

# 4 EDITING AND COMBINING SHAPES AND PATHS

## Lesson overview

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

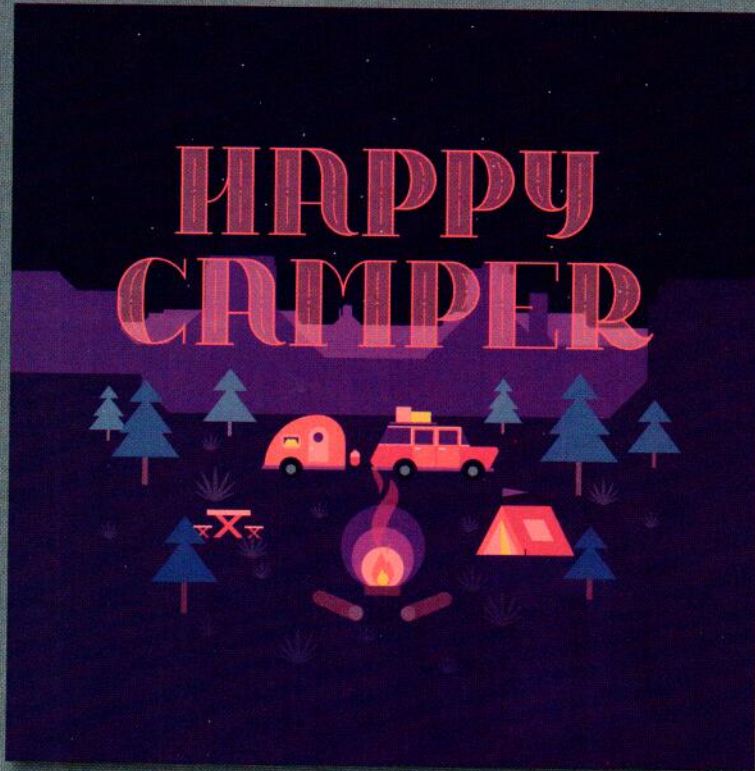
- Cut with the Scissors tool.
- Join paths.
- Work with the Knife tool.
- Outline strokes.
- Work with the Eraser tool.
- Create a compound path.
- Work with the Shape Builder tool.
- Work with Pathfinder commands to create shapes.
- Work with the Reshape tool.
- Edit strokes with the Width tool.



This lesson will take about 45 minutes to complete. Please log in to your account on [peachpit.com](http://peachpit.com) to download the files for this lesson, or go to the "Getting Started" section at the beginning of this book and follow the instructions under "Accessing the lesson files and Web Edition." Store the files on your computer in a convenient location.

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





Soon after you begin creating simple paths and shapes, you will most likely want to use them to create more complex artwork. In this lesson, you'll explore how to both edit and combine shapes and paths.



## Starting the lesson

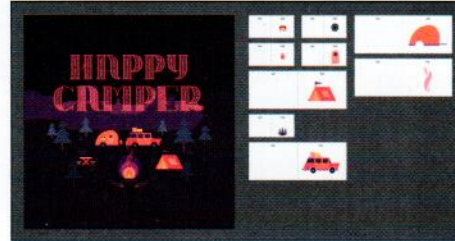
In Lesson 3, “Using Shapes to Create Artwork for a Postcard,” you learned about creating and making edits to basic shapes. In this lesson, you’ll take basic shapes and paths and learn how to both edit and combine them to create artwork to finish a poster about camping.

● **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.

1 To ensure that the tools function and the defaults are set 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.

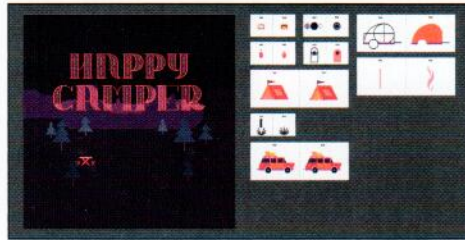
2 Start Adobe Illustrator CC.

3 Choose File > Open. Locate the file named L4\_end.ai, which is in the Lessons > Lesson04 folder that you copied onto your hard disk, and click Open. This file contains the finished artwork.



4 Choose View > Fit All In Window; leave the file open for reference, or choose File > Close (I closed it).

5 Choose File > Open. In the Open dialog box, navigate to the Lessons > Lesson04 folder, and select the L4\_start.ai file on your hard disk. Click Open.



► **Tip:** By default, the .ai extension shows on macOS, but you could add the extension on either platform in the Save As dialog box.

6 Choose File > Save As. In the Save As dialog box, change the name to **HappyCamper.ai** (macOS) or **HappyCamper** (Windows), and choose the Lesson04 folder. Leave Adobe Illustrator (ai) chosen from the Format menu (macOS) or Adobe Illustrator (\*.AI) chosen from the Save As Type menu (Windows) and then click Save.

7 In the Illustrator Options dialog box, leave the Illustrator options at their default settings, and click OK.

8 Choose Window > Workspace > Reset Essentials.

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

## Editing paths and shapes

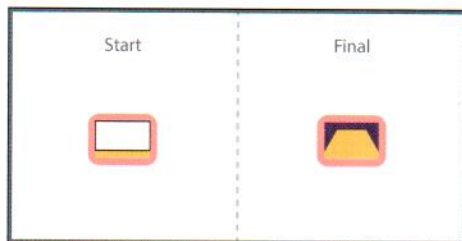
In Illustrator, you can edit and combine paths and shapes in a variety of ways to create your own artwork. Sometimes that may mean starting with simpler paths and shapes and using different methods to produce more complex paths. This includes working with the Scissors tool ( $\times$ ), the Knife tool ( $\text{✂}$ ), and the Eraser tool ( $\text{✏}$ ); outlining strokes; joining paths; and more.

**Note:** You'll explore other methods for transforming artwork in Lesson 5, "Transforming Artwork."

### Cutting with the Scissors tool

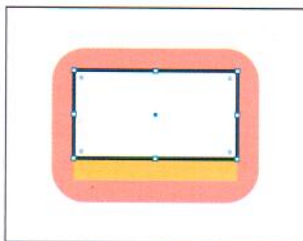
There are several tools that allow you to cut and divide shapes. You'll start with the Scissors tool ( $\times$ ), which splits a path at an anchor point or on a line segment to create an open path. Next, you'll cut a rectangle with the Scissors tool and reshape it to make curtains in a camping trailer illustration.

- 1 Click the View menu, and make sure that the Smart Guides option is selected. A checkmark appears when it's selected.
- 2 Choose 2 Window from the Artboard Navigation menu in the lower-left corner of the Document window. Choose View > Fit Artboard In Window.





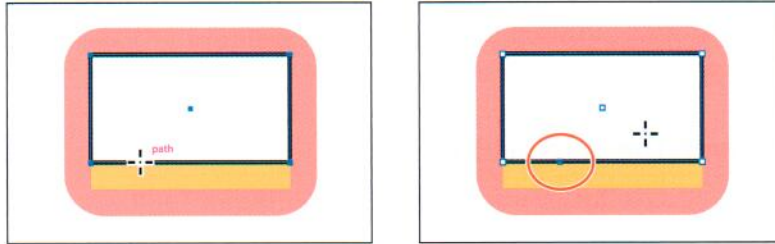
An example of what you will create is labeled "Final" on the right side of the artboard. You will work with the artwork labeled "Start" on the left.

- 3 Select the Selection tool ( $\text{⬮}$ ) in the Tools panel, and click the white shape in the area labeled "Start" to select it.
- 4 Press Command and + (macOS) or Ctrl and + (Windows) a few times to zoom in to the selected artwork.




