

Drawing with the Pencil tool

You can use the Pencil to draw open and closed paths as if you were drawing with a pencil on paper. It is most useful for fast sketching or creating a hand-drawn look. Once you draw a path, you can immediately change it if needed.

Anchor points are set down as you draw with the Pencil tool; you do not determine where they are positioned. However, you can adjust them once the path is complete. The number of anchor points set down is determined by the length and complexity of the path and by tolerance settings in the Pencil Tool Preferences dialog box. These settings control how sensitive the Pencil tool is to the movement of your mouse or graphics-tablet stylus.

When you use a drawing tool (in this case, the Pencil tool), the Control panel displays options for the currently selected tool (**Figure 2**).

- *Fill color:* The interior color of a shape. Select from a series of swatches.
- *Stroke color:* The outline of a shape. Select from a series of swatches.
- *Stroke weight:* Weight for the stroke, in points.
- *Variable Width Profile:* Choose a preset that modifies the width of a stroke and save it as a custom profile.
- *Brush Definition:* A wide selection of preset brushes. You can also create your own.
- *Opacity:* Transparency for painted lines, from 0% (invisible) to 100% (opaque).
- *Graphic Style panel:* A graphic style is a set of reusable appearance attributes, such as fill and stroke color, transparency, and special effects.
- *Recolor Artwork:* Quickly change the color of an object.
- *Align To Selection:* Align or distribute selected objects along the axis you specify.
- *Transform panel:* Displays information about the location, size, and orientation of one or more selected objects. Select the Scale Strokes And Effects option in the panel menu to ensure transformations maintain consistent scale.
- *Isolate Selected Object button:* Isolate the selected object from other objects in a workspace.
- *Select Similar Objects button:* Select objects with similar characteristics in a workspace.

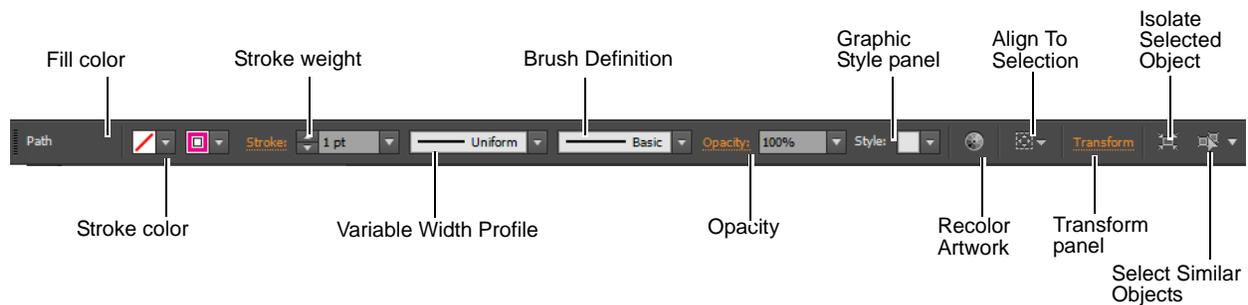


Figure 2 Control panel

In this section, you'll learn about creating freeform paths with the Pencil tool, using the three drawing modes to layer paths and objects, and modifying a stroke by using the Path Control panel.

To draw a freeform path with the Pencil tool:

1. Select the Pencil tool in the Tools panel (**Figure 3**).
2. Set the stroke color and thickness in the Control panel (**Figure 2**).
3. Position the tool where you want the path to begin, and drag to draw a path.

The Pencil tool displays a small asterisk to indicate you are drawing a freeform path (**Figure 4**).

As you drag, you create a line with connection points. You can drag these points later to change the shape of the line.

4. Release the mouse button to create the line (**Figure 5**).

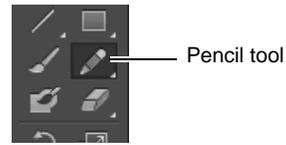


Figure 3 Tools panel



Figure 4 Drawing a line with Pencil tool

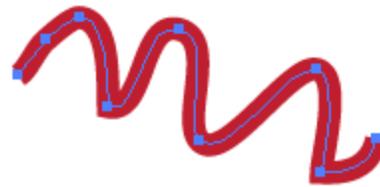


Figure 5 Line drawn with Pencil tool

Using drawing modes

Illustrator provides the following drawing modes: Draw Normal, Draw Behind, Draw Inside. You can select drawing modes from the Tools panel, below the Color Selector tool (**Figure 6**).

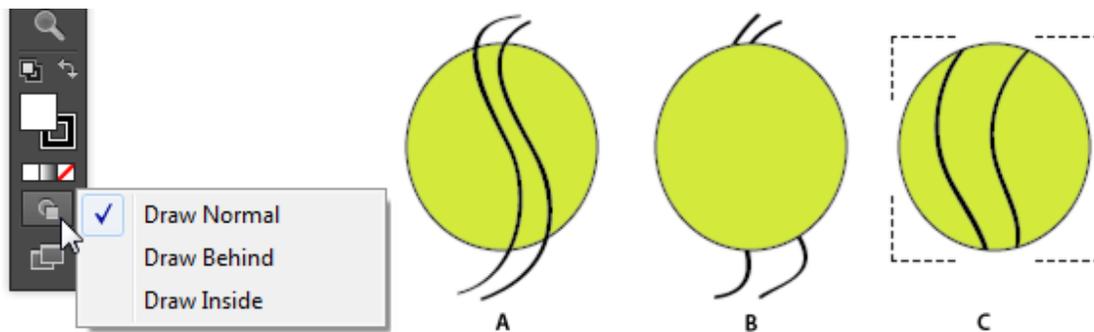


Figure 6 Draw Normal (A), Draw Behind (B), and Draw Inside (C)

The Draw Normal mode is the default drawing mode and allows you to draw on top of other paths and objects.

The Draw Behind 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.

The Draw Inside mode allows you to draw inside the selected object. The Draw Inside mode eliminates the need to perform multiple tasks such as drawing and altering stacking order or drawing, selecting, and creating a clipping mask. The Draw Inside mode is enabled only when there is a single selected object (path, compound path, or text).

How to use drawing modes:

1. To switch drawing modes, click the Drawing Modes panel in the Tools panel (**Figure 6**) and select the Draw Behind drawing mode.
2. Select the Pencil tool in the Tools panel.
3. Set a different stroke color and thickness in the Control panel from the previous steps.
4. Position the tool where you want the path to begin, and drag to draw a path that overlaps the strokes.

Observe how the line is drawn on a layer beneath the original layer (**Figure 7**).

5. Select a shape tool from the Tools panel, for example, the Ellipse tool.
6. Draw a shape on the canvas and set the stroke and fill properties in the Control panel.
7. Choose the Selection tool in the Tools panel and select the shape.

The Draw Inside mode is enabled only when there is a single selected object (path, compound path, or text).

8. Click the Drawing Modes panel in the Tools panel and select the Draw Inside drawing mode.

A dotted bounding box appears around the selected shape (**Figure 8**)

9. Select the Pencil tool in the Tools panel.
10. Set a different stroke color and thickness in the Control panel.
11. Drag to draw a path that overlaps the object and extends beyond its boundaries (**Figure 9**).

Observe how the finished line appears only inside the original shape (**Figure 10**).

