

● **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.

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

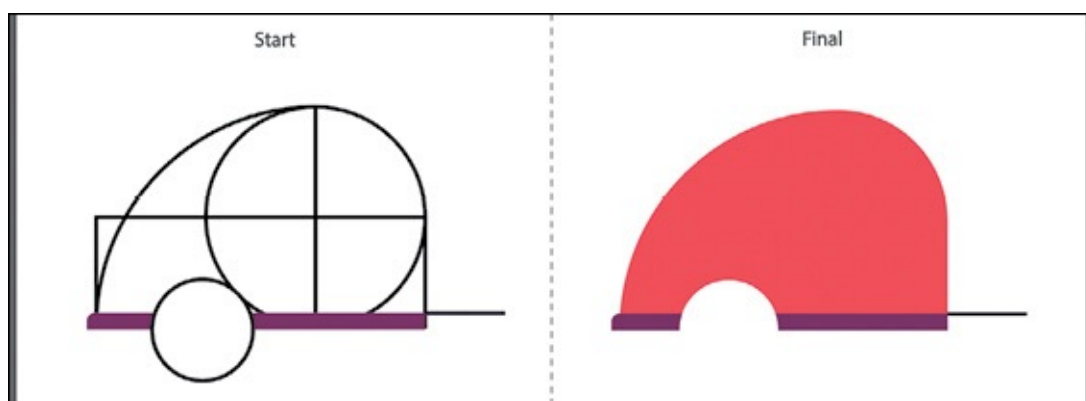
Combining shapes

A lot of the time, 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.

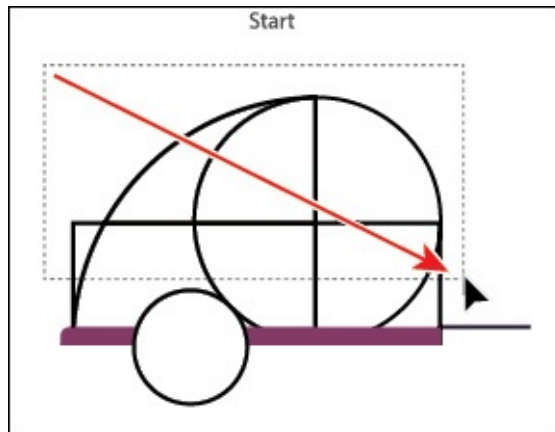
1. Choose 8 Trailer from the Artboard Navigation menu in the lower-left corner of the Document window.





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.

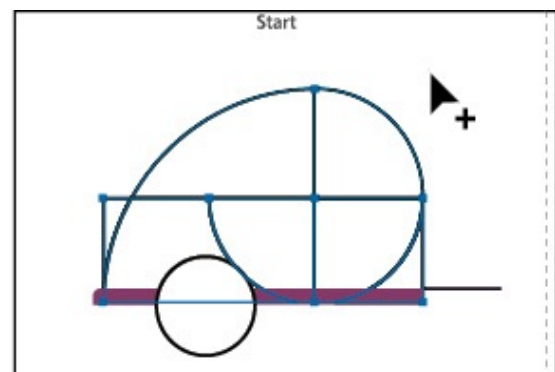
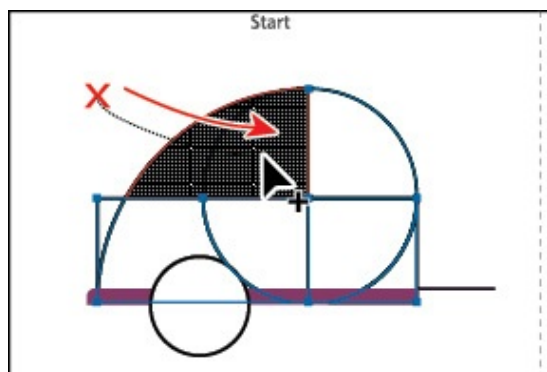
2. Choose View > Fit Artboard In Window to ensure it fits in the Document window.
3. With the Selection tool (⌘) selected, drag a marquee selection across the

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 () , they need to be selected. Using the Shape Builder tool, you will now combine, delete, and paint these simple shapes to create a camper.

