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.
- Work with the Shape Builder tool.
- Work with Pathfinder commands to create shapes.
- Create a compound path.
- Work with the Reshape tool.
- Edit strokes with the Width tool.

This lesson takes approximately 45 minutes to complete. Please log in to your account on peachpit.com to download the lesson files for this chapter, 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."

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.

Soon after you begin creating simple paths and shapes, you will most likely want to take them further in order 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 in order to finish a poster about camping.

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.

● **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.

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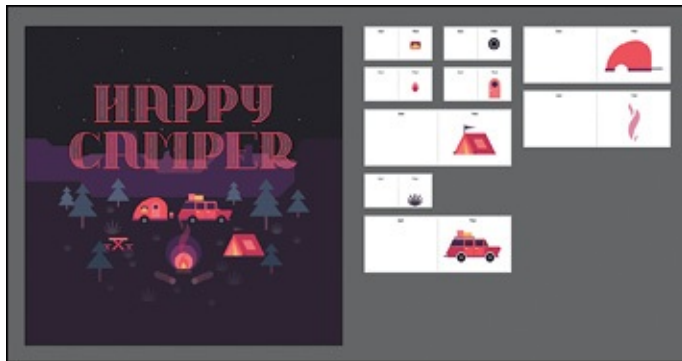
4. Choose View > Fit All In Window; leave the file open for reference, or choose File > Close (I closed it).

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.

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 the Format option set to Adobe Illustrator (ai) (macOS) or the Save As Type option set to Adobe Illustrator (*.AI) (Windows), and click Save.

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

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 achieve the artwork you want. Sometimes, to get the artwork you desire, you start with simpler paths and shapes and use different methods for achieving more complex paths. This includes working with the Scissors tool (✂), the Knife tool (🖊), and the Eraser tool (◆); 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 (✂), which splits a path at an anchor point or on a line segment and makes 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).

2. Choose 2 Window from the Artboard Navigation menu in the lower-left corner of the Document window. Choose View > Fit Artboard In Window.
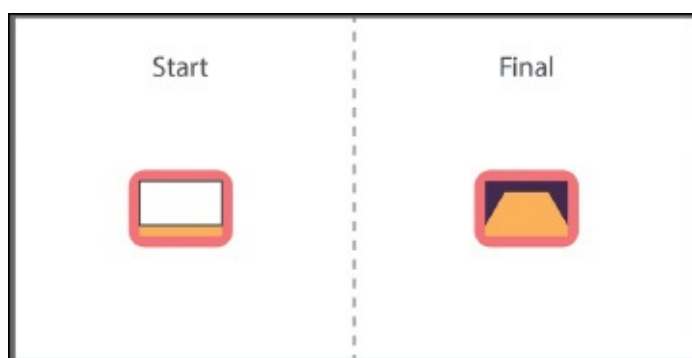
An example of what you will create is labeled "Final" on the right side of the artboard. You will work with the artwork labeled "Start," on the left.

3. Select the Selection tool (▶) in the Tools panel, and click the white shape on the left to select it.

**4.** Press Command++ (macOS) or Ctrl++ (Windows) a few times to zoom in to the selected artwork.
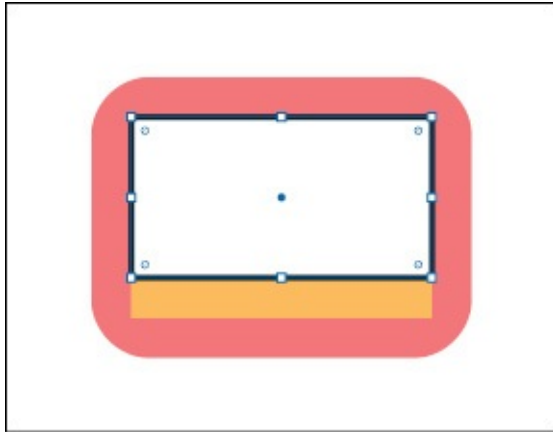
5. With the shape selected, in the Tools panel, click and hold down mouse button on the Eraser tool (◆), and select the Scissors tool (✂). Position the pointer over the bottom edge of the shape (see the figure). When you see the word "path," click to cut the path at that point, and then move the pointer away.

● **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.
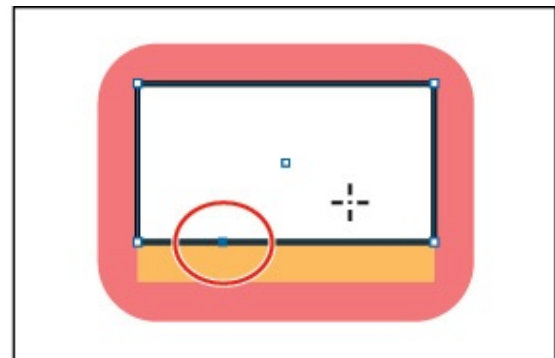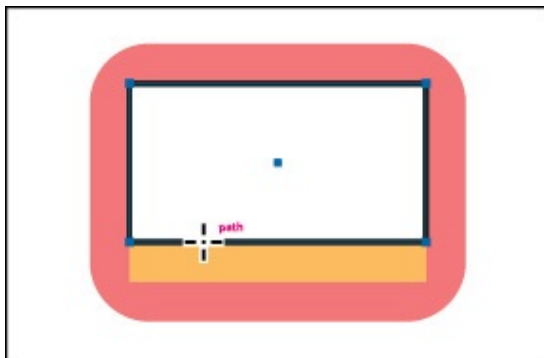

Cuts made with the Scissors tool must be on a line or a curve rather than on an end point of an open path. Clicking the stroke of a shape, the rectangle in this example, with the Scissors tool, the path is cut where you click so that it becomes open (a path with two end points).

