

# 3 USING SHAPES TO CREATE ARTWORK FOR A POSTCARD

## Lesson overview

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

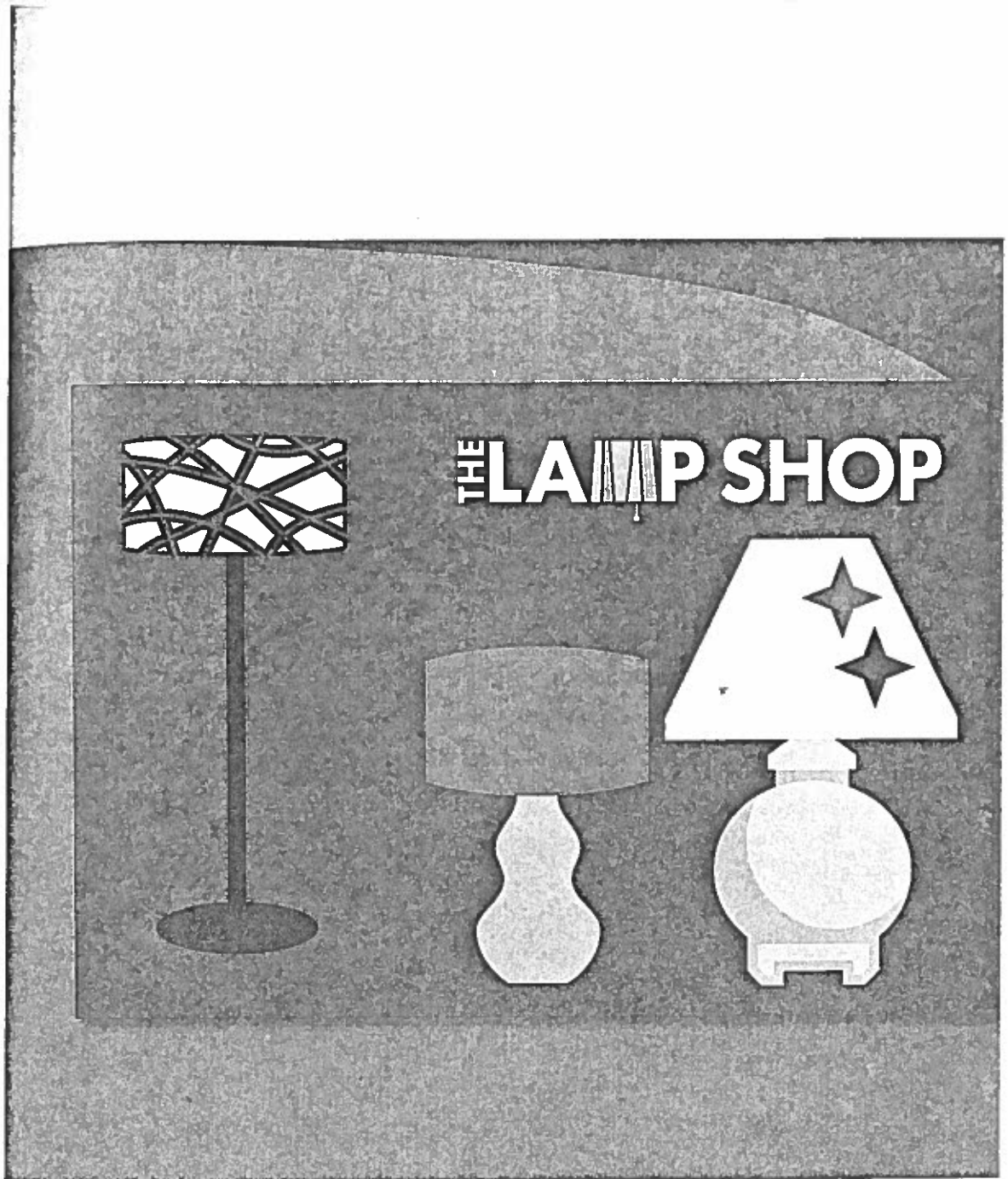
- Create a document with multiple artboards.
- Use tools and commands to create basic shapes.
- Understand Live Shapes.
- Scale and duplicate objects.
- Join and outline objects.
- Edit strokes with the Width tool.
- Work with the Shape Builder tool.
- Work with Pathfinder commands to create shapes.
- Work with drawing modes.
- Use Image Trace to create shapes.



This lesson takes approximately 90 minutes to complete.

Download the project files for this lesson from the Lesson & Update Files tab on your Account page at [www.peachpit.com](http://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 create documents with multiple artboards and many kinds of objects by starting with a basic shape, and then editing it to create new shapes. In this lesson, you'll create a new document, and then create and edit some basic shapes for a postcard.

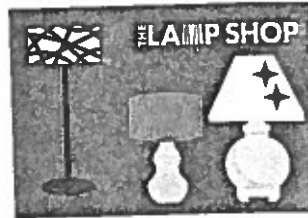
# Getting started

In this lesson, you'll explore the different methods for creating artwork using the shape tools and various creation methods to create artwork for a postcard.

- 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.

**Note:** If you have not already downloaded the project files for this lesson to your computer from your Account page, make sure to do so now. See the "Getting Started" section at the beginning of the book.

- 3 Choose File > Open. Locate the file named L3\_end.ai, which is in the Lesson03 folder in the Lessons folder that you copied onto your hard disk. These are the finished illustrations that you will create in this lesson.
- 4 Choose View > Fit All In Window and leave the file open for reference, or choose File > Close.



## Creating a new document

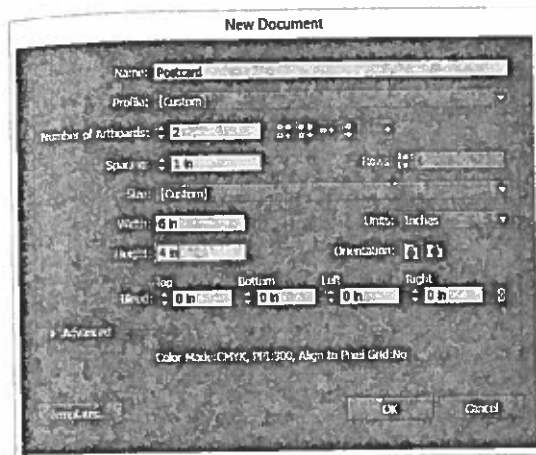
You will now create a document for the postcard that will have two artboards, each with content that you will later combine.

- 1 Choose File > New to open a new, untitled document. In the New Document dialog box, change the following options:
  - Name: **Postcard**
  - Profile: Choose **Print** (the default setting).
  - Number Of Artboards: **2** (to create two artboards). (When you change the number of artboards, the Profile changes to [Custom].)
  - Arrange By Row (☑): **Selected**
  - Make sure that the Left To Right Layout arrow (☑) is showing.

Next, you'll jump to the units so that the rest of the changes are in inches.

- Units: **Inches**
- Spacing: **1** (The spacing value is the distance between each artboard.)
- Width: **6 in** (You don't need to type the in for inches, since the units are set to inches.)
- Height: **4 in**

**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 a window's size.



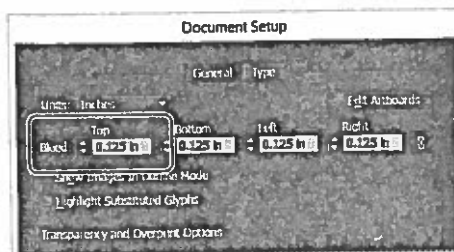
● **Note:** You can set up a document for different kinds of output, such as print, Web, video, and more, by choosing a Profile. For example, if you are designing a Web-page mockup, you can use a Web document profile, which automatically displays the page size and units in pixels, changes the color mode to RGB, and changes the raster effects to Screen (72 ppi).

- 2 Click OK in the New Document dialog box.
- 3 Choose File > Save As. In the Save As dialog box, ensure that the name of the file is **Postcard.ai** (Mac OS) or **Postcard** (Windows), and choose the Lesson03 folder. Leave the Format option set to Adobe Illustrator (.ai) (Mac OS) or Save As Type option set to Adobe Illustrator (\*.AI) (Windows), and click Save. In the Illustrator Options dialog box, leave the Illustrator options at their default settings and click OK.
- 4 Click the Document Setup button in the Control panel.
 

The Document Setup dialog box is where you can change the artboard size (by clicking the Edit Artboards button), units, bleeds, and more, after a document is created.
- 5 In the Bleed section of the Document Setup dialog box, change the value in the Top field to **0.125 in**, either by clicking the Up Arrow to the left of the field once or by typing the value, and all four fields change. Click OK.

► **Tip:** To learn more about the New Document dialog options, search for "New document dialog" in Illustrator Help (Help > Illustrator Help).

● **Note:** If the Document Setup button does not appear in the Control panel, it may mean that center in the document is selected. You can also choose File > Document Setup.



Notice the red line that appears around both artboards. The red line indicates the bleed area. Typical bleeds for printing are about 1/8 of an inch, but it can depend on the printing vendor.

● **Note:** You could have set up the bleeds when you first set up the document in the New Document dialog box by choosing File > New.

## Working with basic shapes


In the first part of this lesson, you'll create some lamps for the postcard using basic shapes, like rectangles, ellipses, rounded rectangles, and polygons. You'll begin this exercise by setting up the workspace.

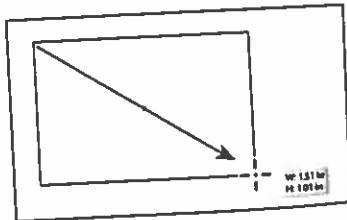
- 1 Choose **Window > Workspace > Essentials** (if it's not already selected), and then choose **Window > Workspace > Reset Essentials**.
- 2 Choose **View > Rulers > Show Rulers** to display rulers along the top and left side of the Document window (if they are not already showing).

The ruler units are inches because you specified them in the New Document dialog box. You can change the ruler units for all documents or for the current document only. The ruler unit shows when measuring objects, moving and transforming objects, setting grid and guide spacing, and creating shapes. It does not affect the units used in the Character, Paragraph, and Stroke panels. The units used in these panels can be changed by choosing (Illustrator > Preferences > Units [Mac OS] or Edit > Preferences > Units [Windows]).

### Creating rectangles

First, you'll create a series of rectangles that will be the start of a lamp on the postcard. Rectangles and rounded rectangles are considered Live Shapes. This means that attributes like width, height, rotation, corner radius, and corner style are still editable later and are retained even if you scale or rotate the shape.

- 1 Make sure that the number 1 is showing in the Artboard Navigation area in the lower-left corner of the Document window, which indicates that the first artboard is showing. Choose **View > Fit Artboard In Window**.
- 2 Select the Rectangle tool () in the Tools panel. Position the pointer anywhere in the artboard, and click and drag down and to the right. As you drag, notice the gray tool tip that appears indicating width and height. Drag until the rectangle is approximately 1.5 in wide and has a height of 1 in, as seen in the tool tip next to the cursor.



As you drag to create shapes, the tool tip that appears next to the pointer is called the *measurement label* and is a part of the Smart Guides (**View > Smart Guides**), which will be discussed later in this lesson. When you release the mouse button, the rectangle is selected. Also, by default, shapes are filled with a white color and have a black stroke (border). A shape with a fill can be selected and moved by first positioning the pointer anywhere inside the shape and then clicking and dragging.

You can also hide the rulers by Command+R (Mac OS) or Ctrl+R (Windows).