4. Select the Shape Builder tool () in the Tools panel. Position 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.

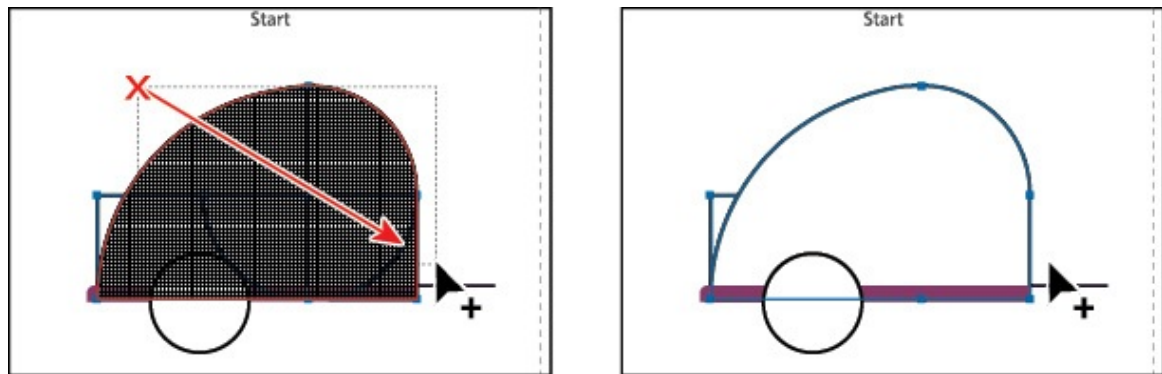


When you select the Shape Builder tool, the overlapping shapes are divided into separate objects temporarily. As you drag from one part to another, a red outline appears, showing you what the final shape will look like when the shapes are merged together, after releasing the mouse button.

► **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.

5. Position the pointer off the upper-left corner of the shapes again. Press the Shift key and drag from the red X in the figure, down and to the right.

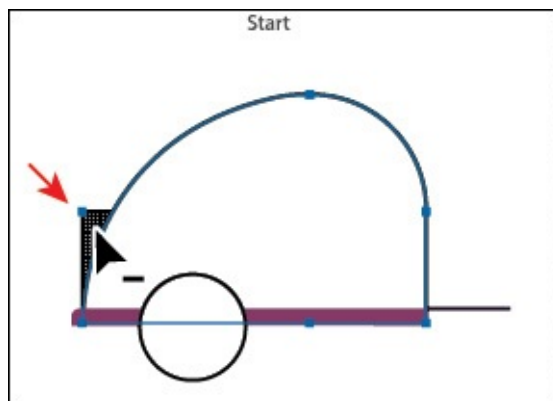
Release the mouse button to combine the shapes.



Next, you'll delete a few shapes.

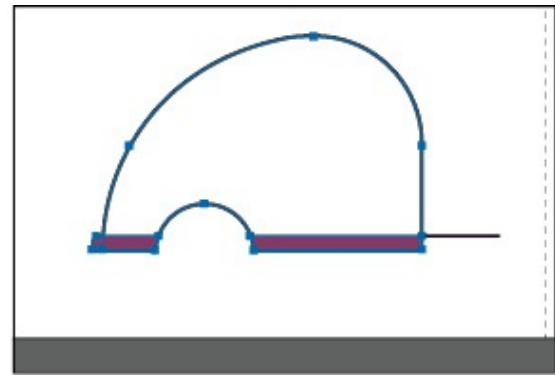
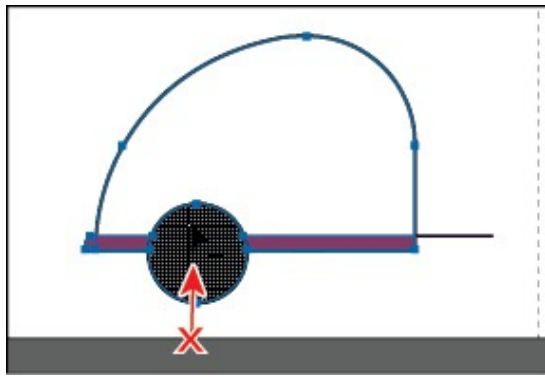
● **Note:** Your final combined shapes may have a different stroke and/or fill, and that's okay. You'll change them shortly.

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. See the figure for which shape to remove.



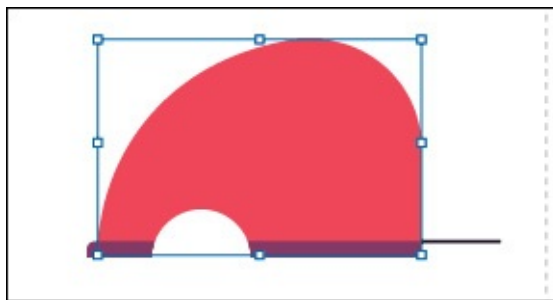
● **Note:** When you position the pointer over the shapes, make sure you see the mesh within those shapes, before clicking to delete.

