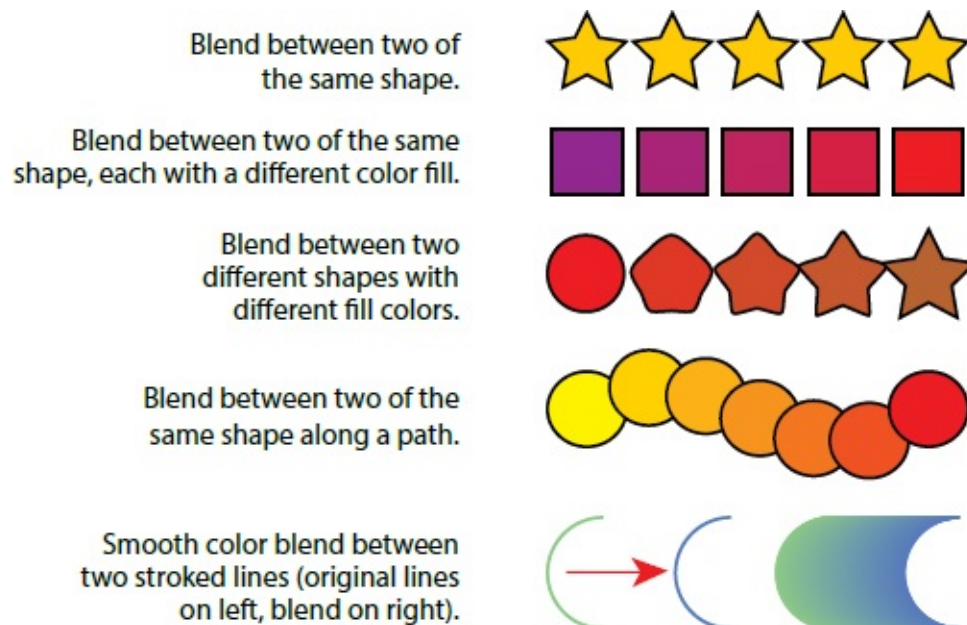8. Choose Object > Hide > Selection.
9. Choose File > Save.

Working with blended objects

You can blend two distinct objects to create and distribute shapes evenly between two objects. The two shapes you blend can be the same or different. You can also blend between two open paths to create a smooth transition of color between objects, or you can combine blends of colors and objects to create color transitions in the shape of a particular object.

The following are examples of different types of blended objects you can create:

Blend between two of the same shape.	
Blend between two of the same shape, each with a different color fill.	
Blend between two different shapes with different fill colors.	
Blend between two of the same shape along a path.	
Smooth color blend between two stroked lines (original lines on left, blend on right).	

When you create a blend, the blended objects are treated as one object, called a *blend object*. If you move one of the original objects or edit the anchor points of the original object, the blend changes accordingly. You can also expand the blend to divide it into distinct objects.

Creating a blend with specified steps

Next, you'll use the Blend tool (🔳) to blend two shapes that you will use to create a pattern for the cake decoration.

1. Choose View > Zoom In a few times to zoom in closely. Make sure you can still see the two small maroon shapes on the cake (see the following figure).

   ▶ **Tip:** You can add more than two objects to a blend.

2. Select the Blend tool (🔳) in the Tools panel. Move the little box part of the pointer (🔳) over the center of the small maroon shape on the left side of the cake and click.

    ● **Note:** If you wanted to end the current path and blend other objects, you would first click the Blend tool in the Tools panel and then click the other objects, one at a time, to blend them.

