

dragging a marquee across any part of the object.

2. You can double-click the group with the Selection tool selected, to enter Isolation mode, edit the shapes as needed, and then exit Isolation mode by pressing the Escape key or by double-clicking outside of the group. Read [Lesson 9, “Organizing Your Artwork with Layers,”](#) to see how you can use layers to make complex selections. Also, using the Group Selection tool ()¹, you can click once to select an individual item within a group (not discussed in the lesson). Click again to add the next grouped items to the selection.
3. Using the Direct Selection tool ()², you can select one or more individual anchor points and make changes to the shape of an object.
4. For any selection that you anticipate using again, choose Select > Save Selection. Name the selection so that you can reselect it at any time from the Select menu.
5. To align objects to an artboard, first select the Align To Artboard option.
6. If your access to an object is blocked, you can choose Object > Hide > Selection to hide the blocking object. The object is not deleted. It is just hidden in the same position until you choose Object > Show All. You can also use the Selection tool () to select an object that's behind other objects by pressing the Command (macOS) or Ctrl (Windows) key and then clicking the overlapping objects until the object you want to select is selected.

3 Using Shapes to Create Artwork for a Postcard

Lesson overview

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

- Create a document with multiple artboards.
- Use tools and commands to create a variety of shapes.
- Understand Live Shapes.
- Round corners.
- Work with the Shaper tool.
- Work with drawing modes.
- Use Image Trace to create shapes.



This lesson takes approximately 60 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.



Basic shapes are at the foundation of creating Illustrator artwork. In this lesson, you'll create a new document and then create and edit a series of shapes using the shape tools for a postcard.

Starting the lesson

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

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 L3_end.ai, which is in the Lessons > Lesson03 folder that you copied onto your hard disk, and click Open.

This file contains the finished illustrations that you'll create in this lesson.

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

Creating a new document

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

1. Choose File > New to create a new, untitled document. In the New Document dialog box, change the following options:

- Select the Print profile at the top of the dialog box.

► **Tip:** In the New Document dialog box, you will see a series of document presets you can start each project with.

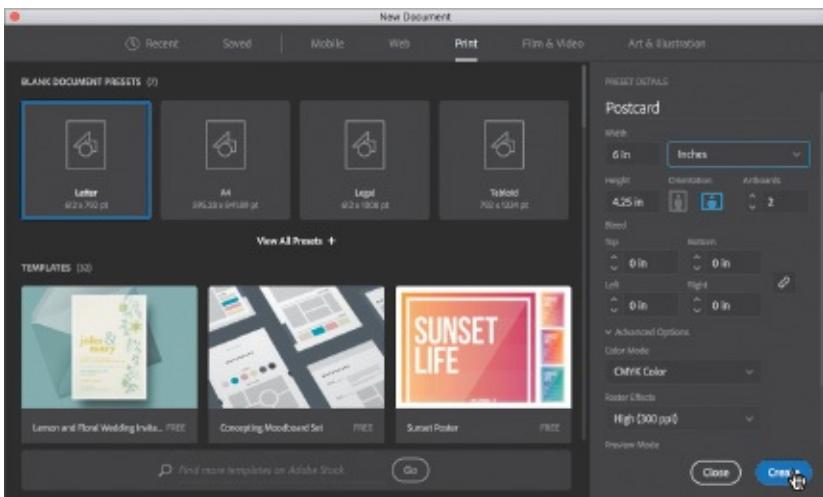
- Select the Letter document preset.

On the right, in the Preset Details area, change the following:

- Name: Change it from Untitled-1 to **Postcard**.
- Units: Change the units from Points to **Inches**.
- Width: **6 in** (You don't need to type the **in** for inches.)
- Height: **4.25 in**
- Orientation: **Landscape** (Portrait icon)
- Artboards: **2** (to create two artboards)

You'll learn about the Bleed option shortly. At the bottom of the Preset Details section on the right side of the New Document dialog box, you will also see Advanced Options and More Settings (you may need to scroll to see it).

They contain more settings for document creation that you can explore on your own.



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

2. Click Create in the New Document dialog box.
3. Choose File > Save As. In the Save As dialog box, ensure that the name of the file is Postcard.ai, and save it in the Lessons > Lesson03 folder. Leave the Format menu set to Adobe Illustrator (.ai) (macOS) or the Save As Type option set to Adobe Illustrator (*.AI) (Windows), and click Save.

Adobe Illustrator (.ai) is called a *native format*. That means it preserves all Illustrator data, including multiple artboards.

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

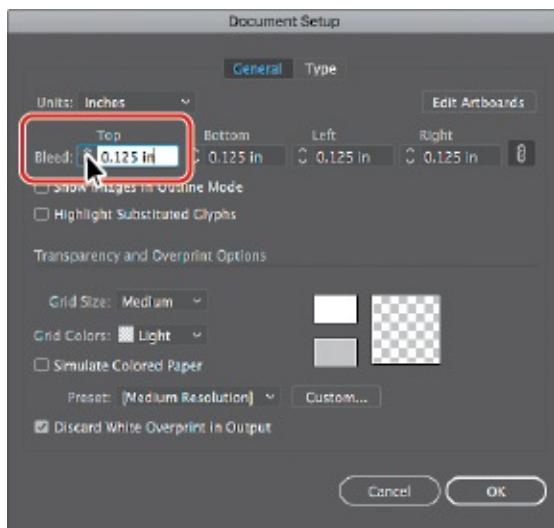
The Illustrator Options dialog box is full of options for saving the Illustrator document, from specifying a version for saving to embedding any files that are linked to the document.

Tip: If you want to learn more about these options, search for “Save artwork” in Illustrator Help (Help > Illustrator Help).

5. Click the Document Setup button in the Properties panel (Window > Properties).

The Document Setup dialog box is where you can change document options like units, bleeds, and more, after a document is created.

6. In the Bleed section of the Document Setup dialog box, change the value in the Top field to **0.125 in**, either by clicking the Up Arrow to the left of the field once or by typing the value, and all four fields change. Click OK.

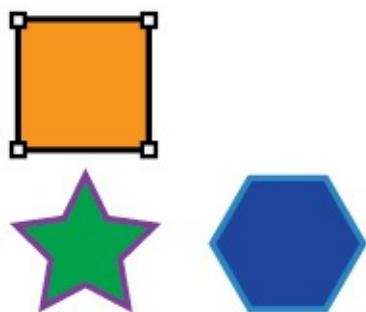


The red line that appears around both artboards indicates the bleed area. You will typically add bleed to artboards where you want artwork to be printed all the way to the edge of the paper. Bleed is the term used for the area that extends beyond the edge of the printed page, and it ensures that no white edges show up on the final trimmed page.

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

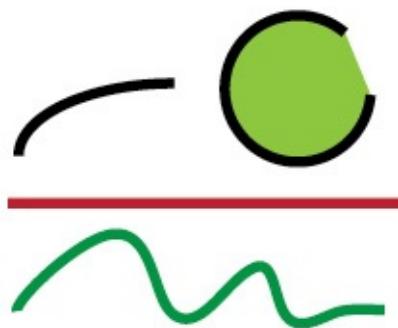
Working with basic shapes

In the first part of this lesson, you'll create a series of basic shapes, such as rectangles, ellipses, rounded rectangles, polygons, and more. Shapes you create are composed of *anchor points* with paths connecting the anchor points. A basic square, for instance, is composed of four anchor points on the corners with paths connecting the anchor points (see the figure at right). A shape is referred to as a *closed path*.



Examples of Closed Paths

A path can be closed, or it can be open with distinct anchor points on each end, called *end points* (see the figure at right). Both open and closed paths can have fills applied to them.



Examples of open paths

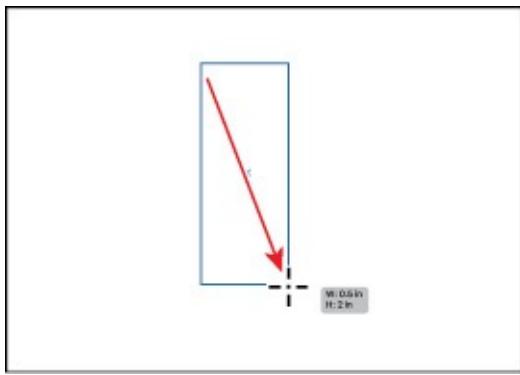
You'll begin this exercise by setting up the workspace.

1. Choose Window > Workspace > Essentials (if it's not already selected) and then choose Window > Workspace > Reset Essentials.
2. Choose 2 from the Artboard Navigation menu below the lower-left corner of the Document window.
3. Choose View > Fit Artboard In Window.

Creating and editing rectangles

You'll start this lesson by creating a few rectangles. All of the shape tools, except for the Star tool and Flare tool, create Live Shapes. *Live Shapes* have attributes such as width, height, rotation, and corner radius that are editable later, without having to switch from the drawing tool, and are retained even if you scale or rotate the shape.

1. Select the Rectangle tool (■) in the Tools panel. Move the pointer near the center of the artboard. Press the mouse button and drag down and to the right. Drag until the rectangle is approximately 0.5 inches wide and has a height of 2 inches, as shown in the gray tooltip next to the cursor.



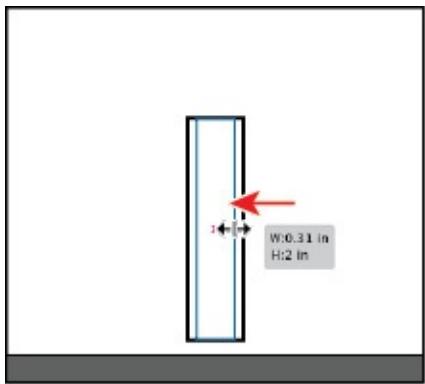
► **Tip:** Holding down Option (macOS) or Alt (Windows) as you drag with the Rectangle, Rounded Rectangle, or Ellipse tool draws a shape from its center point.

As you drag to create shapes, the tooltip that appears next to the pointer is called the *measurement label* and is part of Smart Guides (View > Smart Guides), which will be discussed throughout this lesson. By default, shapes are filled with a white color and have a black stroke (border). Using any of the shape tools, you can either draw a shape or click the artboard with a shape tool selected to enter values in a dialog box.

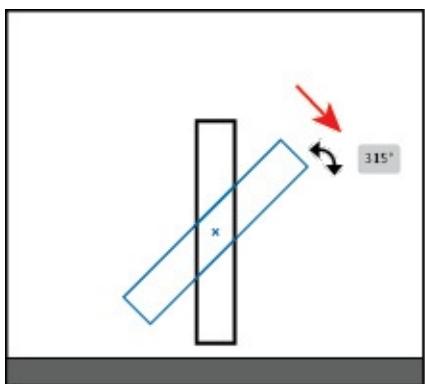
2. With the rectangle selected, move the pointer over the small blue dot in the center of the rectangle (called the *center point widget*). When the pointer changes (), drag the shape into the bottom half of the artboard.



3. Begin dragging the right-middle bounding point of the rectangle to the left to make it narrower. As you drag, press the Option (macOS) or Alt (Windows) key to resize the left and right sides together. When you see a width of approximately 0.3 in the measurement label, release the mouse button and then the key.



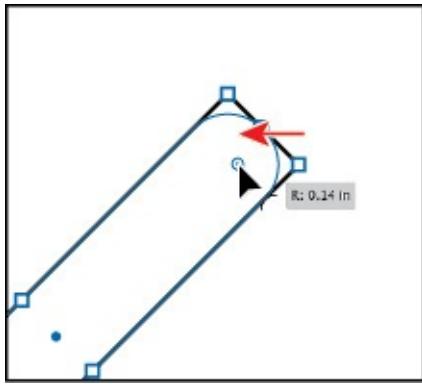
4. Move the pointer just off of a corner on the shape. When you see rotate arrows (↗), press and drag clockwise to rotate the shape. As you drag, press the Shift key to constrain the rotation to 45 degrees. When an angle of 315 shows in the measurement label, release the mouse button and then the key. Leave the shape selected.



Rounding corners

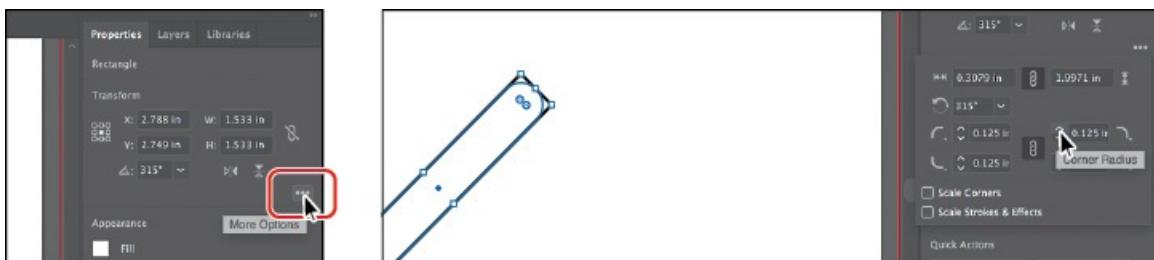
Rounding the corners of a rectangle can be done using several methods. In this section, you'll learn a few ways to round the corners of rectangles you've already created.

1. With the shape still selected, choose View > Zoom In a few times.
2. Select the Selection tool (►) in the Tools panel, and drag any of the corner widgets (●) in the rectangle toward the center of the rectangle to change the corner radius for all corners without worrying about how much right now.



● **Note:** If you drag a corner widget far enough, a red arc appears indicating you've reached the maximum corner radius.

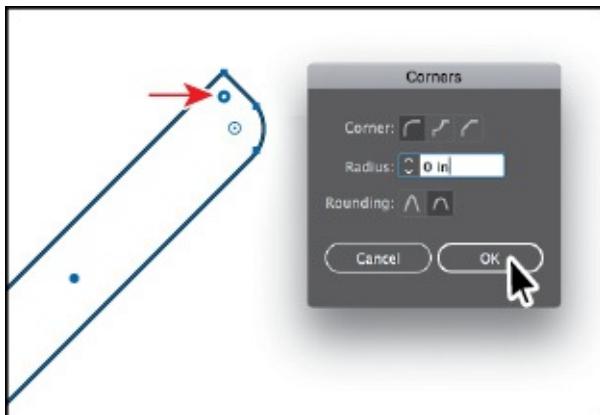
3. In the Properties panel to the right, click More Options (⋮) in the Transform section to show a panel with more options. Ensure that Link Corner Radius Values is on (⊕), and change any of the Radius values to **0.125**. If necessary, click in another field or press the Tab key to see the change to all corners.



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

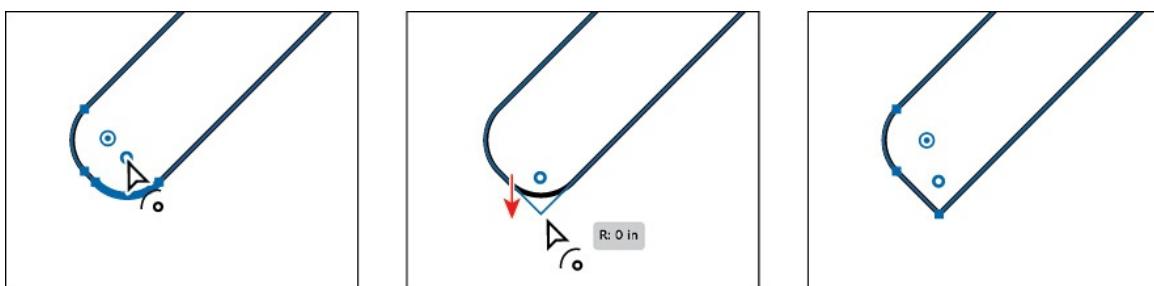
● **Note:** You can press the Escape key to hide the panel before moving on.

4. Select the Direct Selection tool (>) . With the shape still selected, double-click the top-corner widget (○). In the Corners dialog box, change the radius to **0** (zero), and click OK.



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

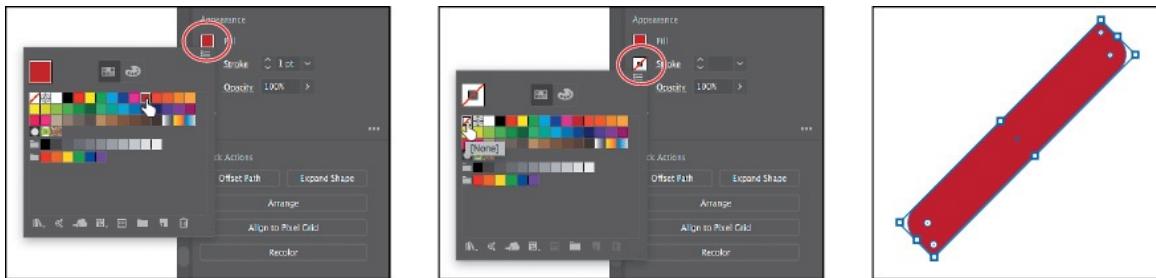
5. Click the bottom-corner widget (○) to select just that one corner widget. See the first part of the following figure.
6. Drag the bottom-corner widget (○) away from the center of the shape, until you see 0 in the measurement label. You will need to drag past the corner point.



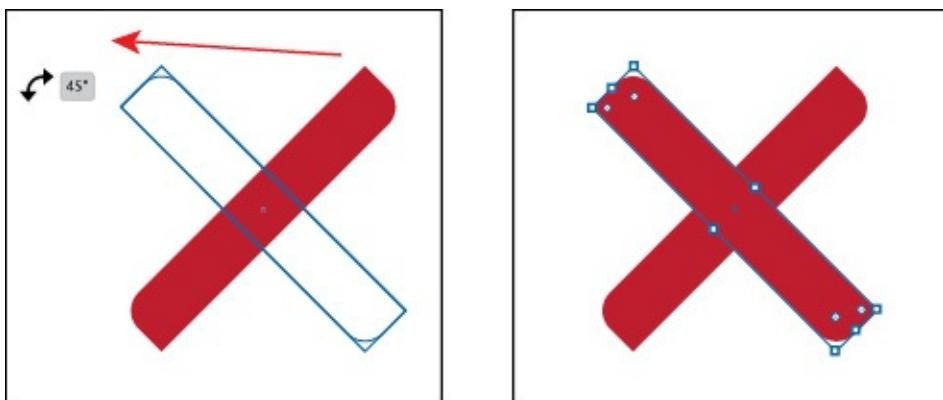
7. Select the Selection tool (►) in the Tools panel. Click the Fill color box in the Properties panel, and make sure that the Swatches option (■) is selected in the panel that appears. Select a darker red color to fill the rectangle with red.

Note: You can press the Escape key to hide the panel before moving on.

8. Click the Stroke color box in the Properties panel, make sure that the Swatches option (■) is selected, and select None to remove the stroke from the rectangle.

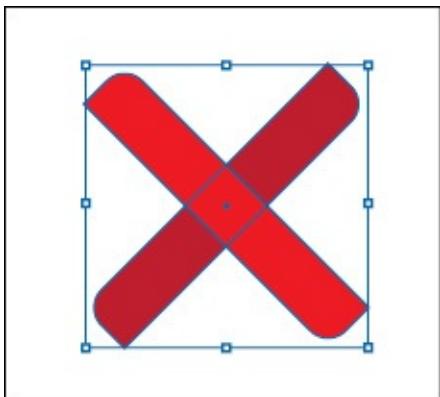


9. Choose Edit > Copy and then choose Edit > Paste In Front to paste a copy of the rectangle right on top of the original.
10. Move the pointer just off of a corner on the shape. When you see rotate arrows (), drag counterclockwise to rotate the shape. As you drag, press the Shift key to constrain the rotation to 45 degrees. When an angle of 45 shows in the measurement label, release the mouse button and then the key.



1. Click the Fill color box in the Properties panel, and make sure that the Swatches option () is selected in the panel that appears. Select a lighter red color to fill the rectangle with red.
2. Choose Select > All On Active Artboard to select both shapes. Click the Group button in the Quick Actions section of the Properties panel to the right of the document.

Grouping treats content like a single object which makes it easier to move the currently selected artwork. You'll group other content you create going forward for the same reason.



3. Choose Select > Deselect.

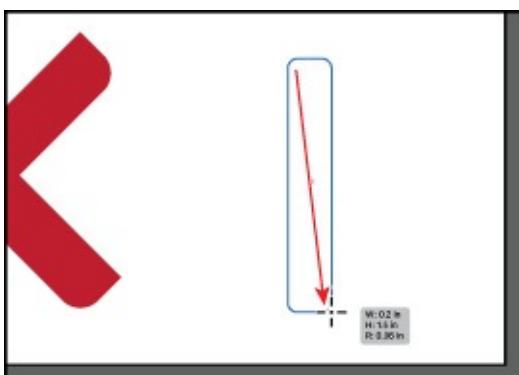
Working with the Rounded Rectangle tool

Next, you'll create a rounded corner rectangle using the Rounded Rectangle tool. Rounded rectangles are also Live Shapes, which means you can edit properties such as the corner radius after the fact. Next, you'll create a shape for the mast of a boat.

1. Choose View > Zoom Out.
2. Click and hold down the mouse button on the Rectangle tool (□) in the Tools panel, and select the Rounded Rectangle tool (□).

For the next step, don't release the mouse button until told to do so.

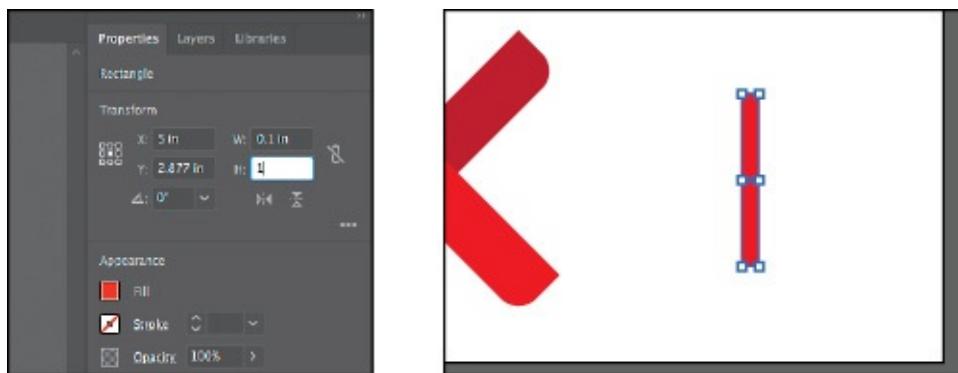
3. To the right of the rectangles on the artboard, click and drag to make a rectangle with a width of 0.2 inches and a height of 1.5 inches in the measurement label, but *do not release the mouse button yet*. With the mouse button still held down, press the Down Arrow key several times to see the corner radius become less rounded. Press the Up Arrow key several times to see the corner become more rounded. No matter how rounded the corners are, release the mouse button.



► **Tip:** When drawing with the Rounded Rectangle tool, pressing the left arrow key will change the corner radius to 0 (zero), and pressing the right arrow key will set the rounded corner radius at the maximum value

for the shape.

-
4. In the Properties panel to the right, make sure Constrain Width And Height Proportions to the right of Width (W:) and Height (H:) is deselected (it looks like this:). Select the Width (W:) value and change it to **0.1**. Click in the Height (H:) field, and change the value to **1**. Press Return or Enter. Leave the shape selected.

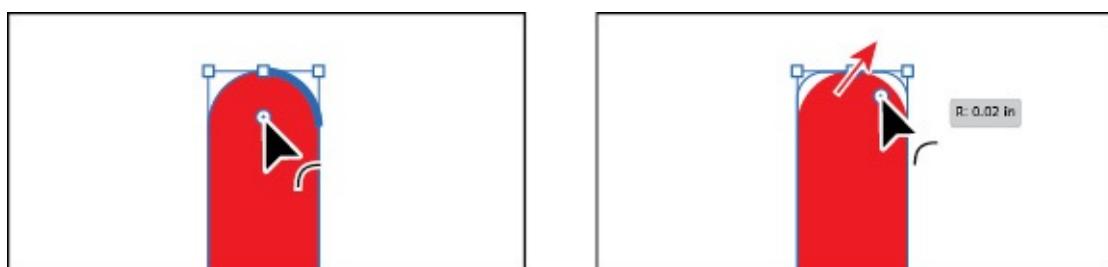


Typing **in** for inches isn't necessary; it is added automatically.

Note: You'll learn a lot more about general transformations in [Lesson 5, "Transforming Artwork."](#)

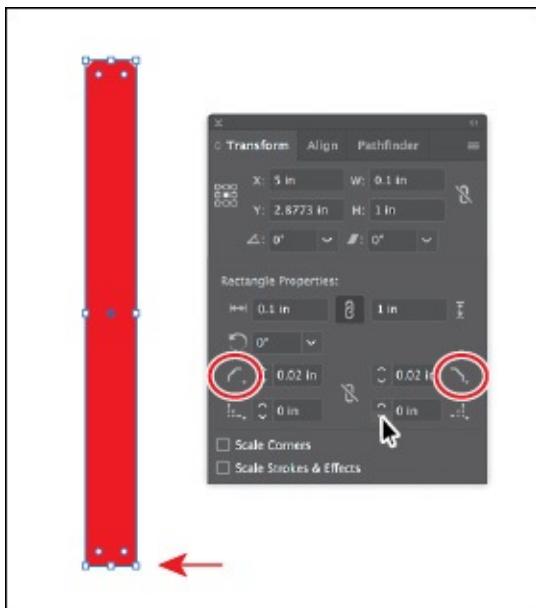
5. Select the Zoom tool () in the Tools panel on the left. Drag across the top part of the selected rounded rectangle to zoom in closely.
6. Select the Selection tool () and, with the rounded rectangle selected, drag any of the corner widgets () toward the top of the shape until the measurement label shows a value of 0.02 in.

Note: Zoom in closer if you don't see the corner widgets after selecting the Selection tool.

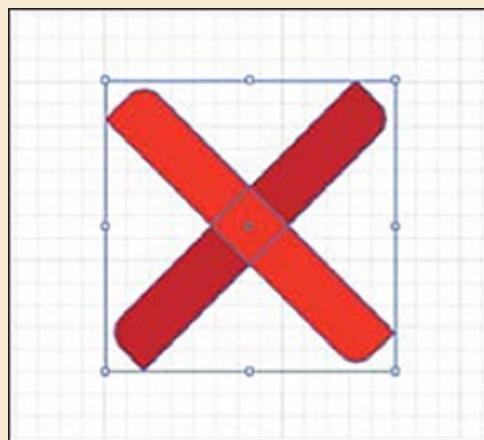


7. Double-click one of the corner widgets () to open the Transform panel. The Transform panel will open, and you should now see corner options. Select Chamfer for the corner type for *the top two corners only* (circled in the following figure).
8. Choose View > Zoom Out until you see the bottom of the shape.

9. Deselect Link Corner Radius Values (so it looks like this [X]) to change the corners independently. Change the bottom-left and bottom-right corners to **0**.
0. Click the X at the top of the Transform panel group to close it.
1. Click the Fill color box in the Properties panel, and make sure that the Swatches option (■) is selected in the panel that appears. Select a brown color.
2. Choose Select > Deselect.



Working with the document grid



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

- To show the grid or hide the grid, choose View > Show Grid/Hide

Grid.

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

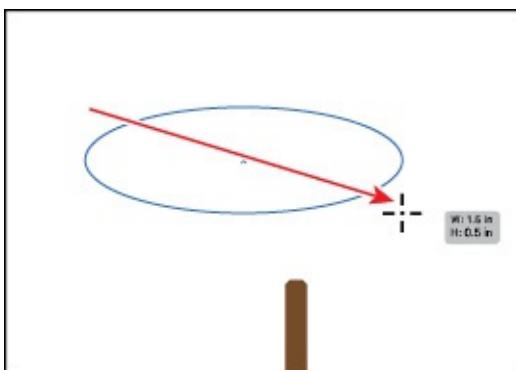
—From Illustrator Help

Creating and editing ellipses

Next, you'll draw and edit an ellipse with the Ellipse tool (○) to continue creating a boat. The Ellipse tool can be used to create ellipses and circles.

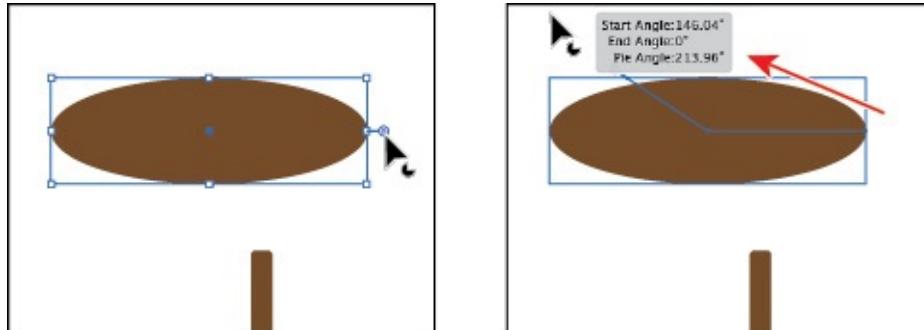
1. Choose View > Zoom Out a few times.
2. Click and hold down the mouse button on the Rounded Rectangle tool (□) in the Tools panel, and select the Ellipse tool (○).
3. Move the pointer above the brown rectangle. Click and drag to make an ellipse that has a width of 1.5 inches and a height of 0.5 inches.

After creating an ellipse, with the Ellipse tool still selected, you can drag the shape from the center widget, transform the shape, and also change the pie angle. Next, you'll create a copy of the ellipse to use later.



4. Select the Selection tool (▶) in the Tools panel. Choose Edit > Copy and then Edit > Paste to paste a copy of the circle you will use later in the lesson. Drag it into a blank area of the artboard, out of the way.
5. **Tip:** To reset a pie shape back to an ellipse, double-click either pie widget.

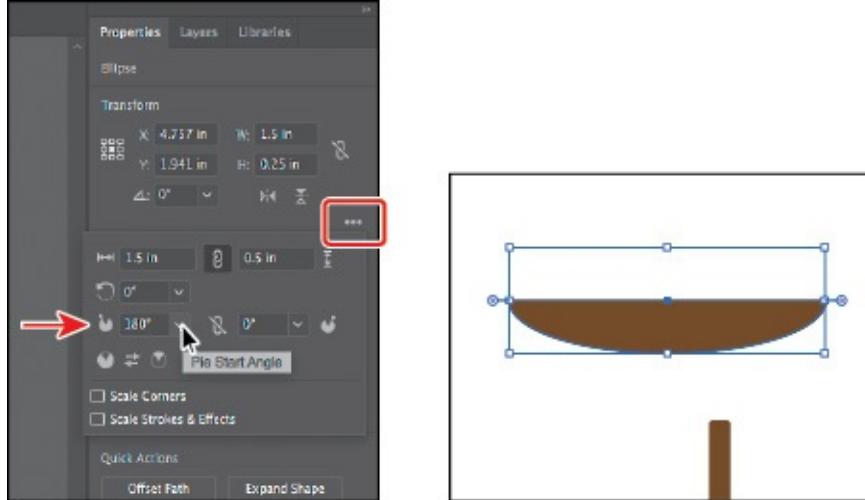
Click to select the original ellipse. Drag the pie widget (◎) off the right side of the ellipse, counterclockwise around the top of the ellipse.



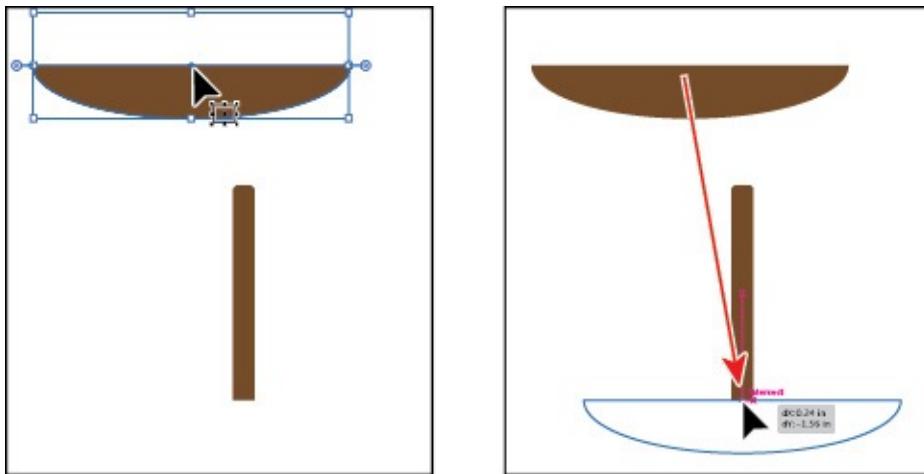
Dragging this widget allows you to create a pie shape. After dragging the widget initially and releasing the mouse button, you will then see a second widget. The widget you dragged controls the start angle. The widget that now appears on the right side of the ellipse controls the end angle.

● **Note:** You can also change ellipse properties like pie angle with the Ellipse tool still selected.

6. In the Properties panel to the right, click More Options (⋮) in the Transform section to show more options. Choose 180° from the Pie Start Angle menu. Press Escape to hide the panel.



7. Move the pointer over what was the center of the ellipse, and drag the ellipse so it snaps to the bottom edge of the brown rectangle. The word "intersect" will most likely appear when it is snapped.



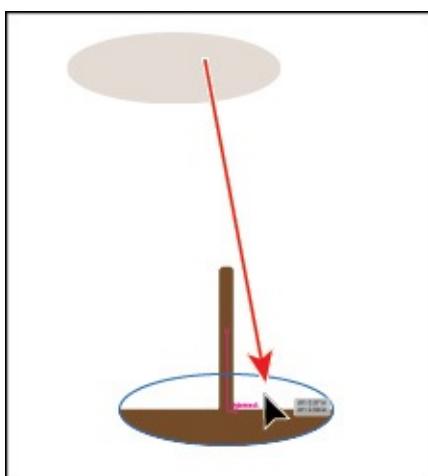
A vertical magenta guide will also show in the center of the brown rectangle to ensure that the ellipse is center-aligned horizontally with the rectangle.

8. Choose Select > Deselect and then choose File > Save.

Changing stroke width and alignment

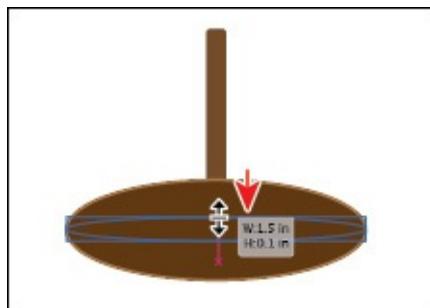
So far in this lesson, you've mostly edited the fill of shapes but haven't done too much with the strokes (a visible outline or border of an object or path). You can easily change the color of a stroke or the weight of a stroke to make it thinner or thicker, which is what you'll do next.

1. With the Selection tool (selected, click the copy of the brown ellipse you made in the last section to select it.



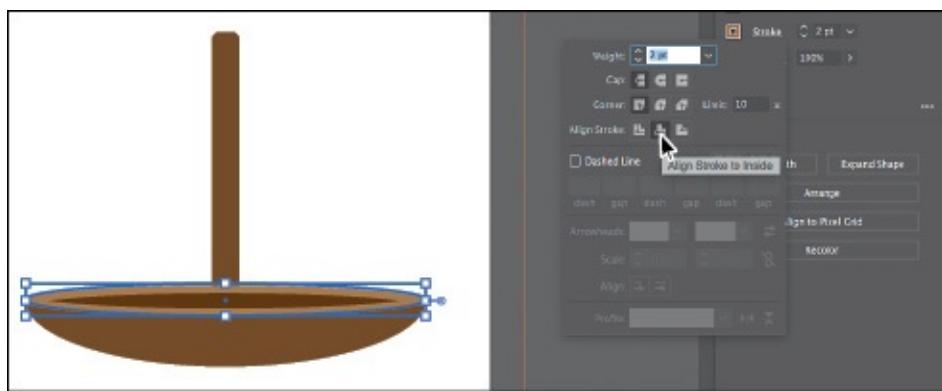
2. Drag it on top of the half ellipse. Magenta smart guides will appear when it's aligned in the center of the half-ellipse.
3. Change the fill color to a darker brown and the stroke color to a lighter brown in the Properties panel.
4. Drag the top-middle point of the ellipse down. As you drag, press the

Option key (macOS) or Alt key (Windows) to resize both sides as the same time. When you see a height of 0.1 inch, release the mouse button and then the key.



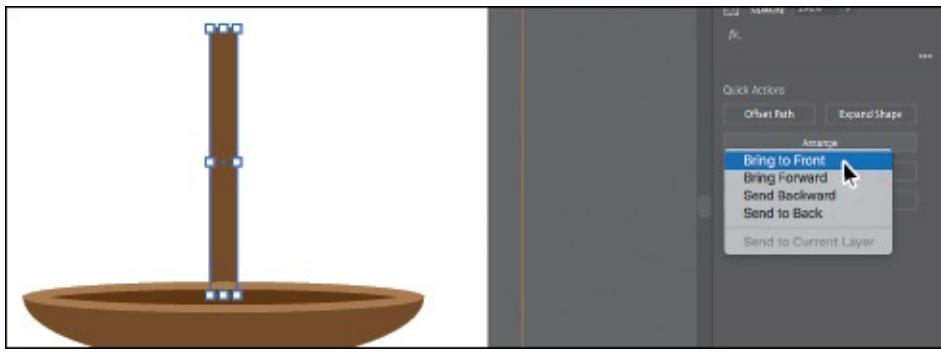
5. Click the word “Stroke” in the Properties panel to open the Stroke panel. In the Stroke panel, change the stroke weight of the selected rectangle to 2. Click the Align Stroke To Inside button () to align the stroke to the inside edge of the ellipse.

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



Note: You may notice in the selected artwork that you only see the corner points of the bounding box. It depends on the zoom level of your document.

6. Click the brown rectangle and then click the Arrange button in the Properties panel and choose Bring To Front so the rectangle is on top of the ellipses.

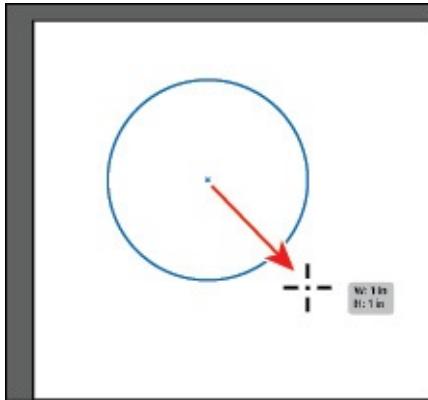


7. Choose Select > Deselect.

Creating and editing a circle

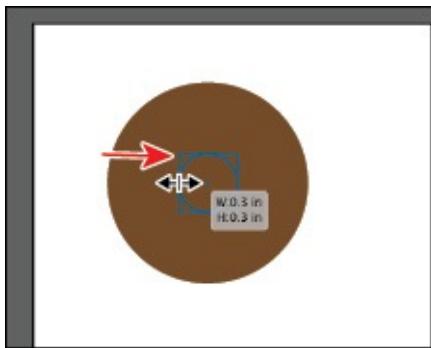
Next, you'll draw and edit a perfect circle with the Ellipse tool (○). Later in the lesson, you'll make a series of copies of the circle you create here for other artwork.

1. Choose View > Fit Artboard In Window to see the whole artboard.
2. Select the Ellipse tool (○), and move the pointer over a blank area in the upper-left corner of the artboard. Begin dragging down and to the right to begin drawing an ellipse. As you drag, press the Shift key to create a perfect circle. When the width and height are both roughly 1 inch, release the mouse button and then the Shift key.



Without switching to the Selection tool, you can reposition and modify an ellipse with the Ellipse tool, which is what you'll do next.

3. With the Ellipse tool selected, position the pointer over the left-middle bounding point of the circle. Click and drag toward the center to make it smaller. As you drag, press Shift+Option (macOS) or Shift+Alt (Windows). Drag until the measurement label shows a width and height of approximately 0.3 inches. Release the mouse button and then the keys.



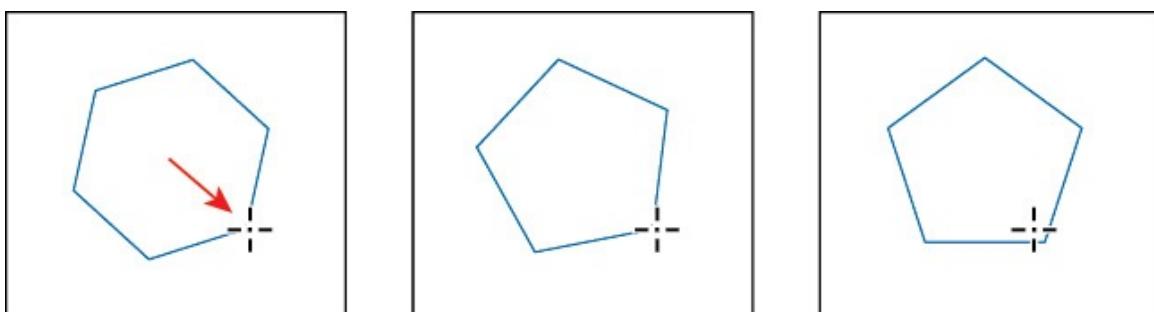
● **Note:** An ellipse is also a Live Shape like a rectangle or rounded rectangle.

4. With the circle selected, click the Fill color in the Properties panel and make sure that the Swatches option (■) is selected in the panel that appears. Select a light gray color with a tooltip of “C=0 M=0 Y=0 K=10.”

Creating polygons

Using the Polygon tool (olygon), you can create shapes with multiple straight sides. By default, the Polygon tool draws hexagons (a five-sided shape) and all shapes are drawn from the center. Polygons are also Live Shapes, which means attributes like size, rotation, number of sides, and more are still editable. Now you’ll create a triangle to make a diamond gem using the Polygon tool (olygon).

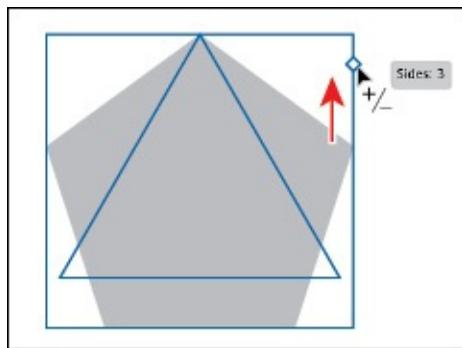
1. Click and hold down the mouse button on the Ellipse tool (ircle) in the Tools panel, and select the Polygon tool (olygon).
2. Choose View > Smart Guides to turn them off.
3. Move the pointer in a blank area of the artboard. Drag to the right to begin drawing a polygon, but *don’t release the mouse button yet*. Press the Down Arrow key once to reduce the number of sides on the polygon to five, and don’t release the mouse yet. Hold down the Shift key to straighten the shape. Release the mouse button and then the key. Leave the shape selected.



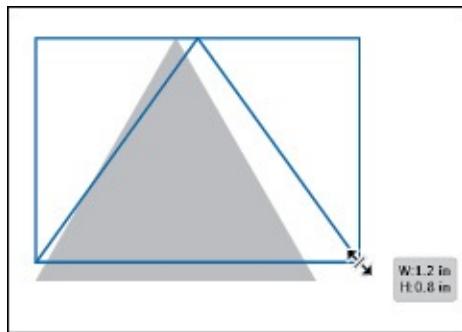
Notice that you didn’t see the gray measurement label (the tooltip) since

the tooltip is part of the Smart Guides that you turned off. The magenta alignment guides are also not showing since the shape is not snapping to other content on the artboard. Smart Guides can be useful in certain situations, such as when more precision is necessary, and can be toggled on and off when needed.

4. Click the Fill color box in the Properties panel, and make sure that the Swatches option (■) is selected in the panel that appears. Select a light gray color with a tooltip of “C=0 M=0 Y=0 K=30.”
5. Choose View > Smart Guides to turn them back on.
6. With the Polygon tool still selected, drag the side widget on the right side of the bounding box to change the number of sides to three, making a triangle.



7. Drag a corner bounding point of the triangle until you see a width of 1.2 inches and a height of 0.8 inches in the measurement label.



● **Note:** The figure may look different from what you see. Your starting shape may have been bigger or smaller, and that's okay. As long as the resulting size is 1.2 inches in width and 0.8 inches in height.

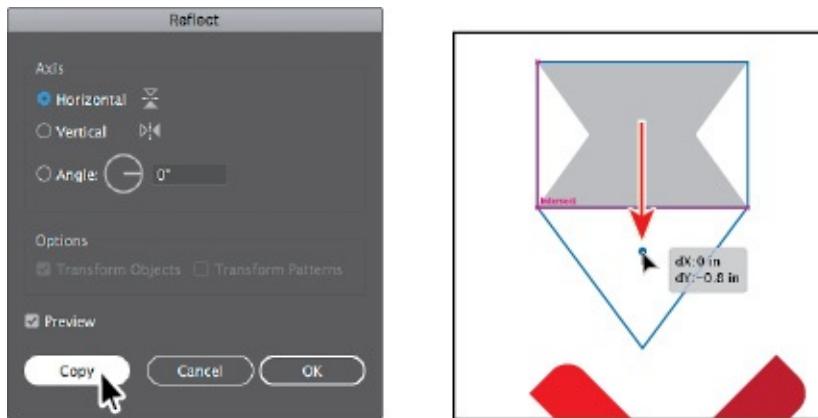
Editing the polygons

Now, you'll make a copy of the polygon and create the rest of the diamond gem.