7. Select the Selection tool (⌘). 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 (⌘). 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 to remove it from the larger shape you combined.

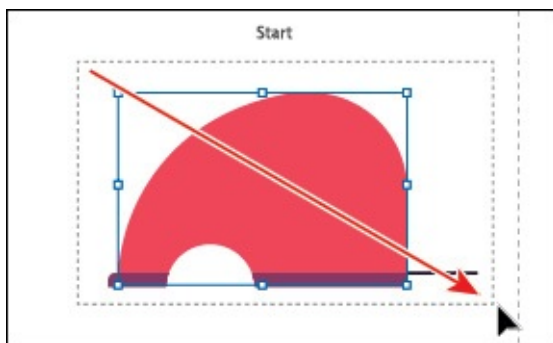


9. Choose Select > Deselect.

0. 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 tooltip name that shows as “Red 1.” Change the stroke weight to 0.



1. Drag across the red shape, purple shape, and black line to select them all.

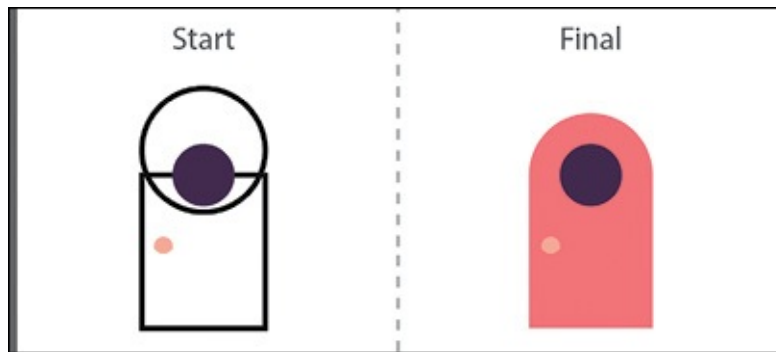


2. Choose Object > Group.

Combining objects using Pathfinder effects

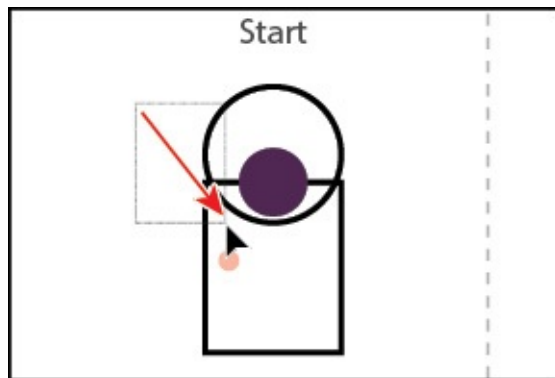
Pathfinder effects, found in the Properties panel or the Pathfinder panel (Window > Pathfinder), are another way to combine shapes in different ways. When a Pathfinder effect such as Unite is applied, the original objects selected are *permanently* transformed.

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.

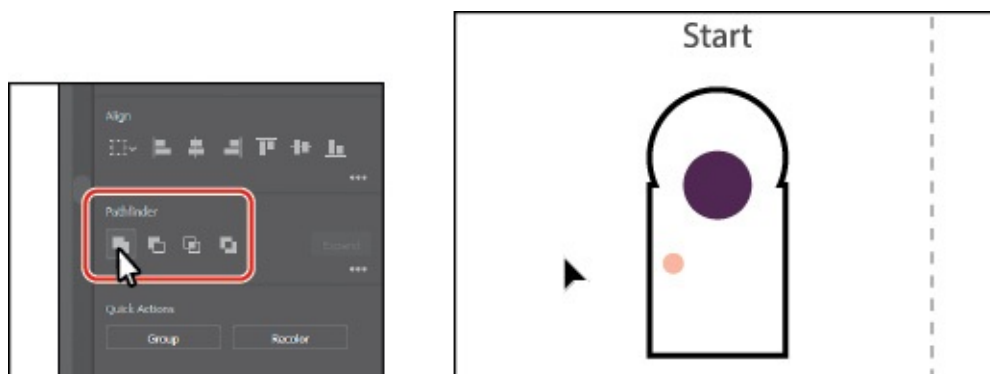
2. Choose View > Fit Artboard In Window.
3. With the Selection tool (▸) selected, drag across the circle and rectangle with the black strokes to select both objects.



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.