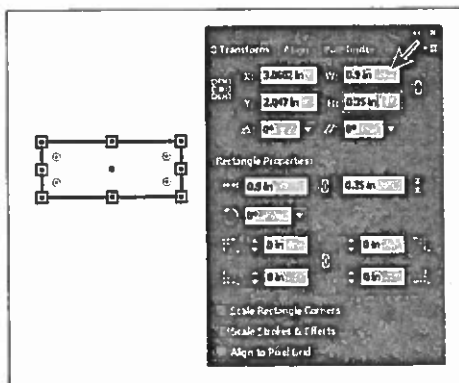
Note: As you go through this section, that you don't match the sizes drawn shapes. They are just as a guide.

After drawing a shape, you can easily edit its size, position, and more using any number of methods.

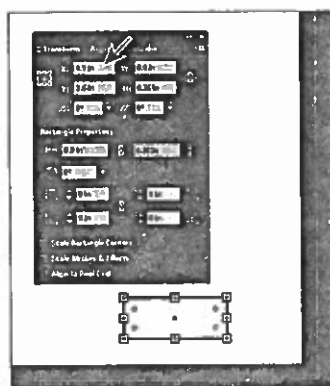
- 3 Choose **Window > Transform**. In the Transform panel that appears, change the size of the selected object by typing **0.9** for the width (W:) and **0.35** for the height (H:). Typing the **in** for inches isn't necessary; it is added automatically.

From the Transform panel, you can change the appearance of your Live Rectangle, including its dimensions, rotation, and corner properties. The center point of the rectangle lets you drag to align the object with other elements in your artwork.

- 4 Change the X value to **4.9** and the Y value to **3.6** to move the rectangle *relative* to the upper-left corner of the artboard. Press **Enter** or **Return** after typing in the Y value to accept it.

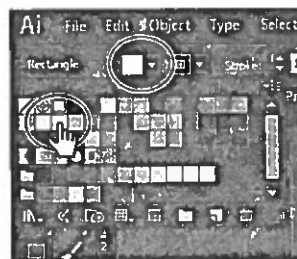


Change the width and height.



Change the position.

- 5 With the new rectangle still selected, click the Fill color (□) in the Control panel to open the Swatches panel. When you position the pointer over colors in the panel, a tool tip with the color name appears. We chose a yellow/green swatch with the tool tip that shows **"C=20 M=0 Y=100 K=0."**



- 6 Press the **Escape** key to hide the Swatches panel.

Next, you will create another rectangle by entering values (like Width and Height) rather than by drawing it. Using any of the shape tools, you can either draw a shape or click on the artboard with a shape tool selected to enter values in a dialog box. This rectangle will become another part of the lamp.

- 7 With the Rectangle tool still selected, position the pointer above the rectangle you drew on the artboard and click.

► **Tip:** Holding down the **Option** (Mac OS) or **Alt** (Windows) key as you drag with the Rectangle, Rounded Rectangle, or Ellipse tool draws a shape from its center point rather than from its upper-left corner. Holding down the **Shift** key as you draw with the Rectangle, Rounded Rectangle, or Ellipse tool selected draws a shape in perfect proportion (a square, rounded corner square, or circle).

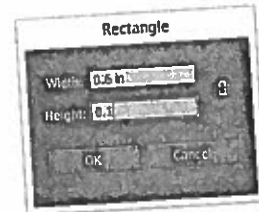
► **Tip:** If you would like the Transform panel to open every time you create a rectangle or rounded rectangle, you can choose **Show On Rectangle Creation** in the Transform panel menu (☰) to toggle it on and off.

► **Tip:** You also could have simply copied and pasted the original rectangle and changed its size and position. You can also Option-drag (Mac OS) or Alt-drag (Windows) a shape to create a copy.

The Rectangle dialog box appears. In the Rectangle dialog box, the width and height values that you see match the last shape drawn.

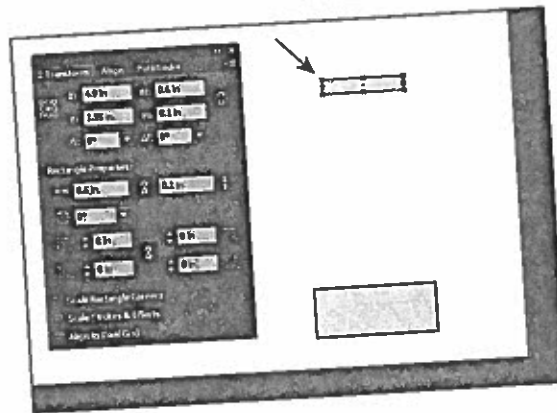
- 8 In the Rectangle dialog box, change the Width to 0.6 in, press the Tab key, and change the Height to 0.1. Click OK.

Notice that the new rectangle has the same fill color and stroke as the previous shape you drew.



- 9 Select the Selection tool (⬇) in the Tools panel. Drag the new rectangle about halfway up the artboard, above the first rectangle you drew.

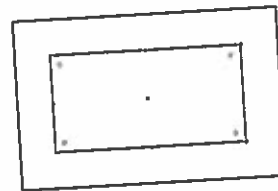
This is just to get the shape out of the way of some new shapes you will be creating.



- 10 With the new rectangle still selected, click the Fill color in the Control panel to open the Swatches panel. Choose the yellow swatch with the tool tip that shows "C=5 M=0 Y=90 K=0." Press the Escape key to hide the Swatches panel.

## Working with the document grid

The grid allows you to work more precisely by creating a series of non-printing horizontal and vertical guides behind your artwork in the Document window that objects can snap to. To turn the grid on and use its features, do the following:



- To show the grid, choose View > Show Grid. To hide the grid, choose View > Hide Grid.
- To snap objects to the gridlines, choose View > Snap To Grid, select the object you want to move, and drag it to the desired location. When the object's boundaries come within 2 pixels of a gridline, it snaps to the point.
- To specify grid properties such as the spacing between gridlines, grid style (lines or dots), grid color, or whether grids appear in the front or back of artwork, choose Illustrator > Preferences > Guides & Grid (Mac OS) or Edit > Preferences > Guides & Grid (Windows).

—From Illustrator Help

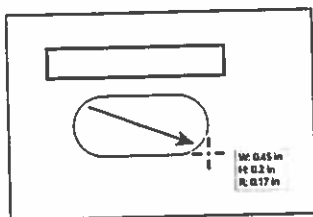
## Creating a rounded rectangle

Next, you'll create a rectangle with rounded corners for another part of the illustration. You'll also round the corners of one of the existing rectangles. This involves working with Live Corners.

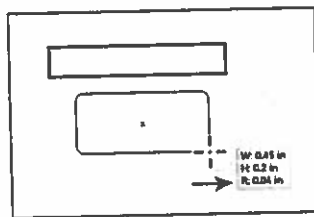
- 1 Select the Zoom tool (Q) in the Tools panel, and click once, on the smaller rectangle you created.
- 2 Click and hold down the mouse button on the Rectangle tool (M), and select the Rounded Rectangle tool (R) in the Tools panel.
- 3 Position the pointer below the smaller rectangle. Click and drag down and to the right until the rectangle has an approximate width of 0.45 inches and a height of 0.2 inches, but *do not release the mouse button yet*. With the mouse button still held down, press the Down Arrow key a few times to see the corner radius become less rounded (the R value in the tool tip). Press the Up Arrow key to see the corner become more rounded. Don't worry about the R (radius) value in the tool tip since we can edit it later, and release the mouse button.

► **Tip:** You can also press and hold the Down Arrow or Up Arrow key to change the corner radius faster.

● **Note:** The values you see in the measurement label may not be the same as you see in the figure, and that's okay.



Draw the rounded rectangle.

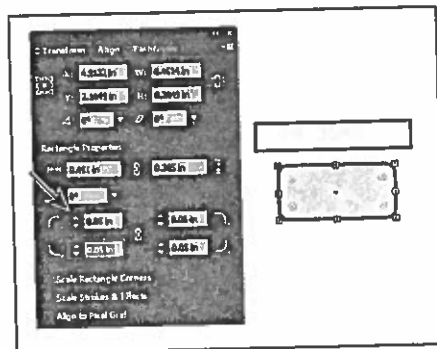


Change the corner radius.

- 4 With the new rectangle still selected, click the Fill color in the Control panel to open the Swatches panel. Choose the yellow swatch with the tool tip that shows "C=20 M=0 Y=100 K=0." Press the Escape key to hide the Swatches panel.

- 5 With the rounded rectangle selected, change the upper-left corner radius to 0.05 in by typing the value into the field in the Transform panel. Click in another field, or press the Tab key to see the other corners change as well. The Link Corner Radius Value button (⌘) is on by default.

By default, the corners are rounded, but you will see shortly that you can choose from three corner types.



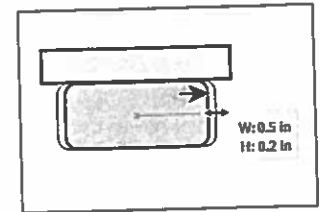
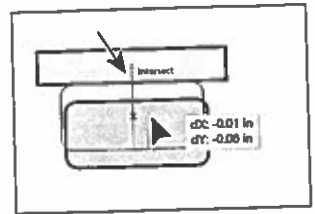
► **Tip:** You can also edit the corner radius and type for all corners at once in the Control panel.

Next, you'll use Smart Guides to help you align the rounded rectangle to the smaller rectangle.



► **Tip:** The color of the Smart Guides can be changed from green to another color by choosing **Illustrator > Preferences > Smart Guides (Mac OS)** or **Edit > Preferences > Smart Guides (Windows)**.

- 6 Select the Selection tool (⌘) in the Tools panel. Drag the rounded rectangle up so that it's centered horizontally with the rectangle above it and so that its top edge snaps to the bottom of that same rectangle, as shown in the figure. When the word "intersect" and the green line(s) appear (Smart Guides), release the mouse button.
- 7 With the rounded rectangle selected, click and drag the right, middle bounding point to the right. As you drag, press the Option (Mac OS) or Alt (Windows) key. This allows you to resize from the center of the shape. Drag until the width is approximately 0.5 in, release the mouse button, and then release the modifier key.

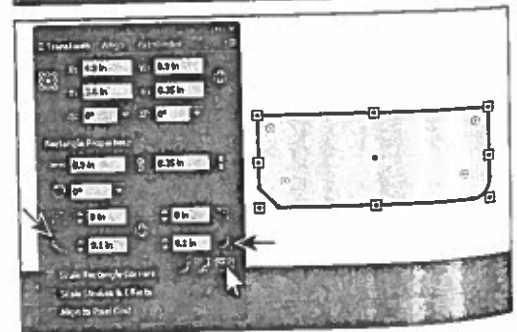
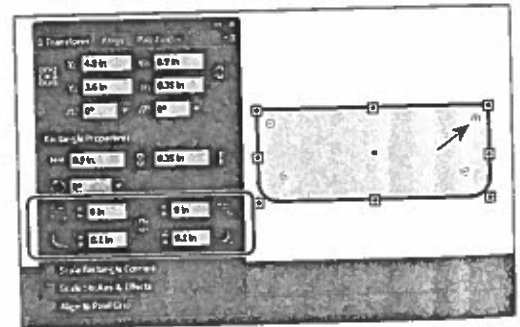


## Editing the corners of a Live Shape

After creating a rectangle or rounded rectangle, you can later easily edit the corner radius and the corner type. Next, you will edit the corner radius and type of the larger rectangle you drew.


► **Tip:** In the Transform panel, with a Live Shape selected, you will see the **Scale Rectangle Corners** option. With this option selected, if you were to scale the Live Shape larger or smaller, the corner radius would scale as well. Otherwise, without the option selected, the corner radius would stay the same.