3. Move the pointer away from the shape and a you'll see a plus sign next to the pointer (🔳), indicating that you can add an object to the blend. Move the little box part of the pointer (not the plus) over the center of the small maroon shape on the right side of the cake and click to create a blend between these two objects.
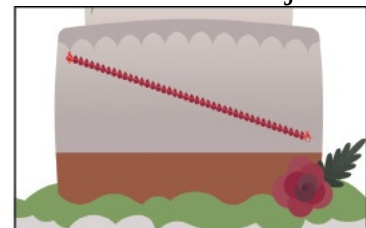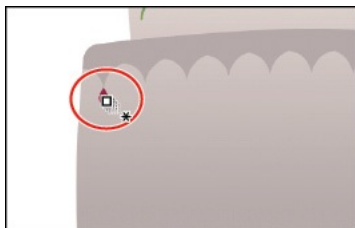
4. With the blended object still selected, choose Object > Blend > Blend Options. In the Blend Options dialog box, choose Specified Steps from the Spacing menu, change Specified Steps to **9**, and then click OK.
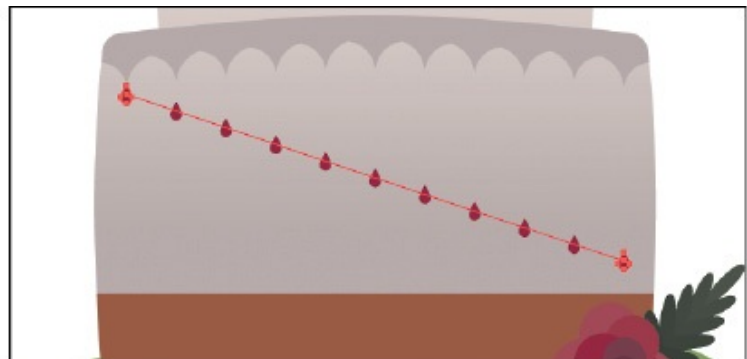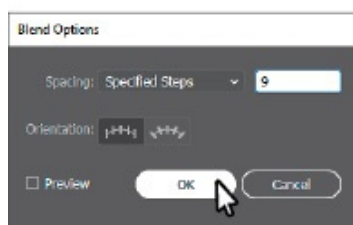
    ▶ **Tip:** To edit the blend options for an object, you can also select the blend object and then double-click the Blend tool. You can also double-click the Blend tool (🔳) in the Tools panel to set tool options *before* you

create the blend object.

Modifying a blend

Now you'll edit the spine of the blend you just created so the shapes blend along a curve.

1. Select the Selection tool (▶) in the Tools panel, and click anywhere on the blend object to select it, if it's not already selected. Choose View > Zoom In, making sure you can still see the whole blend object.

2. Double-click anywhere on the blend object to enter Isolation mode.

This temporarily ungroups the blended objects and lets you edit each original shape, as well as the spine. The spine is a path along which the steps in a blended object are aligned. By default, the spine is a straight line.
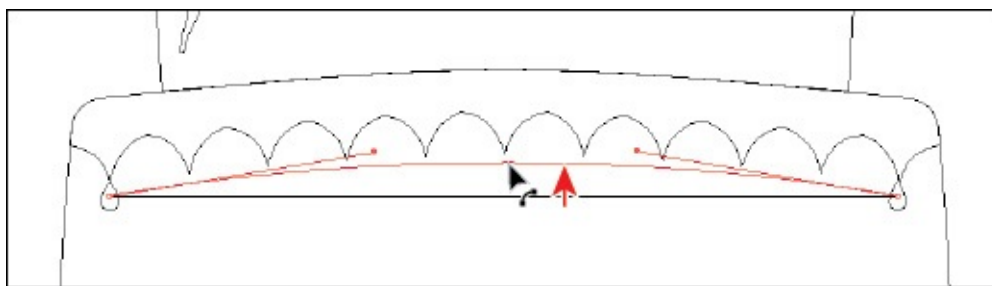
3. Choose View > Outline.

In Outline mode, you can see the outlines of the two original shapes and a straight path (spine) between them. These three objects are what a blend object is composed of, by default. It can be easier to edit the path between the original objects in Outline mode.

4. Click and drag the edge of the smaller shape on the right up until it touches the cake decoration above it. See the following figure.
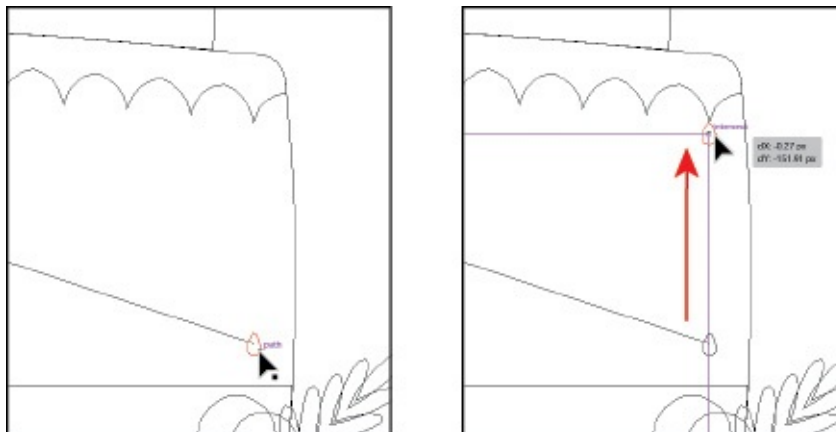

Make sure you drag the shape and not the path between the shapes.

5. Choose Select > Deselect, and remain in Isolation mode.

6. Select the Pen tool (✎) in the Tools panel. Press the Option key (macOS) or Alt key (Windows), and position the pointer over the path between the shapes. When the pointer changes (▶.), drag the path up, like in the first part of the figure.

