Week 11

Adobe illustrator 02/15/2024

Adobe Illustrator is the industry-leading graphic design tool that lets you design anything you can imagine — from logos and icons to graphics and illustrations — and customize it with professional-level precision, as well as timesaving features. You can use the graphics you create with Illustrator in any size digital or print format and be confident they'll look exactly the way you designed them.

We know that illustrator is a Vector Graphic software, vs Rastor Graphic (for example a *.jpg)

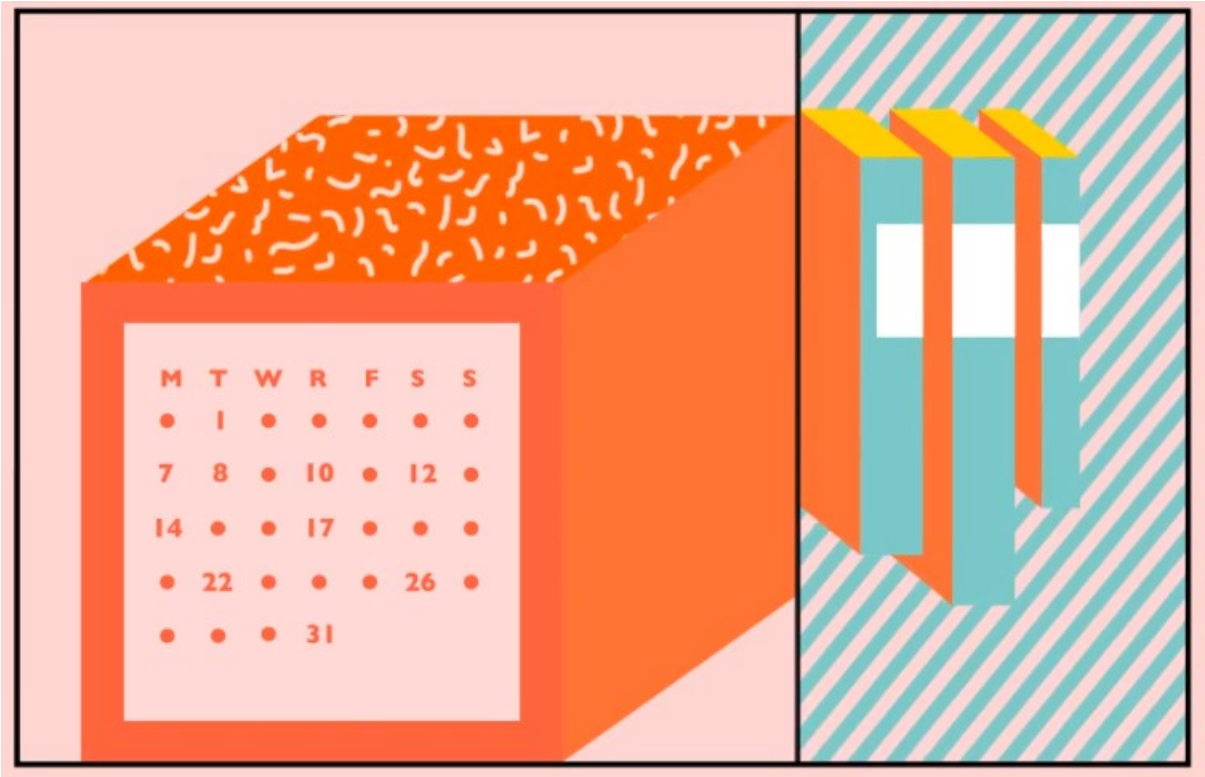
Today lets dig deeper into a couple Illustrator topics, first about what resources are available and how to access them. Next lets expand our knowledge about ***paths***, and (Breifly) about the math that goes into understanding about paths. Then we will learn how ***to edit these new paths*** we have created. Along the way lets learn some hot keys to make our job easier; Hot keys (for example holding the [Alt] or [Control] key with another key is a faster way to trigger a feature available within illustrator, these features are also available from the menu's.

DRAW VECTOR GRAPHICS

Design crisp, bold art that works at any size.

Combine lines, shapes, and color to design incredible illustrations that scale infinitely so you can take them from screens to billboards and beyond.

3D Graphs:



Graphic Designs:

Create and edit graphics online.

Make vector graphics, design with text, and more right in your browser with Illustrator on the web (beta). Open existing projects, upload files, and create totally new work.

Intertwine text and objects.

