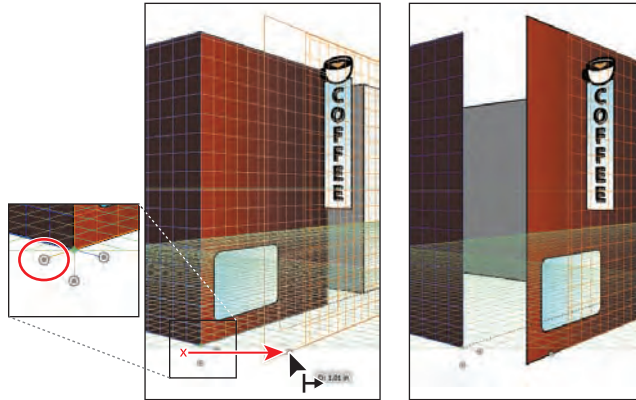
Note: Throughout this section, a red X in the figures shows where to drag from.



► **Tip:** If you select an object or objects on the active grid plane and then drag the grid plane control while holding down the Shift key, only the selected objects move with the grid plane.

- 2 Choose Edit > Undo Perspective Grid Edit to return the grid plane to its original position.
- 3 With the Perspective Selection tool still selected, hold down the Shift key and drag the right grid plane control to the right until the measurement label shows about 1 in. Release the mouse button and then the Shift key.

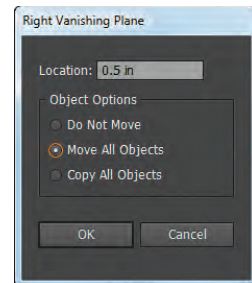
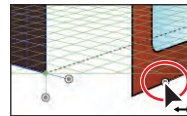
The Shift key moves the grid plane and the artwork on the grid perpendicular to their original positions.



► **Tip:** Dragging a grid plane control while pressing Shift+Alt (Windows) or Shift+Option (Mac OS) drags a copy of the objects with the grid plane.

Dragging a grid plane control is not very precise. For more precision, you can move the right grid plane control according to values you enter, which you will do next.

- 4 Double-click the same right grid plane control you just dragged. In the Right Vanishing Plane dialog box, change the Location to **.5 in** and then select Move All Objects. Click OK.

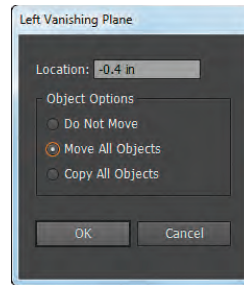
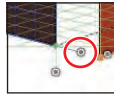


In the Right Vanishing Plane dialog box, the Do Not Move option allows you to move the grid plane and not the objects on it. Copy All Objects allows you to move the grid plane and to bring a copy of the objects on the grid plane with it.

The location in the Right Vanishing Plane dialog box starts at the station point, which is 0. The station point is indicated by the small green diamond on the Perspective Grid, above the horizontal grid control.

Next, you will move the left grid plane using the same method.

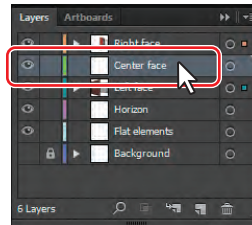
- 5 Double-click the left grid plane control. In the Left Vanishing Plane dialog box, change the Location to **-0.4 in** and then select **Move All Objects**. Click **OK**.



Grid planes move to the right when you enter a positive value and to the left when you enter a negative value.

Now the grid planes and objects are where they need to be, except for the coffee sign and the left side of the second, gray building, which you will move later. You will now add a rectangle to the red building to fill in the gap left when you moved the planes.

- 6 Click the Layers panel icon (☰) on the right side of the workspace to expand the Layers panel. Click to select the **Center face** layer.



- 7 Click the Layers panel icon to collapse the panel.

- 8 Select the **Rectangle tool** (▭) from the same group as the **Rounded Rectangle tool** (▭) in the Tools panel. Click **No Active Grid(4)** in the **Plane Switching Widget**.