---

7. Choose View > GPU Preview if supported, or View > Preview On CPU (Preview) if not, to see the change.
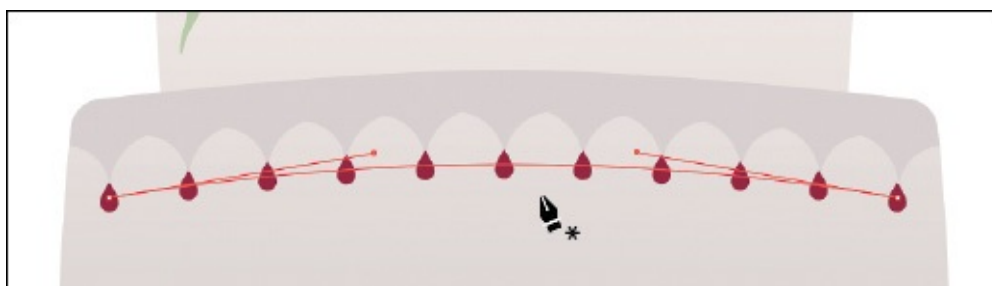
---

8. Press Esc to exit Isolation mode.

9. Choose Select > Deselect, and choose File > Save.

Creating and editing a smooth color blend

You can choose several options for blending the shapes and colors of objects to create a new object. When you choose the Smooth Color blend option in the Blend Options dialog box, Illustrator combines the shapes and colors of the objects into many intermediate steps, creating a smooth, graduated blend between the original objects, like you see in the figure on the right.

If objects are filled or stroked with different colors, the steps are calculated to provide the optimum number of steps for a smooth color transition. If the objects contain identical colors or if they contain gradients or patterns, the

number of steps is based on the longest distance between the bounding box edges of the two objects.

Now you'll combine two shapes into a smooth color blend to make the trunk of a tree that is the leg of the cake stand.

1. Choose View > Fit Artboard In Window.

2. Select the Zoom tool (🔍), and drag across the paths under the cake.

   Both brown paths have a stroke color and no fill. Objects that have strokes blend differently than those that have no stroke.

3. Select the Selection tool (▶) and click on the path on the left. Press the Shift key and click on the path on the right to select both.

4. Choose Object > Blend > Make.

   This is another way to create a blend and can be useful if creating a blend using the Blend tool proves challenging. The blend you created is using the last settings from the Blend Options dialog box (Specified Steps: 9).
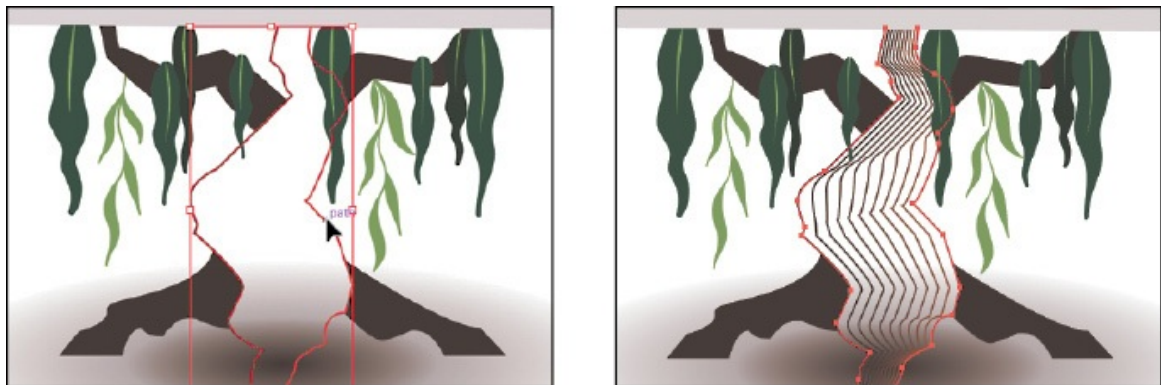
   Next, you'll change the blend settings for the tree trunk so that it blends as smooth color, rather than in specified steps.

