

# Chapter 7: Scale, Skew, and Rotate

Much of the power of Illustrator is expressed in the ability to stretch, shrink, skew, and rotate objects *without losing any image quality*. Since Illustrator is such a powerful tool for distorting objects, there are many tool options for resizing and reshaping. Just as people living in snowbound areas of the planet have developed a vocabulary to cover every shade of white, Illustrator offers multiple options for sizing, reshaping, rotating, and flipping objects or groups of objects.

You can transform a simple drawing in an infinite number of ways by using Illustrator's escalating set of transforming tools. You can apply these tools to single objects, sets of selected objects, or grouped objects.

## Get Ready to Size, Scale, and Rotate

You can elect to display bounding boxes on your artboard, which provide convenient anchor points around selected objects for sizing, mirroring, or rotation. For basic resizing or rotating, the Free Transform tool usually does the trick. For more precise sizing or rotation, the Scale and Rotate tools allow you to assign exact size changes and rotation angles. Further, they allow you to select anchor points that stay in one place as you interactively resize or rotate an object.

The more esoteric Reflect, Shear, and Reshape tools provide more options for distorting selected objects. In this chapter, you'll examine and learn to use each of these resizing and reshaping tools.

## Group Objects First

Before you begin to modify objects, it will be helpful to understand how objects can be grouped together and then moved or transformed together. To group objects, first select them using a selection tool (such as the Selection tool or the Lasso tool). Then choose Object | Group, as shown in [Figure 7-1](#).

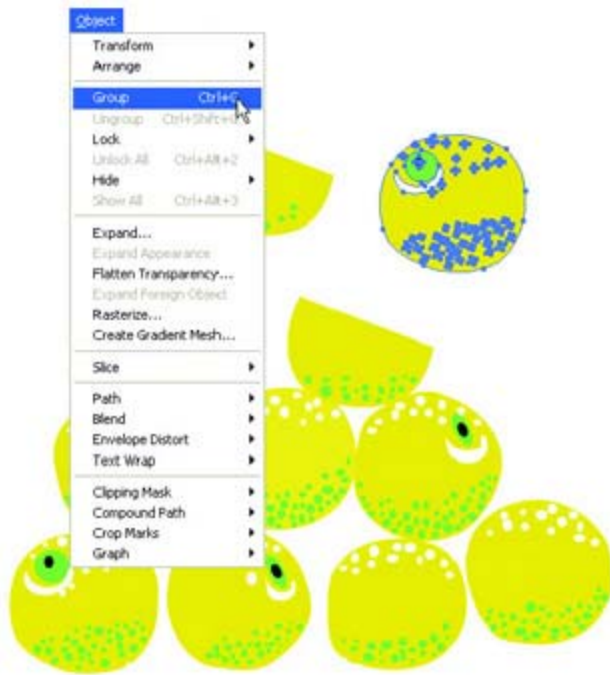


Figure 7-1: Grouping selected objects

Once objects are grouped, you can select the entire group by clicking within it with the Selection tool. With the entire set of grouped objects selected, you apply fill or stroke changes to the entire group. In a similar way, the transforming tools covered in the rest of this chapter (such as those that resize or rotate an object) generally apply to the whole selected group of objects.

## Select Within a Group

If you want to change just one object within a group, you can ungroup the objects and then select an individual object within the group. That can get tedious, however, especially if you're frequently switching back and forth between changes to a bunch of grouped objects and changes to a single object (or a few objects) within the group.

The solution to this problem is to use the Group Selection tool found in the Direct Selection tool tearoff. The Group Selection tool allows you to select any object(s) within a group. So, for example, if you wanted to change the fill color of just the spots on a lemon, you could use the Group Selection tool, hold down SHIFT, and click on the spots, as shown in [Figure 7-2](#). Holding down the SHIFT key allows you to use the tool to select several objects.