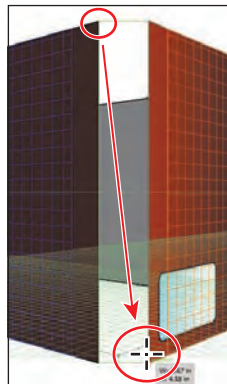


This allows you to draw without perspective.

- 9 Starting from the upper-right corner of the red rectangle on the left grid plane, drag down and to the right, to the lower-left corner of the red rectangle on the right grid plane, as shown in the figure below.

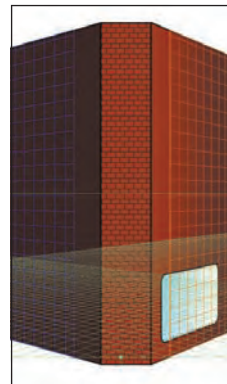
● **Note:** The corners of the rectangles may not line up perfectly. If you want to ensure that they do, you can select the **Perspective Selection tool** and position the rectangles to snap to each other.

- 10 With the rectangle still selected, change the **Fill color** to the **building corner swatch** in the **Control panel**.



- 11 Choose **Select > Deselect** and then **File > Save**.

Now that the red building is taking shape, you will reposition the coffee sign and draw some rectangles to attach the sign to the face of the building. This will require that you move a grid plane to match the coffee sign.



● **Note:** If you wanted to simply move the coffee sign in perspective with the Perspective Selection tool, you would not have to move the grid plane to match it.

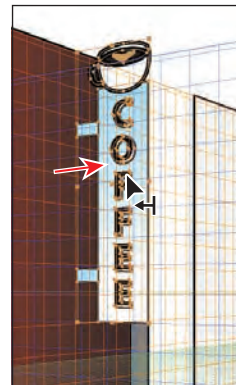
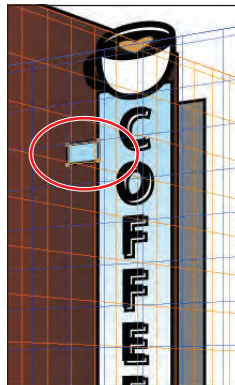
- 1 Select the Perspective Selection tool (⌘) in the Tools panel. Click to select the Coffee sign. Choose Object > Perspective > Move Plane To Match Object.
This moves the left grid plane to match the perspective of the sign. This allows you to draw or add more content in the same plane as the coffee sign.
- 2 Choose Select > Deselect. Select the Zoom tool (⌘) in the Tools panel, and drag a marquee around the coffee sign to zoom in to it.
- 3 Making sure that the Left Grid(1) is selected in the Plane Switching Widget, select the Rectangle tool in the Tools panel.



Next, you will draw some rectangles between the sign and the building to attach the sign to the building.

- 4 Starting on the left edge of the coffee sign, drag down and to the left to create a small rectangle, as shown in the first panel of the figure below. This acts as one attachment point for the sign.
- 5 With the rectangle still selected, change the Fill color in the Control panel to light blue.
- 6 Select the Perspective Selection tool (⌘) in the Tools panel. Holding down Shift+Alt (Windows) or Shift+Option (Mac OS), drag the new rectangle down to create a copy toward the bottom of the sign. Release the mouse button and then the modifier keys. You may need to zoom in further.
- 7 With the new rectangle copy still selected, Shift-click the first rectangle you just drew and the coffee sign and then choose Object > Group.
- 8 Choose View > Smart Guides to turn them off.
- 9 Holding down the Shift key, drag the sign group to the right so that it looks like it's attached to the building. The sign position does not have to match the figure below exactly.

► **Tip:** Effects can be applied to objects in perspective. For instance, you could apply a 3D extrude effect (Effect > 3D > Extrude & Bevel) to the coffee sign group.



- 10 Choose View > Fit Artboard In Window.

11 With the Perspective Selection tool, click to select the red rectangle, representing the left side of the building. Choose Object > Perspective > Move Plane To Match Object.

12 Choose Select > Deselect.

Next, you'll move the medium gray rectangle that represents the left part of the second building into the proper position. In order to see a grid plane as you drag the rectangle into position, you can temporarily align the left grid plane to the object.