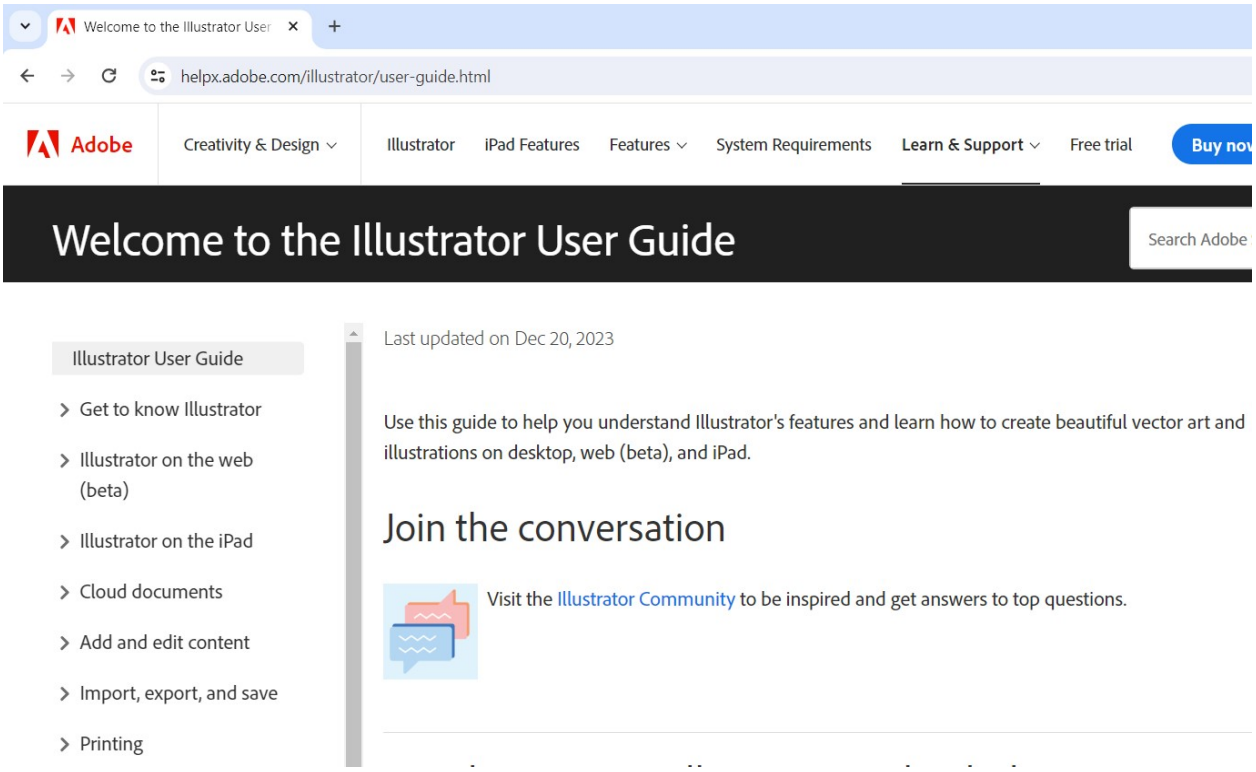
Loop, overlap, and weave design elements together with Intertwine to add unique depth to your work.

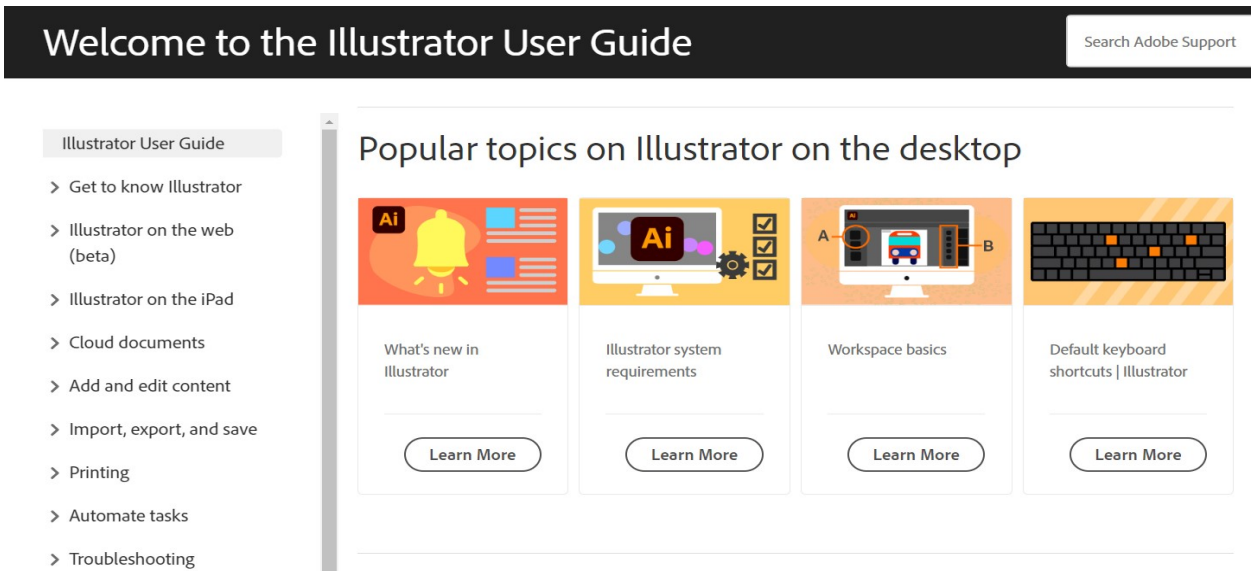
Learn Illustrator right in the app.

Grow your skills with built-in tutorials, tool guides, and creative inspiration right at your fingertips.