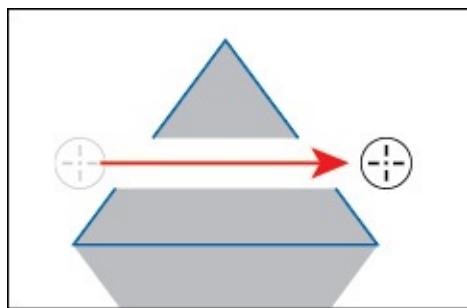
1. With the triangle still selected, choose Object > Transform > Reflect. In

the Reflect dialog box, select Horizontal, and click Copy.

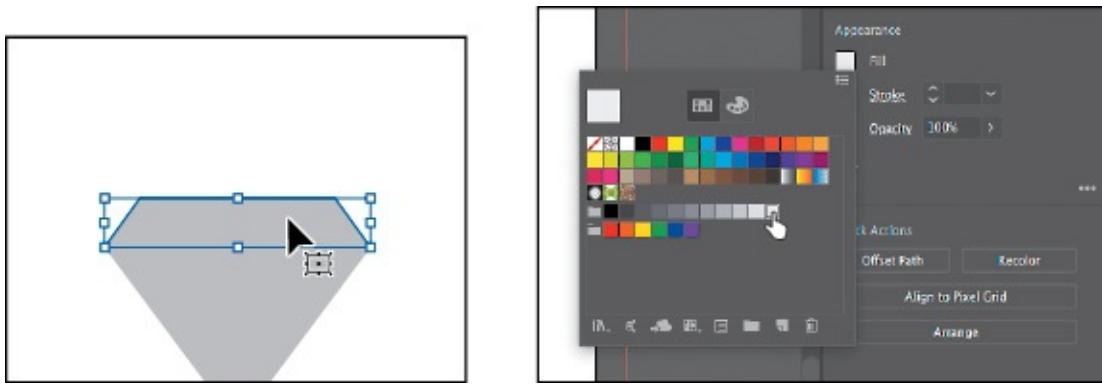
2. Drag the new (top) triangle from the center widget (the blue circle in the center) so its top edge snaps to the bottom edge of the original triangle.



3. Select the Selection tool (in the Tools panel. Click the original (top) triangle.
4. Select the Eraser tool (in the Tools panel. Pressing the Shift key, drag from left to right, across the middle of the triangle. Release the mouse button and then the key.

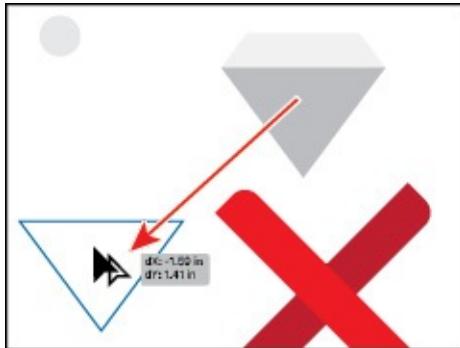


5. Select the Selection tool (and click in a blank area to deselect the artwork. Click the smaller triangle on top and press Backspace or Delete to remove it.
6. Click to select the remaining part of the top triangle, and click the Fill color box in the Properties panel. Make sure that the Swatches option (is selected in the panel that appears, and select a lighter gray color with a tooltip of "C=0 M=0 Y=0 K=5."

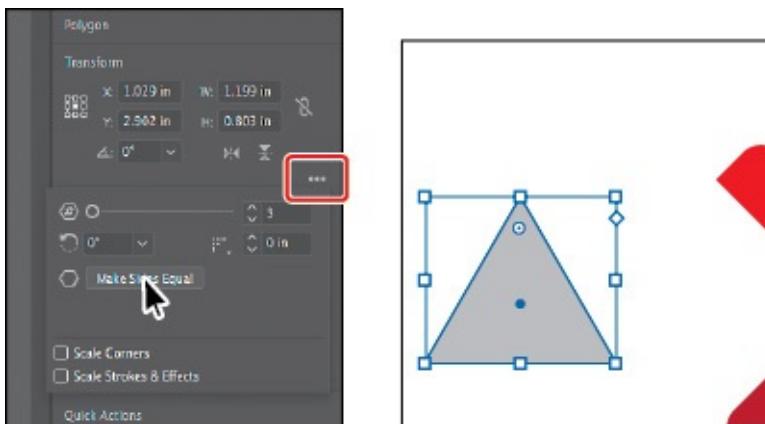


Next, you'll make a copy of the original triangle and make a mountain shape with a rounded corner top.

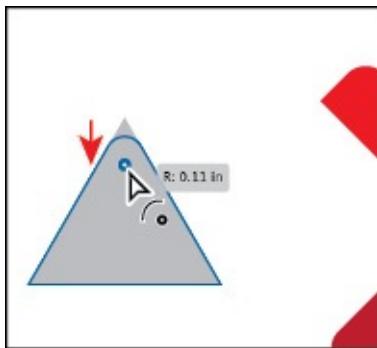
7. Click the darker gray triangle to select it. Option-drag (macOS) or Alt-drag (Windows) the triangle into the lower-left corner of the artboard to make a copy. Release the mouse button and then the key.



8. Click More Options (⋮) in the Transform section of the Properties panel to the right to show more options. To return the triangle to an equal-sided polygon, click the Make Sides Equal button.



9. Select the Direct Selection tool (>) in the Tools panel. Click the top-corner widget (○) of the selected triangle to select it.



0. Drag the top-corner widget toward the center of the shape to round the top corner a little.

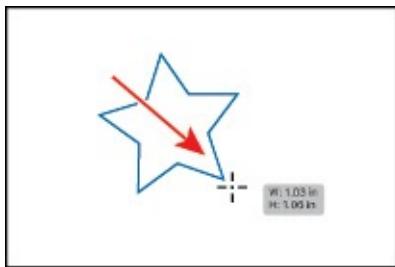
Creating a star

Next, you'll use the Star tool () to create a few stars that will go on the diamond you just created. The Star tool currently doesn't create Live Shapes, which means editing the star after the fact can be more difficult. When drawing with the Star tool, you'll use keyboard modifiers to get the number of points you want and to change the radius of the arms of the star (the length of the arms). Here are the keyboard modifiers you'll use in this section when drawing the star and what each does:

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

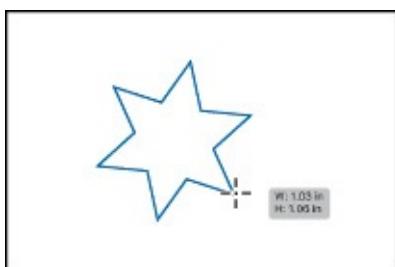
Next, you'll create a star. This will take a few keyboard commands, so *don't release the mouse button* until you are told.

1. Click and hold down the mouse button on the Polygon tool () in the Tools panel, and select the Star tool (). Move the pointer somewhere on the artboard to the right of the triangle shapes that make up the diamond.
2. Click and drag slowly to the right to create a star shape. Notice that as you move the pointer, the star changes size and rotates freely. Drag until the measurement label shows a width of about 1 inch and then stop dragging. *Don't release the mouse button!*

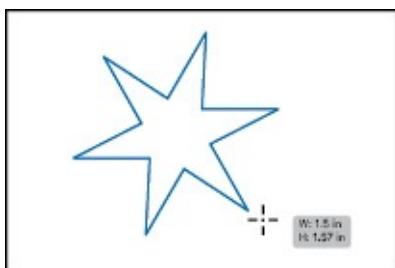


► **Tip:** You can also click in the Document window with the Star tool (★) and edit the options in the Star dialog box instead of drawing it.

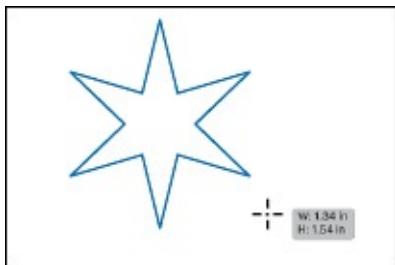
3. Press the Up Arrow key once to increase the number of points on the star to six. *Don't release the mouse button!*



4. Press Command (macOS) or Ctrl (Windows), and continue dragging to the right a little. This keeps the inner radius constant, making the arms longer. Drag until you see a width of approximately 1.5 inches, and stop dragging, without releasing the mouse button. Release Command or Ctrl but *not the mouse button*.



5. Hold down the Shift key. When the star straightens out, release the mouse button and then the Shift key.

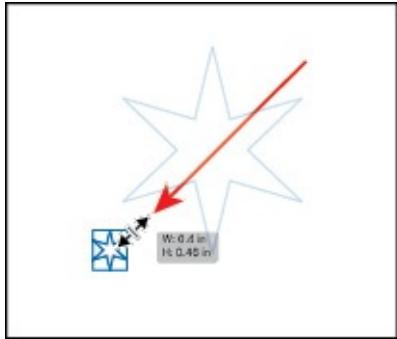


6. Change the stroke weight of the star to **0** in the Properties panel.

► **Tip:** If the stroke color is None (☒), then you don't need to set the

stroke weight.

-
7. Change the fill color in the Properties panel to white.
 8. Select the Selection tool () , press the Shift key, and drag a corner of star bounding box toward the center. When the star has a width of approximately 0.4 inches, release the mouse button and then the key.
 9. Select the Star tool () , and draw one more star, a little smaller than the first.

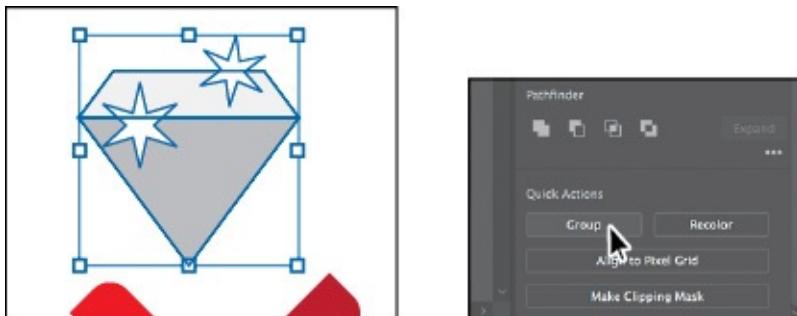


Notice that the new stars have the same basic settings as the first star you drew.

0. Select the Selection tool () , and drag the stars on top of the shapes that make up the diamond.

They may be difficult to see since they have a white fill and are on a white artboard. In this case, you could choose *View > Outline* to more easily see them. Then, after you are finished dragging the shapes by their edges, choose *View > GPU Preview* (or *Preview On CPU* if GPU Preview is not supported).

1. Drag across the triangle and star shapes to select them all, and then click the *Group* button in the Properties panel to group them together.

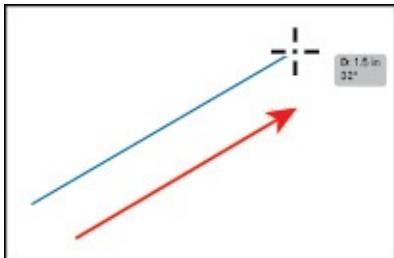


Drawing lines

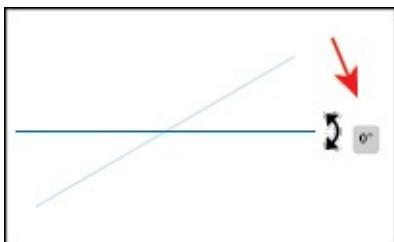
Next, you'll create lines and line segments, known as *open paths*, with the Line Segment tool to create a few bones. Lines created with the Line Segment

tool are Live Lines, and similar to Live Shapes, they have many editable attributes.

1. Select the Line Segment tool () in the Tools panel. On the right side of the artboard, above the existing artwork, click and drag to the right. Notice the length and angle in the measurement label next to the pointer as you drag. Drag until the line is around 1.5 inches in length.



2. With the new line selected, position the pointer just off the right end. When the pointer changes to a rotate arrow (, click and drag (up or down) until you see an angle of 0 (zero) in the measurement label next to the pointer. That will make the line horizontal.

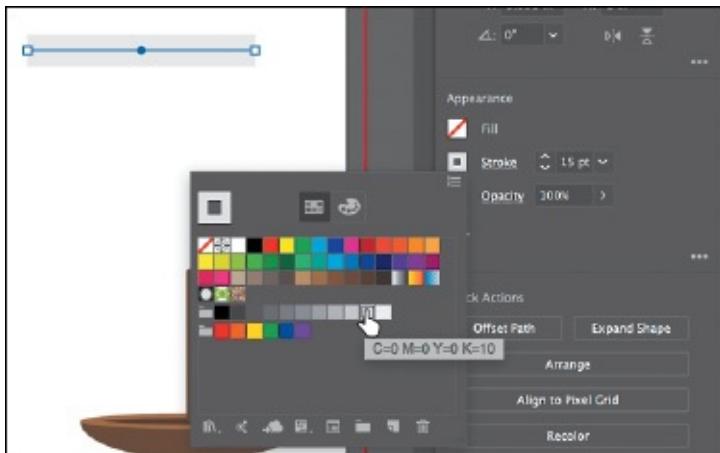


Lines rotate around their center point by default. The angle of the line can also be changed in the Properties panel.

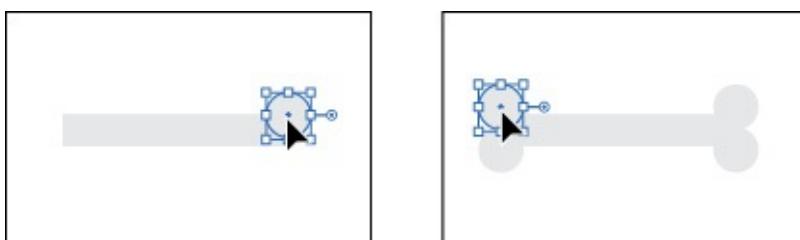
3. With the line selected, change the stroke weight to **15 pt** in the Properties panel to the right of the document.

 **Note:** If you drag a line in the same trajectory as the original path, you will see the words “Line Extension” and “on” appear at opposite ends of the line. These are part of Smart Guides and make it easy to drag a line longer or shorter without changing the angle.

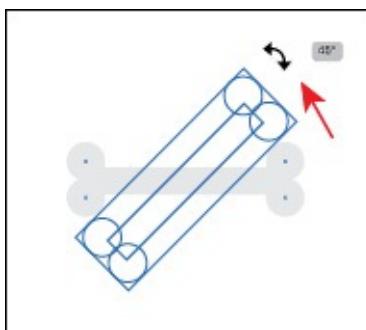
4. Click the Stroke color box in the Properties panel, and make sure that the Swatches option () is selected in the panel that appears. Select a lighter gray color with a tooltip of “C=0 M=0 Y=0 K=10.”



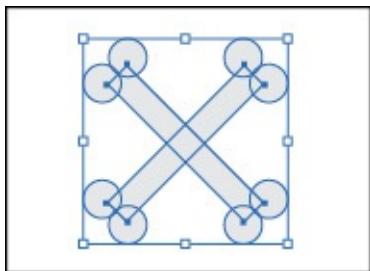
5. Choose Object > Path > Outline Stroke. The line is now a shape with a fill.
6. Select the Selection tool (in the Tools panel, and drag the gray circle in the upper-left corner of the artboard over to the shape.
7. Choose Edit > Copy. Choose Edit > Paste three times to create a total of four circles. Drag the circles onto the shape like you see in the figure to make a bone.



8. Drag across the bone artwork and click the Group button in the Properties panel to keep the artwork together.
9. Move the pointer just off a corner. When the pointer changes to rotate arrows (, drag counterclockwise to rotate it until you see approximately 45 degrees in the measurement label.



0. Choose Object > Transform > Reflect. In the Reflect dialog box, select Vertical, and click Copy.



1. Drag across the artwork for the bones and click the Group button in the Properties panel to keep the artwork together.

Working with the Shaper tool

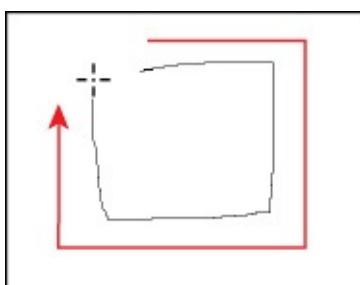
Another way to draw and edit shapes in Illustrator involves the Shaper tool (🔗). The Shaper tool recognizes natural gestures and produces Live Shapes from those gestures. Without switching tools, you can combine, delete, fill, and transform basic shapes you create. In this section, you'll get a feeling for how the tool works by exploring the most widely used features.

● **Note:** The Shaper tool is present in the Tools panel of the classical workspace. In the Touch Workspace, it is a top-level tool in the toolbar. This tool works best with a stylus on touch surfaces, such as Surface Pro or Wacom Cintiq, or through indirect inputs such as the Wacom Intuos.

Drawing shapes with the Shaper tool

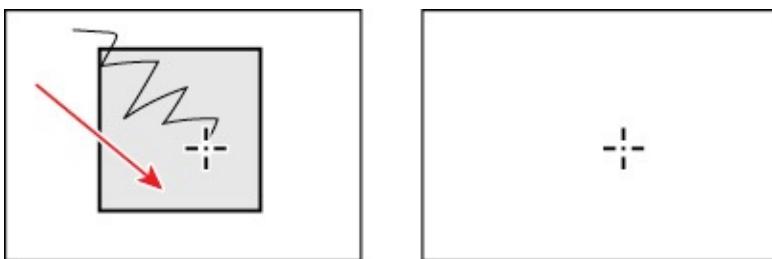
To get started with the Shaper tool, you'll draw a few simple shapes that will eventually become the sail for the boat you made.

1. Choose View > Fit Artboard In Window.
2. Select the Shaper tool (🔗) in the Tools panel on the left. Draw a rough representation of a rectangle in a blank area of the artboard, like you would with a pencil on paper. Use the figure as a guide.



When you finish drawing the shape, the gesture will be converted to a Live Shape with a default gray fill. There are a variety of shapes that can be drawn with the Shaper tool, including (but not limited to) rectangles, squares, ellipses (circles), triangles, hexagons, lines, and more.

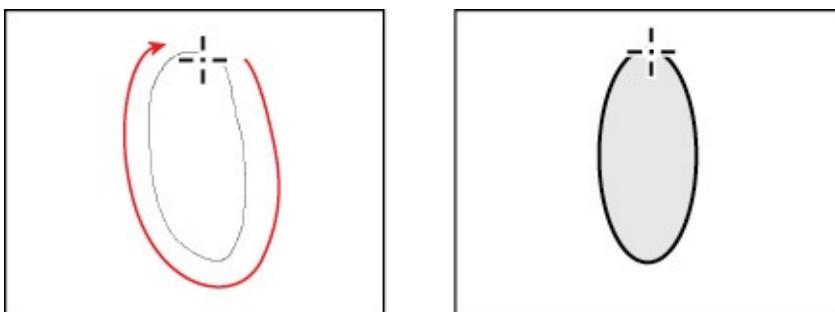
3. Draw a scribble over the shape you just drew to delete it.



This simple gesture is an easy way to delete shapes. Note that you can scribble across more than one object to remove them, and you simply need to scribble over part of the artwork, not the whole thing to delete it. You can also click within a shape you created to select it and then press Backspace or Delete to remove it.

Note: If you try to draw a scribble, a line may be created instead. Simply scribble across all the shapes to remove them.

4. Draw an ellipse in a blank area of the artboard.

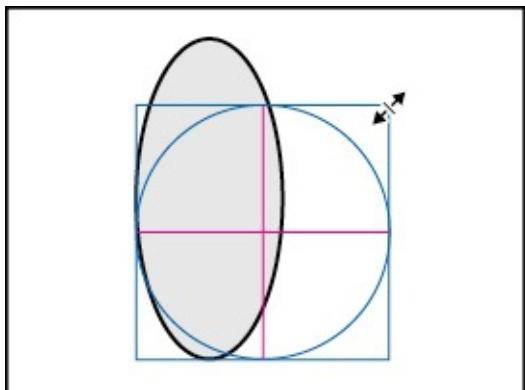


If the shape is not an ellipse, delete it by scribbling across it, and try again.

Once shapes are created, you can also use the Shaper tool to edit those shapes without having to switch tools. Next, you'll edit the ellipse you just created.

5. Click in the ellipse with the Shaper tool to select it.
6. Choose View > Zoom In.
7. Drag a corner of the ellipse to turn it into a circle. When magenta hinting crosshairs (Smart Guides) show in the center, it means the ellipse has become a circle (an ellipse with equal width and height).

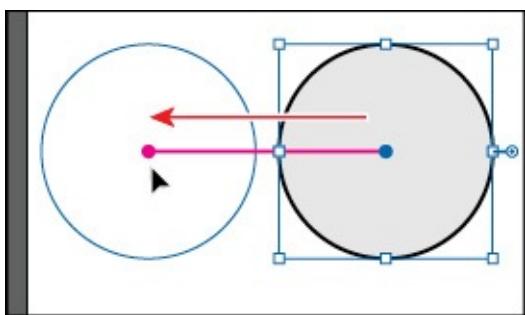
Shapes drawn with the Shaper tool are live and dynamically adjustable, so you can draw and edit intuitively without the extra hassle of switching between tools. Notice that no measurement label appears to indicate the shape size. When transforming shapes with the Shaper tool, measurement labels won't appear, even if Smart Guides are on.



Punching and combining shapes with the Shaper tool

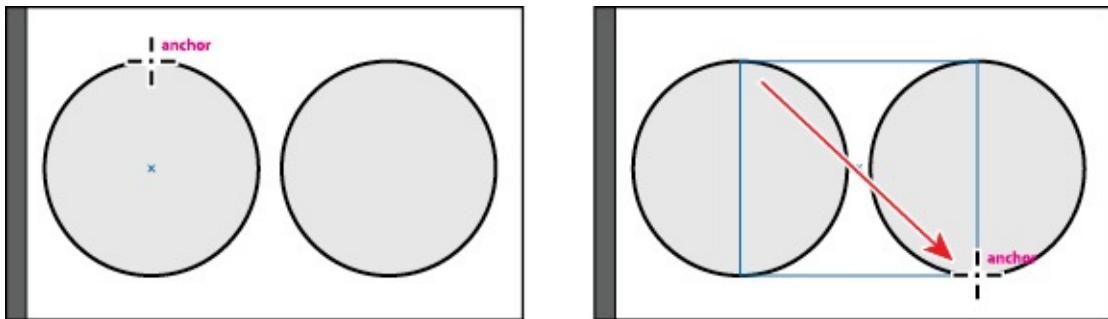
Not only does the Shaper tool let you draw shapes, but you can then combine, subtract, and continuously edit them, all with a single tool. Next, you'll draw a few more shapes and use the Shaper tool to add and subtract them from the original circle, creating a sail for the boat.

- With the Shaper tool () selected, press Shift+Option (macOS) or Shift+Alt (Windows), and drag the circle straight to the left to make a copy. A horizontal magenta alignment guide will show. *Make sure the circles are not touching*, and then release the mouse button and then the keys.

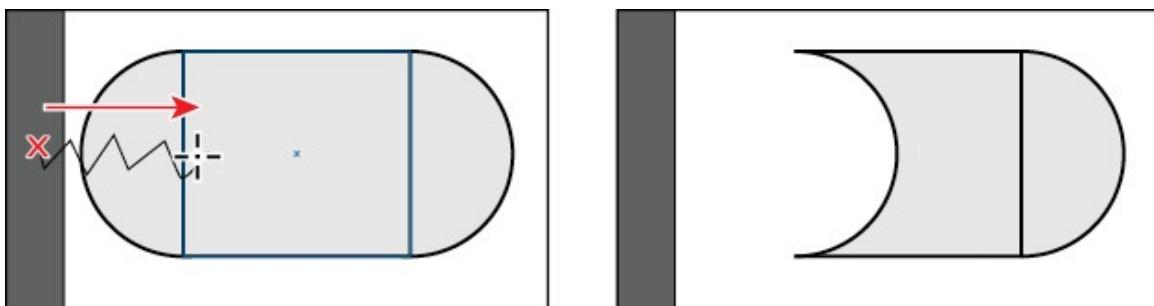


Note: Don't worry if the new circle is on or off the edge of the artboard. You'll reposition it all shortly.

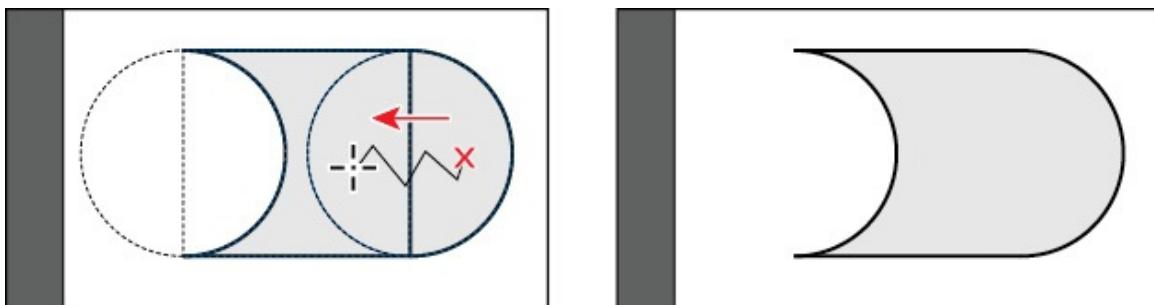
- Click and hold down the mouse button on the Star tool (), and select the Rectangle tool () in the Tools panel. Move the pointer over the center top of the circle on the left. When the word “anchor” appears, drag to create a rectangle. Drag to the bottom-center point of the circle on the right.



3. Select the Shaper tool () in the Tools panel. Click in a blank area of the artboard to deselect all shapes.
4. Move the pointer to the left of the shapes. Scribble across the circle shape, stopping *just after* the left edge of the rectangle. When you release, the circle on the left will be deleted, and the overlapping area of the shapes will be removed.



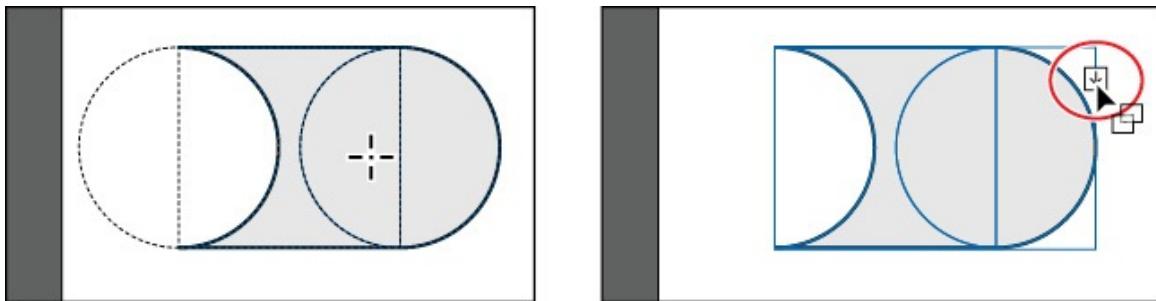
5. Move the pointer *into* the circle on the right, and draw a scribble to the left, into the gray area of the remaining rectangle shape to combine them.



6. Move the pointer over the gray shape to see the outlines of the original shapes, and then click to select the merged group, called a *Shaper Group*. See the first part of the following figure.

Tip: You can also double-click a Shaper Group to be able to select the underlying shapes.

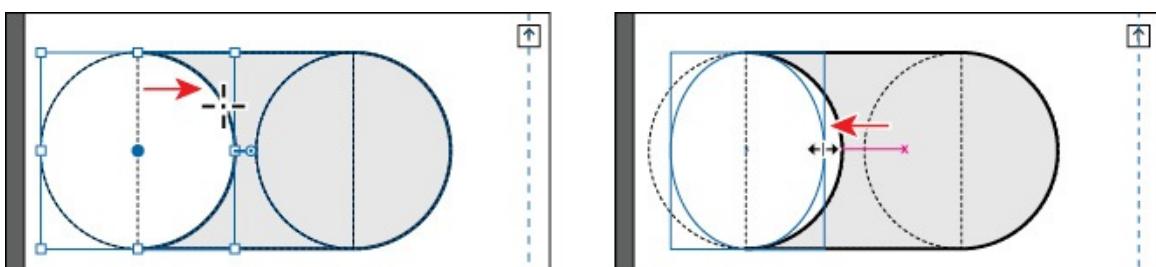
7. Click the arrow widget () on the right side of the Shaper Group to be able to select the underlying shapes. After clicking the arrow widget, the Shaper Group is in Construction Mode.



All shapes in a Shaper Group remain editable, even after portions of shapes may have been punched out or merged.

8. Click the *stroke* of the left circle to select it. Press the Option (macOS) or Alt (Windows) key and drag the right-middle bounding point to the left to make the circle a little narrower. Release the mouse button and then the key.

Note: If you attempted to select the shape and you deselected instead, repeat the previous steps. The circle on the left now has no fill, so it cannot be selected by clicking within.

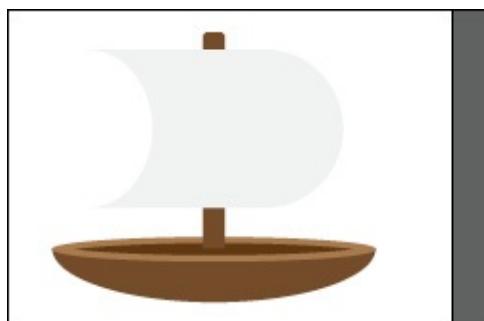


Notice that the circle you dragged is still punched out from the rectangle. Not only can you resize individual shapes in a Shaper Group, but you can also reposition them, rotate them, and more.

9. Press Esc to stop editing the individual shapes, and select the entire Shaper Group.
10. Click the Fill color box in the Properties panel, and make sure that the Swatches option (■) is selected in the panel that appears. Select a light gray color with a tooltip of “C=0 M=0 Y=0 K=5.”
1. Change the stroke weight to **0** in the Properties panel by clicking the down arrow until the stroke is removed.
2. Drag the sail shape onto the boat in the lower-right corner. You may need to zoom out.

Note: You can Shift-drag a corner of the sail shape to resize it to fit better with the boat shapes, if needed.

3. Choose Select > Deselect and then choose File > Save.

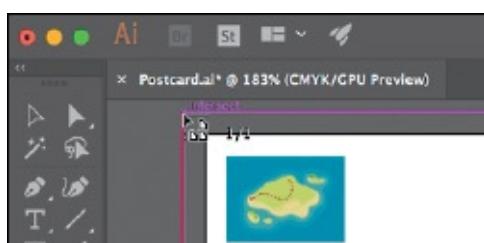


Using Image Trace

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

Tip: Use Adobe Capture CC on your device to photograph any object, design, or shape and convert it into vector shapes in a few simple steps. Store the resulting vectors in your Creative Cloud libraries, and access them or refine them in Illustrator or Photoshop. Adobe Capture is currently available for iOS (iPhone and iPad) and Android.

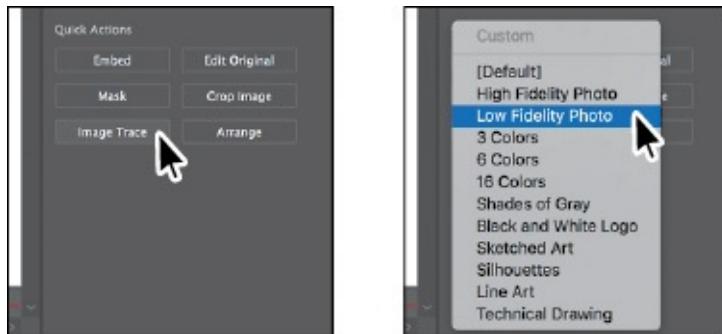
1. Click the Previous button (◀) below the document in the status bar to show the artboard to the left in the Document window.
2. Choose File > Place. In the Place dialog box, select the island.png file in the Lessons > Lesson03 folder on your hard disk, leave the options at their defaults, and click Place.
3. Move the pointer over the upper-left corner bleed guide (the red guide off the edge of the artboard), and click to place the image.



4. With the image selected, click the Image Trace button in the Properties panel to the right of the document, and choose Low Fidelity Photo. The tracing results you see may differ slightly from the figure, and that's okay.

Note: You can also choose Object > Image Trace > Make, with raster

content selected, or begin tracing from the Image Trace panel (Window > Image Trace).



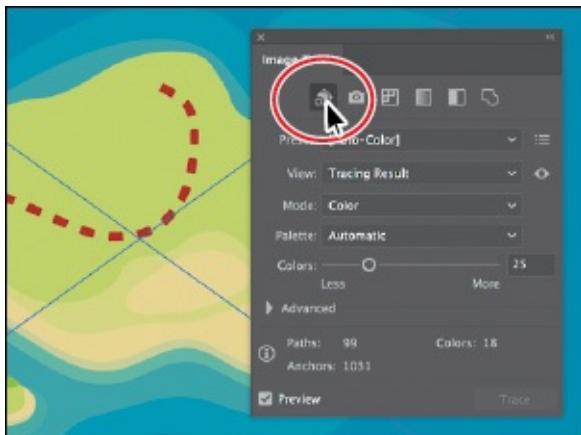
This converts the image into an image tracing object. That means you can't edit the vector content yet, but you can change the tracing settings or even the original placed image and then see the updates.

5. Choose 6 Colors from the Preset menu that's showing in the Properties panel.



The 6 Colors preset will trace the image, forcing the resulting vector content to use six colors only. In some cases, in an image with a lot of different color, this can apply the same color to a lot of content. An image tracing object is made up of the original source image and the tracing result (which is the vector artwork). By default, only the tracing result is visible. However, you can change the display of both the original image and the tracing result to best suit your needs.

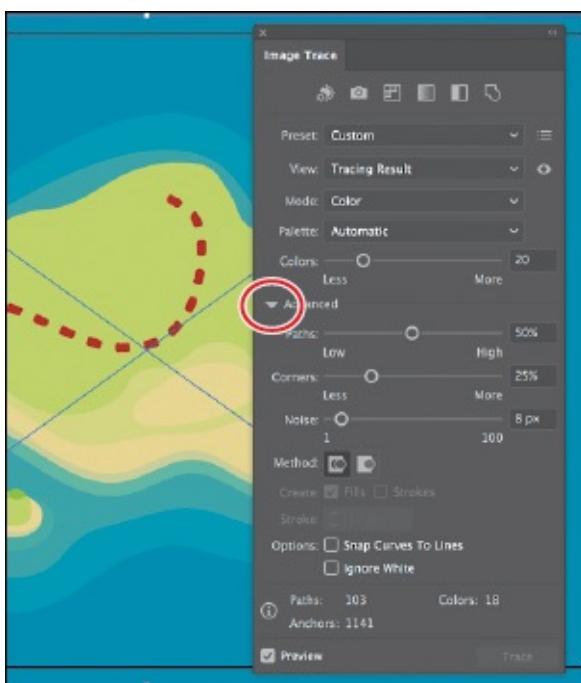
6. Click the Image Trace Panel button () in the Properties panel. In the Image Trace panel, click the Auto-Color button () at the top.



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

► **Tip:** The Image Trace panel can also be opened by choosing Window > Image Trace.

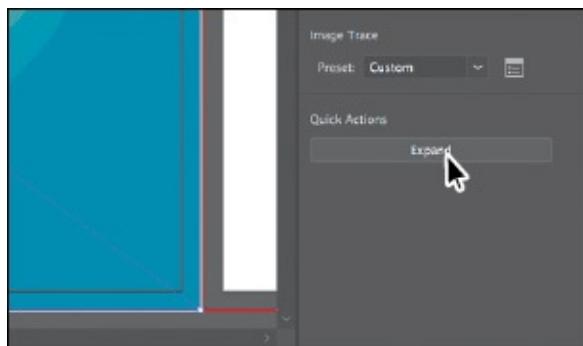
7. In the Image Trace panel, click the triangle to the left of the Advanced options to reveal them. Change the following options in the Image Trace panel, using the values as a starting point:



- Colors: 20

- Paths: **50%**
- Corners: **25%**
- Noise: **8 px**

8. Close the Image Trace panel.
9. With the map tracing object still selected, click the Expand button in the Properties panel.



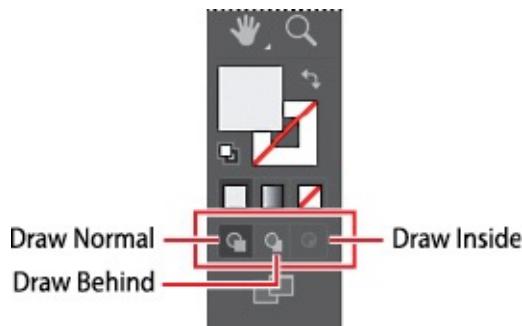
The map is no longer an image tracing object but is composed of shapes and paths that are grouped together.

0. Choose Object > Hide > Selection to temporarily hide it.

Working with drawing modes

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

- **Draw Normal mode:** You start every document by drawing shapes in Normal mode, which stacks shapes on top of each other.
- **Draw Behind mode:** This mode allows you to draw behind all artwork on a selected layer if no artwork is selected. If an artwork is selected, the new object is drawn directly beneath the selected object.
- **Draw Inside mode:** This mode lets you draw objects or place images inside other objects, including live text, automatically creating a clipping mask of the selected object.



● **Note:** To learn more about clipping masks, see [Lesson 14, “Using Illustrator CC with Other Adobe Applications.”](#)

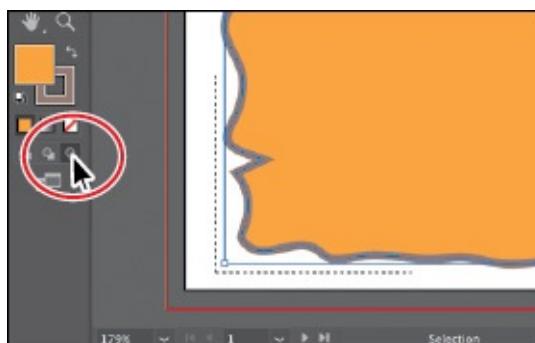
Using the Draw Inside mode

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

1. Choose File > Open. In the Open dialog box, select the map_edges.ai file in the Lessons > Lesson03 folder on your hard disk and click Open.

The orange shape you see is just a closed path that was created using the Pencil tool in the Tools panel. You'll copy this shape and paste it back in the Postcard.ai file.

2. Select the Selection tool (►) in the Tools panel, and click the orange map edges shape to select it. Choose Edit > Copy.
3. Click the Postcard.ai tab to return to the postcard document. Choose Edit > Paste In Place.
4. Click the orange shape to select it, if it isn't, and then click the Draw Inside button (█), near the bottom of the Tools panel.



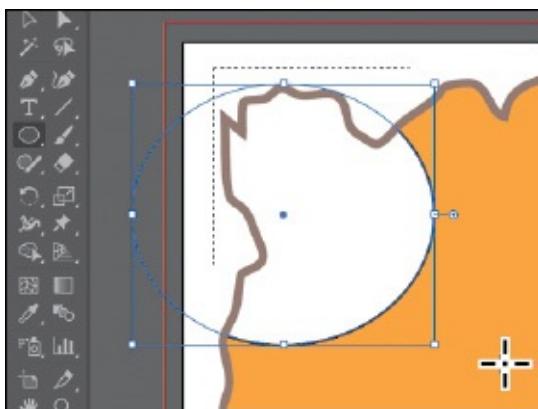
This button is active when a single object is selected (path, compound path, or text), and it allows you to draw within the selected object only. Notice that the orange shape has a dotted open rectangle around it, indicating that, if you draw, paste, or place content, it will be inside the selected object.

orange shape.

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

5. Choose Select > Deselect.

Notice that the orange shape still has the dotted open rectangle around it, indicating that Draw Inside mode is still active. The shape you are about to draw inside of does not need to be selected.



6. Click and hold down the mouse button on the Rectangle tool (□) in the Tools panel, and select the Ellipse tool (○). Press the letter D to apply the default white fill and black stroke to the shape you are about to draw. Click and drag to create an ellipse that overlaps the edge of the orange shape.

The ellipse you just drew is within the orange shape, and part of it is being hidden.

7. Choose Edit > Undo Ellipse to get rid of the ellipse.

You can also place or paste content into a shape with Draw Inside mode active.

8. Choose Object > Show All to show the island artwork again, which is now behind the orange shape.

9. Select the Selection tool (▶) in the Tools panel, and choose Edit > Cut to cut the selected island artwork from the artboard.



0. Choose Edit > Paste In Place.

The island artwork is placed within the orange shape.

1. Click the Draw Normal button (▣) at the bottom of the Tools panel.

When you are finished adding content inside a shape, you can click the Draw Normal button so that any new content you create will be drawn normally (stacked rather than drawn inside).

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

2. Choose Select > Deselect.

► **Tip:** You can also toggle between the available drawing modes by pressing Shift+D.

► **Tip:** You can separate the shapes by choosing Object > Clipping Mask > Release. This would make two objects, stacked one on another.

Editing content drawn inside

Next, you'll edit the map artwork inside of the shape to see how you can later edit content inside.

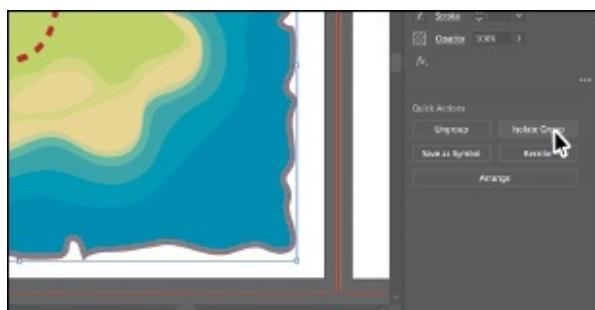
1. With the Selection tool (▶) selected, click to select the island artwork. Notice that it selects the map edges shape instead.

The map edges shape is now a mask, also called a *clipping path*. The island artwork and the map edges shape, together, make a *clip group* and are now treated as a single object. If you look at the top of the Properties panel, you will see Clip Group. Like other groups, if you would like to edit

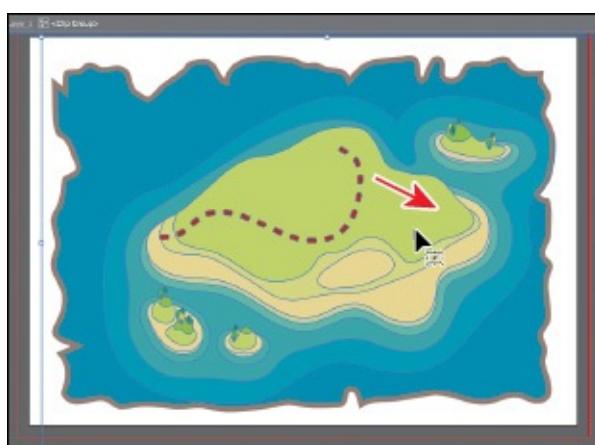
the clipping path (the object that contains the content drawn inside of it) or the content inside, you can double-click the Clip Group object.



2. With the Clip Group selected, click the Isolate Group button in the Properties panel to enter Isolation mode and be able to select the clipping path (map edges shape) or the island artwork within.



3. Click the map artwork within the map boundaries, and drag it down and to the right a little.



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

4. Press Esc to exit Isolation mode.
5. Choose Select > Deselect and then choose File > Save.

Working with Draw Behind mode

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

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

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



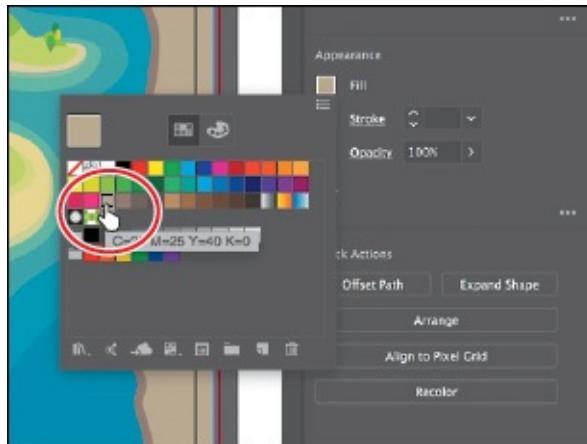
 **Note:** If the Tools panel you see is displayed as a single column, you can click the Drawing Modes button () at the bottom of the Tools panel and choose Draw Behind from the menu that appears.

2. Click and hold down the mouse button on the Ellipse tool () in the Tools panel, and select the Rectangle tool () . Position the pointer off the upper-left corner of the artboard where the red bleed guides meet. Click and drag to the lower-right corner of the red bleed guides.



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

-
3. With the new rectangle selected, click the Fill color box in the Properties panel. Make sure that the Swatches option (■) is selected, then change the fill color to a tan color with the tooltip “C=25 M=25 Y=40 K=0.” Press the Escape key to hide the panel.

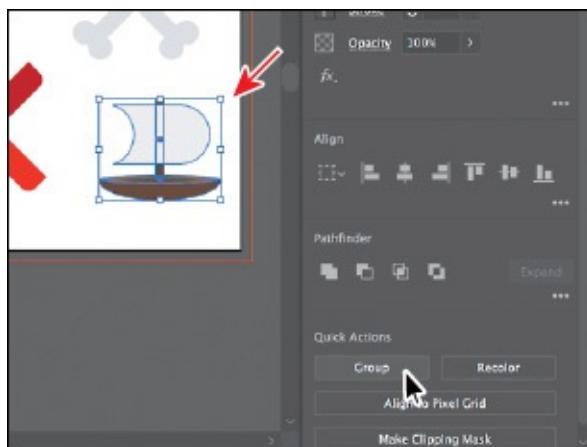


4. Choose Object > Lock > Selection.

Finishing up

To finish the postcard, you’ll bring the artwork onto the artboard with the island artwork on it.

1. Choose View > Fit All In Window to see both artboards.
2. Select the Selection tool (►), and drag across the ship artwork to select it. Click the Group button in the Properties panel.