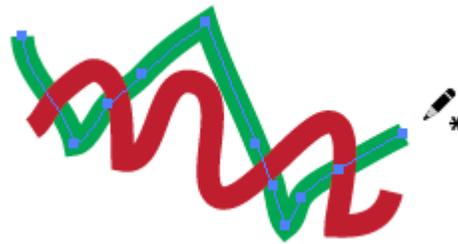


Figure 7 Draw Behind mode

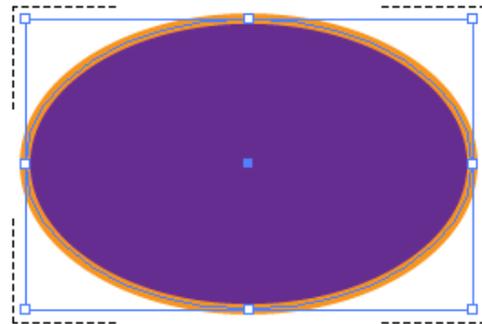


Figure 8 Draw Inside bounding box

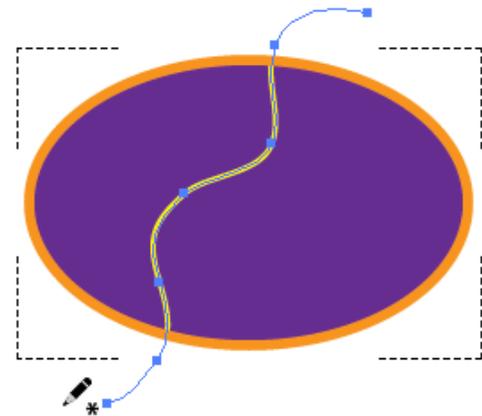


Figure 9 Start anywhere



Figure 10 Start anywhere

Modifying a stroke

Strokes (lines and outlines) and brushes are essential elements of most all artwork created with Illustrator. You can modify a stroke to create beautiful and visually expressive lines. Easily adjust the width of strokes by applying a variable-width preset. You can also add a gradient to a stroke along its length or width, with complete control over gradient placement and opacity.

To create a stroke with a variable width:

1. Choose the Selection tool in the Tools panel.
2. Select the stroke you want to modify (**Figure 11**).
3. Choose a stroke profile from the Variable Width Profile menu in the Control panel (**Figure 12**).

The new stroke profile is applied (**Figure 13**). Increasing the weight of the stroke generally makes the variation in width more pronounced.

Note: You can also modify the width of a stroke and save it as a custom profile by using the Width tool. See Illustrator Help for more information.

4. With the stroke still selected, click the Stroke color button in the Path Control panel.

The Color Picker opens (**Figure 14**).

Note: Holding down the Shift key while clicking brings up an alternate color UI where you can specify exact CMYK values.

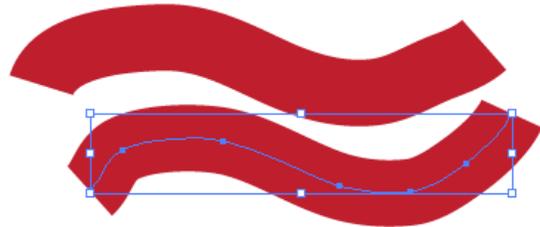


Figure 11 Selecting a stroke

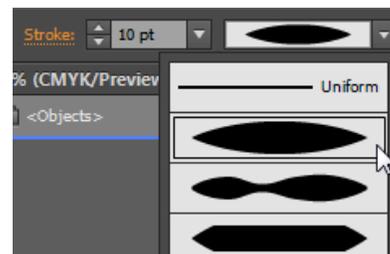


Figure 12 Variable Width Profile options

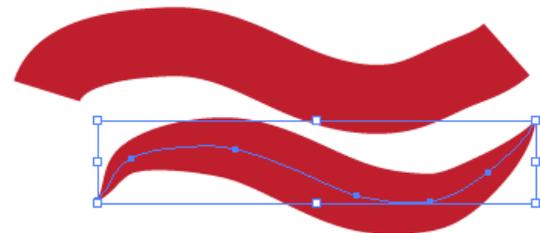


Figure 13 Variable Width Profile applied

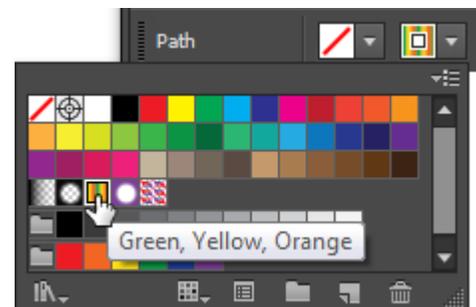


Figure 14 Color Picker

5. Select a gradient option to apply.

For example, in **Figure 15**, a multi-colored Green, Yellow, Orange stroke gradient is applied to the stroke.

Note: You can easily modify the stroke gradient type, gradient angle, colors, and opacities by using the Gradient panel. See “Using the Gradient tool” later in this guide.

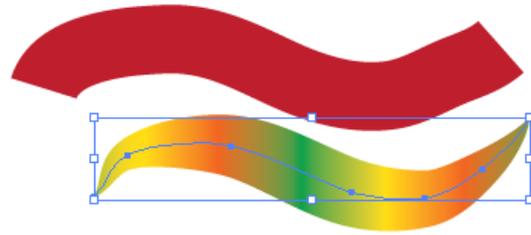


Figure 15 Stroke gradient applied

Drawing with the Pen tool

As you draw with the Pen tool, you create a line called a path. A path is made up of one or more straight or curved segments (**Figure 16**). The beginning and end of each segment are 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).

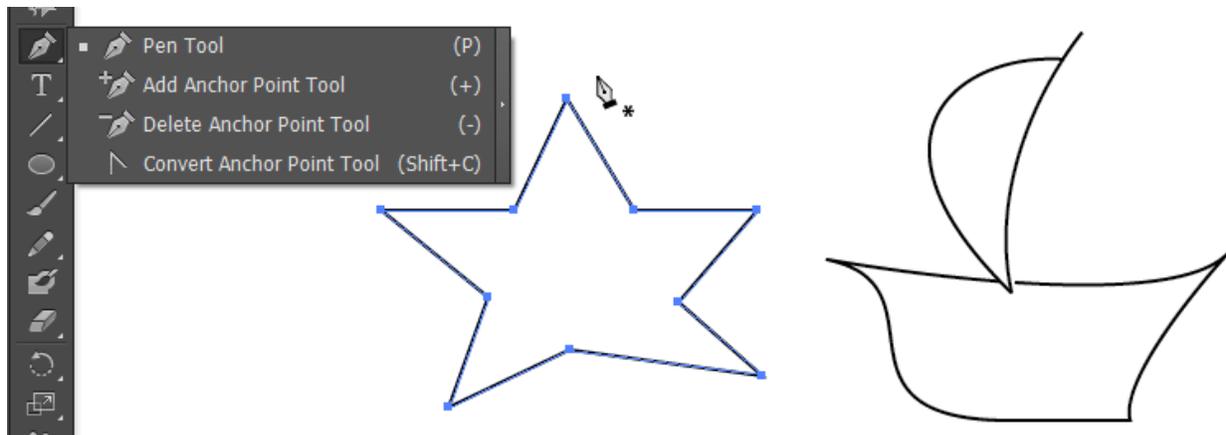


Figure 16 Pen tool with straight lines (left) and curved lines (right)

Adding anchor points can give you more control over a path, or it can extend an open path. However, it’s a good idea not to add more points than necessary. A path with fewer points is easier to edit, display, and print. You can reduce the complexity of a path by deleting unnecessary points. Adding and deleting anchor points works similarly in Adobe applications. The Tools panel contains three tools for adding or deleting points: the Pen tool, the Add Anchor Point tool, and the Delete Anchor Point tool. In addition, the Control panel has a Remove Selected Anchor Points button.

The simplest path you can draw with the Pen tool is a straight line, made by clicking the Pen tool to create two anchor points. By continuing to click, you create a path made of straight-line segments connected by corner points.

You create a curve by adding an anchor point where a curve changes direction, and dragging the direction lines that shape the curve. The length and slope of the direction lines determine the shape of the curve. Curves are easier to edit and your system can display and print them faster if you draw them using as few anchor points as possible. Using too many points can also introduce unwanted bumps in a curve. Instead, draw widely spaced anchor points, and practice shaping curves by adjusting the length and angles of the direction lines.

When you select an anchor point that connects curved segments (or select the segment itself), the anchor points of the connecting segments display direction handles—direction lines that end in direction points. The angle and length of the direction lines determine the shape and size of the curved segments. Moving the direction points reshapes the curves. Direction lines don’t appear in the final output.

In this section, you’ll use the Pen tool to draw both straight and curved lines.

How to draw straight-line segments with the Pen tool:

1. Select the Pen tool from the Tools panel (**Figure 17**).
2. Position the Pen tool where you want the straight segment to begin, and click to define the first anchor point (do not drag).

Note: The first segment you draw will not be visible until you click a second anchor point. Also, if direction lines appear, you've accidentally dragged the Pen tool; choose Edit > Undo, and click again.