Lets get an overview of Illustrator resources, these can take us further:

* The users guide: https://helpx.adobe.com/illustrator/user-guide.html

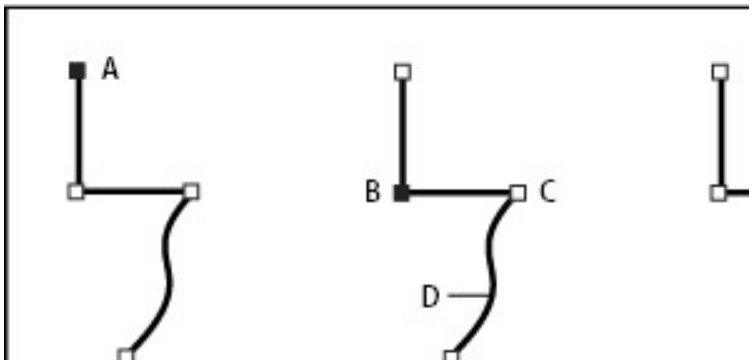




About paths

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 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).

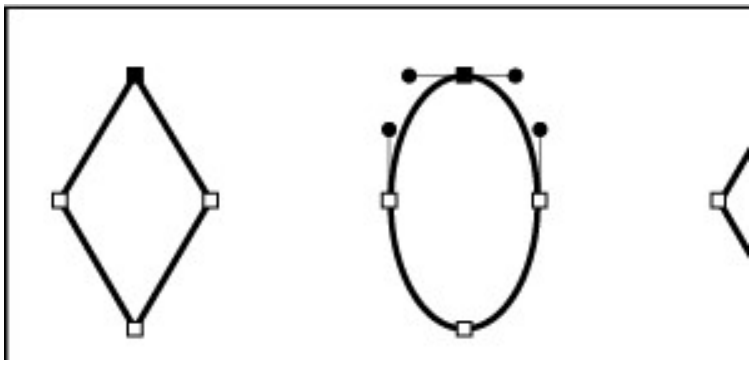
You change the shape of a path by dragging its anchor points, the *direction points* at the end of *direction lines* that appear at anchor points, or the path segment itself.



Components of a path

A. Selected (solid) endpoint **B.** Selected anchor point **C.** Unselected anchor point **D.** Curved path segment **E.** Direction line **F.** Direction point

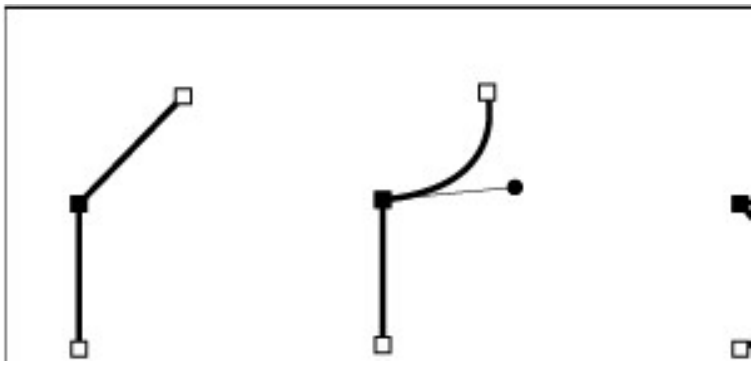
Paths can have two kinds of anchor points: corner points and smooth points. At a *corner point*, a path abruptly changes direction. At a *smooth point*, path segments are connected as a continuous curve. You can draw a path using any combination of corner and smooth points. If you draw the wrong kind of point, you can always change it.



Points on a path

A. Four corner points **B.** Four smooth points **C.** Combination of corner and smooth points

A corner point can connect any two straight or curved segments, while a smooth point always connects two curved segments.



A corner point can connect both straight segments and curved segments.

Note:

Don’t confuse corner and smooth points with straight and curved segments.

A path’s outline is called a *stroke*. A color or gradient applied to an open or closed path’s interior area is called a *fill*. A stroke can have weight (thickness), color, and a dash pattern (Illustrator and InDesign) or a stylized line pattern (InDesign). After you create a path or shape, you can change the characteristics of its stroke and fill.

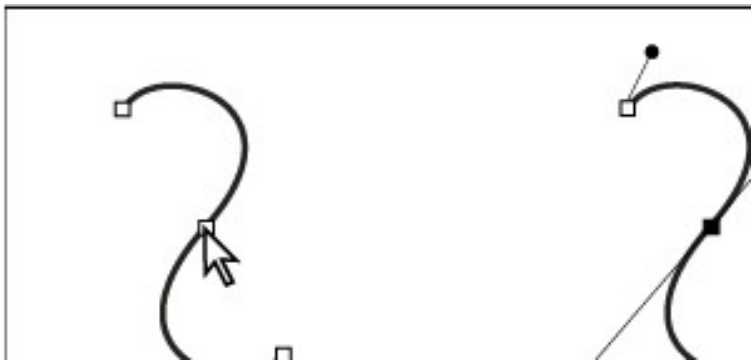
In InDesign, each path also displays a *center point*, which marks the center of the shape but is not part of the actual path. You can use this point to drag the path, to align the path with other elements, or to select all anchor points on the path. The center point is always visible; it can’t be hidden or deleted.