13 Press Ctrl++ (Windows) or Command++ (Mac OS) twice to zoom in to the Perspective Grid and artwork.

14 Choose View > Smart Guides to turn them on.

15 With the Perspective Selection tool, click to select the medium gray rectangle behind the coffee sign, as shown in the figure below.

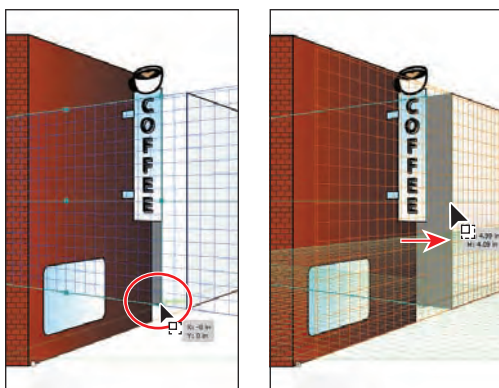
Note: If it is difficult selecting the medium gray rectangle behind the coffee sign, you may need to choose View > Outline to select it by the edge and then choose View > Preview.

16 Holding down the Shift key, position the pointer over the lower-right corner point on the medium gray rectangle. Release the Shift key.

The left grid plane is temporarily aligned with the medium gray rectangle, which means that you can draw or add content to the grid on that plane. You can position the pointer over any of the corner points while holding the Shift key to do the same thing.

Note: Smart Guides need to be turned on (View > Smart Guides) in order for you to position the plane automatically, using the Shift key.

17 Drag the middle, right point on the medium gray rectangle to the right so that it aligns with the edge of the light gray rectangle.



After dragging the rectangle, notice that the left grid plane returns to its original position. This is a way to temporarily reposition a grid plane.

18 Choose Select > Deselect and then File > Save.

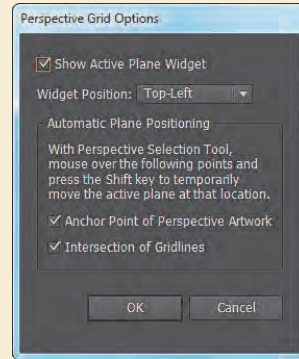
Tip: To return the left grid plane to the building face, you can also double-click the left grid plane control and change the Location to **-4** in, select Do Not Move, and then click OK.

Note: When using the Perspective Selection tool to resize or reposition an object in perspective, you do not need to position the grid plane.

Automatic Plane Positioning

Using the automatic plane positioning options, you can select to move the active plane temporarily when you mouse over the anchor point or gridline intersection point by pressing the Shift key.

The automatic plane positioning options are available in the Perspective Grid Options dialog box. To display this dialog box, double-click the Perspective Grid tool (⌘) or the Perspective Selection tool (⌘) in the Tools panel.



—From Illustrator Help

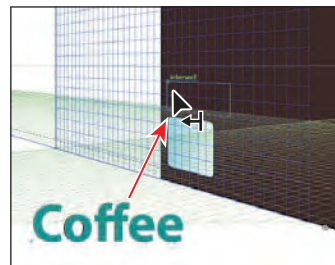
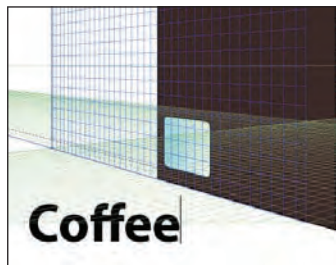
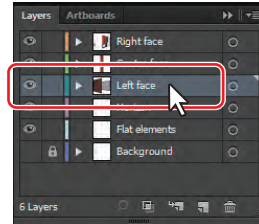
Adding and editing text in perspective

You cannot add text directly to a perspective plane when the grid is visible. However, you can bring text into perspective after creating it off the Perspective Grid. Next, you will add a sign above one of the windows.

● **Note:** You may want to zoom in to the artwork by pressing Ctrl++ (Windows) or Command++ (Mac OS) twice.

● **Note:** If you don't see the Font Formatting options in the Control panel, click the word "Character" in the Control panel to reveal the Character panel.