3. Click again where you want the segment to end (**Figure 18**).
4. Continue clicking to set anchor points for additional straight segments.

The last anchor point you add always appears as a solid square, indicating that it is selected. Previously defined anchor points become hollow, and deselected, as you add more anchor points.

5. Complete the path by doing one of the following:
 - To close the path, position the Pen tool over the first (hollow) anchor point. A small circle appears next to the Pen tool pointer when it is positioned correctly (**Figure 19**). Click or drag to close the path.

Note: To close a path, you can also select the object and choose Object > Paths > Close Path.

- To leave the path open, Ctrl-click (Windows) or Command-click (Mac OS) anywhere away from all objects.

To leave the path open, you can also select a different tool, or choose Select > Deselect in Illustrator or Edit > Deselect All. You can also simply press Enter or Return to leave the path open.

6. You can reposition anchor points by choosing the Direct Selection tool from the toolbar and dragging to reposition the anchor point (**Figure 20**).
7. To add or delete anchor points, select the path you want to modify and:
 - To add an anchor point, select the Pen tool or the Add Anchor Point tool, position the pointer over the path segment, and click.
 - To delete an anchor point, select the Pen tool or the Delete Anchor Point tool, position the pointer over the anchor point, and click (**Figure 21**).

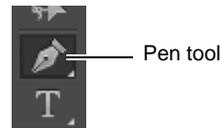


Figure 17 Tools panel



Figure 18 Click to create straight lines

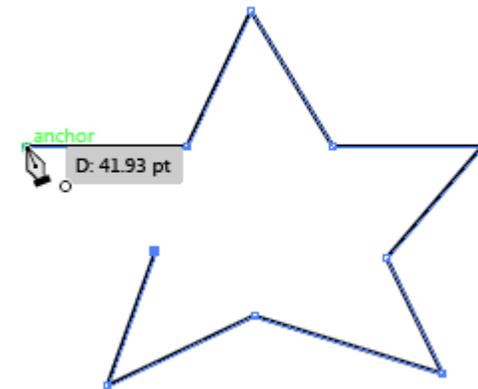


Figure 19 Pen tool with circle icon

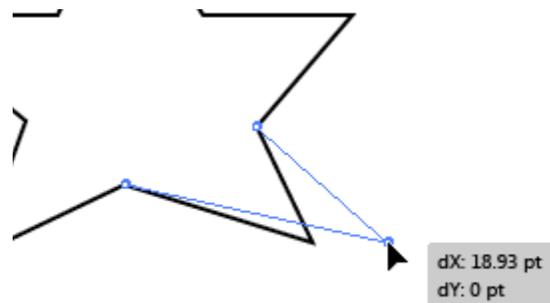


Figure 20 Drag anchor point to reposition

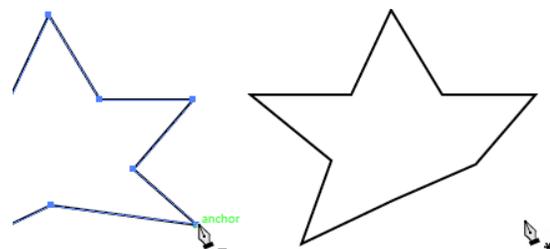


Figure 21 Click an anchor point to delete

How to draw curves with the Pen tool:

1. Select the Pen tool from the Tools panel.
2. Position the Pen tool where you want the curve to begin, and hold down the mouse button.

The first anchor point appears, and the Pen tool pointer changes to an arrowhead.

3. Drag to set the slope of the curve segment you're creating (**Figure 22**), and then release the mouse button.

In general, extend the direction line about one-third of the distance to the next anchor point you plan to draw. (You can adjust one or both sides of the direction line later.)

4. Position the Pen tool where you want the curve segment to end, and do one of the following:

- To create a C-shaped curve, drag in a direction opposite to the previous direction line. Then release the mouse button.
- To create an S-shaped curve, drag in the same direction as the previous direction line (**Figure 23**). Then release the mouse button.

5. Continue dragging the Pen tool from different locations to create a series of smooth curves. Note that you are placing anchor points at the beginning and end of each curve, not at the tip of the curve.

6. Complete the path by doing one of the following:

- To close the path, position the Pen tool over the first (hollow) anchor point. A small circle appears next to the Pen tool pointer when it is positioned correctly (**Figure 24**). Click or drag to close the path.

Note: To close a path in InDesign, you can also select the object and choose **Object > Paths > Close Path**.

- To leave the path open, Ctrl-click (Windows) or Command-click (Mac OS) anywhere away from all objects.

To leave the path open, you can also select a different tool, or choose **Select > Deselect** in Illustrator or **Edit > Deselect All** in InDesign.

7. You can reposition anchor points by choosing the Direct Selection tool from the toolbar and dragging to reposition the anchor point.

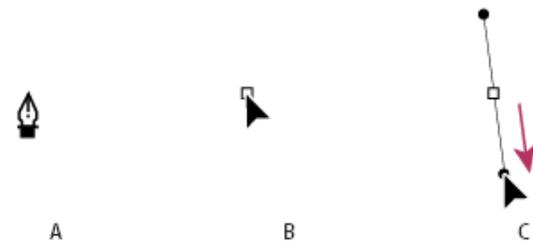


Figure 22 Drawing the first point in a curve: A. Positioning Pen tool B. Starting to drag (mouse button pressed) C. Dragging to extend direction lines

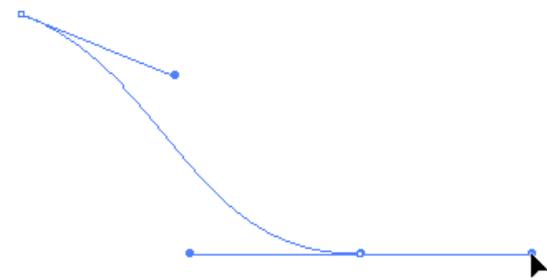


Figure 23 Drawing an S curve

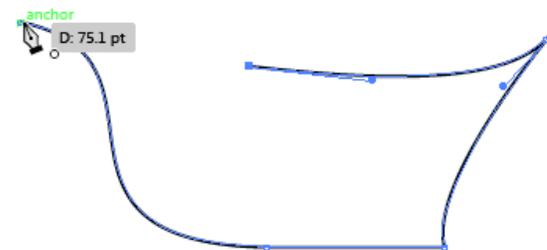


Figure 24 Start top of column

8. To add or delete anchor points, select the path you want to modify and
- To add an anchor point, select the Pen tool or the Add Anchor Point tool, position the pointer over the path segment, and click.
 - To delete an anchor point, select the Pen tool or the Delete Anchor Point tool, position the pointer over the anchor point, and click.

How to work with brushes

You can use brushes to stylize the appearance of paths. You can apply brush strokes to existing paths, or you can use the Paintbrush tool to draw a path and apply a brush stroke simultaneously.

You can achieve a variety of effects with several types of brushes available in Illustrator (**Figure 25**):

- *Calligraphic brushes*: Create strokes that resemble those drawn with the angled point of a calligraphic pen and along the center of the path. When you use the Blob Brush tool, you can paint with a calligraphic brush and automatically expand the brush stroke into a fill shape. This shape can merge with other filled objects of the same color that intersect or are adjacent in stacking order.
- *Scatter brushes*: Disperse copies of an object (such as a ladybug or a leaf) along the path.
- *Art brushes*: Stretch a brush shape (such as Rough Charcoal) evenly along the length of a path.
- *Bristle brush*: Create brush strokes with the appearance of a natural brush with bristles.
- *Pattern brushes*: Paint a pattern—made of individual tiles—that repeats along the path. Pattern brushes can include up to five tiles, for the sides, inner corner, outer corner, beginning, and end of the pattern.

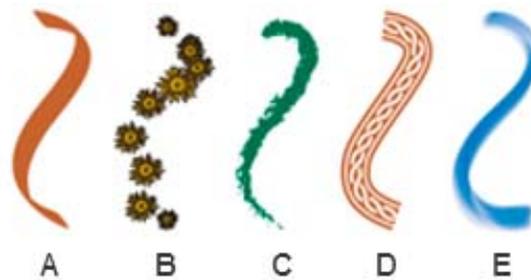


Figure 25 Types of brushes: A. Calligraphic Brush; B. Scatter Brush; C. Art Brush; D. Pattern Brush; E. Bristle Brush

Scatter brushes and Pattern brushes can often achieve the same effect. However, one way in which they differ is that Pattern brushes follow the path exactly, while Scatter brushes do not (**Figure 26**).

