

# 6

## CREATING AN ILLUSTRATION WITH THE DRAWING TOOLS

### Lesson overview

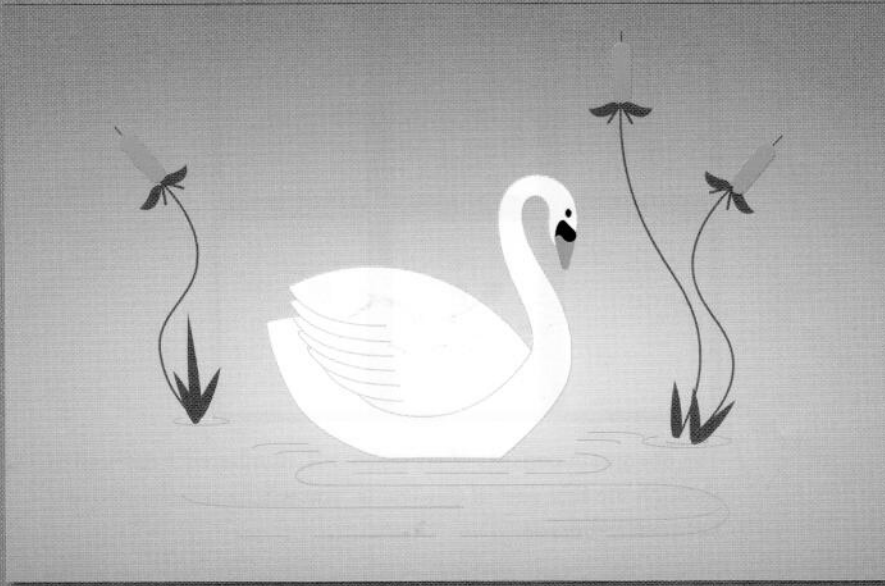
In this lesson, you'll learn how to do the following:

- 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 will take about 90 minutes to complete. Please log in to your account on [peachpit.com](http://peachpit.com) to download the files for this lesson, or go to the "Getting Started" section at the beginning of this book and follow the instructions under "Accessing the lesson files and Web Edition." Store the files on your computer in a convenient location.

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



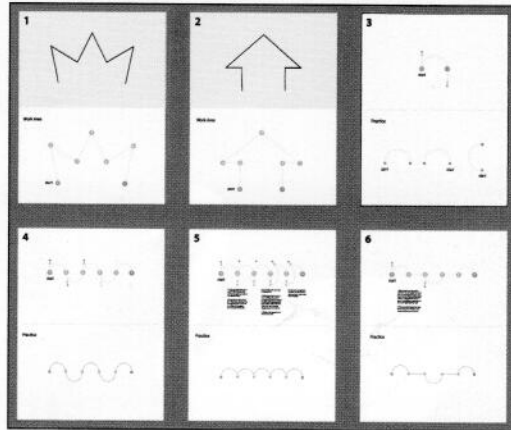
In previous lessons you created shapes. Next you'll learn how to create artwork using drawing tools such as the Pencil tool, Pen tool, and Curvature tool. These tools give you the freedom to draw precisely, whether you're drawing straight lines, curves, or complex shapes. You'll start with the Pen tool and use the other drawing tools to create an illustration.

## Starting the lesson

In the first part of this lesson, you'll get more comfortable with paths and then ease into drawing with the Pen tool after lots of practice.

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

- 1 To ensure that the tools function and the defaults are set exactly as described in this lesson, delete or deactivate (by renaming) the Adobe Illustrator CC preferences file. See "Restoring default preferences" in the "Getting Started" section at the beginning of the book.
- 2 Start Adobe Illustrator CC.
- 3 Choose File > Open, and open the L6\_practice.ai file in the Lessons > Lesson06 folder on your hard disk.




The document consists 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 free-form and more precise artwork. It also can be useful for editing existing vector artwork. Understanding how the Pen tool or Curvature tool works is important. *Just know that it takes plenty of practice to feel comfortable with the Pen tool!*

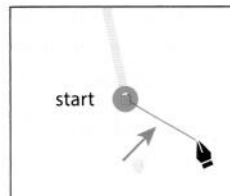
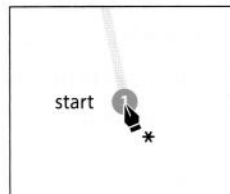
In this section, you'll begin to explore the Pen tool, and later in the lesson, you'll create artwork using the Pen tool and other tools and commands.





- 1 Choose 1 from the Artboard Navigation menu in the lower-left corner of the Document window, if it's not already chosen.
- 2 Choose View > Fit Artboard In Window.
- 3 Select the Zoom tool () in the Tools panel, and click once in the bottom half of the artboard to zoom in.
- 4 Choose View > Smart Guides to turn off Smart Guides. Smart Guides can be useful when you draw, but you won't need them now.
- 5 Select the Pen tool () in the Tools panel. 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 Move the pointer into the area labeled "Work Area" on 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.
- 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.



● **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: .

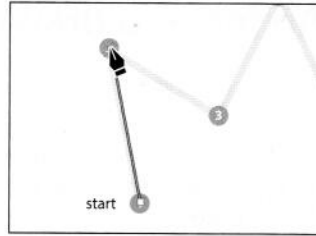
● **Note:** If the path looks curved, you have accidentally dragged with the Pen tool; choose Edit > Undo Pen and then click again without dragging.

► **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.

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

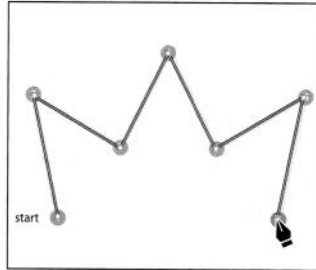
- 9 Move the pointer over the gray dot labeled 2. Click and release to create an anchor point.

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



- 10 Continue clicking points 3 through 7, releasing the mouse button after every 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.



- 11 Choose Select > Deselect.

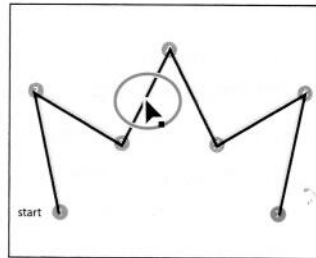
## Selecting paths

The type of anchor point you created in the previous section is called a *corner point*. Corner points are not smooth like a curve; instead, they create an angle at the anchor point. Now that you can create corner points, you will create smooth points, which generate curves for 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.

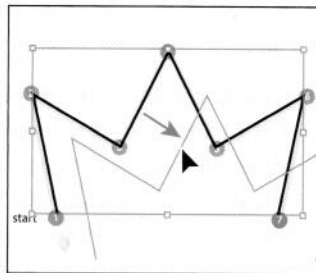
- 1 Select the Selection tool (▸) in the Tools panel, and move the pointer over a straight line in the path you just created. When the pointer shows a solid black box (▸) next to it, click.

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



- 2 Move 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, and release the mouse.

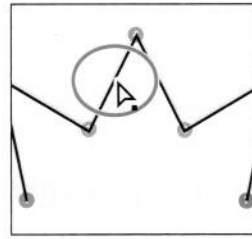
The anchor points all travel together, maintaining the shape of the path.



- 3 Choose Edit > Undo Move to move the path to its original position.
- 4 With the Selection tool selected, click an empty area of the artboard to deselect the path.

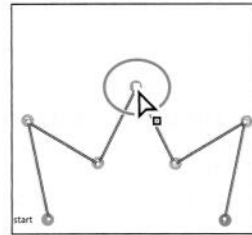
- 5 Select the Direct Selection tool (⬠) in the Tools panel. Move the pointer anywhere over the path between anchor points. When the pointer changes (⬠), click the path to reveal all of the anchor points.

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



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

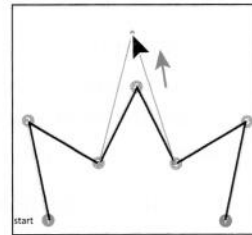
- 6 Move the pointer over the anchor point labeled 4; the anchor point will become a little larger than the others, and the pointer will show a small box with a dot in the center (⬠) next to it, as you see in the figure. Both of these indicate that if you click, you will select the anchor point. Click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



▶ **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.

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

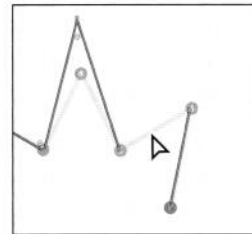
The anchor point moves, but the others remain stationary. This is one method for editing a path, as you saw in Lesson 2, "Techniques for Selecting Artwork."