5. With the blend object still selected, double-click the Blend tool (🔳) in the Tools panel. In the Blend Options dialog box, choose Smooth Color from the Spacing menu to set up the blend options, which will remain set until you change them. Select Preview and then click OK.
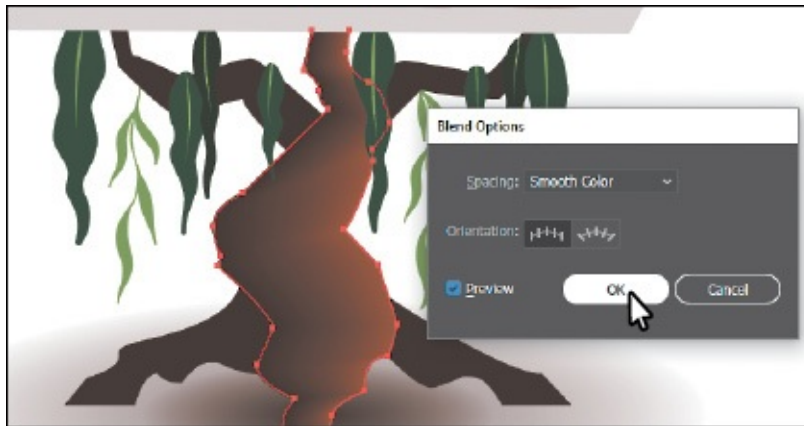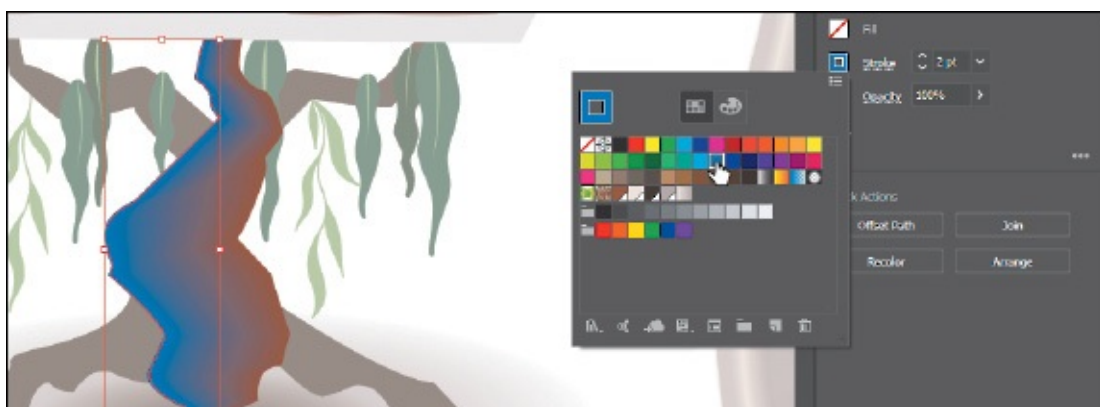
6. Choose Select > Deselect.

> ● **Note:** Creating smooth color blends between paths can be difficult in certain situations. For instance, if the lines intersect or the lines are too curved, unexpected results can occur.

> ▶ **Tip:** If you're having a hard time selecting the path, choose View > Outline to enter Outline mode. Select the path, and then choose View > GPU Preview if supported or View > Preview On CPU (Preview) if not.

Once you've applied a smooth color blend to objects, you can edit it. Next, you'll edit the paths that make up the blend.

7. With the Selection tool (▶) selected, double-click within the color blend to enter Isolation mode. Click the path on the left to select it, and change the Stroke color in the Properties panel to any color you want. Press the Escape key to hide the panel. Notice how the colors are blended.

8. Choose Edit > Undo Apply Swatch until the original stroke color is showing.

9. Double-click away from the blend to exit Isolation mode, and deselect all.

0. Choose View > Fit Artboard In Window.

1. Choose File > Save.

Painting with patterns

In addition to process colors, spot colors, and gradients, the Swatches panel can also contain pattern swatches. Illustrator provides sample swatches of each type in the default Swatches panel as separate libraries and lets you create your own patterns and gradients. In this section, you will focus on creating, applying, and editing patterns.

Applying an existing pattern

A *pattern* is artwork saved in the Swatches panel that can be applied to the stroke or fill of an object. You can customize existing patterns and design patterns from scratch with any of the Illustrator tools. All patterns start with a single tile that is *tiled* (repeated) within a shape, starting at the ruler origin and continuing to the right. Next, you will apply an existing pattern to a shape.

1. Choose Object > Unlock All.

2. Choose Select > Deselect.

3. With the Selection tool (▶) selected, click to select the background rectangle behind all of the other artwork.
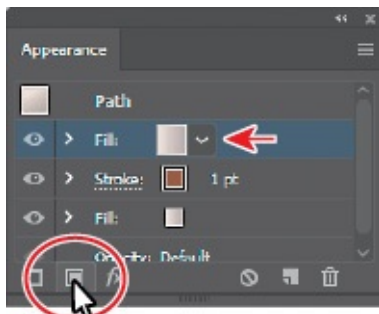