About direction lines and direction points

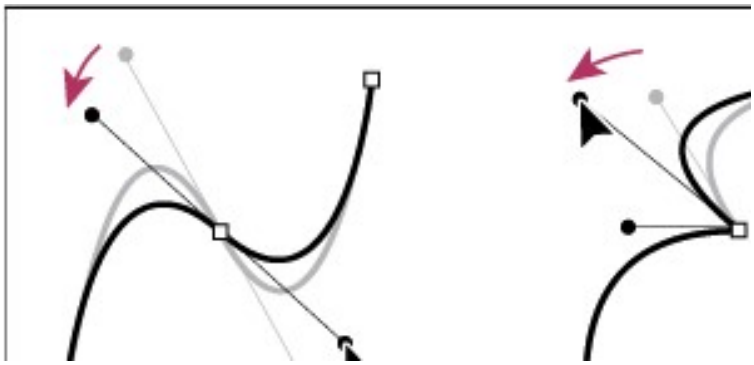
When you select an anchor point that connects curved segments (or select the segment itself), the anchor points of the connecting segments display *direction handles*, which consist of *direction lines* that end in *direction point*s. The angle and length of the direction lines determine the shape and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

A smooth point always has two direction lines, which move together as a single, straight unit. When you move a direction line on a smooth point, the curved segments on both sides of the point are adjusted simultaneously, maintaining a continuous curve at that anchor point.

In comparison, a corner point can have two, one, or no direction lines, depending on whether it joins two, one, or no curved segments, respectively. Corner point direction lines maintain the corner by using different angles. When you move a direction line on a corner point, only the curve on the same side of the point as that direction line is adjusted.

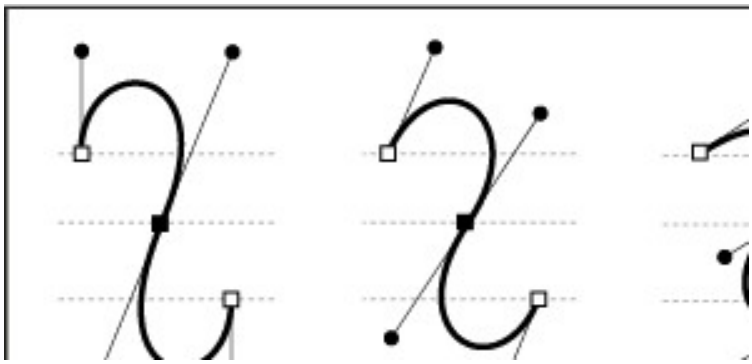


After selecting an anchor point (left), direction lines appear on any curved segments connected by the anchor point (right).



Adjusting direction lines on a smooth point (left) and a corner point (right)

Direction lines are always tangent to (perpendicular to the radius of) the curve at the anchor points. The angle of each direction line determines the slope of the curve, and the length of each direction line determines the height, or depth, of the curve.



Moving and resizing direction lines changes the slope of curves.

Note:

In Illustrator, you can show or hide anchor points, direction lines, and direction points by choosing View > Show Edges or View > Hide Edges.

Specify direction line and direction point appearance

When working with anchor points and paths, you may sometimes need to see direction lines (handles), while at other times they may get in the way. You can show or hide direction lines for multiple selected anchor points. For a single anchor point, the lines always appear.

You can choose to show or hide direction lines on a per-selection basis, or you can set a preference for direction line display.

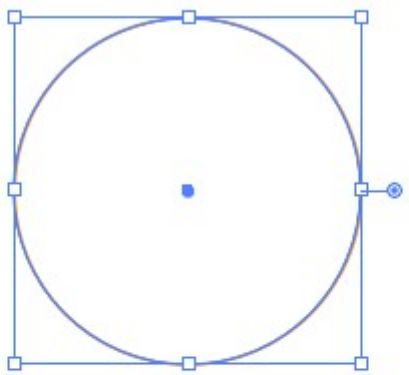
Show or hide direction lines for selected anchor points

1. Use the Direct Selection tool to select the desired anchor points.
2. In the Control panel, click Show Handles For Multiple Selected Anchor Points > or Hide Handles For Multiple Selected Anchor Points .

Adjust anchor point, handle, and bounding box display size

1. Choose **Edit** > **Preferences** > **Selection & Anchor Display** (Windows) or **Illustrator** > **Preferences** > **Selection & Anchor Display** (macOS).
2. In the Anchor Point And Handle Display area, specify any of the following:

Size
Adjust the slider to change the display size of anchor points, handles, and bounding boxes.



Highlight Anchors On Mouse Over
Highlights the anchor point located directly below the mouse cursor.

Handle Style
Specifies the display of handle end points (direction points):

- Displays direction points as blue solid circles.
- Displays direction points as white circles.