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

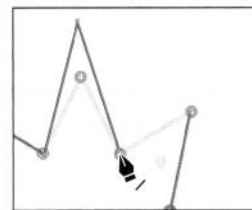
- 9 Move the Direct Selection pointer over the path between points 5 and 6. When the pointer changes (⬠), click to select. Choose Edit > Cut.

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

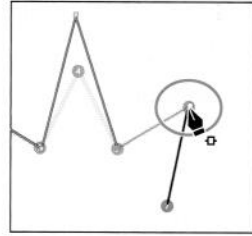


● **Note:** If the entire path disappears, choose Edit > Undo Cut, and try selecting the line segment again.

- 10 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.



- 11 Move 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, if you click, you are connecting to another path. Click the point to reconnect the paths.



- 12 Choose File > Save.

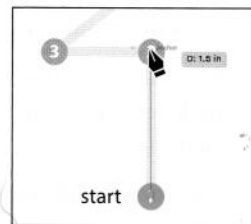
## Drawing straight lines with the Pen tool

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, allowing you to create straight paths with 45° angles. 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 (Q) in the Tools panel, and click in the bottom half of the artboard to zoom in.
- 3 Choose View > Smart Guides to turn on Smart Guides.
- 4 With the Pen tool (P) selected, in the area labeled "Work Area," click 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 approximately 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* Smart Guides.

With Smart Guides turned off, you'll need to press the Shift key to align points, which is what you'll do next.

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

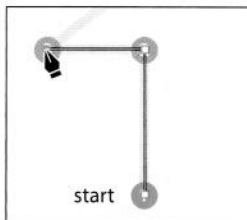
With Smart Guides turned off, there is no measurement label, and the point is only aligning with the previous point because you are holding down the Shift key.

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

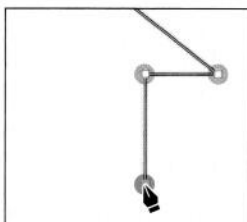
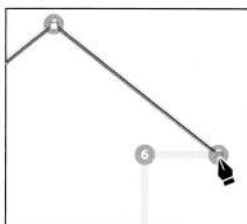
As you've already seen, without pressing the Shift key, you can set an anchor point anywhere. The path is not constrained to angles of 45°.

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

- 10 Choose Select > Deselect.



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



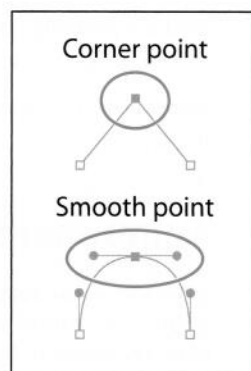
## Introducing curved paths

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, also known as 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*.

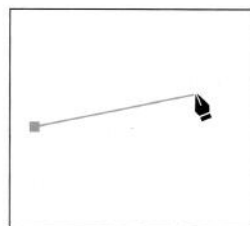
Drawing curves this way gives you some of the greatest control and flexibility in creating paths. However, mastering this technique does take some time. The goal for this exercise is not to create anything specific but to get accustomed to the feel of creating Bezier curves. First, you'll just get a feel for creating 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 (Q) in the Tools panel, and click twice in the bottom half of the artboard to zoom in.

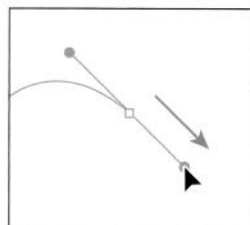




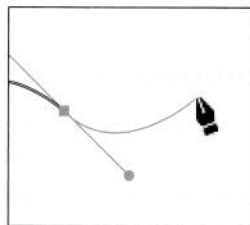
- Select the Pen tool (🖋) in the Tools panel. In the Properties panel, make sure that the fill color is None (☐), the stroke color is Black, and the stroke weight is still **1 pt**.
- With the Pen tool selected, click and release in a blank area of the artboard to create a starting anchor point. Move the pointer away.



- Press and drag to create a curved path. Release the mouse button.  
As you drag away from the point, direction handles appear. *Direction handles* are direction lines that have a round direction point at the end of each. The angle and length of direction handles determine the shape and size of the curve. Direction handles do not print.



- 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.
- Continue pressing and dragging in different areas to create a series of points.
- Choose Select > Deselect. Leave the file open for the next section.

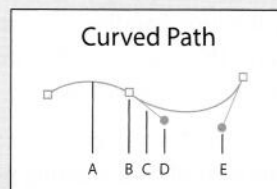


● **Note:** After pressing and dragging, unless otherwise told, release the mouse button when you're finished dragging.

## 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



- Line Segment
- Anchor Point
- Direction Line
- Direction Point
- Direction Handle (Direction Line and Direction Point)

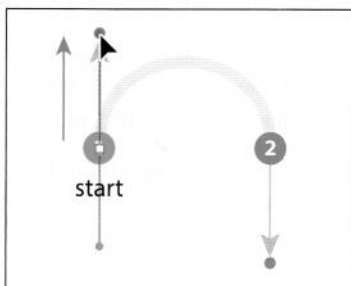
## Drawing a curve with the Pen tool

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, press and drag from the point labeled 1, up to the red dot, and then release the mouse button.

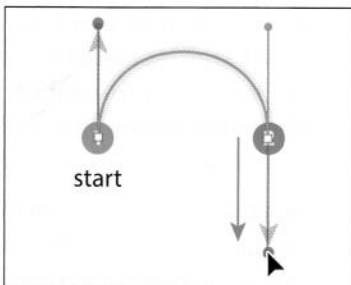
This creates a direction line going in the same general direction as the path (up). Up to this point, you've started your paths by simply clicking to create an anchor point, not dragging, like you did in this step. To create a more "curved" path, dragging out direction lines on the very first anchor 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 Press and drag from point 2 down. Release the mouse button when the pointer reaches the red dot. 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 new path connects to the last point you drew.

► **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

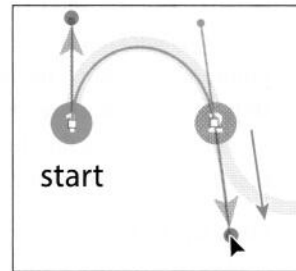
Now that you've experimented with drawing a curve, you will draw a shape that contains several continuous curves.

- 1 Choose 4 from the Artboard Navigation menu in the lower-left corner of the Document window. Select the Zoom tool (Q), and click several times in the *top* half of the artboard to zoom in.
- 2 Select the Pen tool (P). 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 Press and drag up on point 1, labeled "start," in the direction of the arc, stopping at the red dot.

● **Note:** Don't worry if the path you draw is not exact. You can correct the line with the Direct Selection tool (A) 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.

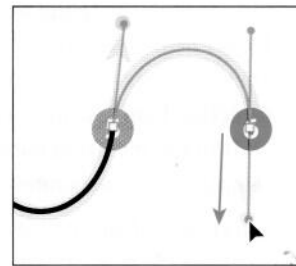
- 4 Move the pointer over the point labeled 2 (to the right), and drag down to the red dot, adjusting the first arc (between points 1 and 2) with the direction handle before you release the mouse button.



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 trailing direction line controls the shape of the segment behind the anchor point.

- 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. If your direction lines don't match the figures, that's okay.



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

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 there.

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

● **Note:** For more information about these attributes, see Lesson 7, "Using Color to Enhance Signage."

## 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 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 (Q), and click several times in the top part of the artboard to zoom in.
- 3 Select the Pen tool (P). 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 Pressing the Shift key, press 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.

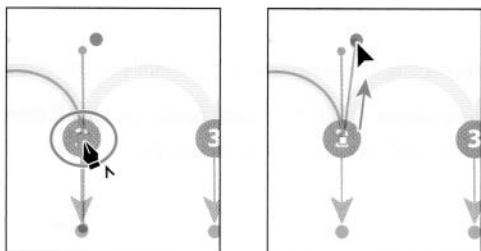
Pressing the Shift key when dragging constrains the direction handles to multiples of 45°.

- 5 From point 2 (to the right), press 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.

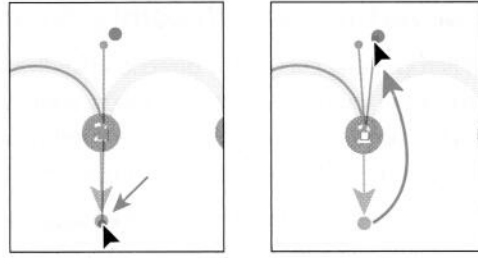
- 6 Press the Option (macOS) or Alt (Windows) key, and position the pointer over the last *anchor point* you created. When a convert-point icon (^) appears next to the Pen tool pointer (P), press and drag a direction line up to the red dot above. Release the mouse button and then release the modifier 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.