6. Select the Direct Selection tool (▷) in the Tools panel. Move the pointer over the selected (blue) anchor point and drag it up.
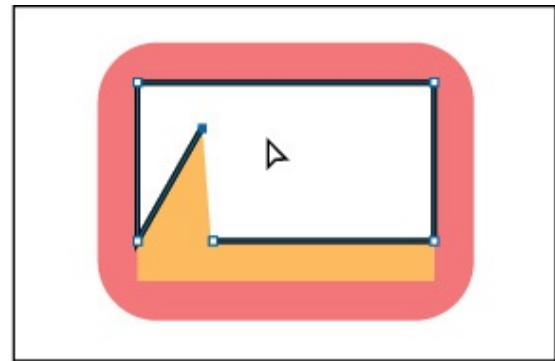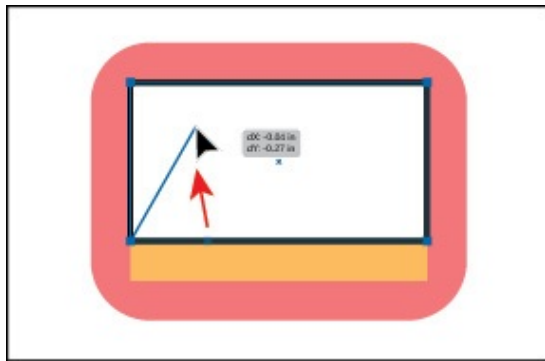
7. Drag the other anchor point, from where you originally cut the shape with the scissors, up and to the right (see the figure).
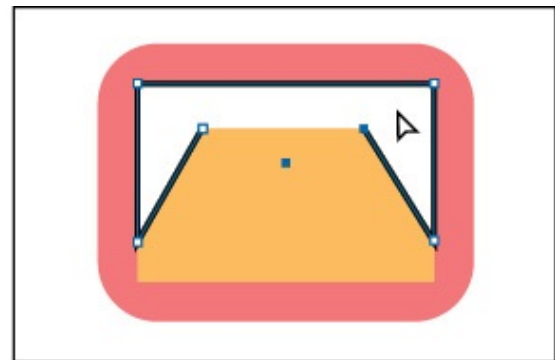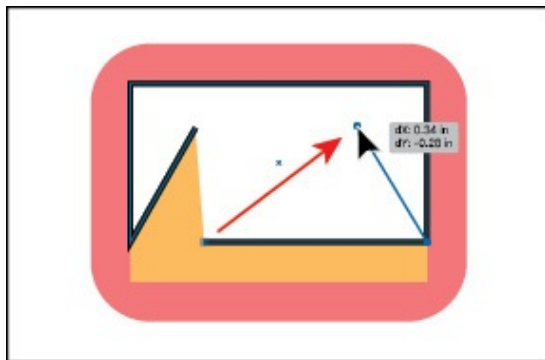
Notice how the stroke (the black border) doesn't go all the way around the white shape. That's because cutting with the Scissors tool makes an open path. If you only want to fill the shape with a color, it doesn't have to be a closed path. It is, however, necessary for a path to be closed if you want a stroke to appear around the entire fill area.

Joining paths

Suppose you draw a "U" shape and later decide 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 to create a closed path. You can also join the end points of two separate paths. Next, you will 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.
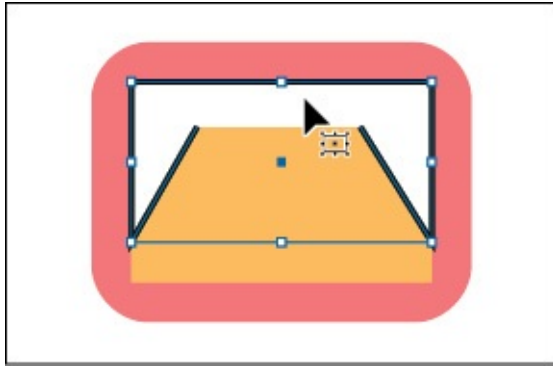
This step is important because only one anchor point was left selected from the previous section. If you were to choose the Join command with only one anchor point selected, an error message would appear. By selecting the whole path, when you apply the Join command, Illustrator simply finds the two ends 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, 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.
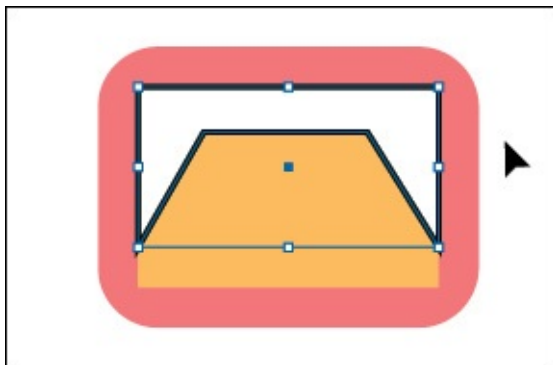
> **Tip:** In Lesson 6, "Creating an Illustration with the Drawing Tools," you'll learn about the Join tool (🔪), which allows you to join two paths at a corner, keeping the original curve intact.