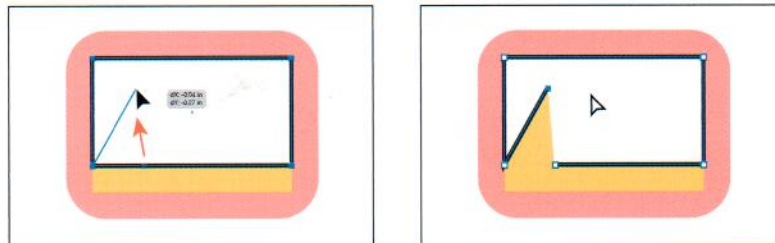
**Note:** If you don't click directly on a point or path, you will see a warning dialog box. You can simply click OK and try again.

- 5 With the shape selected, in the Tools panel, press and hold on the Eraser tool () and select the Scissors tool () . Move the pointer over the bottom edge of the shape (see the first part of the following figure). When you see the word "path," click to cut the path at that point and then move the pointer away.

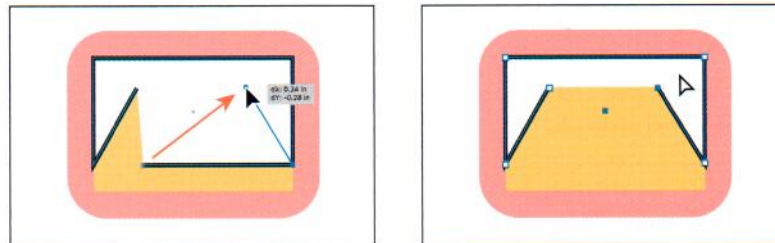


Cuts made with the Scissors tool must be on a line or a curve rather than on an end point of an open path. When you use the Scissors tool to click the stroke of a shape, which is the rectangle in this example, the path is cut where you click so that it becomes open.

- 6 Select the Direct Selection tool () in the Tools panel. Move the pointer over the selected (blue) anchor point and drag it up.



- 7 Drag the other anchor point, from where you originally cut the shape, up and to the right (see the figure).



Notice how the stroke (the black border) doesn't go all the way around the white shape. That's because cutting with the Scissors tool makes an open path. If you only want to fill the shape with a color, it doesn't have to be a closed path. It is, however, necessary for a path to be closed if you want a stroke to appear around the entire fill area.

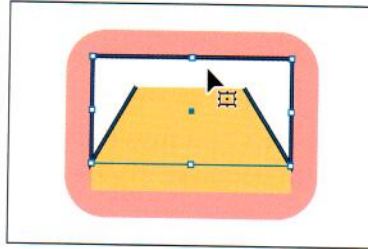


## Joining paths

Suppose you draw a “U” shape and later decide 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 to create a closed path. You can also join the end points of two separate paths. Next, you’ll join the ends of the white path to create a single closed shape.

- 1 Select the Selection tool (▸) in the Tools panel. Click away from the white path to deselect it and then click in the white fill to reselect it.

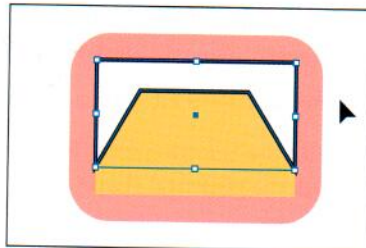
This step is important because only one anchor point was left selected from the previous section. If you were to choose the Join command with only one anchor point selected, an error message would appear. By selecting the whole path, when you apply the Join command, Illustrator simply finds the two ends of the path and connects them with a straight line.



▶ **Tip:** If you wanted to join specific anchor points from separate paths, select the anchor points, and choose Object > Join > Path or press Command+J (macOS) or Ctrl+J (Windows).

- 2 Choose Object > Path > Join.

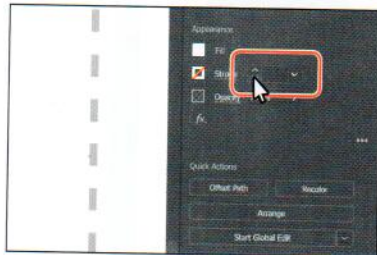
When you apply the Join command to two or more open paths, by default, Illustrator first looks for and joins the paths that have end points located closest to each other. This process is repeated every time you apply the Join command until all paths are joined.



▶ **Tip:** You could also have clicked the Join button in the Quick Actions section of the Properties panel.

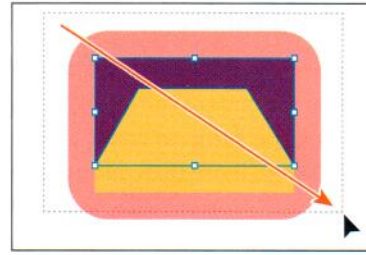
- 3 In the Properties panel on the right (Window > Properties), change the stroke to 0 by clicking the Down Arrow button until the stroke is removed.
- 4 Click the Fill color box (white) in the Properties panel, make sure the Swatches option (■) is selected in the panel that appears, and click to select the color Purple3.

▶ **Tip:** In Lesson 6, “Creating an Illustration with the Drawing Tools,” you’ll learn about the Join tool (⌘+J), which allows you to join two paths at a corner, keeping the original curve intact.



► **Tip:** To group selected content, you can also click the Group button in the Quick Actions section of the Properties panel.

- 5 Drag across the window shapes to select them.
- 6 Choose Object > Group.
- 7 Choose Select > Deselect and then choose File > Save.



## Cutting with the Knife tool

You can also use the Knife tool (✂) to cut a shape. Using the Knife tool, you drag across a shape, and instead of creating open paths, you end up with closed paths.

- 1 Choose 3 Tank from the Artboard Navigation menu in the lower-left corner of the Document window.



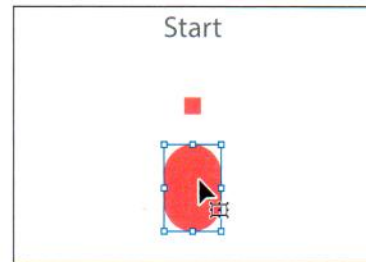
An example of what you will create is labeled “Final” on the right side of the artboard. You will work with the artwork labeled “Start” on the left.

- 2 Choose View > Fit Artboard In Window.

● **Note:** You can select multiple vector objects and cut them at one time with the Knife tool.

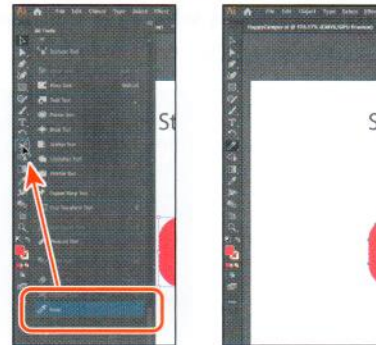
- 3 With the Selection tool (⬇) selected, click the pink oval shape under the artwork labeled “Start.”

If an object is selected, the Knife tool will only cut that object. If nothing is selected, it will cut any vector objects it touches.



● **Note:** You may see a message appear when you first click Edit Toolbar. If you see it, you can click Okay to close it.

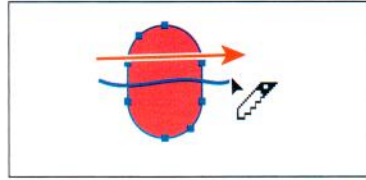
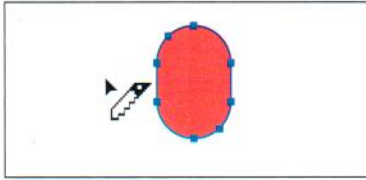
- 4 Click Edit Toolbar (☰) at the bottom of the Tools panel. Scroll in the menu that appears and toward the bottom of the menu you should see the Knife tool (✂). Drag the Knife tool onto the Scissors tool (✂) in the Tools panel on the left to add it to the list of tools.



- 5 With the Knife tool now selected, move the Knife pointer (✂) to the left of the selected shape. Drag across the shape to cut it into two.

● **Note:** You may want to press the Escape key to hide the extra tools menu.

