

4 TRANSFORMING ARTWORK

Lesson overview

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

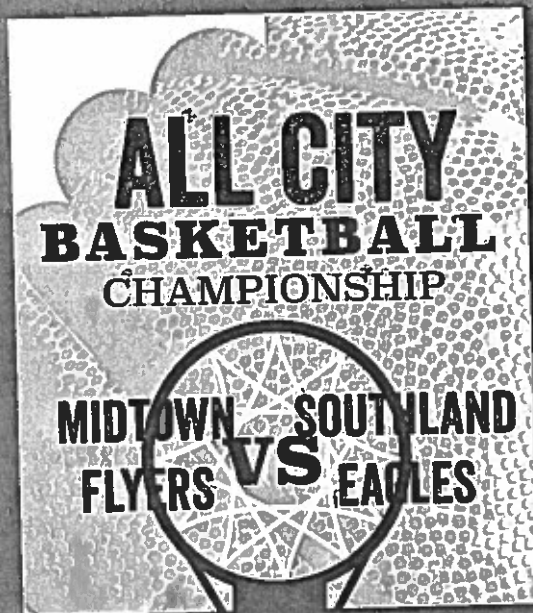
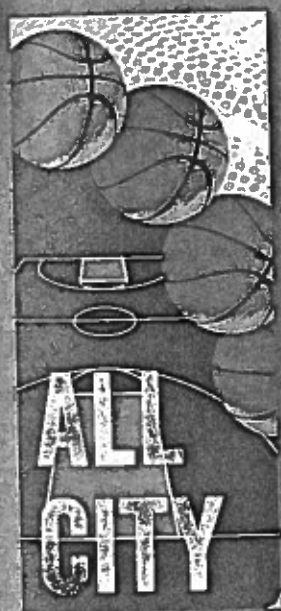
- Add, edit, rename, and reorder artboards in an existing document.
- Navigate artboards.
- Work with rulers and guides.
- Move, scale, and rotate objects using a variety of methods.
- Reflect, shear, and distort objects.
- Position objects with precision.
- Position and align content with Smart Guides.
- Use the Free Transform tool to distort an object.
- Create a PDF.



This lesson takes approximately 60 minutes to complete.

Download the project files for this lesson from the Lesson & Update Files tab on your Account page at www.peachpit.com and store them on your computer in a convenient location, as described in the Getting Started section of this book.

Your Account page is also where you'll find any updates to the chapters or to the lesson files. Look on the Lesson & Update Files tab to access the most current content.



You can modify objects in many ways as you create artwork, by quickly and precisely controlling their size, shape, and orientation. In this lesson, you'll explore creating and editing artboards, the various Transform commands, and specialized tools, while creating several pieces of artwork.

Getting started

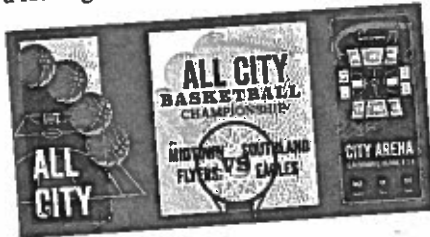
In this lesson, you'll create content and use it in a ticket for a sporting event. Before you begin, you'll restore the default preferences for Adobe Illustrator and then open a file containing the finished artwork to see what you'll create.

- 1 To ensure that the tools and panels function exactly as described in this lesson, delete or deactivate (by renaming) the Adobe Illustrator CC preferences file. See "Restoring default preferences" in the Getting Started section at the beginning of the book.

- 2 Start Adobe Illustrator CC.

- 3 Choose File > Open, and open the L4_end.ai file in the Lessons > Lesson04 folder on your hard disk.

This file contains the three artboards that make up the front, back, and inside of a folding ticket for a sporting event.



- 4 Choose View > Fit All In Window, and leave the artwork onscreen as you work. If you don't want to leave the file open, choose File > Close (without saving).
To begin working, you'll open an existing art file.

- 5 Choose File > Open to open the L4_start.ai file in the Lesson04 folder, located in the Lessons folder on your hard disk.





● **Note:** If you don't see "Reset Essentials" in the Workspace menu, choose Window > Workspace > Essentials before choosing Window > Workspace > Reset Essentials.

- 6 Choose File > Save As. In the Save As dialog box, name the file Ticket.ai, and navigate to the Lesson04 folder. Leave the Format option set to Adobe Illustrator (.ai) (Mac OS) or Save As Type option set to Adobe Illustrator (*.AI) (Windows), and then click Save. In the Illustrator Options dialog box, leave the Illustrator options at their default settings, and then click OK.
- 7 Choose Window > Workspace > Reset Essentials.



Working with artboards

Artboards represent the regions that can contain printable artwork, similar to pages in Adobe InDesign. You can use multiple artboards for creating a variety of things, such as multiple-page PDF files, printed pages with different sizes or different elements, independent elements for websites, or video storyboards, for instance.

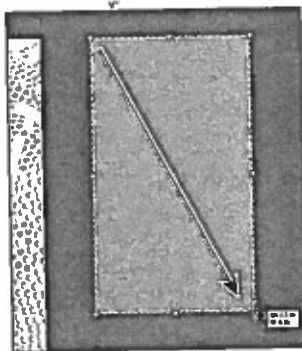
Adding artboards to the document

You can add and remove artboards at any time while working in a document. You can create artboards in different sizes, resize them with the Artboard tool () or Artboards panel () and position them anywhere in the Document window. All artboards are numbered and can have a unique name assigned to them.


Next, you will add two more artboards to the document. Since this is a ticket for a sporting event that will fold, each artboard will be a different face of the ticket (front, inside, and back).

- 1 Choose View > Fit Artboard In Window, then press Command+- (Mac OS) or Ctrl+- (Windows) to zoom out.
- 2 Press the spacebar to temporarily access the Hand tool () . Drag the artboard to the left to see more of the darker canvas off the right side of the artboard.
- 3 Select the Artboard tool () in the Tools panel. Position the Artboard tool pointer to the right of the existing artboard and in line with its top edge (a green alignment guide appears). Drag down and to the right to create an artboard that is 3.5 in (width) by 6 in (height). The measurement label indicates the artboard size.

► **Tip:** If you zoom in on an artboard, the measurement label has smaller increments.



► **Tip:** If you find it difficult to make the width value exactly 3.5 in, you can always change the W: (width) value in the Control panel, after you finish drawing the artboard.

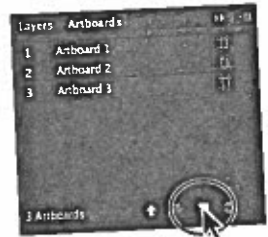
- 4 Click the Artboards panel icon () on the right side of the workspace to show it.

The Artboards panel allows you to see how many artboards the document currently contains. It also allows you to reorder, rename, add, and delete artboards and to choose many other options related to artboards. Notice that Artboard 2 is highlighted in the panel. The active artboard is always highlighted in this panel.



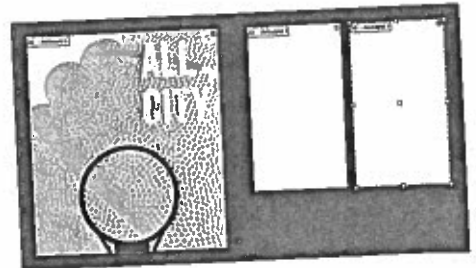
Next, you will create a copy of an artboard using this panel.