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

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



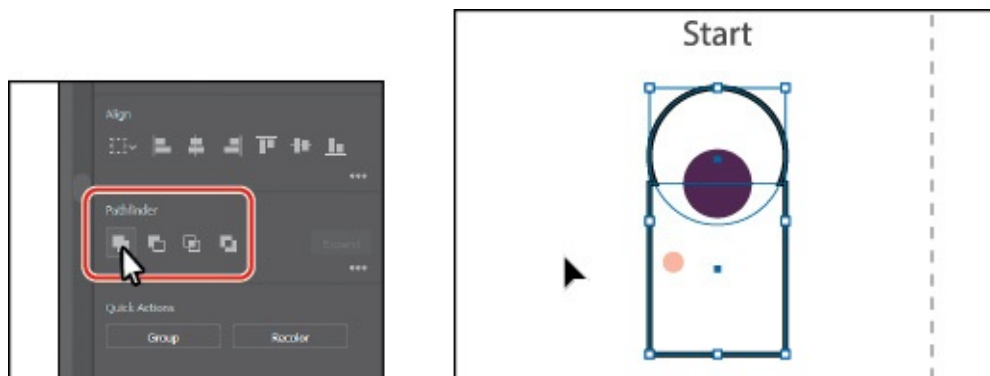
► **Tip:** Clicking More Options (⋮) in the Pathfinder section of the Properties panel will reveal the Pathfinder panel, which has more options.

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. When several shapes are selected, clicking the Pathfinders that are showing in the Properties panel by default while pressing the Option (macOS) 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.

1. With the shapes still selected, hold down 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.

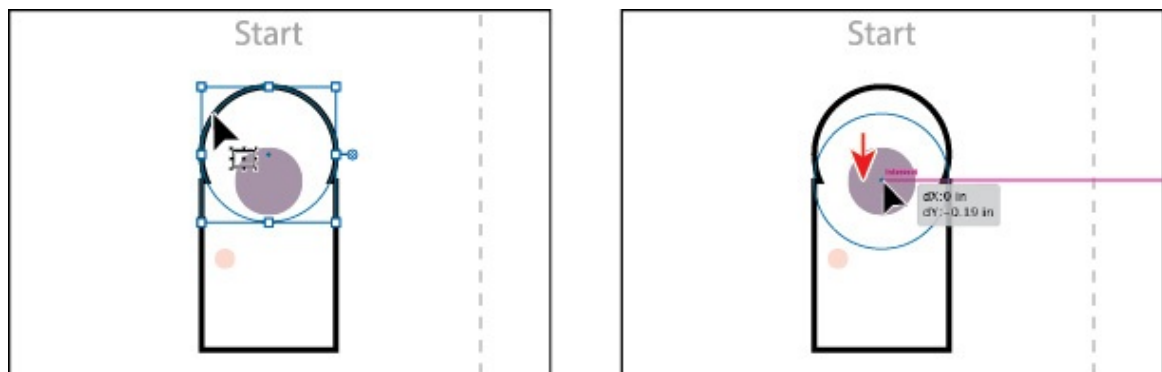
2. Choose Select > Deselect to see the final shape.
3. With the Selection tool, double-click the black stroke of the newly combined shape to enter Isolation mode.

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

4. Click the edge of the circle at the top or drag across the path to select it.
5. Drag the selected circle from the blue dot in the center, straight down. 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.

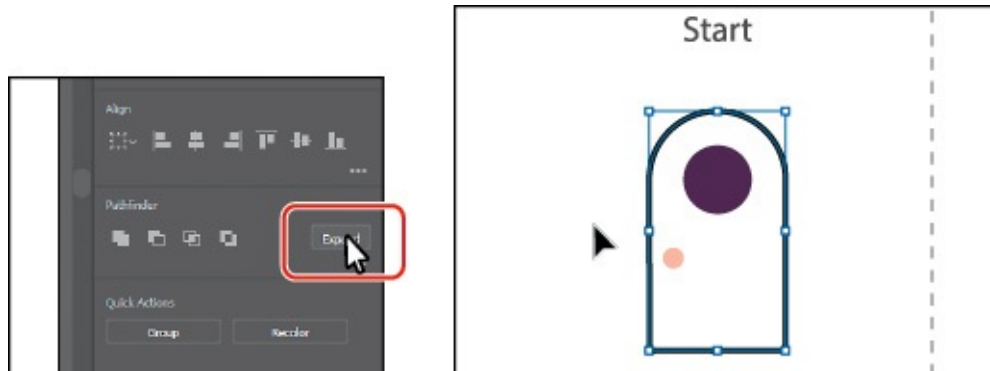
● **Note:** You can also press the arrow keys to move the shape if you find it difficult to drag.