4. Click More Options (⚬⚬⚬) in the Appearance section of the Properties panel to open the Appearance panel (or choose Window > Appearance). Click the Add New Fill button at the bottom of the panel. This adds a second gradient fill to the rectangle and layers it on top of the first.
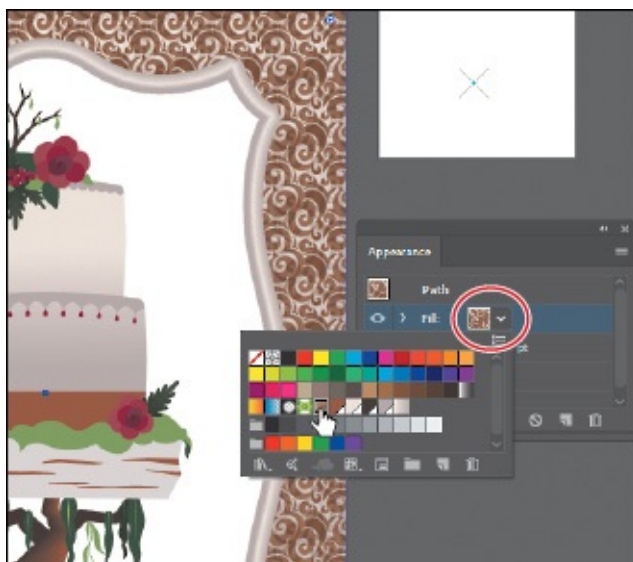
---

5. In the Appearance panel, click the *top* fill box to the right of the word "Fill" to show a panel of swatches. An arrow is pointing to it in the figure. Select the Pompadour swatch.

The pattern swatch fills the shape as a second fill on top of the first. The swatch named "Pompadour" is included in the swatches for a Print document. You can find so many more pattern swatches in Illustrator by choosing Window > Swatch Libraries > Patterns and choosing a pattern library.
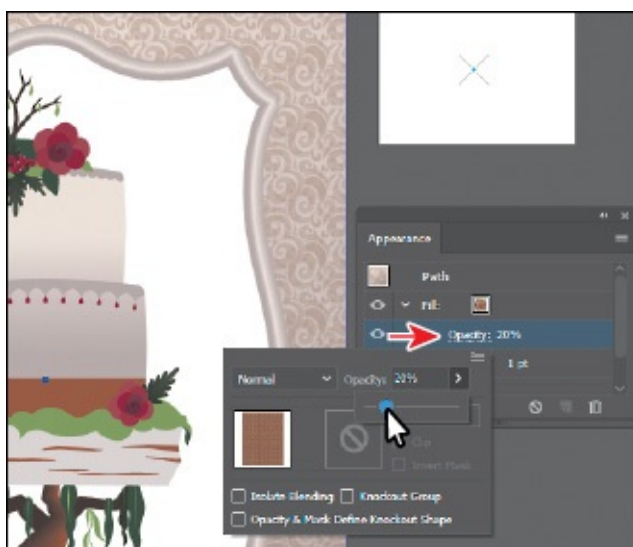

6. In the Appearance panel, click the arrow to the left of the *top* word "Fill." Click the word "Opacity" that appears to open the Transparency panel (or choose Window > Transparency). Change the Opacity value to **20**. Press the Escape key to hide the panel.

7. Close the Appearance panel.

8. Choose Object > Lock > Selection and then choose File > Save.

Creating your own pattern

In this section, you'll create your own custom pattern. Patterns you create are saved as a swatch in the Swatches panel for the document you're working in.
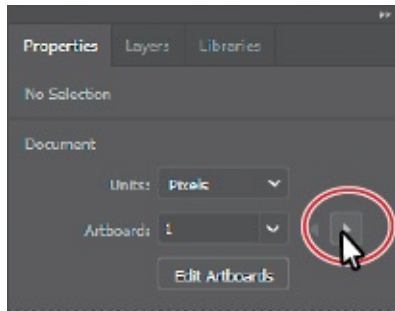
1. With nothing selected, click the Next Artboard button in the Properties panel to show the smaller artboard on the right.

2. With the Selection tool (▶) selected, choose Select > All On Active Artboard to select the artwork you'll use to create a pattern.