3. In the Properties panel on the right (Window > Properties), change the stroke to **0** by clicking the down arrow 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 named Purple3.
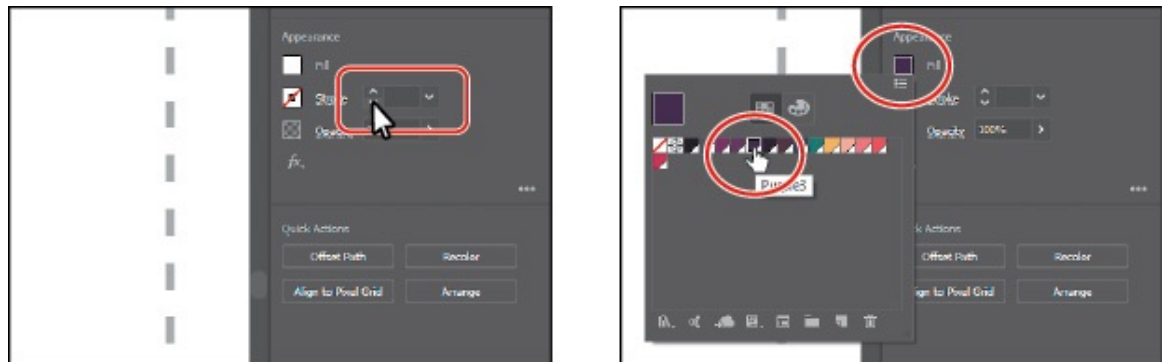
5. Drag across the window shapes to select them.

6. Choose Object > Group.

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

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7. Choose Select > Deselect and then choose File > Save.
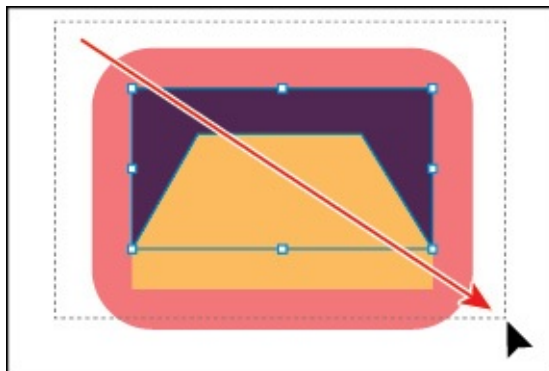
Cutting with the Knife tool

Another way to cut a shape is by using the Knife tool (). To cut with the Knife tool, you drag across a shape, and the result is two 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 to ensure it fits in the Document window.

3. Select the Selection tool (▶), and click the pink oval shape under the artwork labeled "Start."
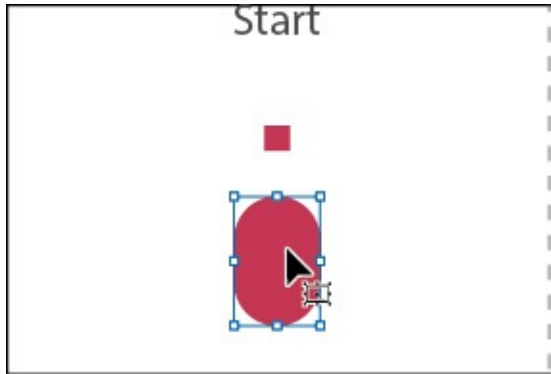
If an object is selected, the Knife tool will only cut that object. If nothing is selected, it will cut any vector objects it touches.

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

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4. Click and hold down the mouse on the Scissors tool (✂), and select the Knife tool (✎).

5. Move the Knife pointer (▶✎) to the left of the selected shape. Drag across the shape to cut it into two.
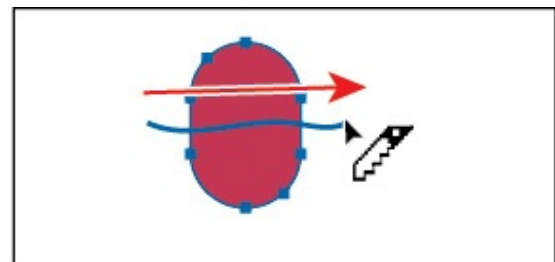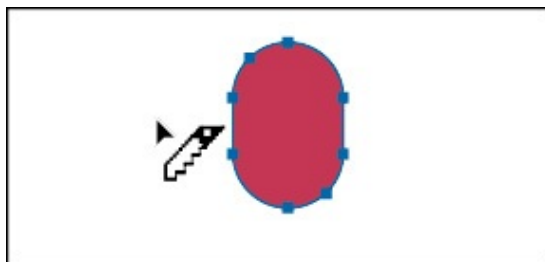

Notice how dragging across a shape with the Knife tool makes a very free-form cut that is not straight at all.

▶ **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.

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6. Choose Select > Deselect.

7. Select the Selection tool (▶), and click the new, top shape (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 named Pink.
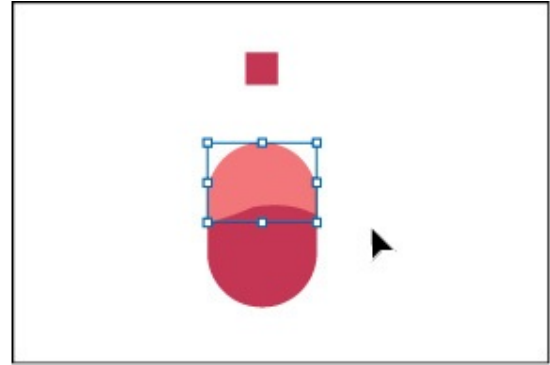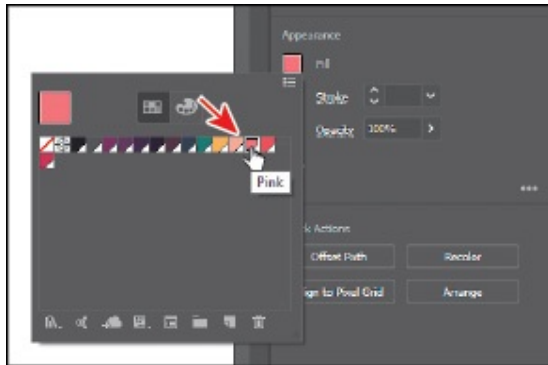