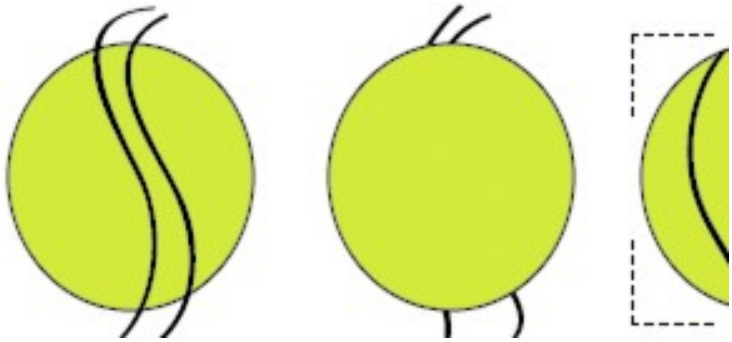
Show Handles When Multiple Anchors Are Selected

Displays direction lines on all selected anchor points when you use the Direct Selection tool or Group Selection tool to select an object. If you don't select this option, direction lines are displayed for an anchor point if it is the only anchor point selected on that path, or if the Bezier segment for the direction line is selected and the anchor point from which the direction line extends is not selected.

Drawing modes

Illustrator provides the following drawing modes:

- Draw Normal ( )
- Draw Behind ( )
- Draw Inside ( )



A dotted open rectangle like the one shown in the illustration C, is displayed when an object with Draw Inside mode is active.

The Draw Normal mode is the default drawing mode. You can select drawing modes from the Tools panel, below the Color Selector tool.

Drawing Modes panel

To switch through drawing modes, click the Drawing Modes panel in the Tools panel and select the drawing mode. You can also use the Shift+D keyboard shortcut to cycle through the drawing modes.

Note:

The options, Paste, Paste in Place, and Paste on **All Artboards**honor the drawing modes. However, Paste in Front and Paste in Back commands are not affected by the drawing modes.

Draw Behind mode

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 behind mode is honored in the following cases:

- Creating new layers
- Placing symbols
- Placing files from the File menu

- Using Alt+Drag to duplicate objects
- Using Paste in Place and Paste on **All Artboards** options

Draw Inside mode

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).

To create clipping masks using the Draw Inside mode, select the path within which you want to draw and switch to the Draw Inside mode. Subsequent paths are clipped by the path that was selected when you switch to the Draw Inside mode, until you switch to the Draw Normal mode (Shift+D or double-click).

Next lets learn how to EDIT Paths:

Learn how to edit, reshape, smoothen, and simplify paths using different tools available in Illustrator.

Select paths, segments, and anchor points

Before you reshape or edit a path, you need to select the path's anchor points, segments, or a combination of both.

SELECT ANCHOR POINTS

Do any of the following:

- If you can see the points, click them with the Direct Selection tool to select them. Shift-click to select multiple points.
- Select the Direct Selection tool and drag a boundary around the anchor points. Shift-drag around additional anchor points to select them.
- You can select anchor points from selected or unselected paths. Move the Direct Selection tool over the anchor point until the pointer displays a hollow square for unselected and filled square for selected paths in a magnified state, and then click the anchor point. Shift-click additional anchor points to select them.

- Select the Lasso tool and drag around the anchor points. Shift-drag around additional anchor points to select them.

SELECT PATH SEGMENTS

Do any of the following:

- Select the Direct Selection tool and click within two pixels of the segment, or drag a marquee over part of the segment. Shift-click or Shift-drag around additional path segments to select them.

- Select the Lasso tool and drag around part of the path segment. Shift-drag around additional path segments to select them.

SELECT ALL ANCHOR POINTS AND SEGMENTS IN A PATH

- Select the Direct Selection tool or the Lasso tool.
- Drag around the entire path.

If the path is filled, you can also click inside the path using the Direct Selection tool to select all anchor points.

COPY A PATH

Select a path or segment using the Selection tool or Direct Selection tool, and do one of the following:

- Use the standard menu functions to copy and paste paths within or between apps.
- Hold down Alt (Windows) or Option (macOS) and drag the path to the desired position.

Add and delete anchor points

Adding anchor points can give you more control over a path, or it can extend an open path. However, you should not add more points unnecessarily as it makes the path complex. A path with fewer points is easier to edit, display, and print. You can reduce the complexity of a path by deleting unnecessary points.

ADD OR DELETE AN ANCHOR POINT

To add an anchor point:

Try it in the app
Add anchor points in a few simple steps.

Open Illustrator

- Select the Pen tool or the Add Anchor Point tool .
  Note: The Pen tool changes to the Add Anchor Point tool as you position it over a selected path.
- Click over the path segment.

To delete an anchor point:

- Select the Pen tool or the Delete Anchor Point tool and click over the anchor point.
  Note: The Pen tool changes to Delete Anchor Point tool as you position it over an anchor point.
- Select the point with the Direct Selection tool and click Remove Selected Anchor Points in the Control panel.

Note:

Don’t use the Delete and Backspace keys or the **Edit** > **Cut** and **Edit** > **Clear** commands to delete anchor points. These keys and commands also delete the line segments that connect to that point.

FIND AND DELETE STRAY ANCHOR POINTS

Stray anchor points are individual points that aren't connected to other anchor points. It's good practice to find and delete stray anchor points.