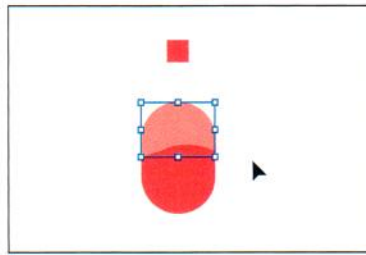




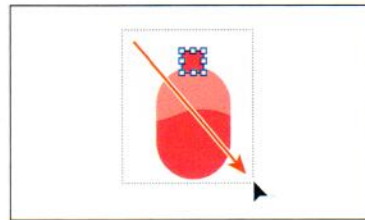
► **Tip:** Pressing the Caps Lock key will turn the Knife tool pointer into a more precise cursor (⌘). This can make it easier to see where the cut will happen.

Notice how dragging across a shape with the Knife tool makes a very free-form cut that is not straight at all.

- 6 Choose **Select > Deselect**.
- 7 Select the Selection tool (⬇️), and click the new shape on the top (see the following figure).
- 8 Click the Fill color box in the Properties panel, make sure the Swatches option (📄) is selected in the panel that appears, and click to select the color Pink.



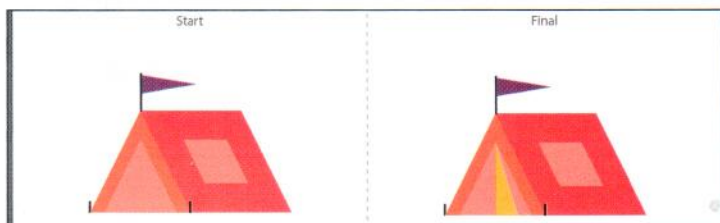
- 9 Drag the small, red square that is above the shapes, down onto the shapes you cut.
- 10 Drag across all of the tank shapes labeled "Start" to select them.
- 11 Choose **Object > Group**.
- 12 Choose **Select > Deselect**.



### Cutting in a straight line

Next, you'll cut artwork in a straight line with the Knife tool.

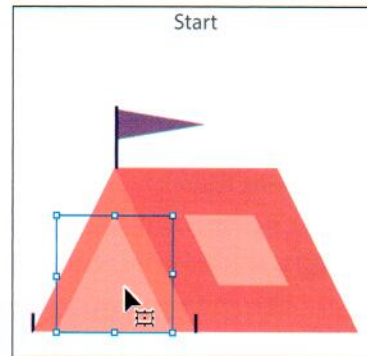
- 1 Choose **4 Tent** from the Artboard Navigation menu in the lower-left corner of the Document window.





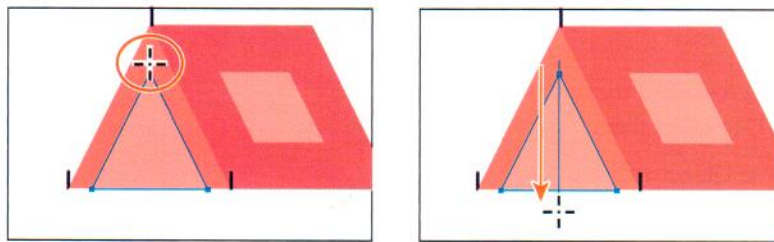
An example of what you will create is labeled “Final” on the right side of the artboard. You will work with the artwork labeled “Start” on the left. You’ll cut the tent opening shape into several paths. This requires you to cut in straight lines.

- 2 Choose View > Fit Artboard In Window.
- 3 With the Selection tool (▸) selected, click the pink triangle shape under the artwork labeled “Start.”
- 4 Choose View > Zoom In, twice, to zoom in to the artwork.
- 5 Select the Knife tool (✂). Move the pointer just above the top point of the selected triangle. Press the Caps Lock key to turn the Knife tool pointer into crosshairs (-|-).

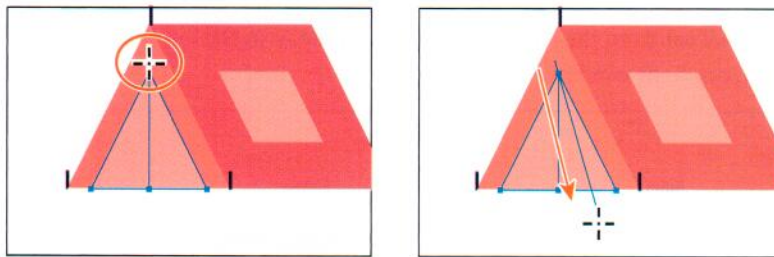


The crosshairs pointer is more precise and can make it easier to see exactly where you begin cutting.

- 6 Press and hold Option+Shift (macOS) or Alt+Shift (Windows), and drag down, all the way across the shape to cut it into two, in a completely straight line. Release the mouse button and then the keys.



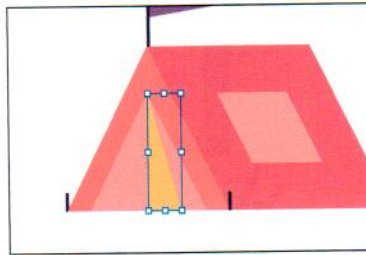
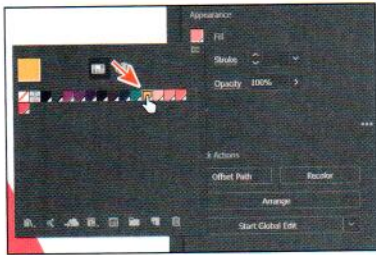
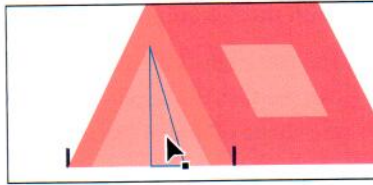
- 7 Press and hold Option (macOS) or Alt (Windows), and drag down from just above the top of the selected triangle, at a slight angle, all the way across the shape to cut it into two. Release the mouse button and then the key.



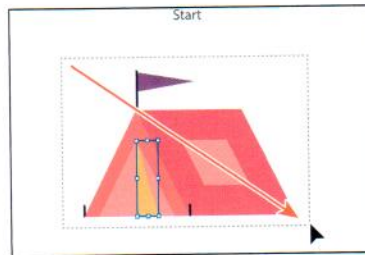
- 8 Choose Select > Deselect.

● **Note:** Pressing the Option/Alt key keeps the cut straight, and pressing the Shift key in addition constrains the cutting to a multiple of 45°.

- 9 Select the Selection tool (▸), and click the middle, pink triangle.
- 10 Click the Fill color box in the Properties panel, make sure the Swatches option (■) is selected in the panel that appears, and click to select the color Yellow.



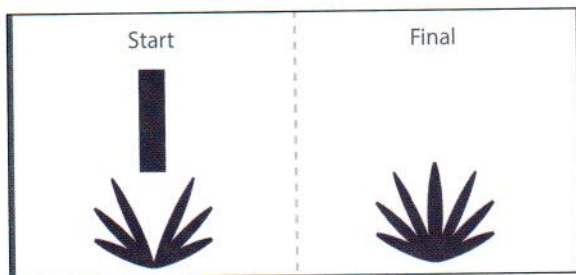
- 11 Drag across all of the tent shapes labeled “Start” to select them.
- 12 Choose Object > Group.
- 13 Press the Caps Lock key to turn them off.



## Outlining strokes

A path, like 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 of a path, which converts it into a closed shape (or compound path). Next, you'll outline the stroke of a line so you can erase parts of it in the next section.

- 1 Choose 5 Plant from the Artboard Navigation menu in the lower-left corner of the Document window.



An example of what you will create is labeled “Final” on the right side of the artboard. You'll work with the artwork labeled “Start” on the left.

- 2 Choose View > Fit Artboard In Window to ensure it fits in the Document window.