- 1 Click the Layers panel icon (📁) to expand the Layers panel. In the Layers panel, make sure that the Left face layer is selected. Click the Layers panel icon to collapse the panel again.
- 2 Select the Type tool (T) in the Tools panel. Click in a blank area on the artboard, and type **Coffee**.
- 3 Select the text with the Type tool, and change the Font to Myriad Pro (if necessary), the Font Size to **48 pt**, and the Font Style to Bold in the Control panel.
- 4 Select the Perspective Selection tool (⌘) in the Tools panel. Press the number 1 key on the keyboard to select the left grid, and then drag the text above the rounded rectangle window on the left wall.



Next, you will edit the text while it is in perspective.

- 5 With the text object still selected, double-click the text with the Perspective Selection tool.

This enters Isolation mode, allowing you to edit the text instead of the perspective object.

- 6 In Isolation mode, the Type tool (T) is selected automatically. Insert the cursor after the *Coffee* text, press the spacebar, and then type **Shop**. Press the Escape key twice to exit Isolation mode and return to the perspective object.

► **Tip:** To exit Isolation mode, you can also click twice on the gray arrow that appears below the document tab at the top of the Document window.

- 7 Using the Perspective Selection tool, hold down the Shift key and drag the upper-right corner of the text object up and to the right to make it a bit larger. Release the mouse button and then the modifier key. Make sure that it isn't wider than the left side of the building.



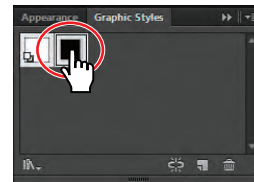
Edit the *Coffee* text.



Resize the text.

- 8 Click the Graphic Styles panel icon (📄) on the right side of the workspace. With the text object selected, click the graphic style named *Text* in the Graphic Styles panel. Click the Graphic Styles panel icon to collapse the panel.

This applies a 3D Extrude effect, as well as strokes, fills, and a drop shadow effect to the text object. You can apply many kinds of effects, strokes, fills, and more to text in perspective.



● **Note:** To learn more about working with graphic styles, see Lesson 13, “Applying Appearance Attributes and Graphic Styles.”

- 9 Choose **View > Fit Artboard In Window**.
- 10 Press **Ctrl+Shift+I** (Windows) or **Command+Shift+I** (Mac OS) to temporarily hide the Perspective Grid.
- 11 Choose **Select > Deselect** and then **File > Save**.




Working with symbols in perspective


● **Note:** To learn more about symbols, see Lesson 14, “Working with Symbols.”

Adding symbols to a perspective plane when the grid is visible is a great way to add repeating items, such as windows. Like text, you can bring symbols into perspective after creating them in Normal mode. Next, you will add some windows to the red building from a window symbol that is already created.

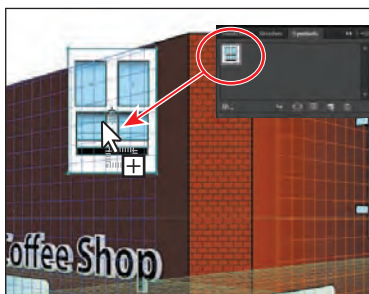
Adding symbols to the Perspective Grid

- 1 Press **Ctrl+Shift+I** (Windows) or **Command+Shift+I** (Mac OS) to show the Perspective Grid, and then press **Ctrl++** (Windows) or **Command++** (Mac OS) twice to zoom in to the Perspective Grid and artwork.
- 2 With the Perspective Selection tool () selected, click the left side of the red building on the left grid plane (the side with the text).

Next, you'll attach a window to the left grid plane and put it on the Left face layer.

- 3 Click the Symbols panel icon () on the right side of the workspace to expand the Symbols panel. Drag the window1 symbol from the Symbols panel onto the left face of the red building. Notice that it is not in perspective.
- 4 With the Perspective Selection tool, drag the window to above the Coffee Shop text to attach it to the left grid plane. Then, drag the window toward the upper-left corner of the left side of the red building. Snap it to the grid.

● **Note:** Make sure that the window is close to the top of the building, since you will be adding another row of windows below this one. See the figure for position.






Drag the symbol onto the artboard.



