



## Create 3D objects

**Note:**

*3D tools are independent of the Perspective Grid tools and 3D objects are treated like any other object in perspective.*

### Create 3D objects

3D effects enable you to create three-dimensional (3D) objects from two-dimensional (2D) artwork. You can control the appearance of 3D objects with lighting, shading, rotation, and other properties. You can also map artwork onto each surface of a 3D object.

There are two ways to create a 3D object: by extruding or revolving. In addition, you can also rotate a 2D or 3D object in three dimensions. To apply or modify 3D effects for an existing 3D object, select the object and then double-click the effect in the Appearance panel.

**Note:**

*3D objects may display anti-aliasing artifacts on screen, but these artifacts won't print or appear in artwork optimized for the web.*

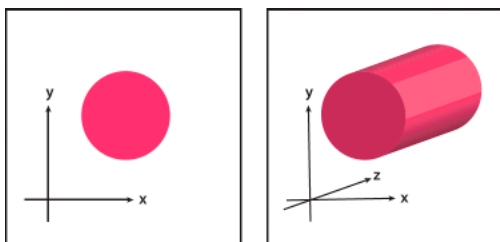
For a video about working with 3D objects in Illustrator, see [Moving into the world of 3D](#).

## Create a 3D object by extruding

Extruding extends a 2D object along the object's z axis to add depth to the object. For example, if you extrude a 2D ellipse, it becomes a cylinder.

**Note:**

*The object's axis always lies perpendicular to the object's front surface and moves relative to the object if the object is rotated in the 3D Options dialog box.*



Extruding an object

- 1 Select the object.
- 2 Choose Effect > 3D > Extrude & Bevel.
- 3 Click **More Options** to view the complete list of options, or Fewer Options to hide the extra options.
- 4 Select Preview to preview the effect in the document window.
- 5 Specify options:

**Position** Sets how the object is rotated and the perspective from which you view it. (See [Set 3D rotation position options](#).)

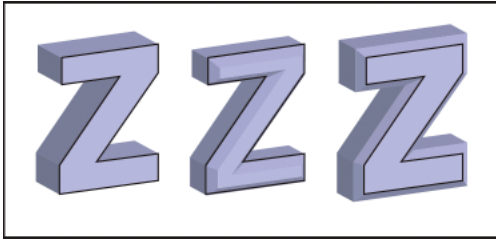
**Extrude & Bevel** Determines the object's depth and the extent of any bevel added to or cut from it. (See [Extrude & Bevel options](#).)

**Surface** Creates a wide variety of surfaces, from dull and unshaded matte surfaces to glossy and highlighted surfaces that look like plastic. (See [Surface shading options](#).)

**Lighting** Adds one or more lights, varies the light intensity, changes the object's shading color, and moves lights around the object, for dramatic effects. (See [Lighting options](#).)

**Map** Maps artwork onto the surfaces of a 3D object. (See [Map artwork to a 3D object](#).)

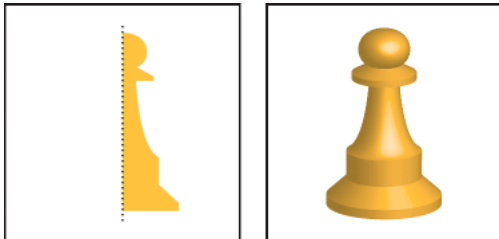
- 6 Click OK.



Extruded object without a beveled edge (left) compared to object with Bevel Extent In (middle) and with Bevel Extent Out (right)

## Create a 3D object by revolving

Revolving sweeps a path or *profile* in a circular direction around the global *y* axis (revolve axis) to create a 3D object. Because the revolve axis is vertically fixed, the open or closed path that you revolve typically needs to depict half of the desired 3D object's profile in a vertical and front-facing position; you can then rotate the 3D object's position in the effect's dialog box.



Revolving an object

- 1 Select the object.

### **Note:**

*Applying the 3D Revolve effect to one or more objects simultaneously revolves each object around its own axis. Each object resides in its own 3D space and can't intersect other 3D objects. Applying the Revolve effect to a targeted group or layer, on the other hand, revolves the objects around a single axis.*



*Revolving a filled path with no stroke is much faster than revolving a stroked path.*

- 2 Choose Effect > 3D > Revolve.
- 3 Select Preview to preview the effect in the document window.
- 4 Click **More Options** to view the complete list of options, or Fewer Options to hide the extra options.