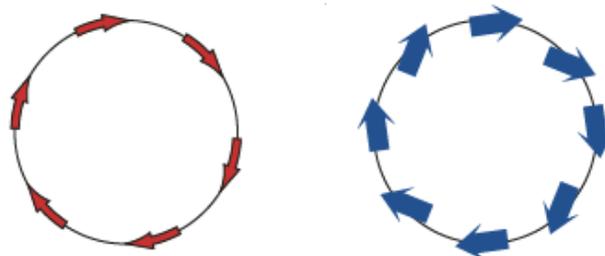


Figure 26 Pattern brush on a path (left) and Scatter brushes on a path (right)

The Brushes panel displays brushes for the current file (**Figure 27**). Whenever you select a brush in a brush library, it is automatically added to the Brushes panel. Brushes you create and store in the Brushes panel are associated only with the current file, which means each Illustrator file can have a different set of brushes in its Brushes panel. For example, the Bristle Brush Library features brush tips that give the appearance of brush strokes along a path.

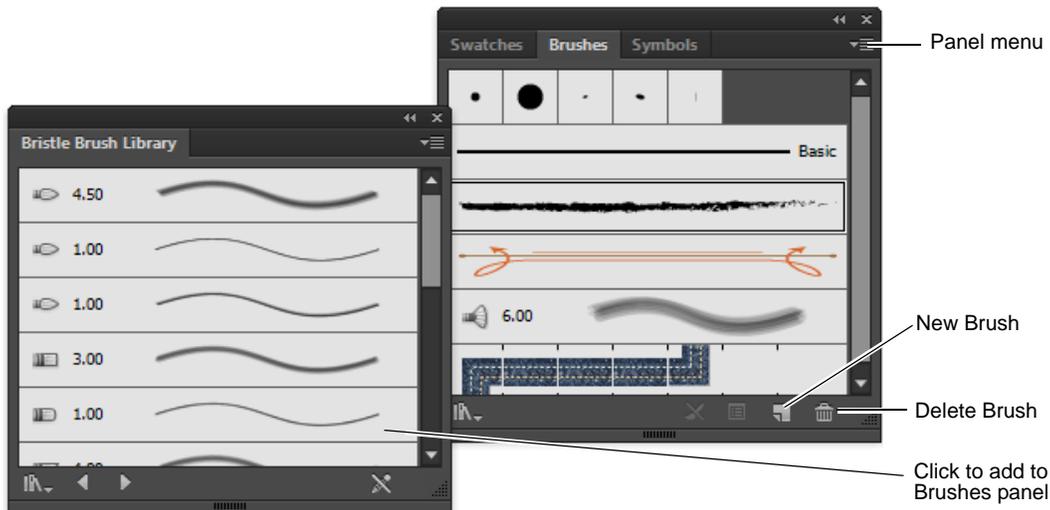


Figure 27 Bristle Brush Library (left) and Brushes panel (right)

In this section you’ll learn how to use brushes and brush libraries, and how to paint with a brush made from a photo.

How to show/hide, change views or order of brushes, duplicate or delete brushes:

To show or hide a type of brush, choose any of the following from the panel menu (**Figure 28**): Show Calligraphic Brushes, Show Scatter Brushes, Show Art Brushes, Show Bristle Brushes, Show Pattern Brushes.

To change the view of brushes, choose Thumbnail View or List View from the panel menu.

To change the order of brushes in the Brushes panel, drag a brush to a new location (**Figure 29**). You can move brushes only within their type. For example, you cannot move a Calligraphic brush to the Scatter brush area.

To duplicate a brush in the Brushes panel, drag the brush onto the New Brush button or choose Duplicate Brush from the Brushes panel menu.

To delete a brush from the Brushes panel, select the brush and click the Delete Brush button. You can select brushes that aren’t used in a document by choosing Select All Unused from the Brushes panel menu.

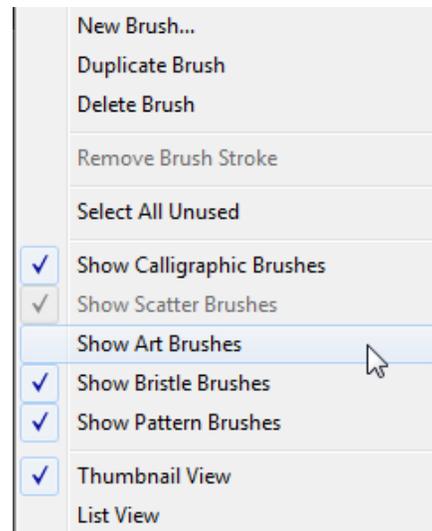


Figure 28 Detail of Brushes panel menu

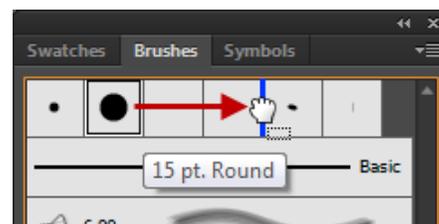


Figure 29 Drag brush to a new location

To draw with the *Paintbrush* tool:

1. Select the *Paintbrush* tool in the Tools panel (**Figure 30**).
2. Choose a stroke color in the Control panel.
3. Choose **Window > Brushes** to display the **Brushes** panel.
4. From the **Brushes** panel menu, choose **Open Brush Library > Bristle Brush > Bristle Brush Library** (**Figure 27**).
5. Click any brush from the **Bristle Brushes Library** to add it to the **Brushes** panel.
6. Return to the **Brushes** panel.

The **Bristle Brush Options** dialog box opens (**Figure 31**).

8. Modify any of the brush characteristics or click **OK** to close the dialog box.
9. Set the **Stroke** color, weight, and other options in the **Control** panel.
10. Draw freehand by dragging in the image (**Figure 32**).
11. Release the mouse button to complete the path (**Figure 33**).

When you are using the *Paintbrush* tool, the line's edges have a much softer edge than they do with the *Pencil* tool.

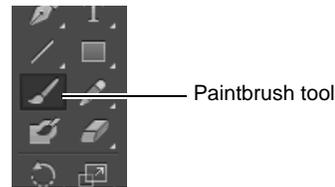


Figure 30 Tools panel



Figure 31 Bristle Brush Options dialog box

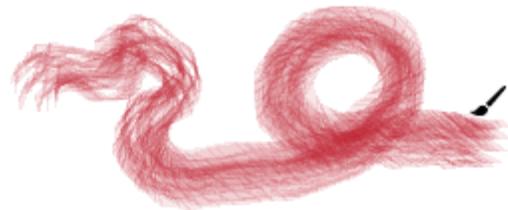


Figure 32 Drawing with the *Paintbrush* tool



Figure 33 Completed *Paintbrush* tool path

Work with brush libraries

Brush libraries are collections of preset brushes that come with Illustrator. You can open multiple brush libraries to browse through their contents and select brushes (**Figure 34**).