3. Choose Select > All On Active Artboard to select all of the shapes. Choose Object > Arrange > Bring To Front.

You brought the selected artwork to the front because it was created first, which means it would be behind the artwork on the left artboard, which was created after. Next, you’ll drag the artwork onto the artboard on the left and resize it.

4. Choose Select > Deselect.
5. Drag each group from the right artboard onto the left artboard, one at a time. To resize each group to better fit within the map, you can press the Shift key and drag a corner of the artwork bounding box to scale it. When finished, release the mouse button and then the key.

In the final artwork, I created copies of a few of the objects by choosing Edit > Copy and then Edit > Paste. I also selected copies of the mountain shape and changed the color fill in the Properties panel on the right, for each.



 **Note:** You may want to zoom in to different artwork by choosing View > Zoom In.

-
6. Choose File > Save and then File > Close.

Review questions

1. What are the basic tools for creating shapes?
2. What is a Live Shape?
3. How do you select a shape with no fill?
4. What is the Shaper tool?
5. How can you convert a raster image to editable vector shapes?

Review answers

1. There are six shape tools: Rectangle, Rounded Rectangle, Ellipse, Polygon, Star, and Flare (the Flare tool was not covered in the lesson). As explained in [Lesson 1](#), “[Getting to Know the Work Area](#),” to tear off a group of tools from the Tools panel, position the pointer over the tool that appears in the Tools panel, and hold down the mouse button until

the group of tools appears. Without releasing the mouse button, drag to the triangle on the right side of the group and then release the mouse button to tear off the group.

2. After you draw a rectangle, rounded rectangle, ellipse, or polygon using the shape tool, you can continue to modify its properties such as width, height, rounded corners, corner types, and radii (individually or collectively). This is what is known as a Live Shape. The shape properties such as corner radius are editable later in the Transform panel, in the Properties panel, or directly on the art.
3. Items that have no fill can be selected by clicking the stroke (or edge) or by dragging a selection marquee across the item.
4. Another way to draw and edit shapes in Illustrator involves the Shaper tool. The Shaper tool recognizes natural gestures and produces Live Shapes from those gestures. Without switching tools, you can transform individual shapes you create and even perform operations such as punch and combine.
5. You can convert a raster image to editable vector shapes by selecting it, and then clicking the Image Trace button in the Properties panel. To convert the tracing to paths, click Expand in the Properties panel, or choose Object > Image Trace > Expand. Use this method if you want to work with the components of the traced artwork as individual objects. The resulting paths are grouped.

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

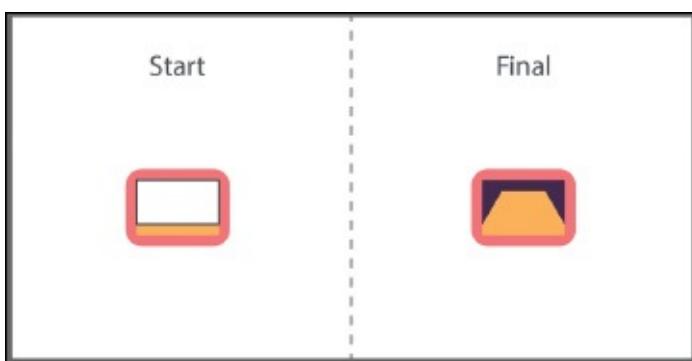
In Illustrator, you can edit and combine paths and shapes in a variety of ways to achieve the artwork you want. Sometimes, to get the artwork you desire, you start with simpler paths and shapes and use different methods for achieving more complex paths. This includes working with the Scissors tool (��), the Knife tool (Knife), and the Eraser tool (Eraser); 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.

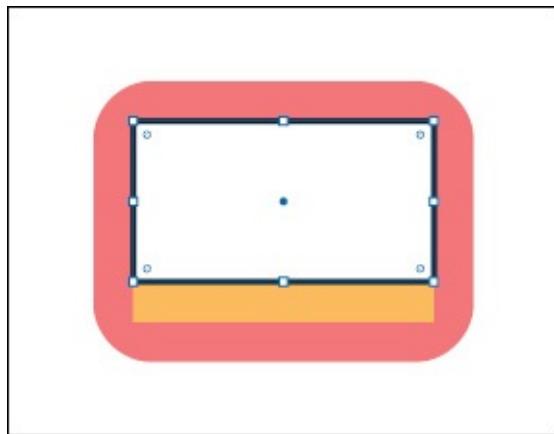
1. Click the View menu and make sure that the Smart Guides option is selected (a checkmark appears).
2. Choose 2 Window from the Artboard Navigation menu in the lower-left corner of the Document window. Choose View > Fit Artboard In Window.



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.

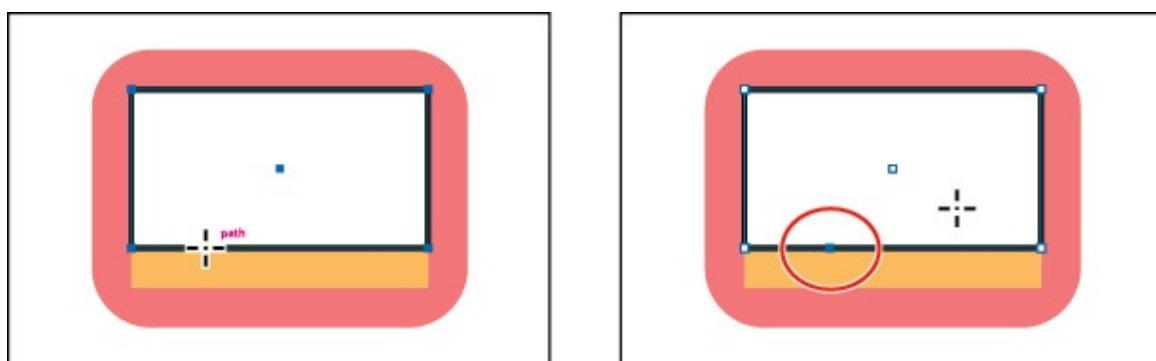
3. Select the Selection tool (▶) in the Tools panel, and click the white shape on the left to select it.

4. Press Command++ (macOS) or Ctrl++ (Windows) a few times to zoom in to the selected artwork.



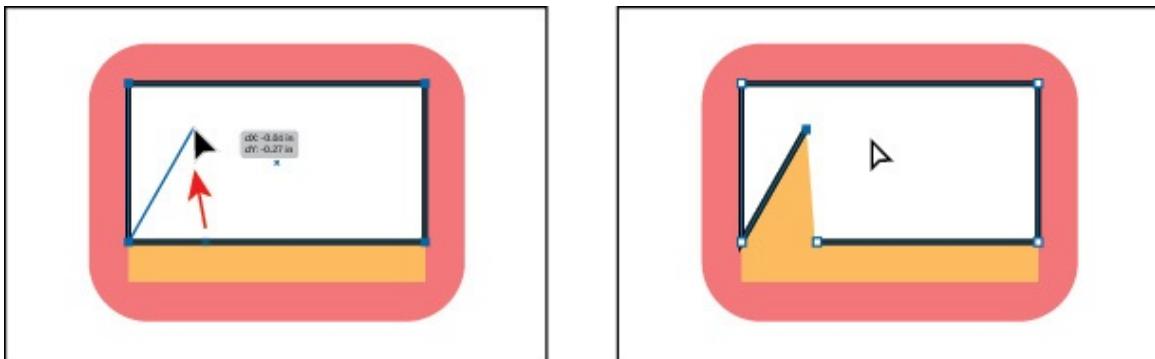
5. With the shape selected, in the Tools panel, click and hold down mouse button on the Eraser tool (◆), and select the Scissors tool (✂). Position the pointer over the bottom edge of the shape (see the figure). When you see the word “path,” click to cut the path at that point, and then move the pointer 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.

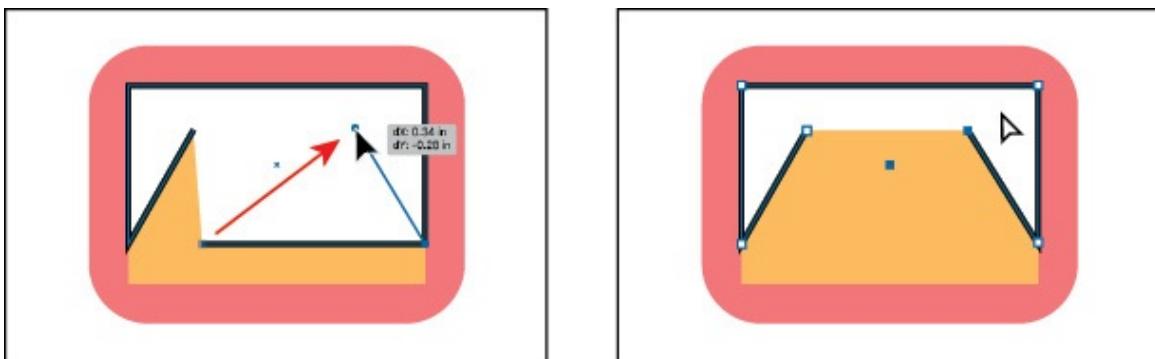


Cuts made with the Scissors tool must be on a line or a curve rather than on an end point of an open path. Clicking the stroke of a shape, the rectangle in this example, with the Scissors tool, the path is cut where you click so that it becomes open (a path with two end points).

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).

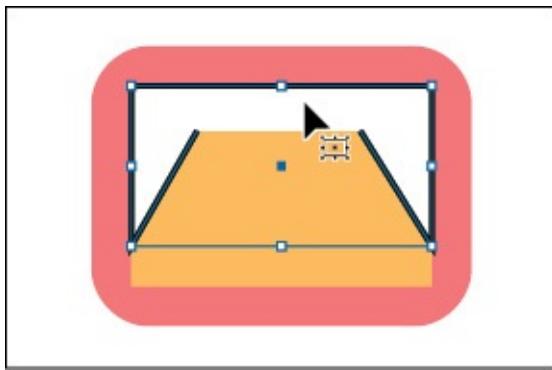


Notice how the stroke (the black border) doesn't go all the way around the white shape. That's because cutting with the Scissors tool makes an open path. If you only want to fill the shape with a color, it doesn't have to be a closed path. It is, however, necessary for a path to be closed if you want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

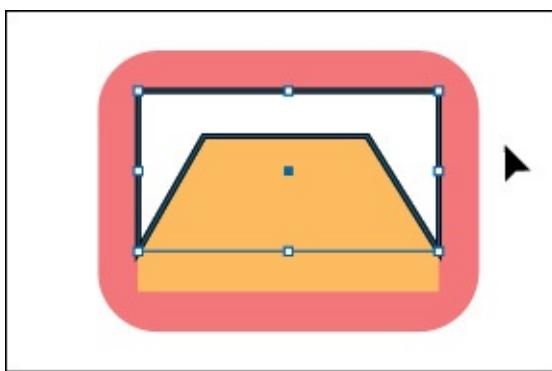


This step is important because only one anchor point was left selected from the previous section. If you were to choose the Join command with only one anchor point selected, an error message would appear. By selecting the whole path, when you apply the Join command, Illustrator simply finds the two ends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

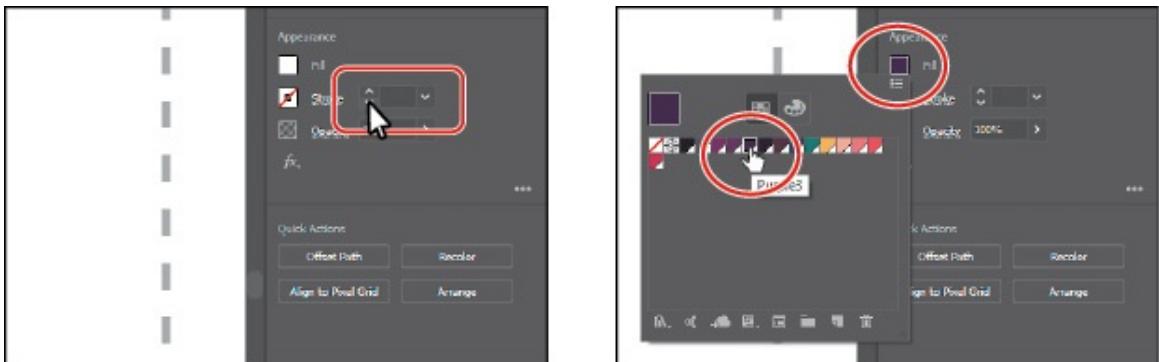
When you apply the Join command to two or more open paths, Illustrator first looks for and joins the paths that have end points stationed closest to each other. This process is repeated every time you apply the Join command until all paths are joined.



► **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.

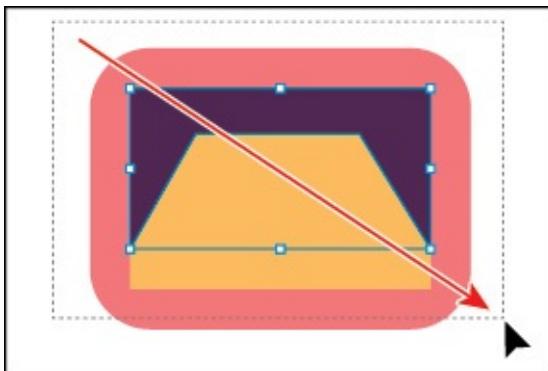


5. Drag across the window shapes to select them.

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.

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 (Knife icon). To cut with the Knife tool, you drag across a shape, and the result is two closed paths.

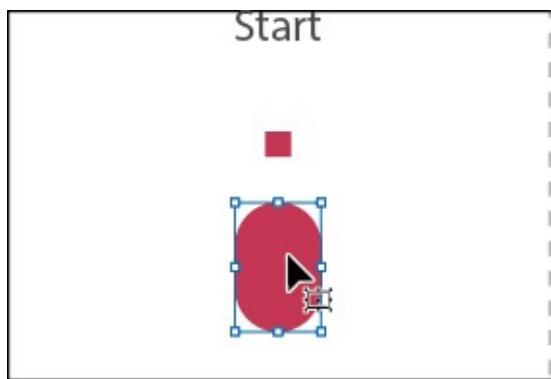
1. Choose 3 Tank from the Artboard Navigation menu in the lower-left corner of the Document window.



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.

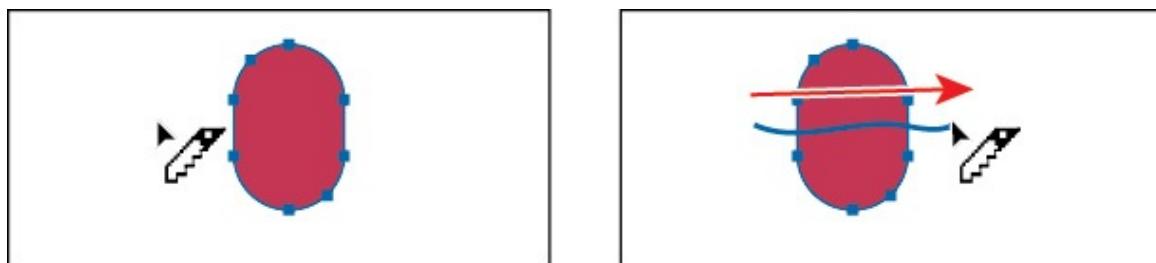
2. Choose View > Fit Artboard In Window to ensure it fits in the Document window.
3. Select the Selection tool (►), and click the pink oval shape under the artwork labeled “Start.”



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.

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.

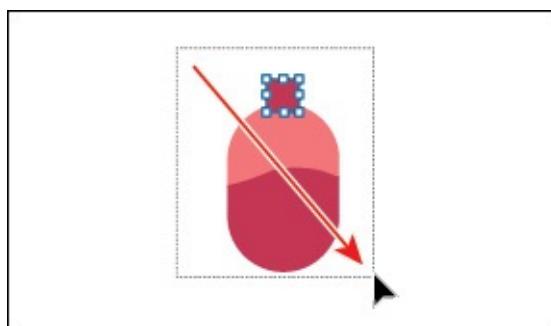
6. Choose Select > Deselect.
7. Select the Selection tool (►), and click the new, top shape (see the

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.



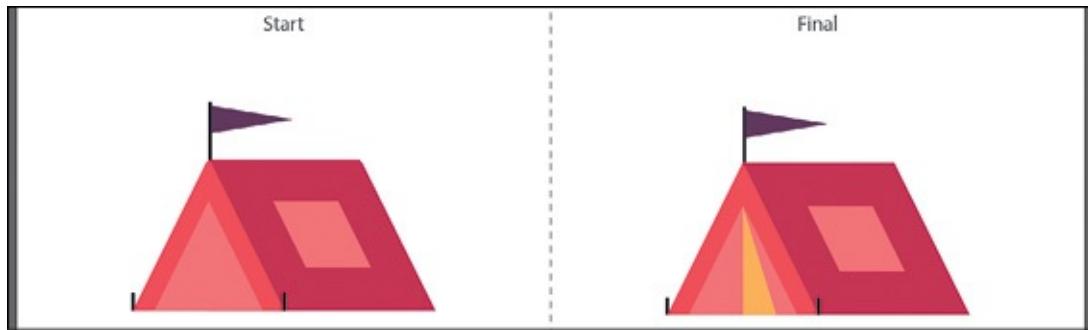
9. Drag the small, red square that is above the shapes, down onto the shapes you cut.
0. Drag across all of the tank shapes labeled “Start,” to select them.
1. Choose Object > Group.
2. Choose Select > Deselect.



Cutting in a straight line

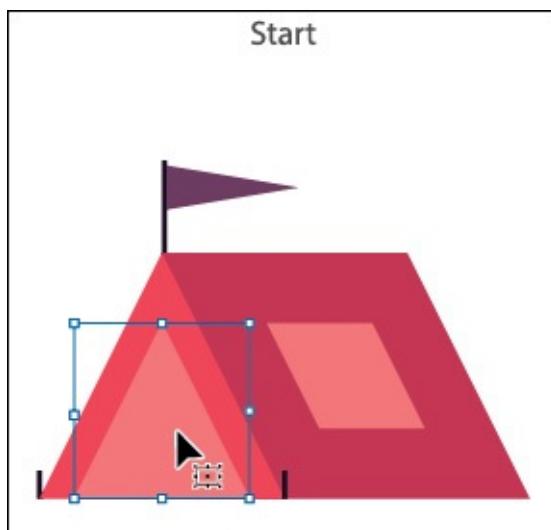
Next, you’ll cut artwork in a straight line with the Knife tool. Pressing the Option (macOS) or Alt (Windows) key allows you to cut in a straight line with the Knife tool. Pressing the Shift key as well constrains the cut to 45 degrees.

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.

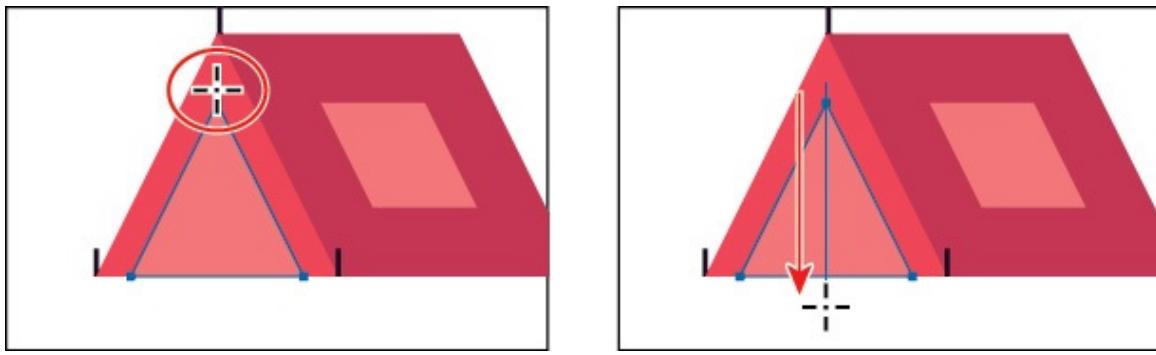
- 2.** Choose View > Fit Artboard In Window.



- 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 ().

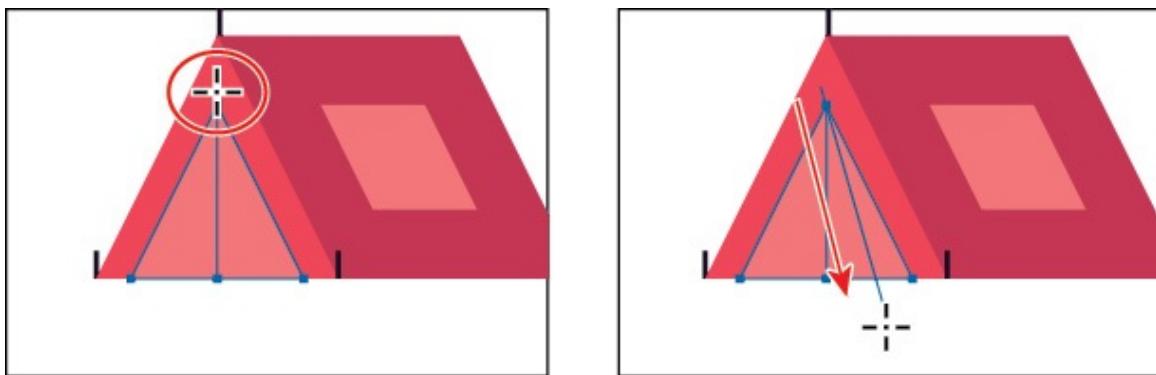
The pointer now appears as cross hairs and can make it easier to see exactly where you will begin cutting.

- 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.

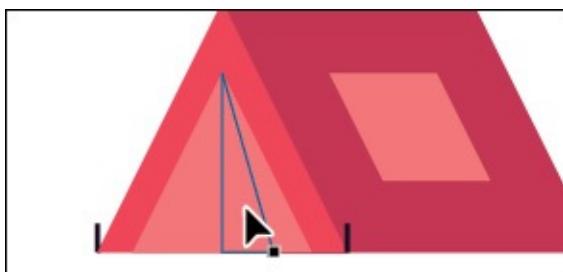


● **Note:** Pressing the Option/Alt key keeps the cut straight, and pressing the Shift key constrains the cutting to a multiple of 45°.

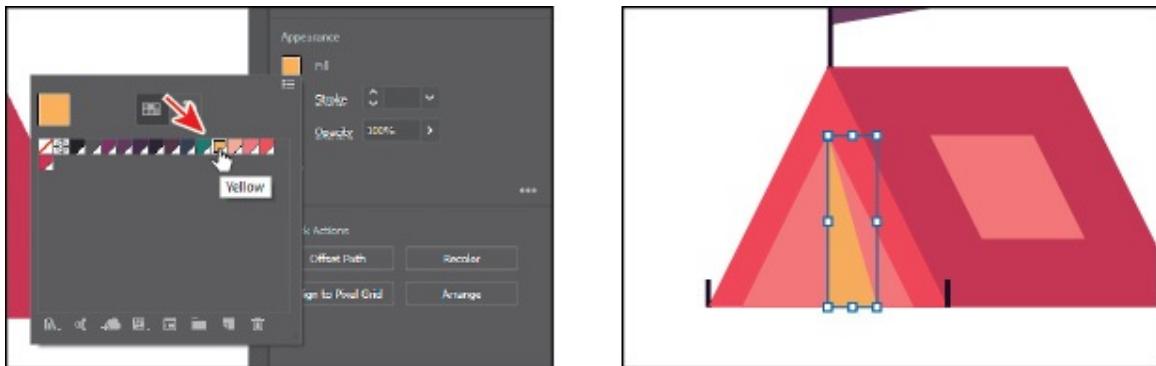
7. Press and hold Option (macOS) or Alt (Windows), and drag from just above the top of the selected triangle, down, at a slight angle, all the way across the shape to cut it into two. Release the mouse button and then the key.



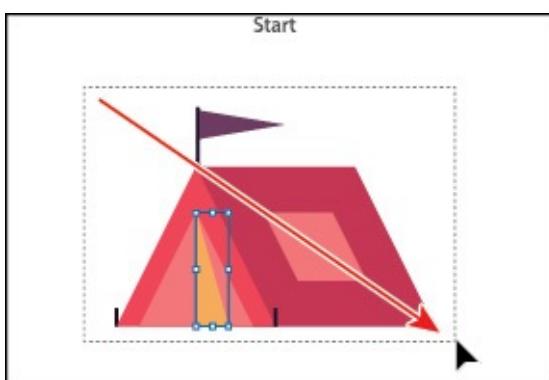
8. Choose Select > Deselect.
9. Select the Selection tool (►), and click the middle, pink triangle.



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 named Yellow.



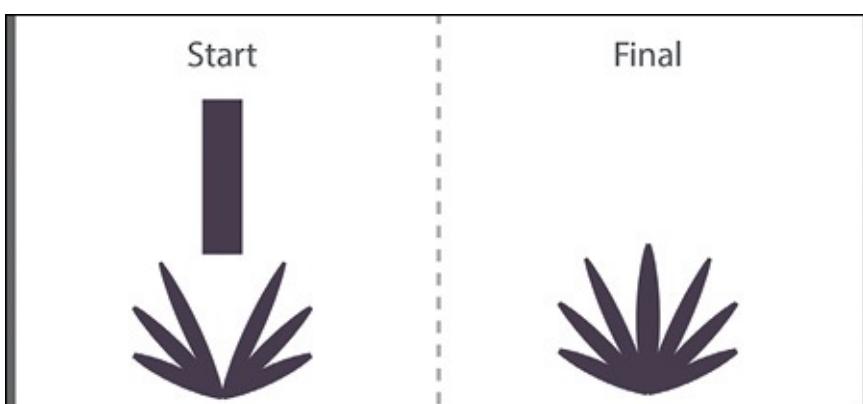
1. Drag across all of the tent shapes labeled “Start,” to select them.
2. Choose Object > Group.
3. Depress the Caps Lock key.



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

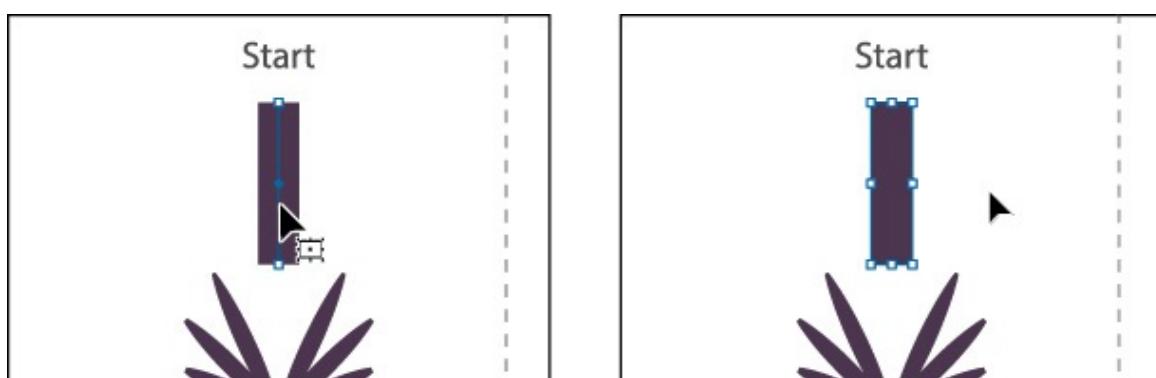
the artboard. You'll work with the artwork labeled "Start," on the left.

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.

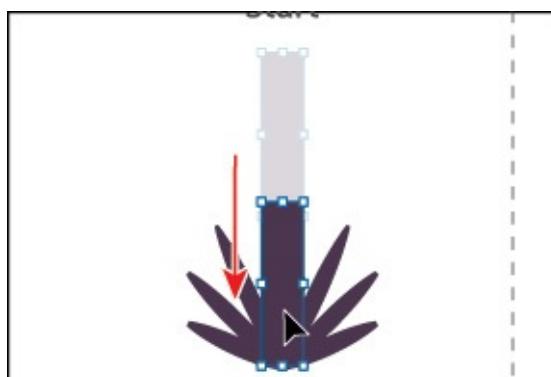
4. Choose Object > Path > Outline Stroke.



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.

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.

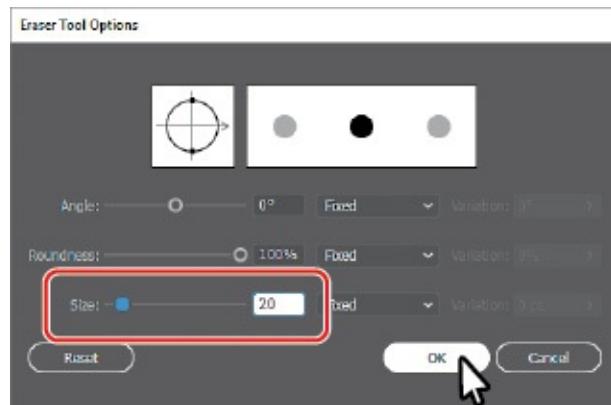
Using the Eraser tool

The Eraser tool (eraser icon) 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.

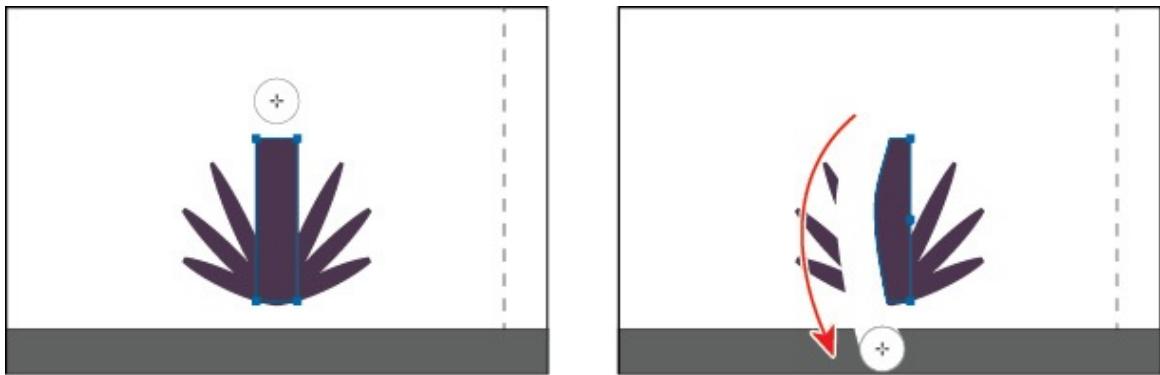
1. Click and hold down the mouse button on the Knife tool (scissors icon), and select the Eraser tool (eraser icon) in the Tools panel.
2. Double-click the Eraser tool (eraser icon) in the Tools panel to edit the tool properties. In the Eraser Tool Options dialog box, change Size to **20** pt to make the eraser larger. Click OK.

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



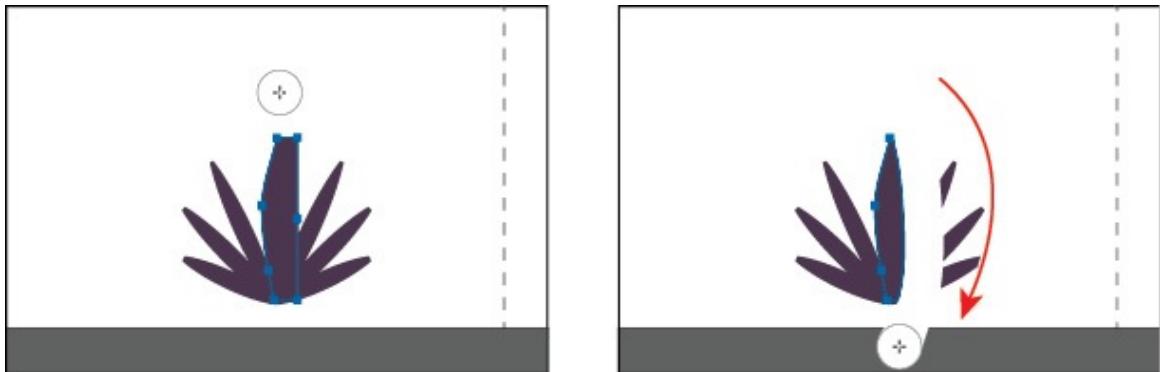
Tip: With the Eraser tool selected, you could also click the Tool Options button at the top of the Properties panel to see the options dialog box.

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

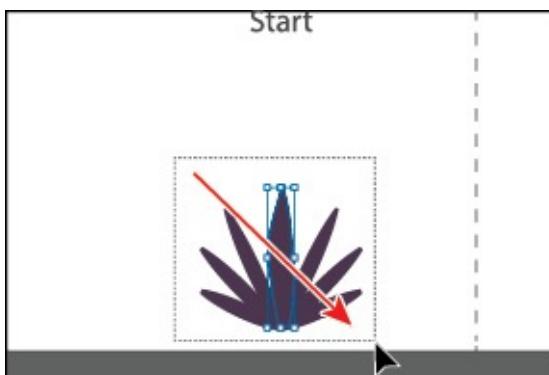


When you release the mouse button, part of the shape is erased, and the shape is still a closed path.

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.

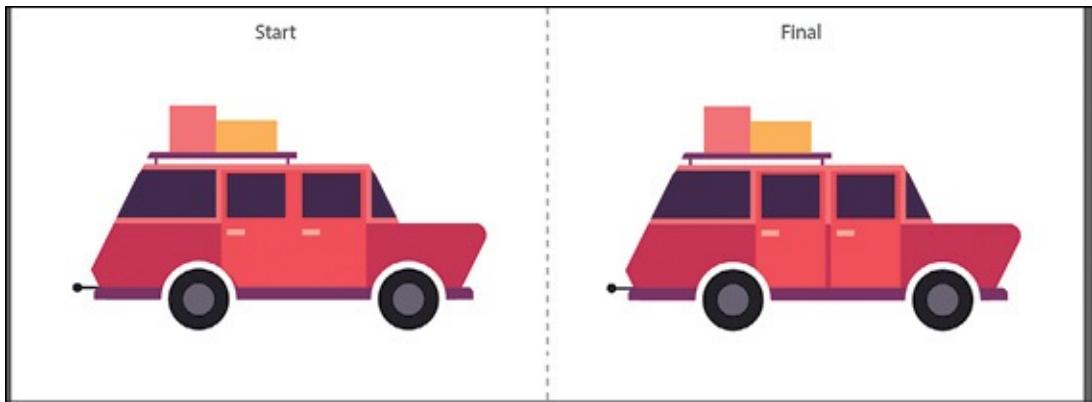


6. Choose Object > Group.

Erasing in a straight line

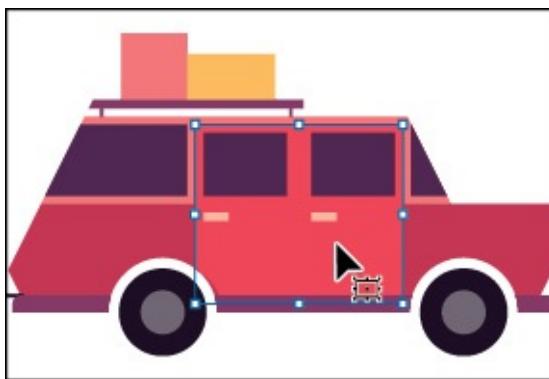
You can also erase in a straight line, which is what you'll do next.

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

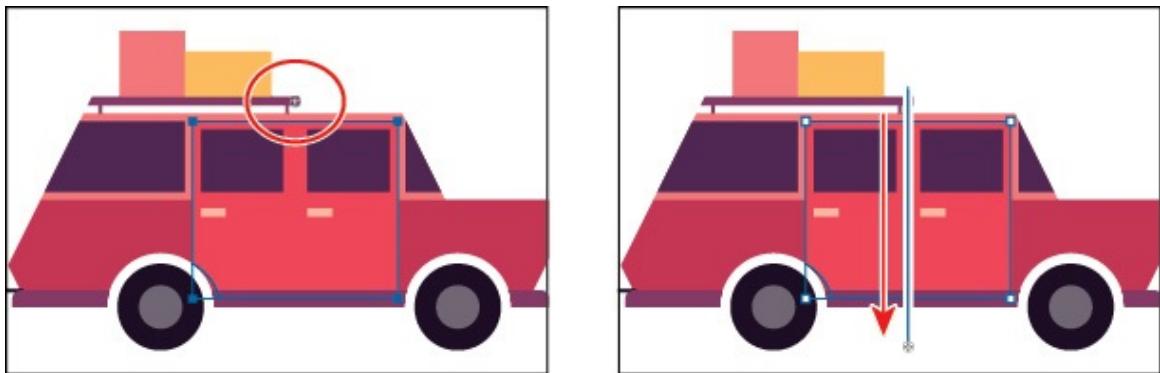


An example of what you will create is labeled “Final” on the right side of the artboard. You will work with the artwork labeled “Start,” on the left. You’ll select and erase the single door shape to make two doors.

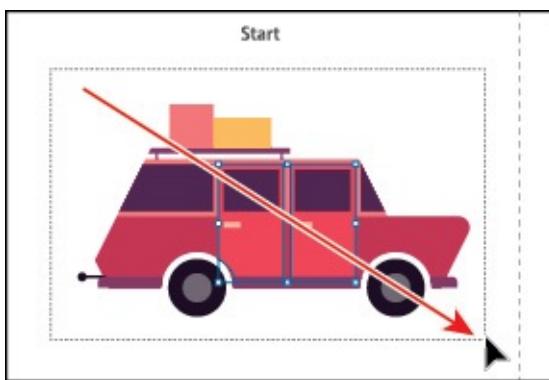
2. Choose View > Fit Artboard In Window to ensure it fits in the Document window.
3. Select the Selection tool (►), and click to select the door shape labeled “Start.”
4. Choose View > Zoom In a few times to zoom in closer.
5. Double-click the Eraser tool (◆) to edit the tool properties. In the Eraser 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]).

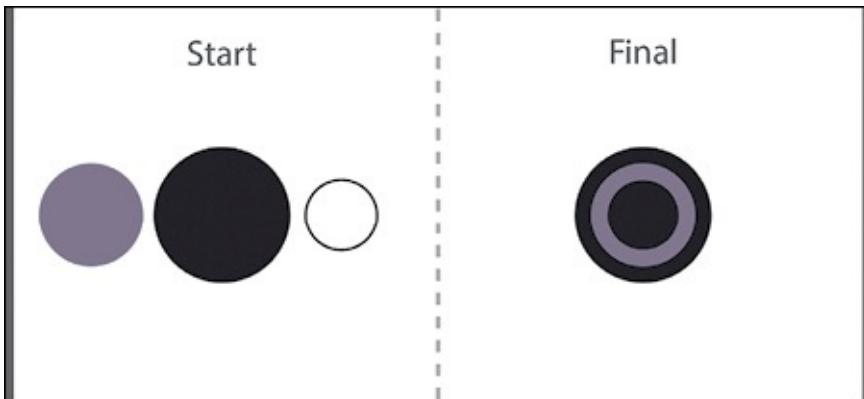
7. Select the Selection tool and drag across all of the car shapes labeled “Start” to select them.
8. Click the Group button in the Quick Actions section of the Properties panel to the right of the document.
9. Choose File > Save.

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.

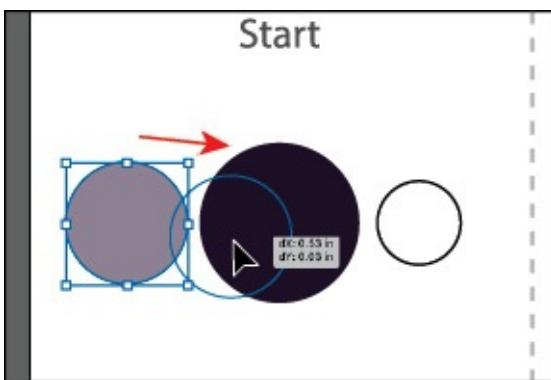
1. Choose 7 Wheel from the Artboard Navigation menu in the lower-left

corner of the Document window.

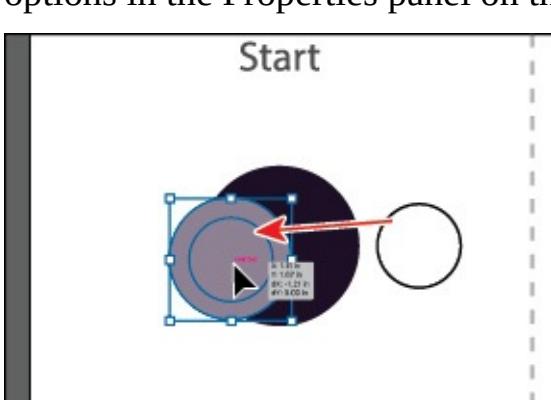


An example of what you will create is labeled “Final” on the right side of the artboard. You will work with the artwork labeled “Start” on the left. You’ll create a wheel from the shapes labeled “Start.”

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.

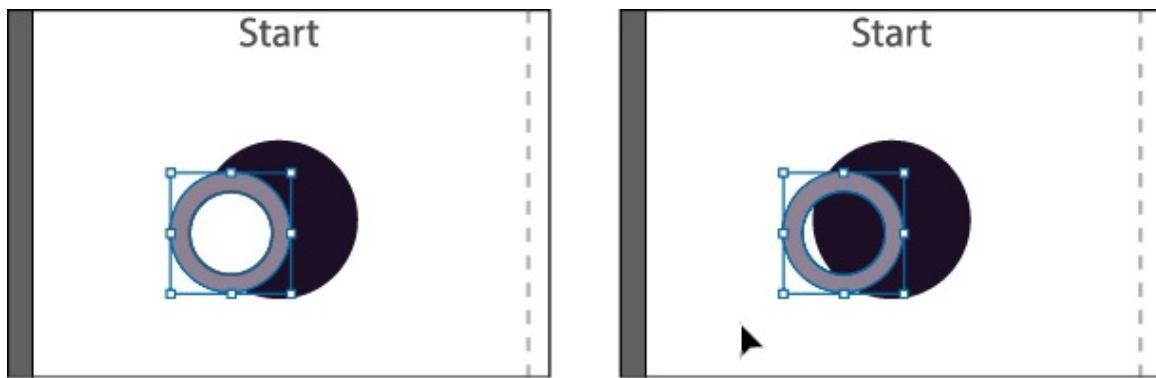


4. Drag the white shape on top of the gray circle and make sure it’s centered. Smart Guides will help you align the circles. You can also select the gray circle and the white circle and align them to each other using the Align options in the Properties panel on the right.



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

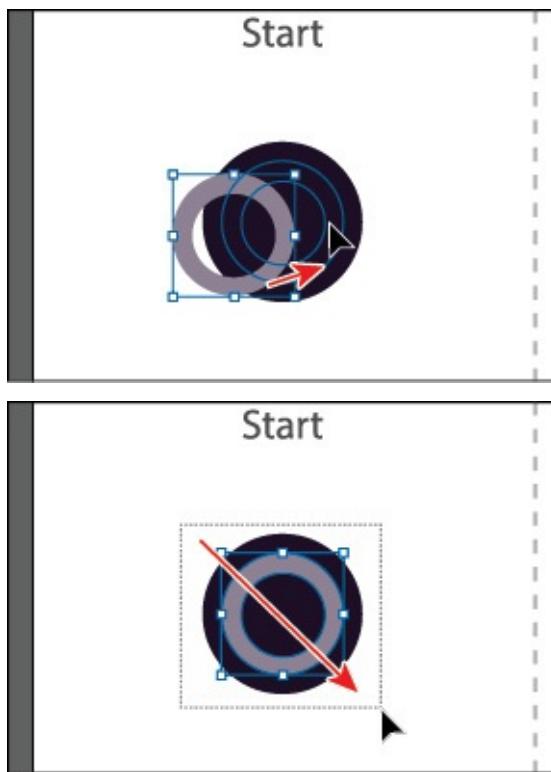
6. Choose Object > Compound Path > Make, and leave the artwork selected.



► **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.



● **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.

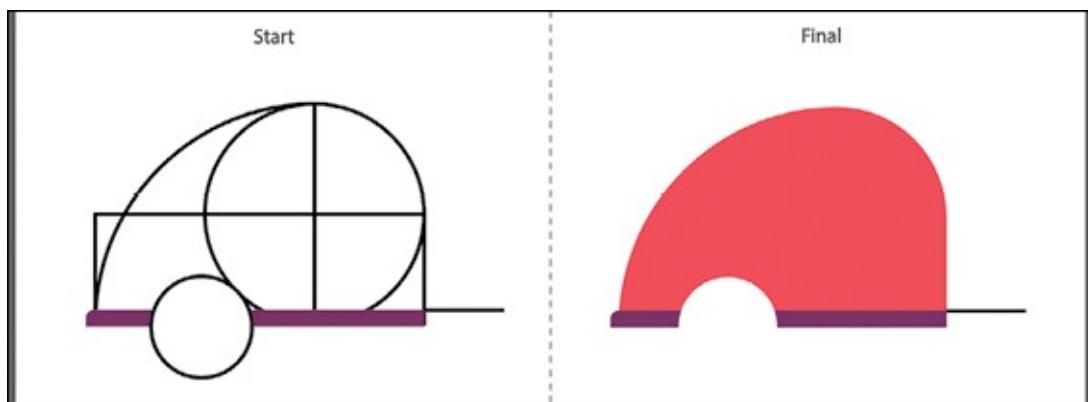
Combining shapes

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 (✿). 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.