- Click the New Artboard button (📄) at the bottom of the panel to create a copy of Artboard 2, called Artboard 3. The copy is placed to the right of Artboard 2 in the Document window.



► **Tip:** You can also create a new artboard by clicking the New Artboard button (📄) in the Control panel. This allows you to create a duplicate of the last selected artboard. After clicking the button, position the pointer in the canvas area and click to create a new artboard.

- Choose View > Fit All In Window to see all of your artboards and leave the Artboard tool selected.

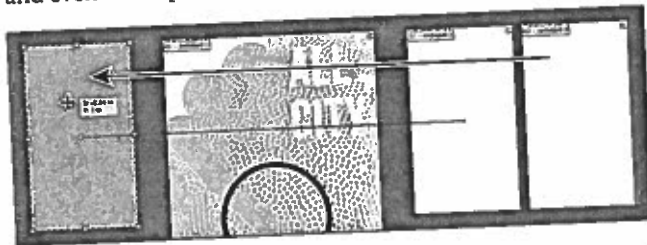


Editing artboards

After creating artboards, you can edit or delete artboards at any time by using the Artboard tool (⇧), menu commands, or the Artboards panel. Next, you will reposition and change the sizes of several of the artboards using multiple methods.

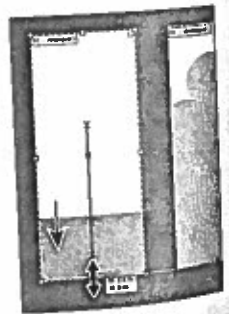
- Press Command+– (Mac OS) or Ctrl+– (Windows) *twice* to zoom out further.
- With the Artboard tool (⇧) still selected, drag Artboard 3 from the center, to the left of the original (larger) artboard. You can reposition artboards at any time and even overlap them, if necessary.

► **Tip:** With the Artboard tool (⇧), you can also copy an artboard by holding down the Option (Mac OS) or Alt (Windows) key and dragging away from the original artboard. When creating new artboards, you can place them anywhere—you can even overlap them.



- With the Artboard tool selected, drag the bottom-center bounding point of the artboard down until the height is 8 in, as shown in the measurement label. The bottom will snap to the bottom of the larger artboard to its right and a green alignment (smart) guide will appear.

► **Tip:** To delete an artboard, select the artboard with the Artboard tool (⇧) and either press Delete, click the Delete Artboard button (🗑) in the Control panel, or click the Delete icon (✖) in the upper-right corner of an artboard. You can delete all but one artboard.



Another way to resize an artboard is to do so by entering values in the Control panel, which is what you'll do next.

- 4 Click Artboard 2, to the right of the larger artboard in the middle. "Artboard 2" will be highlighted in the Artboards panel. Select the upper-middle point in the reference point locator (⌘) in the Control panel. Change the height to 8 in the Control panel and press Enter or Return to accept the value.



Selecting the upper-middle point allows you to resize an artboard from the top, center of the artboard. By default, artboards are resized from their center.

In the Control panel, with the Artboard tool (⇧) selected, you will see many options for editing the currently active artboard. The Preset menu lets you change a selected artboard to a set size. Notice that the sizes in the Preset menu include typical print, video, tablet, and Web sizes. You can also fit the artboard to the artwork bounds or the selected art, which is a great way to fit an artboard to a logo, for instance. Other options in the Control panel include the ability to switch orientation, rename or delete the artboard, even show other helpful guides like a center point or video-safe areas.

► **Tip:** You can see the Constrain Width and Height Proportions icon (⌘) in the Control panel, between the Width and Height fields. This icon, if selected (⌘), allows the width and height to change in proportion to each other.

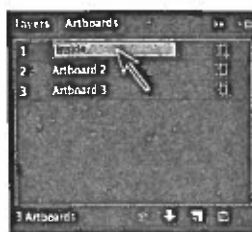
- 5 Select the Selection tool (⌘), and choose View > Fit All In Window.

Notice the very subtle black outline around Artboard 2, with "2" showing in the Artboard Navigation menu (lower-left corner of the Document window), and "Artboard 2" highlighted in the Artboards panel, all of which indicate that Artboard 2 is the currently active artboard. There can only be one active artboard at a time. Commands such as View > Fit Artboard In Window apply to the active artboard.

Renaming artboards

By default, artboards are assigned a number and a name. When you navigate the artboards in a document, it can be helpful to name them. Next, you are going to rename the artboards so that the names are more useful.

- 1 In the Artboards panel, double-click the name "Artboard 1." Change the name to **Inside**, and press Enter or Return.



► **Tip:** You can also change the name of an artboard by double-clicking the Artboard tool (⇧) in the Tools panel. Doing so changes the name for the currently active artboard in the Artboard Options dialog box. You can make an artboard the currently active artboard by clicking it with the Selection tool (⌘).

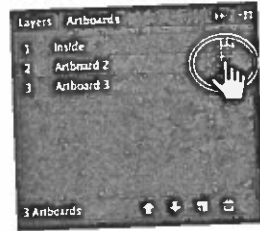
► **Tip:** With the Artboard tool (⇧) selected, you can press the Shift key to resize an artboard proportionally or press the Option (Mac OS) or Alt (Windows) key and drag to resize an artboard from its center.

● **Note:** If you don't see the Width (W) and Height (H) fields in the Control panel, click the Artboard Options button (⌘) in the Control panel and enter the values in the dialog box that appears.

You will now rename the rest of the artboards.

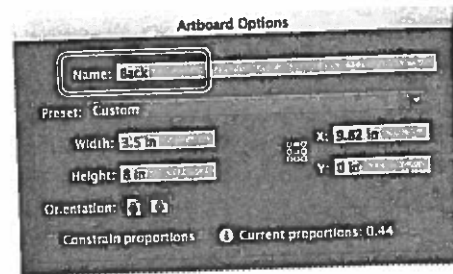
- 2 Double-click the Artboard Options icon (Ⓜ) to the right of the name "Artboard 2" in the Artboards panel. This opens the Artboard Options dialog box.

▶ **Tip:** The Artboard Options icon (Ⓜ) appears to the right of the name of each artboard in the Artboards panel. It not only allows access to the artboard options for each artboard but also indicates the orientation (vertical or horizontal) of the artboard. You only need to single-click the icon when the artboard name is highlighted in the panel.



- 3 In the Artboard Options dialog box, change the Name to Back and click OK.

The Artboard Options dialog box has a lot of extra options as well as a few we've already seen, like width and height.



- 4 Double-click the name "Artboard 3" in the panel, and change the name to Front. Press Enter or Return to accept the name.
- 5 Choose File > Save, and keep the Artboards panel showing for the next steps.

Reordering artboards

When you navigate your document, the order in which the artboards appear can be important, especially if you are navigating the document using the Next artboard (▶) and Previous artboard (◀) buttons. By default, artboards are ordered according to the order in which they are created, but you can change that order. Next, you will reorder the artboards in the Artboards panel.