**Position** Sets how the object is rotated and the perspective from which you view it. (See [Set 3D rotation position options.](#))

**Revolve** Determines how to sweep the path around the object to turn it into three dimensions. (See [Revolve options.](#))

**Surface** Creates a wide variety of surfaces, from dull and unshaded matte surfaces to glossy and highlighted surfaces that look like plastic. (See [Surface shading options.](#))

**Lighting** Adds one or more lights, varies the light intensity, changes the object's shading color, and moves lights around the object, for dramatic effects. (See [Lighting options.](#))





**Map** Maps artwork onto the surfaces of a 3D object. (See [Map artwork to a 3D object.](#))

5 Click OK.

## Set options

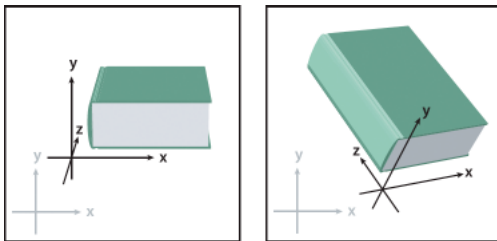
### Set 3D rotation position options

? Do any of the following:

- Choose a preset position from the Position menu.
- For unconstrained rotation, drag a track cube face. The front of the object is represented by the track cube's blue face, the object's top and bottom faces are light gray, the sides are medium gray, and the back face is dark gray.
- To constrain the rotation along a global axis, hold down Shift while dragging horizontally (global  $y$  axis) or vertically (global  $x$  axis). To rotate the object around the global  $z$  axis, drag in the blue band that surrounds the track cube.
- To constrain the rotation around an object axis, drag an edge on the track cube. The pointer changes to a double-sided arrow , and the cube edge changes color to identify the axis around which the object will rotate. Red edges represent the object's  $x$  axis, green edges represent the object's  $y$  axis, and blue edges represent the object's  $z$  axis.
- Enter values between  $-180$  and  $180$  in the horizontal ( $x$ ) axis , vertical ( $y$ ) axis , and depth ( $z$ ) axis  text boxes.
- To adjust the perspective, enter a value between  $0$  and  $160$  in the Perspective text box. A smaller angle is similar to a telephoto camera lens; a larger lens angle is similar to a wide-angle camera lens.

#### Note:

*A lens angle that is higher than  $150$  may result in objects extending beyond your point of view and appearing distorted. Also, keep in mind that there are object  $x$ ,  $y$ , and  $z$  axes and global  $x$ ,  $y$ , and  $z$  axes. Object axes remain relative to an object's position in its 3D space. Global axes remain fixed relative to the computer screen; the  $x$  axis lies horizontally, the  $y$  axis lies vertically, and the  $z$  axis lies perpendicular to the computer screen.*



*Object axes (in black) move with the object; global axes (in gray) are fixed.*

### Extrude & Bevel options

**Extrude Depth** Sets the depth of the object, using a value between  $0$  and  $2000$ .

**Cap** Specifies whether the object appears solid (Revolve Cap On ) or hollow (Revolve Cap Off )

**Bevel** Applies the type of beveled edge you choose along the depth ( $z$  axis) of the object.

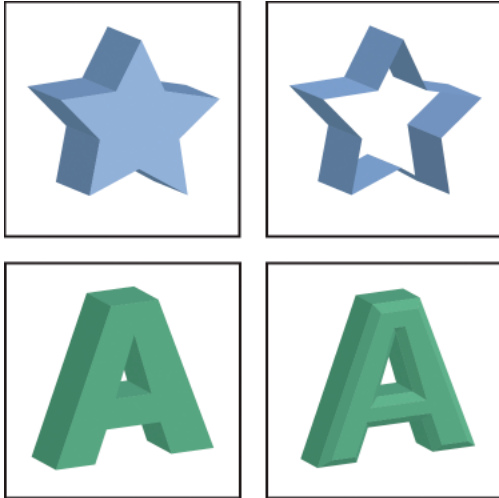
**Height** Sets the height between  $1$  and  $100$ . Bevel heights that are too large for an object may cause the object to self-intersect and produce unexpected results.

### Bevel Extent Out

Adds the bevel to the object's original shape.

### Bevel Extent In

Carves the bevel out of the object's original shape.



*Extruded object with cap (top left) compared to no cap (top right); object without a beveled edge (bottom left) compared to object with a beveled edge (bottom right)*

## Revolve options

**Angle** Sets the number of degrees to revolve the path, between 0 and 360.

**Cap** Specifies whether the object appears solid (Revolve Cap On ) or hollow (Revolve Cap Off )

**Offset** Adds distance between the revolve axis and the path, to create a ring-shaped object, for instance. You can enter a value between 0 and 1000.