9. Drag the small, red square that is above the shapes, down onto the shapes you cut.

0. Drag across all of the tank shapes labeled "Start," to select them.

1. Choose Object > Group.

2. Choose Select > Deselect.
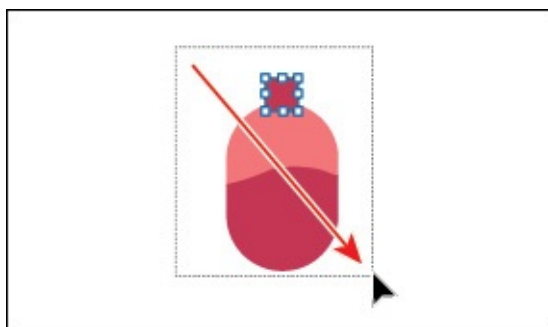

Cutting in a straight line

Next, you'll cut artwork in a straight line with the Knife tool. Pressing the Option (macOS) or Alt (Windows) key allows you to cut in a straight line with the Knife tool. Pressing the Shift key as well constrains the cut to 45 degrees.

1. Choose 4 Tent from the Artboard Navigation menu in the lower-left corner of the Document window.
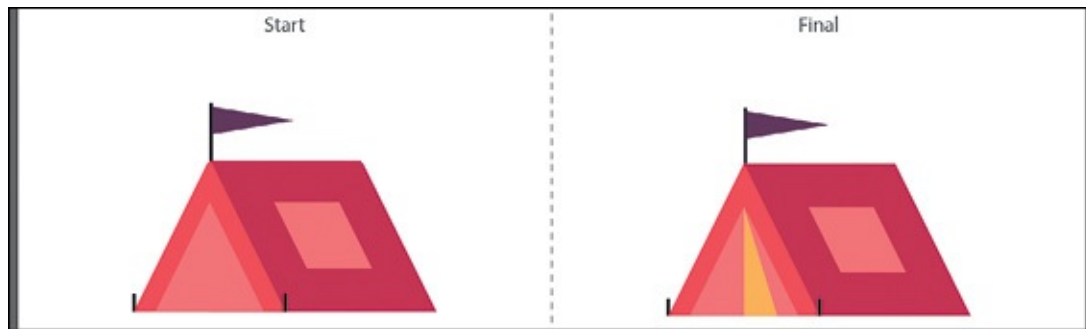
An example of what you will create is labeled "Final" on the right side of the artboard. You will work with the artwork labeled "Start," on the left. You'll cut the tent opening shape into several paths. This requires you to cut in straight lines.

2. Choose View > Fit Artboard In Window.
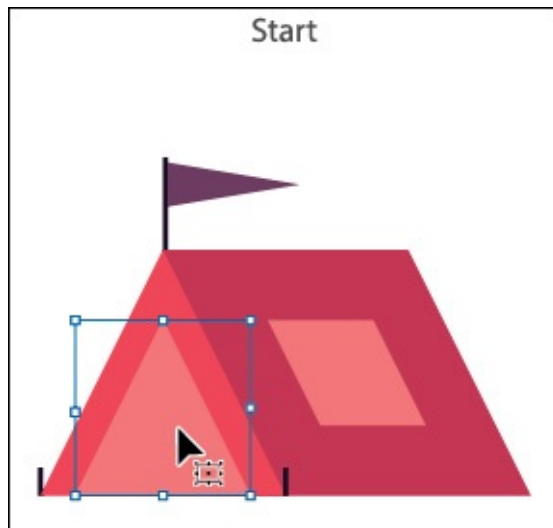
3. With the Selection tool (▶) selected, click the pink triangle shape under the artwork labeled "Start."

4. Choose View > Zoom In, twice, to zoom in to the artwork.

5. Select the Knife tool (✎). Position the pointer just above the top point of the selected triangle. Press the Caps Lock key to turn the Knife tool pointer into a precise cursor (-¦-).

The pointer now appears as cross hairs and can make it easier to see exactly where you will 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.
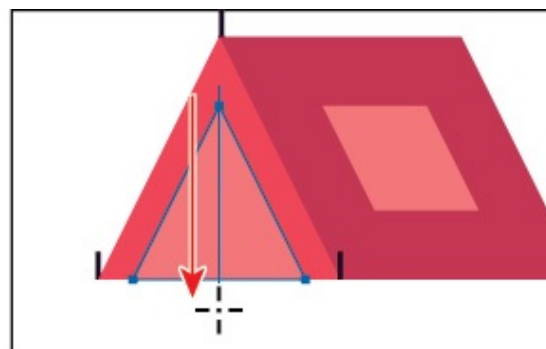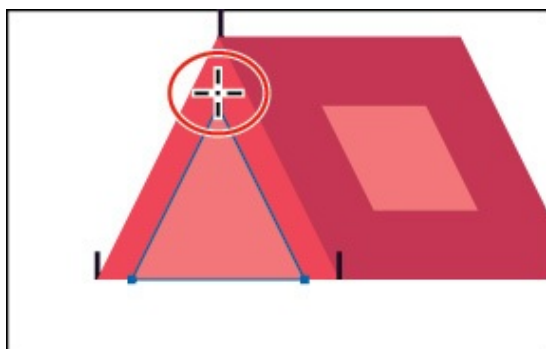
> ● **Note:** Pressing the Option/Alt key keeps the cut straight, and pressing the Shift key constrains the cutting to a multiple of 45°.