- 1 With the Artboards panel still open, double-click the number 1 to the left of the name "Inside" in the panel. This makes the artboard named "Inside" the active artboard and fits it in the Document window.

▶ **Tip:** You can also reorder the artboards by selecting an artboard in the Artboards panel and clicking the Move Up (⬆) or Move Down (⬇) button at the bottom of the panel.

- 2 Click and drag the "Front" artboard name up until a line appears above the artboard named "Inside." Release the mouse button.

This moves the artboard up in order so that it becomes the first artboard in the list.

- 3 Double-click to the right or left of the name "Front" in the Artboards panel to fit that artboard in the Document window, if necessary.



- 4 Click the Next artboard button (▶) in the lower-left corner of the Document window to navigate to the next artboard (Inside). This fits the Inside artboard in the Document window.

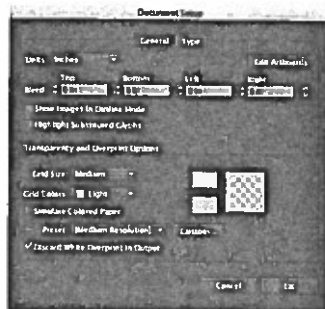
If you had not changed the order, the next artboard would have been dimmed since it was the last artboard in the Artboards panel (there was no artboard after it).

- 5 Choose File > Save.

Now that the artboards are set up, you will concentrate on transforming artwork to create the content for your project.

Editing document setup options

When working with artboards for the current document, you can change default setup options, like units of measure, bleed guides, type settings (such as language), and more in the Document Setup dialog box. To access the Document Setup dialog box, you can either choose File > Document Setup, or, if nothing is selected in the Document window, click the Document Setup button in the Control panel.




There are two sets of options in the Document Setup dialog box that will be worth exploring: General and Type. In the General options, you can change the units and set bleed guides, among a host of other options.

Transforming content

Transforming content allows you to move, rotate, reflect, scale, shear, and either free distort or perspective distort objects. Objects can be transformed using the Transform panel, selection tools, specialized tools, Transform commands, guides, Smart Guides, and more. For the remainder of the lesson, you will transform content using a variety of methods and tools.

Working with rulers and guides

Rulers help you accurately place and measure objects. They appear at the top and left in the Document window and can be shown and hidden. *Guides* are non-printing lines created from the rulers that help you align objects. Next, you will create a few guides based on ruler measurements so that later you can more accurately align content.

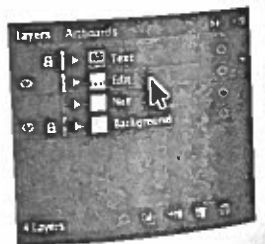
- 1 Choose View > Rulers > Show Rulers, if you don't see the rulers.
- 2 Choose View > Fit All In Window.
- 3 With the Selection tool () selected, click each of the artboards and, as you do, look at the horizontal and vertical rulers. Notice that the 0 (zero) for each ruler is always in the upper-left corner of the active (selected) artboard.

The point on each ruler (horizontal and vertical) where the 0 appears is called the *ruler origin*. By default, the ruler origin is in the upper-left corner of the active artboard. As you can see, the 0 point on both rulers corresponds to the edges of the active artboard.

There are two types of rulers in Illustrator: *artboard rulers* and *global rulers*. Artboard rulers, which are the default rulers that you are seeing, set the ruler origin at the upper-left corner of the *active* artboard. Global rulers set the ruler origin at the upper-left corner of the *first* artboard, or the artboard that is at the top of the list in the Artboards panel, no matter which artboard is active.

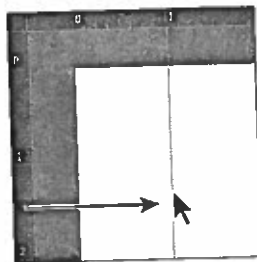
● **Note:** You could switch between artboard and global rulers by choosing View > Rulers > and selecting Change To Global Rulers or Change To Artboard Rulers, (depending on which option is currently chosen), but don't do that now.

- 4 Click the leftmost artboard, called "Front."
- 5 Open the Layers panel by choosing Window > Layers, and select the layer named Edit.



- 6 Shift-drag from the left vertical ruler right to create a vertical guide at 1 inch on the horizontal ruler (the ruler above the artboard) on the “Front” artboard. Release the mouse button, and then release the Shift key.

Dragging with the Shift key pressed “snaps” guides to the measurements on the ruler. The guide is selected and when selected, its color matches the color of the layer that it’s associated with (red in this case). By default, guides that are not selected are aqua in color.



Note: Guides are similar to drawn objects in that they can be selected like a drawn line, and they can be deleted by pressing the Backspace or Delete key, and they also are on the active layer in the Layers panel.

- 7 With the guide still selected (it should be red in color), change the X value in the Control panel to 0.25 in, and press Enter or Return.

On the horizontal ruler, measurements to the right of 0 (zero) are positive and to the left are negative. On the vertical ruler, measurements below 0 (zero) are positive and above are negative.

Note: If you don’t see the X value, you can click the word “Transform” in the Control panel or open the Transform panel (Window > Transform).

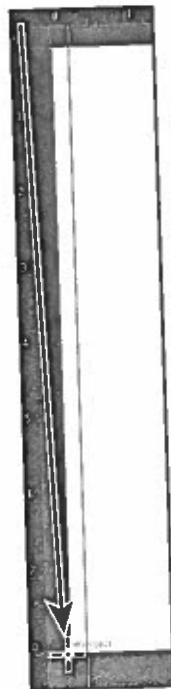
- 8 Position the pointer in the upper-left corner of the Document window, where the rulers intersect (■), and drag the pointer to the lower-left corner of the artboard. When the word “intersect” appears, release the mouse button.

As you drag, a crosshair in the window and in the rulers indicates the changing ruler origin. This sets the ruler origin (0,0) to the lower-left corner of the artboard. This can be very useful when you need to place content a set distance from the bottom edge of the artboard, for instance.

Tip: If you Command-drag (Mac OS) or Ctrl-drag (Windows) from the ruler intersect, you create a horizontal and vertical guide that intersects where you release the mouse button and then release the Ctrl or Command key.

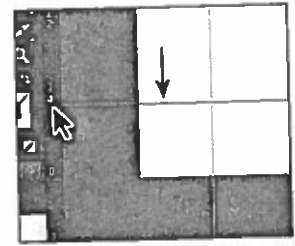
Next, you’ll add a guide using a different method that can sometimes be faster.

- 9 Select the Zoom tool (Q) and click several times, slowly, on the lower-left corner of the artboard until you see 1/4-inch measurements on the ruler. We had to click at least four times.



Tip: To change the units for a document, you can right-click either ruler and choose the new units.

10 Shift-double-click the vertical ruler at the 1/4-inch mark (the ruler to the left of the artboard), *above* the 0 on the ruler. This creates a guide that crosses the bottom edge of the artboard at -0.25 in from the bottom.



11 Position the pointer in the upper-left corner of the Document window, where the rulers intersect (■), and double-click to reset the ruler origin.

12 Choose View > Guides > Lock Guides to prevent them from being accidentally moved.

The guides are no longer selected and are aqua in color by default.