**From** Sets the axis around which the object revolves, either the Left Edge or Right Edge.

## Surface shading options

**Surface** Lets you choose options for the shading surfaces:

**Wireframe** Outlines the contours of the object's geometry and makes each surface transparent.

**No Shading** Adds no new surface properties to the object. The 3D object has the same color as the original 2D object.

**Diffuse Shading** Makes the object reflect light in a soft, diffuse pattern.

**Plastic Shading** Makes the object reflect light as if it were made of a shiny, high-gloss material.

*note: Depending on what option you choose, different lighting options are available. If the object only uses the 3D Rotate effect, the only Surface choices available are Diffuse Shading or No Shading.*

**Light Intensity** Controls the light intensity between %0 and %100.

**Ambient Light** Controls the global lighting, which changes the brightness of all the object's surfaces uniformly. Enter a value between %0 and %100.

**Highlight Intensity** Controls how much the object reflects light, with values ranging from %0 to %100. Lower values produce a matte surface, and higher values create a shinier-looking surface.

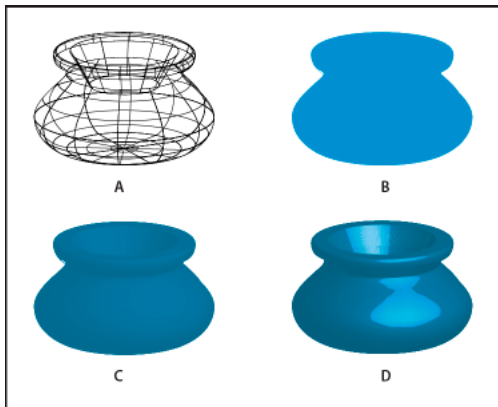
**Highlight Size** Controls the size of the highlight from large (%100) to small (%0).

**Blend Steps** Controls how smoothly the shading appears across the object's surfaces. Enter a value between 1 and 256. Higher numbers produce smoother shades and more paths than lower numbers.

**Draw Hidden Faces** Displays the object's hidden backfaces. The backfaces are visible if the object is transparent, or if the object is expanded and then pulled apart.

***note:** If your object has transparency and you want the hidden backfaces to display through the transparent front faces, apply the Object > Group command to the object before you apply the 3D effect.*

**Preserve Spot Color (Extrude & Bevel effect, Revolve effect, and Rotate effect)** Lets you preserve spot colors in the object. Spot colors can't be preserved if you chose Custom for the Shading Color option.



Examples of different surface shading choices  
A Wireframe B No shading C Diffuse shading D Plastic shading

## Lighting options

**Light** ☐

Defines where the light is. Drag the light to where you want it on the sphere.

**Move Light Back button**

Moves the selected light behind the object.

**Move Light Front button**

Moves the selected light in front of the object.

**New Light button**

Adds a light. By default, new lights appear in the front center of the sphere.

**Delete Light button** Deletes the selected light.

***note:** By default, 3D Effects assigns one light to an object. You can add and delete lights, but the object must always have at least one light.*

**Light Intensity** Changes the selected light's intensity between %0 and %100.

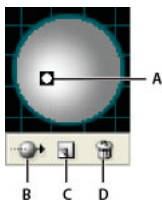
**Shading Color** Controls the object's shading color, depending on the command you choose:

**None** Adds no color to the shading.

**Custom** Lets you choose a custom color. If you choose this option, click the Shade Color box to select a color in the Color Picker. Spot colors are changed to process colors.

**Black Overprint** Avoids process colors if you're using a spot color workflow. The object is shaded by overprinting shades of black on top of the object's fill color. To view the shading, choose View > **Overprint Preview**.


**Preserve Spot Color** Lets you preserve spot colors in the object. Spot colors can't be preserved if you chose Custom for the Shading Color option.



*Lighting Sphere*

*A Selected light in front B Move selected light to back or front button C New light button D Delete light button*

## Add a custom bevel path

- 1 Open the Bevels.ai file, which is located in the Adobe Illustrator [version]\Support Files\Required\Resources\en\_US\ folder (Windows) or Adobe Illustrator [version]\Required\Resources\en\_US folder ((Mac OS).
- 2 Create a single open path in the Bevels.ai file.
- 3 Choose Window > Symbols, and do one of the following to make the path a symbol:
  - Drag the path to the Symbols panel.
  - With the path selected, click the New Symbol button  in the Symbols panel or choose New Symbol from the panel menu.
- 4 To rename the symbol, double-click the symbol in the Symbols panel, enter a name in the Symbol Options dialog box, and click OK.
- 5 Choose File > Save.
- 6 Quit Illustrator and then relaunch Illustrator.