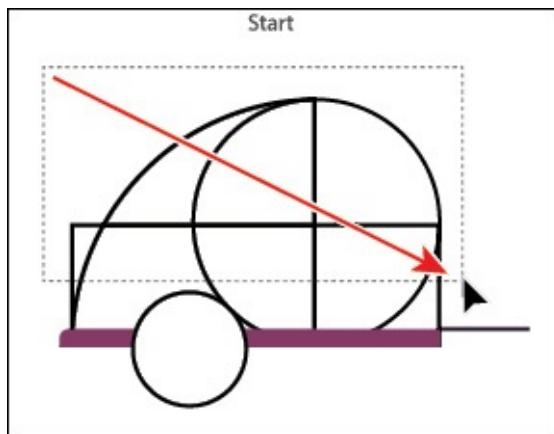
1. Choose 8 Trailer from the Artboard Navigation menu in the lower-left corner of the Document window.



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.

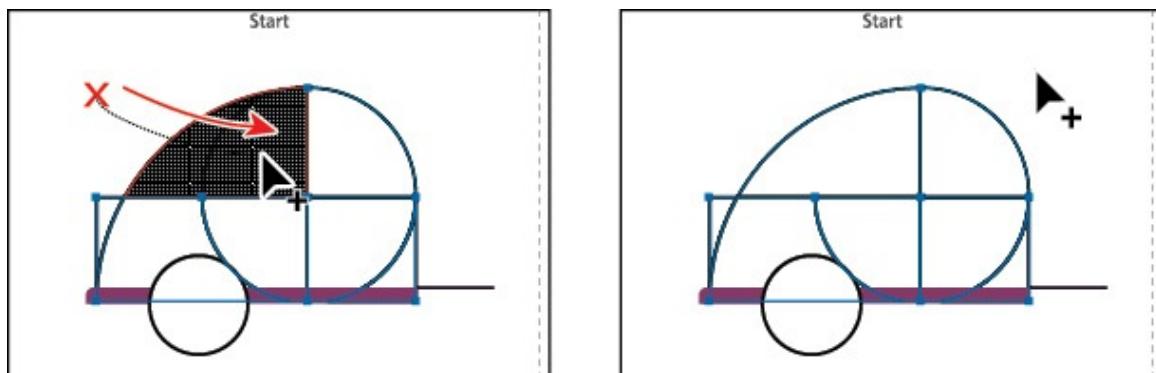
2. Choose View > Fit Artboard In Window to ensure it fits in the Document window.
3. With the Selection tool (►) selected, drag a marquee selection across the

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.

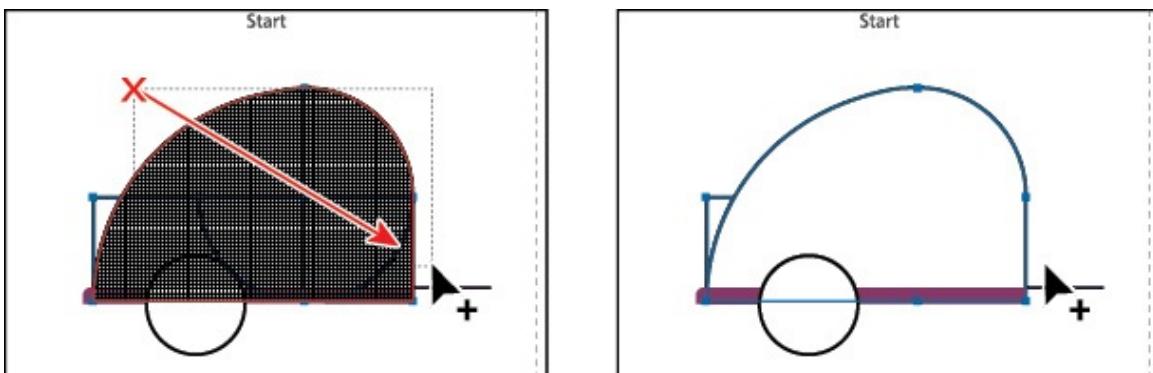


When you select the Shape Builder tool, the overlapping shapes are divided into separate objects temporarily. As you drag from one part to another, a red outline appears, showing you what the final shape will look like when the shapes are merged together, after releasing the mouse button.

► **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.

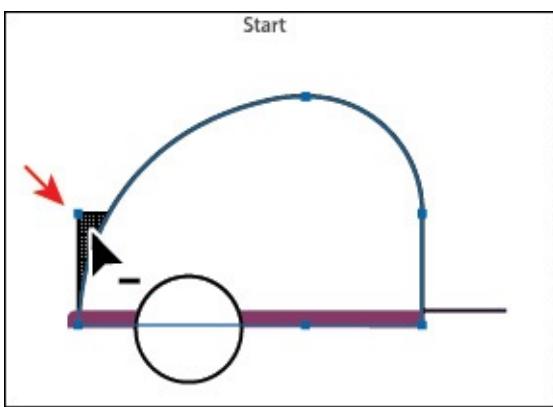
Release the mouse button to combine the shapes.



Next, you'll delete a few shapes.

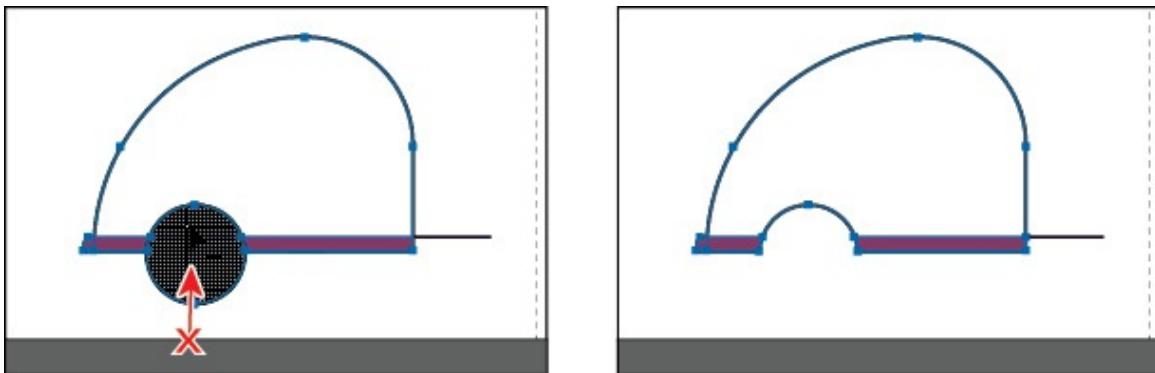
● **Note:** Your final combined shapes may have a different stroke and/or fill, and that's okay. You'll change them shortly.

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.

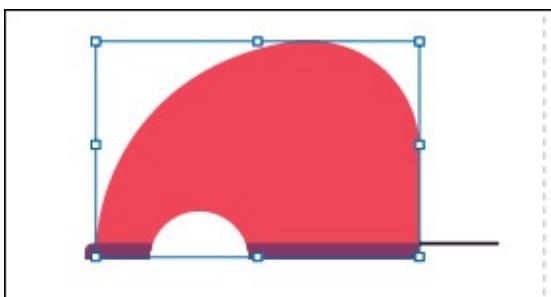


● **Note:** When you position the pointer over the shapes, make sure you see the mesh within those shapes, before clicking to delete.

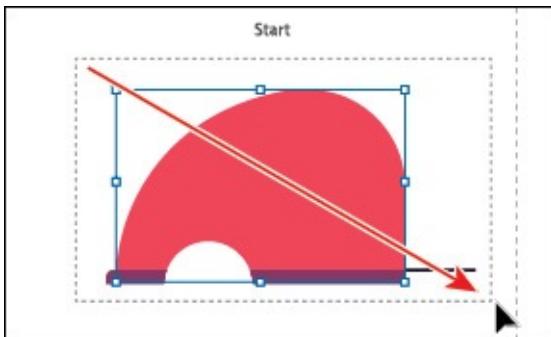
7. Select the Selection tool (►). Drag across the larger shape you combined, the purple bar and the white circle to select all three shapes.
8. Select the Shape Builder tool (🕒) and move the pointer below the white circle. Hold down the Option (macOS) or Alt (Windows) key and drag through the white circle, stopping before the top of the circle to remove it 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 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.

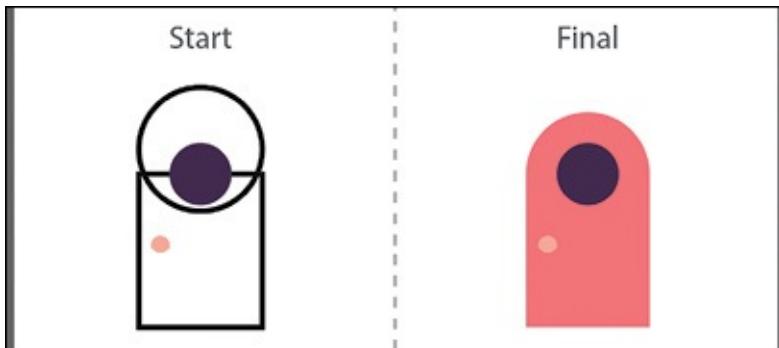


- 2.** Choose Object > Group.

Combining objects using Pathfinder effects

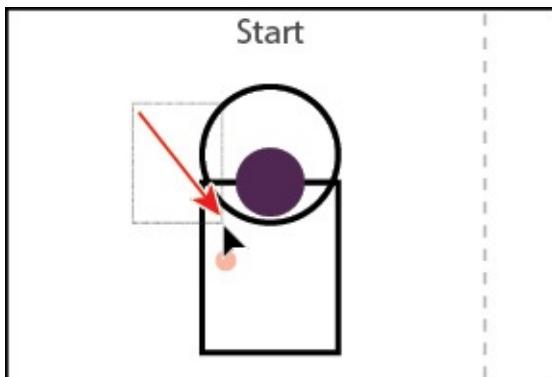
Pathfinder effects, found in the Properties panel or the Pathfinder panel (Window > Pathfinder), are another way to combine shapes in different ways. When a Pathfinder effect such as Unite is applied, the original objects selected are *permanently* transformed.

- 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.

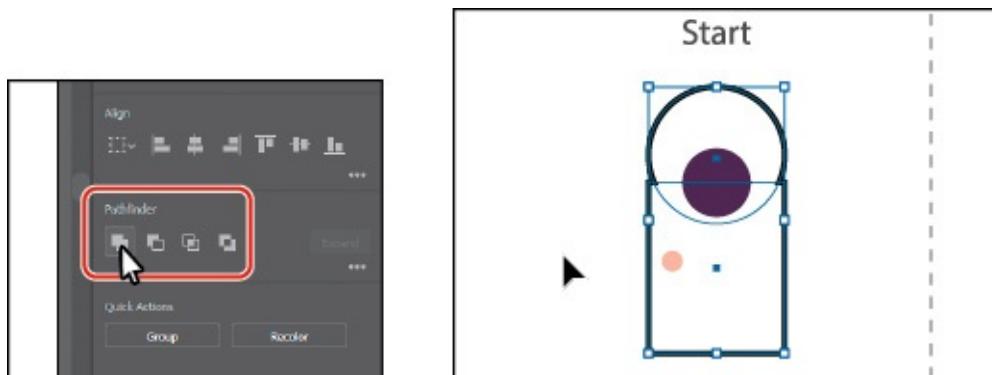
► **Tip:** Clicking More Options (⋮) in the Pathfinder section of the Properties panel will reveal the Pathfinder panel, which has more options.

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.

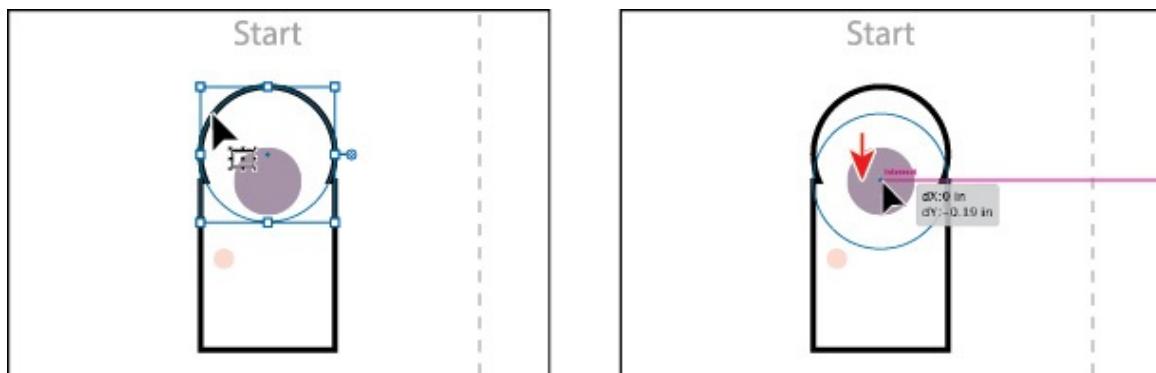
2. Choose Select > Deselect to see the final shape.
3. With the Selection tool, double-click the black stroke of the newly combined shape to enter Isolation mode.

► **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.

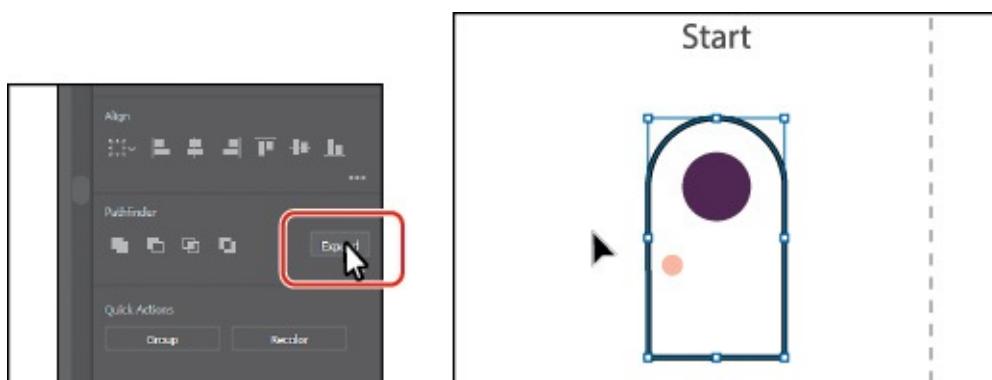
- **Note:** You can also press the arrow keys to move the shape if you find it difficult to drag.



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.

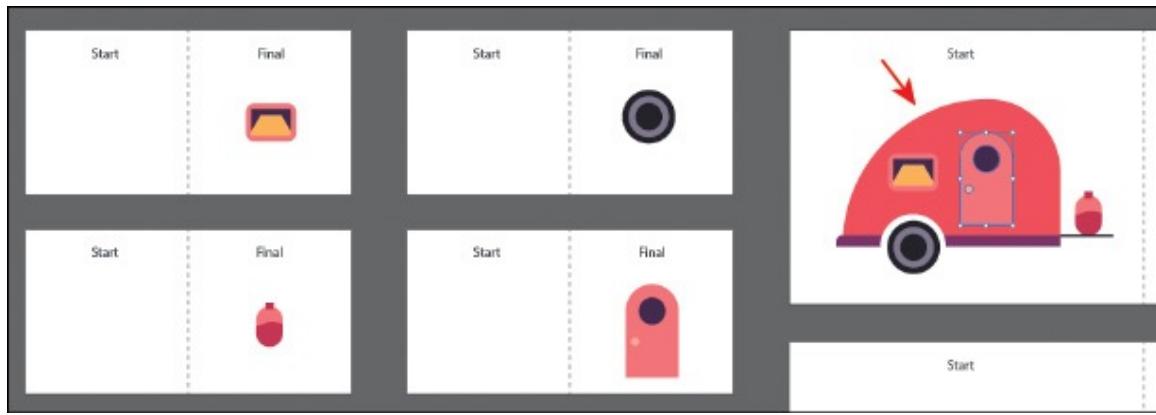


9. Change the fill color in the Properties panel to the color named Pink. Change the stroke weight to **0**.
10. Drag across the shapes that make up the door to select them all.
11. Click the Group button toward the bottom of the Properties panel to group the content together.

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, 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.



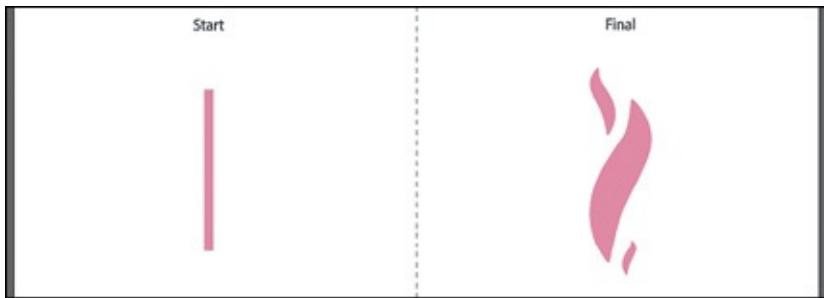
Note: You may find that with the Smart Guides on, it is difficult to position the content on the trailer. You can always turn off the Smart Guides (View > Smart Guides), then turn them on when you are finished dragging the artwork.

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.

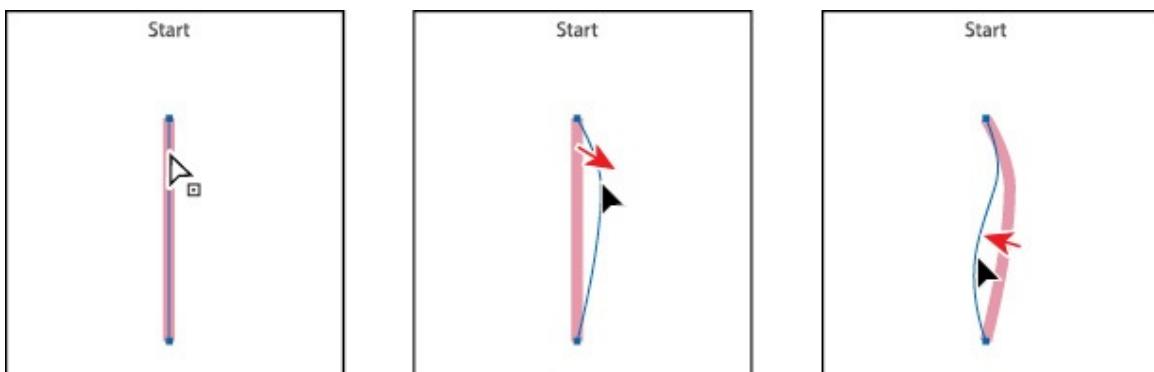
1. Choose 10 Flame from the Artboard Navigation menu in the lower-left corner of the Document window.



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.

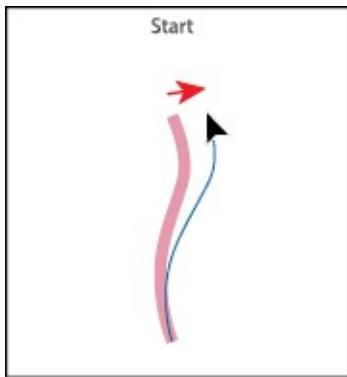
Note: You can use the Reshape path on a closed path, like a square or circle, but if the entire path is selected, the Reshape tool will add anchor points and reshape the path.



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.

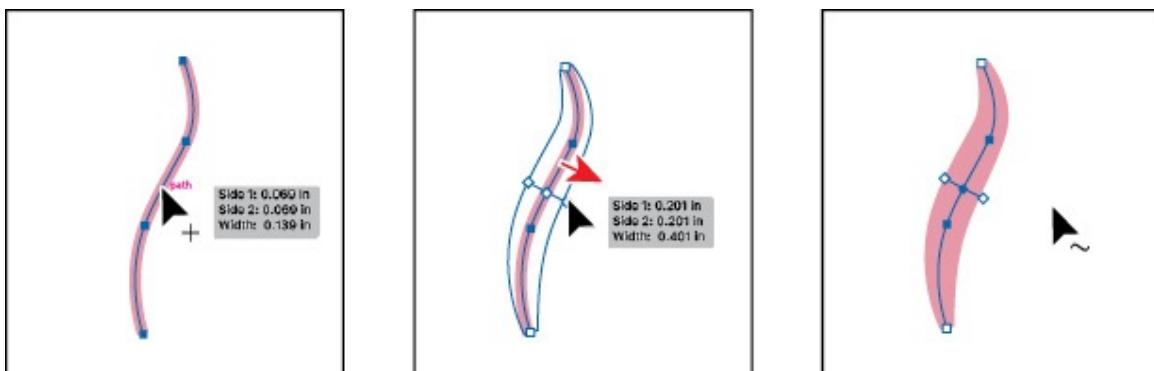


● **Note:** Only selected anchor points will be adjusted when dragging with the Reshape tool.

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

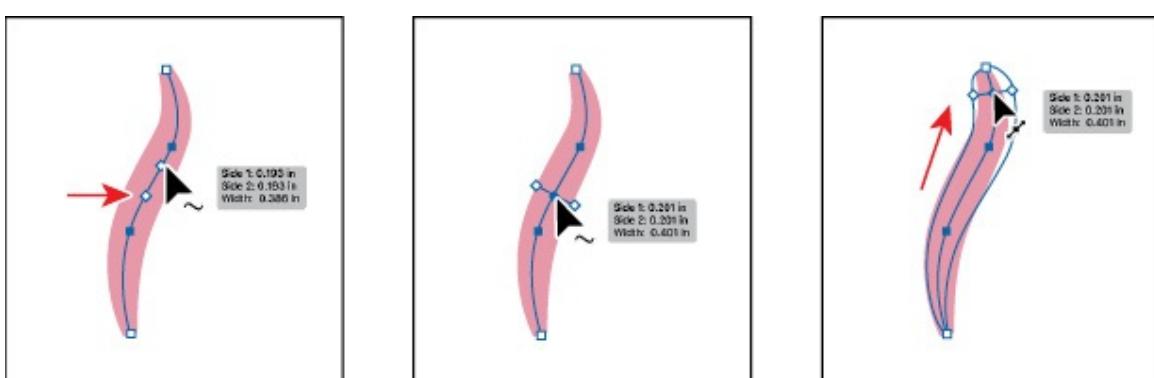
width point, the Width Point Edit dialog box allows you to edit both width points.

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.



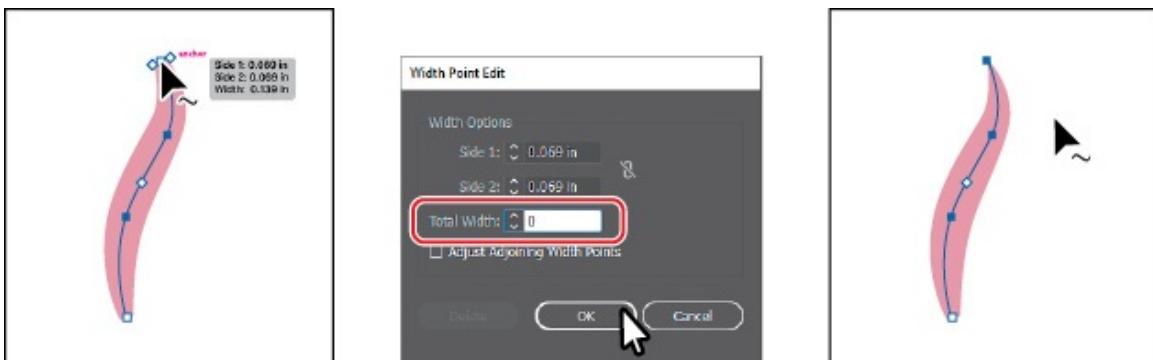
-
- 5.** Choose Edit > Undo Width Point Change to return the width point to its original position on the path.

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.

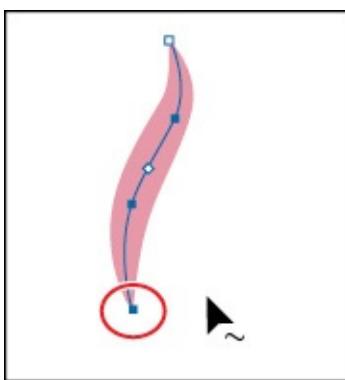
► **Tip:** You can move the pointer over a width point, press the Option (macOS) or Alt (Windows) key, and drag to duplicate it.

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.

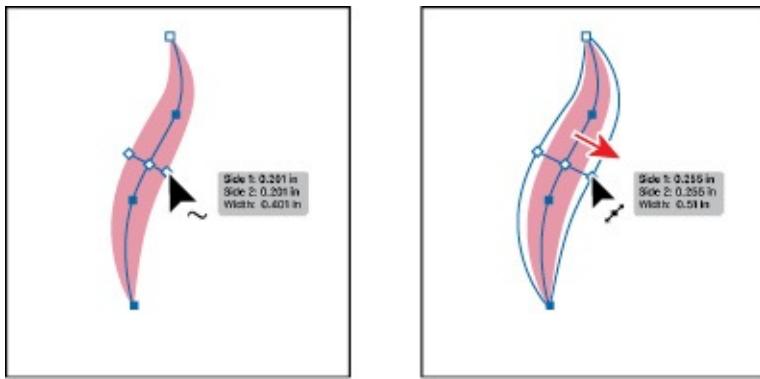
8. Move the pointer over the bottom anchor point of the path, and double-click. In the Width Point Edit dialog box, change the Total Width to **0 in**, and click OK.



► **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.

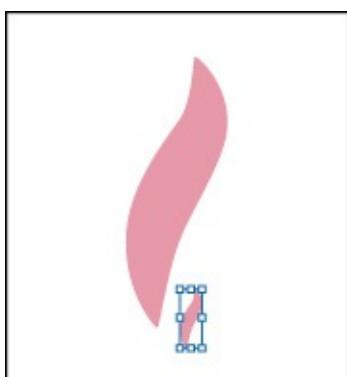
► **Tip:** After defining the stroke width, you can save the variable width as a *profile* that you can reuse later, from the Stroke panel or the Control panel. To learn more about variable width profiles, search for “Painting with fills and strokes” in Illustrator Help (Help > Illustrator Help).



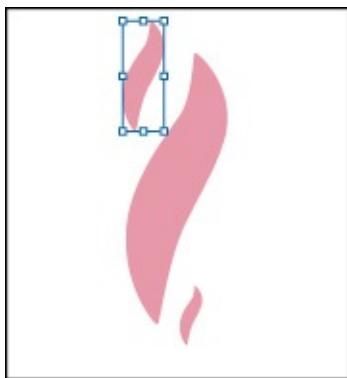
Finishing up the illustration

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.

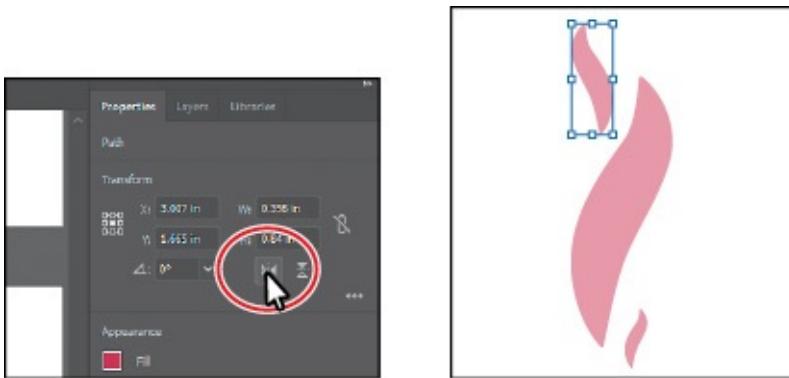


4. With the smaller copy selected, choose Edit > Copy and then Edit > Paste, scale the new copy larger, and position it like you see in the figure.

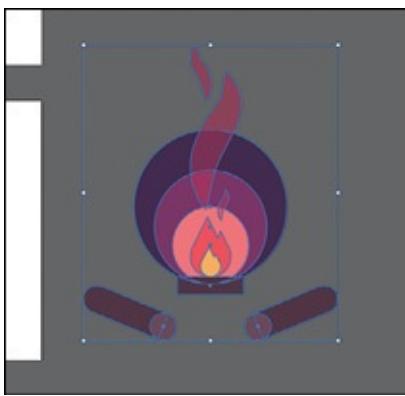


5. With the shape still selected, click the Flip Along Horizontal Axis option (

() 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.
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 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 (Knife)?
3. How can you erase with the Eraser tool (eraser) 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 (Shape Builder), 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 (Knife) 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 (eraser icon), 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).

5 Transforming Artwork

Lesson overview

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

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



This lesson takes approximately 60 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.



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

Starting the lesson

In this lesson, you'll transform artwork and use it to complete an infographic. Before you begin, you'll restore the default preferences for Adobe Illustrator, and then open a file containing the finished artwork to see what you'll create.

- 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.

- Start Adobe Illustrator CC.
- Choose File > Open, and open the L5_end.ai file in the Lessons > Lesson05 folder on your hard disk.



This file contains the three artboards that make up the front, back cover, and center for an infographic pamphlet. Any data presented is purely fictitious.

4. Choose View > Fit All In Window, and leave the artwork onscreen as you work.
5. Choose File > Open. In the Open dialog box, navigate to the Lessons > Lesson05 folder, and select the L5_start.ai file on your hard disk. Click Open.



6. Choose File > Save As. In the Save As dialog box, name the file **Infographic.ai**, and navigate to the Lesson05 folder. Leave the Format option set to Adobe Illustrator (ai) (macOS) or the Save As Type option set to Adobe Illustrator (*.AI) (Windows) and then click Save.
7. In the Illustrator Options dialog box, leave the Illustrator options at their default settings and then 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.

Working with artboards

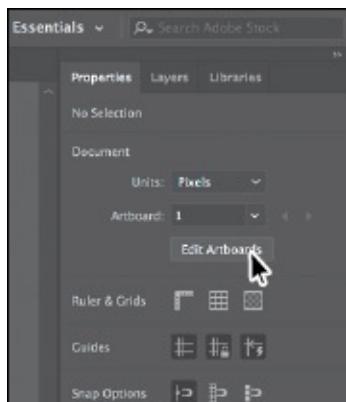
Artboards represent the regions that can contain printable or exportable artwork, similar to pages in Adobe InDesign or artboards in Adobe Photoshop

or Adobe Experience Design. You can use artboards for creating a variety of things, such as multiple-page PDF files, printed pages with different sizes or different elements, independent elements for websites or apps, or video storyboards, for instance.

Adding artboards to a document

You can add and remove artboards at any time while working in a document. You can create artboards in different sizes, resize them in Artboard Editing mode, and position them anywhere in the Document window. All artboards are numbered and can have a name assigned to them. Next, you'll add a few artboards to the Infographic.ai document.

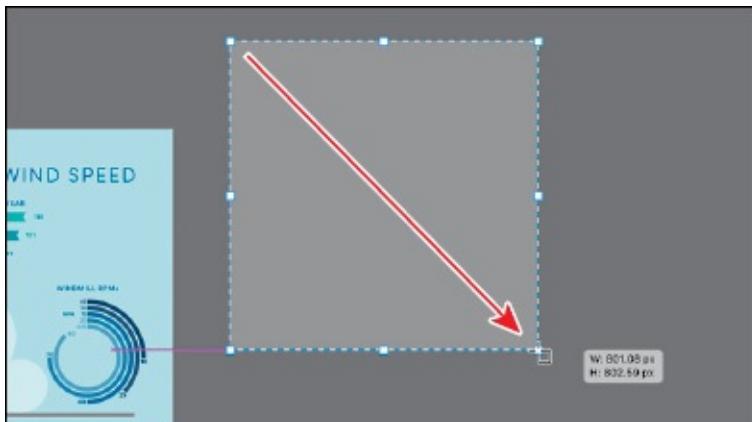
1. Choose View > Fit Artboard In Window and then press Command+- (macOS) or Ctrl+- (Windows) twice to zoom out.
2. Press the spacebar to temporarily access the Hand tool (✋). Drag the artboard to the left to see more of the darker canvas to the right of the artboard.
3. Click the Edit Artboards button in the Properties panel on the right to enter Artboard Editing mode and to select the Artboard tool in the Tools panel.



● **Note:** You can also simply select the Artboard tool (𝒃) in the Tools panel to enter Artboard Editing mode.

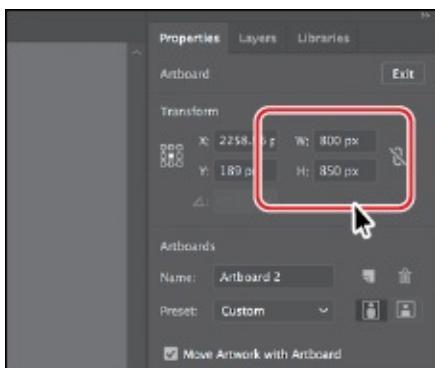
● **Note:** If a message appears after drawing the artboard, click Okay to close it.

4. Move the pointer to the right of the existing artboard and drag down and to the right. When the measurement label next to the pointer shows an approximate width of 800 pixels and height of 800 pixels, release the mouse button.



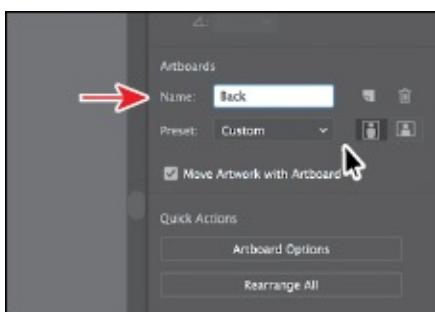
The new artboard should be selected. You can tell it's selected because of the dashed bounding box surrounding it. In the Properties panel on the right, you'll see properties for the selected artboard like position (X, Y) and size (width and height), name, and more.

5. In the Properties panel on the right, select the width value and type **800**. Select the height value and type **850** then press Return or Enter to accept the height.



6. Change the name to **Back** in the Artboards section of the Properties panel. Press Return or Enter to make the change.

Next, you'll create another artboard that's the same size.



7. Click the New Artboard button (), in the Properties panel on the right, to create a new artboard that is the same size as the selected artboard (Back) and added just to the right of the Back artboard.



8. Change the name of the new artboard to **Front** in the Properties panel.

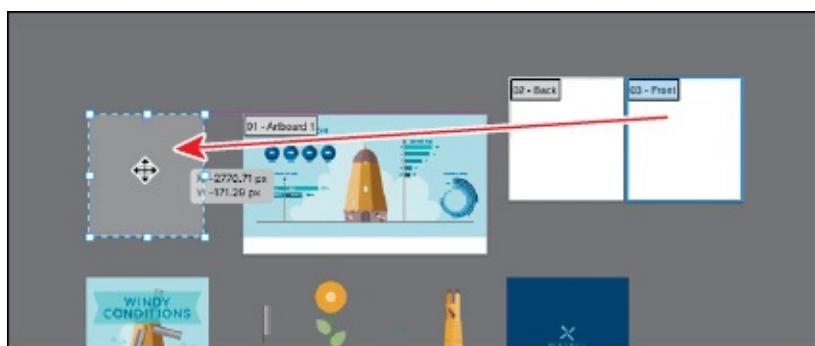


When editing artboards, in Artboard Editing mode, you can see the name of each artboard in the upper-left corner of the artboard.

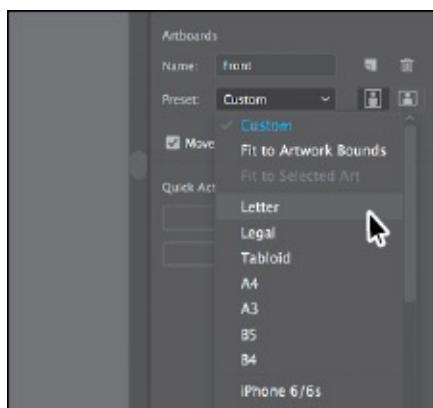
Editing artboards

After creating artboards, you can edit or delete artboards by using the Artboard tool (), menu commands, Properties panel, or the Artboards panel. Next, you'll reposition and change the size of an artboard.

1. Choose View > Fit All In Window to see all of your artboards.
2. Press Command+- (macOS) or Ctrl+- (Windows) twice to zoom out.
3. While still in Artboard Editing mode, and with the Artboard tool () still selected in the Tools panel, drag the artboard named Front to the left of the original artboard. Don't worry about its exact position yet, but make sure it doesn't cover any artwork.



In the Properties panel on the right, in Artboard Editing mode, you'll see lots of options for editing the selected artboard. When an artboard is selected, the Preset menu lets you change the artboard to a set size. The sizes in the Preset menu include typical print, video, tablet, and web sizes. You can also switch orientation, rename, or delete the artboard.

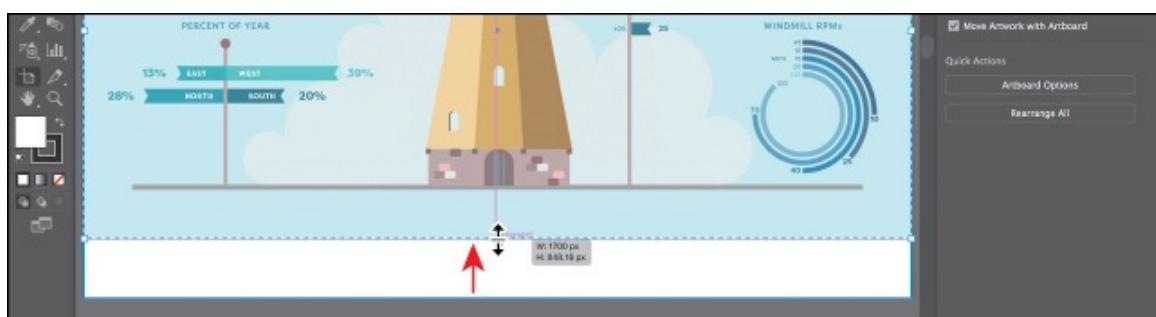


► **Tip:** To delete an artboard, select the artboard with the Artboard tool (), and either press Delete or click the Delete Artboard button () in the Properties panel. You can delete all but one artboard.

4. Click in the larger, original artboard in the center and choose View > Fit Artboard In Window to fit that artboard in the Document window.

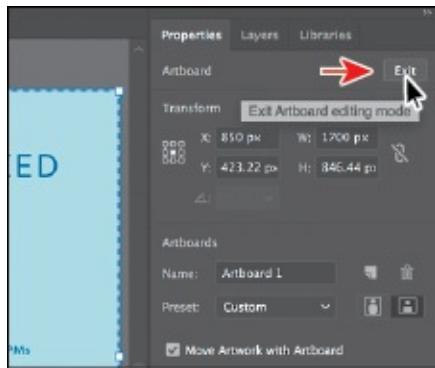
Commands such as View > Fit Artboard In Window typically apply to the selected or *active* artboard.

5. Drag the bottom-middle point of the artboard up to resize it. When the point snaps to the bottom of the blue shape, release the mouse button.



► **Tip:** You can also transform multiple selected artboards at one time.

6. Click the Exit button at the top of the Properties panel to exit Artboard Editing mode.



Exiting Artboard Editing mode will deselect all artboards and also select the Selection tool (►) in the Tools panel on the left.

▶ **Tip:** To exit Artboard Editing mode, you can also select another tool in the Tools panel besides the Artboard tool (□) or press Esc.

7. Choose View > Fit All In Window to fit all of the artboards in the Document window.

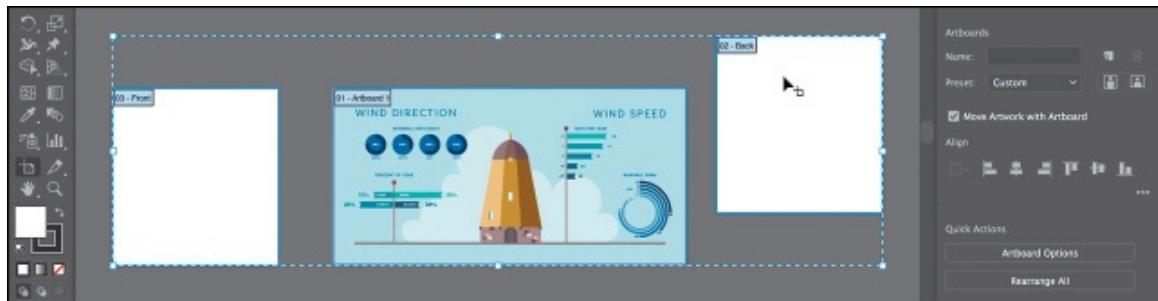
Aligning artboards

In order to organize the artboards in your document, maybe to keep similar artboards next to each other, you can move and align artboards to suit your working style. Next, you'll select all of the artboards and align them.

1. Select the Artboard tool (□) in the Tools panel on the left.

This is another way to enter Artboard Editing mode and can be useful when artwork is selected since you can't see the Edit Artboards button in the Properties panel with artwork selected.

2. Click in the leftmost artboard labeled 03-Front to select it. Press the Shift key, and click in the other two artboards to the right, one at a time, to select all three.

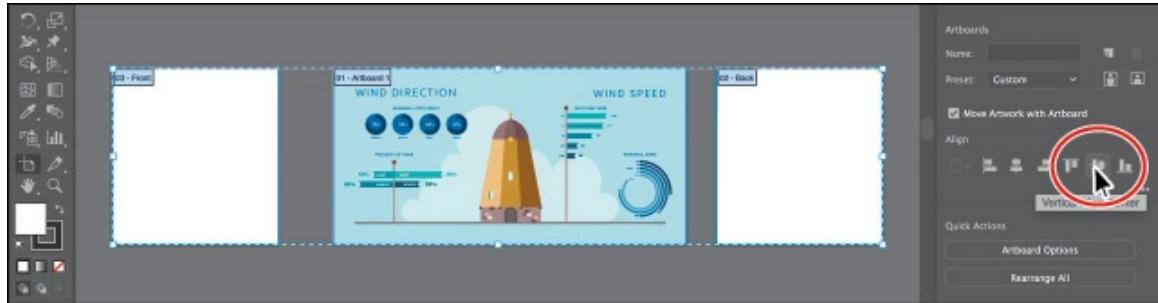


The Shift key allows you to add artboards to the selection, rather than draw an artboard, when the Artboard tool is selected.

▶ **Tip:** With the Artboard tool (□) selected, you can press the Shift

key and drag across a series of artboards to select them.

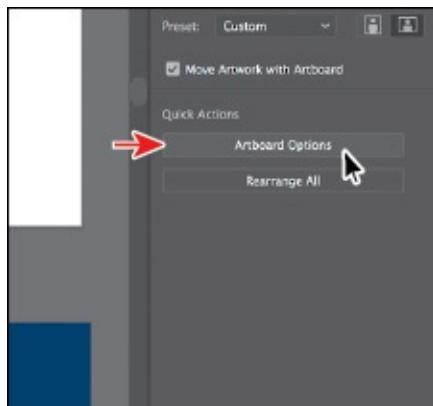
-
3. Click the Vertical Align Center option () in the Properties panel on the right to align the artboards to each other. Leave the artboards selected.



Renaming artboards

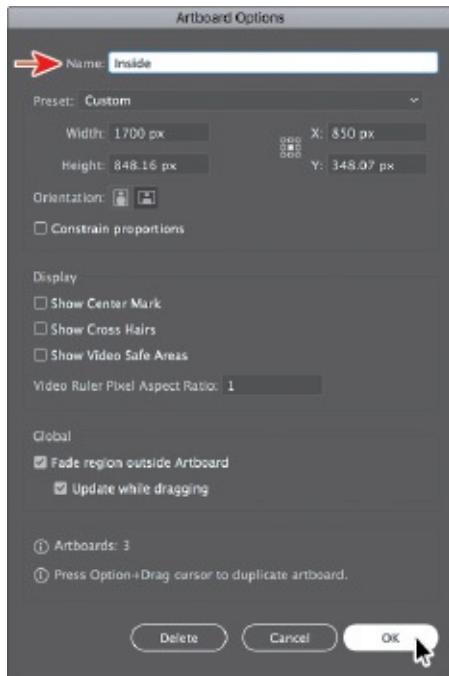
By default, artboards are assigned a number and a name, as you've seen. When you navigate the artboards in a document, it can be helpful to name them. Next, you're going to rename artboards so that the names are more useful.

1. While still in Artboard Editing mode, click to select the middle (largest) artboard. Click the Artboard Options button in the Properties panel.



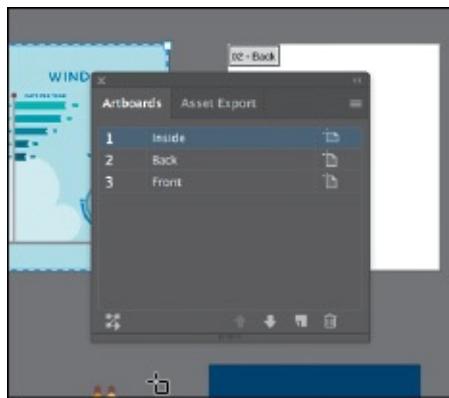
2. In the Artboard Options dialog box, change the name to **Inside**, and click OK.

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



3. Choose Window > Artboards to open the Artboards panel.

The Artboards panel allows you to see a list of all of the artboards in the document. It also allows you to reorder, rename, add, and delete artboards and to choose many other options related to artboards without being in Artboard Editing mode.



4. Choose File > Save, and keep the Artboards panel showing for the next steps.

Reordering artboards

You can navigate between artboards in your document using the Next artboard (➡) and Previous artboard (⬅) buttons in the Properties panel with the Selection tool selected, nothing selected, and not in Artboard Editing mode, or below the Document window. By default, artboards are ordered according to the order in which they are created, but you can change that order. Next, you'll reorder the artboards in the Artboards panel so that if you use the Next or Previous artboard buttons, you navigate in an artboard order

you determine.

- With the Artboards panel open, double-click the number 2 to the left of the name “Back,” and then double-click the number 1 to the left of the name “Inside” in the Artboards panel.