► **Tip:** You can also hide and show guides by pressing Command+; (Mac OS) or Ctrl+; (Windows).

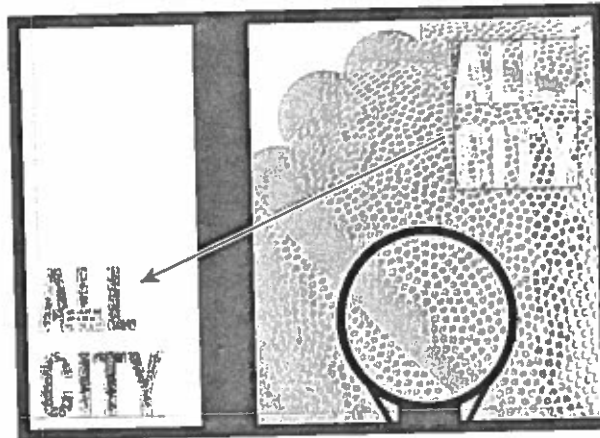
13 Choose View > Fit All In Window.

14 With the Selection tool (⌘) selected, select the white text "ALL CITY."

15 Choose View > Hide Edges so you only see the bounding box of the grouped paths.

This hides the inside edges of the shapes, but not the bounding box. It can make it easier to move and position the artwork.

16 Drag the text group into the lower-left corner of the artboard with the guides. When the left and bottom edges snap to the guides, release the mouse button.



Positioning objects precisely

At times, you may want to position objects more precisely—either relative to other objects or to the artboard. You could use the alignments options, like you saw in Lesson 2 “Techniques for Selecting Artwork,” but you can also use Smart Guides and the Transform panel to move objects to exact coordinates on the x and y axes and to control the position of objects in relation to the edge of the artboard.

Next, you’ll add content to the backgrounds of two artboards and then position that content precisely.

- 1 Press Command+– (Mac OS) or Ctrl+– (Windows) (or View > Zoom Out) *three times* to zoom out. You should see content off the bottom edge of the artboards.
- 2 Click the artboard with the guides on it (the artboard named Front) to ensure that it is the active artboard (check the origin of the rulers and make sure that 0,0 starts in the upper-left corner of the artboard).
- 3 With the Selection tool (⌘), click to select the large background shape on the left, below the artboards (see the next figure for which shape).
- 4 Click the upper-left point of the reference point locator (⌘) in the Control panel. Then, change the X value to 0 and the Y value to 0.

● **Note:** Again, depending on the resolution of your screen, the Transform options may not appear in the Control panel. If they do not appear, you can click the word “Transform” to see the Transform panel, or you can choose Window > Transform.

The content should now be precisely positioned on the artboard, since it was the same size as the artboard to begin with.

- 5 In the Artboards panel, select the artboard named Back to make it the active artboard.
- 6 Select the group with the “City Arena” text in it below the artboards. You may need to either zoom out or scroll over and down to see it.



- 7 With the upper-left point of the reference point locator (☒) selected in the Control panel, change the X value to 0 and the Y value to 0.

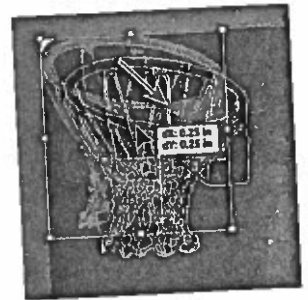
Next, you will use Smart Guides to move content. When moving objects with Smart Guides turned on (View > Smart Guides), measurement labels appear next to the pointer and display the distance (X and Y) from the object's original location. You will use these to make sure that an object is a certain distance from the edge of the artboard.

- 8 With the Selection tool, click to select the basketball hoop with net below the artboards. With the upper-left point of the reference point locator (☒) in the Control panel selected, change the X value to 0 and the Y value to 0.



- 9 Choose View > Fit Artboard In Window.

- 10 Using the Selection tool, position the pointer over the selected basketball hoop with net and drag the group down and to the right. As you drag, press the Shift key to constrain the movement to 45°. When the measurement label shows approximately dX: 0.25 in and dY: 0.25 in, release the mouse button, and then the Shift key. Leave the artwork selected.



The dX indicates the distance moved along the x axis (horizontally), and dY indicates the distance moved along the y axis (vertically). Don't worry if you can't get the exact values, it's difficult when zoomed out so far. Also, because there is other content on the canvas, Smart Guides are attempting to snap to it. You can always change the X and Y values in the Control panel or Transform panel.

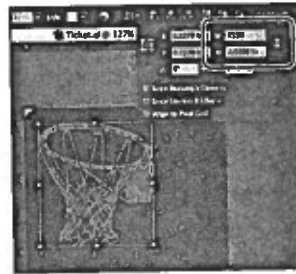
● **Note:** You can also choose Illustrator > Preferences > Smart Guides (Mac OS) or Edit > Preferences > Smart Guides (Windows) and deselect the Measurement Labels option to turn off just the measurement labels when Smart Guides are on.

- 11 Choose File > Save.

Scaling objects

So far in this book, you've scaled most content with the selection tools. In this lesson, you'll use several other methods to scale objects.

- 1 With the artwork (basketball hoop and net) still selected, ensure that the upper-left point of the reference point locator (⌘) is selected in the Control panel. Click to select the Constrain Width And Height Proportions icon (⌘) located between the W and H fields. Change the Width (W:) to 255%. Press Enter or Return to accept the value.

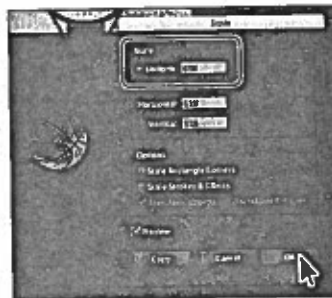


● **Note:** The figure shows the Width value before pressing Enter or Return.

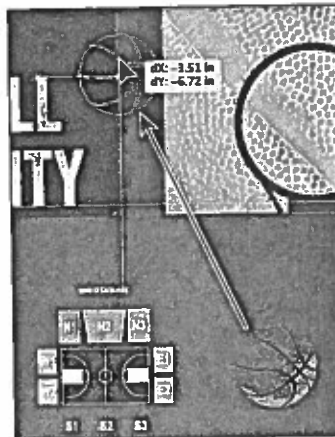
When typing values to transform content, you can type different units such as percent (%) or pixels (px) and they will be converted to the default unit, which is inches (in) in this case.

- 2 Choose View > Fit All In Window.
- 3 Press Command+– (Mac OS) or Ctrl+– (Windows) (or View > Zoom Out) *twice* to zoom out. You should see content off the bottom edge of the artboards again. You may need to scroll down to see all of the content.
- 4 Select the basketball and double-click the Scale tool (⌘) in the Tools panel.
- 5 In the Scale dialog box, change Uniform to 61%. Toggle Preview on and off to see the change in size. Click OK.

► **Tip:** You could also choose Object > Transform > Scale to access the Scale dialog box.