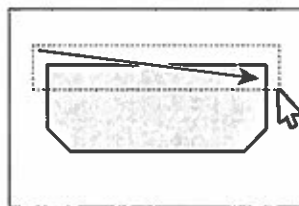
- 1 With the Selection tool (⌘) selected, click to select the larger rectangle beneath the other two shapes, and notice that the shape has four corner widgets that you can drag to edit all of the corners at one time (an arrow is pointing to one in the figure). You may need to scroll down in the Document window to see it.
- 2 In the Transform panel, click the **Link Corner Radius Values** button (⌘) to turn it off. That way you can edit the corners independently. Change the lower-left and lower-right corner radius values to 0.1 in.
- 3 In the Transform panel, click the lower-left **Corner Type** button and select the **Chamfer** option to edit the type of corner. Do the same for the lower-right corner type (shown in the figure).



Another method for editing the corners of a Live Shape involves editing the corner widgets directly on the selected shape(s), which is what you'll do next. You may want to zoom in further to the selected rectangle.

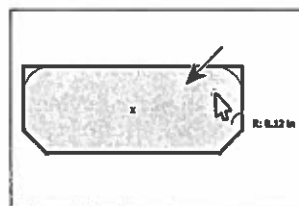
4 Choose **Select > Deselect**.

5 Select the **Direct Selection tool** () and drag a marquee across the top half of the rectangle to select the top two corner points.



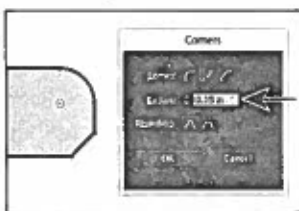
Notice that there are now two corner widgets showing, one for each of the selected anchor points. Using the following method allows you to edit the corner radius and type for only the selected anchor points in one shape or across multiple shapes.

6 Click either corner widget and drag it toward the center of the shape without worrying about how much right now. The corners of a drawn shape are referred to as **Live Corners**.



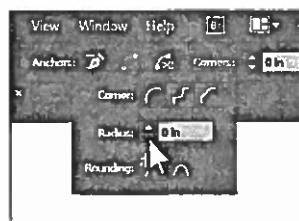
If you were drag too far, you would see a bold red line appear, indicating that you can drag no further.

7 Double-click either corner widget to open the **Corners** dialog box. In the dialog box, change the **Radius** value to **0.15 in** and click **OK**.



The **Corners** dialog box allows you to edit the corner type and radius, but it also has an extra option called **Rounding** for setting absolute versus relative rounding. **Absolute** means the rounded corner is exactly the radius value. **Relative** makes the radius value based on the angle of the corner point.

8 Click the word **Corners** in the **Control panel** to show the same **Corners** options as a menu. Change the **Corner Radius** value to **0** (zero) and click away from the shape to **deselect** it.



Setting the radius to **0** (zero) for the selected anchor points is one way of removing the corner radius from the selected anchor points.

9 Choose **View > Fit Artboard In Window**.

10 Choose **File > Save** and leave the **Transform** panel open.

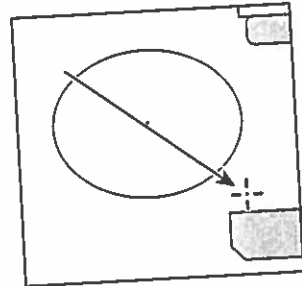
**Tip:** You can **Option-click** (Mac OS) or **Alt-click** (Windows) a corner widget in a shape to cycle through the different corner types.

## Creating an ellipse

Next, you'll draw an ellipse using the Ellipse tool (⌘) to make up the next part of the lamp. The Ellipse tool can draw perfect circles when you press and hold the Shift key as you draw, or it can draw an ellipse without a modifier key.

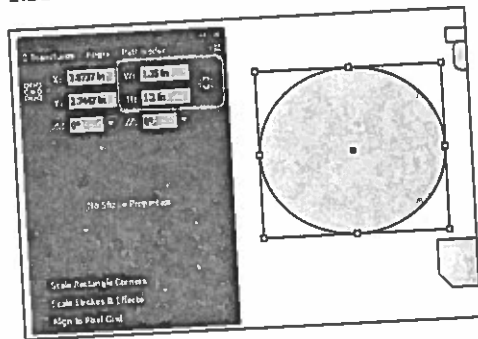
- 1 Click and hold down the mouse button on the Rounded Rectangle tool (⌘) in the Tools panel, and select the Ellipse tool (⌘).
- 2 Choose View > Smart Guides to turn them off. Next, you will create a shape with no Smart Guides turned on to see the difference.
- 3 Position the pointer over a blank area of the artboard. Begin dragging down and to the right to draw a circle that isn't very large (see the figure).

Notice that you cannot see the size of the circle in the measurement tool tip, since the tool tip is part of the Smart Guides that were turned off. The green alignment guides are also not showing, since the shape is not snapping to other content on the artboard. Smart Guides can be useful in certain situations, such as when more precision is necessary, and can be toggled on and off when needed.



- 4 Select the Selection tool (⌘), and in the Transform panel, ensure that the Constrain Width And Height Proportions is turned off. Change the Width to 1.35 in and the Height to 1.2 in.

**Note:** An ellipse is not a Live Shape like a rectangle or rounded rectangle, so you will see "No Shape Properties" in the Transform panel.

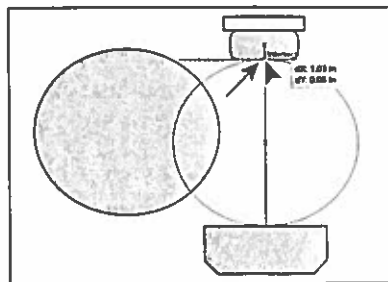


- 5 Choose View > Hide Bounding Box.

The bounding box, as you saw in previous lessons, allows you to transform the shape. With the bounding box not showing, you can drag the shape by an edge or an anchor point without transforming it.

- 6 Choose View > Smart Guides to turn them back on.

- 7 Click and drag the ellipse by the anchor point at the very top of the shape to the center, bottom of the smaller rounded rectangle. Release the mouse button when the ellipse snaps. Don't worry about the position of your larger rectangle toward the bottom of the artboard. You'll position that later on.



- 8 Choose View > Show Bounding Box.
- 9 Choose Select > Deselect, and then choose File > Save.

## Creating polygons

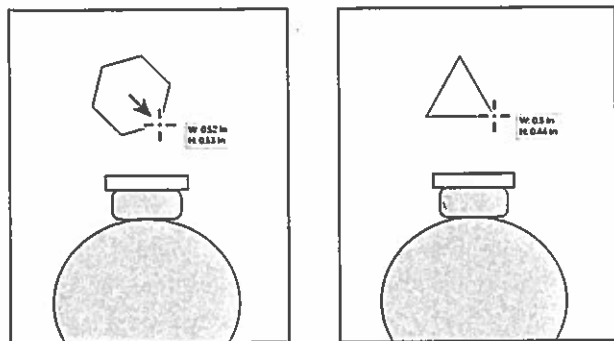
Now you'll create a triangle using the Polygon tool (▢) to finish the lamp. Polygons are drawn from the center by default, which is different than the other tools you've worked with so far.

- 1 Click and hold down the mouse button on the Ellipse tool (○) in the Tools panel, and select the Polygon tool (▢).
- 2 Click the Fill color in the Control panel, and select the yellow color you've already used with the tool tip values "C=5 M=0 Y=90 K=0." Press the Escape key to hide the Swatches panel.

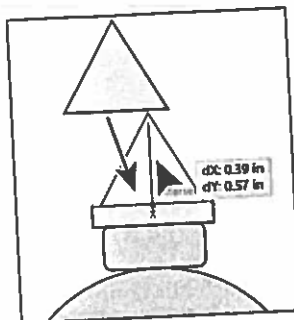
Next, you'll draw a triangle with the Polygon tool. By default, the Polygon tool draws a six-sided shape, but we need a three-sided shape. As you draw, you will press arrow keys to increase or decrease the number of sides on the shape.

- 3 Position the pointer above the top yellow rectangle. Drag to the right to begin drawing a polygon, but *don't release the mouse button yet*. Press the Down Arrow key three times to reduce the number of sides on the polygon to three (a triangle), and don't release the mouse yet. Hold down the Shift key to straighten the triangle. Without releasing the Shift key, drag left or right until the Smart Guides measurement label displays a width of approximately 0.5 in. Release the mouse, and then release the modifier key.

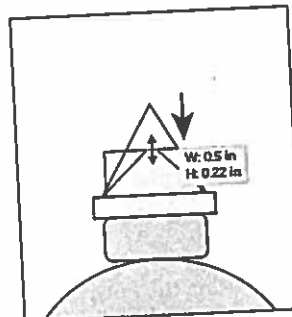
► **Tip:** You could also click in the Document window with the Polygon tool (▢) selected and edit the shape values in the Polygon dialog box.



- 4 Select the Selection tool (⌘) in the Tools panel, and drag the triangle from its center until the bottom of the triangle snaps to the top of the yellow rectangle beneath it. The word "intersect" appears when it is snapped.
- 5 With the Selection tool, drag the top point of the triangle down until the measurement label shows a height of *approximately* 0.22 in.



Snap the triangle to the rectangle.



Change the height of the triangle.

- 6 In the Transform panel, change the Width (W) to 0.6 in to match the rectangle beneath it.
- 7 Choose Select > Deselect.

### Creating stars

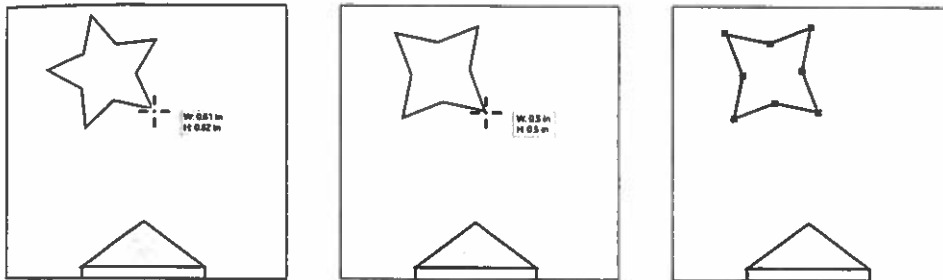
Next, you'll use the Star tool (☆) to create a few stars to decorate the lampshade you'll create later. When drawing with the Star tool, you'll use a few keyboard modifiers to get the number of points you want and to change the radius of the arms of the star (the length of the arms). Here are the keyboard modifiers you will use when drawing the star, and what each does:

- **Arrow keys:** Pressing the Up Arrow and Down Arrow adds and removes points from the star as you draw it.
- **Shift:** Straightens the star (constrains it).
- **Command (Mac OS) or Ctrl (Windows):** Pressing the key and dragging while creating a star allows you to change the radius of the arms of the star (make them longer or shorter).

- 1 Click and hold down the mouse button on the Polygon tool (⬡) in the Tools panel, and select the Star tool (☆). Position the pointer above the shapes already on the artboard.

Next, you will create a few stars to get the hang of how it works.