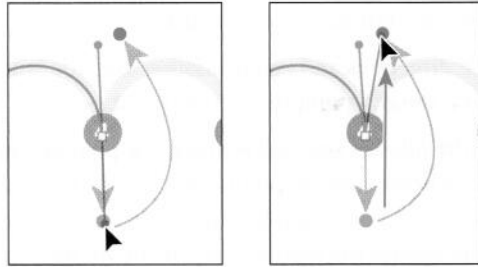
You can also Option-drag (macOS) or Alt-drag (Windows) the end of the direction handle (called the *direction point*). An arrow is pointing to it in the first part of the figure. Either method “splits” the direction handles so they can go in different directions.



- 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 (⌘), press 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, press 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.



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

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

## Combining curves and straight lines

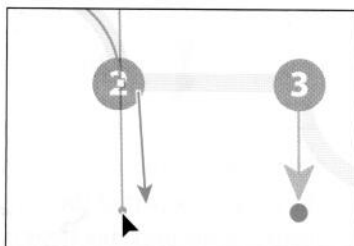
When you're drawing your own artwork with the Pen tool, you'll need to transition easily between curves and straight lines. In this next section, you'll learn how to go from curves to straight lines and from straight lines to curves.

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

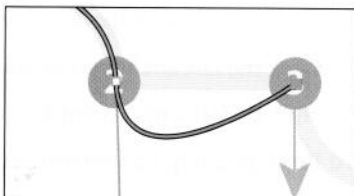
Up to this point, you've been dragging to a gold or red dot in the templates. In the real world those obviously won't be there, so for the next point you will drag to create a point without much guidance. Don't worry, you can always choose Edit > Undo Pen and try again!

- 3 Press 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.

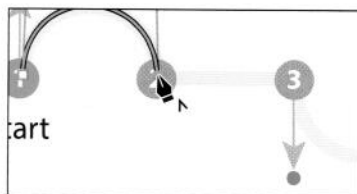
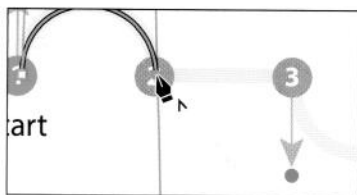


If you were to click point 3, even pressing the Shift key (to produce a straight line), the path would be curved (don't do either). The last point you created is a smooth anchor point and has a leading direction handle. The figure to the right shows what the path would look like if you clicked with the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

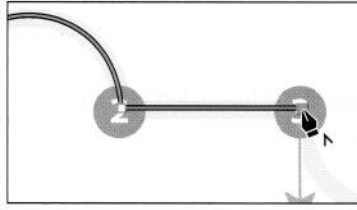


You will now continue the path as a straight line by removing the leading direction handle.

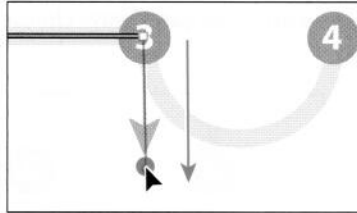
- 4 Move the pointer over the last point created (point 2). When the convert-point icon appears (C), click. This deletes the *leading* direction handle from the anchor point (not the trailing direction handle), as shown in the second part of the following figure.



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



- 6 For the next arc, move the pointer over the last point created. When the convert-point icon appears (⌘), press 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 For the next point (point 4), press 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 Press and drag up from the last point created to create a direction line.
- 11 Press 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.

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

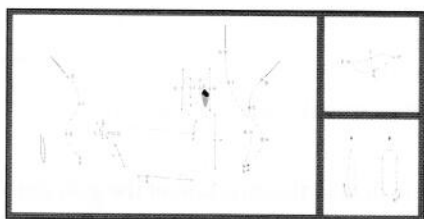
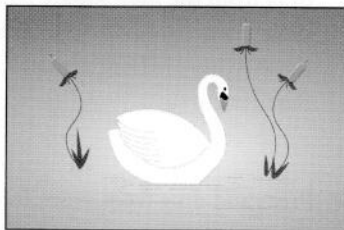
Remember, you can always go back and work on those Pen tool templates in the L6\_practice.ai file as many times as you need. Take it as slow as you need and *practice, practice, practice.*

## Creating artwork with the Pen tool

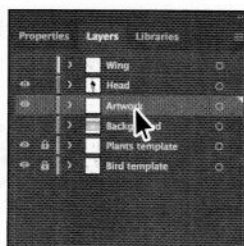
Next, you'll take what you've learned and create some artwork to be used in your project. To start, you'll draw a swan, which combines curves and corners. Just take your time as you practice with this shape, and use the template guides provided to assist you.

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

- 1 Choose File > Open, and open the L6\_end.ai file in the Lessons > Lesson06 folder to see the final artwork.
- 2 Choose View > Fit All In Window to see the finished artwork. If you don't want to leave the artwork open, choose File > Close.
- 3 Choose File > Open, and open the L6\_start.ai file in the Lessons > Lesson06 folder to open the file you'll be working in.



- 4 Choose File > Save As, name the file **Swan.ai**, and select the Lesson06 folder in the Save As dialog box. Leave Adobe Illustrator (ai) chosen from the Format menu (macOS) or Adobe Illustrator (\*.AI) chosen 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.
- 5 Choose 1 Main from the Artboard Navigation menu in the lower-left corner of the Document window, if it's not already chosen.
- 6 Choose View > Fit Artboard In Window to ensure that you see the entire artboard.
- 7 Press Command and + (macOS) or Ctrl and + (Windows) once or twice to zoom in to the swan in the center.
- 8 Open the Layers panel (Window > Layers), and click to select the layer named "Artwork."
- 9 Select the Pen tool (P) in the Tools panel.
- 10 In the Properties panel (Window > Properties), make sure that the fill color is None (None) the stroke color is Black, and the stroke weight is 1 pt.



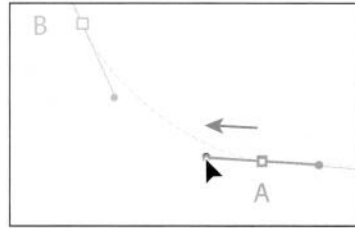


## Drawing the swan

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

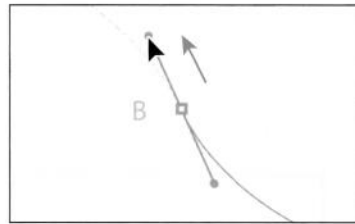
● **Note:** You do not have to start at the blue square (point A) to draw this shape. You can set anchor points for a path with the Pen tool in a clockwise or counterclockwise direction.

- 1 With the Pen tool (🖋️) selected, press and drag from the blue square labeled "A" on the swan body template, to the red dot to set the starting anchor point and direction of the first curve.



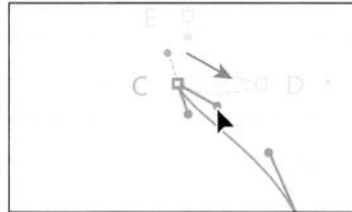
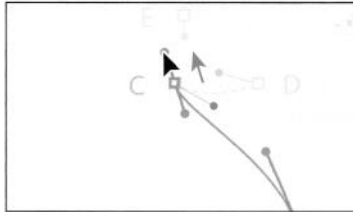
- 2 Press and drag from point B to the red dot to create the first curve.

Remember to pay attention to how the path looks as you drag the direction handle. It's easier when dragging to color dots on a template, but when you're creating your own content, you'll need to be aware of the path you are creating! Next, you'll create a smooth point and split the direction handles.

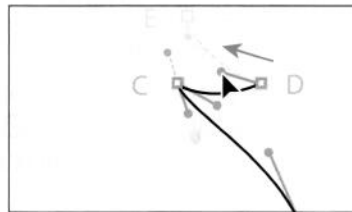
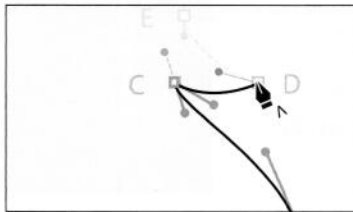


● **Note:** To make it easier to focus on the current point you are creating, the figures show the other anchor points and artwork as dimmed.

- 3 Move the pointer over point C. Press and drag in the direction of 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. Release the mouse button and then the key. The next part of the path can now go in a different direction.

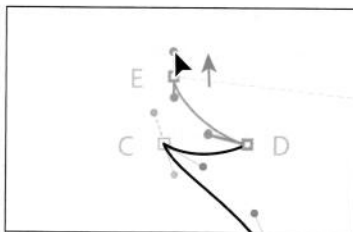


- 4 Move the pointer over point D. Click and release to add a point.
- 5 To make the next path a curve, move the pointer over the anchor point you just created at point D—press and drag to the red dot to add a direction handle.