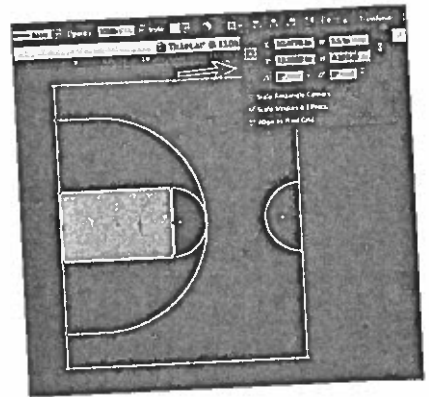


- 6 Select the Selection tool (⌘) and drag the basketball onto the first artboard named "Front," like you see in the figure.
- 7 Select the basketball court group (without the numbers on it) *below the larger artboard*. Notice that the Stroke weight in the Control panel shows as 1 pt.
- 8 Select the Zoom tool (⌘) in the Tools panel and click several times, *slowly*, to zoom in to it.
- 9 Choose View > Show Edges.
- 10 Open the Transform panel by clicking the X, Y, W, or H link in the Control panel (or the word "Transform" if that appears in the Control panel). Select Scale Strokes & Effects.



● **Note:** Depending on the resolution of your screen, the Transform options may not appear in the Control panel. If they do not appear, you can click the word “Transform” to see the Transform panel or you can choose Window > Transform.

- 11 In the Control panel, either click the word “Transform” to reveal the Transform panel, or click the center reference point of the reference point locator (Ⓜ) in the Control panel. Ensure that the Constrain Width And Height Proportions is set (Ⓜ), and type 3.5 in the Width (W) field, and then press Enter or Return to increase the size of the artwork. Notice that the Stroke weight has scaled as well, and is now 2 pt. Leave the artwork selected.



By default, strokes and effects, like drop shadows, are not scaled along with objects. For instance, if you enlarge a circle with a 1 pt stroke, the stroke remains 1 pt. But by selecting Scale Strokes & Effects before you scale—and then scaling the object—that 1 pt stroke would scale (change) relative to the amount of scaling applied to the object.

Reflecting objects

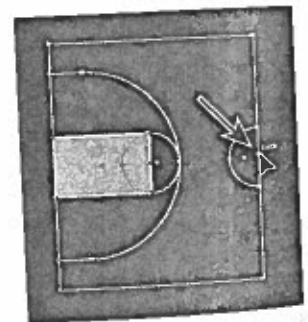
When you *reflect* an object, Illustrator flips the object across an invisible vertical or horizontal axis. In a similar way to scaling and rotating, when you reflect an object, you either designate the reference point or use the object's center point, by default.

Next, you'll use the Reflect tool (Ⓜ) to flip the basketball court artwork 90° across the vertical axis and copy it.

► **Tip:** If all you want to do is flip content in place, you can also choose Flip Horizontal or Flip Vertical from the Transform panel menu (☰).

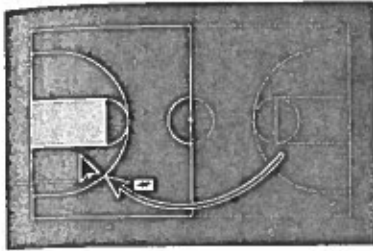
- 1 Select the Reflect tool (Ⓜ), which is nested within the Rotate tool (Ⓜ) in the Tools panel. Click the right edge of the basketball court group (the word “anchor” or “path” may appear).

This sets the invisible axis that the shape will reflect around on the right edge of the selected artwork, rather than on the center, which is the default.



► **Tip:** You can reflect and copy in one step. With the Reflect tool (Ⓜ) selected, Option-click (Mac OS) or Alt-click (Windows) to set a point to reflect around and to open the Reflect dialog box, in one step. Select Vertical, and then click Copy.

- 2 With the basketball court artwork still selected, position the pointer off the right edge and drag clockwise. As you are dragging, hold down the Shift+Option (Mac OS) or Shift+Alt (Windows) keys. When the measurement label shows -90°, release the mouse button and then release the modifier keys.



The Shift key constrains the rotation to 45° as the artwork is reflected, and the Option (Alt) key will copy the artwork. Leave the new court artwork where it is for now. You'll move it later.

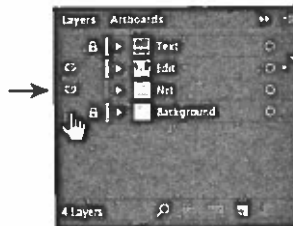
- 3 Select the Selection tool (⌘) and drag across both groups, then choose Object > Group.

Distorting objects with effects

You can distort the original shapes of objects in different ways, using various tools. Now you'll distort the basketball net using the Pucker & Bloat effect. These are different types of transformations because they are applied as effects, which means you could ultimately edit the effect later or remove it in the Appearance panel.

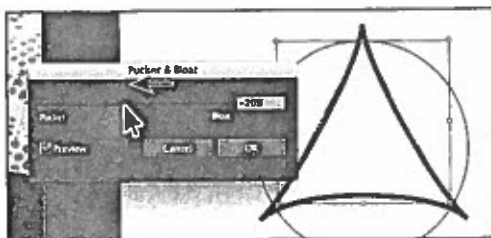
Note: To learn more about effects, see Lesson 11, "Exploring Creative Uses of Effects and Graphic Styles."

- 1 Choose "2 Inside" from the Artboard Navigation menu to fit the larger artboard in the Document window.
- 2 Click the Layers panel icon (☰) to open the panel, and then click the visibility column (an arrow is pointing to it in the figure) to the left of the Net layer name to show that content, and click the eye icon (👁) to the left of the Background layer to hide its contents.



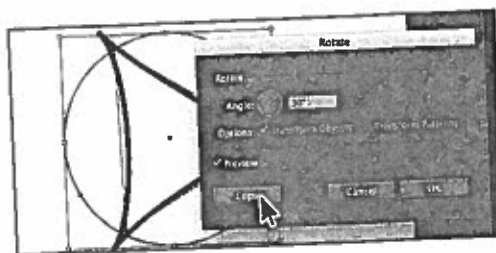
You are going to create a net for the basketball hoop that is already on the artboard.

- 3 Click to select the red triangle shape. Choose Effect > Distort & Transform > Pucker & Bloat.
- 4 In the Pucker & Bloat dialog box, select Preview and drag the slider to the left to change the value to roughly -20%, which distorts the triangle. Click OK.



► **Tip:** To access the Rotate dialog box, you can also double-click the Rotate tool (⌘) in the Tools panel. The Transform panel (Window > Transform) also has a rotate option.

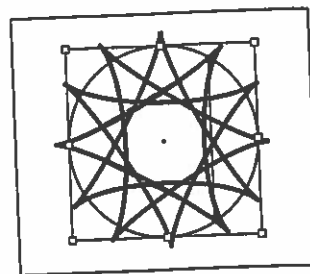
- 5 Drag across the triangle and circle to select them both. Choose Object > Transform > Rotate. In the Rotate dialog box, change the Angle to 30, select Preview, and then click Copy. You will learn more about rotating artwork in the next section.