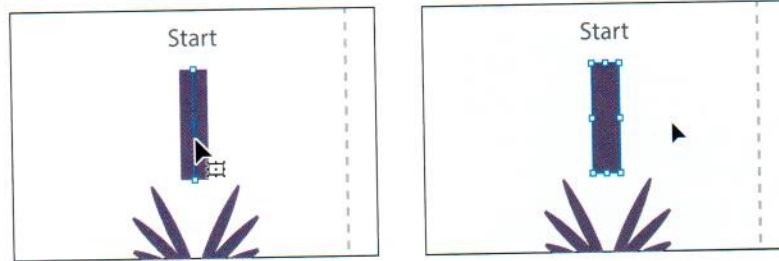
- 3 With the Selection tool (▸), select the purple path labeled “Start.”

The rectangle is actually a path with a large stroke. In the Properties panel, you can see that the stroke weight is set to 20. To erase part of the path to make it the shape of one of the leaves, it will need to be a shape (rectangle), not a path.

► **Tip:** After outlining a stroke, the shape you create may have a lot of anchor points. You can choose Object > Path > Simplify to simplify the path, which usually removes some anchor points.

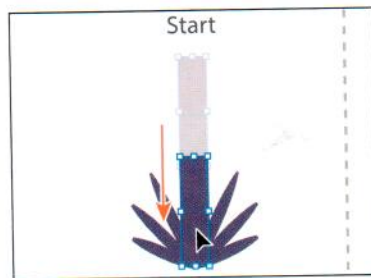
● **Note:** If you outline the stroke and it shows as “Group” in the Selection Indicator at the top of the Properties panel, then there was a fill set on the line. If the artwork is a group, choose Edit > Undo Outline Stroke, apply a fill of None to the path, and try again.

- 4 Choose Object > Path > Outline Stroke.



This creates a filled shape that is a closed path.

- 5 Drag the shape into position like you see in the following figure. Leave the shape selected.



Next, you'll erase parts of the shape.

## Using the Eraser tool

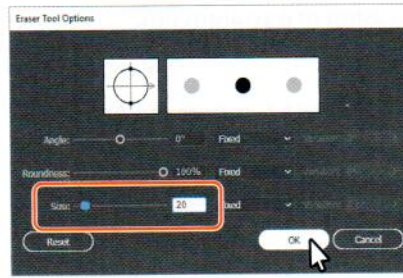
● **Note:** You cannot erase raster images, text, symbols, graphs, or gradient mesh objects.

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. Whatever artwork you select is the only artwork you will erase. If you leave all objects deselected, you can erase any object that the tool touches across all layers. Next, you'll use the Eraser tool to erase part of the selected rectangle so it looks like a leaf.

- 1 Press and hold down the mouse button on the Knife tool (✂), and select the Eraser tool (◆) in the Tools panel.

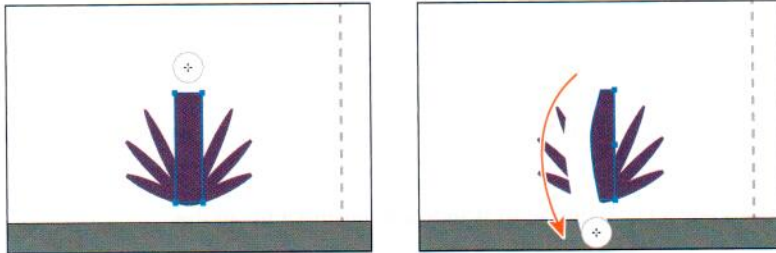
- 2 Double-click the Eraser tool (◆) in the Tools panel to edit the tool properties. In the Eraser Tool Options dialog box, change Size to 20 pt to make the eraser larger. Click OK.

You can change the Eraser tool properties, depending on what your needs are.



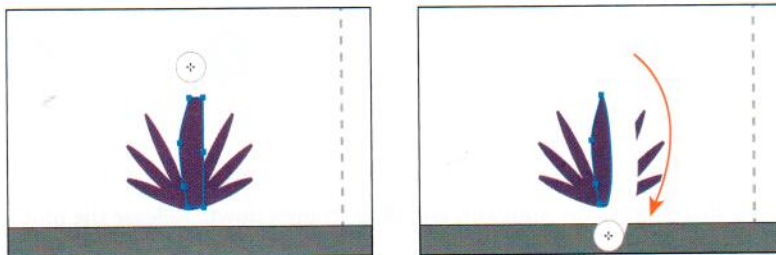
► **Tip:** With the Eraser tool selected, you could also click the Tool Options button at the top of the Properties panel to see the options dialog box.

- 3 Move the pointer above the selected purple shape. Drag down the left side of the shape to erase it.



When you release the mouse button, part of the shape is erased, and the shape is still a closed path.

- 4 Move the pointer above the selected purple shape. Drag down the right side of the shape to erase it.



- 5 Select the Selection tool (▶), and drag across all of the plant shapes labeled "Start" to select them.



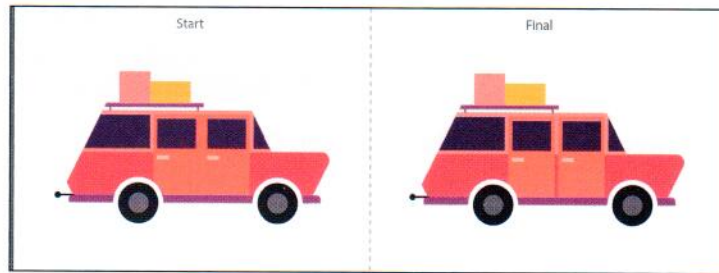
- 6 Choose Object > Group.



## Erasing in a straight line

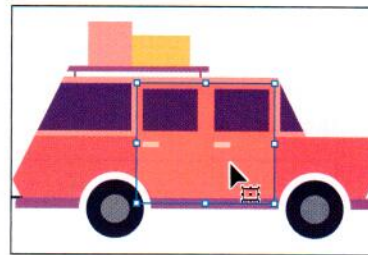
You can also erase in a straight line, which is what you'll do next.

- 1 Choose 6 Car from the Artboard Navigation menu in the lower-left corner of the Document window.

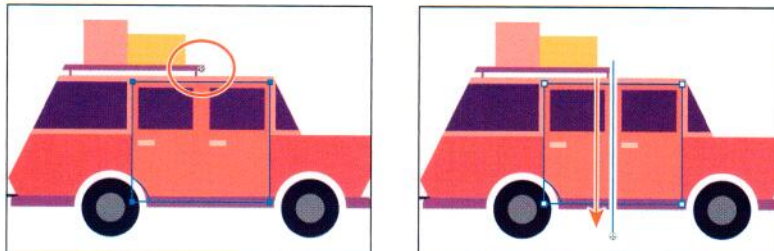


An example of what you will create is labeled “Final” on the right side of the artboard. You will work with the artwork labeled “Start” on the left. You'll select and erase the single door shape to make two doors.

- 2 Choose View > Fit Artboard In Window to ensure it fits in the Document window.
- 3 With the Selection tool (⬚) selected, click to select the door shape labeled “Start.”
- 4 Choose View > Zoom In a few times to see more detail.
- 5 Double-click the Eraser tool (⬮) to edit the tool properties. In the Eraser Tool Options dialog box, change Size to 5 pt to make the eraser smaller. Click OK.



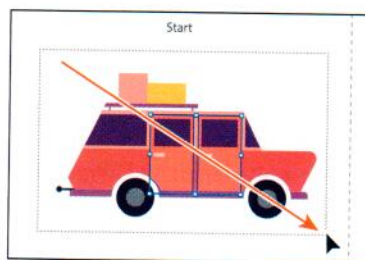
- 6 With the Eraser tool (⬮) selected, move the pointer above the middle of the selected shape. Press the Shift key, and drag straight down. Release the mouse button and then the Shift key.



It may look like you erased other parts of the car, but since nothing else was selected, you didn't. The selected door shape is now two separate shapes, both closed paths.

► **Tip:** If you need to erase a large part of a shape, you can always adjust the eraser size by using the Eraser Tool Options dialog box or by pressing either of the bracket keys ([ or ]).

