

How to modify and transform graphics

Adobe Illustrator offers many options to modify and transform graphics. This guide introduces many common transformation tools, such as:

- Scaling, shearing (**Figure 1**), rotating, and flipping objects
- Distortion
- The Blend tool used to merge two objects into one to create one graphic
- A wide variety of effects, such as the Drop Shadow, Blur, and Sketch

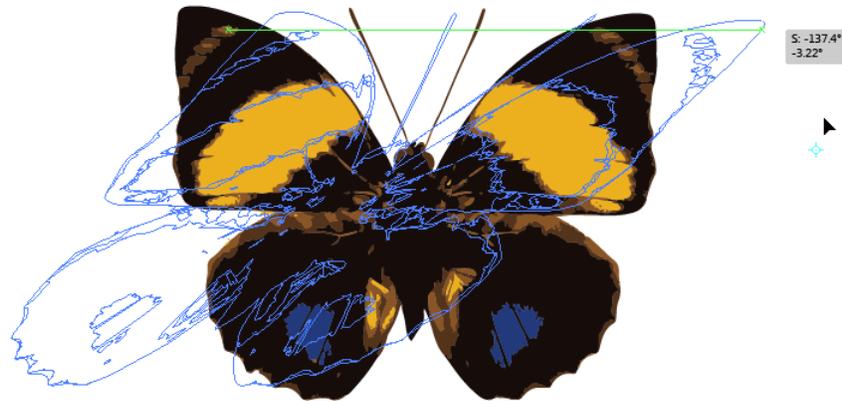


Figure 1 Shearing an object

Transforming graphics

Transforming encompasses moving, rotating, reflecting, scaling, and shearing objects. You can transform objects by using the Transform panel, Object > Transform commands, and specialized tools. You can also perform many types of transformations by dragging the bounding box for a selection.

Sometimes you may want to repeat the same transformation several times, especially when you are copying objects. The Transform Again command in the Object menu lets you repeat a move, scale, rotate, reflect, or shear operation as many times as you want, until you perform a different transform operation. You can use the Info panel to view the current dimensions and position of your selection as you transform it.

Transform panel overview

The Transform panel (Window > Transform) displays information about the location, size, and orientation of one or more selected objects (**Figure 2**). By typing new values, you can modify the selected objects, their pattern fills, or both. You can also change the transformation reference point and lock the object's proportions.

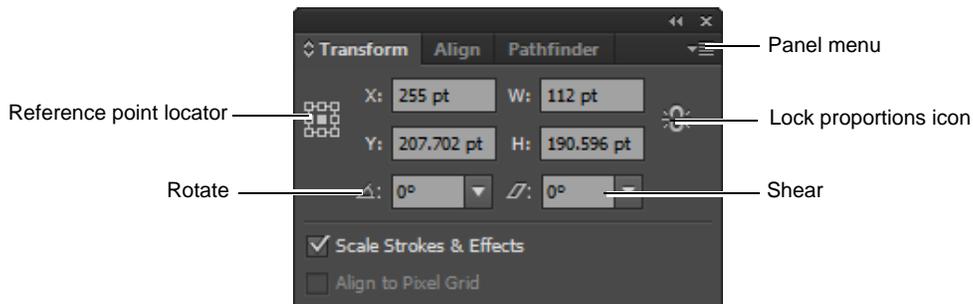


Figure 2 Transform panel

All values in the panel refer to the bounding boxes of the objects except for the X and Y values, which refer to the selected reference point. To pixel-align individual objects to the pixel grid, check the Align to Pixel Grid check box.

Note: The reference point locator in the Transform panel specifies an object's reference point only when you transform the object by changing the values in the panel. Other methods of transforming (such as using the Scale tool) use the object's center point or the pointer location as the reference point.

Transform an object's patterns

When you move, rotate, reflect (flip), scale, or shear an object that is filled with a pattern, you can transform just the object, just the pattern, or both the object and pattern. Once you transform an object's fill pattern, all patterns you subsequently apply to that object are transformed the same way.

- To specify how you want to transform patterns when using the Transform panel, select an option from the panel menu (**Figure 3**): Transform Object Only, Transform Pattern Only, or Transform Both.
- To specify how you want to transform patterns when using a transform command, set the Objects and Patterns options in the corresponding dialog box. For example, select Patterns and deselect Objects if you want to transform the pattern but not the object.
- To transform patterns but not objects when using a Transform tool, hold down the tilde key (~) while dragging. The borders of the object appear to be transformed, but when you release the mouse button, the borders snap back to their original configuration, leaving only the pattern transformed.
- To prevent patterns from transforming when you're using Transform tools, choose Edit > Preferences > General (Windows) or Illustrator > Preferences > General (Mac OS) and deselect Transform Pattern Tiles.
- To return an object's fill pattern to its original state, fill the object with a solid color, and then reselect the desired pattern.