1. Deselect all objects.
2. Choose **Select** > **Object** > **Stray Points**.
3. Choose **Edit** > **Cut** or **Edit** > **Clear** commands, or press Delete or Backspace on the keyboard.

DISABLE OR TEMPORARILY OVERRIDE AUTOMATIC PEN TOOL SWITCHING

You can temporarily override or disable automatic switching to the Add Anchor Point tool or Delete Anchor Point tool.

- To temporarily override switching, hold down Shift as you position the Pen tool over the selected path or an anchor point. This is useful when you want to start a new path on top of an existing path. To prevent Shift from constraining the **Pen** tool, release Shift before you release the mouse button.
- To disable switching, choose Edit > Preferences > General (Windows) or Illustrator > Preferences > General (Mac OS), and select Disable Auto Add/Delete.

Create a simple and a smooth path

Illustrator provides you features to smooth the appearance of paths as well as simplify paths by removing excess anchor points. For more information, see Simplify a path.

Average the position of anchor points

1. Select two or more anchor points (on the same path or on different paths).
2. Choose **Object** > **Path** > **Average**.
3. Choose to average along the horizontal (X) axis only, the vertical (Y) axis only, or both axes, and click **OK**.

Convert points on a path

You can convert the points on a path between corner and smooth points. Use options in the Control panel to quickly convert multiple anchor points. Use the Convert Anchor Point tool to choose to convert only one side of the point, and to precisely alter the curve as you convert the point.

CONVERT ONE OR MORE ANCHOR POINTS USING THE CONTROL PANEL

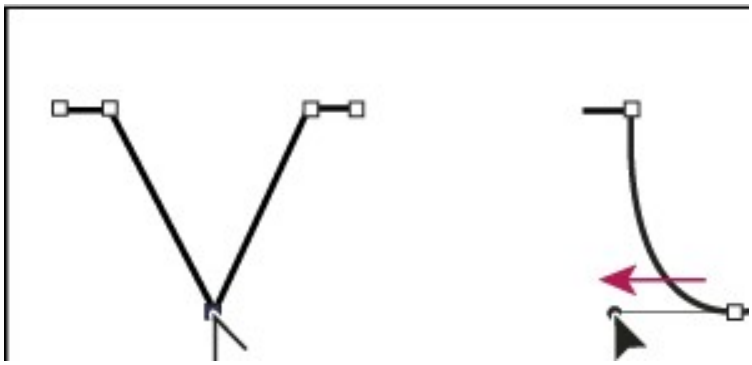
To use the anchor point conversion options in the Control panel, select relevant anchor points only, not the entire object. If you select multiple objects, one of the objects must be only partially selected. When entire objects are selected, the Control panel options change to those that affect the entire object.

1. To convert one or more corner points to smooth points, select the points and then click the Convert Selected Anchor Points To Smooth button in the Control panel.
2. To convert one or more smooth points to corner points, select the points and then click the Convert Selected Anchor Points To Corner button in the Control panel.

CONVERT AN ANCHOR POINT PRECISELY USING THE CONVERT ANCHOR POINT TOOL

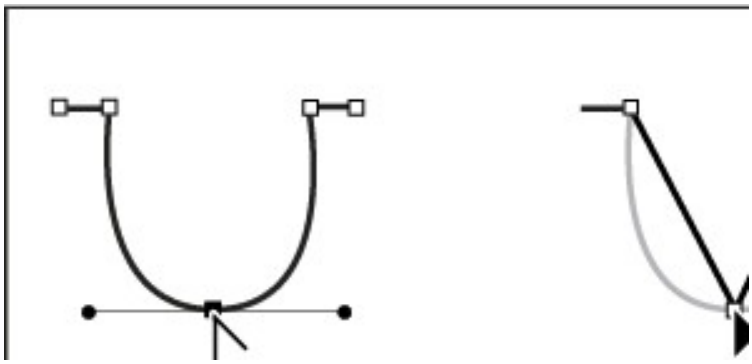
1. Select the entire path you want to modify so that you can see its anchor points.
2. Select the Convert Anchor Point tool.
3. Position the Convert Anchor Point tool over the anchor point you want to convert, and do one of the following:

- To convert a corner point to a smooth point, drag a direction point out of the corner point.



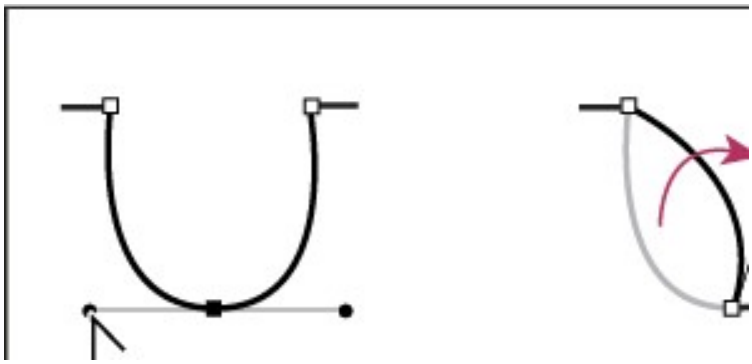
Dragging a direction point out of a corner point to create a smooth point

- To convert a smooth point to a corner point without direction lines, click the smooth point.