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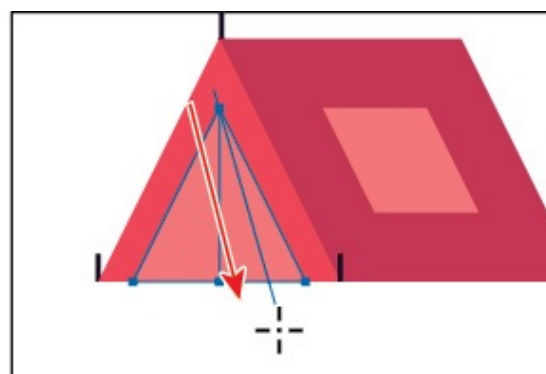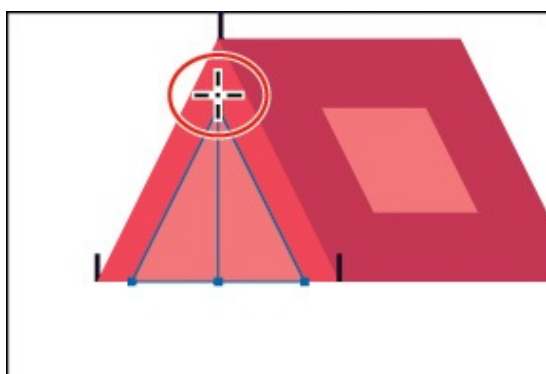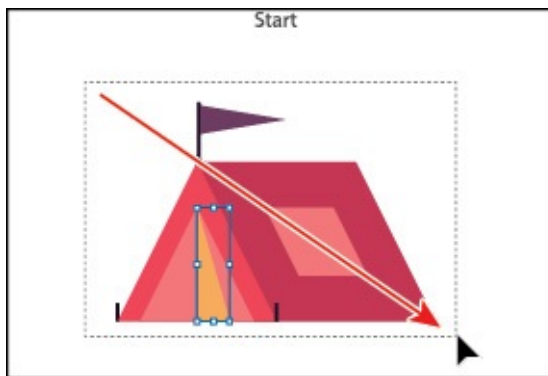

8. Choose Select > Deselect.

9. Select the Selection tool (▶), and click the middle, pink triangle.

0. 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 named Yellow.
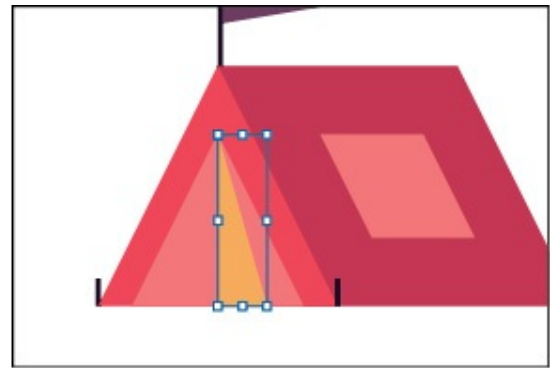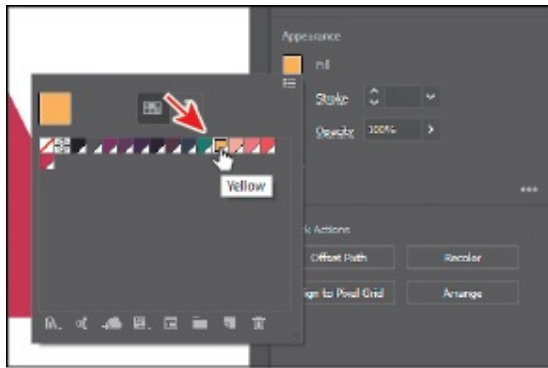
1. Drag across all of the tent shapes labeled "Start," to select them.

2. Choose Object > Group.

3. Depress the Caps Lock key.

Outlining strokes

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 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.
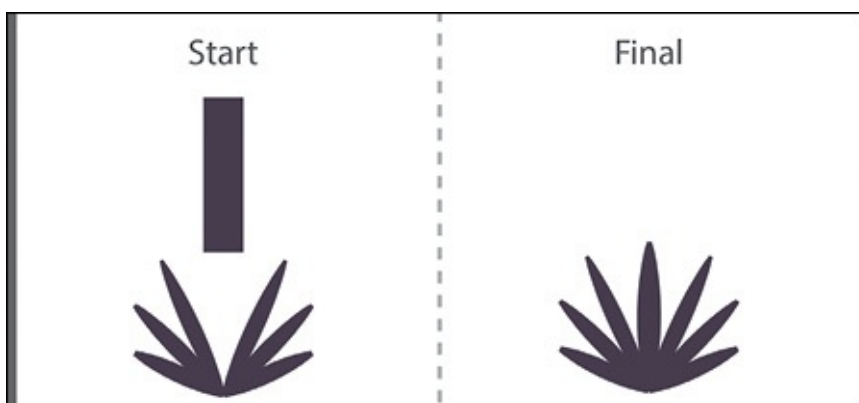
An example of what you will create is labeled "Final" on the right side of

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 rectangle labeled "Start."