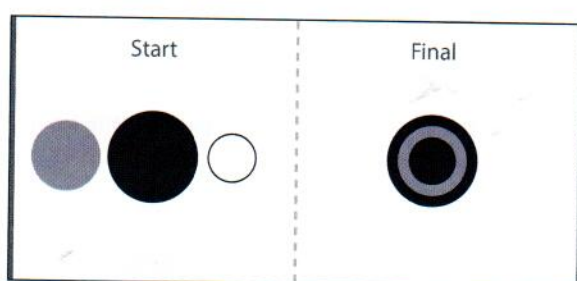
- 7 Select the Selection tool, and drag across all of the car shapes labeled “Start” to select them.
- 8 Click the Group button in the Quick Actions section of the Properties panel to the right of the document.
- 9 Choose File > Save.



## Creating a compound path

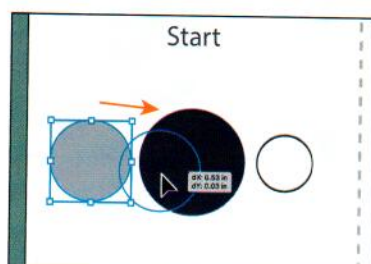
Compound paths let you use a vector object to cut a hole in another vector object. Whenever I think of a compound path, I think of a doughnut shape, which can be created from two circles. Holes appear where paths overlap. A compound path is treated like a group, and the individual objects in the compound path can still be edited or released (if you don’t want them to be a compound path anymore). Next, you’ll create a compound path to create some art for a wheel.

- 1 Choose 7 Wheel from the Artboard Navigation menu in the lower-left corner of the Document window.



An example of what you will create is labeled “Final” on the right side of the artboard. You will work with the artwork labeled “Start” on the left. You’ll create a wheel from the shapes labeled “Start.”

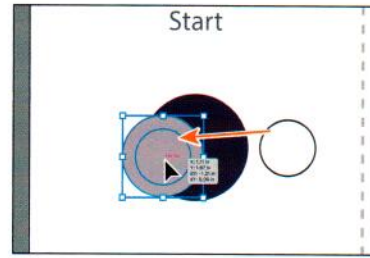
- 2 Choose View > Fit Artboard In Window, if necessary.
- 3 With the Selection tool (▸) selected, select the gray circle on the left, and drag it so it overlaps the larger dark circle to its right.





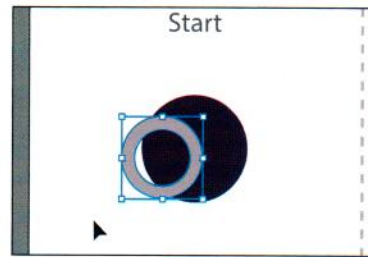
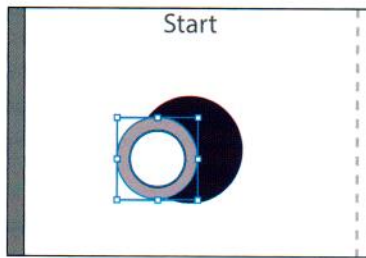
- 4 Drag the white shape on top of the gray circle, and make sure it's centered.

Smart Guides help you align the circles. You can also select the gray circle and the white circle and align them to each other using the Align options in the Properties panel on the right.



- 5 Shift-click the gray circle to select it along with the white circle.

- 6 Choose Object > Compound Path > Make, and leave the artwork selected.

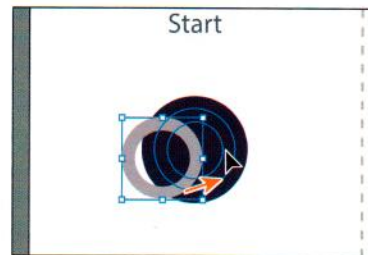


**Tip:** You can still edit the original shapes in a compound path like this one. To edit them, select each shape individually with the Direct Selection tool (⌘) or double-click the compound path with the Selection tool to enter Isolation mode and select individual shapes.

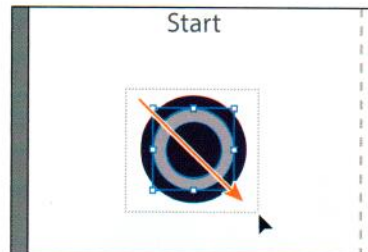
**Note:** When creating a compound path, the appearance attributes of the object lowest in the stacking order determine the appearance of the resulting compound path.

You can now see that the white circle has seemingly disappeared, and you can now see through the shape to the dark circle beneath. The white circle was used to “punch” a hole in the gray shape. With the gray shape still selected, you should see “Compound Path” at the top of the Properties panel to the right.

- 7 Drag the gray donut shape into the center of the darker circle behind it. The selected shape should be on top. If it isn't, choose Object > Arrange > Bring To Front.



- 8 Drag across all of the circle shapes labeled “Start” to select them.
- 9 Choose Object > Group.
- 10 Choose File > Save.



## Combining shapes

Creating more complex shapes from simpler shapes can be easier than trying to create them with drawing tools like the Pen tool. In Illustrator, you can combine vector objects in different ways. The resulting paths or shapes differ depending on the method you use to combine the paths. In this section, you'll explore a few of the more widely used methods for combining shapes.

### Working with the Shape Builder tool

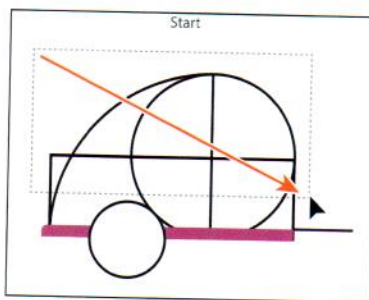
The first method you'll learn for combining shapes involves working with the Shape Builder tool (⌘-Shift-B). This tool allows you to visually and intuitively merge, delete, fill, and edit overlapping shapes and paths directly in the artwork. Using the Shape Builder tool, you'll create a more complex trailer shape from a series of simpler shapes like circles and squares.

- 1 Choose 8 Trailer from the Artboard Navigation menu in the lower-left corner of the Document window.



An example of what you will create is labeled "Final" on the right side of the artboard. You will work with the artwork labeled "Start" on the left.

- 2 Choose View > Fit Artboard In Window to ensure it fits in the Document window.
- 3 With the Selection tool (⬚) selected, drag a marquee selection across the three shapes you see in the figure, labeled "Start," to select the shapes on the artboard. *Make sure not to select the white circle.*



To edit shapes with the Shape Builder tool (⌘-Shift-B), they need to be selected. Using the Shape Builder tool, you will now combine, delete, and paint these simple shapes to create a camper.

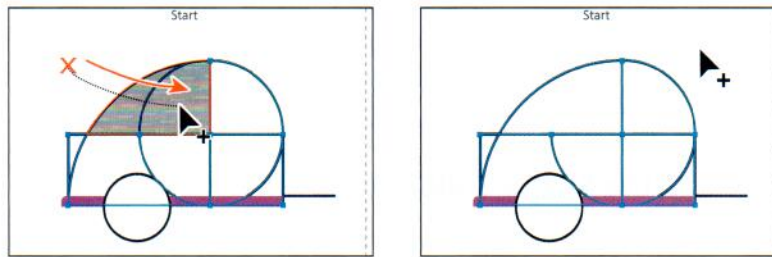


► **Tip:** You can also press the Shift key and drag a marquee across a series of shapes to combine them. Pressing Shift+Option (macOS) or Shift+Alt (Windows) and dragging a marquee across selected shapes with the Shape Builder tool (⌘) selected allows you to delete a series of shapes within the marquee.

● **Note:** Your final combined shapes may have a different stroke and/or fill, and that's okay. You'll change them shortly.