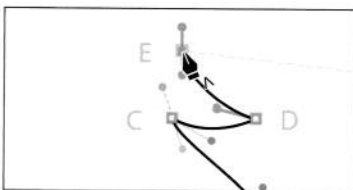


- 6 Move the pointer over point E. Press and drag to the red dot.

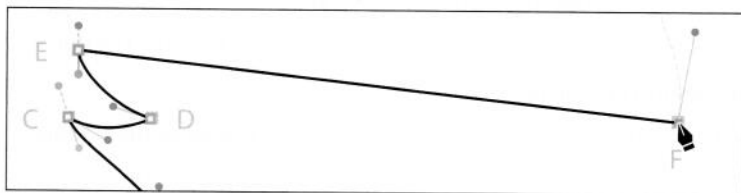
The next part of the path needs to be straight, so the direction handle on point E will need to be removed.



- 7 Move the Pen tool pointer over point E again. When the convert-point icon appears (◻) next to the pointer, click point E to remove the leading direction handle.



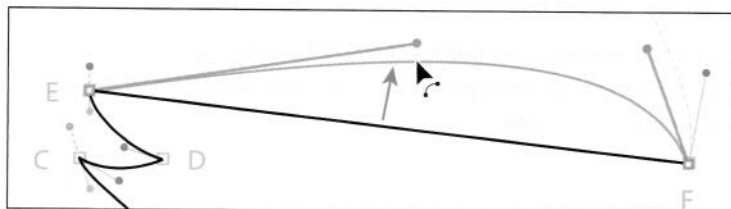
- 8 Click and release on point F to make a straight line.



As you draw with the Pen tool, you may want to edit part of a path you previously drew. Pressing a modifier key with the Pen tool selected, you can move the pointer over a previous path segment and drag to modify it, which is what you'll do next.

- 9 Move the pointer over the path between points E and F. Press the Option (macOS) or Alt (Windows) key. The pointer changes appearance (◻). Drag the path up to make it curved, like you see in the figure. Release the mouse button and then the key. This adds direction handles to the anchor points at both ends of the line segment.

After releasing the mouse button, notice that as you move the pointer, you can see the Pen tool rubber banding, which means you are still drawing the path.

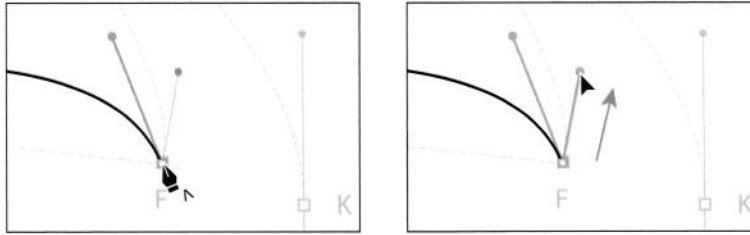


► **Tip:** You can also press the Option+Shift (macOS) or Alt+Shift (Windows) keys to constrain the handles to a perpendicular direction, which ensures that the handles are the same length.

The path that continues from point F needs to be curved, so you'll need to add a leading direction handle to the point at F.

● **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.

- 10 With the Pen tool pointer over point F, press and drag up to the red dot to create a new direction handle.

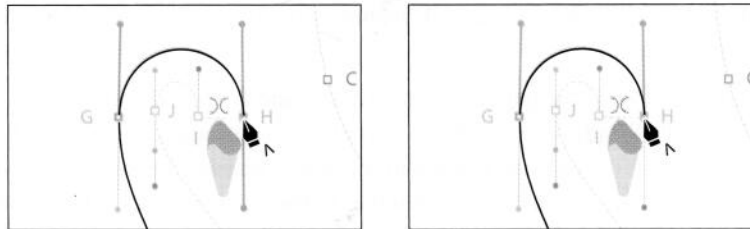


This creates a new leading direction handle and sets up the next path to be a curve. You're about halfway there and doing great!

- 11 Continue drawing by dragging from the anchor point at G to the red dot.  
12 Drag from point H to the red dot.

The next part of the path needs to be straight, so you'll remove the leading direction handle.

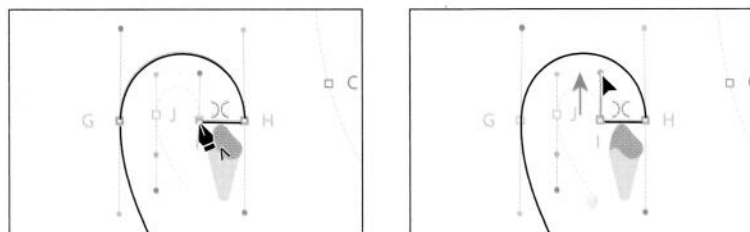
- 13 Move the pointer back over point H. When the convert-point icon (⌘) next to the pointer, click to remove the direction handle.



- 14 Click point I to create a new anchor point.

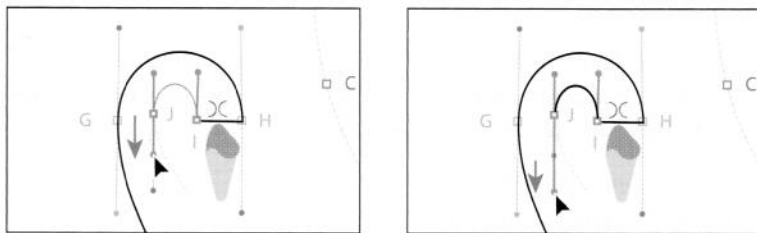
The next part of the path needs to be curved, so you will need to add a leading direction handle to point I.

- 15 Move the Pen tool pointer over point I again. When the convert-point icon appears (⌘) next to the pointer, press and drag from point I up to the red dot to add a leading direction handle.



● **Note:** Once again, to make it easier to focus on the current point you are creating, the figures show the other anchor points and artwork as dimmed.

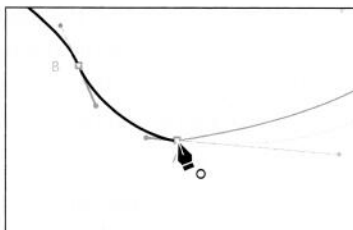
- 16 Continue drawing the point at J by dragging from the anchor point to the gold dot. Release the mouse button.
- 17 Press Option (macOS) or Alt (Windows), and when the pointer changes (N), drag the end of the direction handle down to the red dot from the gold dot.



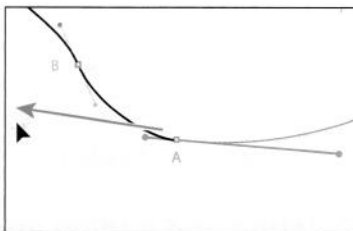
- 18 Press and drag from the anchor point labeled “K” to the red dot. Next, you’ll complete the drawing of the swan by closing the path.

- 19 Move the Pen tool pointer over point A *without clicking*.

Notice that an open circle appears next to the Pen tool pointer (O), 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.



- 20 Press the Option (macOS) or Alt (Windows) key with the pointer still over point A. Click and drag left and a little up. 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.



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


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.


- 21 Click the Properties panel tab. Click the Fill color and select a white. Click the Stroke color and select the light brown swatch named “swan.”
- 22 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.

## Editing paths and points

Next, you'll edit a few of the paths and points for the swan you just created.

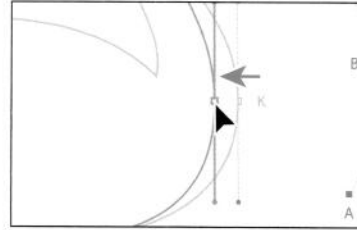
- 1 Select the Direct Selection tool () , and click the swan path to see the anchor points on the path.


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.

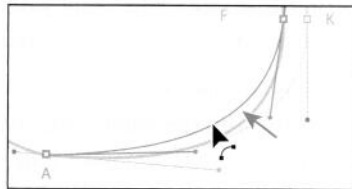
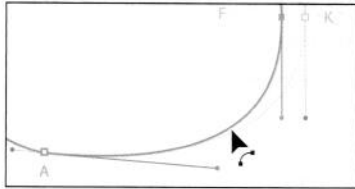
► **Tip:** As you are dragging a path with the Direct Selection tool, you can also press the Shift key to constrain the handles to a perpendicular direction, which ensures that the handles are the same length.

► **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**.

- 2 Click the anchor point labeled K to select it. Drag the anchor point to the left just a bit so it roughly matches the figure.





- 3 Move the pointer over the part of the path between points A and K (at the bottom of the swan). 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.
- 4 Drag the path up and to the left a little to change the curve of the path. This is an easy way to make edits to a curved path without having to edit the direction handles for each anchor point.