The rectangle is actually a path. You can tell it's a path with a large stroke. In the Properties panel, you can see that the stroke weight is set to 20. In order 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 have may be composed of a lot of anchor points. You can choose Object > Path > Simplify to try to simplify the path, which usually means fewer anchor points.

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4. Choose Object > Path > Outline Stroke.
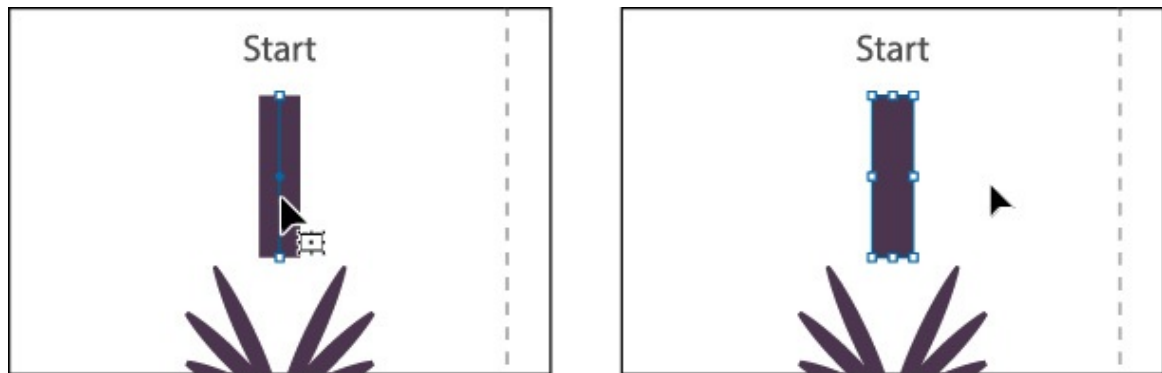
This creates a filled shape that is a closed path.

● **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.

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5. Drag the shape into position like you see in the following figure. Leave the shape selected.
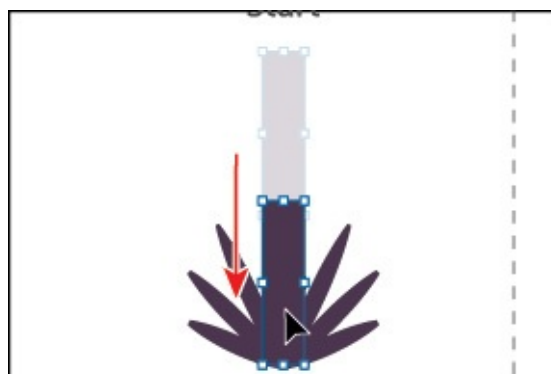
Next, you'll erase parts of the shape.

Using the Eraser tool

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.

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

1. Click 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 erasing needs are.
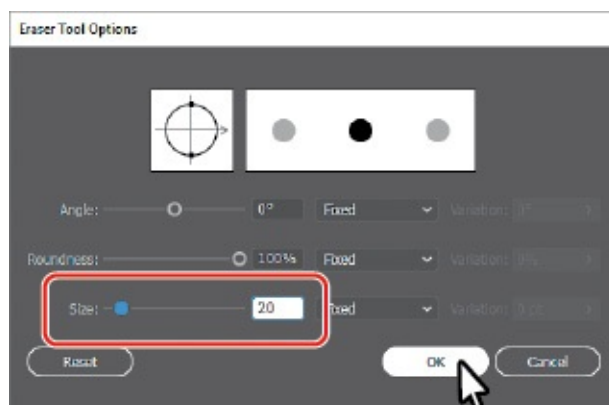

▶ **Tip:** With the Eraser tool selected, you could also click the Tool Options button at the top of the Properties panel to see the options dialog box.

3. Position the pointer above the selected purple shape. Drag down the left side of the shape to erase it.
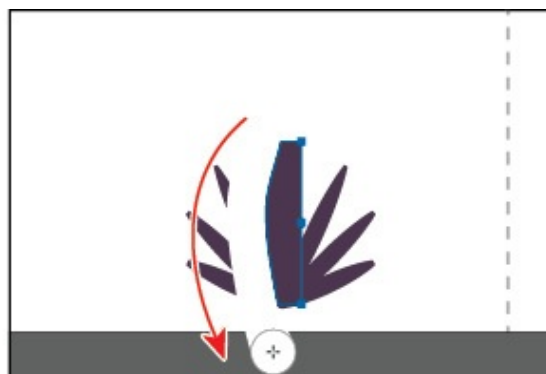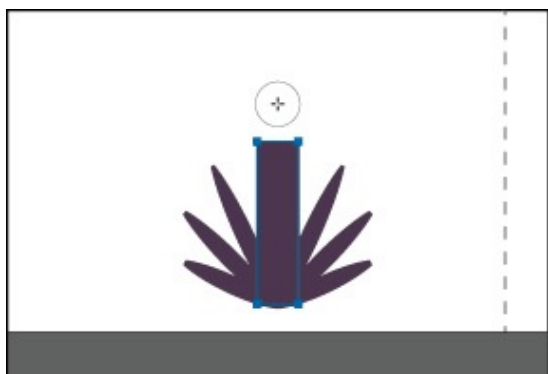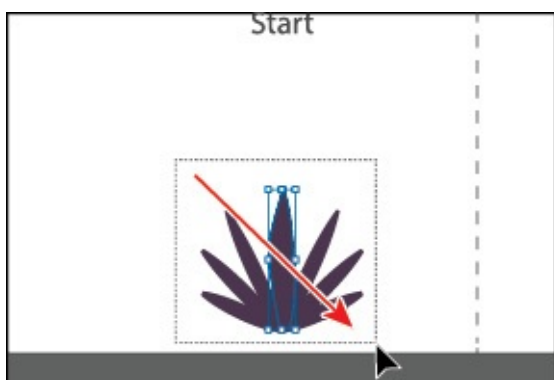
When you release the mouse button, part of the shape is erased, and the shape is still a closed path.