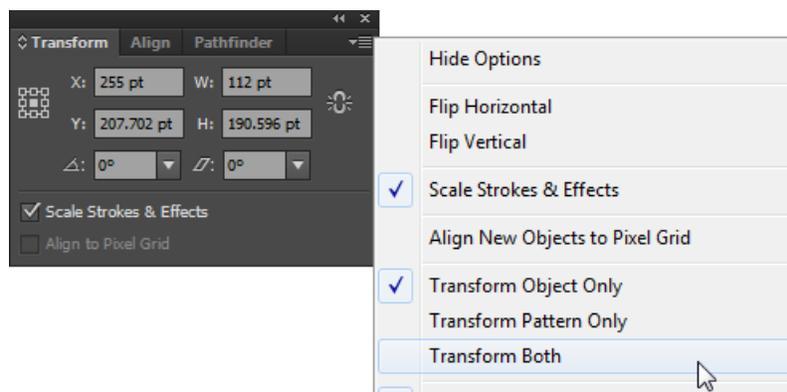


Figure 3 Transform panel menu

Transform by using the bounding box

When you select one or more objects with the Selection tool, a bounding box appears around them. Use the bounding box to easily move, rotate, duplicate, and scale objects by dragging the object or a handle (one of the hollow squares along the bounding box) (**Figure 4**).

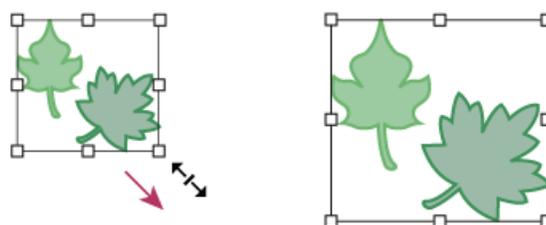


Figure 4 Selected objects before (left) compared to after (right) scaling by using the bounding box

- To show the bounding box, choose View > Show Bounding Box.
- To hide the bounding box, choose View > Hide Bounding Box.
- To reorient the bounding box after you rotate it, choose Object > Transform > Reset Bounding Box.

Move objects

You can move objects by dragging them with specific tools, by using the arrow keys on the keyboard, or by entering precise values in the Control panel (**Figure 5**).



Figure 5 Control panel

You can use snapping to help you position objects as you move them. For example, you can snap the pointer to guides and anchor points and snap object boundaries to gridlines. You can also use the Align (Window > Align) panel to position objects in relation to each other (**Figure 6**).

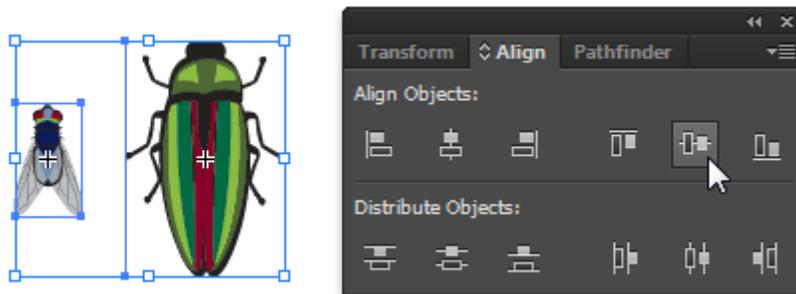


Figure 6 Aligning objects with the panel

You can then use the Shift key to constrain the movement of one or more objects so they move in a precise horizontal, vertical, or diagonal direction relative to the current orientation of the x and y axes. You can also use the Shift key to rotate objects in multiples of 45° (**Figure 7**).

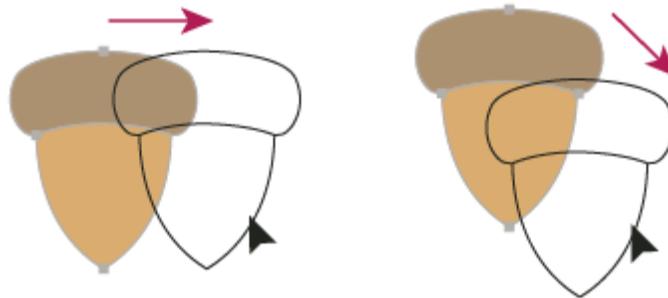


Figure 7 Hold down Shift while dragging or drawing to limit movement to the nearest 45° angle.

Scale objects

Scaling an object enlarges or reduces it horizontally (along the x axis), vertically (along the y axis), or both. Objects scale relative to a reference point that varies depending on the scaling method you choose. You can change the default reference point for most scaling methods, and you can also lock the proportions of an object.

Note: After you scale an object, Illustrator does not retain the original size of the object in memory. Therefore, you cannot resume the original size of the object. However, you can see the resolution of the object in the Document Info panel and decide on the scale at which you want to resize the object, while retaining the object's resolution.

By default, strokes and effects are not scaled along with objects. To scale strokes and effects, choose Edit > Preferences > General (Windows) or Illustrator > Preferences > General (Mac OS), and select Scale Strokes & Effects (**Figure 8**). If you want to choose whether to scale strokes and effects on a case-by-case basis, use the Transform panel or the Scale command to scale objects.