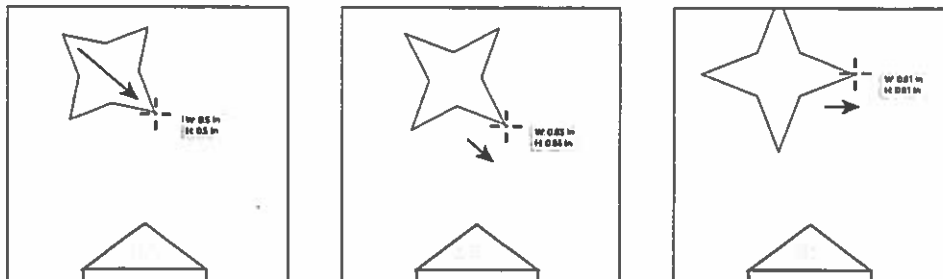
- 2 Click and drag slowly to the right to create a star shape. Notice that as you move the pointer, the star changes size and rotates freely. Without releasing the mouse button, stop dragging and press the Down Arrow key once (to decrease the number of points on the star to four). Drag the mouse until you see a width of approximately 0.5 in and stop dragging. Release the mouse button.



- 3 Delete the star you just created.

Next, you will create a star that is straight (constrained), and has arms that are a little longer. This requires that you edit the star you create using two keyboard modifiers.

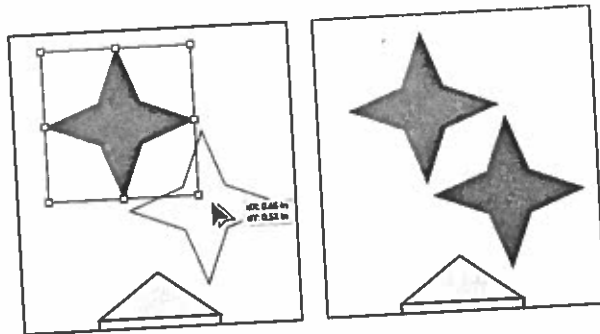
- 4 Click and drag slowly to the right to create a star shape. Notice that it has the same number of points as the last star you created (four). Drag until you see a width of approximately 0.5 in, then press the Command (Mac OS) or Ctrl (Windows) key, and continue dragging to the right. This keeps the inner radius constant, making the arms longer. Drag until you see a width of approximately 0.65 in and stop dragging, *without releasing the mouse button*. Release the Ctrl or Command key, but not the mouse. Hold down the Shift key, and ensure that the star has a width of about 0.8 in. Release the mouse button, and then release the Shift key, and you should see a star.



The next time you draw a star, it will have the same settings. If you want to practice creating another star, try using the keyboard modifiers you've explored. Remember, do not release the mouse button until you are sure you are finished drawing the star. If you do try a few more, delete them and then select the star you made in this step before moving on. Your star doesn't have to exactly match the stars in the figures.

► **Tip:** You can also click in the Document window with the Star tool (★) and edit the options in the Star dialog box instead of drawing it.

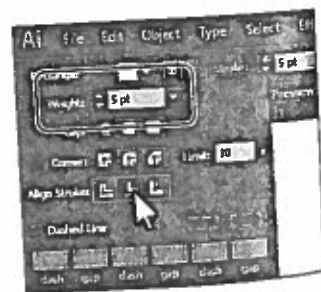
- 5 Change the Stroke weight of the selected star, to the right of the word "Stroke" in the Control panel, to 0.
- 6 Change the Fill color in the Control panel to the orange color with the tool tip "C=0 M=80 Y=95 K=0." Press the Escape key to hide the Swatches panel.
- 7 Select the Selection tool (⌘) and Option-drag (Mac OS) or Alt-drag (Windows) to create a copy of the star (see the following figure). Release the mouse button and then the key.
- 8 Change the Fill color of the copy in the Control panel to the red color with the tool tip "C=15 M=100 Y=90 K=10."
- 9 Choose Select > Deselect.



## Changing stroke width and alignment

So far in this lesson, you've edited the fill of shapes, but haven't touched the strokes (a visible outline or border of an object or path). Every shape and path, by default, is created with a 1-point black stroke. You can easily change the color of a stroke or the weight of a stroke to make it thinner or thicker. Strokes are also aligned to the center of a path edge by default, but you can change the alignment as well using the Stroke panel.

- 1 Click to select the bottom rectangle beneath the circle.
- 2 Select the Zoom tool (Q) in the Tools panel, and click that rectangle once to zoom in. You may need to move the Transform panel out of your way.
- 3 Click the word "Stroke" in the Control panel to open the Stroke panel. In the Stroke panel, change the Stroke weight to 5 pt. Notice that the stroke of the rectangle is centered on the edge of the shape by default.
- 4 Click the Align Stroke To Inside button (L) in the Stroke panel. This aligns the stroke to the inside edge of the rectangle.
- 5 With the rectangle still selected, click the Stroke color in the Control panel (to the left of the word "Stroke"), and change the stroke color to the yellow used earlier, the one with the tool tip "C=5 M=0 Y=90 K=0." Press the Escape key to hide the panel.

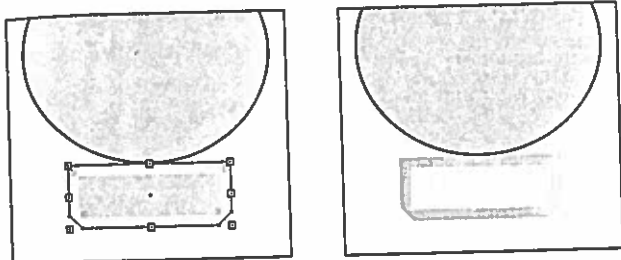


**Note:** You can also open the Stroke panel by choosing Window > Stroke, but you may need to choose Show Options from the panel menu (☰).

**Note:** Going forward, you will find that by opening a panel in the Control panel (such as the Stroke panel in this step), you will need to hide it before moving on. You can do this by pressing the Escape key.

6 Press Shift+X to swap the stroke and fill colors.

7 Choose Select > Deselect.



8 Choose File > Save.

● **Note:** If pressing Shift+X doesn't work, you can also click the Swap Fill And Stroke arrow (🔄) toward the bottom of the Tools panel.

## About aligning strokes

If an object is a closed path (such as a square), you can select an option in the Stroke panel to align the stroke along the path to the center (default), inside, or outside:



Align Stroke  
To Center



Align Stroke  
To Inside



Align Stroke  
To Outside

## Working with lines

Next, you'll work with straight lines and line segments, known as *open paths*, to create another lamp. Shapes can be created in many ways in Illustrator, and the simpler way is usually better.

- 1 Choose View > Fit Artboard In Window.
- 2 Select the Zoom tool (Q) in the Tools panel, and click once in the empty area near the upper-left corner of the artboard to zoom in.
- 3 Choose Reset Essentials from the workspace switcher in the Application bar.

So far, you've been working in the default Preview mode, which lets you see how objects are painted with fill and stroke colors. If paint attributes seem distracting, you can work in Outline mode, which you'll do next.

- 4 Choose View > Outline to switch from Preview to Outline mode.

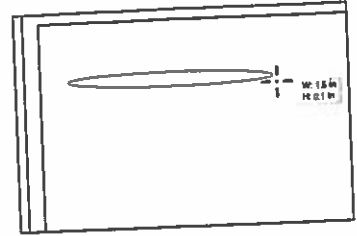
● **Note:** Outline mode temporarily removes all paint attributes, such as colored fills and strokes, to speed up selecting and redrawing artwork. You can't select or drag shapes by clicking in the middle of a shape, because the fill temporarily disappears.



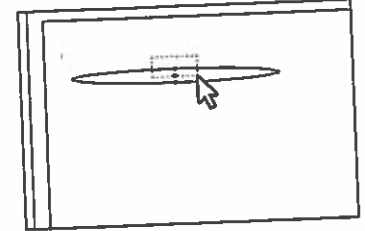
**Note:** When you drag to select, make sure that you do not drag across the points on the left and right ends of the ellipse.

**Tip:** Another method for cutting a path is to use either the Scissors tool or the Knife tool. You will learn about using the Scissors tool and Knife tool for cutting paths in Lesson 5, "Creating an Illustration with the Drawing Tools."

- Click and hold down the mouse button on the Star tool (★) in the Tools panel, and select the Ellipse tool (○). In a blank area near the top of the artboard, draw an ellipse that has a width of 1.5 in and a height of 0.1 in, as shown in the measurement label that appears.



- Select the Direct Selection tool (⌘) in the Tools panel. Drag across the top anchor point to select it. See the figure for where to create the selection.



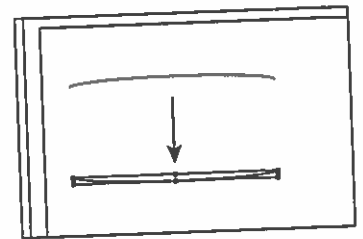
Dragging across a path will select the line segment and anchor points associated with it. If you drag across an anchor point in a path, you also select the line segments on either side of the anchor point.

- Choose Edit > Cut, and then choose Edit > Paste In Front to create a new path that is directly on top of the original.

This copies and pastes only the top half of the ellipse as a single path, because that is what you selected with the Direct Selection tool.

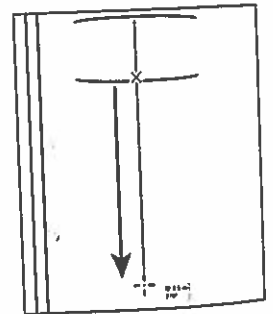
- Select the Selection tool (⬇), and select the bottom half of the shape. Press Shift+Down Arrow five times to move the line down.

Pressing an arrow key will move a selected object 1 pt, by default. Pressing Shift+arrow will move an object 10 pts per arrow keypress.



- Choose View > Fit Artboard In Window.

- Select the Line Segment tool (—) in the Tools panel. Position the point over the center of the path you just moved down (see the red X in the figure). When the word "anchor" appears, press the Shift key and drag down until you see roughly D: 2.5 in. The "D:" in the measurement label is Distance. Release the mouse button and then the Shift key.




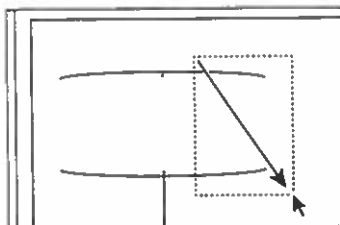
- With the line selected, change the Stroke weight to 9 pt and change the Stroke color to Black in the Control panel.

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

## Joining paths

Suppose you draw a “U” shape and later decide you want to close the shape, essentially joining the ends of the “U” with a straight path. If you select the path, you can use the Join command to create a line segment between the end points, closing the path. When more than one open path is selected, you can join them together to create a closed path. You can also join the end points of two separate paths. Next, you will join the two paths to create a single closed path.

- 1 Select the Selection tool () in the Tools panel. Drag a selection marquee across the two paths. Make sure not to select the line you just drew.

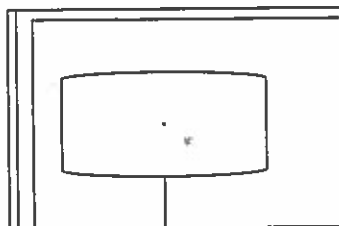


- 2 Choose Object > Path > Join. Notice that the anchor points on the left side of the paths are now joined with a path.


- 3 Choose Object > Path > Join once more.

- 4 Choose Select > Deselect to see the closed path.


When you apply the Join command to two or more open paths, Illustrator first looks for and joins the paths that have end points stationed closest to each other. This process is repeated every time you apply the Join command until all paths are joined.

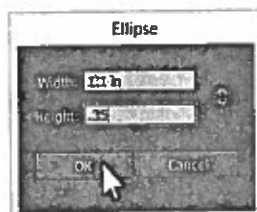


► **Tip:** If you want to join specific anchor points from separate paths, select the anchor points and press Command+J (Mac OS) or Ctrl+J (Windows).