4. Position the pointer above the selected purple shape. Drag down the right side of the shape to erase it.
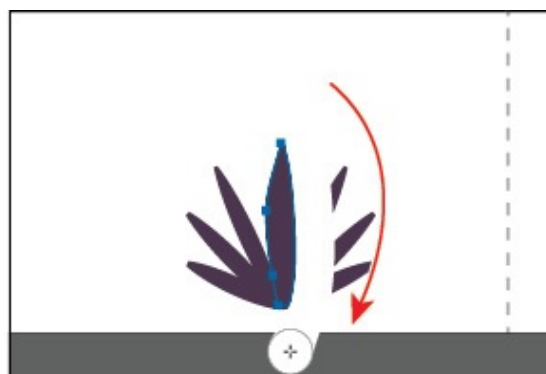
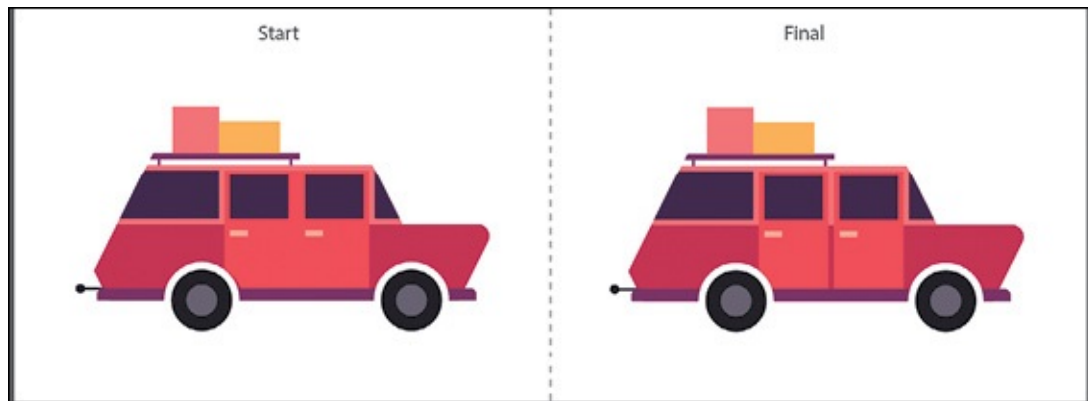5. Select the Selection tool (▶) and drag across all of the plant shapes labeled "Start," to select them.

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.

Start   Final

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. Select the Selection tool (▶), and click to select the door shape labeled "Start."

4. Choose View > Zoom In a few times to zoom in closer.

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.
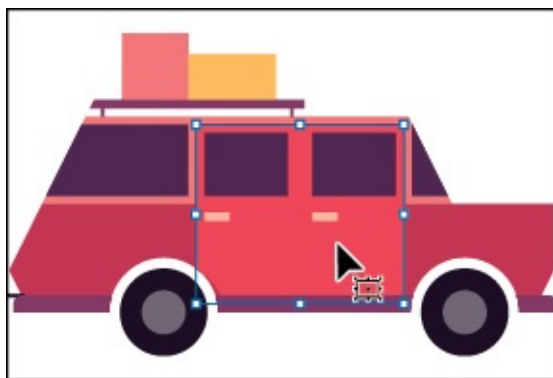
6. With the Eraser tool (◆) selected, move the pointer above the middle of the selected shape. Press the Shift key, and drag straight down. Release the mouse button and then the Shift key.
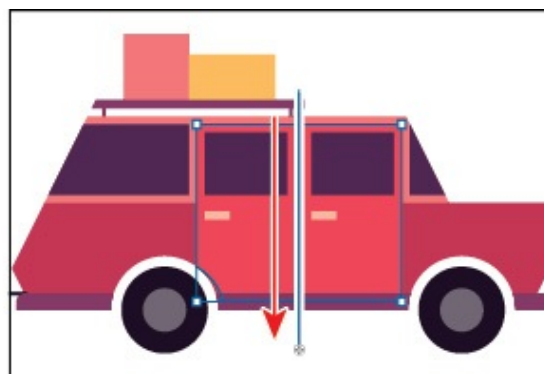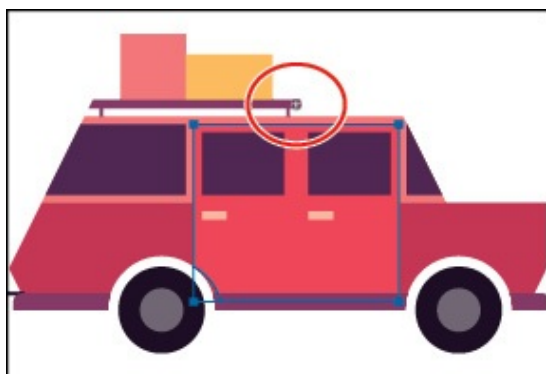
It may look like you erased other parts of the car, but since nothing else was selected, you didn't. The selected door shape is now two separate shapes, both closed paths.
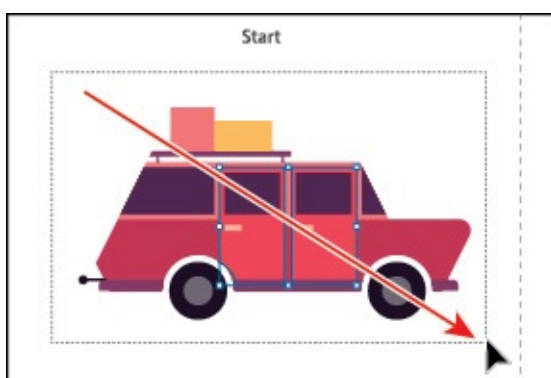
> ▶ **Tip:** If you need to erase a large part of a shape, you can always adjust the eraser size by using the Eraser Tool Options dialog box or by pressing either of the bracket keys ([or]).