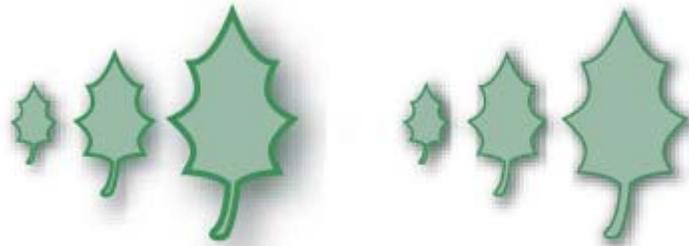


Figure 8 The Scale Strokes & Effects option scales the object, the drop shadow effect, and the stroke (left); only the object scales when this option is off (right).

How to scale objects with the Scale tool:

1. Select one or more objects.
 2. Select the Scale tool (**Figure 9**).
 3. Do any of the following:
 - To scale relative to the object’s center point, drag anywhere in the document window until the object is the desired size (**Figure 10**).
 - To scale relative to a different reference point, click where you want the reference point to be in the document window, move the pointer away from the reference point, and then drag until the object is the desired size.
 - To maintain the object’s proportions as it scales, hold down Shift as you drag diagonally.
- Note:** While using the Scale tool with the Shift key, start dragging at an angle of 45° horizontally or vertically.
- To scale the object along a single axis, hold down Shift as you drag vertically or horizontally.

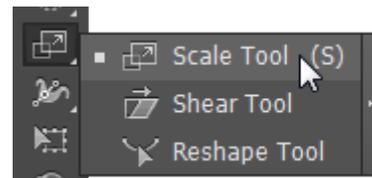


Figure 9 Tools panel

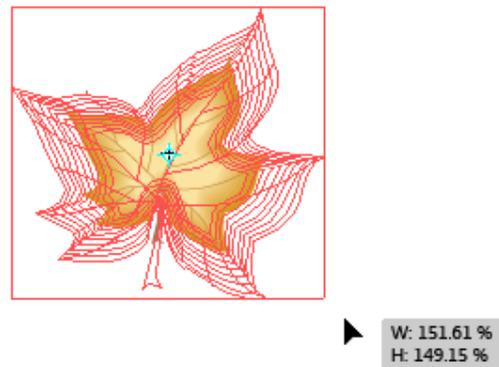


Figure 10 Drag to resize, using Scale tool

How to scale objects with the bounding box:

1. Select one or more objects.
 2. Select the Selection tool.
 3. Drag a bounding box handle until the object is the desired size (**Figure 11**).
- Objects scale relative to the opposite handle of the bounding box.

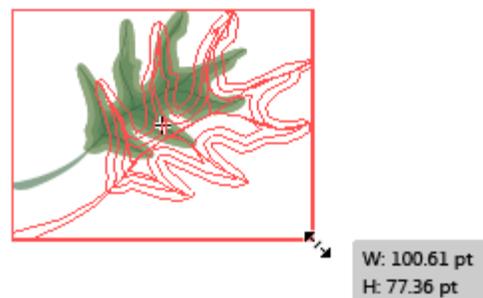


Figure 11 Drag to resize, using Selection tool

4. Do any of the following to control the scaling behavior:

- To maintain the object’s proportions, hold down Shift as you drag.
- To scale relative to the object’s center point, hold down Alt (Windows) or Option (Mac OS) as you drag.

How to scale objects to a specific dimension:

1. Select one or more objects.
2. In the Transform panel, enter a new value in the Width (W) or Height (H) box, or both (Figure 12).

To control the scaling behavior, do any of the following before you enter a value.

- To maintain the objects’ proportions, click the lock proportions button.
- To change the reference point for scaling, click a white square on the reference point locator.
- To scale stroked paths and any size-related effects along with the object, select Scale Strokes & Effects from the panel menu.

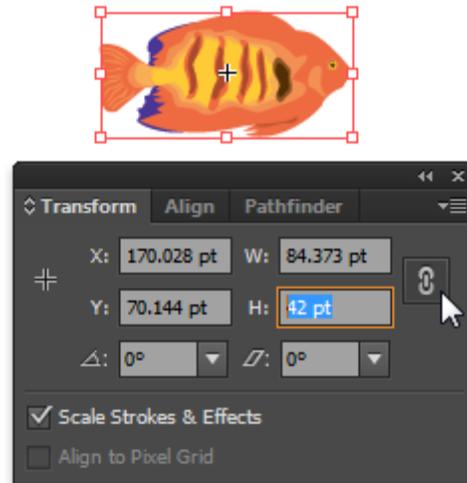


Figure 12 Scale using the Transform panel

Shear objects

Shearing an object slants, or skews, the object along the horizontal or vertical axis, or a specified angle that’s relative to a specified axis. Objects shear relative to a reference point that varies depending on the shearing method you choose and can be changed for most shearing methods (Figure 13). You can lock one dimension of an object as you shear it, and you can shear one object or multiple objects simultaneously.