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. Click the Expand button in the Properties panel.

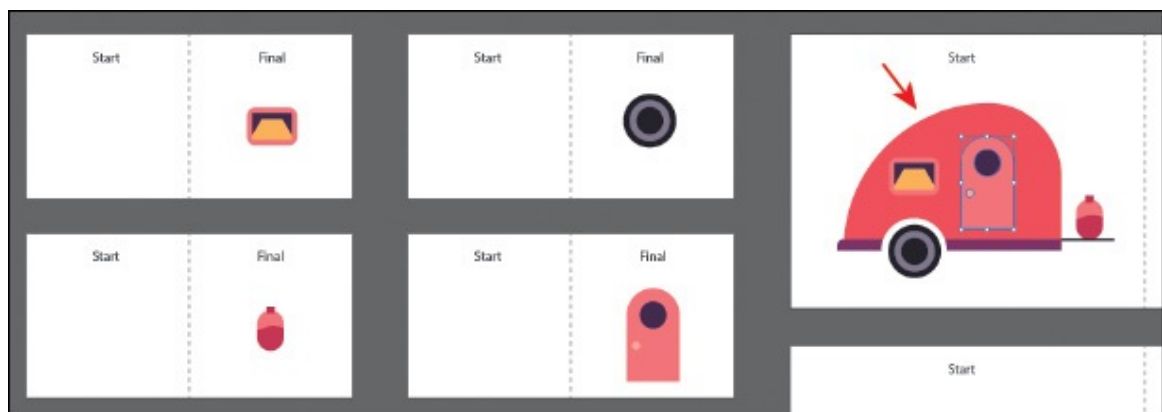


9. Change the fill color in the Properties panel to the color named Pink. Change the stroke weight to 0.
0. Drag across the shapes that make up the door to select them all.
1. Click the Group button toward the bottom of the Properties panel to group the content together.

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, and tank artboards.
3. With the Selection tool selected, drag the wheel, door, window, and tank artwork you created onto the trailer artwork labeled "Start." Position them like you see in the figure.



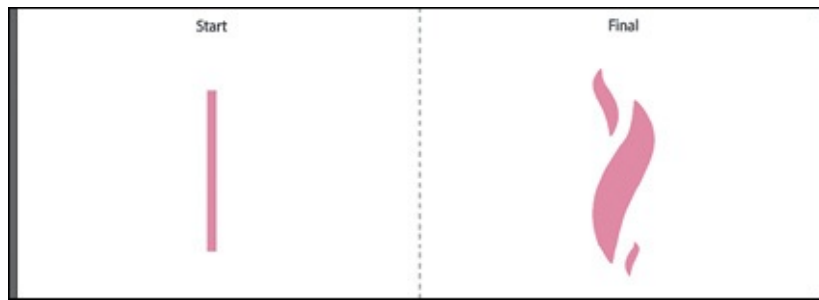
● **Note:** You may find that with the Smart Guides on, it is difficult to position the content on the trailer. You can always turn off the Smart Guides (View > Smart Guides), then turn them on when you are finished dragging the artwork.

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.

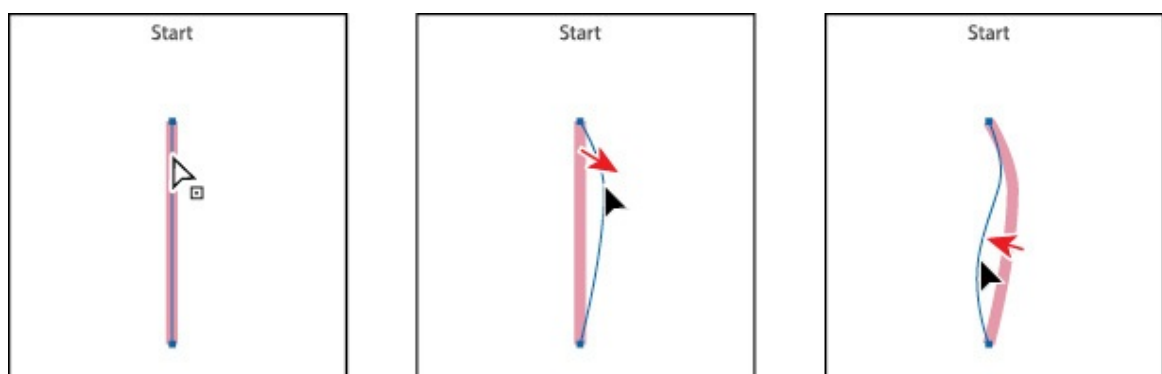
1. Choose 10 Flame from the Artboard Navigation menu in the lower-left corner of the Document window.