3. Choose Object > Pattern > Make. Click OK in the dialog box that appears.
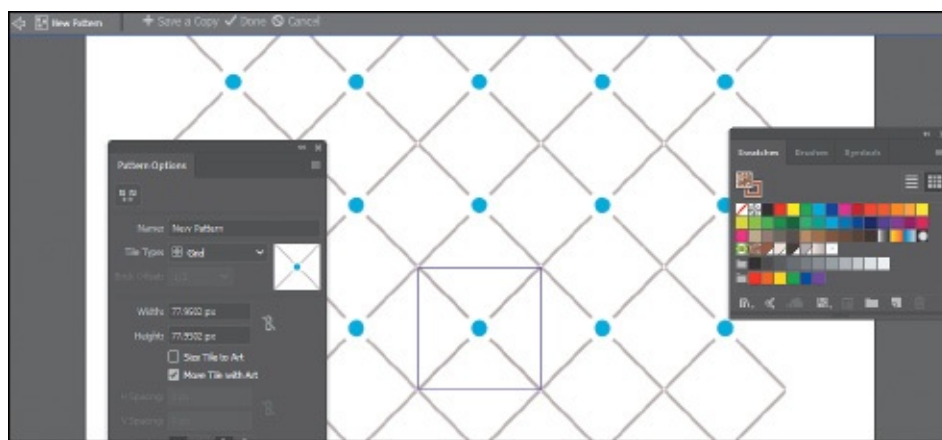
When you create a pattern, Illustrator enters Pattern Editing mode, which is similar to the Isolation mode you've worked with in previous lessons. Pattern Editing mode allows you to create and edit patterns interactively, while previewing the changes to the pattern on the artboard. All other artwork is dimmed and cannot be edited while in this mode. The Pattern Options panel (Window > Pattern Options) also opens, giving you all the necessary options to create your pattern.

● **Note:** You don't need to have anything selected when you create a pattern. You can add content to the pattern when you edit it in Pattern Editing mode, as you'll see.

4. Choose Select > All On Active Artboard to select the artwork.

> 🟢 **Note:** A pattern can be composed of shapes, symbols, or embedded raster images, among other objects that you can add in Pattern Editing mode. For instance, to create a flannel pattern for a shirt, you can create three overlapping rectangles or lines, each with varying appearance options.

5. Press Command++ (macOS) or Ctrl++ (Windows) to zoom in.

The series of lighter-colored objects around the artwork in the center are the pattern repeat. They are there for a preview and are a little dimmed to let you focus on the original. The blue box around the original group of objects is the *pattern tile* (the area that repeats).
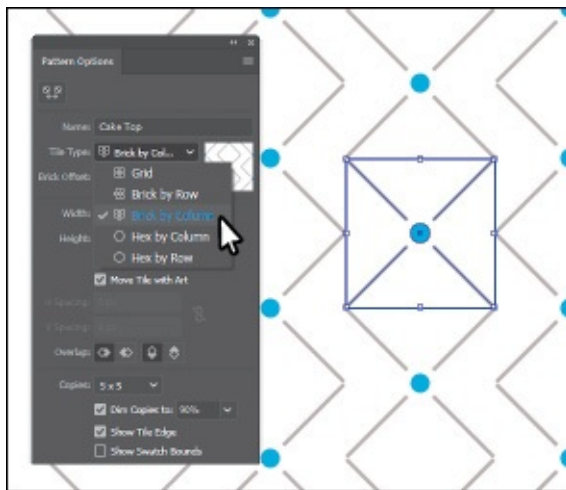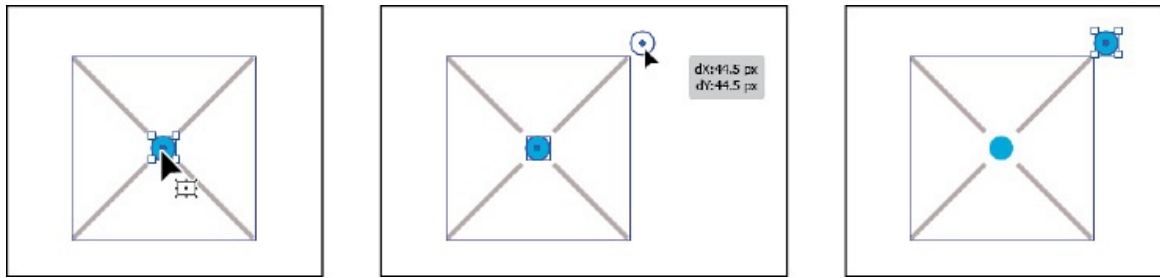

6. In the Pattern Options panel, change the Name to **Cake Top**, and try choosing different options from the Tile Type menu to see the effect on the pattern. Before continuing, make sure Grid is selected.

The name in the Pattern Options panel becomes the name of the swatch saved in the Swatches panel and can be useful to distinguish multiple versions of a pattern swatch, for instance. Tile Type determines how the pattern is tiled. You have three main Tile Type choices: the default grid pattern, a brick-style pattern, or the hex pattern.

7. Choose 1 x 1 from the Copies menu at the bottom of the Pattern Options panel. This will remove the repeat and let you temporarily focus on the main pattern artwork.

8. Click in a blank area to deselect the artwork.

9. Option+Shift-drag (macOS) or Alt+Shift-drag (Windows) the blue circle in the center to a little outside the upper-right corner of the blue pattern tile

box.