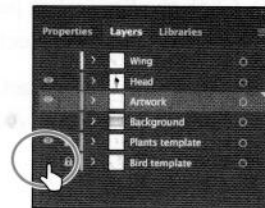


- 5 Choose **Select > Deselect** and then choose **File > Save**.

## Deleting and adding anchor points

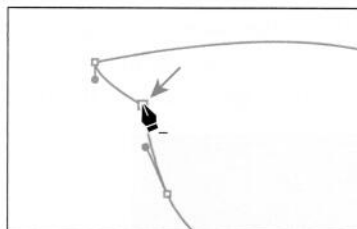
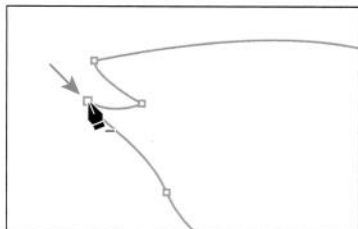
Most of the time, the goal of drawing paths with a tool like the Pen tool or Curvature tool is to avoid adding more anchor points than necessary. You can reduce a path's complexity or change its overall shape by deleting unnecessary points (and therefore gain more control over the shape), or you can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

- 1 Open the Layers panel (**Window > Layers**). In the Layers panel, click the eye icon () for the layer named "Bird template" to hide the layer contents.
- 2 With the Direct Selection tool () selected, click the swan path to select it.



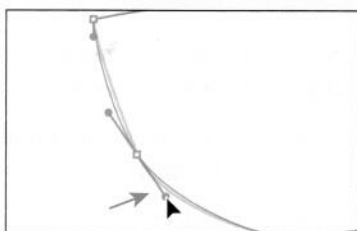
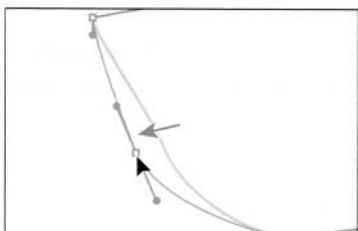
To start, you'll delete a few points in the tail to simplify the path.

- 3 Select the Pen tool (P) in the Tools panel, and move the pointer over the anchor point you see in the first part of the following figure. When a minus sign (-) appears to the right of the Pen tool pointer (P-), click to remove the anchor point. You may need to zoom in.
- 4 Move the pointer over the anchor point in the second part of the following figure. When a minus sign (-) appears to the right of the Pen tool pointer (P-), click to remove the anchor point.

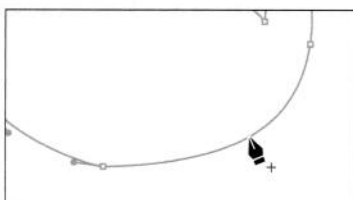


Next, you'll reshape the remaining path to make it look better.

- 5 Press Command (macOS) or Ctrl (Windows) to temporarily select the Direct Selection tool. Now you can move anchor points and edit the direction handles for those selected anchors.
- 6 With the key held down, move the pointer over the anchor point shown in the following figure. When the pointer shows a box next to it (P), drag the new anchor point away from the center of the swan.
- 7 With the Command (macOS) or Ctrl (Windows) key still held down, drag one of the direction handles for the selected anchor to reshape the path.



- 8 Move the pointer over the path to the right of the anchor point that was labeled "A." When a plus sign (+) appears to the right of the Pen tool pointer (P+), click to add an anchor point.



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

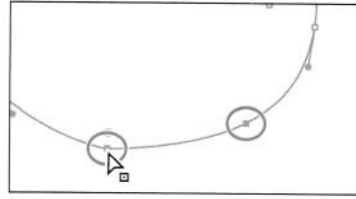
● **Note:** It can be tricky to drag the end of a direction line. If you wind up missing and deselecting the path, with the modifier key still held down, click the path and then click the anchor point to see the direction handles and try again.

## Converting between smooth points and corner points

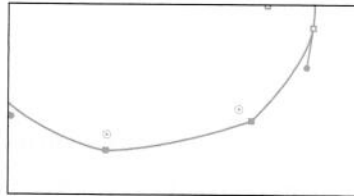
To more precisely control the path you create, you can convert points from smooth points to corner points and from corner points to smooth points, using several methods.

► **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, as you'll see later.

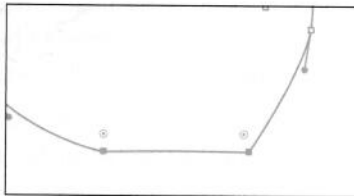
- 1 Select the Direct Selection tool (⬮). With the last point still selected, Shift-click the anchor point to the left (formerly labeled "A") to select both.



- 2 In the Properties panel to the right, click the Convert Selected Anchor Points To Corner button (⬮) to convert the anchor points to corners.



- 3 Click the Vertical Align Bottom button (⬮) in the Properties panel to align the point you first selected to the second point you selected.



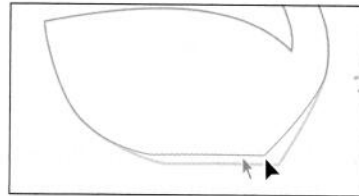
As you saw in Lesson 2, "Techniques for Selecting Artwork," selected anchor points align to the last selected anchor point, which is known as the *key anchor*.

- 4 Drag one of the anchor points up a little to move both selected points.

- 5 Choose Select > Deselect.

Now that's a nice looking swan! Congrats!

- 6 Choose File > Save.



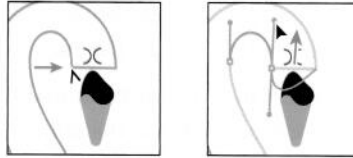
## Working with the Anchor Point tool

Another way to convert anchor points between smooth and corner points is using the Anchor Point tool (⌘). You'll do that next.

- 1 Press and hold on the Pen tool (✎) in the Tools panel to reveal more tools. Select the Anchor Point tool (⌘).

The Anchor point tool is used to either remove both or one of the direction handles from an anchor point, converting it to a corner point or dragging out direction handles from an anchor point.

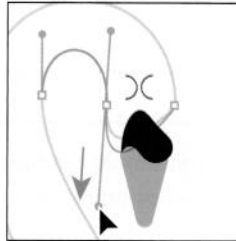
- 2 Move the pointer over the point in the swan's head (an arrow is pointing to it in the figure). When the pointer looks like this: ⌘, press and drag *up* from the corner point to drag the direction handles out.



Drag until the neck looks similar to how it did before you started dragging.

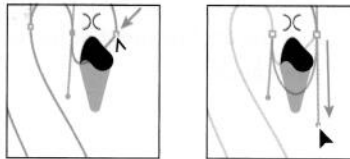
Depending on which direction you drew the path in, dragging in one direction may reverse the direction handles.

- 3 Select the Direct Selection tool and drag the end of the bottom direction handle down to make it longer and to give the path more curve.



The direction handles for an anchor point are split when you create them with the Anchor Point tool. The Direct Selection tool allows you to change both direction handles at once.

- 4 Select the Anchor Point tool (⌘). Move the pointer over the anchor point to the right of the anchor point you just edited. Press and drag down when the pointer looks like this: ⌘. Make sure the top of the swan's head looks similar to the way it did.



- 5 Select the Direct Selection tool, and drag the end of the bottom direction handle up to make it shorter and less curvy.



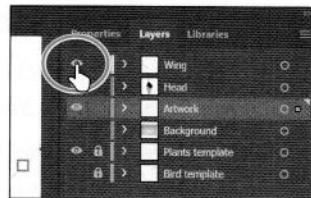
With the Anchor Point tool, you can perform tasks such as converting between smooth and corner points, splitting direction handles, and more. Next, you'll convert an anchor point from a smooth point (with direction handles) to a corner point.

● **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.

▶ **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).

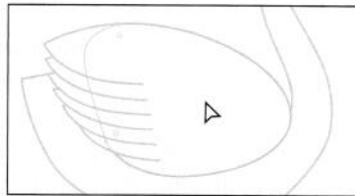


- 6 Open the Layers panel (Window > Layers). In the Layers panel, click the visibility column for the layer named "Wing" to show that layer's contents.

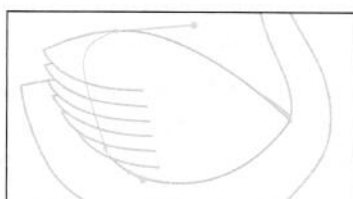
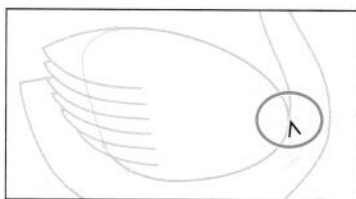


You should now see the wing of the swan on top of the swan shape you drew. It's made up of a series of simple paths that are overlapping each other. You need to make the right edge a corner point, not a smooth point.