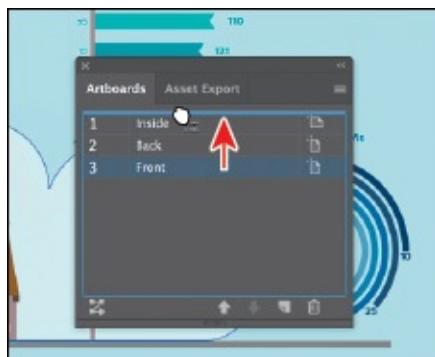


Double-clicking the number to the left of an artboard name that isn’t selected in the Artboards panel makes that artboard the *active* artboard and fits it in the Document window.

- Drag the “Front” artboard name up until a line appears above the artboard named “Inside.” Release the mouse button.

This makes the Front artboard the first artboard in the list.

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



- Choose View > Fit Artboard In Window to fit the Front artboard in the Document window, if necessary.
- Click the Exit button in the Properties panel to exit Artboard Editing mode.
- Click the Next artboard button (▶) in the Properties panel.

► **Tip:** The Artboard Options icon (ⓘ) appears to the right of the name of each artboard in the Artboards panel. It not only allows access to the artboard options for each artboard but also indicates the orientation

(vertical or horizontal) of the artboard.



This fits the next artboard in the Artboards panel list, named “Inside,” in the Document window. If you hadn’t changed the order of the artboards in the Artboards panel, the Next artboard button in the previous step would have been dimmed (you couldn’t select it) because the Front artboard was the last artboard in the Artboards panel list.

6. Click the X at the top of the Artboards panel group to close it.

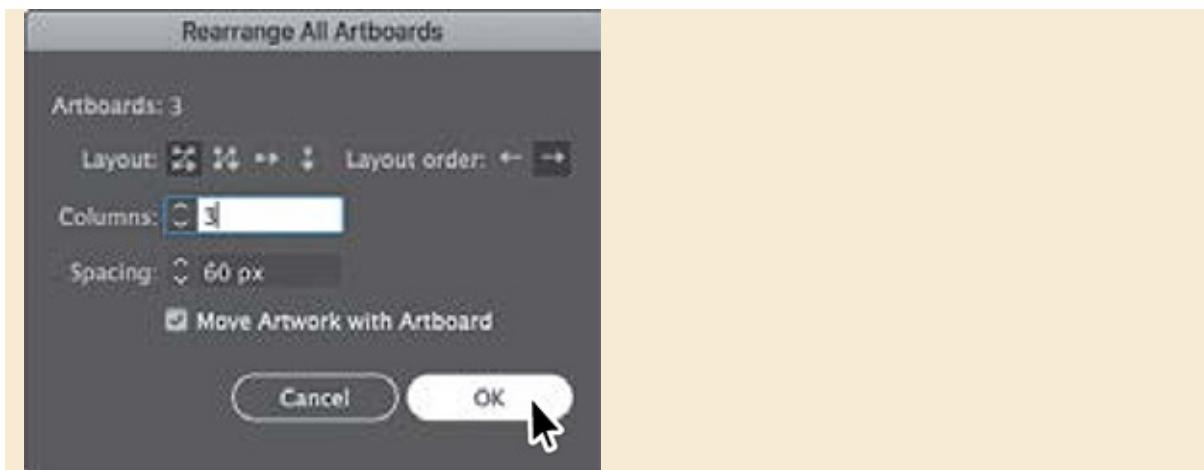
Now that the artboards are set up, you will concentrate on transforming artwork to create the content for your project.

Rearranging artboards

In Artboard Editing mode (with the Artboard tool selected in the Tools panel), you can click the Rearrange All button in the Properties panel to open the Rearrange All Artboards dialog box.

In the Rearrange All Artboards dialog box, you can arrange your artboards in columns and set the spacing between each artboard to a set amount. For instance, if you had a document with six artboards and set the columns to 3, the artboards would be arranged in two rows (or two columns) of three artboards.

You can also click the Rearrange All Artboards button at the bottom of the Artboards panel (Window > Artboards) or choose Object > Artboards > Rearrange All Artboards.



Working with rulers and guides

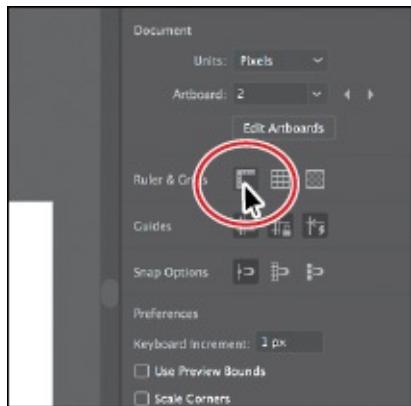
With the artboards set up, next you'll learn about aligning and measuring content using rulers and guides. *Rulers* help you accurately place and measure objects and distances. They appear at the top and left in the Document window and can be shown and hidden. There are two types of rulers in Illustrator: *artboard rulers* and *global rulers*. The point on each ruler (horizontal and vertical) where the 0 (zero) appears is called the *ruler origin*. Artboard rulers, which are the default rulers, set the ruler origin to the upper-left corner of the *active* artboard. Global rulers set the ruler origin to the upper-left corner of the *first* artboard, or the artboard that is at the top of the list in the Artboards panel, no matter which artboard is active. By default, rulers are set to artboard rulers, which means the origin is in the upper-left corner of the active artboard.

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

Creating guides

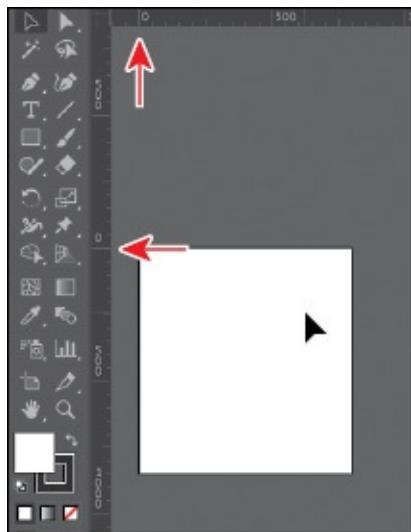
Guides are nonprinting lines created from the rulers that help you align objects. Next, you'll create a guide so later you could more accurately align content on an artboard.

1. With nothing selected and the Selection tool () selected, click the Show Rulers button in the Properties panel to the right to show the page rulers.



► **Tip:** You can also choose View > Rulers > Show Rulers.

2. Choose View > Fit All In Window.
3. Click each of the artboards, and as you do, look at the horizontal and vertical rulers (along the top and left sides of the Document window).



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

4. With the Selection tool, click in the leftmost artboard, called “Front.”

Notice the very subtle black outline around the Front artboard, with “1” showing in the Artboard Navigation menu (below the Document window) and in the Document section of the Properties panel to the right of the document, all of which indicate that the Front artboard is the currently active artboard. There can be only one active artboard at a time. Commands such as View > Fit Artboard In Window apply to the active

artboard.

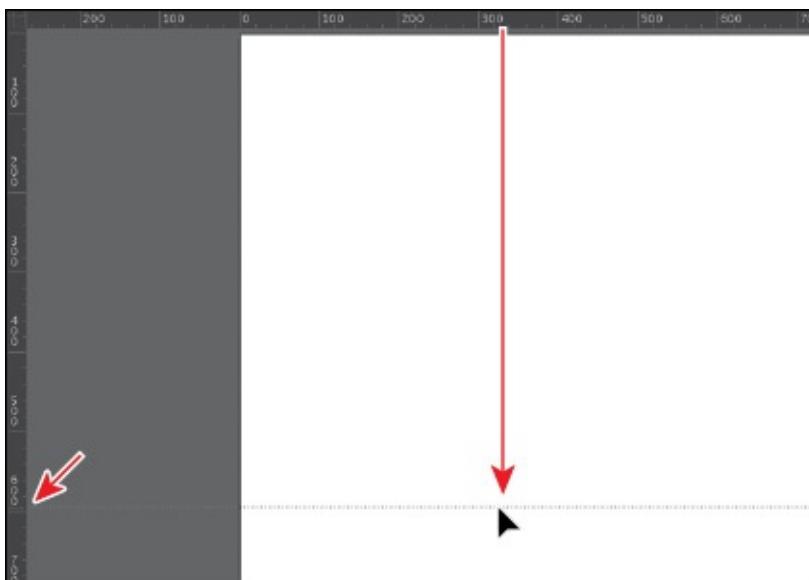
5. Choose View > Fit Artboard In Window.

That fits the active artboard in the window and the ruler origin (0,0) is in the upper-left corner of that same artboard. Next you'll create a guide on the active artboard.

6. Drag from the top ruler down, into the artboard. When the guide reaches 600 pixels on the ruler, release the mouse button. The units for this document are set at pixels.

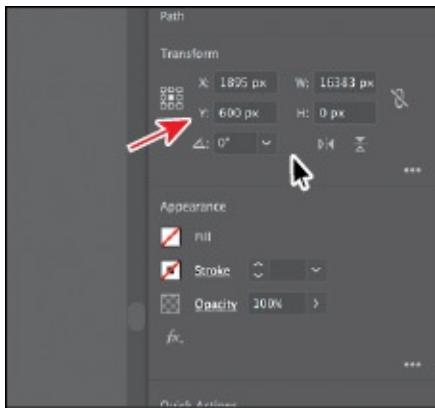
► **Tip:** Dragging from a ruler with the Shift key pressed “snaps” a guide to the measurements on the ruler.

► **Tip:** You can double-click the horizontal or vertical ruler to add a new guide.

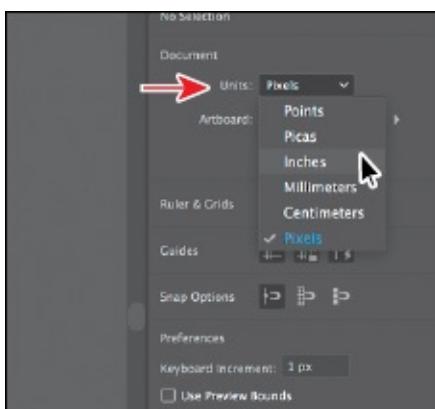


After creating a guide, it's selected, and when selected, its color matches the color of the layer that it's associated with (darker blue in this case) when you move the pointer away from it.

7. With the guide still selected (in this case, it will be blue if selected), change the Y value in the Properties panel to **600**, and press Return or Enter.



8. Click away from the guide to deselect it.
9. Click the Units menu in the Properties panel, and choose Inches to change the units for the entire document. You can now see that the rulers show inches instead of pixels.



► **Tip:** To change the units for a document (inches, points, etc.), you can also right-click either ruler and choose the new units.

0. Choose File > Save.

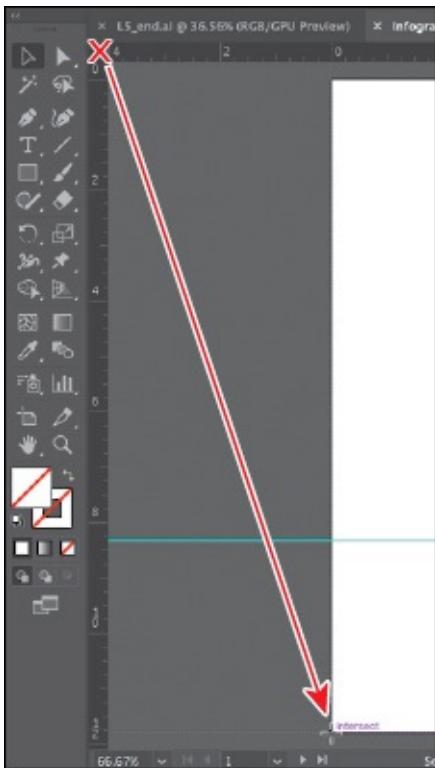
Editing the ruler origin

On the horizontal ruler, measurements to the right of 0 (zero) are positive and to the left are negative. On the vertical ruler, measurements below 0 (zero) are positive and above are negative. You can move the ruler origin to start the horizontal and/or vertical measurements at another location, and that's what you'll do next.

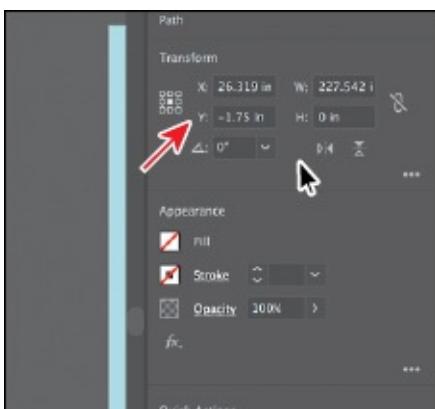
1. Choose View > Zoom Out.
2. Drag from the upper-left corner of the Document window, where the rulers intersect (■), to the lower-left corner of the Front artboard.

This sets the ruler origin (0,0) to the lower-left corner of the artboard. In other words, the measurements start in the lower-left corner of the

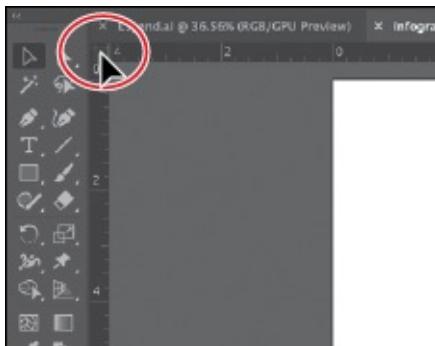
artboard.



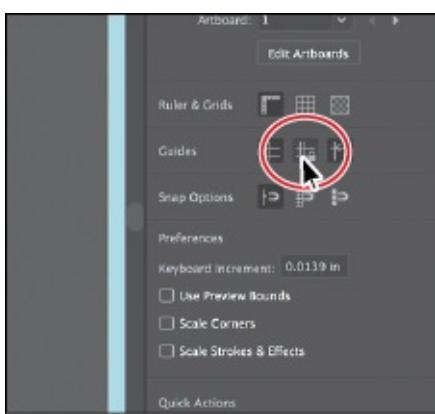
3. With the Selection tool (►) selected, click on the guide to select it.
4. Look in the Properties panel on the right to see the Y value. Right now, because you moved the ruler origin (0,0), the Y shows the vertical distance from the bottom of the artboard. Change the Y value to **-1.75** (inches), and press Return or Enter.



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



6. Choose Select > Deselect to deselect the guide.
7. Click the Lock Guides button in the Properties panel to lock all guides and prevent them from being selected.



► **Tip:** You can also lock guides by choosing View > Guides > Lock Guides. You can hide guides by clicking the Hide Guides button in the Properties panel or pressing Command+; (macOS) or Ctrl+; (Windows).

Transforming content

In [Lesson 4, “Editing and Combining Shapes and Paths,”](#) you learned how to take simple paths and shapes and create more complex artwork by editing and combining that content. That was a form of transforming artwork. In this lesson, you’ll learn how to scale, rotate, and transform content in other ways, using a variety of tools and methods.

Working with the Bounding Box

As you’ve seen in this lesson and previous lessons, a bounding box appears around selected content. You can transform content using the bounding box, but you can also turn it off. This makes it so you can’t resize content by dragging anywhere on the bounding box with the Selection tool.

1. With the Front artboard showing, choose View > Zoom Out until you see the group of artwork that contains the text headline “WINDY”

CONDITIONS” beneath the artboards.

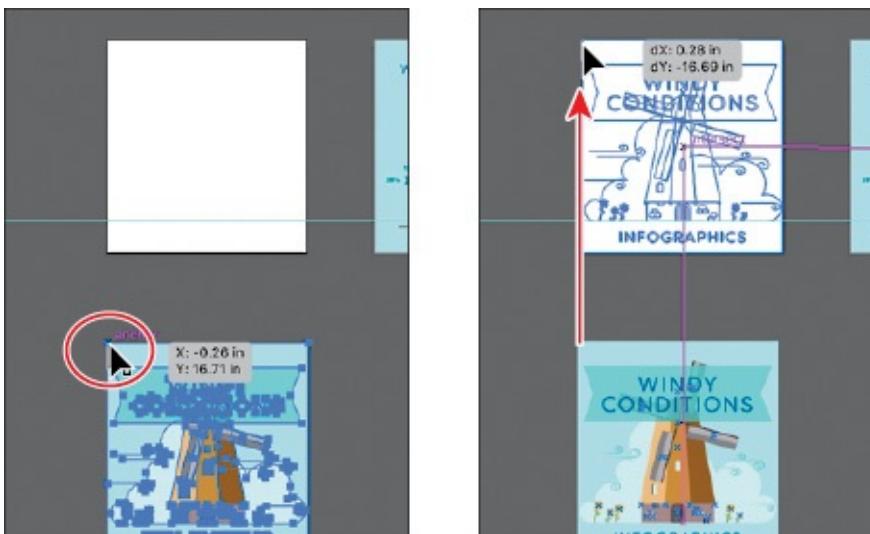
- With the Selection tool (selected, click to select the group. Move the pointer over the upper-left corner of the selected group. If you were to drag right now, you would resize the content.



- Choose View > Hide Bounding Box.

This command hides the bounding box around the group and makes it so you can't resize the group by dragging anywhere on the bounding box with the Selection tool.

- Move the pointer over the upper-left point of the group again, and drag it onto the upper-left corner of the Front artboard. You'll find that being zoomed out can make it more difficult to be precise with placement.



- Choose View > Show Bounding Box.

Positioning artwork using the Properties panel

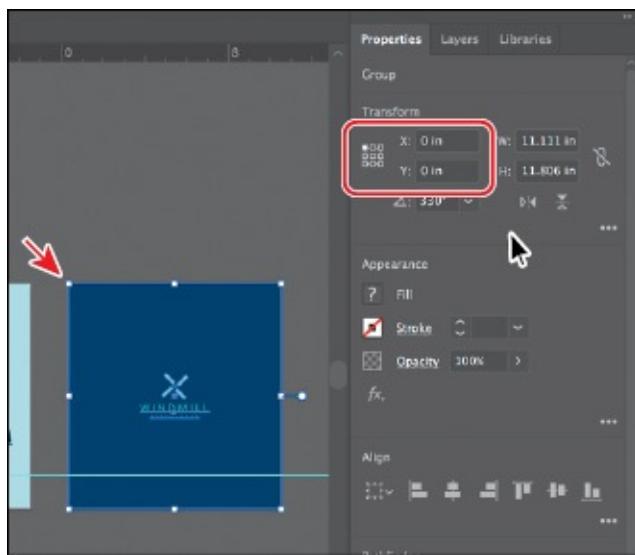
At times, you may want to position objects more precisely—relative either to other objects or to the artboard. You could use the alignment options, like you saw in [Lesson 2, “Techniques for Selecting Artwork,”](#) but you can also use

Smart Guides and Transform options in the Properties panel to move objects to exact coordinates on the x- and y-axes and to control the position of objects in relation to the edge of the artboard. Next, you'll add content to the background of an artboard and position that content precisely.

1. Choose View > Fit All In Window to see all of the artboards. Click in the blank artboard that's farthest to the right to make it the active artboard.

Transformation commands, like you are about to learn, apply to the active artboard.

2. Click to select the blue shape with the WINDMILL logo on top, beneath the artboards. In the Transform section of the Properties panel, click the upper-left point of the reference point locator (↖). Change the X value to **0** and the Y value to **0**, and press Return or Enter.



The group of content is moved into the upper-left corner of the active artboard. The points in the Reference Point locator map to the points of the bounding box for the selected content. For instance, the upper-left reference point refers to the upper-left point of the bounding box.

► **Tip:** You could have also aligned the content to the artboard using the alignment options available. You'll find there are at least a few ways to accomplish most tasks in Illustrator.

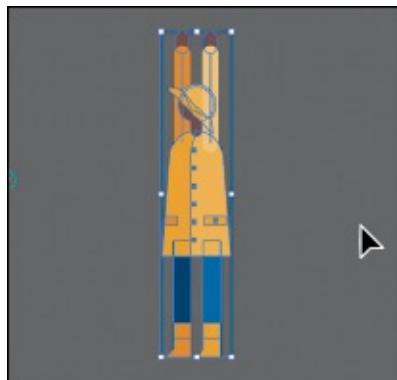
-
3. Choose Select > Deselect and then choose File > Save.

Scaling objects

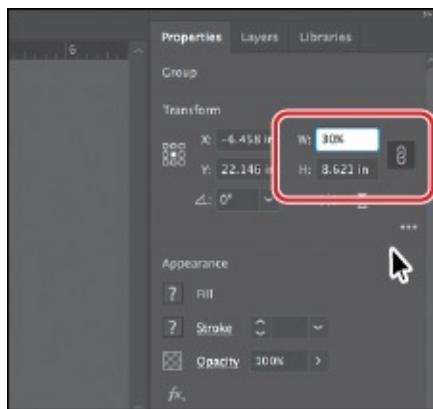
So far in this book, you've scaled most content with the selection tools. In this part of the lesson, you'll use several other methods for scaling artwork.

1. Press Command+- (macOS) or Ctrl+- (Windows) (or View > Zoom Out),

if you need, to see the person in the raincoat off the bottom edge of the artboards.

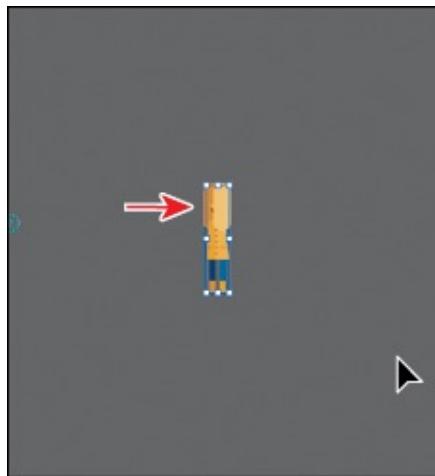


2. With the Selection tool (►) selected, click the artwork of the person in the yellow raincoat.
3. Press Command++ (macOS) or Ctrl++ (Windows) a few times to zoom in.
4. In the Properties panel, click the center reference point of the reference point locator (🕒), if it's not selected, to resize from the center. Ensure that Constrain Width And Height Proportions is set (🕒), type **30%** in the Width (W) field, and then press Enter or Return to decrease the size of the artwork.



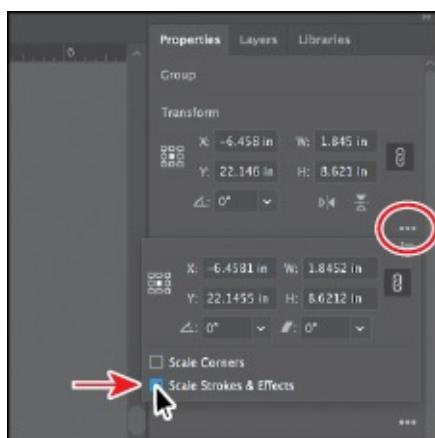
► **Tip:** When typing values to transform content, you can type different units such as percent (%) or pixels (px), and they will be converted to the default unit, which is inches (in) in this case.

-
5. Choose View > Hide Edges so you hide the inside edges.



Notice that the artwork is smaller, but the arms of the person are still the same width. That's because they are a path with a stroke applied. By default, strokes and effects, like drop shadows, are *not* scaled along with objects. For instance, if you enlarge a circle with a 1-pt stroke, the stroke remains 1 pt. By selecting Scale Strokes & Effects before you scale—and then scaling the object—that 1-pt stroke would scale (change) relative to the amount of scaling applied to the object.

6. Choose View > Show Edges so you show the inside edges again.
7. Choose Edit > Undo Scale.
8. In the Properties panel, click Show More (⋮) in the Transform section to see more options. Select Scale Strokes & Effects. Type 30% in the Width (W) field and then press Enter or Return to decrease the size of the artwork.



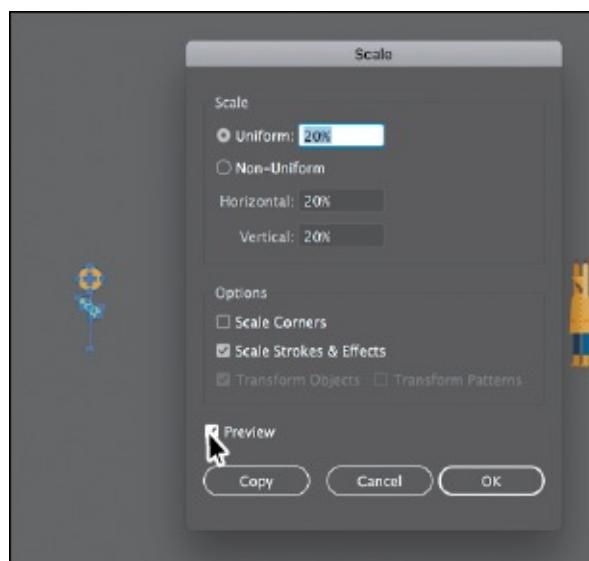
Now, the stroke applied to the paths that make up the arms, are scaled as well.

 **Note:** The figure shows selecting the Scale Strokes & Effects option only.

9. Press the spacebar to select the Hand tool, and drag to the right so you can see the flower to the left of the person.
0. With the Selection tool (►) selected, click to select the flower artwork.

In the Tools panel on the left, you should see the Scale tool (□). The Scale tool is used to scale content by dragging. For a lot of the transform tools, like the Scale tool, you can also double-click the tool to edit selected content in a dialog box. This is similar to choosing Object > Transform > Scale.

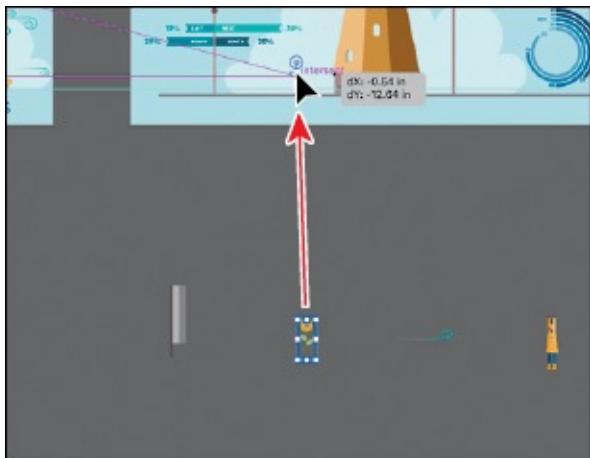
1. Double-click the Scale tool (□) in the Tools panel. In the Scale dialog box, change Uniform to **20%**, and select Scale Strokes & Effects, if it isn't already selected. Toggle Preview on and off to see the change in size. Click OK.



This method of scaling artwork may be useful, for instance, if there is a lot of overlapping artwork, when precision matters, you need to scale content non-uniformly, and more.

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

2. Select the Selection tool, and drag the flower up onto the artboard, just above the gray line that the windmill and other artwork is sitting on. You may need to zoom out.



3. Choose View > Fit Artboard In Window.
4. Press the Option key (macOS) or Alt key (Windows), and drag the flower to the right. Release the mouse button and then the key to make a copy. Do this several times to place copies along the line on the artboard.



Reflecting objects

When you *reflect* an object, Illustrator flips the object across an invisible vertical or horizontal axis. In a similar way to scaling and rotating, when you reflect an object, you either designate the reference point or use the object's center point, by default. Next, you'll copy artwork and use the Reflect tool (▷◀) to flip artwork 90° across an axis.

Tip: You could also choose Object > Transform > Reflect to access the Reflect dialog box.

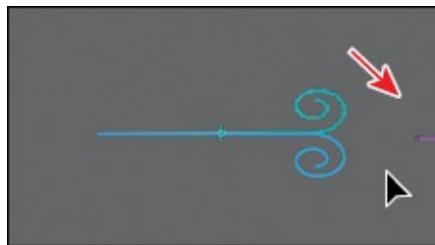
1. Choose View > Fit All In Window.
2. Select the Zoom tool (🔍) in the Tools panel, and drag from left to right across the curly green shape below the artboards to zoom in.
3. Select the Selection tool (▶), and click to select the curly green shape.
4. Choose Edit > Copy and then choose Edit > Paste In Place to create a copy on top of the selected shape.
5. Select the Reflect tool (▷◀), which is nested within the Rotate tool (⟳) in the Tools panel. Click the straight part of the path to set the invisible axis

that the shape will reflect around, rather than the center, which is the default.



► **Tip:** If you want to copy artwork and reflect artwork as you drag, begin dragging artwork with the Reflect tool. As you drag, hold down the Option (macOS) or Alt (Windows) key. When the artwork is where you want it, release the mouse button and then the keys. Pressing Shift+Option (macOS) or Shift+Alt (Windows) will copy the reflected artwork and constrain the reflection angle to 45 degrees.

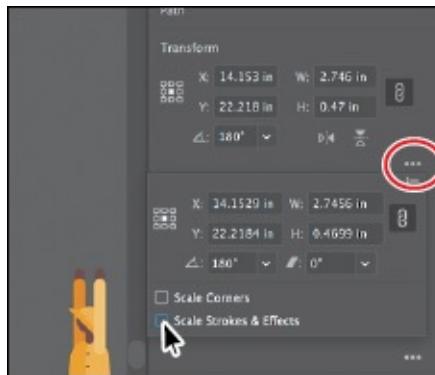
6. With the artwork still selected, position the pointer off the right edge and drag clockwise. As you drag, press the Shift key to constrain the rotation to 45° as the artwork is reflected. When the artwork looks like the figure, release the mouse button and then release the modifier key.



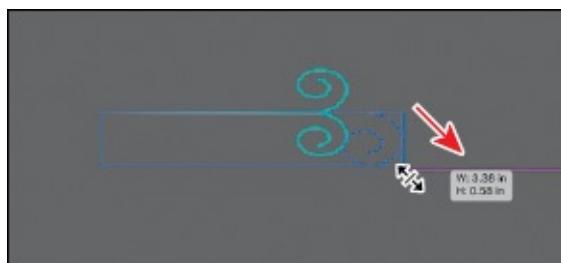
► **Tip:** You can set the reference point, reflect, and even copy in one step. With the Reflect tool (▷◀) selected, Option-click (macOS) or Alt-click (Windows) to set the reference point and to open the Reflect dialog box, where you can set options and copy.

7. Select the Selection tool (▶) in the Tools panel, and with the shape still selected, click More Options (⋮) in the Transform area of the Properties panel and make sure Scale Strokes & Effects is *not* selected.

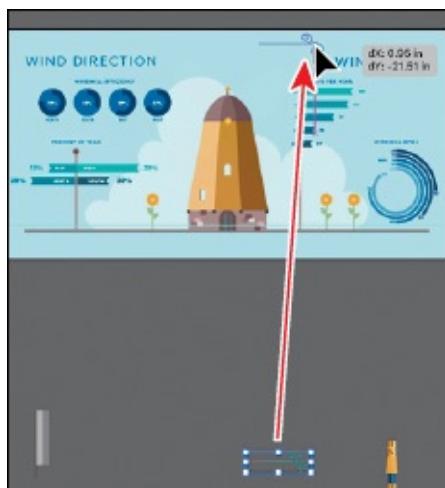
► **Tip:** If all you want to do is flip content in place, you can also click either the Flip Along Horizontal Axis button or Flip Along Vertical Axis button in the Properties panel.



8. Drag the lower-right point of the bounding box away from the center to make the shape larger.



9. Drag across the two curly shapes and choose Object > Group to keep them together.
0. Choose View > Fit All In Window.
1. Drag the group onto the middle artboard.
2. Press the Option key (macOS) or Alt key (Windows) and drag the group to another area of the artboard. Release the mouse button and then the key to make a copy. You can do this several times to place copies around the artboard, if you like.

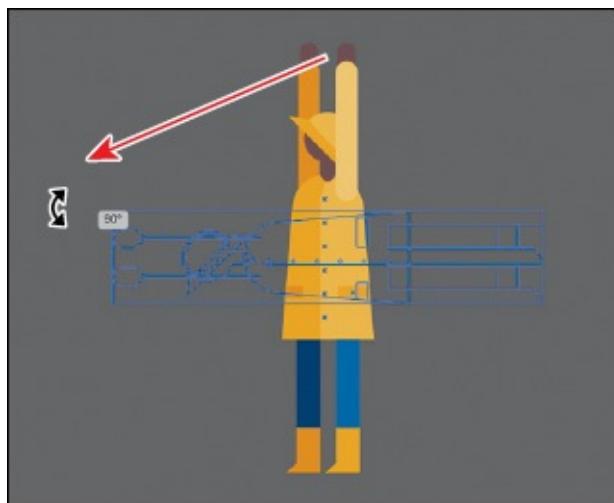


Rotating objects

There are lots of ways to rotate artwork, including methods that range from

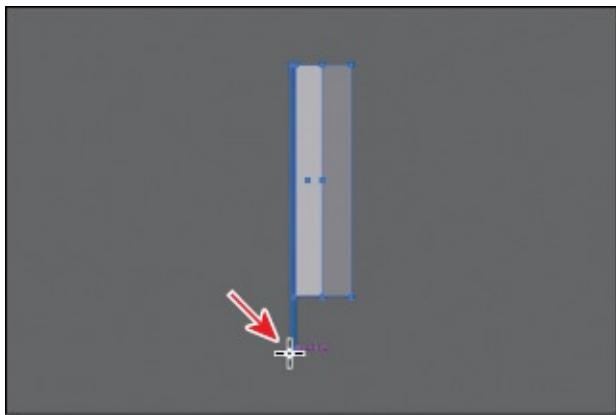
more precise to more freeform rotation. In previous lessons, you learned that you can rotate selected content with the Selection tool. By default, objects are rotated around a designated reference point in the center of content. In this part of the lesson, you'll learn about the Rotate tool and the Rotate command.

1. Choose View > Fit All In Window.
2. With the Selection tool () selected, click to select the artwork of the person in the yellow raincoat. Press Command++ (macOS) or Ctrl++ (Windows) a few times to zoom in.
3. Move the pointer off of one of the corners of the bounding box, and when the rotate arrow () appears, click and drag counterclockwise to rotate it. As you drag, press the Shift key to constrain the rotation to 45 degrees. When you see 90 degrees in the measurement label next to the pointer, release the mouse button and then the key.



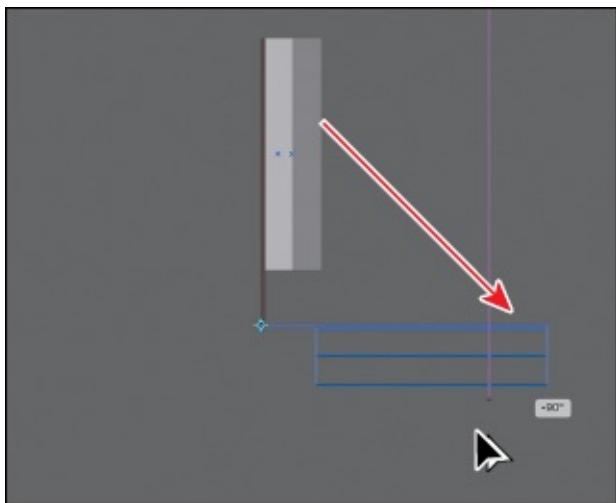
The Selection tool rotates content around the center, by default. Next, you'll use the Rotate tool, which allows you to rotate around a different point.

4. Press the spacebar to access the Hand tool, and drag to the right to see the group to the far left of the person (see the following figure).
5. With the Selection tool selected, click to select the group.
6. Select the Rotate tool () in the Tools panel (it's under the Reflect tool []). Position the pointer on the bottom edge of the selected artwork, and click to set the reference point (where it will rotate around). Look at the figure for where to click.



By default, the rotate-around point is in the center of selected artwork. The Rotate tool allows you to rotate content around a different reference point.

7. Move the pointer off the right side of the selected artwork and begin dragging clockwise. As you drag, press Option+Shift (macOS) or Alt+Shift (Windows) to copy the artwork as you rotate it, and constrain the rotation to 45 degrees. Release the mouse button and then the keys when you see -90 degrees in the measurement label.

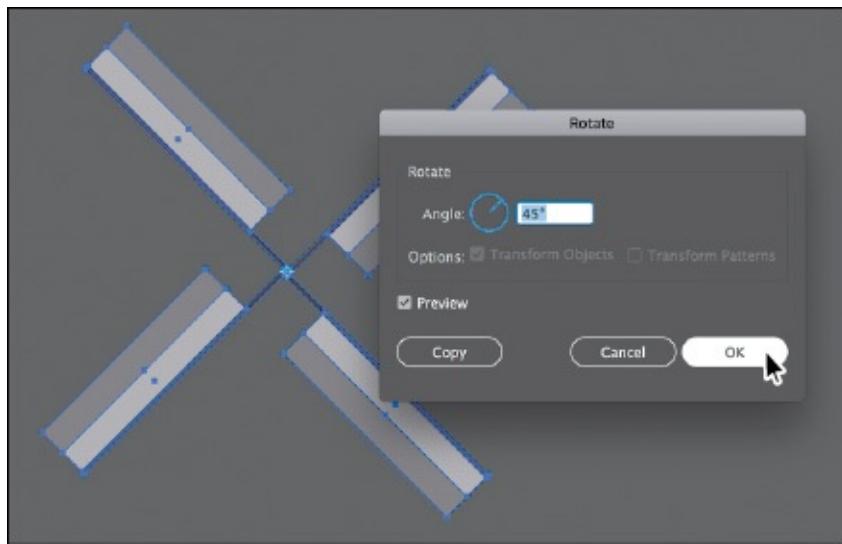


● **Note:** The measurement label you see may look different than the figure, and that's okay.

The Properties panel (or Control panel or Transform panel) is another place to rotate artwork precisely. In the Transform panel, you can always see the angle of rotation and change it later for individual objects.

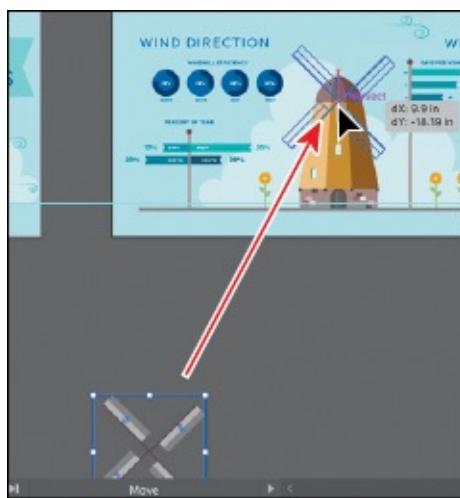
8. Choose Object > Transform > Transform Again, *twice*, to repeat the previous transformations on the selected shape.
9. Select the Selection tool (►), and drag across all four groups to select them.
0. Choose Object > Group.

- With the group still selected, double-click the Rotate tool in the Tools panel. In the Rotate dialog box that appears, change the Angle value to 45°, and click OK.



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

- Choose View > Fit All In Window.
- With the Selection tool (►) selected, drag the selected group up, on top of the windmill artwork.



Distorting objects with effects

You can distort the original shapes of objects in different ways, using various tools. Now you'll distort part of the flower and other artwork using effects. These are different types of transformations because they are applied as

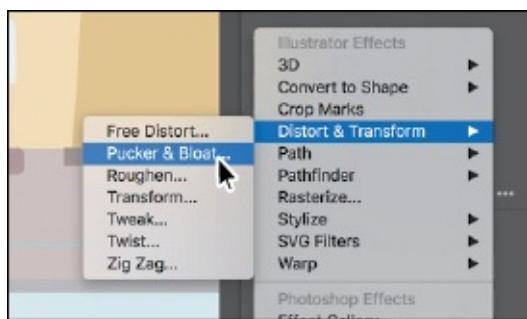
effects, which means you could ultimately edit the effect later or remove it in the Appearance panel.

 **Note:** To learn more about effects, see [Lesson 12, “Exploring Creative Uses of Effects and Graphic Styles.”](#)

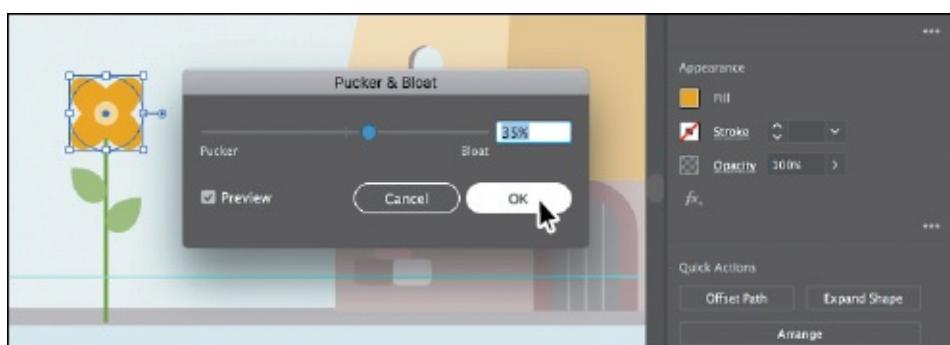
1. Select the Selection tool (►), and click one of the flowers. Press Command++ (macOS) or Ctrl++ (Windows) several times to zoom in closely.
2. Double-click the flower group to enter isolation mode; then click to select the larger orange circle.
3. Click the Effect button (fx) in the Properties panel.



4. Choose Distort & Transform > Pucker & Bloat in the menu that appears.



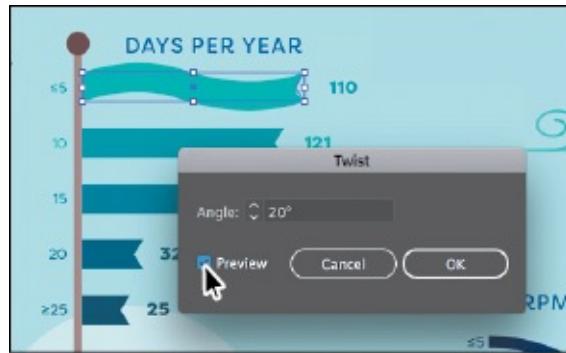
5. In the Pucker & Bloat dialog box, select Preview, and drag the slider to the right to change the value to roughly 35%, which distorts the shape. Click OK.



Effects you apply to shapes are live, which means they can be edited or

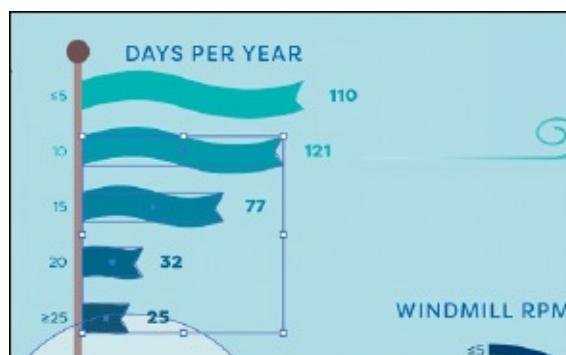
removed at any time. You can access the effect(s) applied to selected artwork in the Appearance panel (Window > Appearance).

6. Press Esc to exit Isolation mode.
7. Press the spacebar, and drag to the left to see the DAYS PER YEAR flags.
8. Click to select the top flag shape. You may need to zoom out.
9. Click the Effect button (in the Properties panel, and choose Distort & Transform > Twist.



0. In the Twist dialog box, change Angle to **20**, select Preview to see the effect, and then click OK.
1. Click the banner below the selected banner; then press the Shift key, and click the remaining three banner shapes to select them all.
2. Choose Effect > Apply Twist.

Choosing Apply Twist applies the last applied effect with the same options. If you were to choose Effect > Twist, the last applied effect would be applied, but the dialog box would open so you could set options.



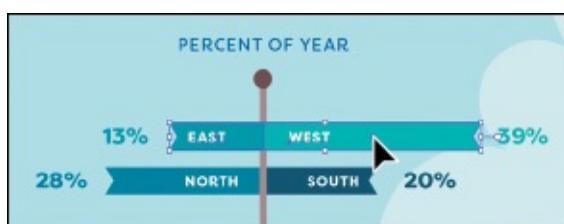
Transforming with the Free Transform tool

The Free Transform tool (is a multipurpose tool that allows you to distort an object, combining functions like moving, scaling, shearing, rotating, and distorting (perspective or free). The Free Transform tool is also touch-enabled, which means you can control transformation using touch controls on

certain devices.

- **Note:** To learn more about touch controls, search for “Touch Workspace” in Adobe Help (Help > Illustrator Help).
-

1. Press the spacebar to select the Hand tool, and drag in the Document window until you see the “PERCENT OF YEAR” text to the left of the windmill.
2. With the Selection tool (►) selected, click to select the shape labeled “EAST WEST.”



3. Click and hold down on the Puppet Warp tool (★), and select the Free Transform tool (▣) in the Tools panel.



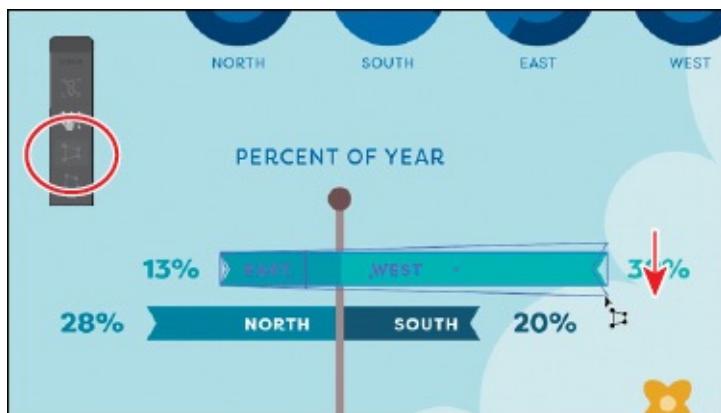
-
- **Note:** To learn more about the options for the Free Transform tool, search for “Free Transform” in Adobe Help (Help > Illustrator Help).
-

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

4. With the Free Transform tool selected, click the Perspective Distort option (▣) in the Free Transform widget (circled in the following figure).
5. Choose View > Smart Guides to temporarily turn them off.

With the Smart Guides off, you can adjust the artwork without it snapping to everything else in the document.