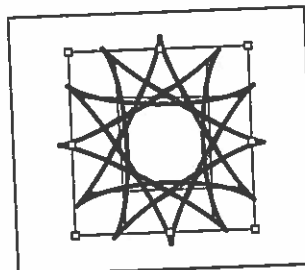
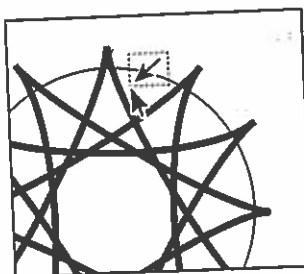
- 6 Choose Object > Transform > Transform Again to repeat the transformation on the selected shapes.

- 7 Press Command+D (Mac OS) or Ctrl+D (Windows) once to apply the transformation one more time.

- 8 Choose Select > Deselect, and then drag across the edge of the circle (see the figure below) to select all of the copies and press Delete.

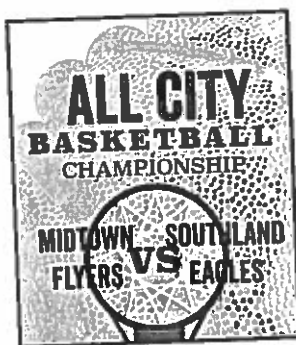


- 9 Drag across the triangles to select them all and choose Object > Group.



- 10 Drag the group down onto the basketball hoop and visually center-align them. Change the Stroke color to White in the Control panel.

- 11 In the Layers panel, click the visibility column to the left of the Background and the Text layers to show the content for each.



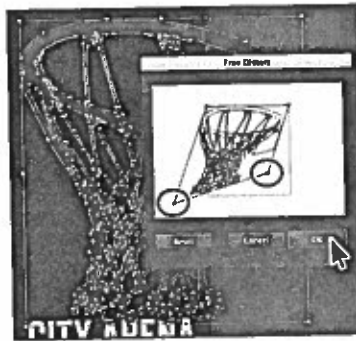
Next, you will apply a Free Distort effect to artwork.

12 Choose "3 Back" from the Artboard Navigation menu and select the basketball net.

13 Choose Effect > Distort & Transform > Free Distort.

14 In the Free Distort dialog, box drag the lower-left and lower-right points so they match the figure. Click OK.

► **Tip:** Later in this lesson, you will learn about the Free Transform tool (**⌘+I**) that has a free distort option. Applying a free distort via the Free Transform tool is permanent and affects the underlying artwork, whereas the Free Distort effect can be edited and even removed later because it's an effect.



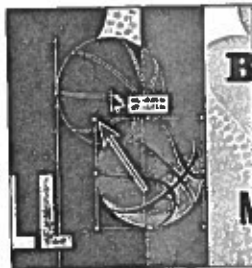
Rotating objects

You rotate objects by turning them around a designated reference point. There are lots of ways to do this, including methods that range from more precise to more free-form rotation.

First, you'll rotate the basketball manually, using the Selection tool.

1 Choose "1 Front" from the Artboard Navigation menu in the lower-left corner of the Document window.

2 With the Selection tool (**⌘**), select the basketball. Option-drag (Mac OS) or Alt-drag (Windows) the basketball up and to the left to create a copy. When the artwork is positioned like you see in the figure, release the mouse button and then the modifier key.



3 Position the pointer just off either the upper-right or lower-right corner points of the bounding box of the basketball you just created and when the pointer changes to rotate arrows (**↻**), drag in a counterclockwise fashion (up). When the measurement label shows *approximately 15°*, release the mouse button.



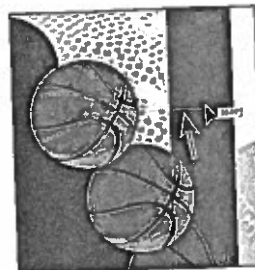
► **Tip:** You can press the Shift key as you rotate artwork with the Rotate tool (**⌘+R**) or Selection tool (**⌘**) to constrain the rotation to 45°. Remember to release the mouse button before the key.

Next, you'll rotate content using the Rotate tool (**⌘+R**) and learn how this method can be different from rotating with the Selection tool.

► **Tip:** To rotate the object around a different reference point, click once anywhere in the document window to reposition the reference point. Then move the pointer away from the reference point and drag in a circular motion.

- 4 With the Selection tool, Option-drag (Mac OS) or Alt-drag (Windows) the selected basketball up and to the left to create another copy. When the artwork is positioned like you see in the following figure, release the mouse button and then the modifier key.

- 5 Select the Rotate tool (⌘) in the Tools panel (it's under the Reflect tool). Notice the rotate-around point in the center of the basketball artwork. The Rotate tool allows you to rotate the object around a different reference point. Position the pointer to the right of the basketball, and drag counterclockwise (up) until the measurement label shows approximately 15°, and then release the mouse button.

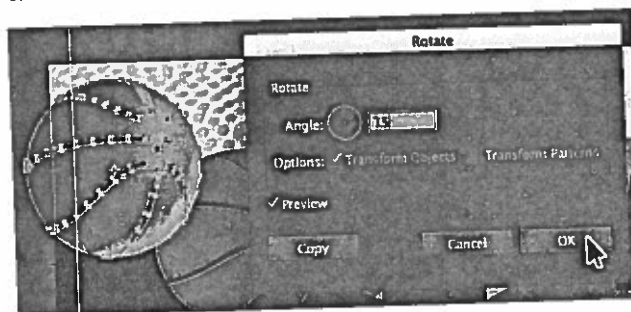


► **Tip:** If you select an object and then select the Rotate tool (⌘), you can Option-click (Mac OS) or Alt-click (Windows) anywhere on the object (or artboard) to set a reference point and to open the Rotate dialog box in one step.

Next, you will rotate each basketball in place using the Transform Each command.

- 6 With the Selection tool, Option-drag (Mac OS) or Alt-drag (Windows) the selected basketball up and to the left to create a final copy. When the artwork is positioned like you see in the following figure, release the mouse button and then the modifier key.
- 7 With the last basketball selected, double-click the Rotate tool in the Tools panel. In the Rotate dialog box that appears, the last rotation value should be the value set for the Angle value. It should be approximately 15°. Make sure it's 15° and click OK.

► **Tip:** You can choose Object > Transform > Transform Each to rotate several selected objects separately, and around the center of each.




► **Tip:** After transforming content using various methods, including rotation, you will notice that the bounding box is now rotated. You can choose Object > Transform > Reset Bounding Box to reset the bounding box around the artwork again.

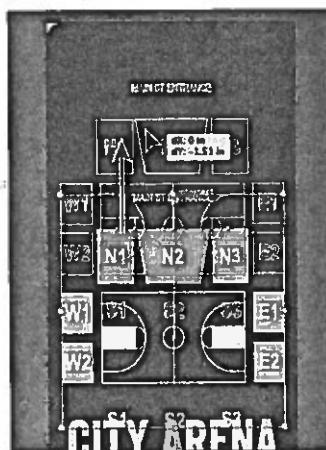
- 8 Choose File > Save.



Shearing objects

Shearing an object slants, or skews, the sides of the object along the axis you specify, keeping opposite sides parallel and making the object asymmetrical.

Next, you'll copy artwork and apply shear to it.