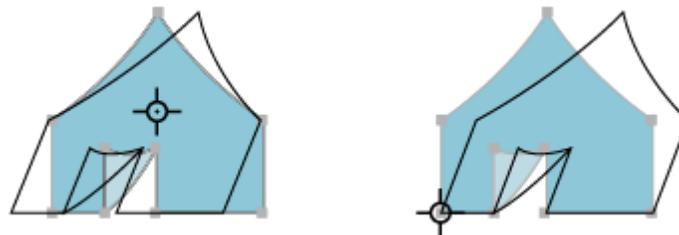


Figure 13 Shearing relative to the center (left) compared to shearing relative to a user-defined reference point (right)

How to shear objects with the Shear tool:

1. Select one or more objects.
2. Select the Shear tool (Figure 14).

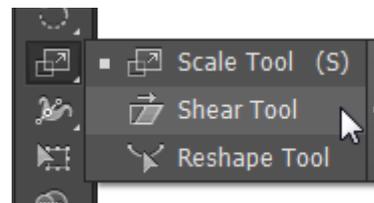


Figure 14 Tools panel

3. Do one of the following:

- To shear relative to the object's center, drag anywhere in the document window (**Figure 15**).
- To shear relative to a different reference point, click anywhere in the document window to move the reference point, move the pointer away from the reference point, and then drag until the object is at the desired slant.
- To shear along the object's vertical axis, drag anywhere in the document window in an up or down direction. To constrain the object to its original width, hold down Shift.
- To shear along the object's horizontal axis, drag anywhere in the document window in a left or right direction. To constrain the object to its original height, hold down Shift.



Figure 15 Drag to shear an object

How to shear objects with the Transform panel:

1. Select one or more objects.
2. In the Transform panel, enter a value in the Shear box (**Figure 16**).

The shear is applied (**Figure 17**).

To change the reference point, click a white square on the reference point locator before you enter the value.

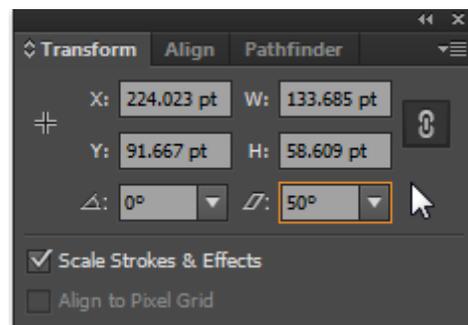


Figure 16 Shear using the Transform panel

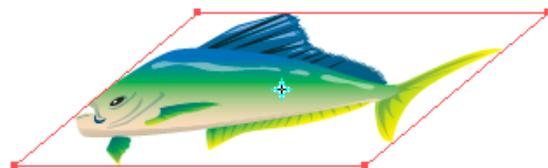


Figure 17 Shear applied

Rotate objects

Rotating an object turns it around a fixed point that you designate. The default reference point is the object's center point. If you have multiple objects in a selection, the objects will rotate around a single reference point, which is the center point of the selection or bounding box by default.

To rotate each object around its own center point, use the Transform Each command (**Figure 18**). You can control the exact angle of rotation with the Rotate command.



Figure 18 Results of Rotate tool (left) compared to Transform Each command (right)

How to rotate an object using the bounding box:

1. Select one or more objects.
2. With the Selection tool, move the pointer outside the bounding box and near a bounding box handle so that the pointer changes to the rotate icon (**Figure 19**), and then drag.



Figure 19 Rotate using the bounding box

How to rotate an object with the Rotate tool:

1. Select one or more objects.
2. Select the Rotate tool (**Figure 20**)
3. Do any of the following:
 - To rotate the object around its center point, drag in a circular motion anywhere in the document window (**Figure 21**).
 - To rotate the object around a different reference point, click once anywhere in the document window to reposition the reference point. Then move the pointer away from the reference point and drag in a circular motion.
 - To rotate a copy of the object instead of the object itself, hold down Alt (Windows) or Option (Mac OS) after you start to drag.

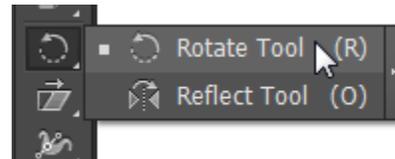


Figure 20 Tools panel

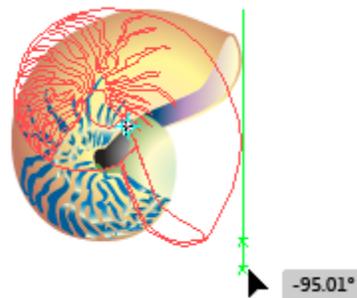


Figure 21 Drag to rotate an object

Reflect or flip objects

Reflecting an object flips the object across an invisible axis that you specify (**Figure 22**). You can reflect objects by using the Free Transform tool, the Reflect tool, or the Reflect command. If you want to specify an axis from which to reflect, use the Reflect tool.



Figure 22 Click to set one point of the axis (left), then click again to set the other axis point and reflect the object across the axis (right).

How to reflect an object with the Free Transform tool:

1. Select the object to reflect.
2. Select the Free Transform tool and confirm Free Transform is selected in the options pane (**Figure 23**).