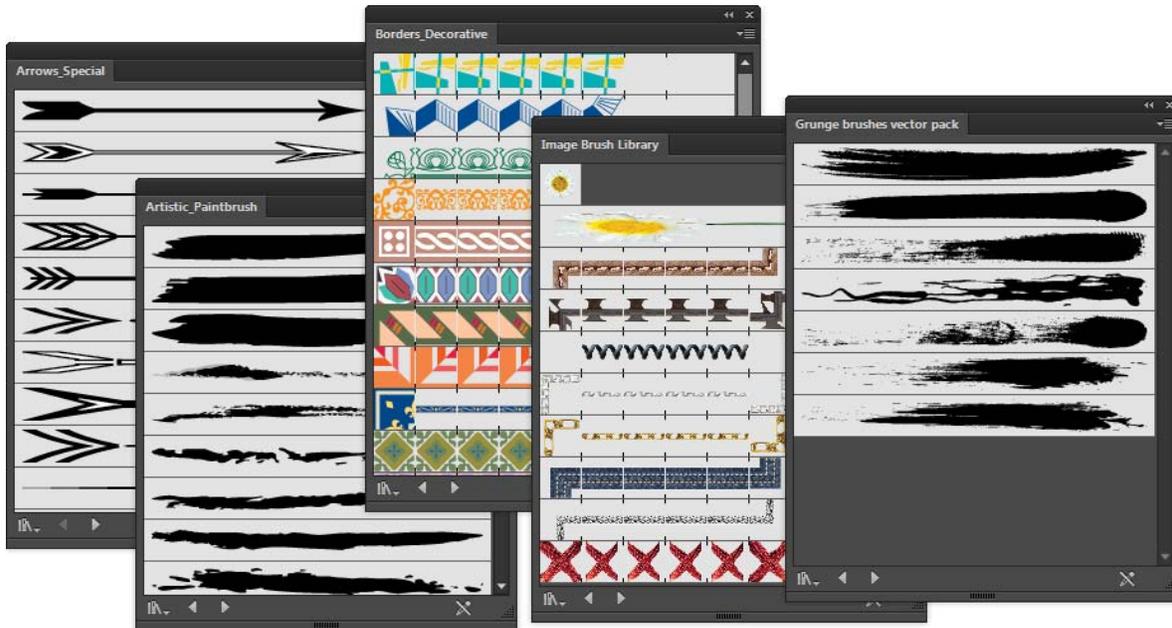


Figure 34 A selection of brush libraries

How to copy brushes from a brush library to the Brushes panel:

1. Open a brush library by using the Brushes panel menu (**Figure 35**).

You can also open brush libraries by choosing Window > Brush Libraries > [library].

2. Drag the brushes to the Brushes panel (**Figure 36**) or choose Add To Brushes from the brush library's panel menu.

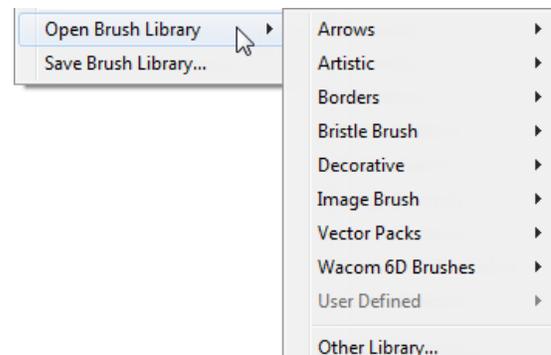


Figure 35 Detail of Brushes panel menu

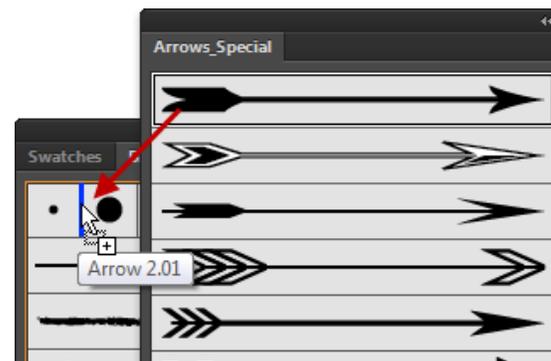


Figure 36 Drag to add to Brushes panel

How to create new brush libraries:

1. Add the brushes you want to the Brushes panel, and delete any brushes you don't want (**Figure 37**).
2. Choose Save Brush Library from the Brushes panel menu (**Figure 38**).
3. Navigate to the location of where you want to save your brush library, name the file, and click Save.

The custom brush library is saved (**Figure 39**).

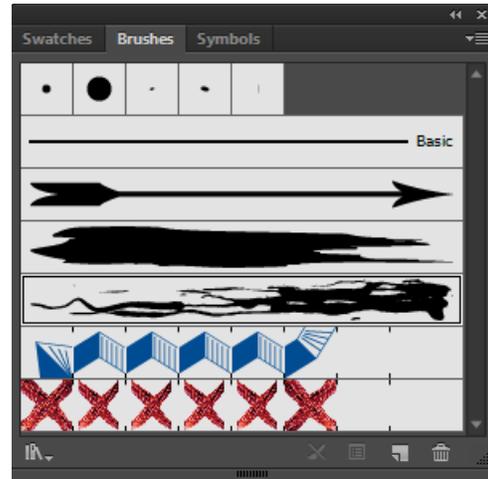


Figure 37 Customized Brushes panel

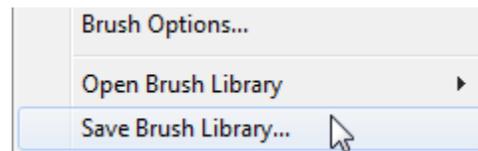


Figure 38 Detail of Brushes panel menu



Figure 39 Saved custom brush library

How to import brushes into the Brushes panel from another file:

1. Choose Window > Brush Libraries > Other Library and select the file.

The custom Brush Library panel opens (**Figure 40**)

2. In the Brush Library panel, click on the individual brush definition or all the brush definitions that you need to import and select Add To Brushes from the Brush Library panel menu.

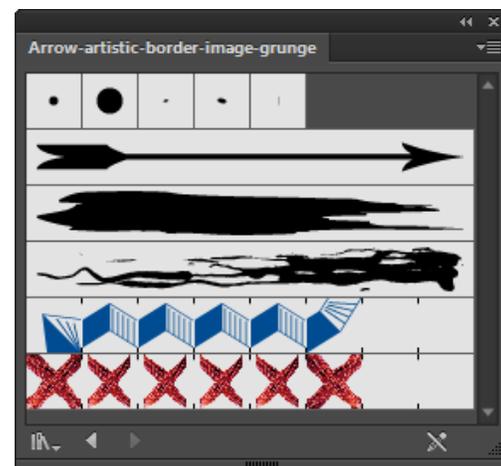


Figure 40 Custom Brush Library panel

Painting with a brush made from a photo

Brush definitions can contain or hold images (non-vector artwork). You can define three types of image-based brushes: Scatter, Art, and Pattern. The behavior of the brushes is like any other brush: You can reshape or modify them. Images in a brush take the shape of the stroke; that is, the images can bend, scale, and stretch with the shape and type of stroke. Also, such brushes behave and can be modified in the same way as other brushes, using the Brush Options dialog box. For example, the leftmost image (below) is the original image. When using it in a brush definition, you could draw the three images on the right (**Figure 41**). Each stroke uses different scale options, specified in the Brush Options dialog box.

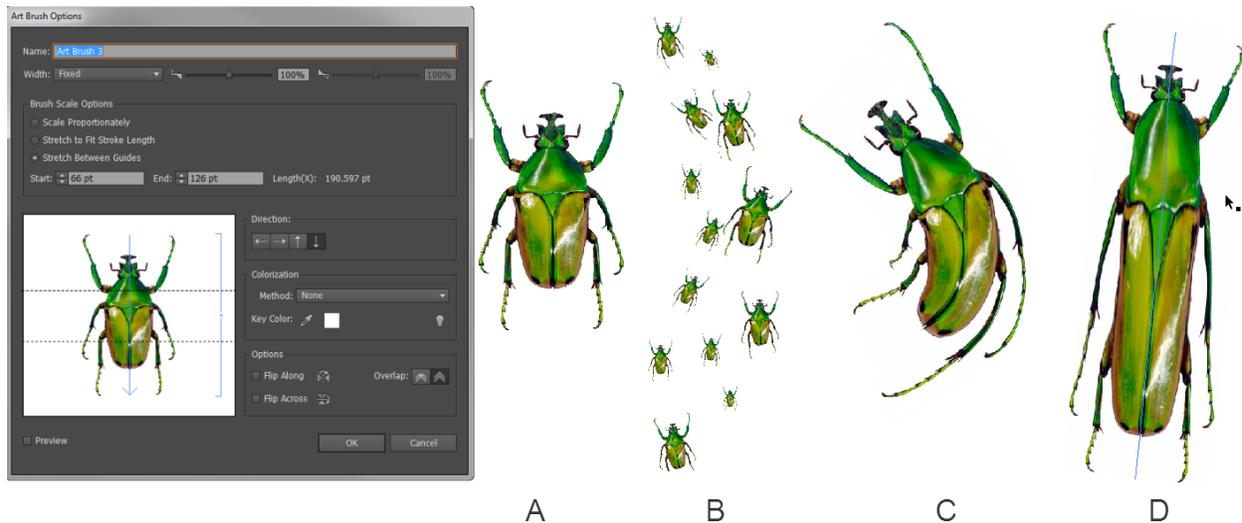


Figure 41 Art Brush Options dialog box and A. Original image, B. Image in a brush, scaled proportionately, C. Image in a brush, stretched to fit a curved stroke length, D. Image in a brush, stretched between guides

Note: Using large images in brushes impacts performance. Choose a small image to start with, or resize a large image down to a smaller scale for use as an image-based brush.