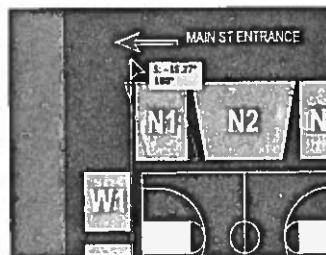
- 1 Choose View > Fit All In Window.
- 2 Press Command+- (Mac OS) or Ctrl+- (Windows) (or View > Zoom Out) *twice* to zoom out. You should see content off the bottom edge of the artboards again.
- 3 Select the Selection tool (). Click to select the grouped content below the first artboard that contains the "N1," "N2," etc.
- 4 Choose Edit > Cut, and then choose "3 Back" from the Artboard Navigation menu in the lower-left corner of the Document window.
- 5 Select the basketball net and choose Object > Hide > Selection.
- 6 Choose Edit > Paste to paste a copy in the center of the artboard.
- 7 Begin dragging the group of content up, and as you drag, press the Shift key to constrain the movement. Drag it up until it looks something like you see in the figure. Release the mouse button and then the Shift key.
- 8 Choose Object > Ungroup and the Select > Deselect.
- 9 Press Command++ (Mac OS) or Ctrl++ (Windows) once to zoom in to the artboard.



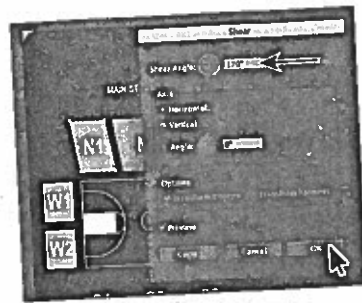
- 10 Select the gray square beneath the "N1" text. Select the Shear tool () nested within the Scale tool () in the Tools panel. Position the pointer above the shape; press the Shift key and drag to the left. The Shift key constrains the artwork to its original width.

If you were shearing a single object and precision didn't matter, you could leave the object as is. But this artwork requires the shapes beneath "N1" and "N3" to have the same shearing applied.

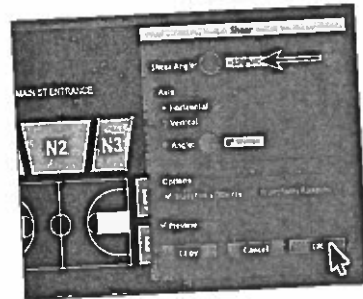
- 11 Choose Edit > Undo Shear.



- 12 With the rectangle still selected, double-click the Shear tool. In the Shear dialog box, change the Shear Angle to 170, select Preview, and click OK.



- 13 With the Selection tool, select the gray rectangle beneath the "N3" text. Double-click the Shear tool in the Tools panel and change the Shear Angle to -170, select Preview, and click OK. Leave the rectangle selected.

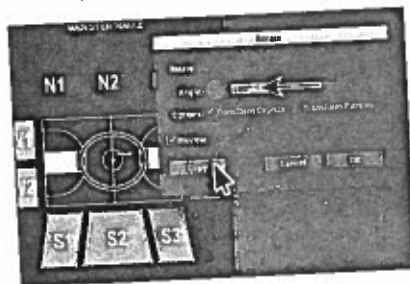


► **Tip:** You can also apply shear numerically in the Transform panel (Window > Transform) or in the Shear dialog box (Object > Transform > Shear).

- 14 Select the Selection tool, and with the Shift key pressed, select the gray rectangles behind the "N1" and "N2" text to select all three.

- 15 Choose Object > Group.


- 16 Select the Rotate tool (⌘) and position the pointer over the center of the circle below (circled in the figure). When the green word "center" appears, Option-click (Mac OS) or Alt-click (Windows). In the Rotate dialog box, change the Angle to 180 and click Copy.






- 17 Choose Object > Show All to show the basketball net you hid earlier.

- 18 Choose Select > Deselect, and then choose File > Save.

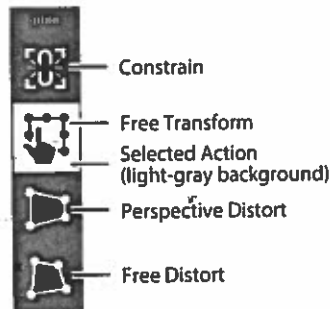
Transforming with the Free Transform tool

The Free Transform tool () is a multipurpose tool that allows you to distort an object, combining functions like moving, scaling, shearing, rotating, and distorting (perspective or free). The Free Transform tool is also touch-enabled, which means you can control transformation using touch controls on certain devices. For more information on touch controls, see the sidebar at the end of this section.


● **Note:** To learn more about the options for the Free Transform tool, search for "Free Transform" in Adobe Help (Help > Illustrator Help).

- 1 Select the Selection tool () in the Tools panel. Press the Spacebar to access the Hand tool () temporarily. Drag up so you can see the basketball court artwork beneath the artboards.
- 2 Click to select the basketball court group, and then select the Free Transform tool () in the Tools panel.

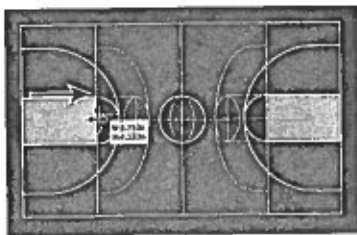
After selecting the Free Transform tool, the Free Transform widget appears in the Document window. This widget, which is free-floating and can be repositioned, contains options to change how the Free Transform tool works. By default, the Free Transform tool allows you to move, shear, rotate, and scale objects. By selecting other options, like Perspective Distort, you can change how the tool transforms content.



First, you'll change the width of the selected artwork using the Free Transform tool.

- 3 Position the pointer over the left middle point of the artwork bounding box, and the pointer changes its appearance () indicating that you can shear or distort. Begin dragging to the right. As you drag, press the Option (Mac OS) or Alt (Windows) key to change both sides at once. Notice that you can't drag the artwork up or down—the movement is constrained to horizontal by default. When a width of *approximately* 3.7 in shows in the measurement label, release the mouse button and then the key.

● **Note:** If you were to drag the side bounding point up first to distort the artwork by shearing, the movement wouldn't be constrained and you could move in any direction.

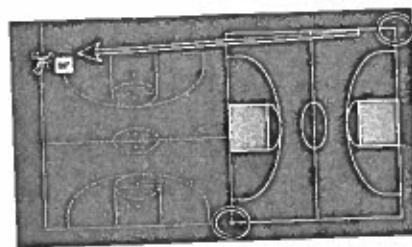


Next, you will rotate with the Free Transform tool around a specific point.

► **Tip:** You can also drag the reference point to a location. You can double-click the reference point to reset its position.

- 4 Position the pointer over the lower-left corner and double-click when the pointer looks like this (☒).

This moves the reference point and ensures that the artwork will rotate around it. Press the Shift key and drag the upper-right corner in a counterclockwise fashion until you



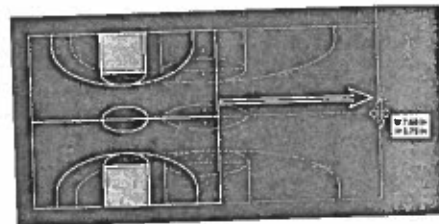
see 90° in the measurement label. Release the mouse button and then the Shift key.

● **Note:** If you find that, by trying to rotate, you are instead scaling, stop dragging and choose Edit > Undo Scale and try again.

● **Note:** The Constrain option cannot be selected when the Perspective Distort option is selected.