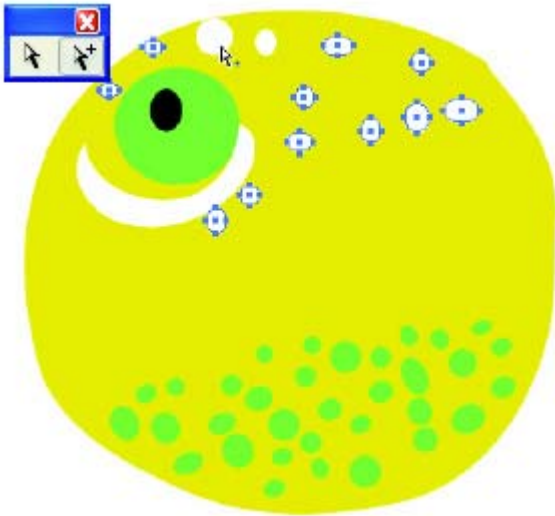


Figure 7-2: Selecting within a group with the Group Selection tool

To more or less permanently ungroup a set of objects, select the group and choose **Object | Ungroup** (or use the shortcut keys **COMMAND-SHIFT-G** [**CTRL-SHIFT-G**]). Groups can themselves be grouped again.

**Note** The keyboard shortcut for grouping is **command-g** (**ctrl-g**).

**Tip** If you're going to get into multiple levels of grouping, you'll probably be better served by organizing collections of objects into more powerful layers. You will learn to do that in [Chapter 20](#).

An alternative way to select several objects is to hold down **SHIFT** while clicking with the Selection tool. Be aware that each level of grouping has to be ungrouped in turn. So if you've grouped a group within a group, you'll have to choose **Object | Ungroup** more than once to ungroup all the objects.

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## Change Objects with a Bounding Box

A bounding box is an imaginary, non-printing border around an object or group of objects. It facilitates some basic transformations, including resizing, reshaping, mirroring (flipping), and rotating objects. Illustrator's object editing tools provide detailed control over any kind of tweaking you wish to apply to an object or group of objects.

You'll explore each of those powerful tools shortly, but first here's the quick-and-dirty way to change an object. When you just want to quickly and (relatively) crudely resize, rotate, or flip an object or quickly experiment with all these changes to an object, the simplest way to do so is to use a bounding box.

### View a Bounding Box

To view a bounding box around a selected object, choose **View | Show Bounding Box** (if this is not already selected). When you do, a bounding box with four small, square side anchor points and four corner anchor points appears, as shown in [Figure 7-3](#).

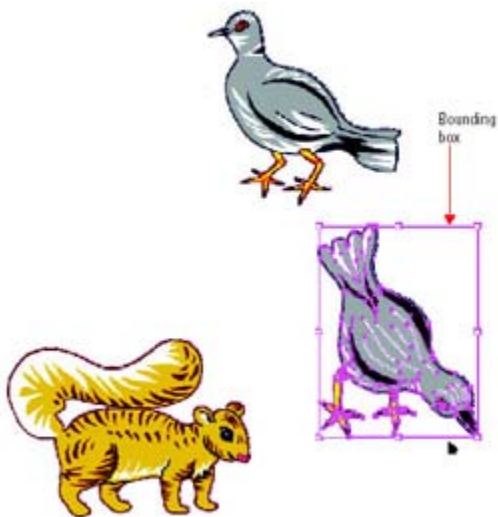


Figure 7-3: The bounding box enables quick-and-dirty resizing and rotating.

Most editing is the same, whether or not a bounding box is displayed. For example, you move an object or group with the bounding box displayed by clicking on a path or fill within the bounding box and click and drag to a new location on the artboard.

**Tip** Holding down alt as you click and drag makes a copy of the object(s) at a new location.

### Resize and Reshape with a Bounding Box

To resize an object, click and drag on a side or corner anchor point while holding down SHIFT. Holding down SHIFT maintains the height-to-width (aspect) ratio of your object(s) as you resize. [Figure 7-4](#) shows a group being resized using a bounding box with the SHIFT key.



Figure 7-4: The height-to-width ratio is maintained as the squirrel is resized with bounding box.

The bounding box around this set of grouped objects provides easy access to basic transformation actions. If you want to resize without maintaining the height-to-width ratio of your object(s), click and drag a side anchor point to change height or width, or a corner anchor point to resize both height and width independently of each other. With this technique, you can make an object or group wider, narrower, shorter, or taller.