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 line labeled “Start.”
3. Click and hold down the mouse button on the Scale tool (⌘) and select the Reshape tool (⌘) from the tool menu.
4. 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.

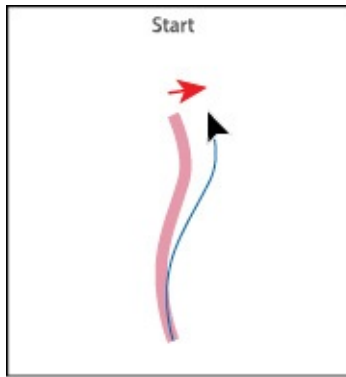
● **Note:** You can use the Reshape path on a closed path, like a square or circle, but if the entire path is selected, the Reshape tool will add anchor points and reshape the path.



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.

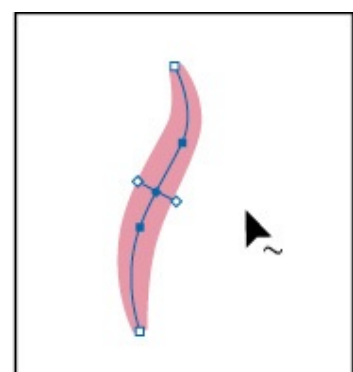
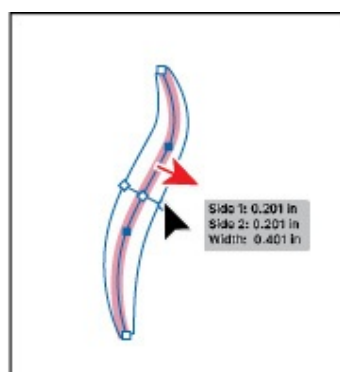
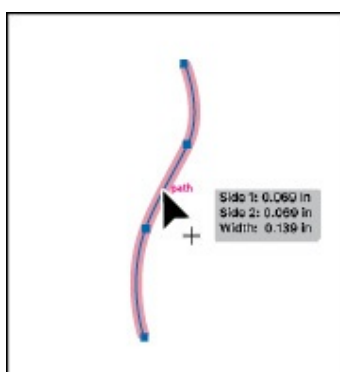


● **Note:** Only selected anchor points will be adjusted when dragging with the Reshape tool.

Using the Width tool

Not only can you adjust the weight of a stroke, like you did in [Lesson 3](#), 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.

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 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 that's filled with blue is called the *width point*. The lines extending from the width point are the *handles*.

► **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

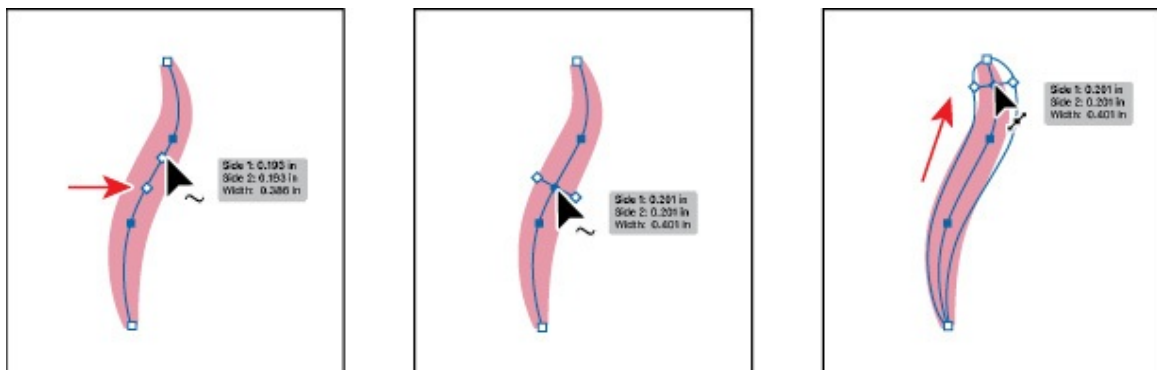
width point, the Width Point Edit dialog box allows you to edit both width points.

2. Click in a blank area of the artboard to deselect the point.
-

► **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.