6. Position the pointer over the lower-right corner of the bounding box, and the pointer changes in appearance (). Drag down a little, until it looks something like the figure.



7. Press the Command key (macOS) or Ctrl key (Windows) to temporarily select the Selection tool and click to select the shape labeled "NORTH SOUTH." Release the key to return to the Free Transform tool.
8. With the Perspective Distort option (in the Free Transform widget still selected, drag the lower-left point down a little, until it looks like the figure. Leave the group selected.



9. Choose View > Smart Guides to turn them back on.
0. Choose File > Save.

Shearing objects

Shearing an object slants, or skews, the sides of the object along the axis you specify, keeping opposite sides parallel and making the object asymmetrical. Next, you'll apply shear to the selected sign artwork.

1. With the group labeled "NORTH SOUTH" still selected, select the Shear tool () nested within the Scale tool () in the Tools panel.

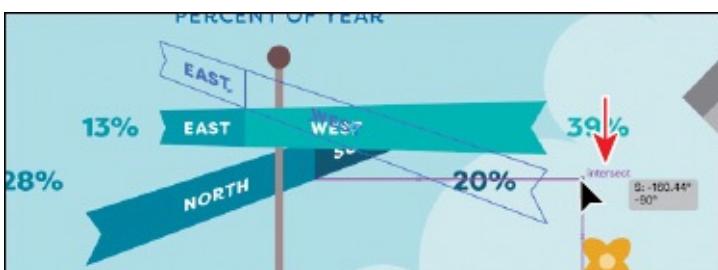
Tip: You can set a reference point, shear, and even copy in one step. With the Shear tool () selected, Option-click (macOS) or Alt-click (Windows) to set the reference point and to open the Shear dialog box,

where you can set options and even copy if necessary.

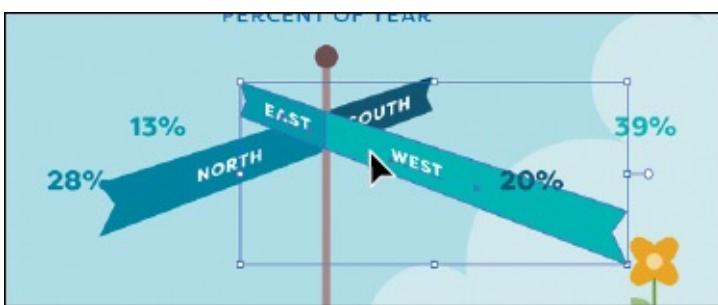
2. Move the pointer off the right side of the group, press the Shift key to constrain the artwork to its original width, and drag up. Release the mouse button and then the Shift key when you see a shear angle (S) of *approximately* –20.



3. Press the Command key (macOS) or Ctrl key (Windows) to temporarily select the Selection tool. Click to select the shape labeled “EAST WEST.” Release the key to return to the Shear tool.
4. Press the Shift key to constrain the artwork to its original width, and drag from off the right side of the group, down. Release the mouse button and then the Shift key when you see a shear angle (S) of *approximately* –160.

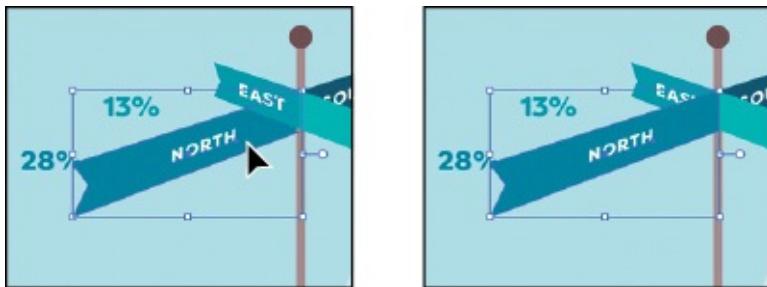


5. Select the Selection tool (►), and drag the “NORTH SOUTH” group and then the “EAST WEST” group so they are each aligned with the sign pole like you see in the following figure.



6. Click the NORTH SOUTH group to select it. Click the Ungroup button in the Properties panel to the right.
7. Choose Select > Deselect.
8. Click the NORTH text to select that group.

- 9.** Choose Object > Arrange > Bring To Front.



- 0.** Drag each of the numbers with percent (%) next to the ends of the signs. I moved the flower to the right as well.



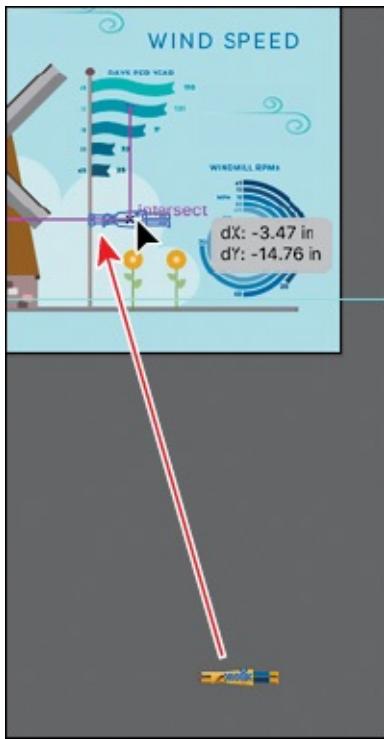
- 1.** Choose View > Fit All In Window and then choose File > Save.

Using Puppet Warp

In Illustrator, you can easily twist and distort artwork naturally, into different positions, using the Puppet Warp tool. In this section, you'll warp the artwork of the person in the yellow raincoat using the Puppet Warp tool.

- 1.** With the Selection tool () selected, drag the artwork of the person in the yellow rain jacket onto the artboard above, to the right of the windmill, like you see in the figure.

Make sure the hands of the person are directly on the flagpole. The idea is to have the person appear to be holding on to the DAYS PER YEAR flag pole, as the wind blows them to the right.

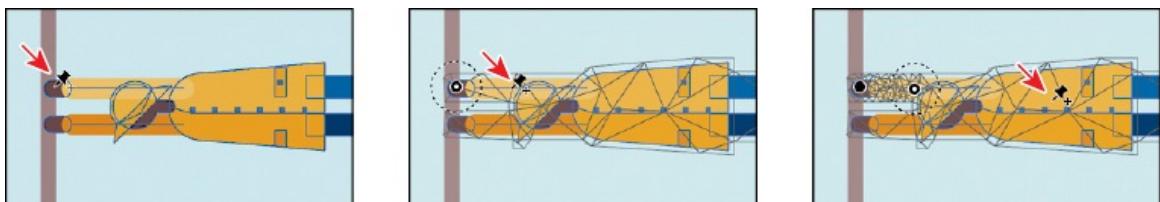


● **Note:** It's difficult to see exactly where to drag the person in the figure. If you look at the figures on the next page, you may get a better idea of what I mean by "Make sure the hands of the person are directly on the flagpole."

2. Press Command++ (macOS) or Control++ (Windows) several times to zoom in closely.
3. Press and hold on the Free Transform tool (in the Tools panel, and select the Puppet Warp tool (.

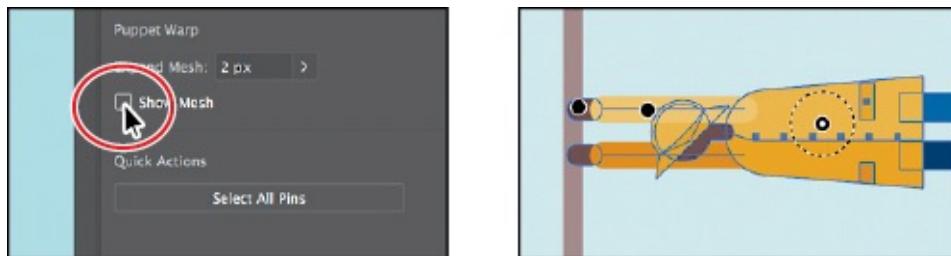
Using the Puppet Warp tool, you'll start by bending the arm of the person. To do that, you'll need to set pins. Pins are a way to hold part of the selected artwork to the artboard. You can rotate the artwork around a pin, reposition pins to move artwork, and more.

4. Move the pointer over the top hand of the person, and when the pointer shows a plus (+) next to it, click to add a pin. On the same arm, click roughly halfway down the arm, where the elbow might be. Finally, click to set a pin in the middle of the raincoat.

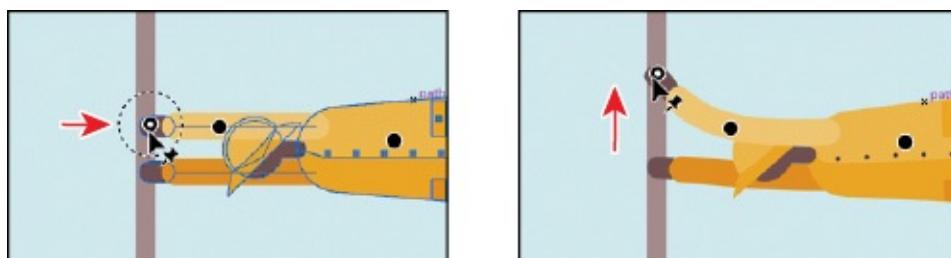


As you add pins, you can see a mesh showing on the artwork.

5. In the Properties panel on the right, you should see Puppet Warp options. Deselect Show Mesh. That will make it easier to see the pins and provide a clearer view of transformations you make.



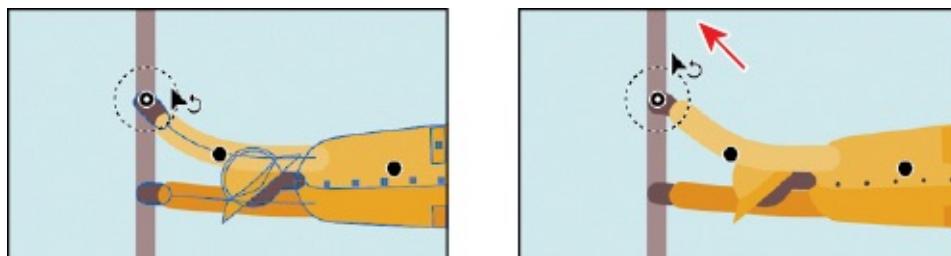
6. Click the pin you added to the hand to select it. You can tell that a pin is selected because it has a white dot in the center. Drag the selected pin up to move the hand and not the rest of the artwork.



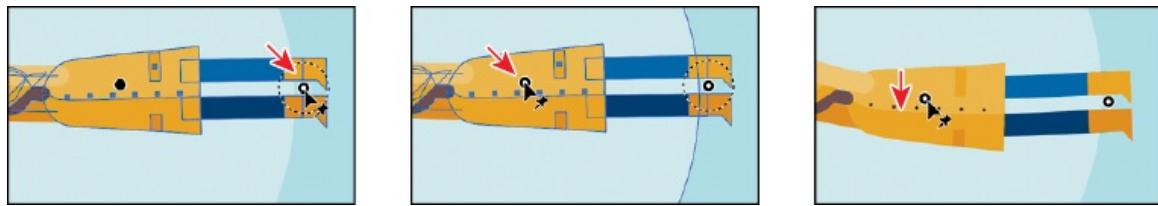
You set the pin on the hand so you could move it. The pin farther down the arm, near the “elbow,” was for a pivot point or to ensure that only from that point to the hand moved. The third pin on the body was to keep the body in place without moving it. Setting at least three pins like this usually achieves a better result.

► **Tip:** You can press the Shift key and click multiple pins to select them or click the Select All Pins button in the Properties panel to select all of the pins.

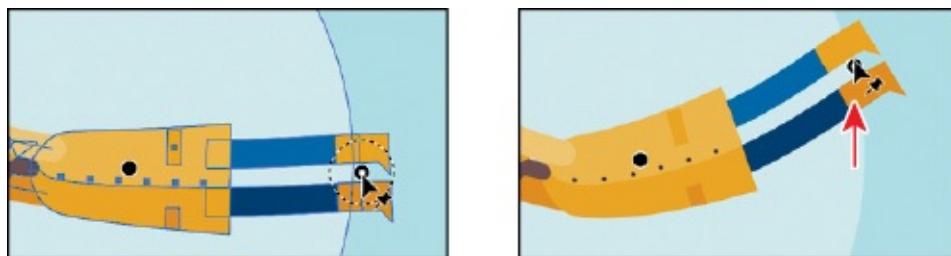
7. With the hand pin still selected, move the pointer over the dotted circle and drag counterclockwise a little to rotate around the pin.



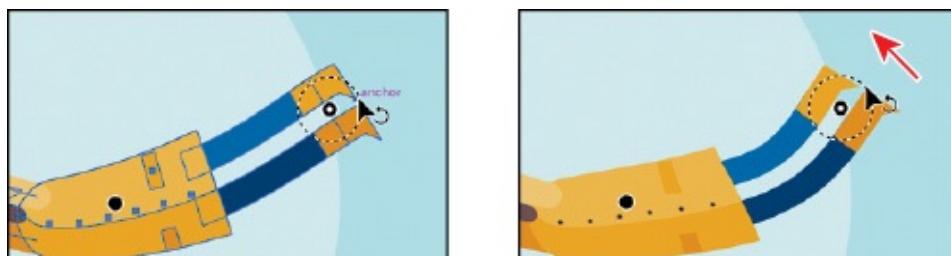
8. Click between the feet to set a pin. Press the Shift key and click the pin in the body to select the pin at the feet and in the body. Drag either pin down a little to bend the body.



9. Click the pin at the feet to select only that pin. *Make sure it's the only pin selected.* Remember that selected pins have a white dot in the center. If the pin in the body is still selected, click the pin at the feet *again*. Drag the selected pin at the feet, up.



10. Move the pointer over the dotted circle of the selected pin, and drag counter-clockwise a little to rotate around the pin.



1. Choose Select > Deselect and then choose View > Fit All In Window.



2. Choose File > Save and then File > Close.

Review questions

1. Name three ways to change the size of an existing active artboard.
2. What is the *ruler origin*?
3. What is the difference between *artboard rulers* and *global rulers*?
4. Briefly describe what the *Scale Strokes & Effects* option in the

Properties panel or Transform panel does.

5. Briefly describe what the Puppet Warp tool does.

Review answers

1. To change the size of an existing artboard, you can do the following:
 - Double-click the Artboard tool () , and edit the dimensions of the active artboard in the Artboard Options dialog box.
 - With nothing selected and the Selection tool selected, click the Edit Artboards button to enter Artboard Editing mode. With the Artboard tool selected, position the pointer over an edge or corner of the artboard, and drag to resize.
 - With nothing selected and the Selection tool selected, click the Edit Artboards button to enter Artboard Editing mode. With the Artboard tool selected, click in an artboard in the Document window, and change the dimensions in the Properties panel.
2. The ruler origin is the point where 0 (zero) appears on each ruler. By default, the ruler origin is set to be 0 (zero) in the top-left corner of the active artboard.
3. There are two types of rulers in Illustrator: artboard rulers and global rulers. Artboard rulers, which are the default rulers, set the ruler origin at the upper-left corner of the active artboard. Global rulers set the ruler origin at the upper-left corner of the first artboard, no matter which artboard is active.
4. The Scale Strokes & Effects option, which can be accessed from the Properties panel or the Transform panel, scales any strokes and effects as the object is scaled. This option can be turned on and off, depending on the current need.
5. In Illustrator, you can easily twist and distort artwork naturally, into different positions, using the Puppet Warp tool.

6 Creating an Illustration with the Drawing Tools

Lesson overview

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

- Understand paths and anchor points.
- Draw curved and straight lines with the Pen tool.
- Edit curved and straight lines.
- Add and delete anchor points.
- Draw with the Curvature tool.
- Delete and add anchor points.
- Convert between smooth points and corner points.
- Create dashed lines and add arrowheads.
- Draw and edit with the Pencil tool.
- Work with the Join tool.



This lesson takes approximately 90 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.



Aside from creating artwork using shapes like in previous lessons, you can also create artwork using drawing tools such as the Pencil tool, Pen tool, and Curvature tool. With these tools, you can draw precisely, including drawing straight lines, curves, and complex shapes. You'll start with the Pen tool and use all of these tools and more to create an illustration.

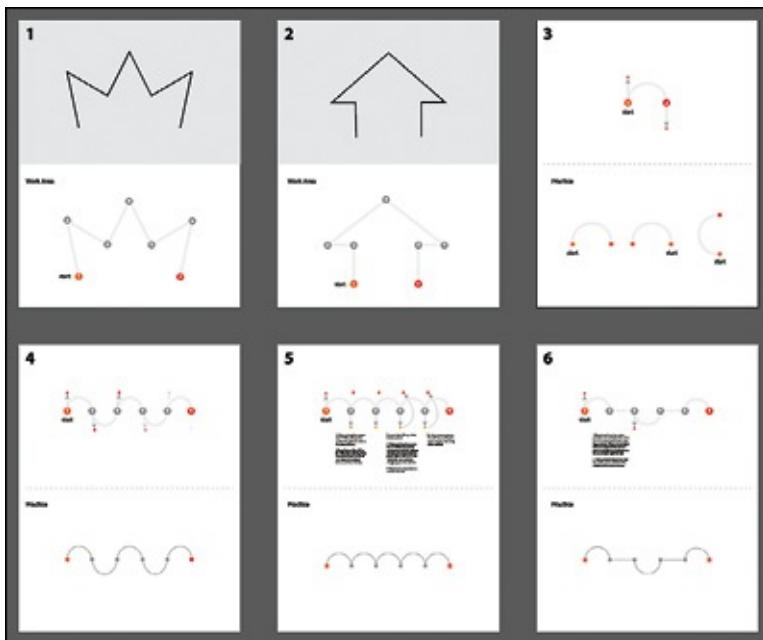
Starting the lesson

In the first part of this lesson, you'll come to understand paths and ease into drawing with the Pen tool after lots of practice.

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, and open the L6_practice.ai file in the Lessons > Lesson06 folder on your hard disk.



The document is made up of six artboards, numbered 1 through 6. As you progress through the first part of this lesson, you will be asked to move between artboards.

4. Choose File > Save As. In the Save As dialog box, navigate to the Lesson06 folder, and open it. Rename the file to **PenPractice.ai**. Choose Adobe Illustrator (ai) from the Format menu (macOS), or choose Adobe Illustrator (*.AI) from the Save As Type menu (Windows). Click Save.
5. In the Illustrator Options dialog box, leave the default settings, and then click OK.
6. Choose Window > Workspace > Reset Essentials.

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

An intro to drawing with the Pen tool

The Pen tool () is one of the main drawing tools in Illustrator that's used to create both freeform and more precise artwork and also plays a role in editing existing vector artwork. It's important to have an understanding of a tool like the Pen tool (or Curvature tool) when working with Illustrator. *Just know that it takes plenty of practice to feel comfortable with the Pen tool!*

In this first section, you'll begin to explore the Pen tool, and later in the lesson, you'll create artwork using the Pen tool and other tools and commands.

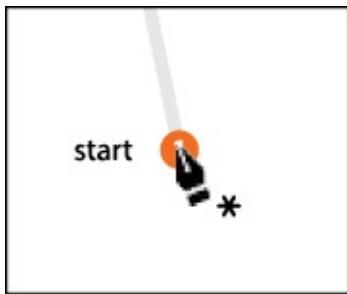
► **Tip:** Adobe has created a simple game for learning the Pen tool. Check it out here: <https://helpx.adobe.com/illustrator/how-to/pen-tool-game.html>.

1. Choose 1 from the Artboard Navigation menu in the lower-left corner of the Document window.
2. Choose View > Fit Artboard In Window.
3. Select the Zoom tool () in the Tools panel, and click twice in the bottom half of the artboard to zoom in.
4. Choose View > Smart Guides to turn off the Smart Guides. Smart Guides can be useful when you draw, but you won't need them now.
5. In the Properties panel to the right of the document, click the Fill color box, make sure the Swatches option () is selected, and choose None () . Then, click the stroke color, and make sure that the Black swatch is selected. Make sure the stroke weight is also **1 pt** in the Properties panel.

When you begin drawing with the Pen tool, it's usually best to have no fill on the path you create because the fill can cover parts of the path you are trying to create. You can add a fill later, if necessary.

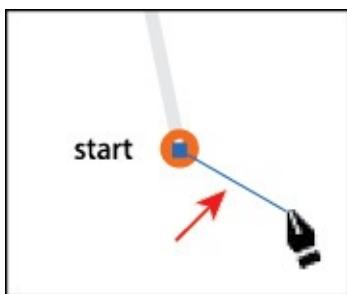
6. Select the Pen tool () in the Tools panel. Position the pointer in the area labeled "Work Area" in the artboard, and notice the asterisk next to the Pen icon (, indicating that you'll create a new path if you begin drawing.
 7. In the area labeled "Work Area," click and release on the orange point labeled 1, where you see "start," to set the first anchor point.
-

● **Note:** If you see  instead of the Pen icon (, the Caps Lock key is active. Caps Lock turns the Pen tool icon into  for increased precision. After you begin drawing, with the Caps Lock key active, the Pen tool icon looks like this: .



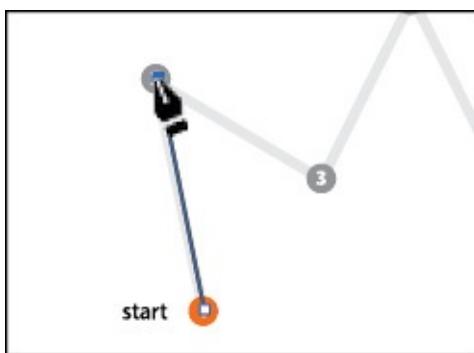
8. Move the pointer away from the point you just created, and you'll see a line connecting the first point and the pointer, no matter where you move the pointer.

That line is called the Pen tool preview (or Rubber Band). Later, as you create curved paths, it will make drawing them easier because it is a preview of what the path will look like. Also notice that the asterisk has disappeared from next to the pointer, indicating that you are now drawing a path.



9. Position the pointer over the gray dot labeled 2. Click and release to create another anchor point.

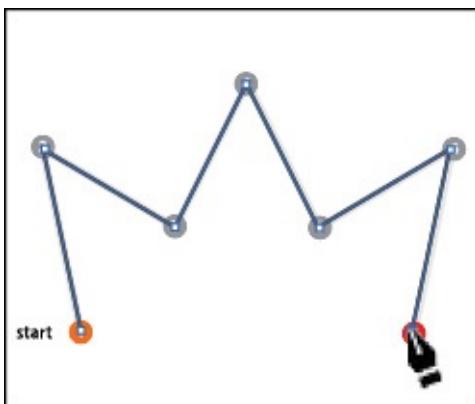
You just created a path. A simple path is composed of two anchor points and a line segment connecting the anchor points. You use the anchor points to control the direction, length, and curve of the line segment.



● **Note:** If the path looks curved, you have accidentally dragged with the Pen tool; choose Edit > Undo Pen and then click again without dragging.

0. Continue clicking points 3 through 7, releasing the mouse button every time you click to create an anchor point.

Notice that only the last anchor point is filled (not hollow like the rest of the anchor points), indicating that it is selected.



► **Tip:** You can toggle the Pen tool preview by choosing Illustrator CC > Preferences > Selection & Anchor Display (macOS) or Edit > Preferences > Selection & Anchor Display (Windows) to open the Preferences dialog box. In the dialog box, with the Selection & Anchor Display category options showing, deselect Enable Rubber Band For: Pen Tool.

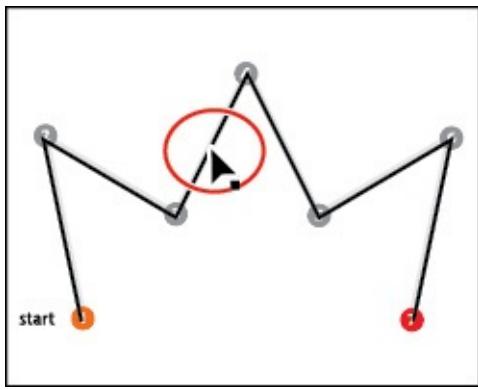
-
1. Choose Select > Deselect.

Selecting paths

The type of anchor point you created in the previous section is called a corner point. *Corner points* are not smooth like a curve; rather, they create an angle where the anchor point is. Now that you can create corner points, you will move on to adding other types of points such as smooth points to create curves in a path. But first, you'll learn a few more techniques for selecting paths.

In [Lesson 2](#), “[Techniques for Selecting Artwork](#),” you were introduced to selecting content with the Selection and Direct Selection tools. Next, you’ll explore a few more options for selecting artwork with those same Selection tools.

1. Select the Selection tool (►) in the Tools panel, and position the pointer over a straight line in the path you just created. When the pointer shows a solid black box (►) next to it, click.

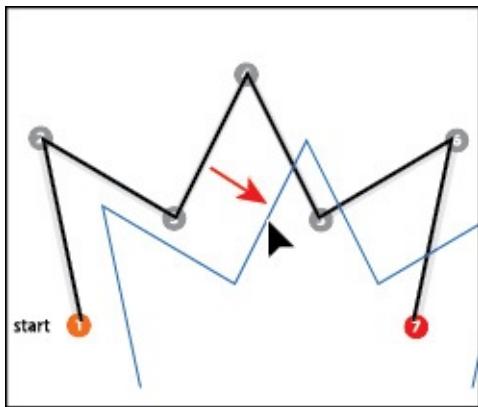


This selects the entire path and all of the anchor points.

► **Tip:** You can also drag across a path to select it with the Selection tool.

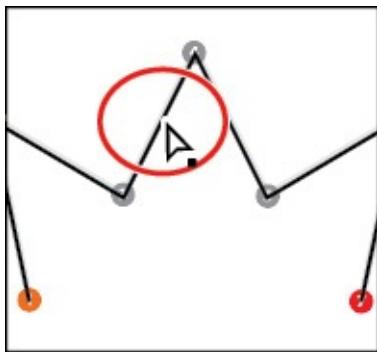
2. Position the pointer over one of the straight lines in the path. When the pointer changes appearance (), drag the path to a new location anywhere on the artboard.

All the anchor points travel together, maintaining the shape of the path.



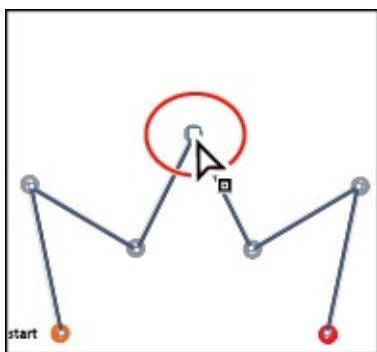
3. Choose Edit > Undo Move to move the path back to its original position.
4. With the Selection tool selected, click an empty area of the artboard to deselect the path.
5. Select the Direct Selection tool () in the Tools panel. Move the pointer anywhere over the path between anchor points. When the pointer changes (, click the path to reveal all of the anchor points.

You just selected a line segment (path). If you were to press Backspace or Delete (*don't*), only that part of the path between two anchor points would be removed.



► **Tip:** If the Pen tool (☞) were still selected, you could Command-click (macOS) or Ctrl-click (Windows) in a blank area of the artboard to deselect the path. This temporarily selects the Direct Selection tool. When you release the Ctrl or Command key, the Pen tool is selected again.

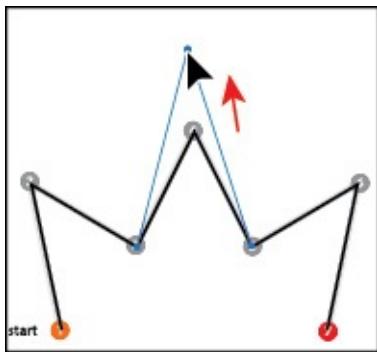
6. Move the pointer over the anchor point labeled 4; the anchor point will become a little larger than the others, and the pointer will show a small box with a dot in the center (☞) next to it (the figure shows this). Both of these indicate that if you click, you will select the anchor point. Click to select the anchor point, and the selected anchor point is filled (looks solid), whereas the other anchor points are still hollow (deselected).



● **Note:** When you position the pointer over a line segment that is not already selected, a black, solid square appears next to the Direct Selection tool pointer, indicating that you will select a line segment.

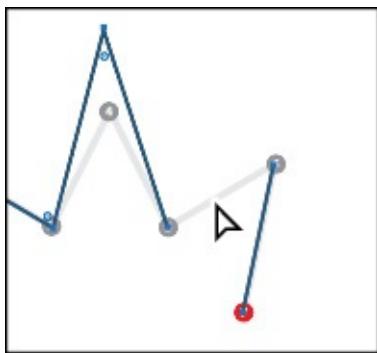
7. Drag the selected anchor point up to reposition it.

The anchor point moves, but the others remain stationary. This is one method for editing a path, like you saw in [Lesson 2](#), “[Techniques for Selecting Artwork](#).”



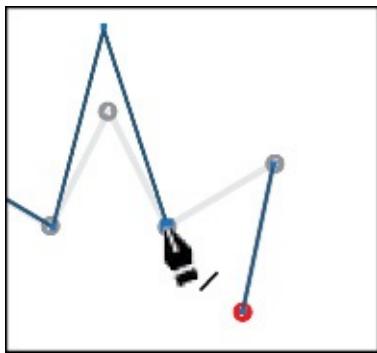
8. Click in a blank area of the artboard to deselect.
9. Position the Direct Selection pointer over the path between points 5 and 6. When the pointer changes (), click to select. Choose Edit > Cut.

This removes the selected segment between anchor points 5 and 6. Next, you'll learn how to connect the paths again.



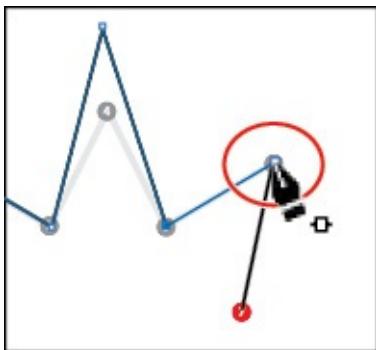
Note: If the entire path disappears, choose Edit > Undo Cut, and try again.

0. Select the Pen tool (, and move the pointer onto the blue anchor point labeled 5. Notice that the Pen tool shows a forward slash (, indicating that if you click, you will continue drawing from that anchor point. Click the point.



1. Position the pointer over the other anchor point (point 6) that was connected to the cut line segment. The pointer now shows a merge symbol next to it (, indicating that you are connecting to another path. Click the

point to reconnect the paths.



2. Choose File > Save.

Drawing straight lines with the Pen tool

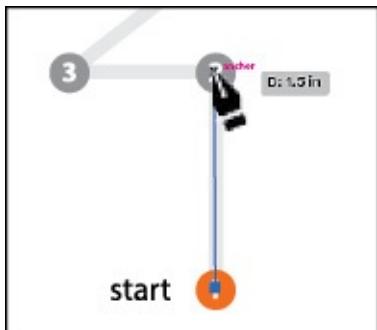
In previous lessons, you learned that using the Shift key as well as Smart Guides in combination with shape tools constrains the shape of objects. The Shift key and Smart Guides can also constrain paths drawn with the Pen tool to create straight paths in angles of 45°. Next, you'll learn how to draw straight lines and constrain angles as you draw.

1. Choose 2 from the Artboard Navigation menu in the lower-left corner of the Document window.
2. Select the Zoom tool (🔍) in the Tools panel, and click twice in the bottom half of the artboard to zoom in.
3. Choose View > Smart Guides to turn on the Smart Guides.
4. With the Pen tool (🖌️) selected, in the area labeled "Work Area," click on the point labeled 1, where you see "start," to set the first anchor point.

The Smart Guides most likely are attempting to "snap" the anchor point you create to other content on the artboard, possibly making it difficult to add an anchor point exactly where you want it. This is expected behavior and is sometimes why you might turn off the Smart Guides when drawing.

5. Move the pointer above the original anchor point to the point labeled 2. When you see 1.5 inches in the gray measurement label that appears next to the pointer, click to set another anchor point.

As you've learned in previous lessons, the measurement label and alignment guides are part of the Smart Guides. The measurement labels showing distance can be useful at times when drawing with the Pen tool.

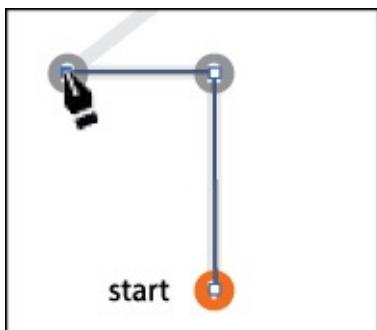


6. Choose View > Smart Guides to turn off the Smart Guides.

Without Smart Guides on, to align points, you will need to press the Shift key, which is what you'll do next.

7. Press the Shift key, and click in the point labeled 3. Release the Shift key.

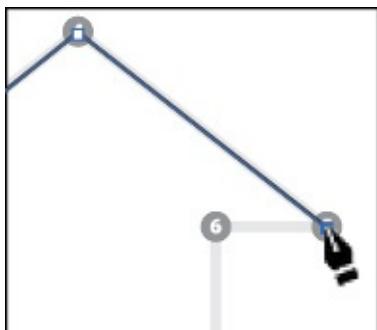
With Smart Guides turned off, there is no measurement label, and the point is only aligning with the previous point because you are holding down the Shift key.



● **Note:** The points you set don't have to be in exactly the same position as the path at the top of the artboard.

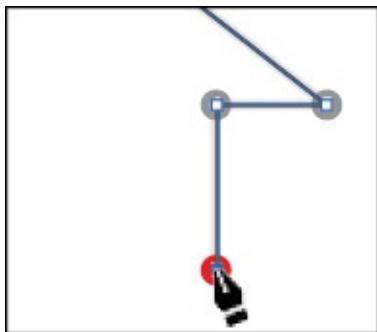
8. Click to set point 4 and then click to set point 5.

Like you've already seen, without holding the Shift key, you can set an anchor point anywhere. The path is not constrained to angles of 45°.

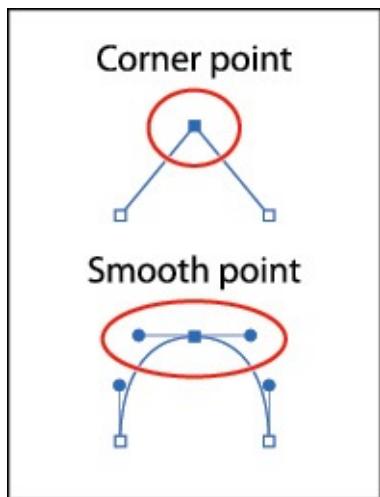


9. Press the Shift key, and click to set points 6 and 7.

10. Choose Select > Deselect.



Introducing curved paths

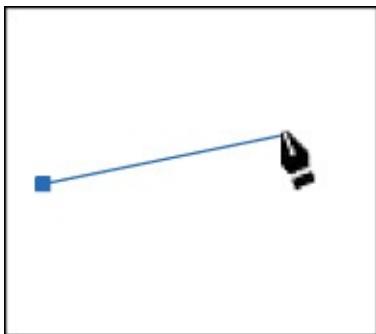


In this part of the lesson, you'll learn how to draw curved lines with the Pen tool. In vector drawing applications such as Illustrator, you can draw a curve, called a Bezier curve. Paths can have two kinds of anchor points: *corner points* and *smooth points*. At a corner point, a path abruptly changes direction. At a smooth point, path segments are connected as a continuous curve. By setting anchor points and dragging direction handles, you can define the shape of the curve. This type of anchor point, with direction handles, is called a *smooth point*.

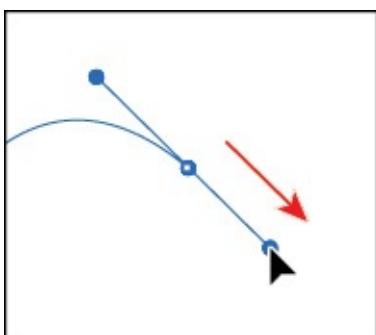
Although drawing curves this way can take some time to learn, it gives you some of the greatest control and flexibility in creating paths. The goal for this exercise is not to create anything specific but to get accustomed to the feel of creating Bezier curves. First, you'll just get the feel for how to create a curved path.

1. Choose 3 from the Artboard Navigation menu in the lower-left corner of the Document window. You will draw in the area labeled "Practice."
2. Select the Zoom tool () in the Tools panel, and click twice in the bottom half of the artboard to zoom in.
3. Select the Pen tool () in the Tools panel. In the Properties panel, make sure that the fill color is None () and the stroke color is Black. Also,

make sure the stroke weight is still **1 pt** in the Properties panel.

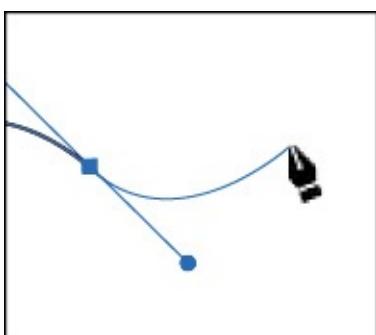


4. With the Pen tool selected, click in a blank area of the artboard to create a starting anchor point. Move the pointer away after releasing the mouse button.



5. Click and drag to create a curved path.

As you drag away from the point, direction handles appear. *Direction handles* consist of direction lines that end in round direction points. The angle and length of the direction handles determine the shape and size of the curve. Direction handles do not print.

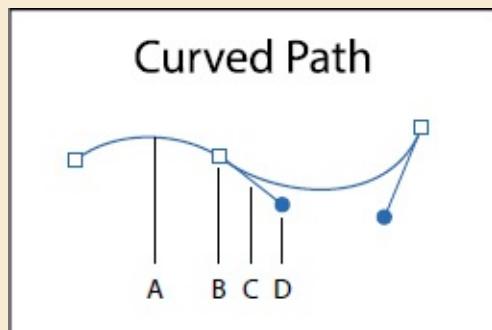


6. Move the pointer away from the anchor point you just created to see the rubber banding. Move the pointer around a bit to see how it changes.
7. Continue clicking and dragging in different areas to create a series of points.
8. Choose Select > Deselect. Leave the file open for the next section.

Components of a path

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

—From Illustrator Help



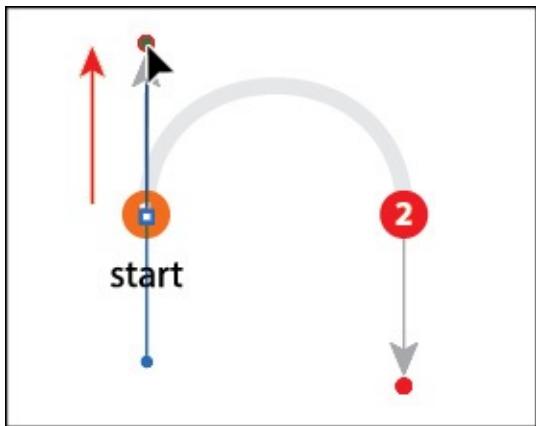
- A. Line Segment
- B. Anchor Point
- C. Direction Line
- D. Direction Point

Drawing a curve with the Pen tool

In this part of the lesson, you'll use what you just learned about drawing curves to trace a curved shape with the Pen tool.

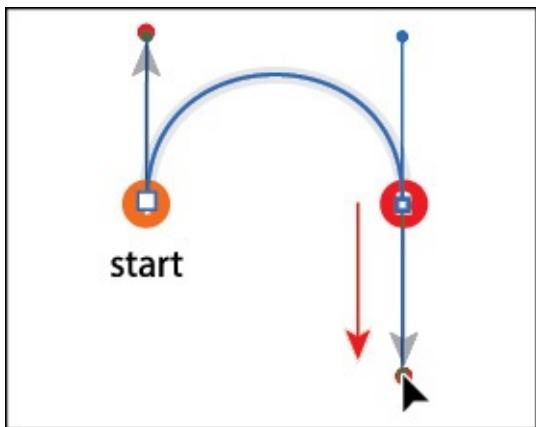
1. Press the spacebar to temporarily select the Hand tool (☞), and drag down until you see the curve at the top of the current artboard (on Artboard 3).
2. With the Pen tool (☞) selected, click and drag from the point labeled 1, up to the red dot, and then release the mouse button.

This creates a direction line going in the same general direction as the path. Up to this point, you've started your paths by simply clicking to create an anchor point, not dragging, like you did in this step. To create a more “curved” path, dragging out direction lines on the very first anchor point can be helpful.



● **Note:** The artboard may scroll as you drag. If you lose visibility of the curve, choose View > Zoom Out until you see the curve and anchor point. Pressing the spacebar allows you to use the Hand tool to reposition the artwork.

3. Click point 2 and drag down. Release the mouse button when the pointer reaches the red dot and the path you are creating follows the gray arc.



If the path you created is not aligned exactly with the template, select the Direct Selection tool (►), and select the anchor points one at a time to show the direction handles. You can then drag the ends of the direction handles (called *direction points*) until your path follows the template more accurately.

● **Note:** Pulling the direction handle longer makes a steeper curve; when the direction handle is shorter, the curve is flatter.

4. Select the Selection tool (►), and click the artboard in an area with no objects, or choose Select > Deselect.

Deselecting the first path allows you to create a new path. If you click somewhere on the artboard with the Pen tool while the path is still selected, the path connects to the next point you draw.

► **Tip:** While drawing with the Pen tool, to deselect objects, you can press the Command (macOS) or Ctrl (Windows) key to temporarily switch to the Direct Selection tool and then click the artboard where there are no objects. Another way to end a path is to press the Escape key when you are finished drawing.

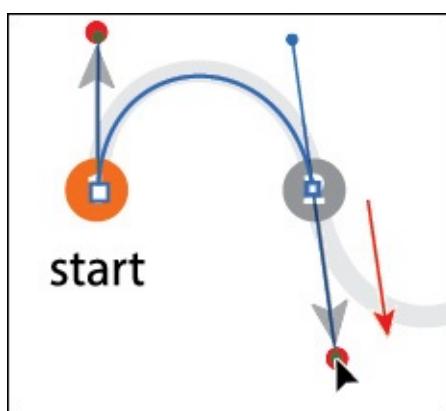
If you want to try drawing the curve for more practice, scroll down to the Practice area in the same artboard and trace the different curves.

Drawing a series of curves with the Pen tool

Now that you've experimented with drawing a curve, you will draw a shape that contains several continuous curves.

1. Choose 4 from the Artboard Navigation menu in the lower-left corner of the Document window. Select the Zoom tool (🔍), and click several times in the *top* half of the artboard to zoom in.
2. In the Properties panel to the right of the document, make sure that the fill color is None (☒), the stroke color is Black, and the stroke weight is still **1 pt**.
3. Select the Pen tool (🖌️). Click and drag up on point 1, labeled "start," in the direction of the arc, stopping at the red dot.
4. Position the pointer over the point labeled 2 (to the right), and drag down to the red dot, adjusting the first arc (between points 1 and 2) with the direction handle before you release the mouse button.

When it comes to smooth points (curved), you'll find that you spend a lot of time focusing on the path segment *behind* (before) the current anchor point you are creating. Remember, by default there are two direction lines for an anchor point. The previous direction line controls the shape of the previous segment.



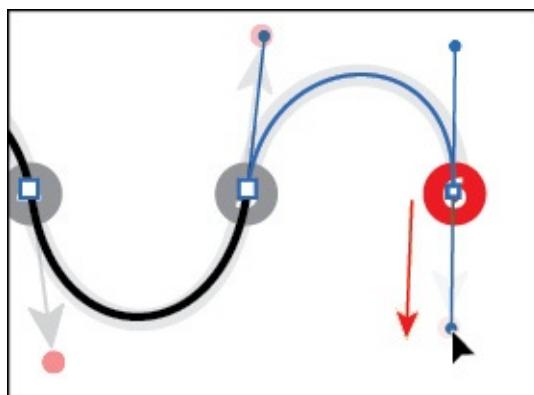
● **Note:** Don't worry if the path you draw is not exact. You can correct

the line with the Direct Selection tool (►) when the path is complete.

► **Tip:** As you drag out the direction handles for an anchor point, you can press and hold the spacebar to reposition the anchor point. When the anchor point is where you want it, release the spacebar.

5. Continue along the path, alternating between dragging up and down. Put anchor points only where there are numbers and finish with the point labeled 6.

If you make a mistake as you draw, you can undo your work by choosing Edit > Undo Pen and then draw the last point again. Note that your direction lines may not match the figures, and that's okay.



6. When the path is complete, select the Direct Selection tool (►), and click to select any anchor point in the path.
-

● **Note:** For more information about these attributes, see [Lesson 7](#), “[Using Color to Enhance Signage](#).”

When an anchor point is selected, the direction handles appear, and you can readjust the curve of the path if necessary. With a curve selected, you can also change the stroke and fill of the curve. When you do this, the next line you draw will have the same attributes. If you want to try drawing the shape again for more practice, scroll down to the bottom half of the same artboard (labeled Practice), and trace the shape down there.

7. Choose Select > Deselect and then choose File > Save.

Converting smooth points to corner points

When creating curves, the direction handles help to determine the shape and size of the curved segments, as you've already seen. Removing the direction lines from an anchor point can convert a smooth point into a corner point. In this next part of the lesson, you'll practice converting between smooth points

and corner points.

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

On the top of the artboard, you can see the path that you will trace. You'll use the top artboard as a template for the exercise, creating your paths directly on top of those. Use the Practice section at the bottom of the artboard for additional practice on your own.

2. Select the Zoom tool () , and click several times in the top part of the artboard to zoom in.
3. In the Properties panel, make sure that the fill color is None () , the stroke color is Black, and the stroke weight is still **1 pt**.
4. Select the Pen tool () . Pressing the Shift key, click and drag up from point 1, labeled "start," in the direction of the arc, stopping at the red dot. Release the mouse button and then release the Shift key.