The Free Transform tool provides other options to constrain proportions, to distort perspective, and to free distort the selected object.

3. Do one of the following:
 - Drag a handle of the bounding box past the opposite edge or handle until the object is at the desired level of reflection (**Figure 24**).
 - To maintain the object’s proportions, hold down Shift while dragging a corner handle past the opposite handle.

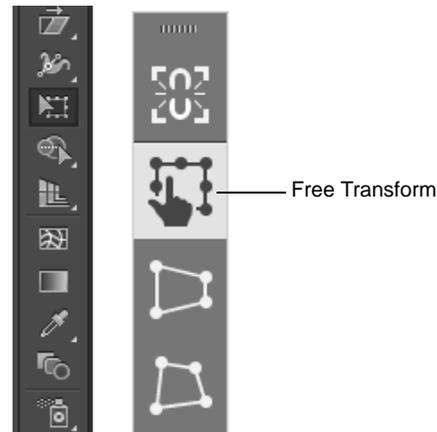


Figure 23 Tools panel with Free Transform pane



Figure 24 Drag to reflect

How to reflect an object with the Reflect tool:

1. Select the object.
2. Select the Reflect tool (**Figure 25**).
3. To draw the invisible axis across which you want the object to reflect, click anywhere in the document window to set one point of the axis. The pointer changes to an arrowhead.

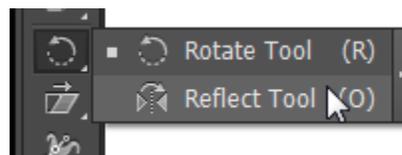


Figure 25 Tools panel

4. Position the pointer at another point to define the invisible axis, and do one of the following:
 - Click to set the second point of the invisible axis. When you click, the selected object flips over the defined axis (**Figure 26**).
 - To reflect a copy of the object, hold down Alt (Windows) or Option (Mac OS) and click to set the second point of the invisible axis.
 - Adjust the axis of reflection by dragging instead of clicking. Shift-drag to constrain the angle by 45°. As you drag, the invisible axis of reflection rotates around the point you clicked in step 3 and an outline of the object appears reflected. When the outline is in the desired position, release the mouse button.

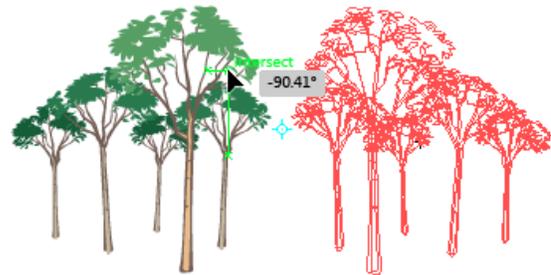
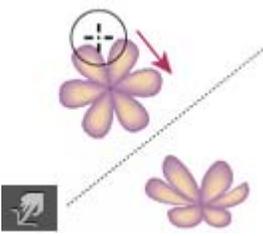
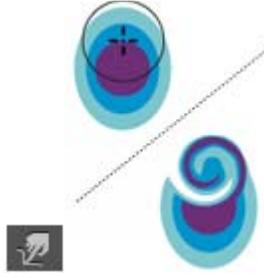
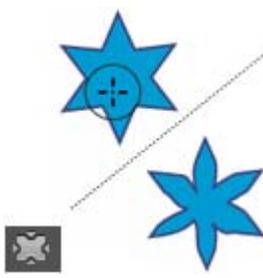
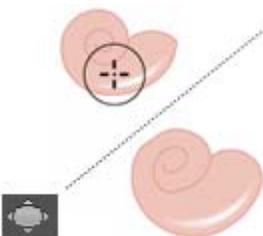
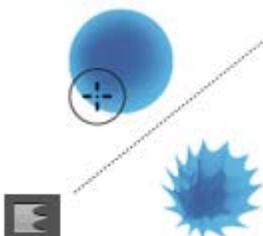
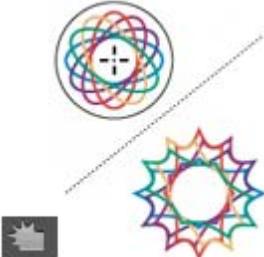
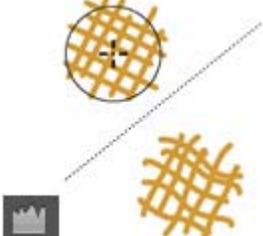


Figure 26 Click to reflect an object

Distorting graphics

You can distort objects by using the Free Transform tool or a Liquify tool. Use the Free Transform tool when you want to distort freely; use a Liquify tool if you want to take advantage of specific preset distortions such as twirls, puckers, or wrinkles. The following tools can be used for reshaping and distorting objects:

 <p>The Width tool allows you to create a stroke with variable width.</p>	 <p>The Warp tool molds objects with the movement of the cursor (like molding clay, for example).</p>	 <p>The Twirl tool creates swirling distortions within an object.</p>	 <p>The Pucker tool deflates an object by moving control points toward the cursor.</p>
 <p>The Bloat tool inflates an object by moving control points away from the cursor.</p>	 <p>The Scallop tool adds random curved details to the outline of an object.</p>	 <p>The Crystallize tool adds random spiked details to the outline of an object.</p>	 <p>The Wrinkle tool adds wrinkle-like details to the outline of an object.</p>

You cannot use Liquify tools on linked files or objects that contain text, graphs, or symbols.