► **Tip:** In Lesson 5, “Creating an Illustration with the Drawing Tools,” you’ll learn about the Join tool () , which allows you to join two paths at a corner, keeping the original curve intact.

● **Note:** If you only want to fill the shape with a color, it is not necessary to join the path to make a closed path. An open path can have a color fill. It is, however, necessary to join a path if you want a stroke to appear around the entire fill area.

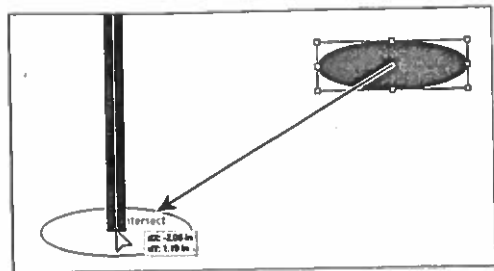
- 5 Choose View > Preview.
- 6 Click the joined path to select it and press the letter D to apply the default black 1 pt stroke and white fill. Change the Stroke weight in the Control panel to 2 pt.
- 7 Select the Ellipse tool () in the Tools panel and click the artboard. In the Ellipse dialog box, change the Width to 1.1 and the Height to 0.35. Click OK.
- 8 Change the Fill color to Black and change the Stroke weight to 0 in the Control panel.



● **Note:** On Windows, if your machine supports it, you may see View > Preview On CPU instead of View > Preview.

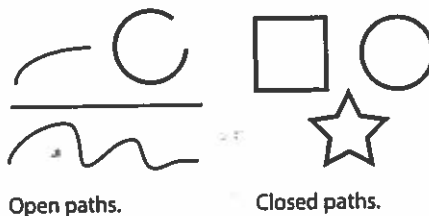
- 9 Press the letter V to select the Selection tool. Drag the ellipse from the center to the bottom of the vertical path you drew. Snap the center to the bottom of the path.

Don't worry if the bottom of the lamp is off the bottom of the artboard. Later, you will align all of the lamps to each other.



## Open path vs. closed path




As you draw, you create a line called a *path*. A path is made up of one or more straight or curved segments. The beginning and end of each segment is marked by anchor points, which work like pins holding a wire in place. A path can be closed (for example, a circle), or open, with distinct endpoints (for example, a wavy line).




Both open and closed paths can have fills applied to them.

—From Illustrator Help

## Editing and combining paths and shapes

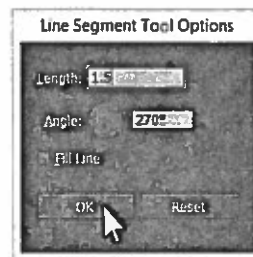
In Illustrator, you can edit and combine paths and shapes in different ways to achieve what you want. This includes working with the Width tool () , outlining strokes, the Shape Builder tool () , Pathfinder effects, and the Eraser tool () , among other features you will explore in Lesson 4, "Transforming Artwork."

### Using the Width tool

Not only can you adjust the stroke weight and the alignment of the stroke, but you can also alter regular stroke widths either by using the Width tool () or by applying width profiles to the stroke. This allows you to create a variable width along the stroke of a path.

Next, you will use the Width tool to create the base for another new lamp.

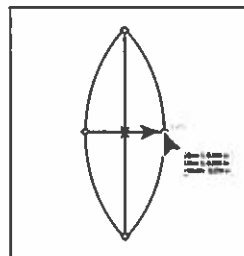
1 Select the Line Segment tool (↙) in the Tools panel, and click roughly in the center of the artboard. In the Line Segment Tool Options dialog box, change the length to 1.5 and leave the rest of the settings at their defaults. Click OK to create a line.



2 Make sure that the Stroke color of the line is Black, the Fill color is None (important), and that the Stroke weight is 1 pt in the Control panel.

3 Select the Zoom tool (Q) in the Tools panel and click twice, *slowly*, on the line to zoom in.

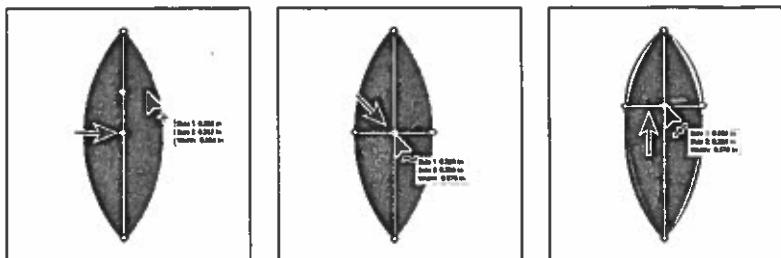
4 Select the Width tool (W) in the Tools panel. Position the pointer over the middle of the line, and notice that the pointer has a plus symbol next to it (⊕), indicating that if you click and drag, you can edit the stroke. Click and drag to the right, away from the line. Notice that, as you drag, you are stretching the stroke to the left and right equally. Release the mouse when the measurement label shows Side 1 and Side 2 at approximately 0.29 in.



The new point that is filled with blue on the original line is called the width point. The lines extending from the width point are the *handles*. Width points created at a corner or at a direct-selected anchor point stick to the anchor point during basic editing of the path.

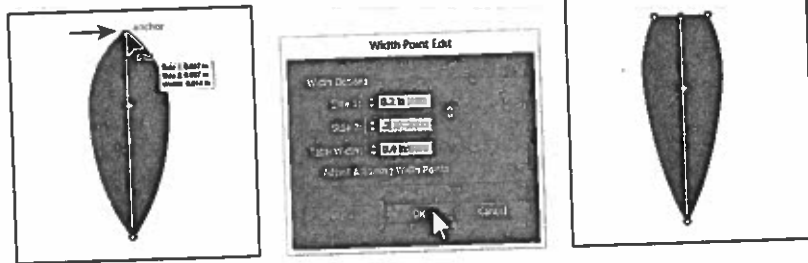
5 Click in a blank area of the artboard to deselect the path. Position the pointer over the path again and the new width point you just created will appear (an arrow is pointing to it in the figure). The width point you see in line with the pointer is where a new point would be created if you were to click. Position the pointer over the original width point and when you see lines extending from it and the pointer changes (⊕), drag it up a bit.

► **Tip:** If you select a width point by clicking on it, you can press Delete to remove it. If there was only one width point on a stroke, removing that point would remove the width completely.



Aside from clicking and dragging to add a width point to a path, you can also double-click and enter values in a dialog box. That's what you'll do next.

- 6 Position the pointer over the top anchor point of the line, and notice that the pointer has a wavy line next to it (⤴) and the word "anchor" appears. Double-click on the point to create a new width point and to open the Width Point Edit dialog box.
- 7 Change the Side 1 width to 0.2 in and change Side 2 to 0.2 in as well, and click OK.



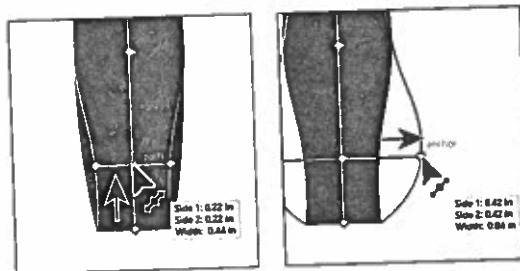
The Width Point Edit dialog box allows you to adjust the sides together or separately, using more precision. Clicking the Adjust Widths Proportionately button (⌘) would link Side 1 with Side 2 so that they adjust together, in proportion. Also, if you select the Adjust Adjoining Width Points option, any changes you make to the selected width point affect neighboring width points as well.

- 8 Double-click the bottom anchor point of the path and repeat step 7 above to make the stroke width the same at the top and bottom of the path.

You can also duplicate a width point if you like, which is what you'll do next.

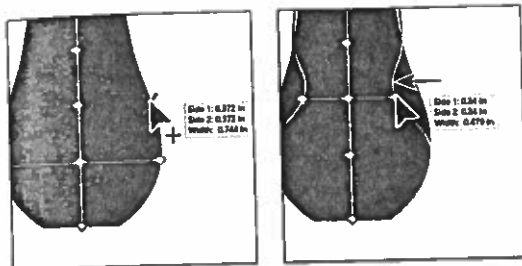
► **Tip:** You can drag one width point on top of another width point to create a discontinuous width point. If you double-click a discontinuous width point, the Width Point Edit dialog box allows you to edit both width points.

- 9 Position the pointer over the bottom anchor point of the line. Press the Option (Mac OS) or Alt (Windows) key, and drag up to duplicate the width point. Use the figure below to see roughly how far to drag. Release the mouse button, and then release the modifier key.
- 10 Position the pointer over the right end of the width point handle and drag to the right until you see a Side 1 and Side 2 of roughly 0.42 in.



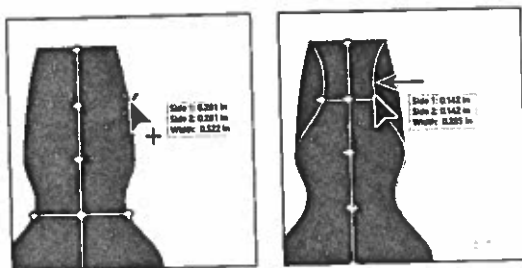
► **Tip:** If you Option-drag (Mac OS) or Alt-drag (Windows) a width point handle, you will adjust only the side you are dragging.

- 11 Position the pointer over the edge of the stroke above the last point (indicated by the red X in the figure). Click and drag to the left until you see a Side 1 width of approximately 0.24 in.

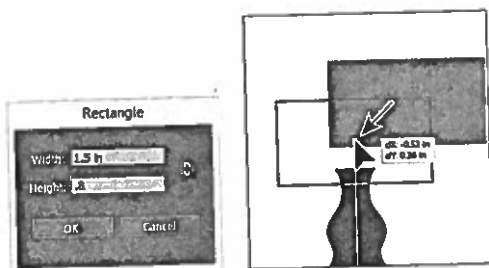


**Note:** You don't have to position the pointer over the center of the line and drag to create another width point. You can also drag from anywhere in the stroke area.

- 12 Position the pointer between the top width point and the second width point from the top. See the red X in the figure for help. Click and drag to the left until you see a Side 1 width of approximately 0.14 in.

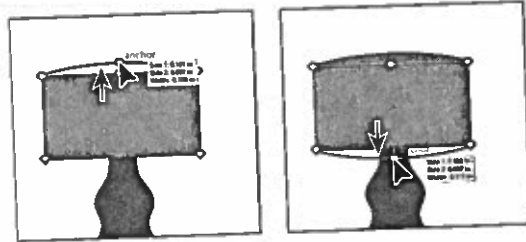


- 13 Select the Rectangle tool (▭) in the Tools panel. In the blank area above the lamp you just created, click to open the Rectangle dialog box. Change the Width to 1.5 in and the Height to 0.8 in. Click OK.
- 14 Change the Fill color to an orange with a tool tip of "C=0 M=80 Y=95 K=0" in the Control panel. Change the Stroke color to the same orange with a Stroke weight of 1 pt.
- 15 Select the Selection tool (⬅) and drag the rectangle so that it is centered with the lamp body and covers the very top. See the figure for placement help.



Next, you will use the Width tool to edit one side of the stroke, rather than both, as you've been doing.