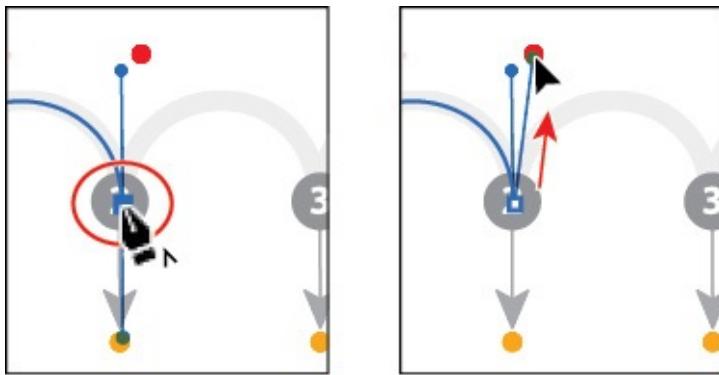
Pressing the Shift key when dragging constrains the direction handles to multiples of 45°.

5. Click point 2 (to the right), and begin dragging down to the gold dot. As you drag, press and hold the Shift key. When the curve looks correct, release the mouse button and then release the Shift key. Leave the path selected.

Now you need the curve to switch directions and create another arc. You will *split* the direction lines to convert a smooth point to a corner point.

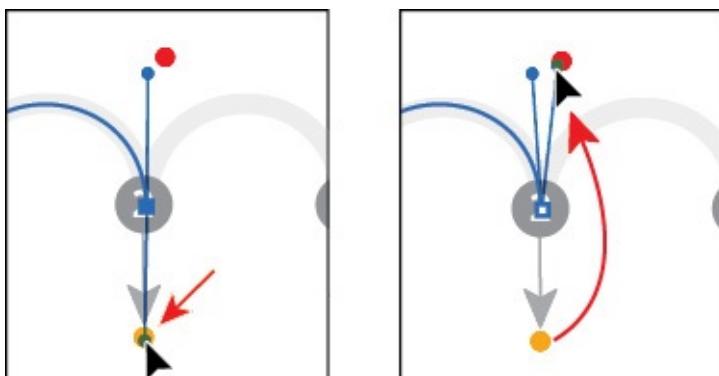
6. Press the Option (macOS) or Alt (Windows) key, and position the pointer over the last *anchor point* you created. When a convert-point icon (^) appears next to the Pen tool pointer () , click and drag a direction line up to the red dot above. Release the mouse button and then release the modifier key. If you do not see the caret (^), you might end up creating an additional loop.

 **Note:** The Option (macOS) or Alt (Windows) key essentially allows you to create a new direction line that is independent of the other for that anchor point. If you don't hold down the Option (macOS) or Alt (Windows) key, the direction handles would not be split, so it would stay a smooth point.



► **Tip:** After you draw a path, you can also select single or multiple anchor points and click the Convert Selected Anchor Points To Corner button (▣) or Convert Selected Anchor Points To Smooth button (▢) in the Properties panel.

You can also Option-drag (macOS) or Alt-drag (Windows) the end of the direction handle (called the *direction point*). An arrow is pointing to it in the first part of the figure. Either method “splits” the direction handles so they can go in different directions.

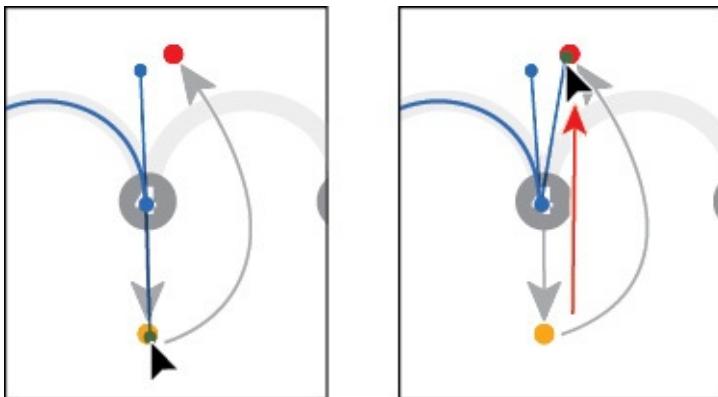


7. Move the Pen tool pointer over point 3 to the right on the template path, and drag down to the gold dot. Release the mouse button when the path looks similar to the template path.
8. Press the Option (macOS) or Alt (Windows) key, and move the pointer over the last anchor point you created. When a convert-point icon (^) appears next to the Pen tool pointer (↖), click and drag a direction line up to the red dot above. Release the mouse button and then release the modifier key.

For the next point, you will not release the mouse button to split the direction handles, so pay close attention.

9. For anchor point 4, click and drag down to the gold dot until the path looks correct. This time, *do not release the mouse button*. Press the Option (macOS) or Alt (Windows) key, and drag up to the red dot for the next

curve. Release the mouse button and then release the modifier key.



0. Continue this process using the Option (macOS) or Alt (Windows) key to create corner points until the path is completed.
1. Use the Direct Selection tool to fine-tune the path and then deselect the path.

If you want to try drawing the same shape for more practice, scroll down to the Practice area in the same artboard, and trace the shape down there.

Combining curves and straight lines

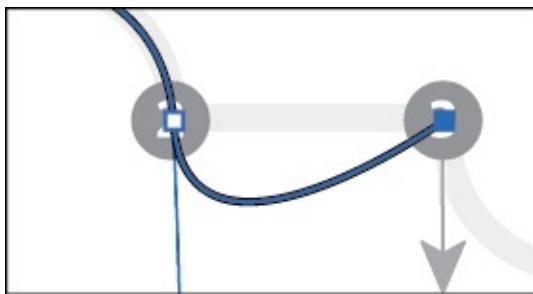
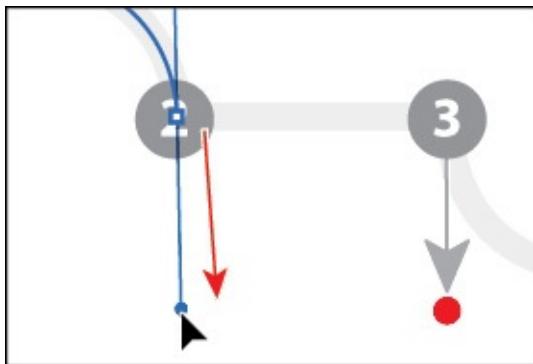
Of course in the real world, when you draw with the Pen tool, you won't just create either curves or straight lines. In this next section, you'll learn how to go from curves to straight lines and from straight lines to curves.

1. Choose 6 from the Artboard Navigation menu in the lower-left corner of the Document window. Select the Zoom tool (🔍), and click several times in the top half of the artboard to zoom in.
2. Select the Pen tool (🖌️). Click point 1, labeled "start," and drag up, stopping at the red dot. Release the mouse button.

Up to this point, you've been dragging to a gold or red dot in the templates. In the real world those obviously won't be there, so for the next point you will drag to create a point without much template guidance. Don't worry, you can always choose Edit > Undo Pen and try again!

3. Click and drag down from point 2, and release the mouse button when the path roughly matches the template.

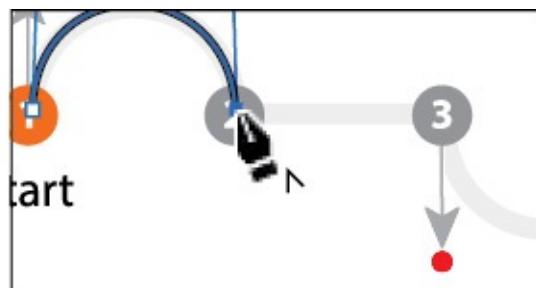
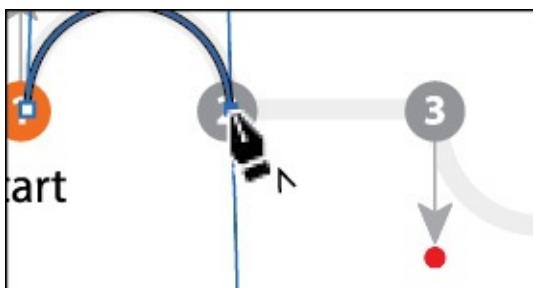
This method of creating a curve should be familiar to you by now.



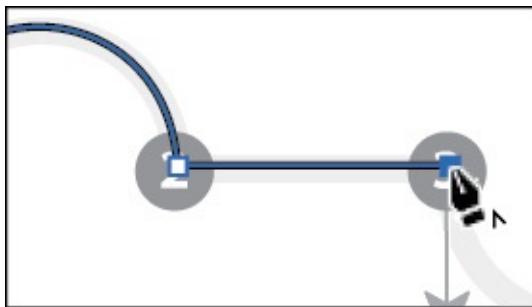
If you were to click point 3 (*don't*), even pressing the Shift key (to produce a straight line), the path would be curved. The last point you created is a smooth anchor point and has a leading direction handle. The figure to the right shows what the path would look like if you clicked with the Pen tool on the next point.

You will now continue the path as a straight line by removing the leading direction handle.

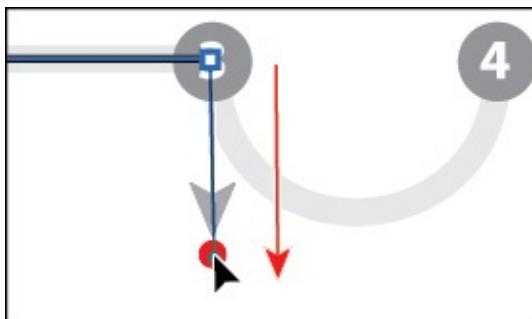
4. Position the pointer over the last point created (point 2). When the convert-point icon appears (☞), click. This deletes the *leading* direction handle from the anchor point (not the trailing direction handle), as shown in the second part of the following figure.



5. Press the Shift key, and click point 3 in the template path to the right to set the next point, creating a straight segment.



6. For the next arc, position the pointer over the last point created. When the convert-point icon appears (), click and drag down from that point to the red dot. This creates a new, independent direction line.



For the rest of this section, I'm going to ask you to complete the path, following the remaining part of the template. I don't include any figures, so go through the figures in the previous steps if you need guidance.

7. Click to create the next point (point 4), and drag up to complete the arc.
8. Click the last anchor point you just created to remove the direction line.
9. Shift-click the next point to create the second straight segment.
10. Click and drag up from the last point created to create a direction line.
11. Click and drag down on the end point (point 6) to create the final arc.

If you want to try drawing the same shape for more practice, scroll down to the Practice area in the same artboard, and trace the shape down there. Make sure you deselect the previous artwork first.

2. Choose File > Save and then choose File > Close.

Remember, you can always go back and work on those Pen tool templates in the L6_practice.ai file as many times as you need. Take it as slow as you need and *practice, practice, practice*.

Creating artwork with the Pen tool

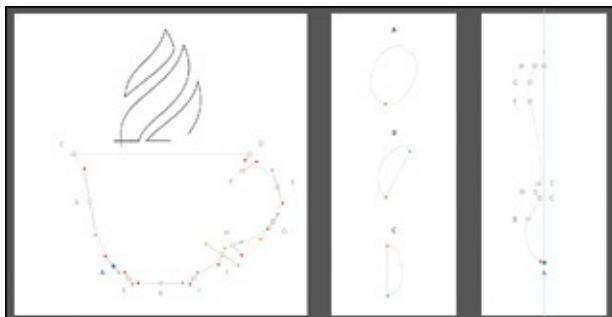
Tip: Don't forget, you can always undo a point you've drawn (Edit > Undo Pen) and then try again.

Next, you'll take what you've learned and create some artwork to be used in your project. To start, you'll draw a coffee cup, which combines curves and corners. Just take your time as you practice with this shape, and use the template guides provided to assist you in drawing it.

1. Choose File > Open, and open the L6_end.ai file in the Lessons > Lesson06 folder.
2. Choose View > Fit All In Window to see the finished artwork. (Use the Hand tool [H] to move the artwork to where you want it.) If you don't want to leave the artwork open, choose File > Close.



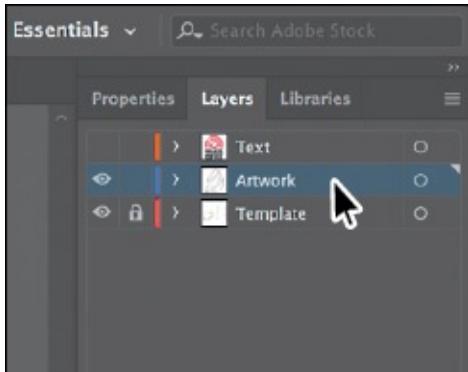
3. Choose File > Open. In the Open dialog box, navigate to the Lessons > Lesson06 folder, and select the L6_start.ai file on your hard disk. Click Open to open the file.



4. Choose View > Fit All In Window.
5. Choose File > Save As, name the file **CoffeeShop.ai**, and select the Lesson06 folder in the Save As dialog box. Choose Adobe Illustrator (ai) from the Format menu (macOS) or choose Adobe Illustrator (*.AI) from the Save As Type menu (Windows), and click Save. In the Illustrator Options dialog box, leave the options set at the defaults and then click OK.
6. Choose 1 Main from the Artboard Navigation menu in the lower-left corner of the Document window, if it's not already chosen.
7. Choose View > Fit Artboard In Window.
8. Select the Zoom tool (Q), and zoom in to the cup in the bottom half of the

artboard.

9. In the Layers panel (Window > Layers), click to select the layer named “Artwork.”

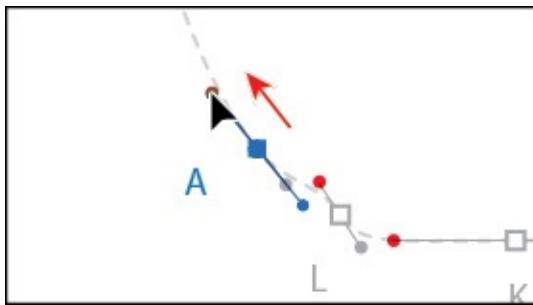


0. In the Properties panel (Window > Properties), make sure that the fill color is None (☒) and the stroke color is Black. Also make sure the stroke weight is 1 pt in the Properties panel.

Drawing a coffee cup

Now that you have the file open and ready, you’re going to put to use some of the Pen tool practice you did in previous sections, by drawing a coffee cup. This next section has more than the average number of steps, so take your time.

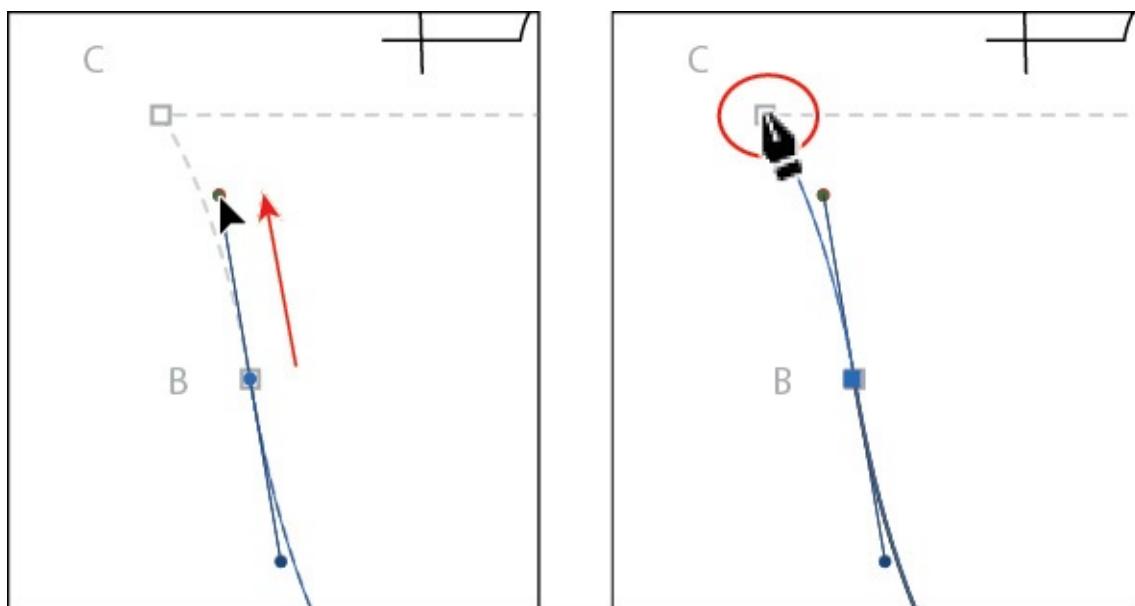
1. Select the Pen tool (🖌️) in the Tools panel. Drag from the blue square labeled “A” to the red dot above it to set the starting anchor point and direction of the first curve.



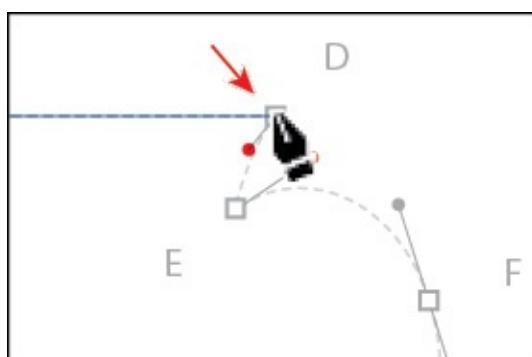
● **Note:** You do not have to start at the blue square (point A) to draw this shape. You can set anchor points for a path with the Pen tool in a clockwise or counterclockwise direction.

2. Drag from point B to the red dot to create the first curve.
The next point you create will be a simple corner point.
3. Position the pointer over the point C, and click (*don’t drag*) to set a corner

point.

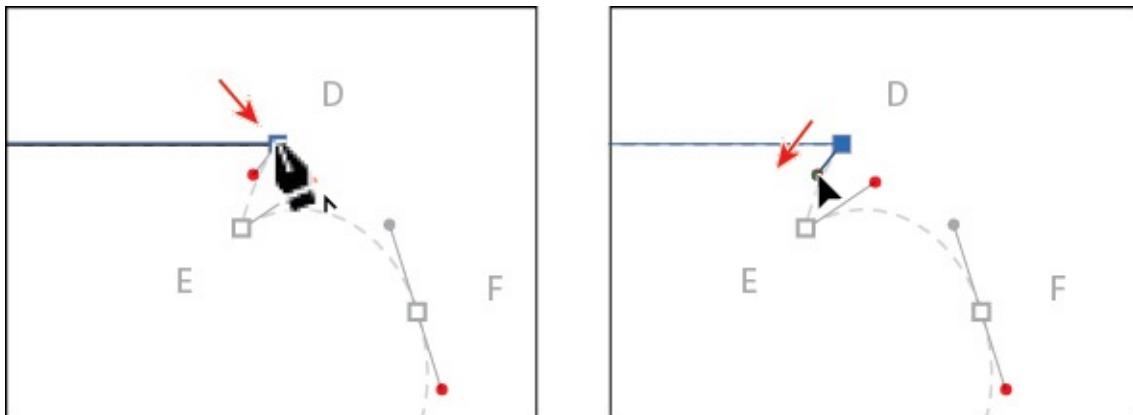


4. Press the Shift key, and click point D to create a straight line; then release the key.



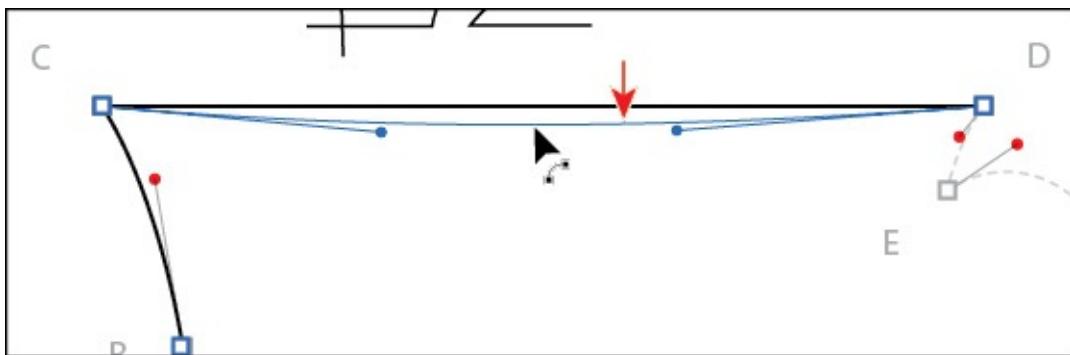
● **Note:** If you find that the path you are drawing has a fill of white, part of the template may be hidden. You can always change the fill to None () for the path you are drawing.

5. Position the Pen tool pointer over point D again. When the convert-point icon appears () next to the pointer, drag down from point D to the red dot. This creates a new direction line.



As you draw with the Pen tool, you may want to edit a curve you previously drew without ending the path you are drawing. Pressing a modifier key with the Pen tool selected, you can position the pointer over a previous path segment and drag to modify it, which is what you'll do next.

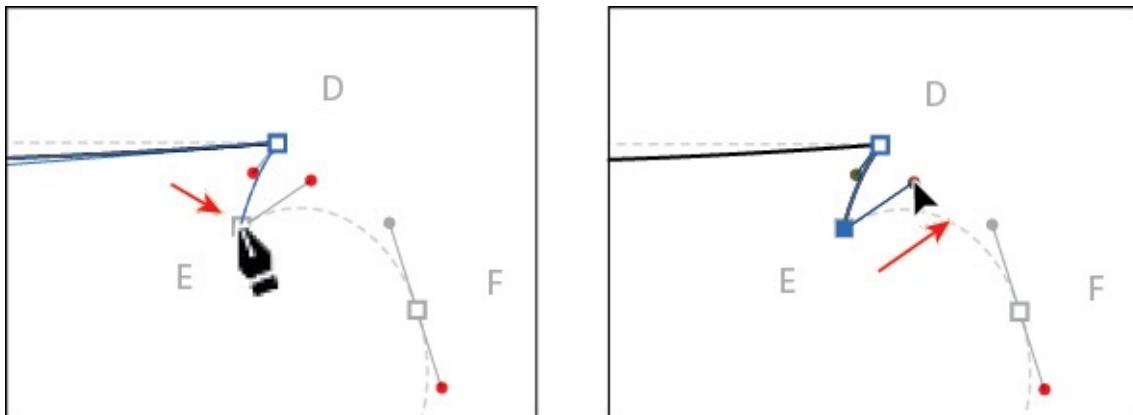
6. Position the pointer over the path between points C and D. Press the Option (macOS) or Alt (Windows) key. The pointer changes appearance (↗). Drag the path down to make the path curved, like you see in the figure. Release the mouse button and then the key. Now, you can continue drawing the path.



This adds direction handles to the top anchor points.

Tip: You can also press the Option+Shift (macOS) or Alt+Shift (Windows) keys to constrain the handles to a perpendicular direction, which ensures that the handles are the same length.

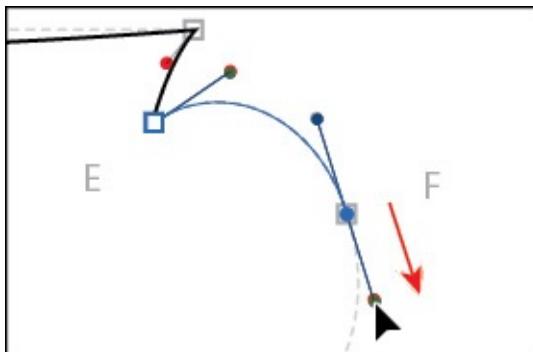
7. Position the pointer over point E. Notice that as you move the pointer, you can see the Pen tool rubber banding, which means you are still drawing the path. Click point E to create a corner point, and release the mouse button.
8. With the Pen tool pointer over point E, click and drag up and to the right from that point to the red dot.



This creates a new leading direction handle and sets up the next path to be a curve.

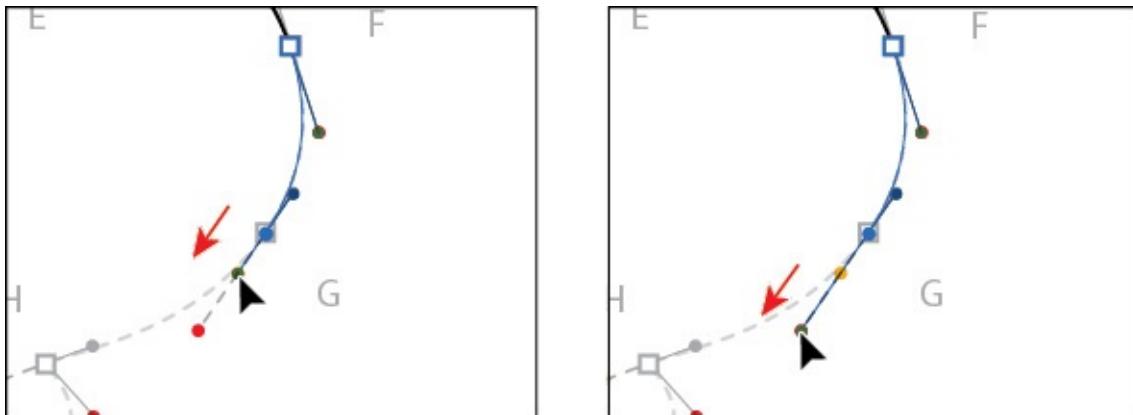
Note: After releasing the mouse button in the previous step, if you move the pointer away and then bring it back to point E, the convert-point icon [^] will appear next to the pointer.

9. Continue drawing by dragging from the anchor point at F to the red dot.



For the next point, G, you will create another smooth point, but you will edit the direction handles independently using a modifier key as you draw. For the next step, don't release the mouse button until you are told.

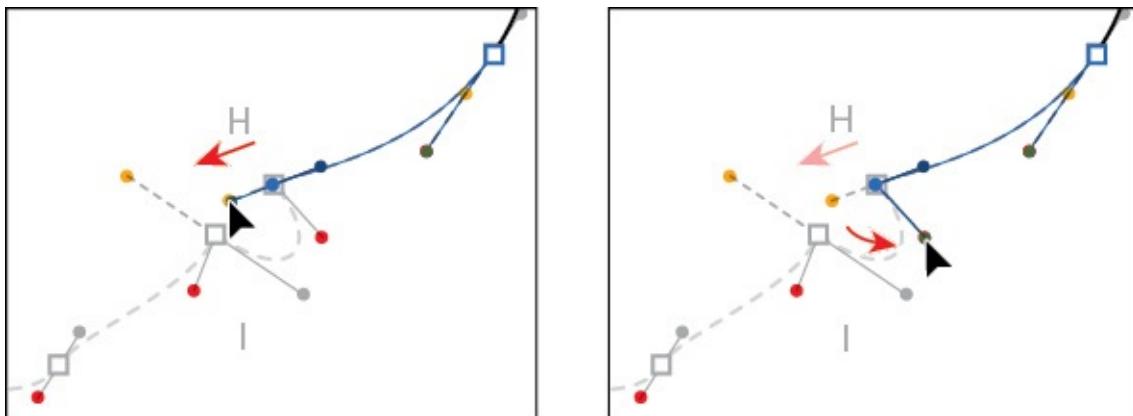
10. Begin dragging from point G to the gold dot. When the pointer reaches the gold dot, *without releasing the mouse button yet*, press the Option (macOS) or Alt (Windows) key, and continue dragging from the gold dot to the red dot to make the *leading* direction handle longer. When the pointer reaches the red dot, release the mouse button and then release the key.



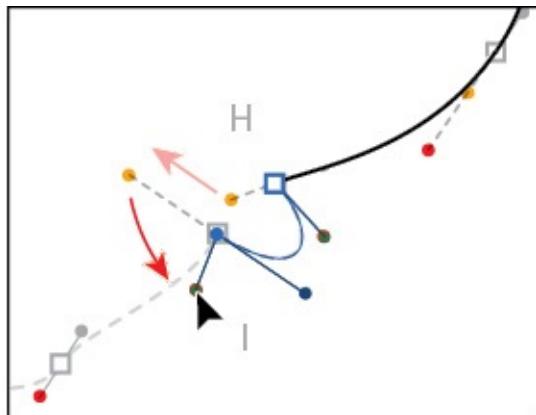
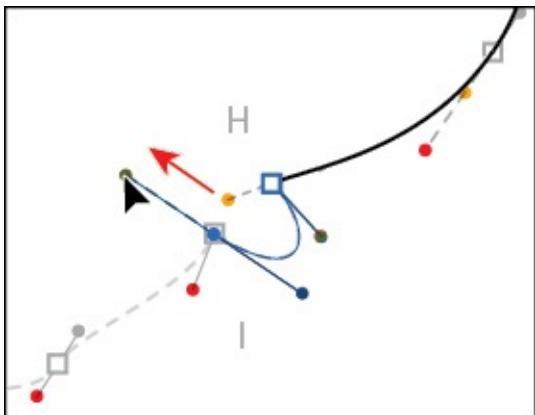
Next, you'll create a smooth point and split the direction handles.

 **Note:** You could also create the point in this step by dragging and releasing the mouse button when the pointer reaches the gold dot. You could then position the Pen tool icon over the anchor point. When the convert-point icon (^) appears next to the pointer, you could drag out a new direction handle.

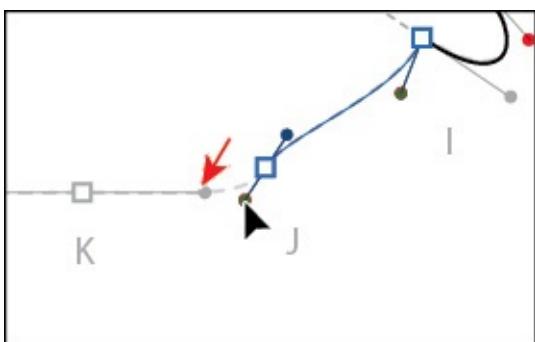
1. Continue drawing the point at H by first dragging from the anchor point to the gold dot. *Without releasing the mouse button*, press the Option (macOS) or Alt (Windows) key and drag from the gold dot to the red dot.



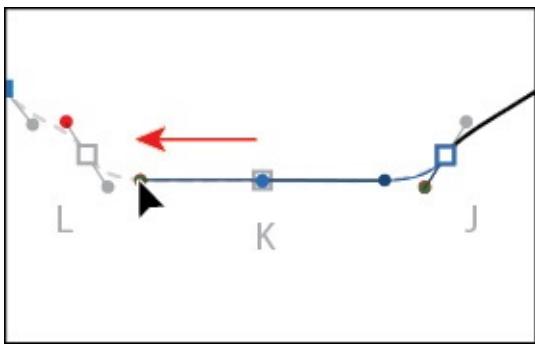
2. Continue drawing the point at I by first dragging from the anchor point to the gold dot. *Without releasing the mouse button*, press the Option (macOS) or Alt (Windows) key and continue dragging from the gold dot to the red dot.



3. Continue drawing the point at J by dragging from the anchor point to the red dot.



4. Begin dragging from point K to the red dot. As you drag, press the Shift key to constrain the direction handles. When you reach the red dot, release the mouse button and then the key.



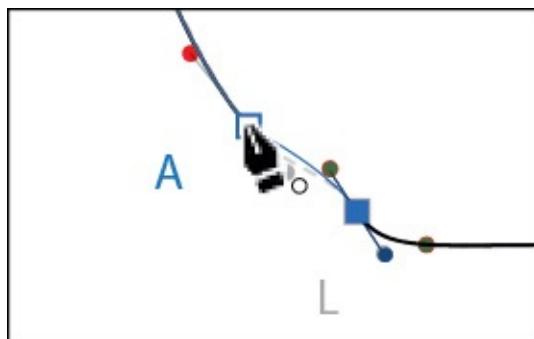
Note: If you press and hold the Shift key before you click and drag from a point, the point will be aligned with the previous point. That's not what you want in this case.

5. Continue drawing by clicking and dragging from the point at L to the red dot.

Next, you'll complete the drawing of the coffee cup by closing the path.

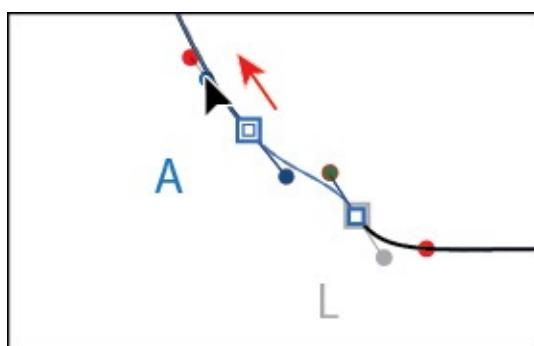
6. Position the Pen tool over the starting point A without clicking.

Notice that an open circle appears next to the Pen tool pointer (P), indicating that the path will close if you were to click the anchor point (don't click yet). If you were to click and drag, the direction handles on either side of the point would move as a single straight line. You need to extend one of the direction handles to match the template.



7. Press the Option (macOS) or Alt (Windows) key with the pointer still over point A. Click and drag up and to the left. Notice that a direction handle shows but is going in the opposite direction (it's going down and to the right). Drag until the curve looks right. Release the mouse button and then the key.

Normally, as you drag away from a point, direction lines appear before and after the point. Without the modifier key, as you drag away from closing point, you are reshaping the path before *and* after the anchor point. Pressing the Option (macOS) or Alt (Windows) modifier key on the closing point allows you to edit the previous direction handle independently.



► **Tip:** When creating a closing anchor point, you can press the spacebar to move the point as you create it.

8. Command-click (macOS) or Ctrl-click (Windows) away from the path to deselect it and then choose File > Save.

● **Note:** This is a shortcut method for deselecting a path while keeping the Pen tool selected. You could also choose Select > Deselect, among

other methods.

Drawing with the Curvature tool

With the Curvature tool () , you can draw and edit paths quickly and visually to create paths with smooth refined curves and straight lines, without editing direction lines. Using the Curvature tool, you can also edit paths while drawing or after the path is complete using the same tool. The paths it creates are composed of anchor points and can be edited with any of the drawing or selecting tools. In this section, you'll explore the Curvature tool while creating a spoon.

1. Choose 3 Spoon from the Artboard Navigation menu in the lower-left corner of the Document window.
2. Choose View > Fit Artboard In Window (if necessary).

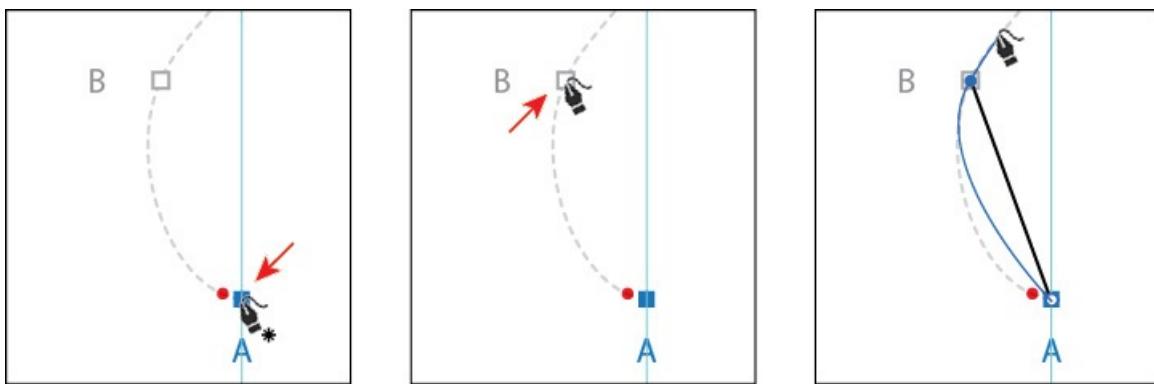
Looking at the template path, you'll see a vertical guide running through points A and I. After you draw half of the spoon, you will copy and reflect it around the guide and then join the two halves together.

 **Note:** You may want to zoom in to the spoon template in this section.

3. Select the Curvature tool () in the Tools panel. Click the blue square at point A to set the starting anchor point and release the mouse button. See the first part of the following figure.

 **Note:** Like the Pen tool, you don't have to start at the blue square (point A) to draw this shape. You can set anchor points for a path with the Curvature tool in a clockwise or counterclockwise direction.

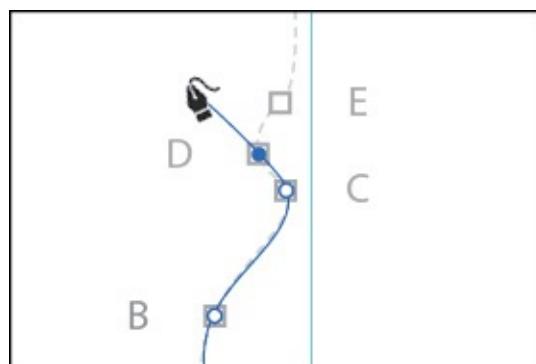
4. Click point B to create a point. After clicking, release the mouse button, and move the pointer away from point B. Notice the preview of the curve before and after point B.



The Curvature tool works by creating anchor points where you click. The drawing curve will “flex” around the points dynamically. Direction handles are created when necessary to curve the path for you.

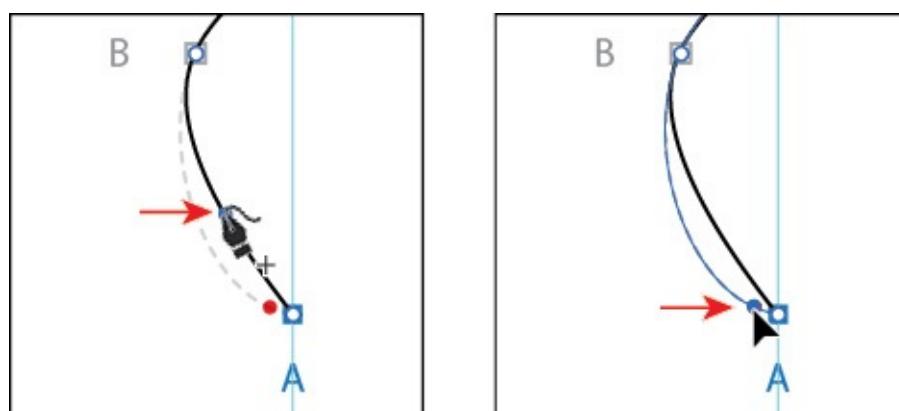
5. Click point C and then click point D, releasing the mouse button. Move the pointer away from point D.

At this point, the path between points A and B will no longer be affected by new points (E, F, etc.), but the path is not following the template. While drawing with the Curvature tool, you can go back and edit points as well as add points.



6. Hover the pointer over the path segment between points A and B. When a plus sign (+) appears next to the pointer, click to create a new point. Drag the new point to the red dot in the template, repositioning it to match the shape of the dotted template.

Note: The points you create with the Curvature tool can have three appearances, indicating its current state: selected (●), corner point (not selected [○]), and smooth point (not selected [○]).



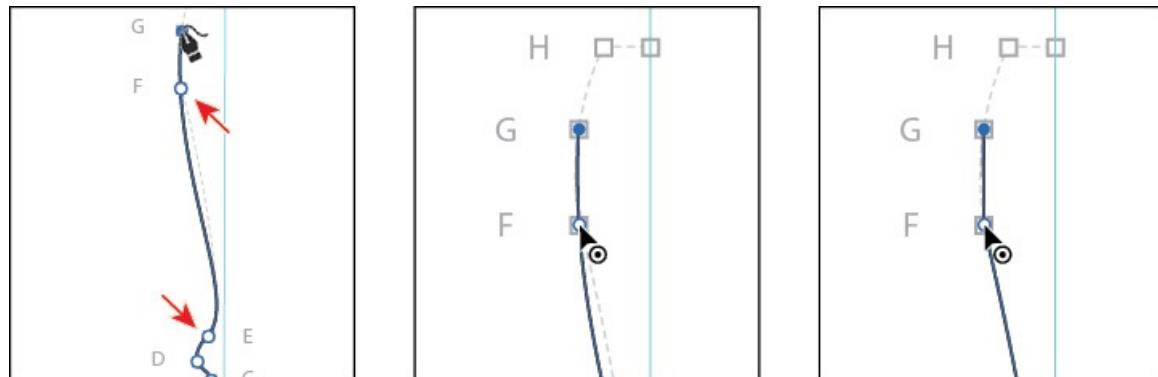
7. Click point E and then click point F.
8. Shift-click to add point G.

Pressing the Shift key while clicking with the Curvature tool aligns the new point vertically (in this case) or horizontally with the previous point.

Notice that the path segments before and after point F are curved, but they need to be straight to follow the template. To convert a default smooth point to a corner point, you can double-click a point you've made with the Curvature tool.

9. Hover the pointer over the anchor point at F. When the pointer changes (), double-click to convert the point to a corner point.

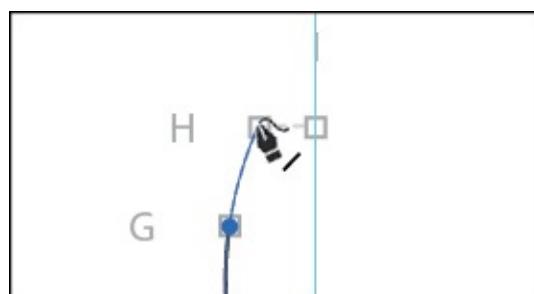
Double-clicking a point, which converts it to a corner point, has the effect of splitting the direction handles for the point.



Next, you'll add a new point and convert it to a corner point in one step.

0. Option-click (macOS) or Alt-click (Windows) point H.

By Option-clicking (macOS) or Alt-clicking (Windows) when you create a point with the Curvature tool, you create a corner point instead of the default smooth point.



1. Shift-click point I.
2. Press the Escape key to stop drawing and then choose Select > Deselect.



► **Tip:** To close a path with the Curvature tool, hover the pointer over the first point you created in the path, and a circle appears next to the pointer (●). Click to close the path.

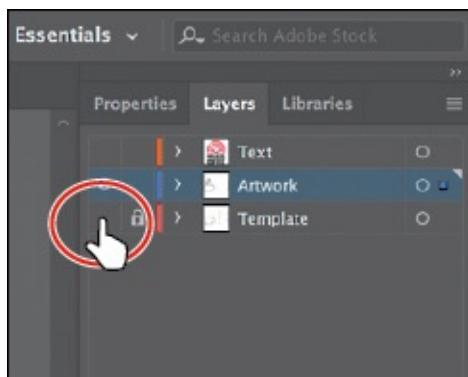
Editing curves

In this part of the lesson, you'll adjust curves you've drawn using several methods learned previously and a few new ones.

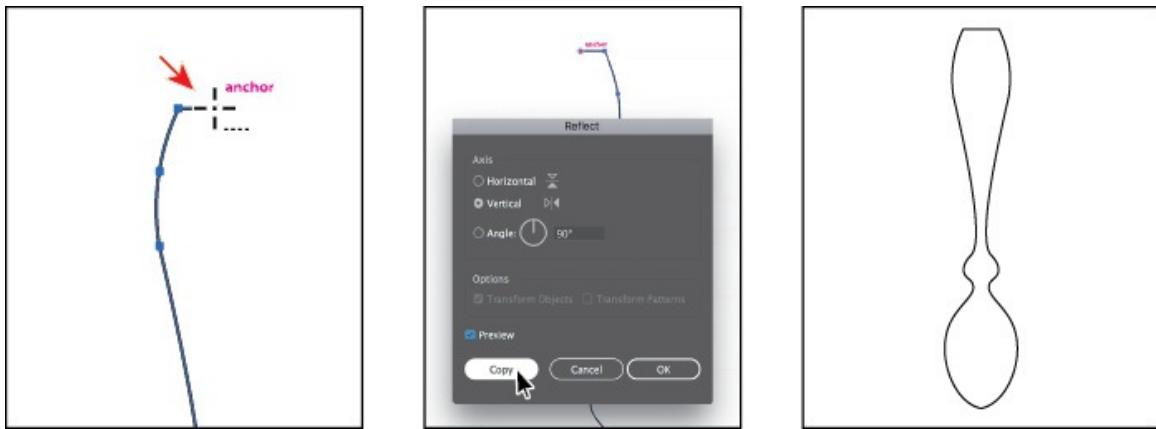
Reflecting the spoon shape

Since the spoon you are creating is symmetrical, you drew only half of it. Now you'll copy, reflect, and join the spoon path to create a whole spoon.

1. Choose View > Smart Guides to turn them on.
2. Select the Selection tool (►), and click to select the spoon path.
3. In the Layers panel, click the visibility column (eye icon ☰) for the layer named “Template” to hide the contents.
4. Click and hold down the mouse button on the Rotate tool (⟳) in the Tools panel, and select the Reflect tool (▷◀).



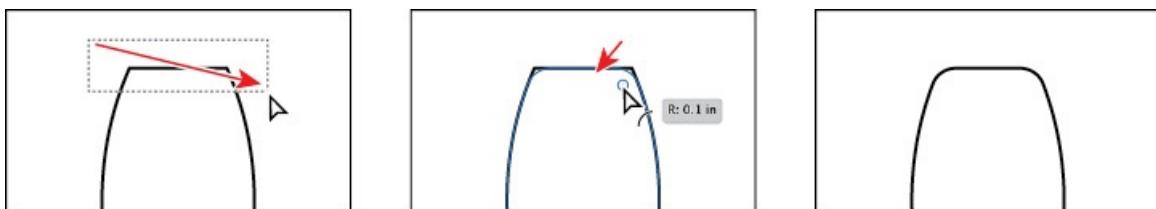
5. While holding down the Option (macOS) or Alt (Windows) key, position the pointer over point I (see the first part of the following figure). When you see the word “anchor” appear, click with the modifier key held down.
6. In the Reflect dialog box, select Vertical if necessary, and click Preview. Click Copy to copy the shape and reflect it in one step.
7. Select the Selection tool and Shift-click the original path to select both and press Cmd+J (macOS) or Ctrl+J (Windows) twice to join the paths together.
8. Choose Select > Deselect.