Clicking a smooth point to create a corner point

- To convert a smooth point to a corner point with independent direction lines, drag either direction point.

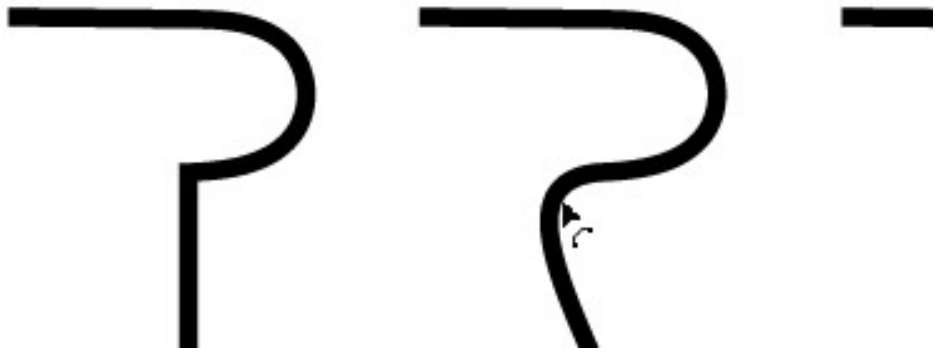


Converting a smooth point to a corner point

- To convert a corner point without direction lines to a corner point with independent direction lines, first drag a direction point out of a corner point (making it a smooth point with direction lines). Release the mouse button only (don't release any keys you may have pressed to activate the Convert Anchor Point tool), and then drag either direction point.

The **Reshape Segment** cursor supports reshaping with touch input on touch-based devices and touch workspace. To use it with the **Convert Anchor Point** tool, follow these steps:

1. Select the **Convert Anchor Point** tool, and then hover the pointer over a path segment.
2. When the **Reshape Segment** cursor is displayed, drag the path segment to reshape it.



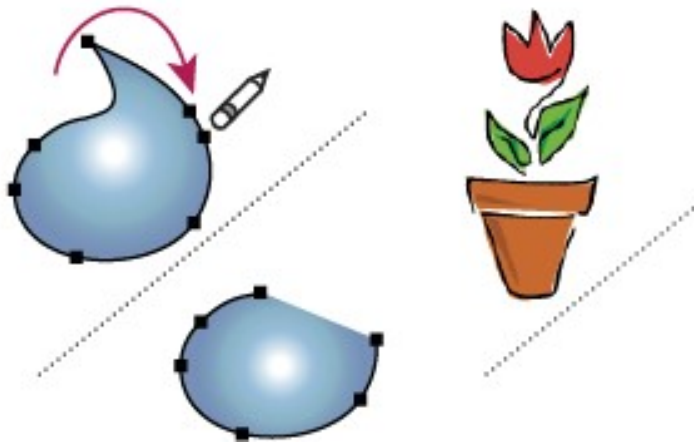
Artwork modified by reshaping a line segment with the Anchor Point tool

A. Original artwork **B.** Reshaping a segment with the Anchor Point tool **C.** Modified shape

3. To create a copy of the path segment, press Alt / Option while performing Step 2.
4. To create a semi-circular segment hold the Shift key while reshaping a segment. Holding the Shift modifier constrains the handles to a perpendicular direction, and ensures that the handles are of equal length.

Erase artwork

You can erase portions of your artwork using the Path Eraser tool, the Eraser tool, or the eraser on a Wacom stylus pen. The Path Eraser tool lets you erase parts of a path by drawing along the path. This tool is useful when you want to limit what you erase to a path segment, such as one edge of a triangle. The Eraser tool and the eraser on a Wacom stylus pen let you erase any area of your artwork, regardless of structure. You can use the Eraser tool on paths, compound paths, paths inside Live Paint groups, and clipping paths.



Using the Path Eraser tool to erase portions of a path (left); using the Eraser tool to erase part of a grouped object (right)

ERASE PART OF A PATH USING THE PATH ERASER TOOL

1. Select the object.
2. Select the Path Eraser tool .

3. Drag the tool along the length of the path segment you want to erase. For best results, use a single, smooth, dragging motion.

ERASE OBJECTS USING THE ERASER TOOL

1. Do one of the following:

- To erase specific objects, select the objects or open the objects in isolation mode.
- To erase any object on the artboard, leave all objects unselected.

When you have nothing selected, the Eraser tool erases through and across all layers.

2. Select the Eraser tool .
3. (Optional) Double-click the Eraser tool and specify options.
4. Drag over the area you want to erase. You can control the tool by doing any of the following:

- To constrain the Eraser tool to a vertical, horizontal, or diagonal line, Shift-drag.
- To create a marquee around an area and erase everything inside the area, Alt-drag (Windows) or Option-drag (Mac OS). To constrain the marquee to a square, Alt-Shift-drag (Windows) or Option-Shift-drag (Mac OS).

ERASE OBJECTS USING A WACOM STYLUSPEN ERASER

When you flip a stylus pen, the Eraser Tool automatically becomes active. When you flip the stylus pen back over, the last active tool becomes active again.