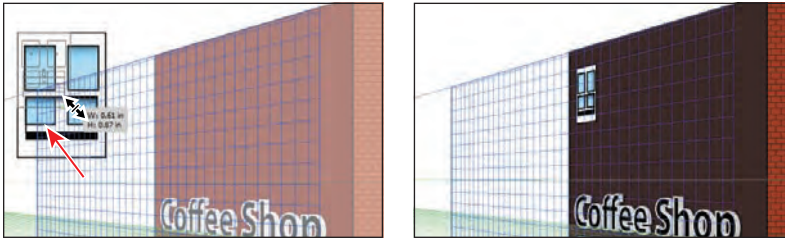
Drag it into perspective.

Transforming symbols in perspective

● **Note:** To edit a symbol that is associated with the Perspective Grid, you can also select the symbol and then click the Edit Symbol button () in the Control panel.

- 1 With the Perspective Selection tool () selected, double-click the window on the left grid plane. A dialog box appears, telling you that you are about to edit the symbol definition. This means that if you edit the content, it will change all of the window symbols on the artboard, which are called instances. Click OK.
- 2 Select the Selection tool () in the Tools panel. Choose **Select > All On Active Artboard**. Holding down the Shift key, drag the lower-right corner of the window up and to the left to make it smaller. When the measurement label shows a width of about .6 in, release the mouse button and then the Shift key.

- 3 Press the Escape key to exit Isolation mode. Notice that the window is now smaller.



Next, you will align the left edge of the window with the left edge of the rounded rectangle window shape at the bottom of the building face. To do that, you will reposition the grid origin. If you shift the origin, the X and Y coordinates of the horizontal plane and the X coordinate of vertical planes are affected. When you select an object in perspective while the grid is visible, the X and Y coordinates displayed in the Transform and Info panels change with the shift in the origin.

- 4 Select the Perspective Selection tool (☛) in the Tools panel. Click to select the rounded rectangle window on the left side of the red building, below the Coffee Shop text. Choose Window > Transform to open the Transform panel. Notice the X and Y measurements.

- 5 Select the Perspective Grid tool (⌘) in the Tools panel. Position the pointer over the origin point at the bottom of the center, brick face of the red building on the grid. The cursor (☛) shows a small circle next to it. Drag the origin point to the lower-left corner of the red rectangle of the left grid plane. It may snap a little to the left of the lower-left point of the rectangle, and that's okay.



This sets the 0,0 point (origin) for the X and Y coordinates of the horizontal plane and the X coordinate of vertical planes to the new origin point.

- 6 Select the Perspective Selection tool in the Tools panel. Click to select the rounded rectangle window, and then click the lower-left reference point in the Transform panel (☛). Change the X value to **.3 in.**
- 7 Select the window above the rounded rectangle, and change the X value to **.3 in.** This will align the left edge of both objects to each other at the distance you specified from the origin. Don't worry if the Y position you see is different.

► **Tip:** You can show rulers on the Perspective Grid by choosing View > Perspective Grid > Show Rulers. This shows you a ruler on each grid plane, in the units set in the Define Grid dialog box.

● **Note:** To reset the origin point, you can select the Perspective Grid tool in the Tools panel and double-click the origin point.



Drag the origin point.



Reposition the window.



Reposition the other window.

- 8 Close the Transform panel.
- 9 Holding down the Shift+Alt (Windows) or Shift+Option (Mac OS) keys, drag the window to the right until the measurement label shows approximately 1 in for dX. Release the mouse button and then the keys. This creates a copy of the window in perspective.
- 10 Choose Object > Transform > Transform Again to repeat the transformation. Press Ctrl+D (Windows) or Command+D (Mac OS) once to repeat the transformation again. Notice that the copies are in perspective.
- 11 With the Perspective Selection tool, Shift-click the other three windows in the row to select them all.
- 12 Holding down the Shift+Alt (Windows) or Shift+Option (Mac OS) keys, drag the selected windows down, to just above the Coffee Shop text. Release the mouse button, and then release the modifier keys. This creates a copy of the windows in perspective, making a total of eight windows.

● **Note:** When you Shift-click the window(s), you may accidentally move them. If this happens, choose Edit > Undo Perspective Move and try again.



Drag a copy of the window.