Like other transform tools, by holding down the Shift key while dragging with the Free Transform tool, you can constrain the movement for most of the transformations. If you don't want to hold down the Shift key, you can also select the Constrain option in the Free Transform widget before transforming, to constrain movement automatically. After dragging, the Constrain option is deselected.

- 5 Position the pointer over the right middle point of the artwork bounding box, and drag to the right. Drag until a width of approximately 7.7 in shows in the measurement label.

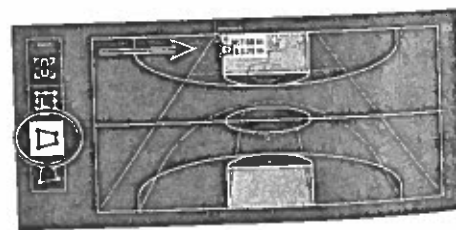


- 6 With the Free Transform tool still selected, click the Perspective Distort option in the Free Transform widget (circled in the figure below).

With this option selected, you can drag a corner point of the bounding box to distort the perspective.

● **Note:** The Free Distort option of the Free Transform tool (☒) allows you to freely distort the selected content by dragging one of the corner bounding points.

- 7 Position the pointer over the upper-left corner of the bounding box, and the pointer changes in appearance (☒). Drag to the right until it looks like the figure.



- 8 Change the Opacity to 60% in the Control panel.

- 9 Press Command+- (Mac OS) or Ctrl+- (Windows) several times to zoom out, until you see the artboard with the basketballs on it.

- 10 Select the Selection tool and drag the artwork onto the artboard similar to what you see in the figure.

● **Note:** If the artwork appears on top of the text, choose **Object > Arrange > Send To Back** as many times as necessary to arrange it behind the text.



- 11 Select the Artboard tool (⇧) in the Tools panel. Drag the 1 Front artboard to the left until the basketball court is no longer overlapping the artboard to the right.

● **Note:** When you drag an artboard with content on it, the art moves with the artboard, by default. If you want to move an artboard but not the art on it, select the Artboard tool (⇧) and then click to deselect **Move/Copy Artwork With Artboard** (☐) in the Control panel.



► **Tip:** You could also simply mask the content that is outside of the artboard. You will learn about clipping masks in Lesson 14, "Using Illustrator CC with Other Adobe Applications."

- 12 Choose **View > Fit All In Window** and then choose **Choose File > Save**.

The Free Transform tool and touch-enabled devices

In Illustrator CC, the Free Transform tool is touch-enabled. This means that, if you are using either a Windows 7- or 8-based touchscreen PC or a Touchscreen device like Wacom Cintiq 24HD Touch, you can utilize certain touch-enabled features.

Here are a few noteworthy examples:

- You can touch and drag from the center of an object and move the reference point.
- Double tapping on any of the corner points moves the reference point for the object to that point.
- Double tapping on the reference point resets it to the default position (if it's not already there).
- To constrain movement, you can tap the Constrain option in the widget before transforming.

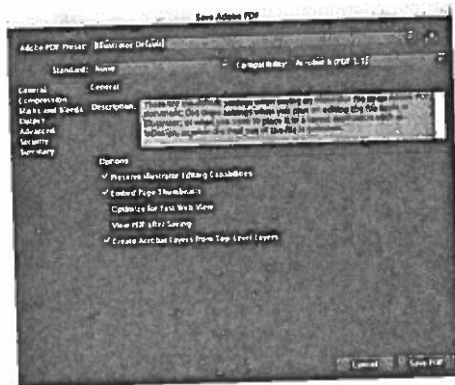
Creating a PDF

Portable Document Format (PDF) is a universal file format that preserves the fonts, images, and layout of source documents created on a wide range of applications and platforms. Adobe PDF is the standard for the secure, reliable distribution and exchange of electronic documents and forms around the world. Adobe PDF files are compact and complete, and can be shared, viewed, and printed by anyone with free Adobe Reader® software.

You can create different types of PDF files from within Illustrator. You can create multipage PDFs, layered PDFs, and PDF/x-compliant files. Layered PDFs allow you to save one PDF with layers that can be used in different contexts. PDF/X compliant files ease the burden of color, font, and trapping issues in printing. Next, you will save this project as a PDF so that you can send it to someone else to view.

- 1 Choose File > Save As. In the Save As dialog box, choose Adobe PDF (pdf) from the Format menu (Mac OS) or Adobe PDF (*.PDF) from the Save As Type menu (Windows). Navigate to the Lessons > Lesson04 folder, if necessary. Notice that you have the option, at the bottom of the dialog box, to save all of the artboards in the PDF or a range of artboards. Click Save.
- 2 In the Save Adobe PDF dialog box, click the Adobe PDF Preset menu to see all of the different PDF presets available. Ensure that [Illustrator Default] is chosen and click Save PDF.

● **Note:** If you want to learn about the options and other presets in the Save Adobe PDF dialog box, choose Help > Illustrator Help and search for "Creating Adobe PDF files."



There are many ways that you can customize the creation of a PDF. Creating a PDF using the [Illustrator Default] preset creates a PDF in which all Illustrator data is preserved. PDFs created with this preset can be reopened in Illustrator without any loss of data. If you are planning on saving a PDF for a particular purpose, such as viewing on the Web or printing, you may wish to choose another preset or adjust the options.

- 3 Choose File > Save, if necessary, and then choose File > Close.

Review questions

- 1 Name two ways to change the size of an existing active artboard.
- 2 How can you rename an artboard?
- 3 What is the *ruler origin*?
- 4 What is the difference between *artboard rulers* and *global rulers*?
- 5 Briefly describe what the Scale Strokes & Effects option does.
- 6 Name at least three transformations that can be applied with the Free Transform tool.

Review answers

- 1 To change the size of an existing artboard, you can double-click the Artboard tool (⇧) and edit the dimensions of the active artboard in the Artboard Options dialog box. Select the Artboard tool, position the pointer over an edge or corner of the artboard, and drag to resize. Select the Artboard tool, click an artboard in the Document window, and change the dimensions in the Control panel.
- 2 To rename an artboard, you can select the Artboard tool (⇧) and click within the bounds of an artboard to select it. Then, change the name in the Name field in the Control panel. You can also double-click the name of the artboard in the Artboards panel (⇧) to rename it or click the Options button (⌘) in the Artboards panel to enter the name in the Artboard Options dialog box.
- 3 The ruler origin is the point where 0 (zero) appears on each ruler. By default, the ruler origin is set to be 0 (zero) in the top-left corner of the active artboard.
- 4 There are two types of rulers in Illustrator: artboard rulers and global rulers. Artboard rulers, which are the default rulers, set the ruler origin at the upper-left corner of the active artboard. Global rulers set the ruler origin at the upper-left corner of the first artboard, no matter which artboard is active.
- 5 The Scale Strokes & Effects option, found in the Transform panel (or in Illustrator > Preferences > General [Mac OS] or Edit > Preferences > General [Windows]), scales any strokes and effects as the object is scaled. This option can be turned on and off, depending on the current need.
- 6 The Free Transform tool (⇧) can perform a multitude of transformation operations, including move, scale, rotate, shear, and distort (perspective distort and free distort).