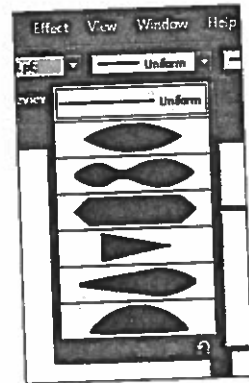
- 16 With the rectangle still selected, select the Width tool in the Tools panel. Option-drag (Mac OS) or Alt-drag (Windows) the top, middle of the stroke up until you see a value of approximately 0.1 in for Side 1 in the measurement label. Release the mouse button and then the key.
- 17 Do the same for the bottom of the rectangle—but dragging down with the Option (Mac OS) or Alt (Windows) key held down.



## Saving width profiles

After defining the stroke width, you can save the variable width profile from the Stroke panel or the Control panel by selecting a modified stroke and then clicking the Add To Profiles button at the bottom of the Variable Width Profiles menu in the Control panel or the Profile menu at the bottom of the Stroke panel.


Width profiles can be applied to selected paths by choosing them from the Variable Width Profile menu in the Control panel or the Profile menu in the Stroke panel. When a stroke with no variable width is selected, the list displays the Uniform option. You can also select the Uniform option to remove a variable width profile from an object. To restore the default width profile set, click the Reset Profiles button at the bottom of the Profile menu.





If you apply a variable width profile to a stroke, it is indicated with an asterisk (\*) in the Appearance panel.

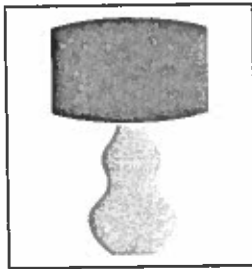
—From Illustrator Help

## Outlining strokes

Paths, such as a line, can show a stroke color but not a fill color by default. If you create a line in Illustrator and want to apply both a stroke and a fill, you can outline the stroke, which converts the line into a closed shape (or compound path). By outlining the stroke, you can no longer edit the path using the Width tool () .


Next, you will outline the stroke of the lamp you just created with the Width tool.



- 1 With the Selection tool () , select the black path you edited with the Width tool () and choose Object > Path > Outline Stroke.  
This creates a filled shape that is a closed path.
- 2 With the new shape selected, click the Fill color in the Control panel and change the color to the yellow/green that shows "C=20 M=0 Y=100 K=0" in the tool tip.
- 3 Shift-click the orange lampshade and choose Object > Group.
- 4 Choose Select > Deselect, and then choose File > Save.
- 5 Choose View > Fit Artboard In Window.

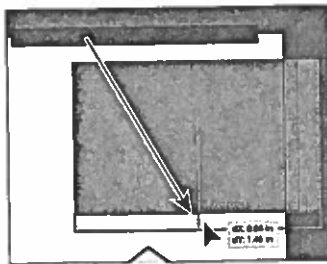


**Note:** If you outline the stroke and it shows as "Group" in the Selection Indicator on the left end of the Control panel, then there was a fill set on the line. If the artwork is a group, choose Edit > Undo Outline Stroke, apply a fill of None to the path, then try again.

## Working with the Shape Builder tool

In Illustrator, you can combine vector objects to create shapes in a variety of ways. The resulting paths or shapes differ depending on the method you use to combine the paths. The first method you will learn for combining shapes involves working with the Shape Builder tool. This tool allows you to visually and intuitively merge, delete, fill, and edit overlapping shapes and paths directly in the artwork. Using the Shape Builder tool () , you'll create a lampshade for the lamp on the right.

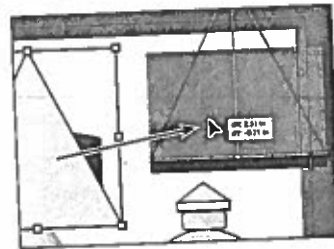
- 1 With the Selection tool () selected, Shift-click both star shapes. Choose Object > Hide > Selection to temporarily hide them.
- 2 Select the Rectangle tool () in the Tools panel. Near the top edge of the artboard on the right, above the yellow/green lamp shapes, click to open the Rectangle dialog box. Change the Width to 2 in and the Height to 1.2 in. Click OK.
- 3 Change the Fill color of the rectangle to an orange with a tool tip of "C=0 M=80 Y=95 K=0" in the Control panel, if necessary.
- 4 Click the artboard again to open the Rectangle dialog box. Ensure that the Width is still 2 in and change the Height to 0.15 in. Click OK. Change the fill of the smaller rectangle to Black in the Control panel.
- 5 With the Selection tool, drag the smaller rectangle so that its top edge snaps to the bottom of the first rectangle and aligns to its center.



**Note:** You may find that the rectangles are snapping to other content as well. In that case, you can either use Align options or move both rectangles away from other objects.

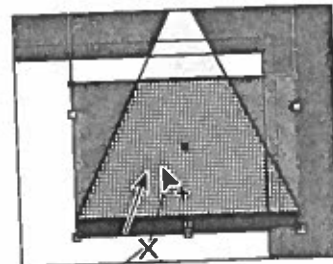


- 6 Click to select the yellow triangle at the top of the lamp shapes on the right. Choose Edit > Copy and then Edit > Paste.
- 7 In the Transform panel (Window > Transform), change the Width to 2 in and the Height to 2 in.
- 8 With the Selection tool, drag the triangle so that its bottom edge aligns with the bottom of the larger rectangle and is centered vertically with it.
- 9 Drag across all three shapes to select them. In order to edit shapes with the Shape Builder tool (⌘), they need to be selected.



Using the Shape Builder tool, you will now combine, delete, and paint these shapes.

- 10 Select the Shape Builder tool (⌘) in the Tools panel. Position the pointer below the shapes, and drag from the red X in the figure up into the larger rectangle. Release the mouse button to combine the shapes.

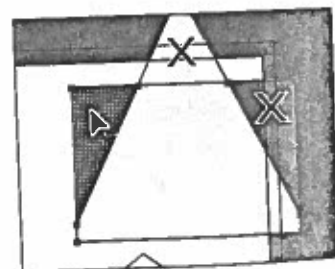


► **Tip:** You can also press the Shift key and drag a marquee across a series of shapes to combine them. Pressing Shift+Option (Mac OS) or Shift+Alt (Windows) and dragging a marquee across selected shapes with the Shape Builder tool (⌘) selected allows you to delete a series of shapes within the marquee.

When you select the Shape Builder tool, the overlapping shapes are divided into separate objects temporarily. As you drag from one part to another, a red outline appears, showing you what the final shape outline will look like when it merges the shapes together.

► **Tip:** You can also press the Option (Mac OS) or Alt (Windows) key and drag through a series of shapes to delete them all at once.

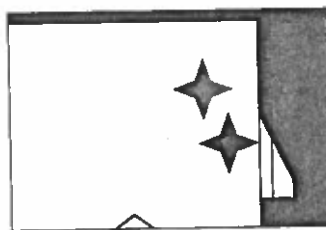
- 11 With the shapes still selected, hold down the Option (Mac OS) or Alt (Windows) key. Notice that, with the modifier key held down, the pointer shows a minus sign (⌘). Click each shape indicated in the figure with a red X to delete them.



► **Tip:** You can also apply fills to any of the selected shapes with the Shape Builder tool by selecting the fill color first and then clicking the shape.

- 12 With the shape still selected, select the Selection tool (⌘). Change the Fill color in the Control panel to a light gray, with the tool tip showing "C=0 M=0 Y=0 K=10." Press the Escape key to hide the panel. Change the Stroke weight to 0.
- 13 Choose Select > Deselect.
- 14 Choose Object > Show All to show the star shapes that are now behind the lampshade.

- 15 With the stars selected, choose **Object > Arrange > Bring To Front**.
- 16 With the Selection tool, Shift-drag a corner to make them small enough to fit on the gray lampshade. Position them like you see in the figure.
- 17 Shift-click the gray lampshade and stars to select all three objects, and choose **Object > Group**.
- 18 Choose **Select > Deselect**, and then choose **File > Save**.



## Shape Builder tool options

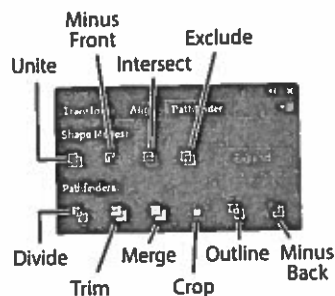
You can set up and customize various options such as gap detection, coloring source, and highlighting to get the required merging capability and better visual feedback.

Double-click the Shape Builder Tool icon (⌘) in the Tools panel to set these options in the Shape Builder Tool Options dialog box.

—From Illustrator Help

## Working with the Pathfinder panel

The bottom row of buttons in the Pathfinder panel, called *Pathfinder effects*, lets you combine shapes in many different ways to create paths or compound paths by default. When a Pathfinder effect (such as Merge) is applied, the original objects selected are permanently transformed. If the effect results in more than one shape, they are grouped automatically.



### Pathfinder effects in the Pathfinder panel

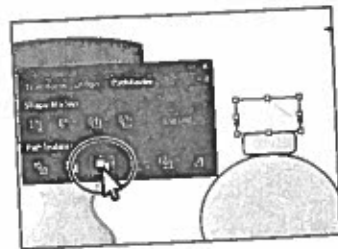
Next, you will finish the yellow/green lamp using Pathfinder effects.

- 1 Choose **Window > Pathfinder** to open the Pathfinder panel group.
- 2 With the Selection tool (⌘), hold down the Shift key and click the small yellow triangle and the small rectangle beneath the lamp shade to select both objects.

- 3 With the shapes selected, in the Pathfinder panel, click the Merge button (⊞) to combine the shapes into one.

With the new shape selected, notice the word "Path" on the left side of the Control panel.

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

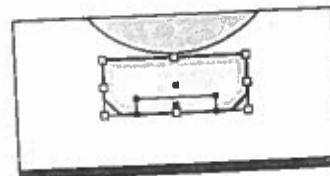


### Shape modes in the Pathfinder panel

The buttons in the top row of the Pathfinder panel, called *shape modes*, create paths just like the Pathfinder effects, but they can also be used to create compound shapes. When several shapes are selected, clicking a shape mode while pressing the Option (Mac OS) or Alt (Windows) key creates a compound shape rather than a path. The original underlying objects of compound shapes are preserved. As a result, you can still select each original object within a compound shape. Using a shape mode to create a compound shape can be useful if you think that you may want to retrieve the original shapes at a later time.

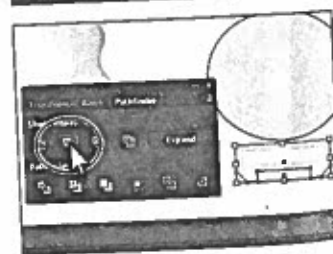
Next, you will use shape modes to finish the yellow/green lamp.

- 1 Select the Zoom tool (Q), and click several times on the rectangle at the bottom of the yellow/green lamp to zoom in.
- 2 Select the Rectangle tool (⊞) in the Tools panel. Draw a rectangle that has an approximate width of 0.5 in and a height of 0.1 in.
- 3 With the Selection tool (⬚), Shift-click the bottom yellow/green rectangle with the chamfered corners to select both shapes. Release the Shift key. Click again on the larger shape to make it the key object for alignment.
- 4 Click the Horizontal Align Center button (⊞) and the Vertical Align Bottom button (⊞) in the Control panel to align the two shapes.



- 5 With the objects selected, hold down the Option (Mac OS) or Alt (Windows) key and click the Minus Front button (⊞) in the Shape Modes section of the Pathfinder panel.

This creates a compound shape that traces the outline where the two objects overlap. You will still be able to edit both shapes separately.