How to paint with a brush made from a photo:

1. In Illustrator, open an image file you want to convert into a brush by choosing File > Open.

The Place dialog box opens.

2. Navigate to the location of the image, and click Open.

The image opens in Illustrator.

3. Choose the Selection tool from the Tools panel and scale the image down to a maximum width or height of 250 pixels (**Figure 42**).

Holding down the Shift button allows the image to scale proportionally as you resize it.

4. Choose Window > Brushes to display the Brushes panel.

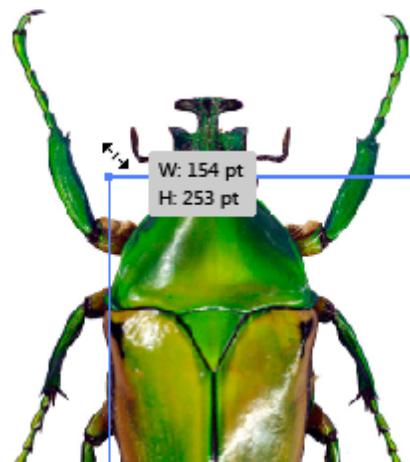


Figure 42 Scale an image down

5. Select the object in the document and drag it over into the Brushes panel.

A small blue line appears in the panel showing you that the object is being added. When you release the mouse, the New Brush dialog box appears (**Figure 43**).

Three brush options are available: Scatter Brush, Art Brush, and Pattern Brush. The other brush options are dimmed, as you cannot create an image-based brush in these formats.

You will work with the Art Brush option in this section. Be sure to experiment with the other brush options after you finish.

6. Select the Art Brush option and click OK.
The Art Brush Options dialog box opens (**Figure 41**).
7. Type a name for the brush in the Name text field.
8. Select Scale Proportionately in the Brush Scale Options area (**Figure 44**) and click OK.

The Art Brush Options dialog box closes.

9. Move the original object off the workspace onto the scratchboard. You will use it again to create another brush.
10. Click the newly created brush in the Brushes panel (**Figure 45**).
11. Choose the Paintbrush tool in the Tools panel.
12. Drag the Paintbrush tool in different locations to create a series of brush strokes (**Figure 46**).

Observe that the image scales to the relative size of the stroke. Small strokes produce small images and larger strokes create bigger images while maintaining proportion.

13. Create another brush, but this time select Stretch To Fit Stroke Length and drag to create a curved path.
Observe how the image bends to accommodate the curve.
14. Create another brush, but this time select Stretch Between Guides.
Adjust the guide settings by changing the values in the Start and End boxes, or drag the guides in the preview area (**Figure 47**).
16. Click OK to close the Art Brush Options dialog box.
Observe how the image stretches between the guides.

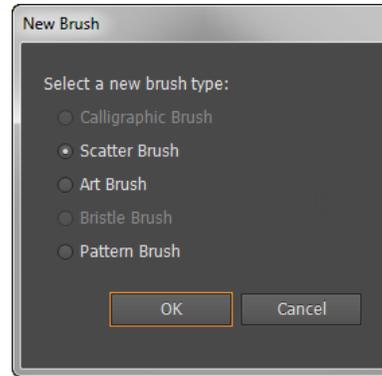


Figure 43 New Brush dialog box

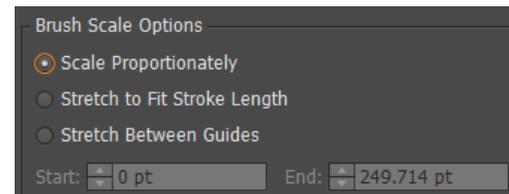


Figure 44 Art Brush Options dialog box detail

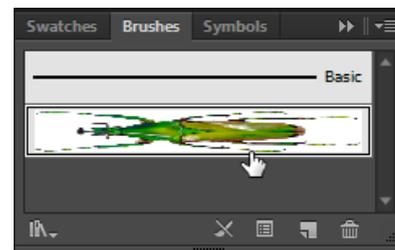


Figure 45 Brushes panel

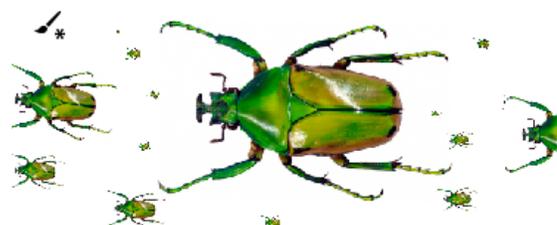


Figure 46 Image in a brush, scaled proportionately

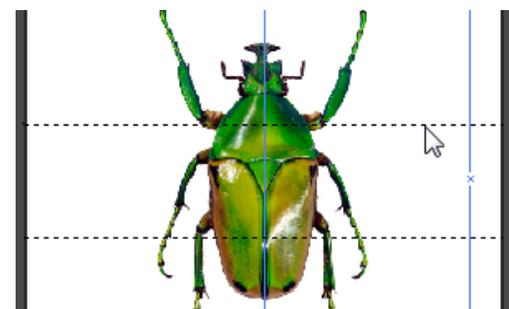


Figure 47 Drag guides in preview area

Drawing with the Blob Brush tool

You can use the Blob Brush tool to create freeform drawings, much like drawing with pixels in Adobe Photoshop or using natural media tools. The Blob Brush tool is particularly suitable for use with a pressure-sensitive tablet or stylus for creating editable vector art by using natural gestures. Unlike the Pencil and Paintbrush tools, the Blob Brush tool does not create paths; instead, your brush-like gestures create open areas with color. Drawing naturally with the Blob Brush tool delivers a unified area of color you can easily select and edit.

To draw with the Blob Brush tool:

1. Select the Blob Brush tool in the Tools panel (**Figure 48**).
2. In the Control panel, modify some options, including:
 - Stroke color
 - Stroke thickness
 - Brush definition from the Brush picker menu
 - Opacity
3. Paint freehand by dragging on the page (**Figure 49**).
4. Select the Eraser tool in the Tools panel.
5. Use the Eraser tool to edit the vector shape, such as splitting the vector shape into two pieces (**Figure 50**).
6. Choose the Selection tool in the Tools panel, select one piece of the split vector shape, and click on a corner anchor. Drag the corner to scale the shape.

You can now edit the split vector shapes independently (**Figure 51**).

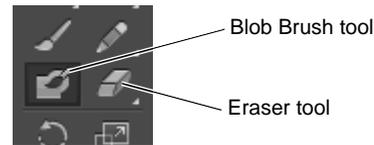


Figure 48 Tools panel

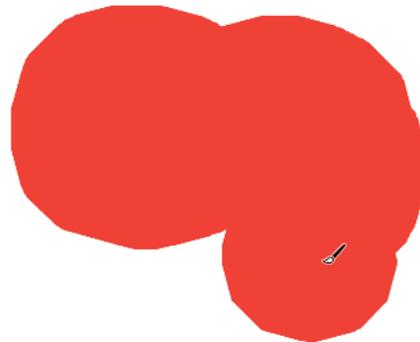


Figure 49 Drawing with the Blob Brush tool

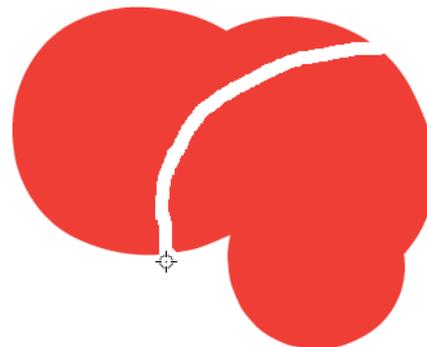


Figure 50 Shape edited with the Eraser tool

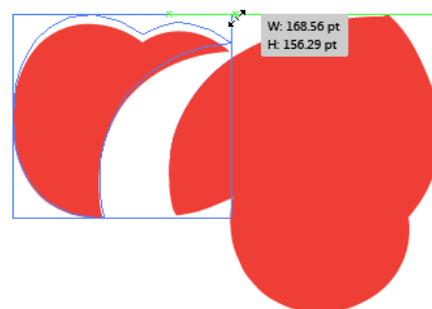


Figure 51 Editing the split vector shape

Drawing shapes

In addition to using brushes and the Pencil tool, you can draw shapes in Illustrator, such as rectangles, ellipses, and polygons. The colors of the interior and outline of the shape are determined by the fill and stroke colors, respectively.