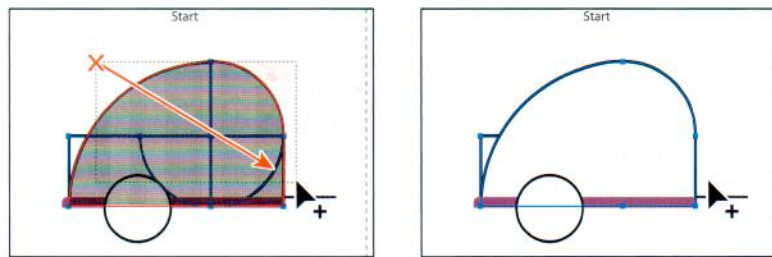
● **Note:** When you position the pointer over the shapes, make sure you see the mesh within those shapes before clicking to delete.

- 4 Select the Shape Builder tool (⌘) in the Tools panel. Move the pointer off the upper-left corner of the shapes, and drag from the red X in the figure to the right, into the shapes. Release the mouse button to combine the shapes.



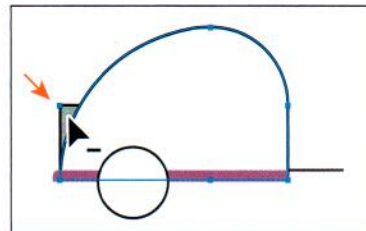
When you select the Shape Builder tool, the overlapping shapes are temporarily divided into separate objects. As you drag from one part to another, a red outline appears, showing you what the final shape will look like when the shapes are merged together, once you've released the mouse button.

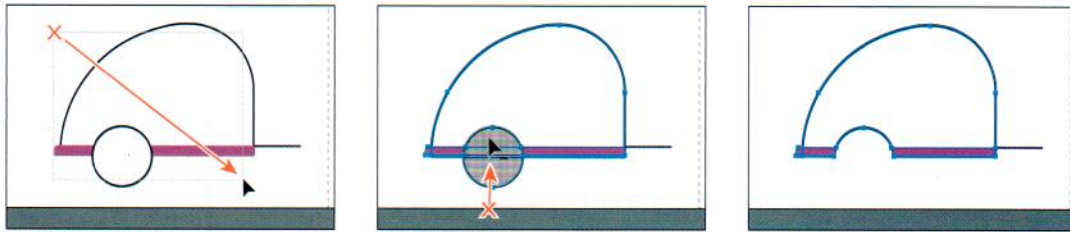
- 5 Move the pointer off the upper-left corner of the shapes again. Press the Shift key and, from the red X in the figure, drag down and to the right. Release the mouse button and then the key to combine the shapes.



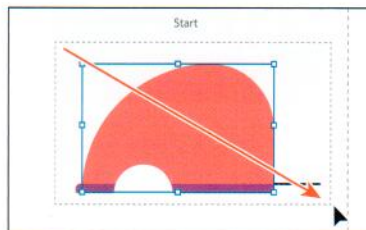
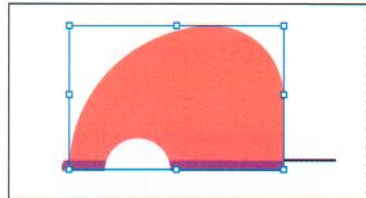
Next, you'll delete a few shapes.

- 6 With the shapes still selected, hold down the Option (macOS) or Alt (Windows) key. Notice that, with the modifier key held down, the pointer shows a minus sign (⌘-). Click the shape on the far left to delete it. Refer to the figure to see which shape to remove.
- 7 Select the Selection tool (⌘) and click in a blank area to deselect the artwork. Drag across the larger shape you combined, the purple bar, and the white circle to select all three shapes.
- 8 Select the Shape Builder tool (⌘), and move the pointer below the white circle. Hold down the Option (macOS) or Alt (Windows) key and drag through the white circle, stopping before the top of the circle. Release the mouse button and then the key to remove the circle from the larger shape you combined.





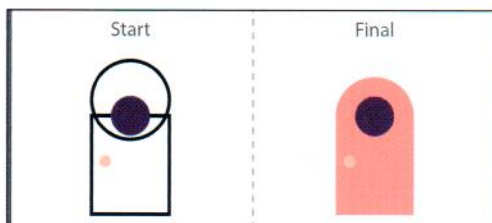
- 9 Choose Select > Deselect.
- 10 Select the Selection tool (▸), and click the edge of the larger shape to select it. Change the fill color in the Properties panel to the color named red 1 with the tool tip name that shows as “Red 1.”
- 11 Change the stroke weight to 0.
- 12 Drag across the red shape, purple shape, and black line to select them all.
- 13 Choose Object > Group.



## Combining objects using Pathfinder effects

Pathfinder effects, found in the Properties panel or the Pathfinder panel (Window > Pathfinder), are another way to combine shapes in a variety of ways. When a Pathfinder effect such as Unite is applied, the original objects selected are *permanently* transformed.

- 1 Choose 9 Door from the Artboard Navigation menu in the lower-left corner of the Document window.



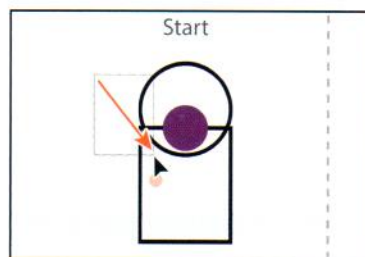
An example of what you will create is labeled “Final” on the right side of the artboard. You will work with the artwork labeled “Start” on the left. You’ll combine shapes in different ways to create a single door.

- 2 Choose View > Fit Artboard In Window.



- 3 With the Selection tool (▸) selected, drag across the circle and rectangle with the black strokes to select both objects.

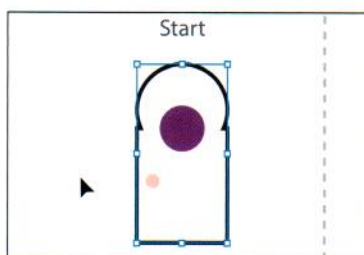
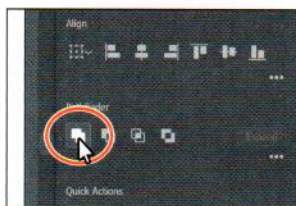
You need to create a shape that looks like the door to the right of the shapes you selected, labeled “Final.” You will use the Properties panel and those shapes to create the final artwork.



**Note:** The Unite button in the Properties panel produces a similar result as the Shape Builder tool, by combining the shapes into one.

**Tip:** Clicking More Options (⋮) in the Pathfinder section of the Properties panel will reveal the Pathfinder panel, which has more options.

- 4 With the shapes selected, in the Properties panel on the right, click the Unite button (◻) to *permanently* combine the two shapes.

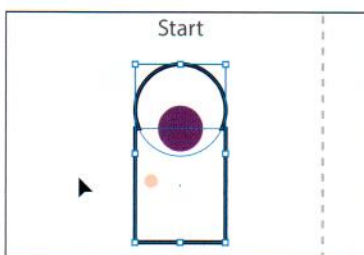
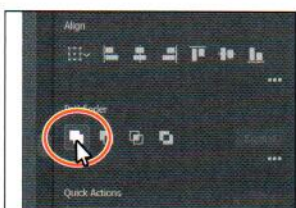


- 5 Choose Edit > Undo Add to undo the Unite command and bring both shapes back. Leave them selected.

### Understanding Shape Modes

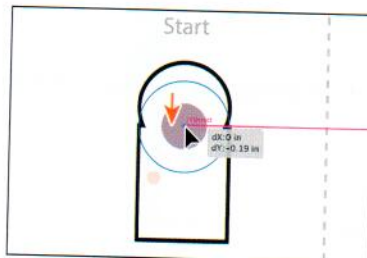
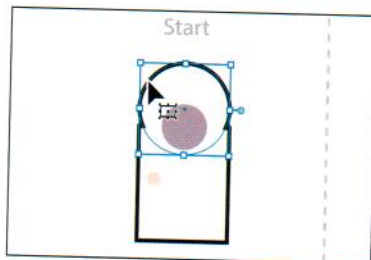
In the previous section, the pathfinder effect made a permanent change to the shapes. With shapes selected, Option-clicking (macOS) or Alt-clicking (Windows) any of the default set of Pathfinders showing in the Properties panel creates a compound shape rather than a path. The original underlying objects 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.