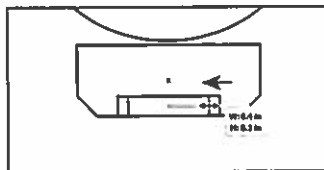


- 6 Choose Select > Deselect to see the final shape.
- 7 With the Selection tool, double-click the same shape to enter Isolation mode.

► **Tip:** To edit the original shapes in a compound shape like this one, you can also select them individually with the Direct Selection tool (⬚).

8 Choose View > Outline so that you can see the two shapes.

9 Click the edge of the smaller rectangle to select it. Option-drag (Mac OS) or Alt-drag (Windows) the right, middle bounding point of the smaller rectangle bounding box to the left to make it a bit narrower. Drag until the measurement tool tip shows a width of approximately 0.4 in. Release the mouse button and then the key.



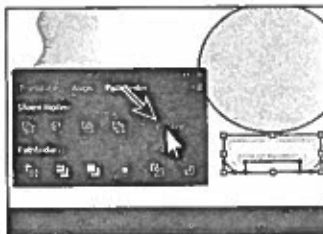
**Note:** It is easier to resize a shape precisely if you zoom in. You can also change the width and height of the selected shape in the Transform panel.

10 Press the Escape key to exit Isolation mode.

Because you entered Outline mode while in Isolation mode, exiting Isolation mode switches back to Preview mode automatically.

You will now expand the window shape. Expanding a compound shape maintains the shape of the compound object, but you can no longer select or edit the original objects. You will typically expand an object when you want to modify the appearance attributes and other properties of specific elements within it.


11 Click away from the shape to deselect it, and then click to select it again. Click the Expand button in the Pathfinder panel. Close the Pathfinder panel group.




12 Choose Select > Deselect.


13 Choose View > Fit Artboard In Window, and then choose File > Save.

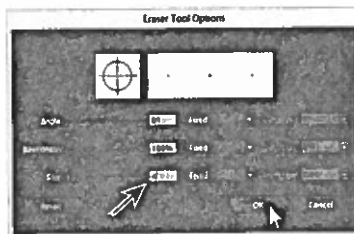
## Using the Eraser tool


The Eraser tool () lets you erase any area of your vector artwork, regardless of the structure. You can use the Eraser tool on paths, compound paths, paths inside Live Paint groups, and clipping content. Next, you'll use the Eraser tool to edit one of the lampshades.

1 With the Selection tool () , select the white lampshade on the left side of the artboard.

By selecting the white lampshade, you'll erase only that shape and nothing else. If you leave all objects deselected, you can erase any object that the tool touches, across all layers.

2 Double-click the Eraser tool () in the Tools panel to edit the tool properties. In the Eraser Tool Options dialog box, change the Size to 4 pt. Click OK.



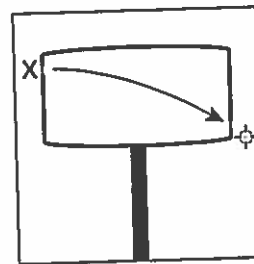
**Tip:** With the Eraser tool () selected and the pointer on the artboard, you can press and hold the Right Bracket key (]) for a second or two to increase the diameter of the eraser. If you make it too large, you can press the Left Bracket key ([) to make it smaller.

► **Tip:** If you press the Shift key and drag across content, you will constrain the Eraser tool (🧼) to a vertical, horizontal, or diagonal line.

► **Tip:** If you press the Option (Mac OS) or Alt (Windows) key, you will be able to drag a marquee across content to erase it.

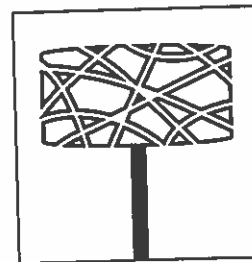
● **Note:** To learn more about clipping masks, see Lesson 14, "Using Illustrator CC with Other Adobe Applications."

- 3 Position the pointer off the upper-left corner of the white rectangle (where you see the red X in the figure). Click and drag diagonally across the rectangle. When you release the mouse button, the rectangle is cut in two and the two paths are closed shapes.



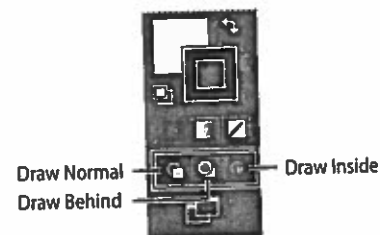
● **Note:** You cannot erase images, text, symbols, graphs, or gradient mesh objects.

- 4 Try dragging across the lampshade some more to create an effect like you see in the figure below.
- 5 Choose Object > Group, and then choose Select > Deselect.
- 6 Select the Selection tool and drag across the lampshade you just created, the line, and the ellipse beneath it to select all *three* objects that make up that lamp. Choose Object > Group.
- 7 Choose Select > Deselect, and then choose File > Save.



## Working with drawing modes

Illustrator has three different drawing modes available that are found at the bottom of the Tools panel: Draw Normal, Draw Behind, and Draw Inside. Drawing modes allow you to draw shapes in different ways. The three drawing modes are:



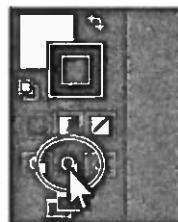
- **Draw Normal mode:** You start every document by drawing shapes in Normal mode, which stacks shapes on top of each other.
- **Draw Behind mode:** This mode allows you to draw objects behind other objects without choosing layers or paying attention to the stacking order.
- **Draw Inside mode:** This mode lets you draw objects or place images inside other objects, including live text, automatically creating a clipping mask of the selected object.

### Working with Draw Behind mode

Throughout this lesson, you've been working in the default Draw Normal mode. Next, you'll draw a rectangle that will cover the artboard and go behind the rest of the content using Draw Behind mode.

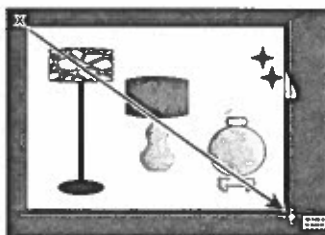
- 1 Click the Draw Behind button (⌘) at the bottom of the Tools panel.

As long as this drawing mode is selected, every shape you create using the different methods you've learned will be created behind the other shapes on the page. The Draw Behind mode also affects placed content (File > Place).



● **Note:** If the Tools panel you see is displayed as a single column, you can click the Drawing Modes button (⌘) at the bottom of the Tools panel and choose Draw Behind from the menu that appears.

- 2 Select the Rectangle tool (⌘) in the Tools panel. Position the pointer off the upper-left corner of the artboard in the corner of the red bleed guides. Click and drag off the lower-right side of the artboard to the corner of the red bleed guides.

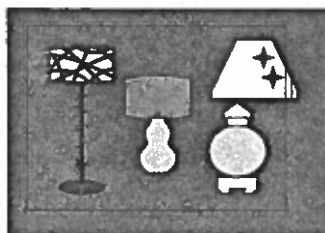


- 3 With the new rectangle selected, click the Fill color in the Control panel and change the fill color to a red with the tool tip values "C=15 M=100 Y=90 K=10." Press the Escape key to hide the Swatches panel.
- 4 Change the Stroke weight to 0 in the Control panel.

● **Note:** If artwork were selected, clicking the Draw Behind button would allow you to draw artwork behind the selected artwork.

- 5 Choose Object > Lock Selection.

- 6 Click the Draw Normal button (⌘) at the bottom of the Tools panel.

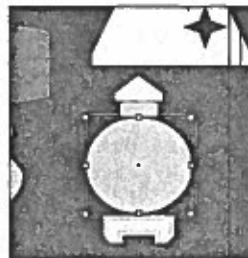


## Using the Draw Inside mode

Next, you will learn how to draw a shape inside of another using the Draw Inside drawing mode. This can be useful if you wanted to hide (mask) part of artwork.

- 1 Select the Selection tool (⌘) in the Tools panel. Click to select the yellow/green ellipse of the rightmost lamp.
- 2 Click the Draw Inside button (⌘), near the bottom of the Tools panel.

This button is active when a single object is selected (path, compound path, or text), and it allows you to draw within the selected object only. Every shape you create will now be drawn inside of the selected shape (the circle). Notice that the ellipse has a dotted open rectangle around it, indicating that, if you draw, paste, or place content, it will be inside of the circle, even if you were to choose Select > Deselect.

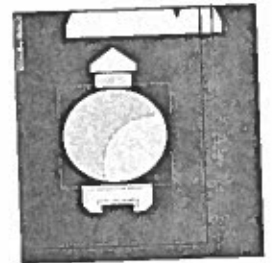
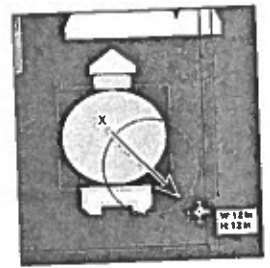


**Note:** If you draw a shape outside of the original yellow/green ellipse shape, it will seem to disappear. That is because the yellow/green ellipse is masking all shapes drawn inside of it; so only shapes positioned inside of the ellipse bounds will appear.

**Tip:** You can also toggle between the available Drawing Modes by pressing Shift+D.

**Tip:** You can separate the shapes by right-clicking on the shapes and choosing Release Clipping Mask. This would make two shapes, stacked one on another.

- 3 Select the Ellipse tool (○) in the Tools panel. Position the pointer near the center of the yellow/green ellipse, press the Shift key, and draw a circle that has a width and height of 1.2 in. Release the mouse button and then the key.
- 4 Change the Fill color of the new circle to the yellow with the tool tip that shows "C=5 M=0 Y=90 K=0."
- 5 Change the Stroke weight to 0 in the Control panel.
- 6 Choose Select > Deselect.



Notice that the ellipse still has the dotted open rectangle around it, indicating that Draw Inside mode is still active.

When you are finished drawing content inside of a shape, you can click the Draw Normal button (□) so that any new content you create will be drawn normally (stacked rather than drawn inside). Right now, if you were to attempt to select the ellipse or the circle inside of it, you would select the ellipse. If you move the ellipse, the shape inside goes with it. If you resize or reshape the yellow/green ellipse, the shape inside will resize or reshape.

- 7 Click the Draw Normal button at the bottom of the Tools panel. This ensures that any new content you create will not be drawn inside of the yellow/green ellipse.

## Editing content drawn inside

Next, you will edit the circle inside of the yellow/green ellipse to see how you can later edit content drawn inside.

- 1 Select the Selection tool (☞), and click to select the yellow circle (that is inside of the yellow/green ellipse). Notice that it selects the yellow/green ellipse instead.

The yellow/green ellipse is now a mask, also called a *clipping path*. The ellipse and the circle together make a clip group and are now treated as a single object. If you look on the left end of the Control panel, you will see "Clip Group" and two buttons that allow you to edit either the clipping path (the yellow/green ellipse) or the contents (the yellow circle).

- 2 Click the Edit Contents button (⊙) on the left end of the Control panel to select the yellow circle.

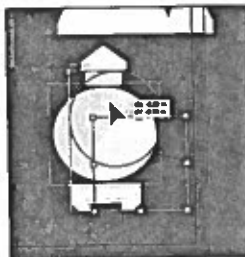
**Tip:** You can also double-click the yellow circle to enter Isolation mode and press the Escape key to exit.