The Bevel menu in the 3D Extrude & Bevel Options dialog box lists the bevel.
- 7 To apply the custom bevel, do one of the following:
  - To apply the bevel to an extruded 3D object, select the 3D object, and then double-click the 3D Extrude & Bevel effect in the Appearance panel. In the 3D Extrude & Bevel Options dialog box, choose the bevel from the Bevel menu.
  - To apply the custom bevel to 2D artwork, select the 2D object, and then choose Effect > 3D > Extrude & Bevel. In the 3D Extrude & Bevel Options dialog box, choose the custom bevel from the Bevel menu.

## Rotate an object in three dimensions

- 1 Select the object.
- 2 Choose Effect > 3D > Rotate.
- 3 Select Preview to preview the effect in the document window.
- 4 Click **More Options** to view the complete list of options, or Fewer Options to hide the extra options.

5 Specify options:

**Position** Sets how the object is rotated and the perspective from which you view it. (See [Set 3D rotation position options.](#))

**Surface** Creates a wide variety of surfaces, from dull and unshaded matte surfaces to glossy and highlighted surfaces that look like plastic. (See [Surface shading options.](#))

6 Click OK.

## Map artwork to a 3D object

Every 3D object is composed of multiple surfaces. For example, an extruded square becomes a cube that is made of six surfaces: the front and back faces, and the four side faces. You can map 2D artwork to each surface on a 3D object. For example, you might want to map a label or text onto a bottle-shaped object or simply add different textures to each side of an object.



3D object with artwork mapped to each side

A Symbol artwork B Symbol artwork C A and B mapped to 3D object

You can only map 2D artwork that's stored in the Symbols panel to a 3D object. Symbols can be any Illustrator art object, including paths, compound paths, text, raster images, mesh objects, and groups of objects.

When mapping 3D objects, consider the following:

- Because the Map Art feature uses symbols for mapping, you can edit a symbol instance and then automatically update all surfaces that are mapped with it.
- You can interact with the symbol in the Map Art dialog box with normal bounding box controls to move, scale, or rotate the object.
- The 3D effect remembers each mapped surface on an object as a number. If you edit the 3D object or apply the same effect to a new object, there may be fewer or more sides than the original. If there are fewer surfaces than the number of surfaces defined for the original mapping, the extra artwork will be ignored.
- Because a symbol's position is relative to the center of an object surface, if the geometry of the surface changes, then the symbol will be remapped relative to the new center of the object.
- You can map artwork to objects that use the Extrude & Bevel or Revolve effect, but you can't map artwork to objects that only use the Rotate effect.





1 Select the 3D object.

2 In the Appearance panel, double-click the 3D Extrude & Bevel or 3D Revolve effect.

3 Click Map Art.

4 Choose the artwork to map to the selected surface from the Symbol pop-up menu.



- 5** To select which object surface you want to map, click the first , previous , next , and last  surface arrow buttons, or enter a surface number in the text box.

A light gray color mark appears on the surfaces that are currently visible. A dark gray color mark appears on the surfaces that are hidden by the object's current position. When a surface is selected in the dialog box, the selected surface is outlined in red in the document window.

- 6** Do any of the following:
- To move the symbol, position the pointer inside the bounding box and drag; to scale, drag a side or corner handle; to rotate, drag outside and near a bounding box handle.
  - To make the mapped artwork fit to the boundaries of the selected surface, click Scale To Fit.
  - To remove artwork from a single surface, select the surface using the Surface options, and then either choose None from the Symbol menu or click Clear.
  - To remove all maps from all of the 3D object's surfaces, click **Clear All**.
  - To shade and apply the object's lighting to the mapped artwork, select Shade Artwork.
  - To show only the artwork map, not the geometry of a 3D object, select Invisible Geometry. This is useful when you want to use the 3D mapping feature as a three-dimensional warping tool. For example, you could use this option to map text to the side of an extruded wavy line, so that the text appears warped as if on a flag.
  - To preview the effect, select Preview.
- 7** Click OK in the Map Artwork dialog box.

**Note:**

*3D tools are independent of Illustrator's Perspective Grid tools. 3D objects are treated like any other art when placed in Perspective Grid.*