- 1 With the shapes still selected, press the Option (macOS) or Alt (Windows) key, and click the Unite button (◻) in the Properties panel.



This creates a compound shape that traces the outline of what's left after the shapes are combined. You will still be able to edit both shapes separately.

- 2 Choose Select > Deselect to see the final shape.
- 3 With the Selection tool, double-click the black stroke of the newly combined shape to enter Isolation mode.
- 4 Click the edge of the circle at the top or drag across the path to select it.
- 5 Drag the selected circle straight down from the blue dot in the center. As you drag, press the Shift key. Drag down until you see that a horizontal Smart Guide appears and the center of the circle is aligned with the top edge of the rectangle. When in position, release the mouse button and then the Shift key.



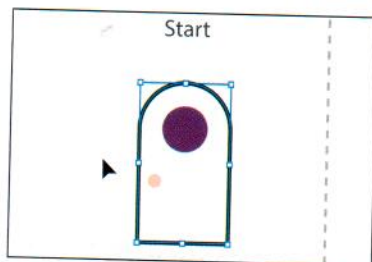
► **Tip:** To edit the original shapes in a compound shape like this one, you can also select them individually with the Direct Selection tool (◄).

● **Note:** You can also press the arrow keys to move the shape if you find it difficult to drag.

- 6 Press the Escape key to exit Isolation mode.

You will now expand the 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.

- 7 Click away from the shape to deselect it and then click to select it again.
- 8 Choose Object > Expand Appearance.



The pathfinder effect is now *permanent* and the shapes are a single shape.

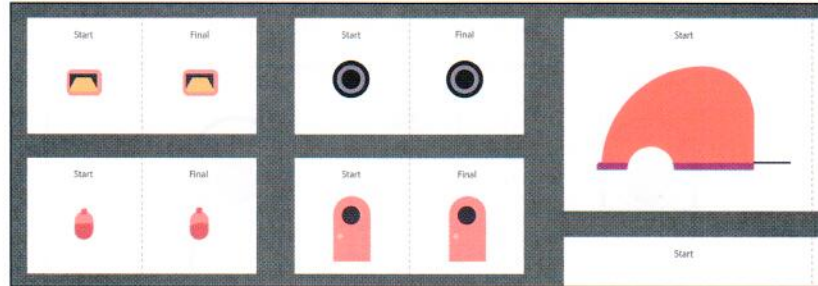
- 9 Change the Fill color in the Properties panel to the color Pink. Change the stroke weight to 0.
- 10 Drag across the shapes that make up the door to select them all.
- 11 Click the Group button toward the bottom of the Properties panel to group the content together.



## Creating the trailer

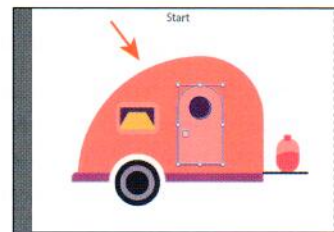
In this short section, you'll drag all of the pieces for the trailer together and group them.

- 1 Choose View > Zoom Out several times.
- 2 Press the spacebar to access the Hand tool, and drag in the Document window to see the wheel, door, window, tank, and trailer artboards.



**Note:** You may find that with the Smart Guides on, it is difficult to position the content on the trailer. You can always turn off the Smart Guides (View > Smart Guides) and then turn them on when you are finished dragging the artwork.

- 3 With the Selection tool selected, drag the wheel, door, window, and tank artwork you created labeled "Start" onto the trailer artwork labeled "Start." Position them like you see in the figure.
- 4 Drag across the trailer artwork, and choose Object > Group.



## Reshaping a path

In Lesson 3, "Using Shapes to Create Artwork for a Postcard," you learned about creating shapes and paths (lines). You can use the Reshape tool to stretch parts of a path without distorting its overall shape. In this section, you'll change the shape of a line, giving it a bit of curve, so you can turn it into a flame.

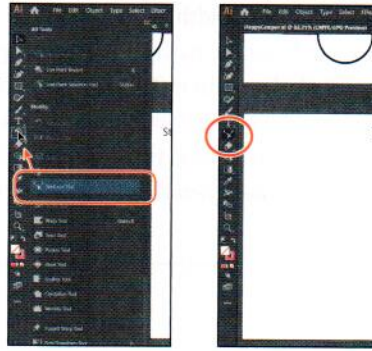
- 1 Choose 10 Flame from the Artboard Navigation menu in the lower-left corner of the Document window.



An example of what you will create is labeled "Final" on the right side of the artboard. You will work with the artwork labeled "Start" on the left. You'll reshape the straight line on the left to start.

- 2 Select the Selection tool (⬚), and click the path labeled "Start."

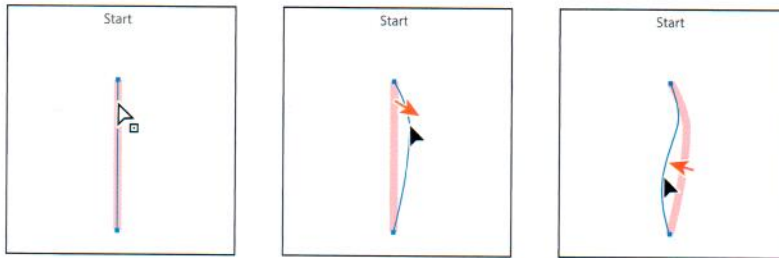
3 Click Edit Toolbar (☰) at the bottom of the Tools panel. Scroll in the menu that appears, and drag the Reshape tool (🔧) onto the Rotate tool (🔄) in the Tools panel on the left to add it to the list of tools.



● **Note:** You may want to press the Escape key to hide the extra tools menu.

4 With the Reshape tool (🔧) selected, move the pointer over the path. When the pointer changes (👉), drag away from the path to add an anchor point and reshape the path. Move the pointer farther down the path, and drag the path to the left. You can look at the flame shape labeled “Final,” to the right, for guidance.

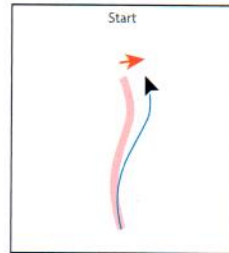
● **Note:** You can use the Reshape tool on a closed path, like a square or circle, but if the entire path is selected, the Reshape tool will add anchor points and reshape the path.



The Reshape tool can be used to drag an existing anchor point or path segment. If you drag from an existing path segment, an anchor point is created.

5 Move the pointer over the top anchor point of the path, and drag it to the right a little. Leave the path selected.

All of the anchor points were selected in the path, which means the Reshape tool will adjust the entire path.





● **Note:** Only selected anchor points are adjusted when dragging with the Reshape tool.

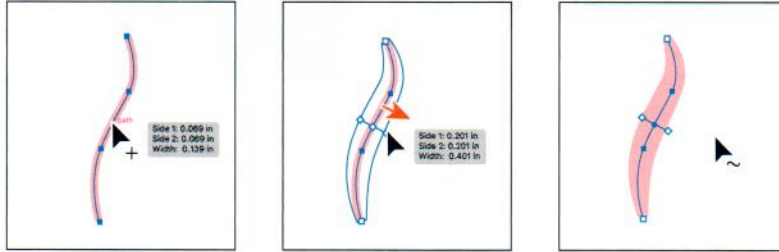
## Using the Width tool

Not only can you adjust the weight of a stroke, like you did in Lesson 3, “Using Shapes to Create Artwork for a Postcard,” but you can 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 adjust the path you just reshaped to look like a flame.



► **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.