- 7 Select the Direct Selection tool in the Tools panel. Click the larger wing shape to select it and see the anchor points.



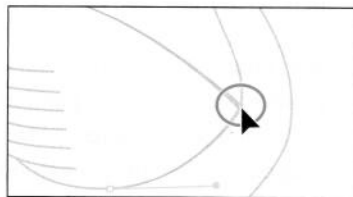
- 8 Select the Anchor Point tool (N) in the Tools panel. Move the pointer over the point circled in the first part of the following figure. Click to convert the point from a smooth point (with direction handles) to a corner point.



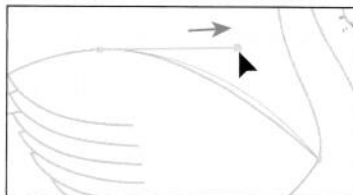
You should see the direction handles for the anchor points on either side of the anchor point you just edited.

● **Note:** You may find you need to drag the anchor point up a little higher to cover the back of the swan.

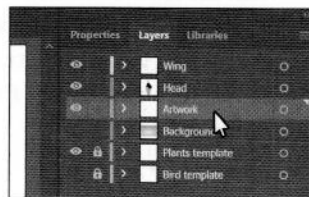
- 9 Select the Direct Selection tool, and drag the anchor point you converted. Snap it to the anchor point at the base of the swan neck.




- 10 Move the pointer over the end of the direction handle coming from the top anchor point, and drag to change the shape of the path.




- 11 Choose Select > Deselect.
- 12 Open the Layers panel (Window > Layers) and click the Artwork layer to select it and ensure new artwork goes on that layer.
- 13 Choose View > Fit Artboard In Window.



# Working with the Curvature tool

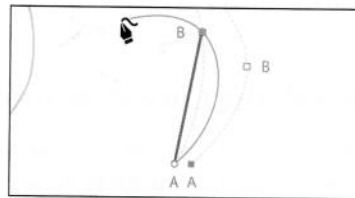
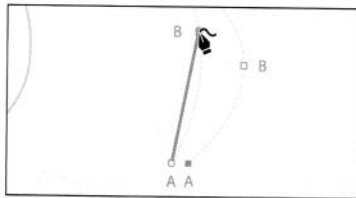
With the Curvature tool () , you can draw and edit paths quickly and visually to create paths with smooth refined curves and straight lines, without editing direction lines. Using the Curvature tool, you can also edit paths while drawing or after the path is complete. The paths it creates are composed 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 the final parts for the swan artwork.

- 1 Select the Curvature tool () in the Tools panel.
- 2 Click the Fill color in the Properties panel, and select the None () color to remove it. Click the Stroke color, and select the green swatch named "Plant green." Change Stroke Weight to 3 pt.

- 3 Click the purple square at point A, to the right of the swan, to set the starting anchor point and release the mouse button.
- 4 Click the purple point B to create a point. After clicking, release the mouse button, and move the pointer away from the point.

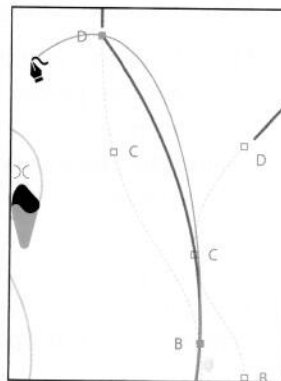


● **Note:** Similar to the Pen tool, you don't have to start at point A to draw this shape. You can set anchor points with the Curvature tool in a clockwise or counterclockwise direction.



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 Skip point C and, instead, click point D and then release the mouse button. Move the pointer away from point D, and notice that you could continue drawing.

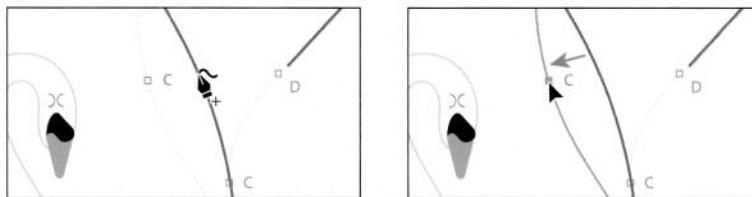


● **Note:** Each point you create with the Curvature tool can have three appearances, indicating their current state: selected (●), corner point (not selected [○]), and smooth point (not selected [○]).

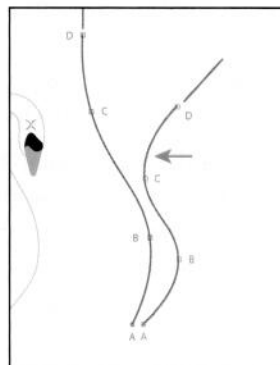
► **Tip:** To close a path with the Curvature tool, hover the pointer over the first point you created in the path. When a circle appears next to the pointer (⦿), click to close the path.

● **Note:** The figure at right shows the plant paths to the right of the swan.

- 6 Move the pointer over the path between points B and D. When a plus sign (+) appears next to the pointer, click to create a new point.
- 7 Drag the new point to point C in the template, repositioning the path to match the shape of the dotted template.



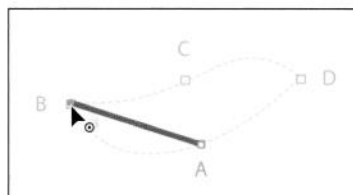
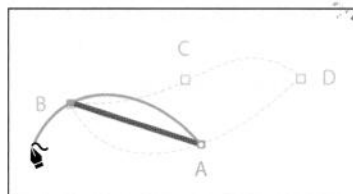
- 8 Press the Escape key to stop drawing and then choose Select > Deselect.
- 9 Draw the plant path to the right, starting with the green point A.
- 10 Press the Escape key to stop drawing and then choose Select > Deselect.
- 11 Draw the plant path to the far left, starting with the orange point A.
- 12 Press the Escape key to stop drawing.



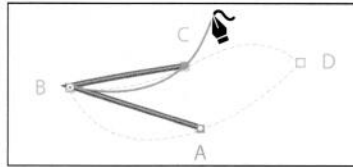
## Editing with the Curvature tool

The Curvature tool can be used to create new paths as well as edit any type of path you create with drawing tools. Now you'll create and edit a leaf using the Curvature tool.

- 1 Choose 2 Leaf from the Artboard navigation menu in the lower-left corner of the Document window.
- 2 With the Curvature tool (⌘) selected, click where you see the blue point labeled "A" to set the first point.
- 3 Move the pointer over point B, and click. Move the pointer away after releasing the mouse button and you will see that the path is curved. Point B needs to be a corner.
- 4 Move the pointer over point B. When the pointer changes (⦿), double-click to convert it to a corner point.

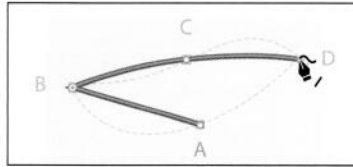


- Click point C, and move the pointer away to see the curved path.

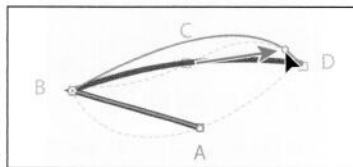


Point D needs to be a corner point. You can also press a key while creating it to make it a corner point.

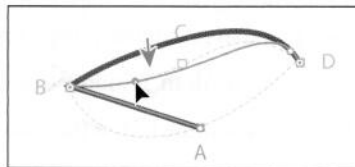
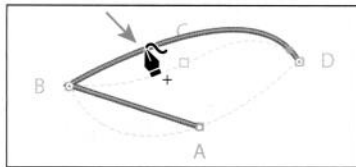
- Press Option (macOS) or Alt (Windows) and the pointer will change. Move the pointer over point D, and click to create a new anchor point. Release the key after clicking.



- Drag point C up and to the right, so that the path matches the dashed template path closer to point D.

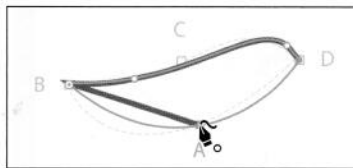


- Move the pointer over the path between points B and C, and click to add a new anchor point. Drag it until the top right portion matches the top right portion of the template path.



- Move the pointer back over the first point, point A, and, when you see the pointer change again, click to close the path.

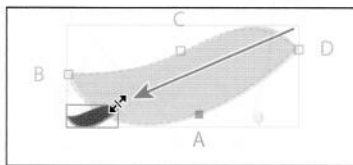
You may want to drag the anchor points with the Curvature tool to more closely match the template path.