0. In the Pattern Options panel, change the following options:

▶ **Tip:** The H Spacing and V Spacing values can be either positive or negative values, and they move the tiles apart or bring them closer together, either horizontally (H) or vertically (V).
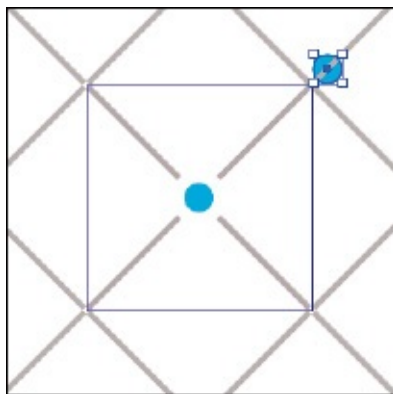
○ Choose 5 x 5 from the Copies menu to see the repeat again.

Notice that the circle you dragged outside of the pattern tile is not repeated. That's because it's not within the pattern tile. Only artwork within the pattern tile is repeated.
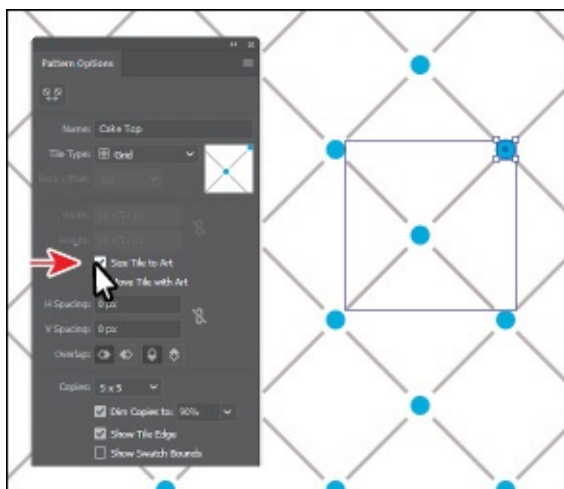
○ Select the Size Tile To Art option in the Pattern Options panel.

The Size Tile To Art selection fits the tile area (the blue square) to the

bounds of the artwork, changing the spacing between the repeated objects. With Size Tile To Art deselected, you could manually change the width and the height of the pattern definition area in the Width and Height fields to include more content or to edit the spacing between. You can also edit the tile area manually with the Pattern Tile Tool button ( ) in the upper-left corner of the Pattern Options panel.

● **Note:** To learn more about the Pattern Options panel, search for "Create and edit patterns" in Illustrator Help (Help > Illustrator Help).

▶ **Tip:** If you want to create pattern variations, you can click Save A Copy in the bar along the top of the Document window when in Pattern Editing mode. This saves the current pattern in the Swatches panel as a copy and allows you to continue creating.

If you set the spacing values (H Spacing or V Spacing) to negative values, the artwork in the pattern tile will overlap. By default, when objects overlap horizontally, the left object is on top; when objects overlap vertically, the top object is on top. You can set the overlap values: Left In Front, Right In Front to change overlap horizontally or Top In Front, Bottom In Front to change the overlap vertically.
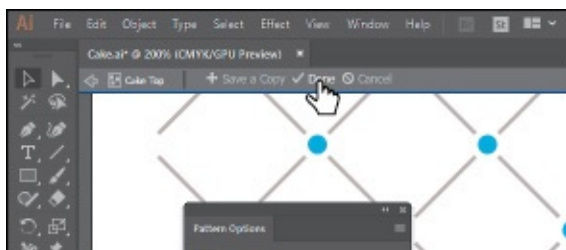
1. Click Done in the bar along the top of the Document window. If a dialog box appears, click OK.

2. Choose File > Save.

Applying your pattern

You can assign a pattern using a number of different methods. In this section, you'll apply your pattern using the fill color in the Properties panel.

1. With nothing selected, click the Previous Artboard button ( ) in the Properties panel to show the larger artboard on the left.

2. With the Selection tool ( ), click the top cake shape (see the following figure). Choose Edit > Copy and then Edit > Paste In Front.

3. Select the swatch named "Cake Top" from the fill color in the Properties

panel.

🟢 **Note:** Instead of making a copy of the shape, you could have applied a second fill to the shape like you did previously.


Editing your pattern

Next, you'll edit the Cake Top pattern swatch in Pattern Editing mode.

1. With the shape still selected, click the Fill color in the Properties panel. Double-click the Cake Top pattern swatch to edit it in Pattern Editing mode.

2. Press Command++ (macOS) or Ctrl++ (Windows) several times to zoom in.

3. In Pattern Editing mode, with the Selection tool (▶) selected, click one of the blue circles; then pressing the Shift key, click to select the other.