In this section, you'll learn how to draw a simple shape with stroke and fill, expand a shape, use Live Paint, and create new shapes by using the Shape Builder tool.

How to draw a shape:

1. Click one of the shape tools in the Tools panel, such as the Polygon tool (**Figure 52**).

Shape tools are located below the Type tool. By default, the Rectangle tool appears in the Tools panel. To access other shapes, click the Rectangle tool and hold down the mouse until the menu of shape tools opens.

2. Set the Fill, Stroke, and Stroke width for the shape in the Control panel (**Figure 53**).
3. Click the canvas where you want to put the shape.
 - For the Rectangle, Rounded Rectangle, and Ellipse tools, click where you want the upper-left corner of the shape.
 - For the Polygon, Star, and Flare tools, click where you want the center of the shape.

A shape options dialog box appears, such as the Polygon options dialog box (**Figure 54**).

Note: Alternately, you can drag on the canvas to make a polygon. You can press the Up Arrow and Down Arrow keys to add and remove sides from the polygon.

4. Enter options for the shape. For the polygon shape, enter a radius and number of sides.
5. Click OK.

The shape options dialog box closes and the shape appears in the document (**Figure 55**).

You can modify any of the shape's attributes by selecting the shape with the Selection tool and modifying its properties in the Control panel.

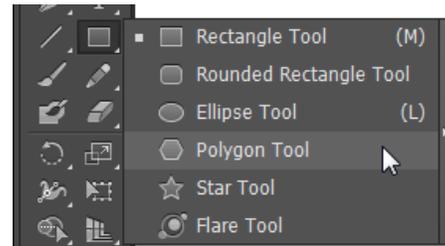


Figure 52 Shape tools in the Tools panel



Figure 53 Control panel

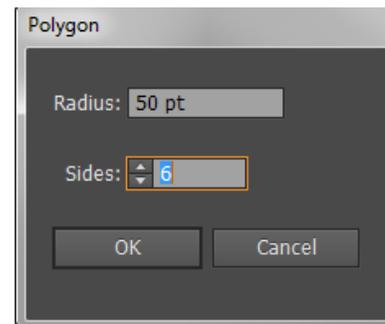


Figure 54 Polygon options dialog box

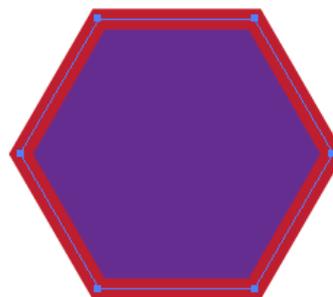


Figure 55 Drawn polygon shape.

Expand objects

You can expand an object so you can then divide it into the multiple objects that make up its appearance. For example, if you expand a simple object, such as a circle with a solid-color fill and a stroke, the fill and the stroke each become discrete objects (**Figure 56**). If you expand more complex artwork, such as an object with a pattern fill, the pattern is divided into all of the distinct paths that created it.

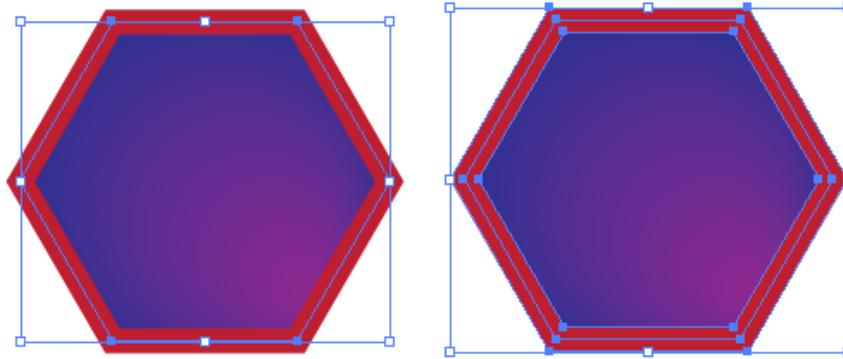


Figure 56 Before (left) and after (right) expanding an object that has a fill and stroke

You typically expand an object when you want to modify the appearance attributes and other properties of specific elements within it. In addition, expanding objects may be helpful when you want to use an object that is native to Illustrator in a different application that doesn't recognize the object.

How to expand objects:

1. Choose the Selection tool from the Tools panel and click on a shape in the workspace.
2. Choose Object > Expand.

The Expand dialog box opens (**Figure 57**).

Note: If the object has appearance attributes applied to it, the Object > Expand command is dimmed. In this case, choose Object > Expand Appearance and then choose Object > Expand.

3. Set the Expand options:
 - *Object* Expands complex objects, including live blends, envelopes, symbol sets, and flares.
 - *Fill* Expands fills.
 - *Stroke* Expands strokes.
 - *Gradient Mesh* Expands gradients to a single mesh object.
 - *Specify* Sets the tolerance for color values between color stops. Higher numbers help maintain a smooth color transition; low numbers can create a more banded appearance.
4. Click OK to close the Expand dialog box.

The object is expanded.

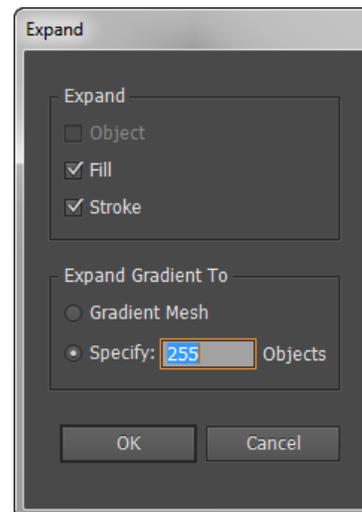


Figure 57 Expand dialog box

Paint with Live Paint

Illustrator provides two methods of painting. You can assign a fill, stroke, or both to an entire object. You can also convert the object to a Live Paint group and assigns fills or strokes to the separate edges and faces of paths within it (**Figure 58**). Converting your artwork to Live Paint groups allows you to color them freely, as you would a drawing on canvas or paper. You can stroke each path segment with a different color and fill each enclosed path (Note: not just closed paths) with a different color, pattern, or gradient.

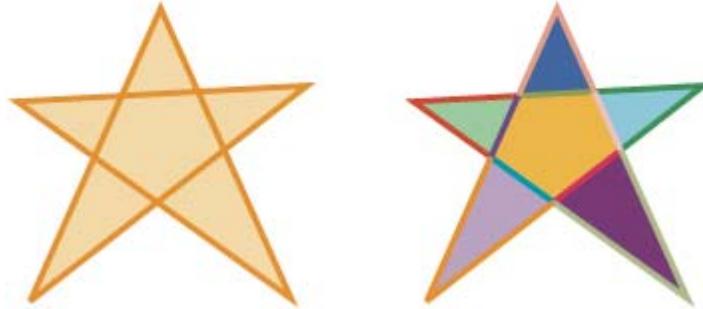


Figure 58 An object consisting of a single path painted with the existing method has a single fill and a single stroke (left). The same object converted to a Live Paint group can be painted with a different fill for each face and a different stroke for each edge (right)

Live Paint is an intuitive way to create colored drawings. It lets you use the full range of Illustrator's vector drawing tools but treats all the paths you draw as though they are on the same flat surface. That is, no path is behind or in front of any other. Instead, the paths divide the drawing surface up into areas, any of which can be colored, regardless of whether the area is bounded by a single path or by segments of multiple paths. The result is that painting objects is like filling in a coloring book or using watercolors to paint a pencil sketch.