How to distort objects with the Free Transform tool:

1. Select one or more objects.
2. Select the Free Transform tool.
3. Choose Free Distort in the options pane (**Figure 27**).
The Free Transform tool provides other options to constrain proportions, to distort perspective, and to free distort the selected object.
4. Start dragging a corner handle on the bounding box (not a side handle) (**Figure 28**) and release when you've achieved the desired level of distortion.

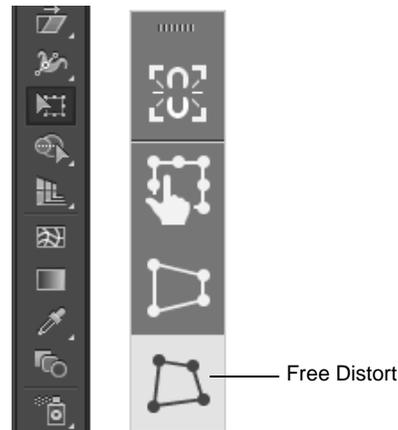


Figure 27 Tools panel with Free Transform pane

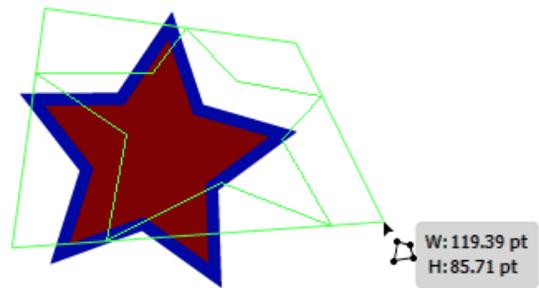


Figure 28 Drag to free distort

How to distort objects using a Liquify tool:

1. Select a Liquify tool (**Figure 29**).
There are many to choose from, including the Width tool, Warp tool, Twirl tool and more. This example will demonstrate the Bloat tool.

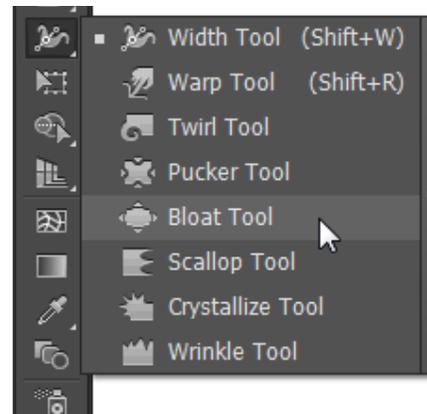


Figure 29 Tools panel

2. Click or drag over the objects you want to distort (Figure 30).

The object is distorted (Figure 31).

3. (Optional) To isolate the distortion to specific objects, select the objects before using the tool.
4. (Optional) To change the size of the tool cursor and set other tool options, double-click the Liquify tool and specify any of the following in the dialog box (Figure 32):

- *Width and Height* Controls the size of the tool cursor.
- *Angle* Controls the orientation of the tool cursor.
- *Intensity* Specifies the rate of change for the distortion. Higher values equal faster changes.
- *Use Pressure Pen* Uses the input from a tablet or pen instead of the Intensity value. If you don't have a pressure-sensitive tablet attached, this option is dimmed.
- *Complexity* (Scallop, Crystallize, and Wrinkle tools) Specifies how closely the results of the particular brush are spaced on the object's outline. This is closely tied with the Detail value.
- *Detail* Specifies the spacing between points introduced into the object's outline (higher values space points closer together).
- *Simplify* (Warp, Twirl, Pucker, and Bloat tools) Specifies how much you want to reduce the superfluous points that do not measurably affect the overall appearance of the shape.
- *Twirl Rate* (Twirl tool only) Specifies the rate at which the twirl is applied. Enter a value between -180° and 180° . Negative values twirl the object clockwise and positive values twirl counter-clockwise. The object twirls faster with values that are closer to either -180° or 180° . To twirl slowly, specify a rate close to 0° .
- *Horizontal and Vertical* (Wrinkle tool only) Specifies how far apart the control points are placed.
- *Brush Affects Anchor Points*, *Brush Affects In Tangent Handles*, and *Brush Affects Out Tangent Handles* (Scallop, Crystallize, Wrinkle tools) Enables the tool brush to make changes to these properties.