4. In the Properties panel, change the fill color to the brown swatch named "BG."
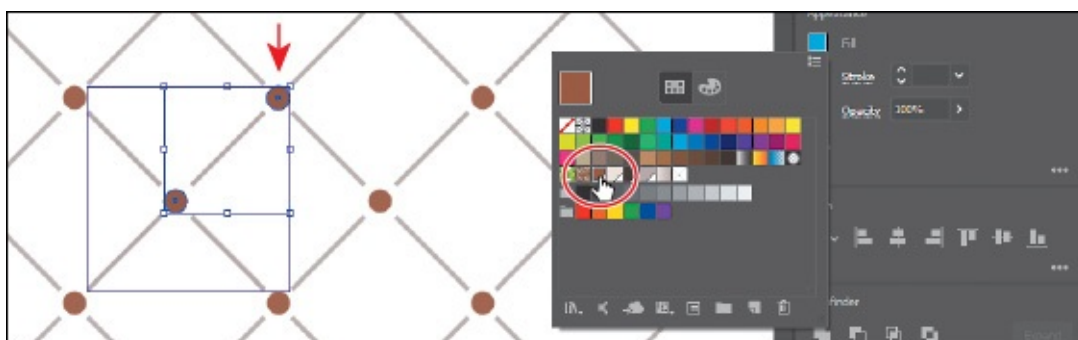
5. Click Done in the gray bar along the top of the Document window to exit Pattern Editing mode.

6. Choose View > Fit Artboard In Window.

7. Click the top cake shape with the pattern fill to select it, if necessary.
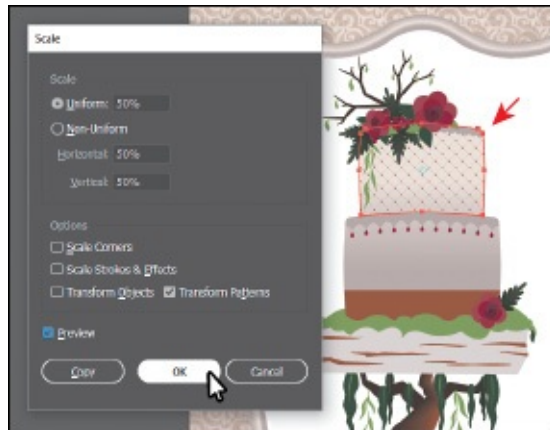
8. With the shape selected, double-click the Scale tool (⊞) in the Tools panel to scale the pattern but not the shape. In the Scale dialog box, change the following options (if not already set):

- Uniform Scale: **50%**

▶ **Tip:** In the Scale dialog box, if you wanted to scale the pattern *and* the shape, you can select Transform Objects and select Transform Patterns. You can also transform patterns in the Transform panel (Window > Transform) by choosing Transform Pattern Only, Transform Object Only, or Transform Both from the panel menu (▤) before applying a transformation.

- Scale Corners: **Deselected** (the default setting)
- Scale Strokes & Effects: **Deselected** (the default setting)
- Transform Objects: **Deselected**
- Transform Patterns: **Selected**

9. Select Preview to see the change. Click OK.

0. Choose Object > Show All.

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

2. Choose File > Close.

Review questions

1. What is a *gradient*?

2. How do you adjust the blend between colors in a gradient?

3. Name two ways you can add colors to a gradient.

4. How can you adjust the direction of a gradient?

5. What is the difference between a gradient and a blend?

6. When you save a pattern in Illustrator, where is it saved?

Review answers

1. A gradient is a graduated blend of two or more colors or of tints of the same color. Gradients can be applied to the stroke or fill of an object.

2. To adjust the blend between colors in a gradient, with the Gradient tool ( ) selected and with the pointer over the gradient annotator or in the Gradient panel, you can drag the diamond icons or the color stops of the gradient slider.

3. To add colors to a gradient, in the Gradient panel, click beneath the gradient slider to add a gradient stop to the gradient. Then, double-click the color stop to edit the color, using the panel that appears to mix a new color or to apply an existing color swatch. You can select the Gradient tool in the Tools panel, position the pointer over the gradient-filled object, and then click beneath the gradient slider that appears in the artwork to add a color stop.

4. Drag with the Gradient tool to adjust the direction of a gradient. Dragging a long distance changes colors gradually; dragging a short distance makes the color change more abrupt. You can also rotate the gradient using the Gradient tool and change the radius, aspect ratio, starting point, and more.

5. The difference between a gradient and a blend is the way that colors combine together—colors blend together within a gradient and between objects in a blend.

6. When you save a pattern in Illustrator, it is saved as a swatch in the Swatches panel. By default, swatches are saved with the currently active document.