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 figure below). 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 (↗), click and drag it up and down to see the effect on the path.
-

● **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.



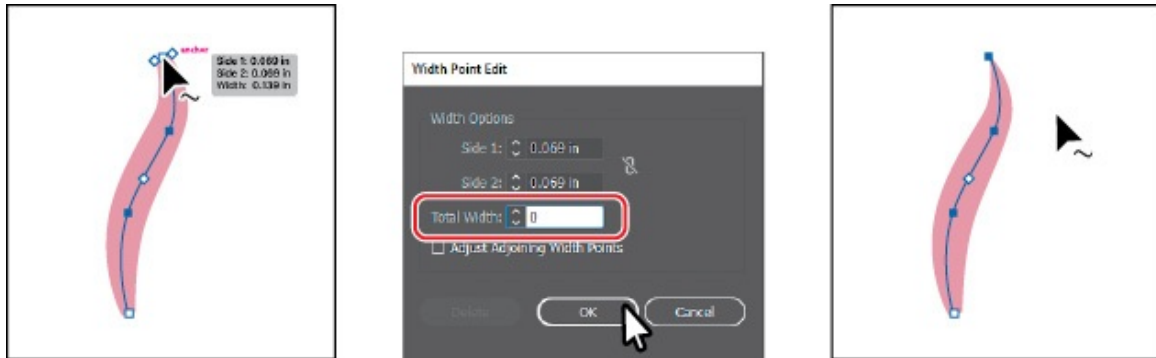
5. Choose Edit > Undo Width Point Change to return the width point to its original position on the path.

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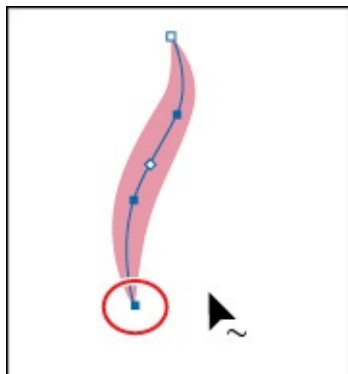
► **Tip:** You can move the pointer over a width point, press the Option (macOS) or Alt (Windows) key, and drag to duplicate it.

7. In the Width Point Edit dialog box, change the 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.

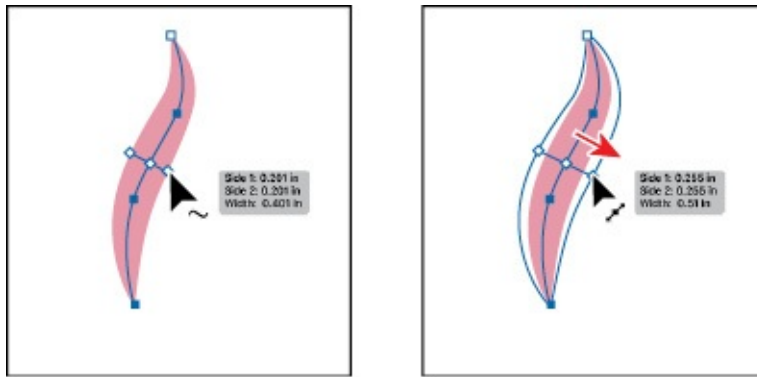
8. Move the pointer over the bottom anchor point of the path, and double-click. In the Width Point Edit dialog box, change the Total Width to **0 in**, and click OK.



► **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.

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.

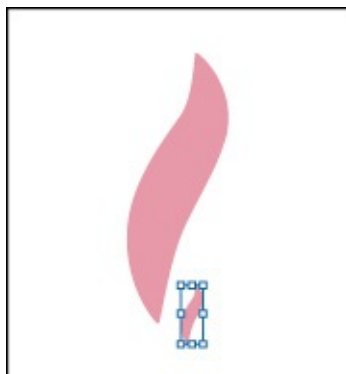
► **Tip:** After defining the stroke width, you can save the variable width as a *profile* that you can reuse later, from the Stroke panel or the Control panel. To learn more about variable width profiles, search for “Painting with fills and strokes” in Illustrator Help (Help > Illustrator Help).



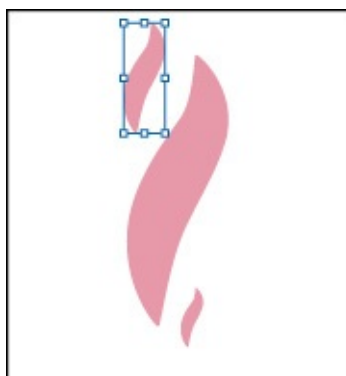
Finishing up the illustration

To finish the illustration, you will 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.