- 1 Select the Width tool () in the Tools panel. Position the pointer over the middle of the path you just reshaped, and notice that the pointer has a plus symbol next to it () when it's positioned over the path. If you were to drag, you would edit the width of the stroke. Drag away from the line, to the right. 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* 0.2 in.

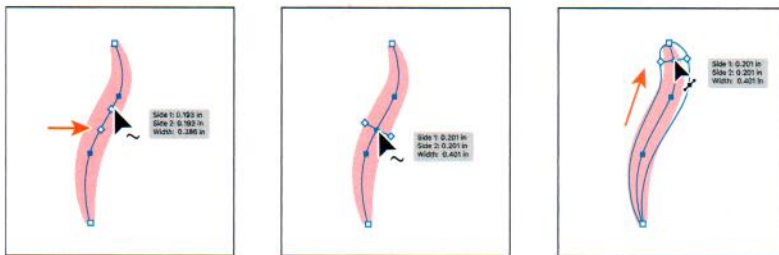


You just created a variable stroke on a path, not a shape with a fill. The new point on the original path is called the *width point*. The lines extending from the width point are the *handles*.

► **Tip:** If you select a width point by clicking 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.


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

- 2 Click in a blank area of the artboard to deselect the point.
- 3 Position the pointer anywhere over the path, and the new width point you just created will appear (an arrow is pointing to it in the first part of the following figure). The width point you see on the path next to the pointer is where a new point would be created if you were to click.
- 4 Position the pointer over the original width point, and when you see lines extending from it and the pointer changes () drag it up and down to see the effect on the path.



- 5 Choose Edit > Undo Width Point Change to return the width point to its original position on the path.

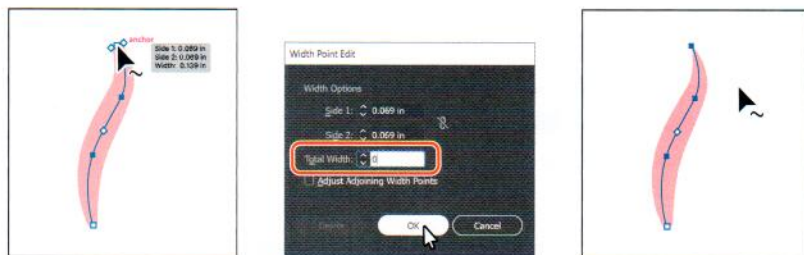
In addition to dragging to add a width point to a path, you can double-click and enter values in a dialog box. That's what you'll do next.

- 6 Move the pointer over the top anchor point of the path, and notice that the pointer has a wavy line next to it () and the word "anchor" appears (see the

► **Tip:** You can move the pointer over a width point, press the Option (macOS) or Alt (Windows) key, and drag to duplicate it.

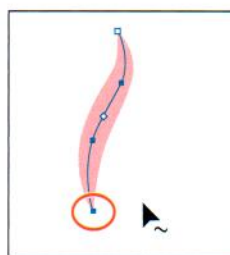
first part of the following figure). Double-click the point to create a new width point and to open the Width Point Edit dialog box.

- 7 In the Width Point Edit dialog box, change Total Width to **0 in**, and click OK.



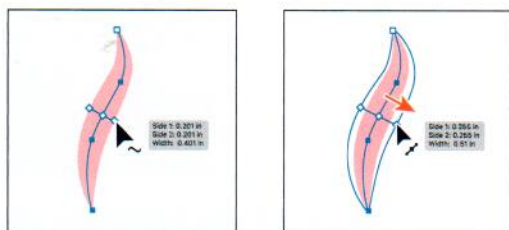
The Width Point Edit dialog box allows you to adjust the length of the width point handles, together or separately, with more precision. Also, if you select the Adjust Adjoining Width Points option, any changes you make to the selected width point affect neighboring width points as well.

- 8 Move the pointer over the bottom anchor point of the path, and double-click. In the Width Point Edit dialog box, change Total Width to **0 in**, and click OK.
- 9 Move the pointer over the original width point. When the width point handles appear, drag one of them away from the center of the path to make it a little wider. Leave the path selected for the next section.



► **Tip:** You can select a width point and Option-drag (macOS) or Alt-drag (Windows) one of the width point handles to change one side of the stroke width.

► **Tip:** After defining the stroke width, you can save the variable width as a *profile* that you can reuse later, from the Stroke panel or the Control panel. To learn more about variable width profiles, search for "Painting with fills and strokes" in Illustrator Help (Help > Illustrator Help).



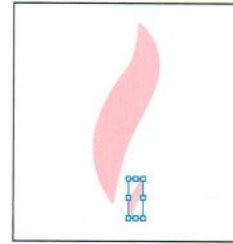
## Finishing up the illustration

To finish the illustration, you'll drag the artwork you grouped on each artboard into the main illustration on the left.

- 1 Select the Selection tool (☛) and, with the path selected, choose Edit > Copy and then Edit > Paste to paste a copy.
- 2 With the copy selected, choose Object > Path > Outline Stroke so you can more easily scale the shape without having to adjust a stroke weight.

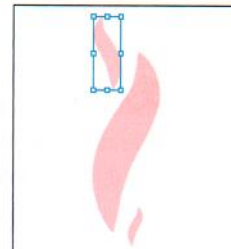
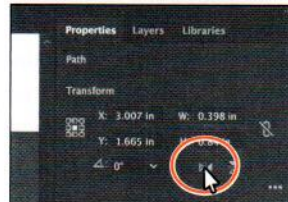
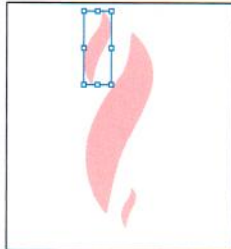


- 3 Shift-drag the corner of the path to make it smaller. Release the mouse button and then the key. Drag it into position like you see in the figure.



- 4 With the smaller copy selected, choose Edit > Copy and then Edit > Paste, scale the new copy larger, and position it like you see in the figure.

- 5 With the shape still selected, click the Flip Along Horizontal Axis button (↕) in the Properties panel. Drag the shape into position like you see in the figure.



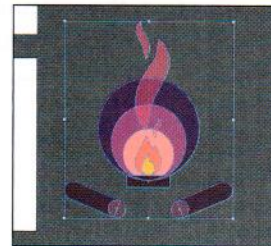
- 6 Drag across the three flame shapes to select them all. Choose Object > Group.
- 7 Choose View > Zoom Out a few times so you can see the campfire artwork to the right of the artboard. Drag the group of flames onto the fire artwork to the right of the artboard.

- 8 Drag across all of the campfire shapes to select them. Choose Object > Group.

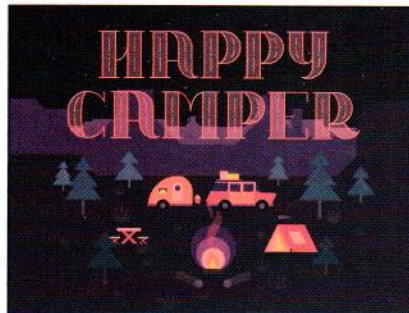
- 9 Choose View > Fit All In Window.

- 10 Choose View > Smart Guides to turn them off.

- 11 Drag each of the artwork groups you created into the main illustration like you see in the figure.






You may want to adjust the size of each group so it fits within the existing artwork better. With the Selection tool, you can hold down the Shift key and drag a corner point to resize artwork proportionally. When you're finished resizing, release the mouse button and then the Shift key.



- 12 Choose View > Smart Guides to turn them on for the next lesson.

- 13 Choose File > Save and then choose File > Close.

## Review questions

- 1 Name two ways you can combine several shapes into one.
- 2 What is the difference between the Scissors tool () and the Knife tool ()?
- 3 How can you erase with the Eraser tool () in a straight line?
- 4 What is the main difference between shape modes and Pathfinder effects in the Properties panel or Pathfinder panel?
- 5 Why would you outline strokes?