Rounding corner points

In [Lesson 3](#), “[Using Shapes to Create Artwork for a Postcard](#),” you learned about Live Shapes and the ability to round corners. You can also round corner points on paths, which is what you’ll do next.

1. Select the Zoom tool (🔍), and click a few times on the top of the spoon to zoom in.
 2. Select the Direct Selection tool (▶), and drag across the two points shown in the first part of the following figure to select them.
- Notice that a Live Corners widget (🕒) shows next to each of the anchor points. With both points selected, you can edit the radius of both by dragging one of the Live Corners widgets or double-clicking one of them.
3. Drag either Live Corner widget toward the center of the spoon just a bit to make the corners round. When the measurement label shows a radius of roughly 0.1 in, release the mouse button.
 4. Choose Select > Deselect.



5. Choose View > Smart Guides to turn off the Smart Guides.
6. Select the Selection tool (▶), and click to select the spoon path.
7. Choose Edit > Copy.
8. Choose 1 Main from the Artboard Navigation menu in the lower-left corner of the Document window.
9. Click in a blank area of the artboard to ensure that it’s the active artboard. Choose Edit > Paste to paste the spoon. Drag it off to the side for the

moment.

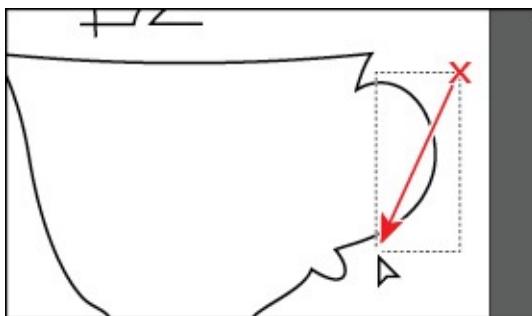
-
- **Note:** You will need to select the spoon by its stroke since it doesn't have a fill.
-

Editing paths and points

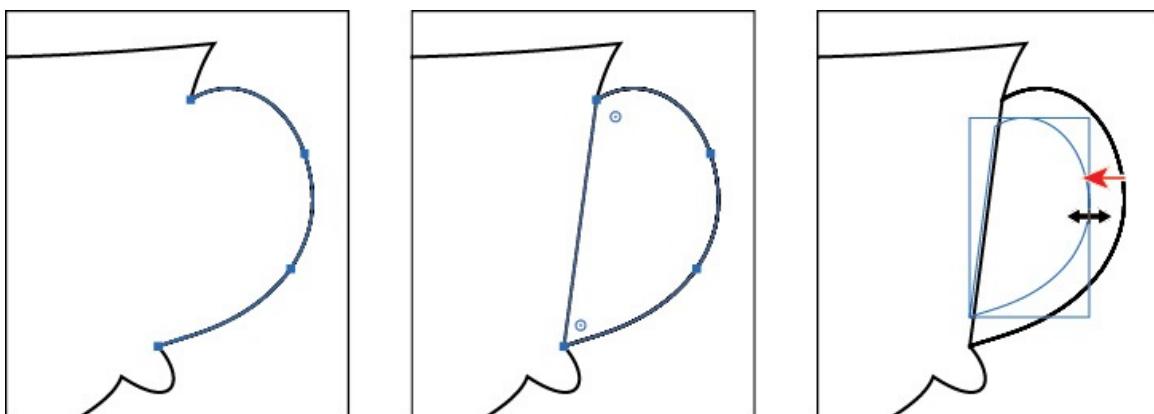
Next, you'll edit a few of the paths and points for the coffee cup you created earlier.

1. Select the Direct Selection tool (►), and starting at the red X you see in the figure, drag across the "handle" of the coffee cup to select just that part of the path.

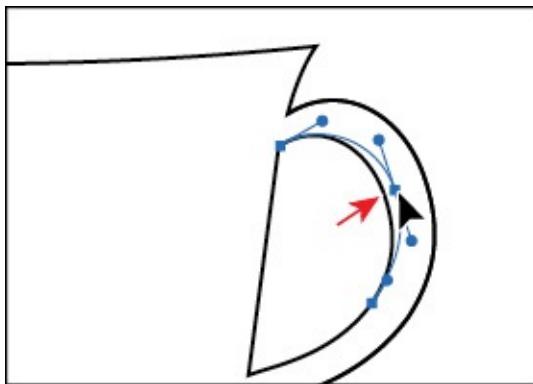
Selecting with the Direct Selection tool in this way selects only the path segments and anchor points contained within the marquee selection. Clicking with the Selection tool (►) selects the entire path.



2. Choose Edit > Copy and then Edit > Paste In Front.
3. Press Command+J (macOS) or Ctrl+J (Windows) to close the path.
4. Select the Selection tool, and Shift-drag the right-middle bounding point to the left to make it smaller. Release the mouse button and then the key.



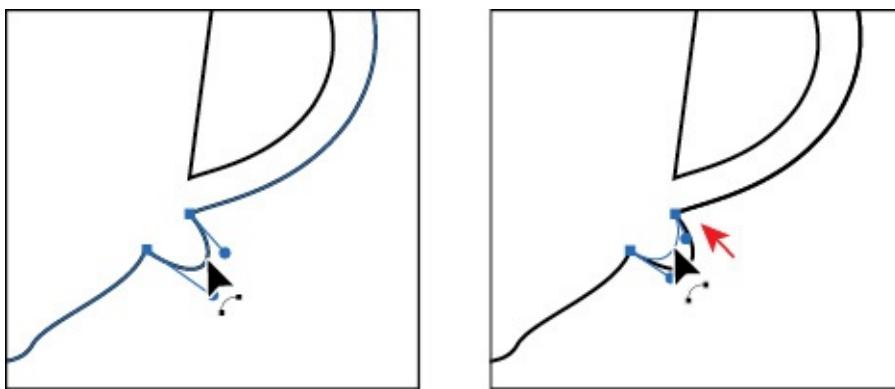
5. Select the Direct Selection tool, and click the anchor point you see in the figure to select it. Drag the anchor point to the right just a bit so it roughly matches the figure.



6. Position the pointer over the part of the path you see in the figure below, and click to select the path.

Notice that the pointer changes appearance () with the pointer over the path. This indicates that you can drag the path, which will adjust the anchor points and direction handles as you drag.

7. Drag the path up and to the left to make the curve a little less rounded. This is an easy way to make edits to a path.



► **Tip:** If you wanted to adjust the direction handles instead of dragging the path and wanted to see the direction handles for all of the selected points, you could choose Illustrator CC > Preferences > Selection & Anchor Display (macOS) or Edit > Preferences > Selection & Anchor Display (Windows) and select Show Handles When Multiple Anchors Are Selected.

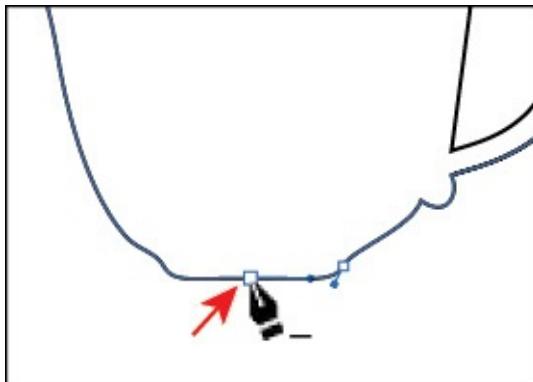
► **Tip:** As you are dragging a path with the Direct Selection tool, you can also press the Shift key to constrain the handles to a perpendicular direction, which ensures that the handles are the same length.

8. Choose Select > Deselect and then choose File > Save.

Deleting and adding anchor points

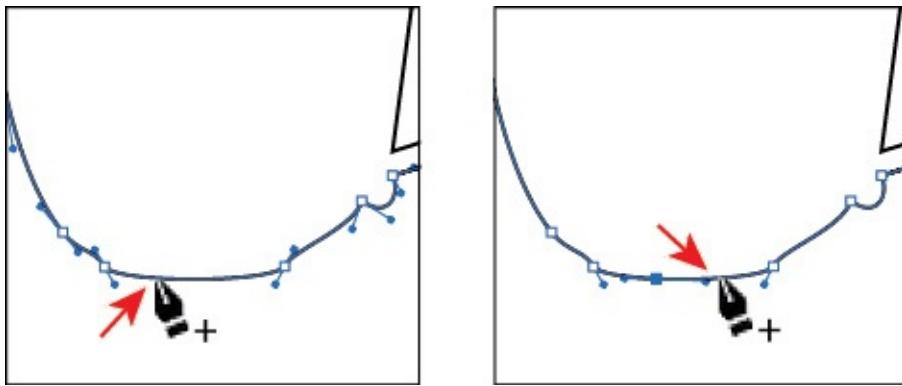
Most of the time, the goal of drawing paths with a tool like the Pen tool or Curvature tool is to avoid adding more anchor points than necessary. You can reduce a path's complexity or change its overall shape by deleting unnecessary points (and therefore gain more control over the shape), or you can extend a path by adding points to it. Next, you'll delete and add anchor points to the coffee cup path so that it has a flatter bottom.

1. Select the Zoom tool () in the Tools panel, and click twice, *slowly*, on the bottom of the cup to zoom in.
2. With the Direct Selection tool () selected, click the coffee cup path to select it.
3. Select the Pen tool () in the Tools panel, and position the pointer over the anchor point at the bottom center of the cup (see the figure). When a minus sign (–) appears to the right of the Pen tool pointer () click to remove the anchor point.



 **Tip:** With an anchor point selected, you can also click Remove Selected Anchor Points () in the Properties panel to delete the anchor point.

4. Position the Pen tool pointer over the bottom of the cup shape again. Look at the first part of the following figure for where to position the pointer. This time, when a plus sign (+) appears to the right of the Pen tool pointer () click to add an anchor point.
5. Move the pointer over to the right a bit, and click the path to add another point. Leave this last point selected.

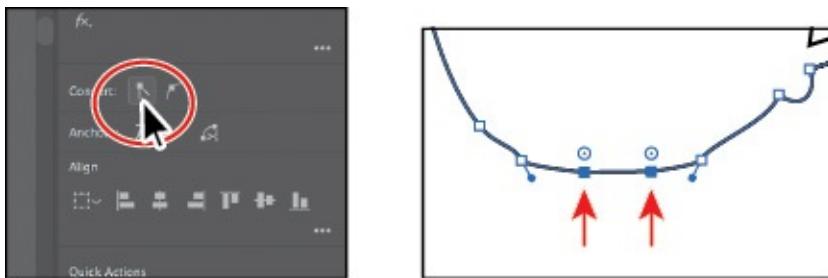


Adding points to a curved path means that the anchor points will most likely have direction lines and be considered smooth points.

Converting between smooth points and corner points

To more precisely control the path you create, you can convert points from smooth points to corner points and from corner points to smooth points, using several methods.

1. Select the Direct Selection tool (), and with the last point still selected, Shift-click the other point you added to the left. In the second part of the following figure, arrows are pointing to the anchor points to select. Click the Convert Selected Anchor Points To Corner button (in the Properties panel.



Tip: You could also convert between corner and smooth points by double-clicking an anchor point (or Option-clicking [macOS] or Alt-clicking [Windows]) with the Curvature tool, like you saw earlier.

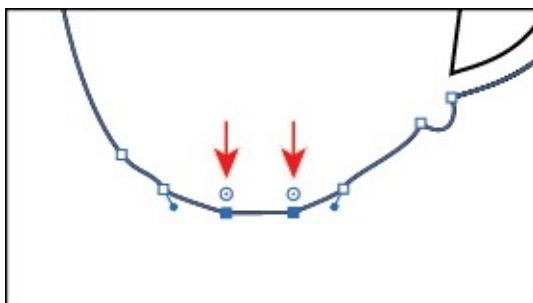
2. With both points selected, click the Vertical Align Bottom button (in the Properties panel to align one point to the other.

As you saw in [Lesson 2](#), “[Techniques for Selecting Artwork](#),” selected anchor points align to the last selected anchor point, which is known as the *key anchor*.

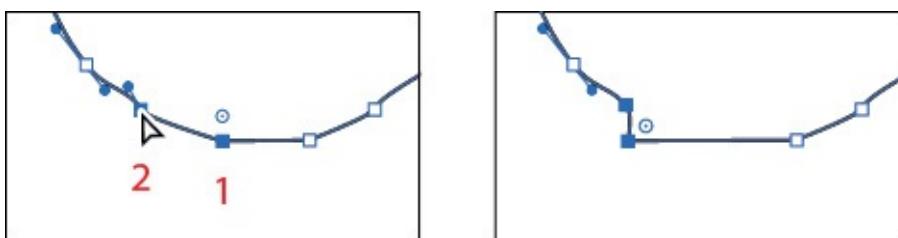
Note: If the points align to the artboard after clicking the align button, try again. Make sure that Align To Key Object is selected in the

Properties panel first.

3. Press the Down arrow *five times* to move both points down.
4. Choose Select > Deselect.

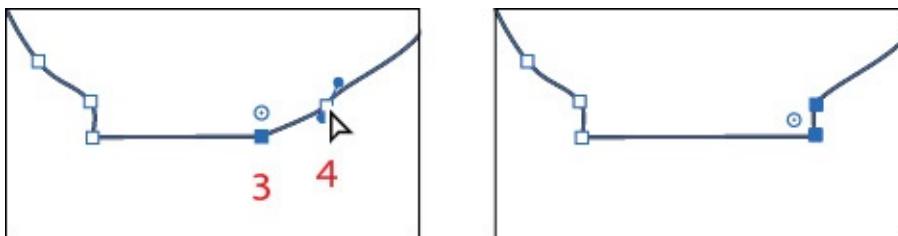


5. With the Direct Selection tool, click the coffee cup path to show all of the anchor points. Click the anchor point labeled 1 in the figure first and then Shift-click the anchor point labeled 2. Click the Horizontal Align Left button (in the Properties panel to align them.



Note: If you find it difficult to select the second anchor point, you can also drag a marquee across the bottom of the coffee cup to select the two anchor points or enter Outline mode (View > Outline).

6. Click the anchor point labeled 3 in the figure first and then Shift-click the anchor point labeled 4. Click the Horizontal Align Right button (in the Properties panel to align them. Leave the path (and points) selected.



Working with the Anchor Point tool

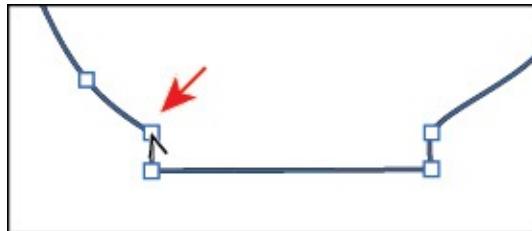
Another way to convert anchor points between smooth and corner points is using the Anchor Point tool. Next, you'll convert anchor points using the Anchor Point tool (.

1. Position the pointer over the Pen tool (in the Tools panel, and click and

hold down the mouse button to reveal more tools. Select the Anchor Point tool ().

You will also see the Add Anchor Point tool ( +) and the Delete Anchor Point tool ( -), which are specifically for adding or removing anchor points.

2. Position the pointer over the point with an arrow pointing to it in the figure. Click to convert the point from a smooth point (with direction handles) to a corner point.



3. Position the pointer over the anchor point below the point you just converted. Click and drag up when the pointer looks like this: . As you drag, press the Shift key. Drag up until you reach the anchor point above it. Release the mouse button and then release the key.



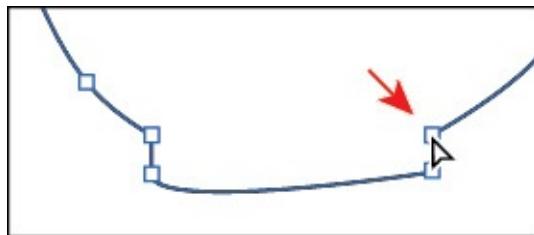
 **Note:** Don't drag if the pointer looks like this: . This means that the pointer is not over the anchor point, and if you drag, you will reshape the curve.

With the Anchor Point tool, you can perform tasks such as converting between smooth and corner points, splitting direction handles, and more. Next, you'll do the same thing to the right side of the bottom of the coffee cup.

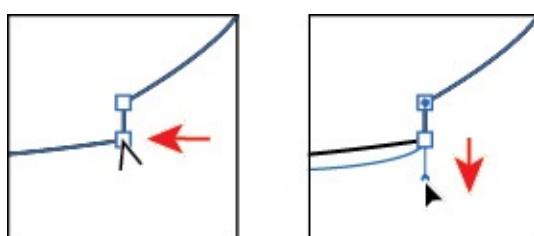
 **Tip:** If you position the Anchor Point tool pointer over the end of a direction handle that is split, you can press the Option (macOS) or Alt (Windows) key and, when the pointer changes (, click to make the direction handles a single straight line again (not split).

4. Position the pointer over the point with an arrow pointing to it in the figure. Click to convert the point from a smooth point (with direction

handles) to a corner point.



5. Position the pointer over the anchor point below the point you just converted. Click and drag down when the pointer looks like this: ↘. As you drag, press the Shift key. Drag down until the end of the opposite direction handle reaches the point above. Release the mouse button and then release the key.

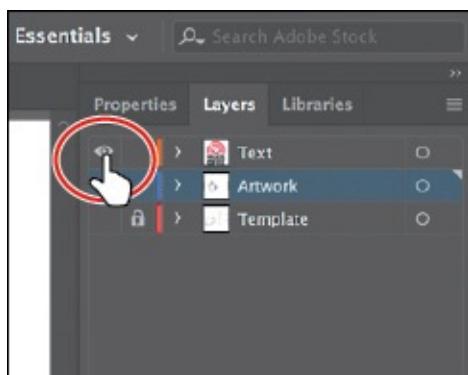


6. Choose Select > Deselect and then choose File > Save.

Creating a dashed line

Dashed lines apply to the stroke of an object and can be added to a closed path or an open path. Dashes are created by specifying a sequence of dash lengths and the gaps between them. Next, you will add a dash to a line.

1. Choose View > Fit Artboard In Window.



2. In the Layers panel, click the visibility column for the layer named “Text” to show the layer contents.
3. Select the Zoom tool (Q), and click twice to zoom in to the red circles that are now showing.
4. Select the Selection tool (P) in the Tools panel, and click the dark gray

path in the center of the red circles.

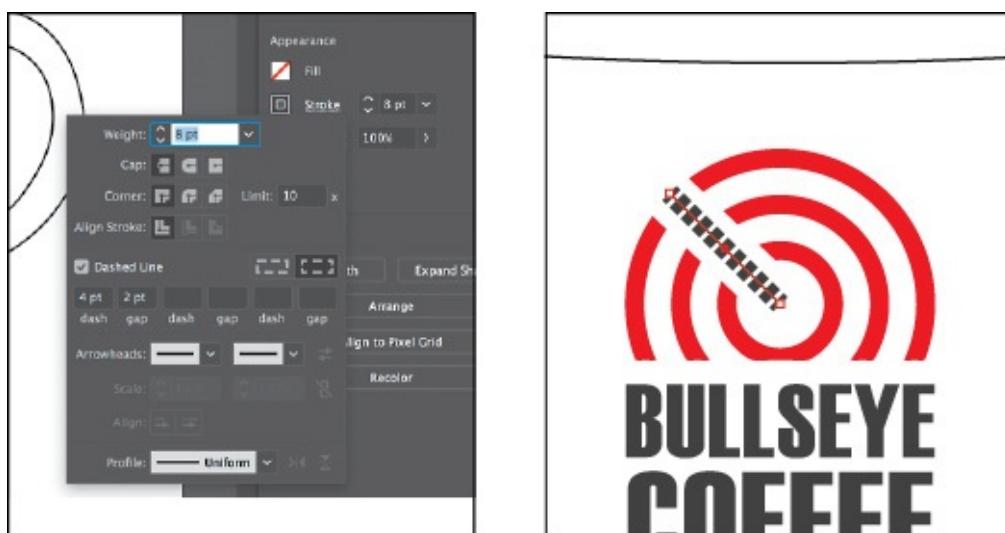
5. Click the Properties panel tab to show the panel. Click the word “Stroke” in the Properties panel to show the Stroke panel. Change the following options in the Stroke panel:

- Weight: **8 pt**

► **Tip:** The Preserves Exact Dash And Gap Lengths button () allows you to retain the appearance of the dashes without aligning to the corners or the dash ends.

- Dashed Line: **Selected**

- First Dash value: **4 pt** (This creates a 4-pt dash, 4-pt gap repeating pattern.)
- First Gap value: **2 pt** (This creates a 4-pt dash, 2-pt gap repeating pattern.)
- Aligns Dashes To Corners And Path Ends (): Selected



6. Press the Escape key to hide the Stroke panel.

● **Note:** Be careful about pressing the Escape key when you change a value in a panel, like you just did. Sometimes the value may not be accepted. You can press Enter or Return to both accept the last value in a panel and hide the panel.

7. Choose File > Save, and leave the line selected.

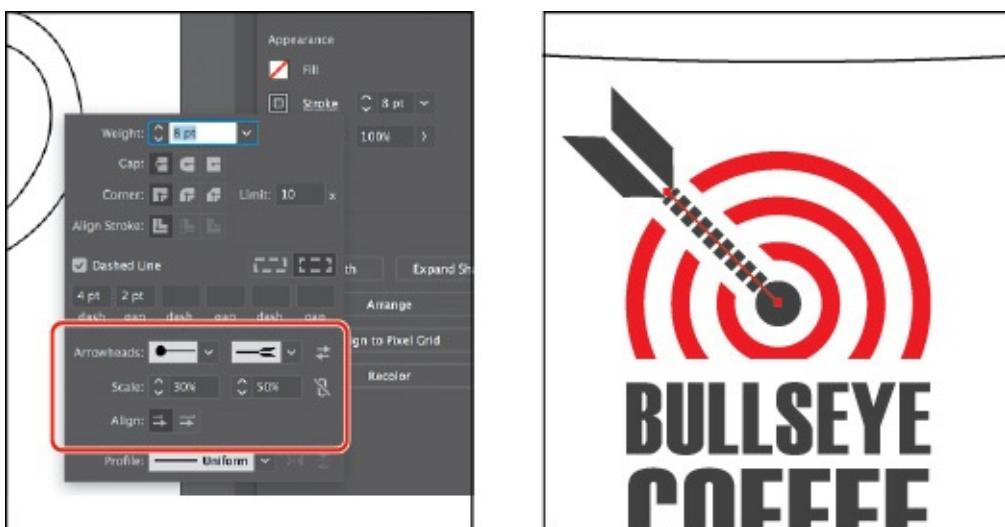
Adding arrowheads to a path

You can add arrowheads to both ends of a path using the Stroke panel. There

are many different arrowhead styles to choose from in Illustrator, as well as arrowhead editing options. Next, you'll apply different arrowheads to the dashed path.

- With the dashed line still selected, click the word "Stroke" again in the Properties panel to open the Stroke panel (or choose Window > Stroke). In the Stroke panel, change only the following options:

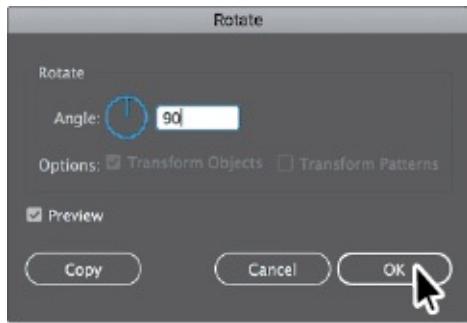
- Choose Arrow 21 from the menu directly to the right of the word "Arrowheads." This adds an arrowhead to the start (right end) of the line.
- Scale (*beneath where you chose Arrow 21*): **30%**
- Choose Arrow 17 from the arrowheads menu to the far right of the word "Arrowheads." This adds an arrowhead to the end of the line.
- Scale (*beneath where you chose Arrow 17*): **50%**
- Click the Extend Arrow Tip Beyond End Of Path button (↗).



- Click the edge of the coffee cup path, and change the fill color to White.
- Click the spoon shape, and change the fill color to a light gray (I chose the color with the tooltip that shows "C=0 M=0 Y=0 K=10").

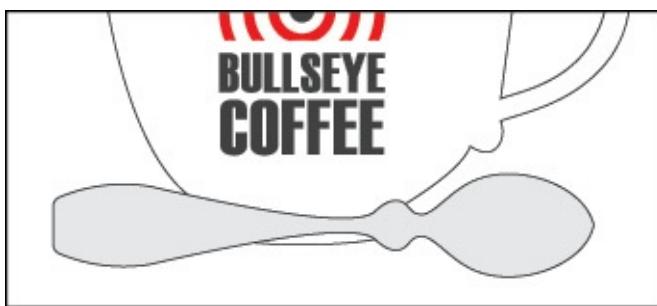
Note: You may need to zoom out to see your spoon.

- With the spoon selected, choose Object > Transform > Rotate, change the Angle to **90**, select Preview, and then click OK.



Note: If the spoon is behind the coffee cup in the stacking order, you can choose Object > Arrange > Bring To Front with the spoon selected.

5. Drag the spoon into the position you see in the following figure.



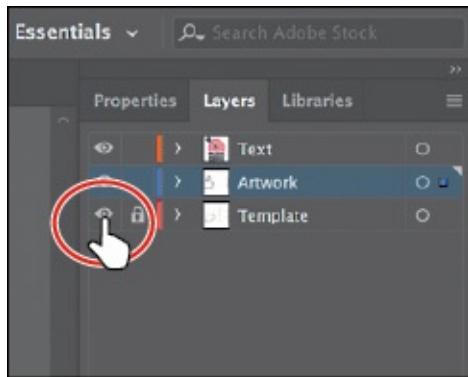
Working with the Pencil tool

The Pencil tool (🖌️) lets you draw freeform open and closed paths that contain curves and straight lines. As you draw with the Pencil tool, anchor points are created on the path where necessary and according to the Pencil tool options you set. The path can easily be adjusted when the path is complete.

Drawing freeform paths with the Pencil tool

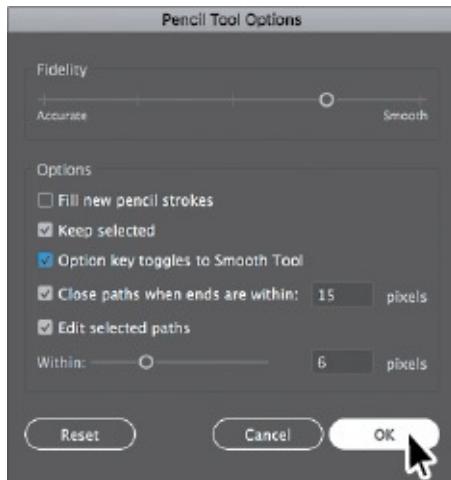
Next, you'll draw and edit a simple path using the Pencil tool.

1. Choose 2 Coffee Bean from the Artboard Navigation menu in the lower-left corner of the Document window.
2. Choose View > Fit Artboard In Window, if necessary.
3. In the Layers panel, click the visibility column for the layer named "Template" to show the layer contents.
4. Select the Zoom tool (🔍) in the Tools panel, and click a few times, slowly, on the top of the artboard to zoom in where you see "A."



5. Choose Select > Deselect.
6. In the Properties panel, make sure that the fill color is None (unchecked) and the stroke color is Black. Also make sure the stroke weight is 1 pt in the Properties panel.
7. Click and hold down on the Shaper tool (scissors icon) in the Tools panel to select the Pencil tool (brush icon). Double-click the Pencil tool. In the Pencil Tool Options dialog box, set the following options, leaving the rest at their default settings:
 - Drag the Fidelity slider to the right, one position closer to Smooth. This will reduce the number of points on a path drawn with the Pencil tool and make the path smoother.
 - Keep Selected: **Selected** (the default setting)
 - Option Key (Alt Key on Windows) Toggles To Smooth Tool: **Selected** (The Smooth tool is used to smooth the path after it is drawn.)
 - Close Paths When Ends Are Within: **Selected** (the default setting)

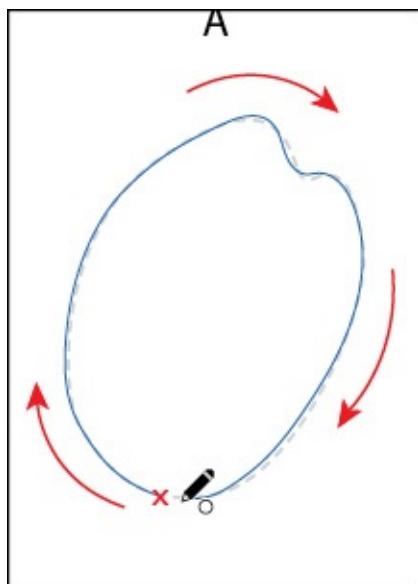
► **Tip:** Tip: When it comes to the Fidelity value, dragging the slider closer to Accurate usually creates more anchor points and more accurately reflects the path you've drawn. Dragging the slider toward Smooth makes fewer anchor points and a smoother, less complex path.



8. Click OK.

The asterisk (*) that appears next to the Pencil tool pointer indicates that you are about to create a new path. If you don't see the asterisk, it means that you are about to redraw a shape that the pointer is near.

9. Starting at the red X in the template, click and drag around the dashed template path. When the pointer gets close to the start of the path (at the red X), a small circle displays next to it (Ⓐ) to indicate that if you release the mouse button, the path will close. When you see the circle, release the mouse button to close the path.

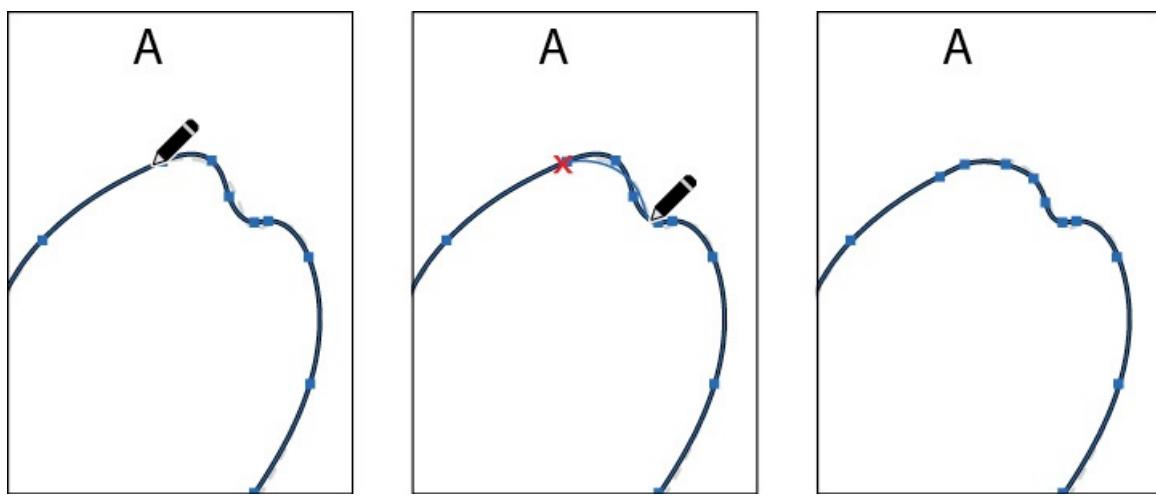


Notice that as you are drawing, the path may not look perfectly smooth. After releasing the mouse button, the path is smoothed based on the Fidelity value that you set in the Pencil Tool Options dialog box.

● **Note:** If you see an X (✗) instead of the Pencil icon (-pencil), the Caps Lock key is active. Caps Lock turns the Pencil tool icon into an X for increased precision.

● **Note:** When editing a path with the Pencil tool, you may find that a new path is created instead of editing the original shape. You can always undo and make sure that you finish back on the original path (or at least close to it).

0. Position the Pencil tool on or near the path to redraw it. When the asterisk disappears from the pointer, click and drag to reshape the path. Make sure you wind up back on the original path. Think of it as redrawing parts of the path.



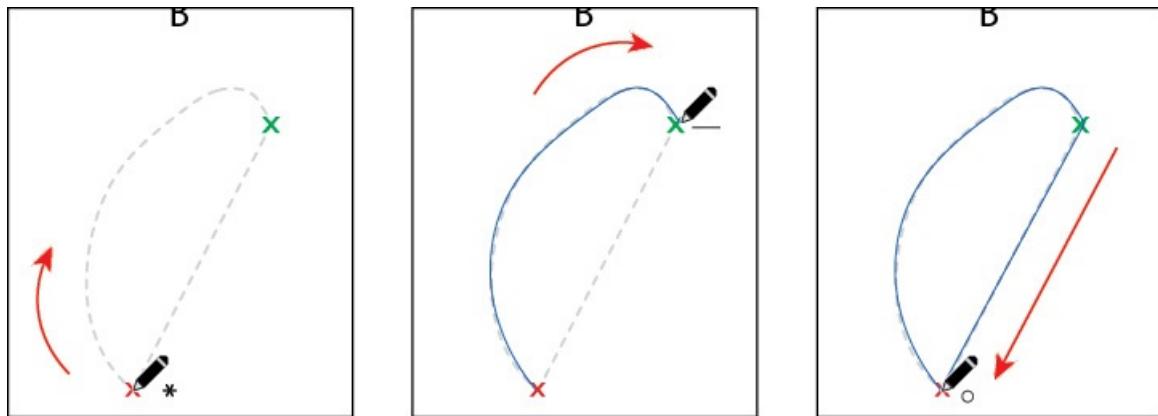
► **Tip:** If you wanted to “smooth” parts of the path you drew, you could press the Option key (macOS) or Alt key (Windows) and drag along the path. This can simplify the path and remove anchor points. This is possible because you selected Option Key (Alt Key on Windows) Toggles To Smooth Tool in the Pencil Tool Options dialog box earlier.

Drawing straight segments with the Pencil tool

Aside from drawing more freeform paths, you can also create straight lines that can be constrained to 45° angles with the Pencil tool. That’s what you’ll do next.

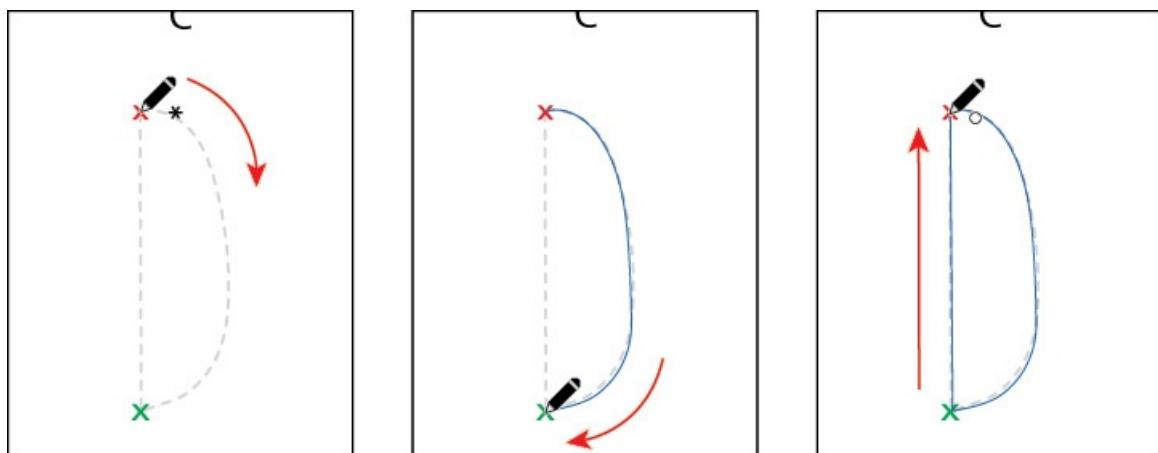
1. Scroll down the artboard to see the template shapes labeled “B” and “C,” if you can’t see them.
2. Position the pointer over the red X at the bottom of the path labeled “B.” Click and drag around the left side of the shape and stop at the green X, but *don’t release the mouse button yet*.
3. With the mouse button still down, press Option (macOS) or Alt (Windows), and drag a straight line that follows the flat edge of the shape.

When you reach the red X again and a small circle displays next to the Pencil tool pointer (), release the mouse button and then the key to close the path.

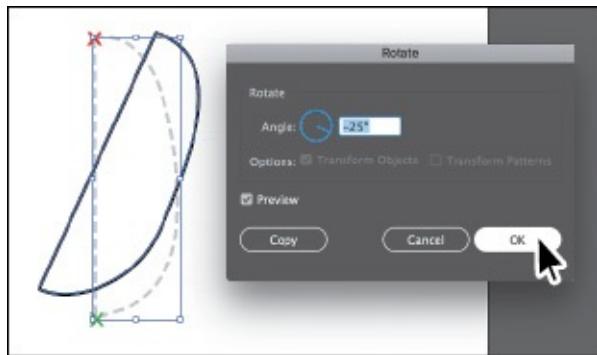


Note: When drawing the path, after reaching the green X, you could have released the mouse button to stop drawing and then just started drawing from the same place later. You can tell you are continuing a path with the Pencil tool when a line appears next to the Pencil tool pointer (), with the pointer positioned over the end of a path.

4. Position the pointer over the red X at the top of the path labeled "C" (it's below "B"). Click and drag down around the right side of the shape and stop at the green X, but *don't release the mouse button* yet.
5. With the mouse button still down, press the Shift key, and drag a straight line that follows the flat edge of the shape. When you reach the red X again and a small circle displays next to the Pencil tool pointer (), release the mouse button and then the key to close the path.



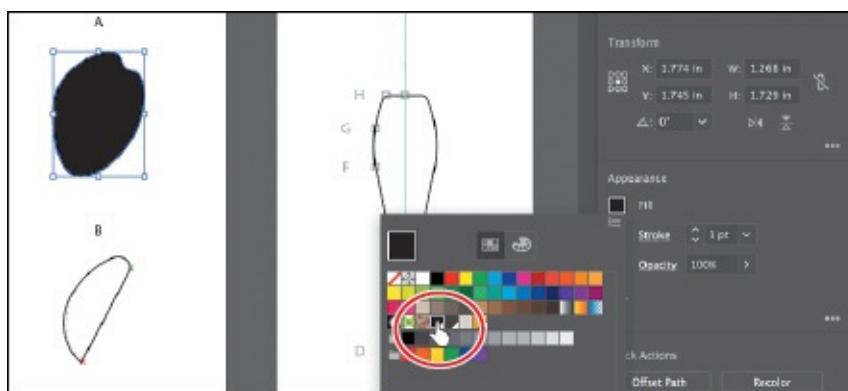
6. With shape "C" selected, choose Object > Transform > Rotate. In the Rotate dialog box, change Angle to -25° , select Preview, and then click OK.



Finishing the coffee bean

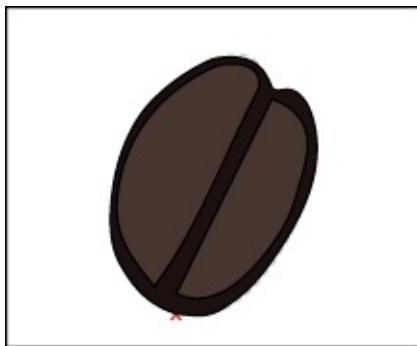
In this last part of the section, you'll take the shapes you created with the Pencil tool, bring them together to create a coffee bean, then add it to the final artwork.

1. Choose View > Fit Artboard In Window.
2. Select the Selection tool (), and click to select the top shape labeled “A.” Change the fill color to the swatch named “CoffeeBean” in the Properties panel.



3. Click to select shape B, and then Shift-click to select shape C. Change the fill color for both to the swatch named “CoffeeBean2” in the Properties panel.
4. Choose Select > Deselect.
5. Drag shape B and then shape C onto shape A, something like you see in the figure.

Feel free to adjust the individual shapes using any of the methods you've learned so far (I did).



6. Drag across all three shapes to select them, and choose Object > Group.
7. Choose View > Fit All In Window.
8. Drag the coffee bean group on front of the coffee cup and spoon. You may want to resize the coffee bean group a little.
9. Choose Select > Deselect.



Joining with the Join tool

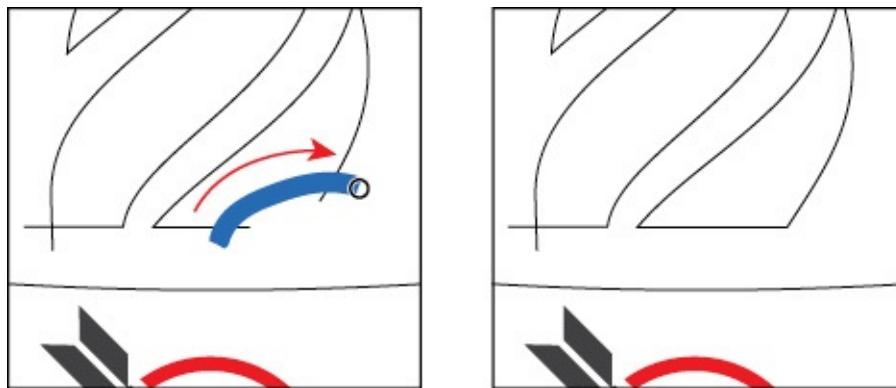
In this lesson and earlier lessons, you've used the Join command (Object > Path > Join) to join as well as close paths. Using the Join tool (), you can easily join paths that cross, overlap, or have open ends using scrubbing gestures.

1. Choose View > Steam. This command will zoom in to the shapes above the coffee cup and also hide the layer named "Template."
2. Click and hold down the mouse on the Pencil tool (, and select the Join tool ().

Unlike the Join command (Object > Path > Join) you learned about in [Lesson 3, “Using Shapes to Create Artwork for a Postcard,”](#) the Join tool can trim overlapping paths as it joins, and it doesn't simply create a straight line between the anchor points you are joining. The angle created by the two paths to be joined are taken into account.

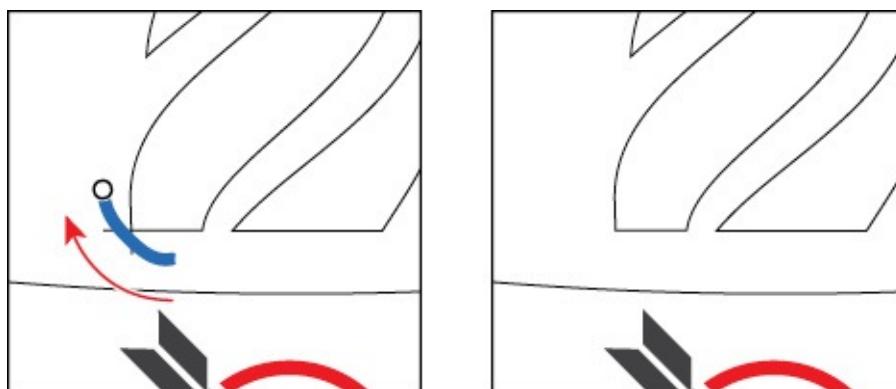
3. With the Join tool selected, drag across the two ends of the path on the right (see the figure for which paths to drag across).

● **Note:** If you were to instead join the ends of the open path by pressing Cmd+J (macOS) or Ctrl+J (Windows), a straight line would connect the ends.



When dragging (also called *scrubbing*) across paths, they will be either “extended and joined” or “trimmed and joined.” In this example, the paths were extended and joined. The Join tool works on paths that are selected or not, but the result of joining is not selected to continue working on more paths.

4. Drag across (or scrub) the excess part of the paths on the shape to the left to remove them and close the path. In this case, the path was “trimmed and joined.”



5. Choose View > Fit Artboard In Window.
6. Select the Selection tool, and drag across the “steam” shapes above the cup to select them.
7. Change the Fill color to the swatch named “Steam” and the stroke weight to **0** in the Properties panel.
8. Choose Object > Group, and drag the group down like the following figure.
9. Choose Select > Deselect, and take a step back to admire all that you’ve accomplished!

0. Choose File > Save and then choose File > Close.



Review questions

1. Describe how to draw straight vertical, horizontal, or diagonal lines using the Pen tool ().
2. How do you draw a curved line using the Pen tool?
3. Name two ways to convert a smooth point on a curve to a corner point.
4. Which tool would you use to edit a segment on a curved line?
5. How can you change the way the Pencil tool () works?
6. How is the Join tool different from the Join command (Object > Path > Join)?

Review answers

1. To draw a straight line, click with the Pen tool () and then move the pointer and click again. The first click sets the starting anchor point, and the second click sets the ending anchor point of the line. To constrain the straight line vertically, horizontally, or along a 45° diagonal, press the Shift key as you click to create the second anchor point with the Pen tool.
2. To draw a curved line with the Pen tool, click to create the starting anchor point, drag to set the direction of the curve, and then click to end the curve.
3. To convert a smooth point on a curve to a corner point, use the Direct Selection tool (>) to select the anchor point and then use the Anchor Point tool (N) to drag a direction handle to change the direction. Another method is to choose a point or points with the Direct Selection tool and then click the Convert Selected Anchor Points To Corner

button () in the Properties panel.

4. To edit a segment on a curved line, select the Direct Selection tool, and drag the segment to move it; or drag a direction handle on an anchor point to adjust the length and shape of the segment. Dragging a path segment with the Direct Selection tool or pressing the Option (macOS) or Alt (Windows) key and dragging a path segment with the Pen tool is another way to reshape a path.
5. To change the way the Pencil tool () works, double-click the Pencil tool in the Tools panel to open the Pencil Tool Options dialog box. There you can change the fidelity and other options.
6. Unlike the Join command, the Join tool can trim overlapping paths as it joins, and it doesn't simply create a straight line between the anchor points you are joining. The angle created by the two paths to be joined are taken into account.