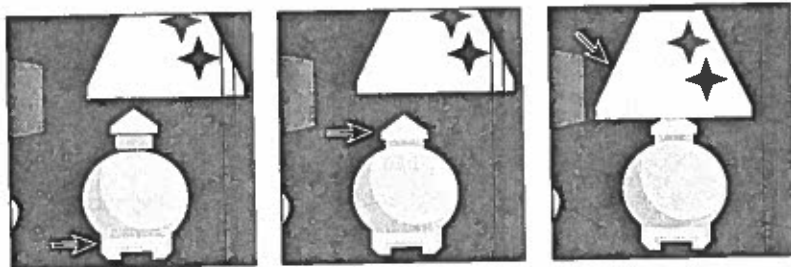
- 3 Drag the yellow circle from within the yellow fill color up to match the figure as best you can.
- 4 Click the Edit Clipping Path button (⌘) on the left end of the Control panel to select the yellow/green ellipse.
- 5 Change the Stroke weight to 0 in the Control panel.  
If you find it difficult to change the Stroke weight to 0 (zero), try changing it to another value first, and then 0.
- 6 Choose Select > Deselect.

Next, you will assemble the yellow/green lamp by dragging shapes. Make sure that you keep the shapes aligned horizontally with each other using the Smart Guides for alignment.

- 7 Drag the shape below the clip group (circle) up to match the first part of the following figure (below).
- 8 Click to select the yellow/green rounded rectangle above the clip group (the circle).
- 9 Change the Stroke weight to 0 in the Control panel.
- 10 Drag that same rounded rectangle and the shape above it down to match the middle part of the following figure (you will need to select both).
- 11 Drag the lampshade over the top of the lamp to match the figure.



► **Tip:** Sometimes it can be helpful to choose View > Outline, to more easily see and select shapes when in Isolation mode.



- 12 Drag across all of the shapes in the lamp to select them, and choose Object > Group.
- 13 Choose Select > Deselect, and then choose File > Save.

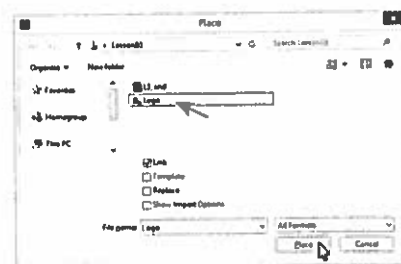


## Using Image Trace to create shapes

In this part of the lesson, you will learn how to work with the Image Trace command. Image Trace traces existing artwork, like a raster picture from Adobe Photoshop. You can then convert the drawing to vector paths or a Live Paint object. This can be useful for turning a drawing into vector art, tracing raster logos, tracing a pattern or texture, and much more.

- 1 With the Selection tool (⌘) selected, click the Next artboard button (▶) in the status bar in the lower-left corner of the Document window to navigate to the second artboard.

- 2 Choose File > Place. In the Place dialog box, select the Logo.png file in the Lessons > Lesson03 folder on your hard disk, and click Place (shown in the figure). Click on the left edge of the artboard to place the image. The image will be larger than the artboard, but that's okay.

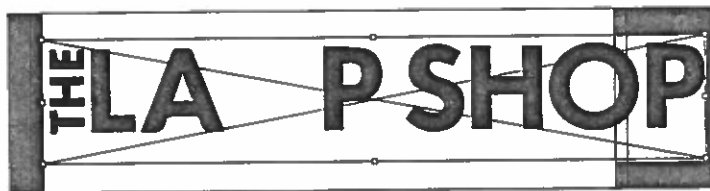


▶ **Tip:** You will learn more about placing images in Lesson 14, "Using Illustrator CC with Other Adobe Applications."

▶ **Tip:** Tracing a larger image or higher-resolution image will most likely result in better results.

With the placed image selected, the Control panel options change. You can see the words "Linked File" on the left side of the Control panel, and you can see the name Logo.png and the resolution (PPI: 72), as well as other information.

- 3 Click the Image Trace button in the Control panel. The tracing results you see may differ slightly from the figure, and that's okay.

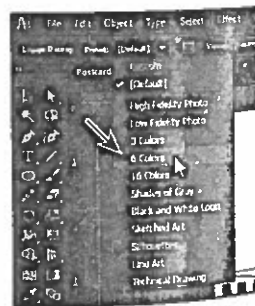


This converts the image into an image tracing object using the default tracing options. That means that you can't edit the vector content yet, but you can change the tracing settings or even the original placed image and then see the updates.

● **Note:** You can also choose Object > Image Trace > Make, with raster content selected, or begin tracing from the Image Trace panel (Window > Image Trace).

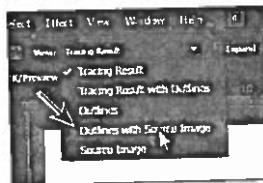
- 4 Choose 6 Colors from the Preset menu on the left end of the Control panel.

Illustrator comes with preset tracing options that you can apply to your image tracing object. You can then make changes to the tracing settings, if need be, using the default preset as a starting point.

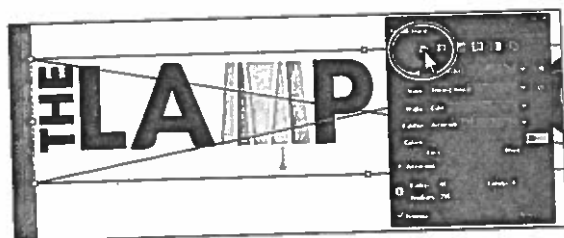


- 5 Choose Outlines With Source Image from the View menu in the Control panel, and take a look at the image. Choose Tracing Result from that same menu.

An image tracing object is made up of the original source image and the tracing result (which is the vector artwork). By default, only the tracing result is visible. However, you can change the display of both the original image and the tracing result to best suit your needs.



- 6 Choose Window > Image Trace to open the Image Trace panel. In the panel, click the Auto-Color button (🎨) at the top of the panel.



► **Tip:** The Image Trace panel can also be opened with traced artwork selected, by clicking the Image Trace Panel button (📄) in the Control panel.

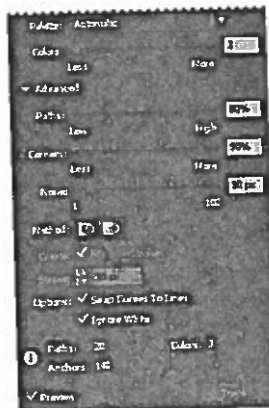
The buttons along the top of the Image Trace panel are saved settings for converting the image to grayscale, black and white, and more. Below the buttons at the top of the Image Trace panel, you will see the Preset and View options. These are the same as those in the Control panel. The Mode option allows you to change the color mode of resulting artwork (color, grayscale, or black and white). The Palette option is also useful for limiting the color palette or for assigning colors from a color group.

- 7 Press and hold the eye icon (👁) to the right of the View menu in the Image Trace panel to see the source image on the artboard. Release the mouse button.

- 8 In the Image Trace panel, click the toggle arrow to the left of the Advanced options to reveal them. Change only the following options, using the values as a starting point:

- Colors: 3
- Paths: 80%
- Corners: 90%
- Noise: 10 px
- Snap Curves To Lines: Selected
- Ignore White: Selected

The type in the logo isn't perfect yet. You can clean up the type (see the sidebar "Cleaning up traced artwork") or find out the original font used and replicate it.

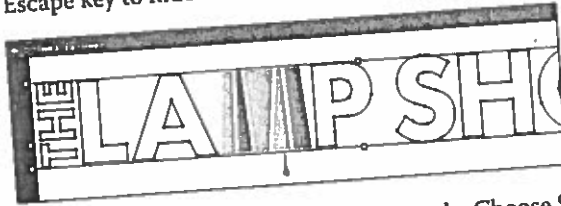


● **Note:** By selecting the Snap Curves To Lines option, the small yellow/green lamp pull cord no longer has rounded corners. You can fix that yourself using the drawing tools after you learn more about them in Lesson 5, "Creating an Illustration with the Drawing Tools."

- 9 Close the Image Trace panel.

10 With the logo image tracing object still selected, click the Expand button in the Control panel. The logo is no longer an image tracing object but is composed of shapes and paths that are grouped together.

11 With the Selection tool, double-click the logo to enter Isolation mode. Click one of the black letters to select it. Choose **Select > Same > Fill Color** to select all of the black letters. Change the Fill color to White in the Control panel. Press the Escape key to hide the Swatches panel.

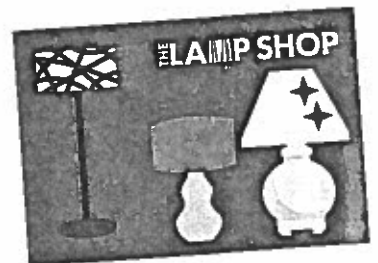


12 Press the Escape key to exit isolation mode. Choose **Select > Deselect**, and then click to select the logo group.

13 Choose **Object > Transform > Scale**. In the Scale dialog box, change the Uniform value to 48 and click OK. This will scale the logo so you can place it into the previous artboard.

14 Choose **View > Fit All In Window** to see both artboards. Drag the logo into the upper-right corner of the first artboard (with the lamps on it). See the figure for placement.

15 Drag the lamps into position like you see in the figure.

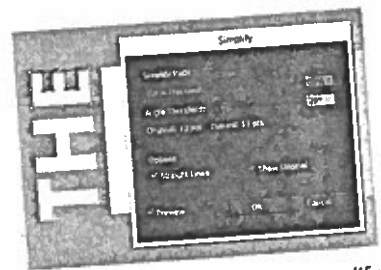


16 Choose **File > Save**, and then choose **File > Close**.

## Cleaning up traced artwork

After tracing, you may need to clean up the resulting vector artwork. Using the **Object > Path > Simplify** command, you can simplify selected paths.



For instance, for the logo you traced, you could double-click the logo after it's been expanded and painted, and select a few of the letters. You can then choose **Object > Path > Simplify** to change the path settings in the Simplify dialog box. You can apply the Simplify command to other parts of the logo as well. By aligning points and editing paths using the drawing tools, you can turn the raster logo into a viable vector logo.



## Review questions

- 1 What are the basic tools for creating shapes?
- 2 What is a Live Shape?
- 3 How do you select a shape with no fill?
- 4 How do you change the number of sides on a polygon as you draw?
- 5 Name two ways you can combine several shapes into one.
- 6 How can you convert a raster image to editable vector shapes?

## Review answers

- 1 There are six shape tools: Rectangle, Rounded Rectangle, Ellipse, Polygon, Star, and Flare. As explained in Lesson 1, "Getting to Know the Work Area," to tear off a group of tools from the Tools panel, position the pointer over the tool that appears in the Tools panel and hold down the mouse button until the group of tools appears. Without releasing the mouse button, drag to the triangle on the right side of the group, and then release the mouse button to tear off the group.
- 2 After you draw a rectangle or rounded rectangle using the shape tool, you can continue to modify its properties such as width, height, rounded corners, corner types, and radii (individually or collectively). This is what is known as a Live Shape. These shape properties are editable using the Transform panel, which has a separate Rectangle Properties section, or directly on the art.
- 3 Items that have no fill can be selected by clicking the stroke or by dragging a selection marquee across the item.
- 4 To change the number of sides on a polygon as you draw, select the Polygon tool () in the Tools panel. Start dragging to draw the shape, and press the Down Arrow key to reduce the number of sides and the Up Arrow key to increase the number of sides.
- 5 Using the Shape Builder tool (), you can visually and intuitively merge, delete, fill, and edit overlapping shapes and paths directly in the artwork. You can also use the Pathfinder effects to create new shapes out of overlapping objects. You can apply Pathfinder effects by using the Effects menu or the Pathfinder panel.
- 6 You can convert a raster image to editable vector shapes by tracing it. To convert the tracing to paths, click Expand in the Control panel or choose Object > Image Trace > Expand. Use this method if you want to work with the components of the traced artwork as individual objects. The resulting paths are grouped.