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
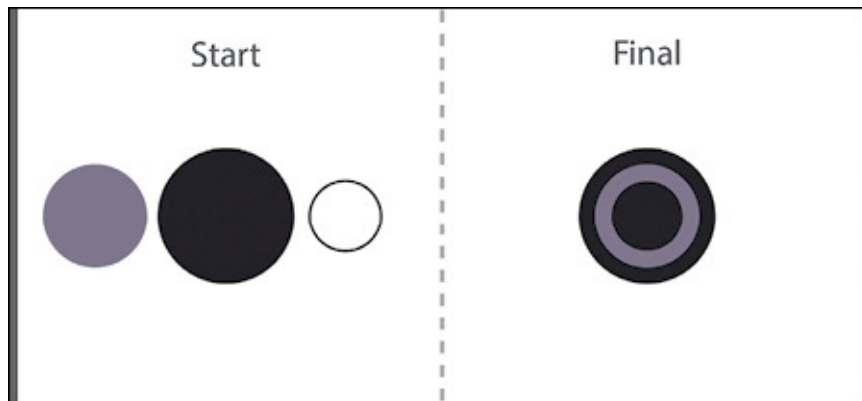
corner of the Document window.

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.
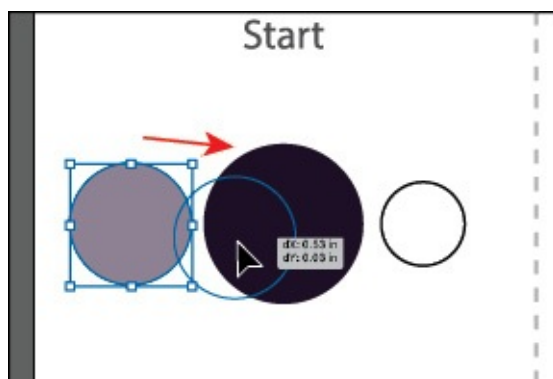

4. Drag the white shape on top of the gray circle and make sure it's centered.

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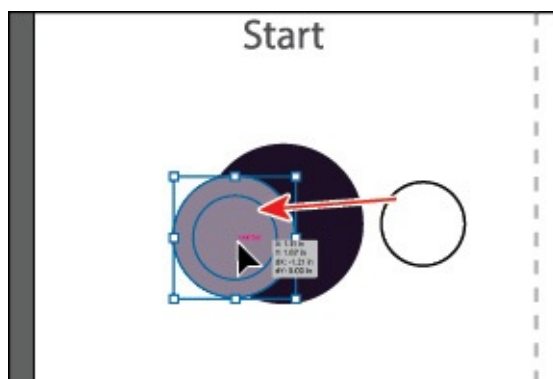
5. Shift-click the gray circle to select it along with the white circle.

6. Choose Object > Compound Path > Make, and leave the artwork selected.
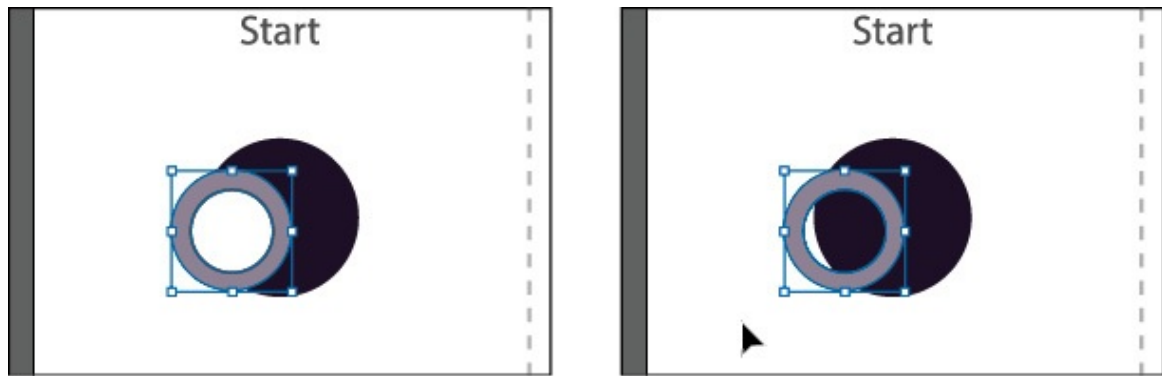
▶ **Tip:** You can still edit the original shapes in a compound path like this one. To edit them, select each shape individually with the Direct Selection tool (▷) or double-click the compound path with the Selection tool to enter Isolation mode and select the individual shapes.

You can now see that the white circle has seemingly disappeared, and you can now see through the shape to the dark color of circle beneath. The white circle was used to "punch" a hole in the gray shape. With the 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.