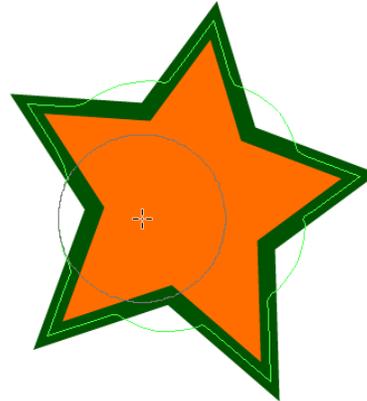


Figure 30 Drag to distort

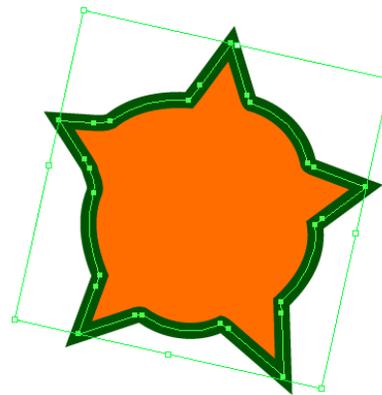


Figure 31 Result of Bloat tool distortion

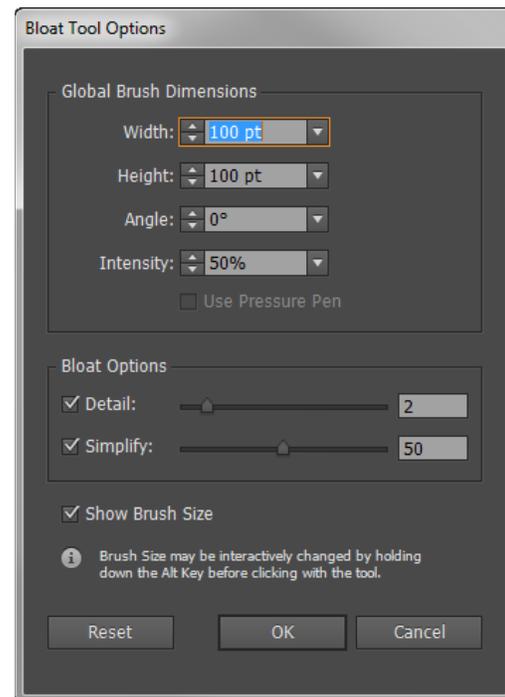


Figure 32 Bloat Tool options dialog box

About the Blend tool

You can blend objects to create and distribute shapes evenly between two objects (**Figure 33**). You can also blend between two open paths to create a smooth transition between objects, or you can combine blends of colors and objects to create color transitions in the shape of a particular object (**Figure 34**). Blending objects is not the same as applying blending modes or transparency to objects.

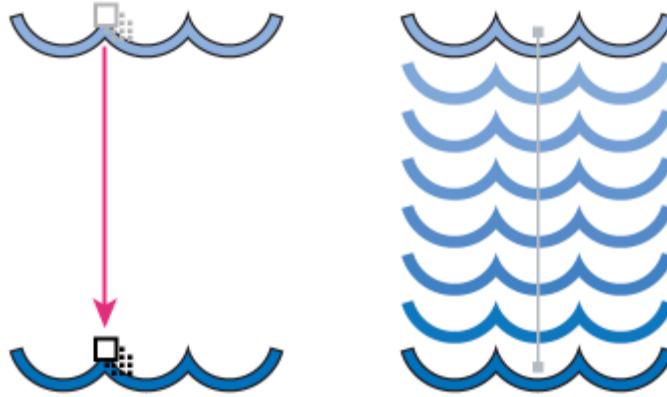


Figure 33 Example of using a blend to distribute shapes evenly between two objects

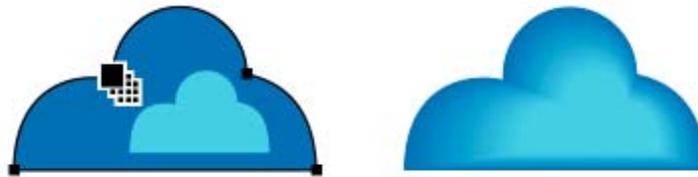


Figure 34 Example of using a blend to distribute color smoothly between two objects

Once you create a blend, the blended objects are treated as one object. If you move one of the original objects or edit the original object's anchor points, the blend changes accordingly. In addition, the new objects blended between the original objects don't have their own anchor points. You can expand the blend in order to divide the blend into distinct objects.

The following rules apply to blended objects and their associated colors:

- You cannot blend between mesh objects.
- If you blend between one object painted with a process color and another object painted with a spot color, the blended shapes are painted with a blended process color. If you blend between two different spot colors, process colors are used to paint the intermediate steps. If, however, you blend between tints of the same spot color, the steps are all painted with percentages of the spot color.
- If you blend between two patterned objects, the blended steps will only use the fill of the object on the topmost layer.
- If you blend between objects that have blending modes specified with the Transparency panel, the blended steps will only use the blending mode of the top object.
- If you blend between objects with multiple appearance attributes (effects, fills, or strokes), Illustrator attempts to blend the options.
- If you blend between two instances of the same symbol, blended steps will be instances of that symbol. If, however, you blend between two instances of different symbols, the blended steps will not be symbol instances.

- By default, blends are created as knockout transparency groups, so if any of the steps consist of overlapping transparent objects, these objects will not show through each other. You can change this setting by selecting the blend and deselecting Knockout Group in the Transparency panel.