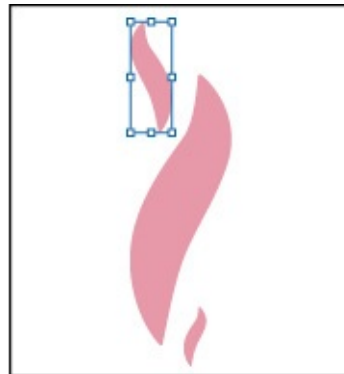
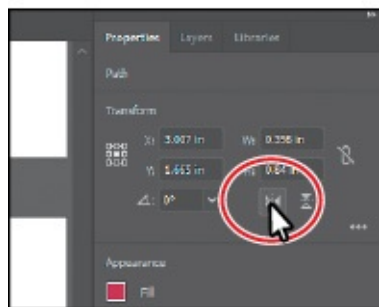


4. With the smaller copy selected, choose Edit > Copy and then Edit > Paste, scale the new copy larger, and position it like you see in the figure.

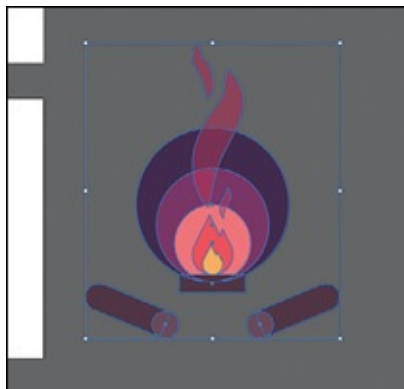


5. With the shape still selected, click the Flip Along Horizontal Axis option (

⏮) in the Properties panel. Drag the shape into position like you see in the figure.

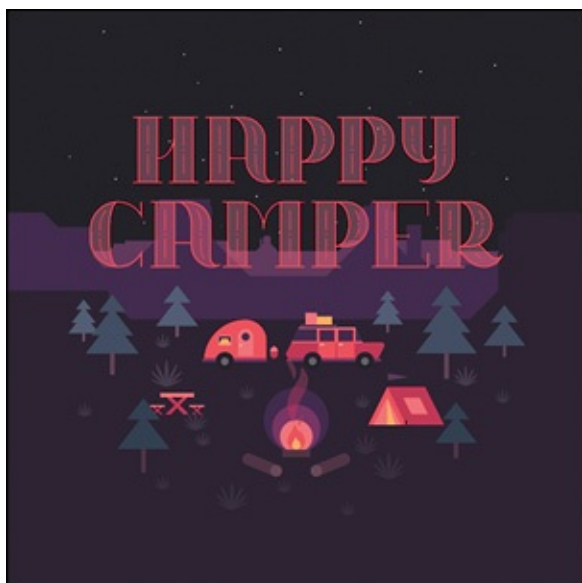


6. Drag across the three flame shapes to select them all. Choose Object > Group.
7. Choose View > Zoom Out a few times so you can see the campfire artwork to the right of the artboard. Drag the group of flames onto the fire artwork to the right of the artboard.
8. Drag across all of the campfire shapes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






9. Choose View > Fit All In Window.
0. Choose View > Smart Guides to turn them off.
1. 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 they fit 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 finished resizing, release the mouse button and then the Shift key.






2. Choose View > Smart Guides to turn them on for the next lesson.
3. 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?

Review answers

1. 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, which can be found in the Properties panel, the Effects menu, or the Pathfinder panel, to create new shapes out of overlapping objects. As you saw in [Lesson 3](#), “[Using Shapes to Create Artwork for a Postcard](#),” shapes can also be combined using the Shaper tool.
2. The Scissors tool () is meant to split a path, graphics frame, or empty text frame at an anchor point or along a segment. The Knife tool () cuts objects along a path you draw with the tool, dividing objects. When you cut a shape with the Scissors tool, it becomes an open path. When

you cut a shape with the Knife tool, they become closed paths.

3. To erase in a straight line with the Eraser tool () , you need to press and hold the Shift key before you begin dragging with the Eraser tool.
4. In the Properties panel, when a shape mode (such as Unite) is applied, the original objects selected are permanently transformed, but you can hold down the Option (macOS) or Alt (Windows) key, and the original underlying objects are preserved. When a Pathfinder effect (such as Merge) is applied, the original objects selected are permanently transformed.
5. Paths, 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, which converts the line into a closed shape (or compound path).