Once you've made a Live Paint group, each path remains fully editable. When you move or adjust a path's shape, the colors that had been previously applied don't just stay where they were, like they do in natural media paintings or image editing programs. Instead, Illustrator automatically reapplies them to the new regions that are formed by the edited paths.

How to create a Live Paint group:

1. Choose the Selection tool from the Tools panel and select one or more paths, compound paths, or both in the workspace.
2. Choose Object > Live Paint > Make.

A Live Paint group bounding box appears around the selected object (**Figure 59**).

Note: Certain properties may be lost in the conversion to a Live Paint group, such as transparency and effects, while other objects cannot be converted (such as type, bitmap images, and brushes).

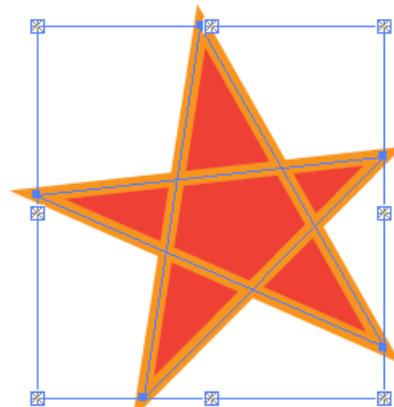


Figure 59 Live Paint bounding box around an object

3. Choose Object > Expand.

The Expand dialog box opens.

4. Set the Expand options and click OK to close the Expand dialog box.

The object is expanded (**Figure 60**).

5. Click and hold the Shape Builder tool to see and select the Live Paint Bucket tool (**Figure 61**).

6. Specify the fill color or stroke color and size you want.

Note: If you select a color from the Swatches panel, the pointer changes to display three colors. The selected color is in the middle, and the two adjacent colors on the sides. To use an adjacent color, click the left or right arrow key.

7. To paint a face, click a face to fill it [when the pointer is over a face, it changes to a half-filled paint bucket and highlight lines surround the inside of the fill (**Figure 62**)] or drag across multiple faces to paint more than one face at a time.

Double-click a face to fill across unstroked edges into adjacent faces (flood fill). Triple-click a face to fill all faces that currently have the same fill.

8. To paint an edge, double-click the Live Paint Bucket tool and select Paint Strokes, or temporarily toggle to the Paint Strokes option by pressing Shift, and then click an edge to stroke it, or drag across multiple edges to stroke more than one edge at a time.

Double-click an edge to stroke all connected edges of the same color (flood stroke). Triple-click an edge to stroke all edges of the same stroke.

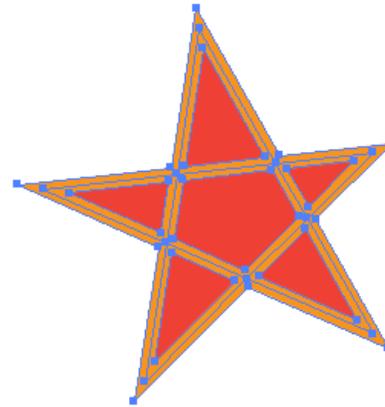


Figure 60 Expanded object

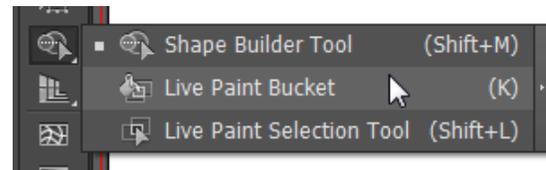


Figure 61 Tools panel

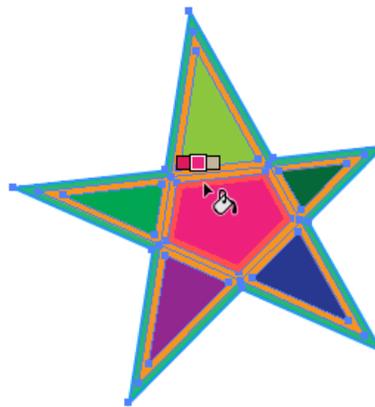


Figure 62 Click to apply color to a fill area

Creating new shapes by using the Shape Builder tool

The Shape Builder tool is an interactive tool for creating complex shapes by merging and erasing simpler shapes. It works on simple and compound paths.

It intuitively highlights edges and regions for a selected artwork that can be merged to form new shapes. An *edge* is defined as the section of a path that does not intersect any other path of the selected objects. A *region* is a closed area bounded by edges.

To create a shape with the Shape Builder tool:

1. Create the shapes on which you want to apply the Shape Builder tool.
2. Using the Selection tool, select *only* the paths you need to merge to create the shape (**Figure 63**).

Note: Make sure that you select only those paths on which you need to apply the tool.

3. Select the Shape Builder tool from the Tools panel (**Figure 64**).

By default, the tool is in merge mode, ready to combine different paths.

4. To merge two or more paths, drag across the regions enclosed by the paths. Each region is highlighted as you drag across it (**Figure 65**). Release the mouse button when all the regions are highlighted.

The regions are merged to form a new shape (**Figure 66**). Notice the topmost circle has not been merged into the shape. In the next step, you will delete a portion of that shape.

The art style that the new shape inherits depends on the following rules:

- The art style of the object from where the mouse drag was initiated is applied to the merging shapes.
- If no art style is available on mouse down, the art style available on mouse release is applied to the merging shapes.
- If no art style is available on mouse down or mouse release, the art style of the topmost selected object in the Layers panel is applied.

For coloring, you can override these rules by selecting Color Swatches from the Pick Color From menu in the Shape Builder Tool Options dialog box. (Double-click the Shape Builder tool to open the Shape Builder Tool Options dialog box.)

Note: An alternative to dragging across the regions to be merged is to Shift-drag a rectangular marquee around the regions with the Shape Builder tool. When you release, the regions are merged.

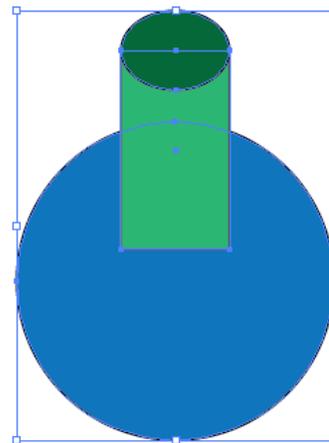


Figure 63 Selecting paths



Shape Builder tool

Figure 64 Tools panel

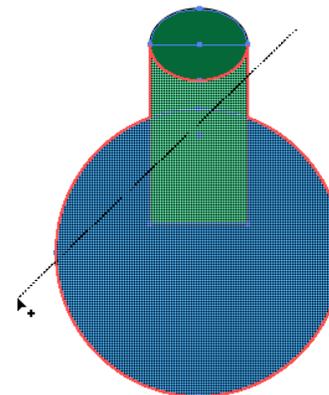


Figure 65 Selecting a region to merge

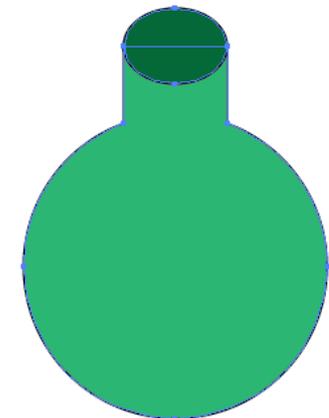


Figure 66 Merged shape

5. To use the Erase mode of the Shape Builder tool, Alt-click (Windows) or Option-click (Mac OS) the closed region you want to delete.

In Erase mode, you can delete regions within selected shapes (**Figure 67**). If you delete a region that is shared by multiple objects, the shapes are broken in such a way that the regions selected by the marquee are removed from the shapes.

You can also delete edges in Erase mode. This option is useful when you want to clear the remaining portions after creating the required shape.

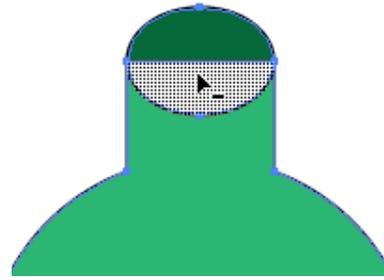


Figure 67 Deleting a region within a selected shape