The Blend tool and Make Blend command let you create blends, which are a series of intermediate objects and colors between two or more selected objects.

How to create a blend with the Blend tool:

1. Select the Blend tool (**Figure 35**).
2. Do one of the following:
 - To blend in sequential order with no rotation, click anywhere on each object, but avoid anchor points (**Figure 36**).
 - To blend to a specific anchor point on an object, click the anchor point with the Blend tool. When the pointer is over an anchor point, the pointer changes from a white square to transparent with a black dot in its center.
 - To blend open paths, select an endpoint on each path.
3. When you are finished adding objects to the blend, click the Blend tool again.

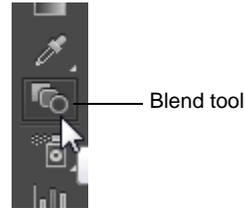


Figure 35 Tools panel

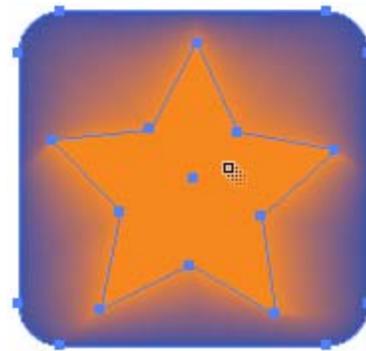


Figure 36 Click in the center object to blend with an object below

Applying effects

Illustrator includes a variety of effects, which you can apply to an object, group, or layer to change its characteristics.

Once you apply an effect to an object, the effect appears in the Appearance panel (**Figure 37**). From the Appearance panel, you can edit the effect, move it, duplicate it, delete it, or save it as part of a graphic style. When you use an effect, you must expand the object before you can access the new points.

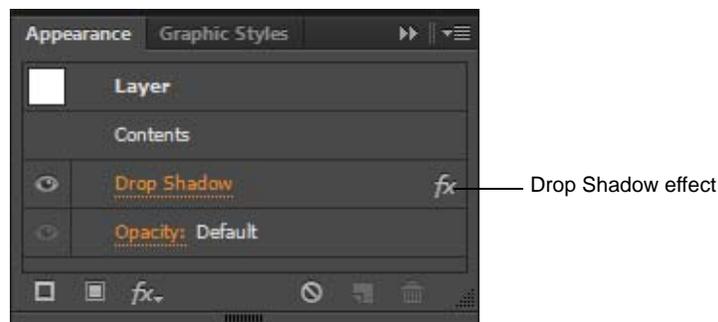


Figure 37 Appearance panel

The effects in the top half of the Effects menu are vector effects (**Figure 38**). You can apply these effects only to vector objects or to the fill or stroke of a bitmap object in the Appearance panel. The following effects and effects categories from the top section are exceptions to this rule and can be applied to both vector and bitmap objects: 3D effects, SVG Filters, Warp effects, Transform effects, Drop Shadow, Feather, Inner Glow, and Outer Glow.

The effects in the bottom half of the Effects menu are raster effects. You can apply them to either vector or bitmap objects.

How to apply a drop shadow effect:

1. Select the object or group (or target a layer in the Layers panel).

If you want to apply an effect to a specific attribute of an object, such as its fill or stroke, select the object and then select the attribute in the Appearance panel.

2. Choose Effect > Stylize > Drop Shadow from the Effect menu (**Figure 38**).

The Drop Shadow dialog box opens (**Figure 39**)

3. Set drop shadow options, and then click OK.

The drop shadow effect is applied (**Figure 40**).

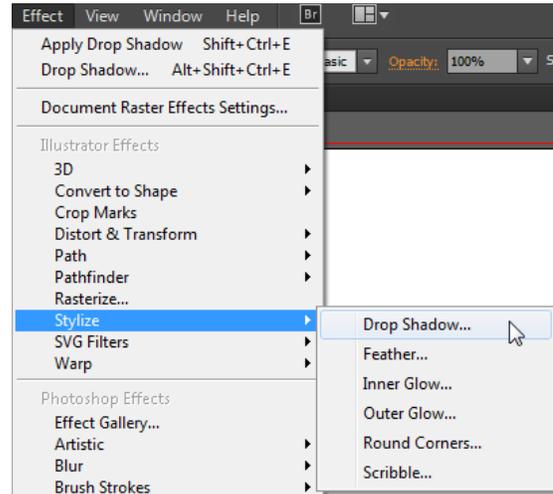


Figure 38 Effect menu

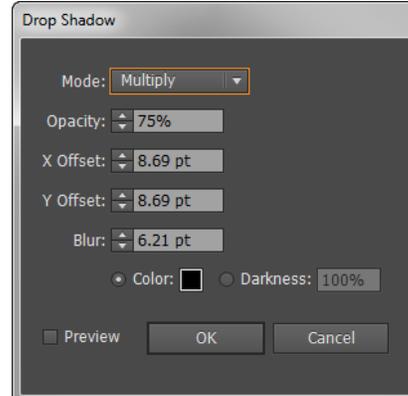


Figure 39 Drop Shadow dialog box



Figure 40 Drop shadow effect applied