- Turn over the stylus pen and drag across the area you want to erase. Press harder to increase the width of the erased path. (You may need to select the Pressure option in the Eraser Tool Options dialog box first.)

ERASER TOOL OPTIONS

You can change the Eraser tool options by double-clicking the tool in the Tools panel.

Note:

You can change the diameter at any time by pressing] to enlarge or [to reduce.

Angle

Determines the angle of rotation for the tool. Drag the arrowhead in the preview, or enter a value in the Angle text box.

Roundness

Determines roundness of the tool. Drag a black dot in the preview away from or toward the center, or enter a value in the Roundness text box. The higher the value, the greater the roundness.

Diameter

Determines the diameter of the tool. Use the Diameter slider, or enter a value in the Diameter text box.

The pop-up list to the right of each option lets you control variations in the shape of the tool. Select one of the following options:

Fixed

Uses a fixed angle, roundness, or diameter.

Random

Uses random variations in angle, roundness, or diameter. Enter a value in the Variation text box to specify the range within which the brush characteristic can vary. For example, when the Diameter value is 15 and the Variation value is 5, the diameter can be 10, or 20, or any value in between.

Pressure

Varies in angle, roundness, or diameter based on the pressure of a drawing stylus. This option is most useful when used with Diameter. It is available only if you have a graphics tablet. Enter a value in the Variation text box to specify how much more or less the original value the brush characteristic will vary. For example, when the Roundness value is 75% and the Variation value is 25%, the lightest stroke is 50% and the heaviest stroke is 100%. The lighter the pressure, the more angular the brush stroke.

Stylus Wheel

Varies in diameter based on manipulation of the stylus wheel.

Tilt

Varies in angle, roundness, or diameter based on the tilt of a drawing stylus. This option is most useful when used with Roundness. It is available only if you have a graphics tablet that can detect the direction in which the pen is tilted.

Bearing

Varies in angle, roundness, or diameter based on the pressure of a drawing stylus. This option is most useful when used to control the angle of calligraphic brushes, especially when you’re using the brush like a paintbrush. It is available only if you have a graphics tablet that can detect how close to vertical the pen is.

Rotation

Varies in angle, roundness, or diameter based on how the drawing stylus pen tip is rotated. This option is most useful when used to control the angle of calligraphic brushes, especially when you’re using the brush like a flat pen. It is available only if you have a graphics tablet that can detect this type of rotation.

Split a path

You can split a path at any anchor point or along any segment. When you split a path, keep the following in mind:

- If you want to split a closed path into two open paths, you must slice in two places along the path. If you slice a closed path only once, you get a single path with a gap in it.
- Any paths resulting from a split inherit the path settings of the original path, such as stroke weight and fill color. Stroke alignment is automatically reset to center.

1. (Optional) Select the path to see its current anchor points.
2. Do one of the following:

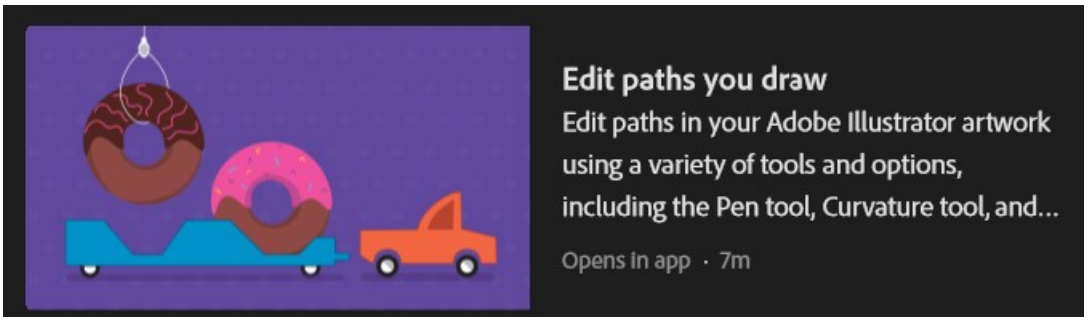
- Select the Scissors tool and click the path where you want to split it. When you split the path in the middle of a segment, the two new endpoints appear on top of the other, and one endpoint is selected.
- Select the Knife tool and drag the pointer over the object. The cuts created using the Knife tool appear as strokes on the object.

- Select the anchor point where you want to split the path, and then click the Cut Path At Selected Anchor Points button in the Control panel. When you split the path at an anchor point, a new anchor point appears on top of the original anchor point, and one anchor point is selected.

  For details, see *Cut, divide, and trim objects*.

3. Use the Direct Selection tool to adjust the new anchor point or path segment.

Next we will watch a short video about Editing Paths:



What you learned

Select anchor points

With the Direct Selection tool, you can select a path to see its anchor points. To select a point, click it. Shift-click to add or remove points from the selection, or drag across anchor points to select them.

Add and remove anchor points

You can add points to a selected path by clicking the path with the Pen tool selected. Click directly on an anchor point with the Pen tool selected to remove anchor points.

Convert points with the Anchor Point tool

To remove the direction lines from a point, click it with the Anchor Point tool. To add direction lines to a point so you can make a curve, drag away from the point.