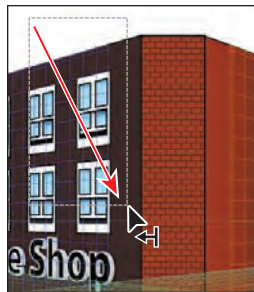


Repeat the transformation.



Drag a copy of the windows.

- 13 Choose Select > Deselect.
- 14 With the Perspective Selection tool, starting above the left side of the red building, drag a marquee across the four windows on the right, above the word “Shop.” Shift-click the red rectangle on the left grid plane to deselect it.



Drag to select the windows.



Shift-click to deselect.

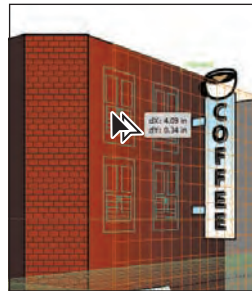
The next step requires several key commands in a precise order, so read carefully.

- 15 With the four windows selected, drag them to the right. Don't release the mouse button yet. Press the number 3 key to switch to the right grid plane. Hold down the Alt (Windows) or Option (Mac OS) key, and continue dragging the windows close to the upper-left corner of the right side of the red building. Try to align the left edges of the windows with the round rectangle on the right grid plane. When they are in position, release the mouse button and then the modifier key. Leave the windows selected.

The copied windows are on another layer, which is beneath the rectangle on the right side of the building. You need to move the copied windows to the same layer.



Drag and switch planes.



Drag a copy of the windows.

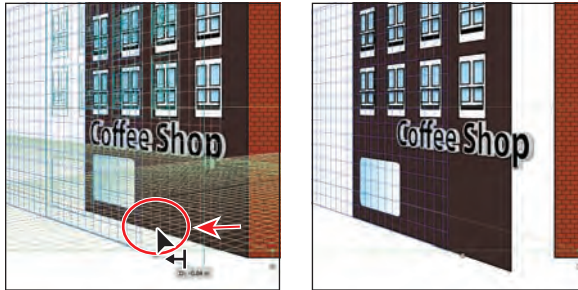
- 16 Choose Edit > Cut.
- 17 Click the Layers panel icon (☒) on the right side of the workspace to expand the Layers panel. Click the Right face layer to select it.
- 18 Choose Edit > Paste In Place.
You can position the selected windows by pressing the arrow keys.
- 19 Choose Select > Deselect.
- 20 Choose View > Fit Artboard In Window, and then choose File > Save.

Releasing content from perspective

There will be times when you want to use objects that are currently in perspective elsewhere, or you want to detach an object from a grid plane. Illustrator allows you to release an object from the associated perspective plane and to make it available as normal artwork. That's what you'll do next.

- 1 With the Perspective Selection tool (↻) selected, click to select the Coffee Shop text on the left side of the red building.
- 2 Choose Object > Perspective > Release With Perspective.
- 3 Choose Select > Deselect.

- 4 With the Perspective Selection tool, Shift-drag the left grid plane control to the left until the measurement label shows a distance of approximately –1 in. Release the mouse button and then the modifier key. This shows that the Coffee Shop text does not move with the grid, since the text has been released from the grid.



- 5 Choose Edit > Undo Perspective Grid Edit, and then choose Edit > Undo Release With Perspective.
 - 6 In the Layers panel, click the visibility column to the left of the Background layer to show it.
 - 7 Choose Select > Deselect and then File > Save.
- **Note:** The grid is not showing in the figure, but it will still be showing in your document.



Working with the horizontal plane

- 1 In the Layers panel, click the Horizon layer to select it.
- 2 Select the Rectangle tool (■), and press the number 2 key to select the Horizontal Grid. Position the pointer about an inch below the bottom edge of the brick building face, drag up to the horizon line, and release the mouse button. This will be a sidewalk.
- 3 Change the Fill color of the sidewalk rectangle to a gray in the Control panel.
- 4 Click to select the Left face layer in the Layers panel.
- 5 Select the Rectangle tool (■), and making sure that the left grid is selected in the Plane Switching Widget, create a door for the red building on the left grid plane.
- 6 Choose File > Save, and then choose File > Close.