## Finishing the leaves

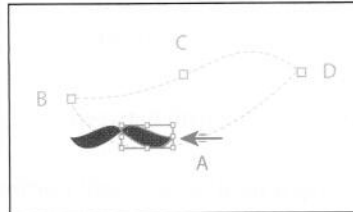
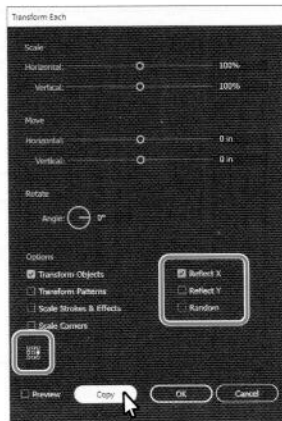
Now you'll change the color of the leaf, transform it, and move it into position.

- Select the Selection tool in the Tools panel. With the leaf shape selected, click the Fill color in the Properties panel, and select the green swatch named Plant green.
- Press the Shift key, and drag a corner to make the leaf *much smaller*. Release the mouse button and then the key. Use the figure as a guide.

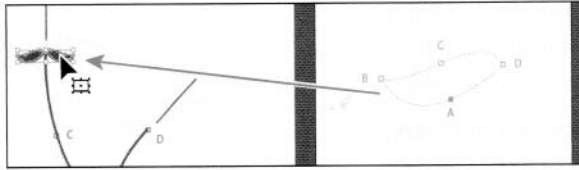


Now you'll make a copy of the shape and reflect it.

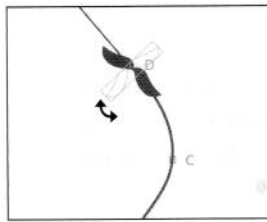
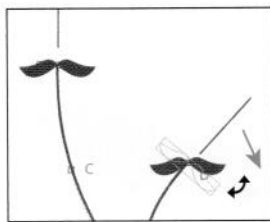
- 3 With the leaf selected, choose Object > Transform > Transform Each. In the Transform Each dialog box, select Reflect X to reflect the shape around the x axis, click the right-middle point in the reference point indicator (■), and click Copy.



- 4 Drag across the 2 green leaf shapes, and click the Group button in the Properties panel to group them together.
- 5 Choose View > Fit All In Window to see everything.
- 6 Drag the leaves onto the top of the plant path you drew, just to the right of the swan.



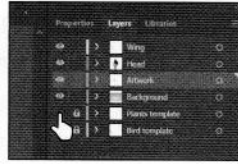
- 7 Press Option (macOS) or Alt (Windows), and drag a copy onto the plant path to the right. Release the mouse button and then the key.
- 8 Move the pointer off a corner of the bounding box. When a rotate arrow appears, drag to rotate the leaf group.
- 9 Repeat steps 7 and 8 for the plant path to the left of the swan.



# Creating a dashed line

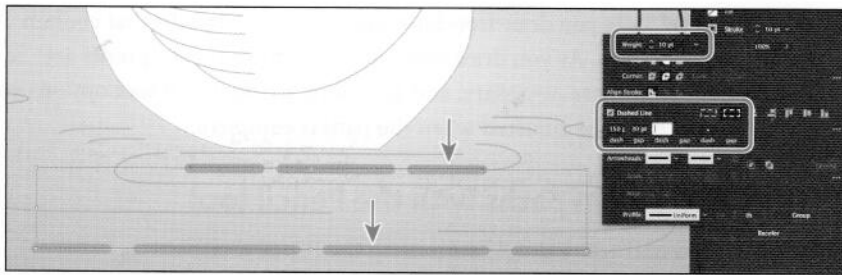
Dashed lines apply to the stroke of an object and can be added to a closed path or an open path. Dashes are created by specifying a sequence of dash lengths and the gaps between them. Next, you will add a dash to lines.

- 1 In the Layers panel, click the visibility column for the layer named "Background" to show the layer contents, and click the eye icon (👁) for the Plants template layer to hide it.
- 2 Select the Zoom tool (Q), and drag across the paths near the bottom of the artboard with the swan on it.
- 3 With the Selection tool (V) selected, click one of the paths you see in the following figure. Press the Shift key, and select the second path. Arrows are pointing to both.
- 4 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: **10 pt**
  - Dashed Line: **Selected**
  - First Dash value: **150 pt** (This creates a 150-pt dash, 150-pt gap pattern.)
  - First Gap value: **30 pt** (This creates a 150-pt dash, 30-pt gap pattern.)
  - Aligns Dashes To Corners And Path Ends (☑): Selected



● **Note:** The paths you will select are not dashed, like you see in the following figure.

▶ **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.



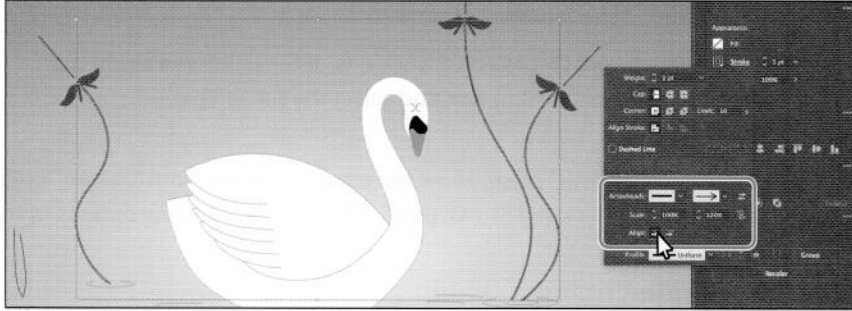
● **Note:** Be careful about pressing the Escape key when you change a value in a panel, like you just did. Sometimes the value may not be accepted. You can press Enter or Return to both accept the last value, in a panel and hide the panel.

- 5 Change Stroke Weight to **1**, and press the Escape key to hide the Stroke panel.
- 6 Choose Select > Deselect, and choose File > Save.

## Adding arrowheads to paths

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 arrowheads to the three paths that make up the plants in the background.

- 1 Choose View > Fit Aboard In Window.
- 2 Click to select the plant path to the left of the swan. Press the Shift key, and click the two plant paths to the right of the swan.
- 3 With the paths selected, click the word “Stroke” in the Properties panel to open the Stroke panel. In the Stroke panel, change only the following options:
  - Choose Arrow 13 from the Arrowheads menu on the right. This adds an arrowhead to the end (top) of the line.
  - Scale (*directly beneath where you chose Arrow 13*): 120%
  - Click the Extend Arrow Tip Beyond End Of Path button (☐).



● **Note:** If you need to move the leaves you previously created, you can use the Selection tool.

- 4 Choose Select > Deselect.

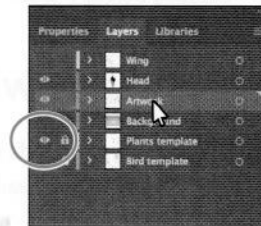
## Working with the Pencil tool

The Pencil tool (🖋) lets you draw free-form 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 free-form paths with the Pencil tool

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

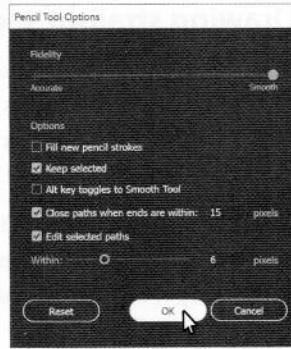
- 1 Choose 3 Plant from the Artboard navigation menu in the lower-left corner of the Document window.
- 2 In the Layers panel, click the visibility column for the layer named “Plants template” to show the layer contents. Click the Artwork layer to select it and ensure new artwork goes on that layer.
- 3 Select the Pencil tool (🖋) from the Paintbrush tool group in the Tools panel.



► **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.

4 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 all the way to the Smooth setting. 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)
- Close Paths When Ends Are Within: **Selected** (the default setting)

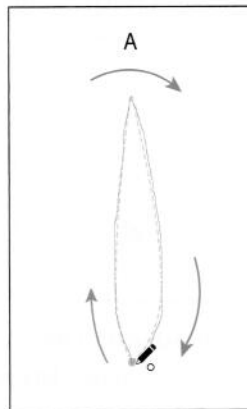


5 Click OK.

6 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 1 pt in the Properties panel.

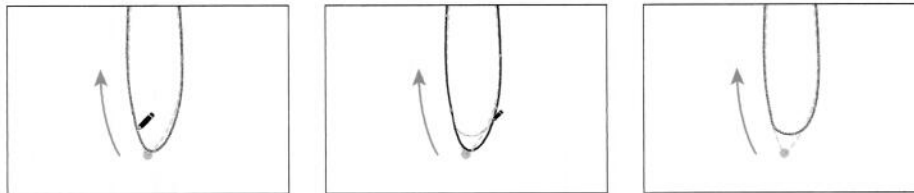
The asterisk (\*) that appears next to the Pencil tool pointer indicates that you are about to create a new path.

7 Starting at the red dot at the bottom of the template labeled “A,” press and drag around the dashed template path in the direction of the arrow. Draw, following the dotted path on the template. When the pointer gets close to where you started the path (the red dot), a small circle displays next to it (⦿). This means that if you release the mouse button, the path will be closed. 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. Next, you'll redraw a part of the path with the Pencil tool.

8 Move the pointer on or near the path to redraw it. When the asterisk next to the pointer disappears, press and drag to reshape the path, making the bottom a little shorter. Make sure you wind up back on the original path.



9 With the path selected, change the fill color to Plant green in the Properties panel and the stroke weight to 0.

● **Note:** If the pointer looks like X instead of the Pencil icon (✎), 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).

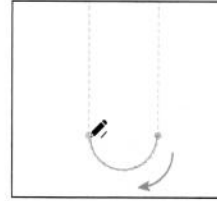
► **Tip:** If you wanted to “smooth” parts of the path you drew, you could press Option (macOS) or Alt (Windows) and drag along the path. This simplifies the path by removing anchor points. This is possible because you selected Option Key (Alt Key on Windows) Toggles To Smooth Tool in the Pencil Tool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



## Drawing straight segments with the Pencil tool

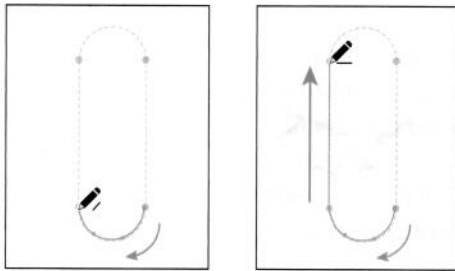
In addition to drawing more free-form paths, you can create straight lines that can be constrained to 45° angles with the Pencil tool. Note that the shape you will draw could be created with a rounded rectangle, but since this is part of a plant, we want it to look more hand-drawn.

- 1 Move the pointer over the red dot at the bottom of the path labeled "B." Press and drag around the bottom of the shape, and release the mouse button when you get to the blue dot.



The next part of the path you draw will be straight. As you draw with the Pencil tool, you can easily continue paths you draw.

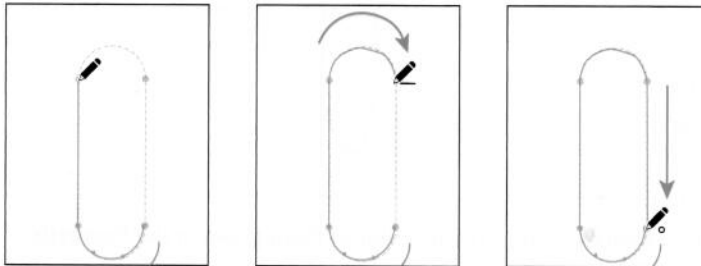
- 2 Move the pointer over the end of the path you drew. When a line appears next to the Pencil tool pointer (↗), indicating that you can continue drawing the path, press Option (macOS) or Alt (Windows), and drag up to the orange dot. When you reach the orange dot, release the key but *not the mouse*.



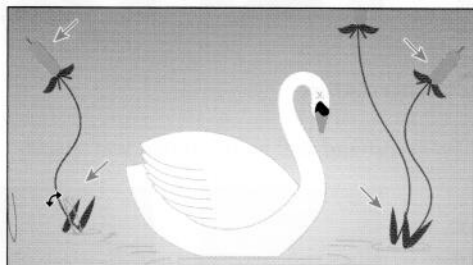
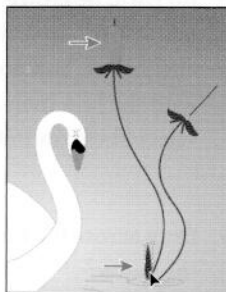
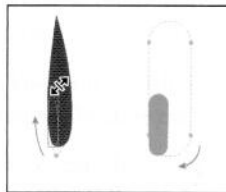
Pressing the Option (macOS) or Alt (Windows) key when you're drawing with the Pencil tool lets you create a straight path in any direction.

► **Tip:** You can also press the Shift key when drawing with the Pencil tool and drag to create a straight line that is constrained to 45 degrees.


- 3 With the mouse button still held down, continue drawing around the top of the template path. When you reach the purple dot, keep the mouse button held down, and press the Option (macOS) or Alt (Windows) key. Continue drawing down until you reach the start of the path at the red dot. When a small circle displays next to the Pencil tool pointer (⦿), release the mouse button and then the modifier key to close the path.




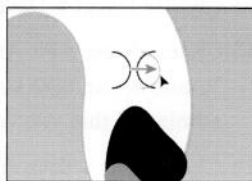
- 4 With the path selected, change the fill color to the orange swatch named "Cattail" in the Properties panel and the stroke weight to 0.
- 5 Select the Selection tool, and Shift-drag the corner to make it about half its current size. Release the mouse button and then the key. Do the same for the green leaf shape.
- 6 Choose View > Fit All In Window to see everything.
- 7 Drag the shapes onto the swan artwork like you see in the figure.
- 8 For each of the shapes, make a series of copies by Option-dragging (macOS) or Alt-dragging (Windows) copies to different parts of the artwork. Make sure you release the mouse button and then the key when dragging to make copies. See the following figure.
- 9 For each of the copies, select it, and then move the pointer off a corner of the bounding box. When a rotate arrow appears, drag to rotate it.



## Joining with the Join tool

In earlier lessons, you used the Join command (Object > Path > Join) to join and close paths. You can also join paths using the Join tool. With the Join tool () , you can also use scrubbing gestures to join paths that cross, overlap, or have open ends.

- 1 Choose View > Eye. This saved view command zooms in to the head shapes of the swan and also hides any template layers.
- 2 Select the Selection tool (). While pressing the Shift key, drag the shape you see in the figure to the right. When it overlaps the shape to the right, release the mouse button and then the key.
- 3 Choose Select > Deselect.

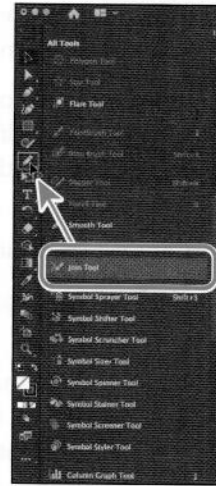


● **Note:** You may want to press the Escape key to hide the extra tools menu.

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

● **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.

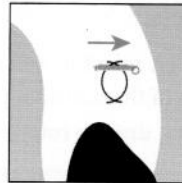
4 Click Edit Toolbar (☰) at the bottom of the Tools panel. Scroll in the menu that appears, and drag the Join tool (⌘) onto the Pencil tool (P) in the Tools panel on the left to add it to the list of tools.



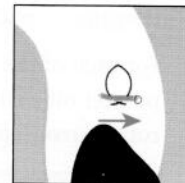
5 With the Join tool now selected, drag across the top two ends of the paths (see the following figure).

When dragging (also called *scrubbing*) across paths, they will be either “extended and joined” or “trimmed and joined.” In this example, the paths were trimmed and joined. You don’t have to select paths to join them with the Join tool. Also, the resulting joined paths aren’t selected to continue working on other paths.

6 Drag across the bottom two ends of the paths.



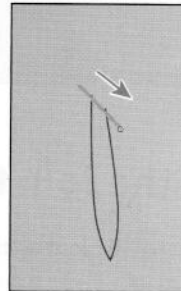
7 Select the Selection tool, and click to select the stroke of the new eye shape. Click the Fill color in the Properties panel, and select the black swatch.



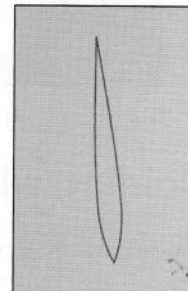
● **Note:** You may want to move the eye into a better position.

8 Choose View > Leaf. This saved view command will zoom in to a leaf shape.

9 With the Join tool selected, drag across the top two ends of the “U” shaped path (see the figure for which paths to drag across). The path ends are extended (continued) and joined.



10 Select the Selection tool, and click the path you just joined. Press Shift+X to swap the fill color (which was none) and the stroke color (green). The stroke color is now the fill color.

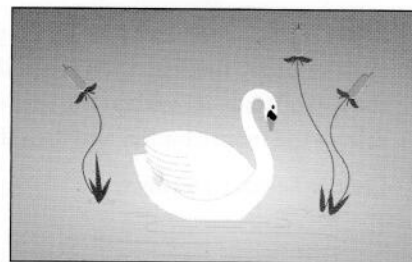


11 Drag the leaf over to the plant path to its right.

12 Choose Select > Deselect.

13 Choose View > Fit Artboard In Window, and take a step back to admire all that you’ve accomplished!

14 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)?