### Rotate and Flip with a Bounding Box

Displaying a bounding box around selected objects also makes it easy to rotate or mirror (flip) these objects. To rotate a selection, choose the Selection tool, and move your cursor near a corner or side anchor point. As you do, a rotation cursor appears, as shown in [Figure 7-5](#). Click and drag with the rotation cursor to rotate the selected object(s) around the center point of the selection.



Figure 7-5: Using the rotation cursor with a bounding box

You can also use a bounding box to mirror (flip) an object horizontally or vertically. The routine for mirroring an object is similar to the one for resizing, except that you drag an anchor point across the box, and post the opposite edge of the bounding box, creating a mirrored version of the object.

If you hold down the **OPTION (ALT)** key as you mirror an object with the bounding box, the object mirrors using the center of the selected object as an axis. If you hold down the **SHIFT** key as you mirror, the object retains its height-to-width ratio but also flips horizontally and vertically, as shown in [Figure 7-6](#).

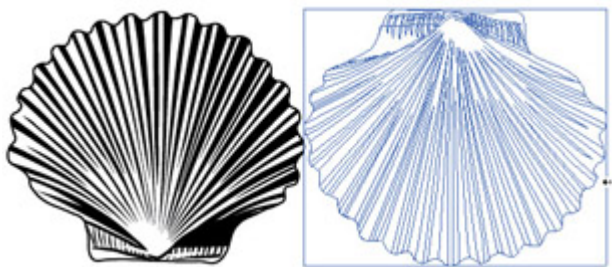


Figure 7-6: Quick mirroring with the bounding box

**Tip** If you want to rotate your object around an axis other than the center point, jump ahead to the [“Rotate Objects Precisely”](#) section.

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## Resize and Reshape with the Free Transform Tool

Enabling a bounding box around selected objects has its merits: it makes rotation, sizing, and mirroring easy to accomplish. The downside is that you have to put up with a bounding box popping up on your screen whenever you select an object or group of objects.

If the bounding box is getting in your way, choose View | Hide Bounding Box (or COMMAND-SHIFT-B [CTRL-SHIFT-B]) to make it disappear.

The Free Transform tool applies a functioning bounding box to selected objects. Use it to rotate, resize, or mirror a selected object. When you select a different tool, the bounding box created by the Free Transform tool disappears.

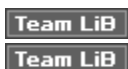
If you are an artist or designer who is new to Illustrator, or if you don't need precision sizing and rotating, you will find the Free Transform tool useful. It's versatile, intuitive, and easy to use. You can quickly resize a selected object using the Free Transform tool by clicking and dragging on a side or corner anchor point. Hold down SHIFT as you drag to maintain the height-to-width ratio as you resize the object.

To rotate a selected object with the Free Transform tool, hover over a corner or side anchor point and click and drag to rotate clockwise or counterclockwise. You can easily mirror (flip) a selected object using the Free Transform tool by clicking and dragging on a side anchor point. To mirror the object horizontally, drag a right or left side anchor point over and past the other side anchor point. To mirror vertically, click on the top anchor point and drag past the bottom anchor point.

As mentioned, using the Free Transform tool is very similar to displaying a bounding box—it's really a matter of your preference as to whether you want and need the bounding box displayed all the time.

Note For more precise control over sizing and rotating, you'll want to use the Scale and Rotate tools.

These tools allow you to enter sizes or rotation angles digitally, and to rotate an object around any of the anchor points—not just the middle of the object.



## Resize Precisely with the Scale Tool

The Scale tool has a couple of advantages over sizing freehand with a bounding box or the Free Transform tool. The Scale tool allows you to resize to an exact percentage—so, for instance, you can resize an object to 50 percent to make it exactly half size. And you can use the Scale tool to resize an object from a defined point, as opposed to just scaling from a selected anchor point with the Free Transform tool.

Using the Scale tool interactively is a bit like driving on an icy road—controlling the process is a bit scary until you get comfortable with the tool.

When you resize using the Scale tool, you simply click and drag on a selected object to change the size. If you hold down the SHIFT key and click and drag out at about a 45-degree angle from a corner handle, you can maintain the height-to-width ratio of the original drawing. If you hold down the SHIFT key and drag up or down, you will change only the height *or* the width, as shown in [Figure 7-7](#).



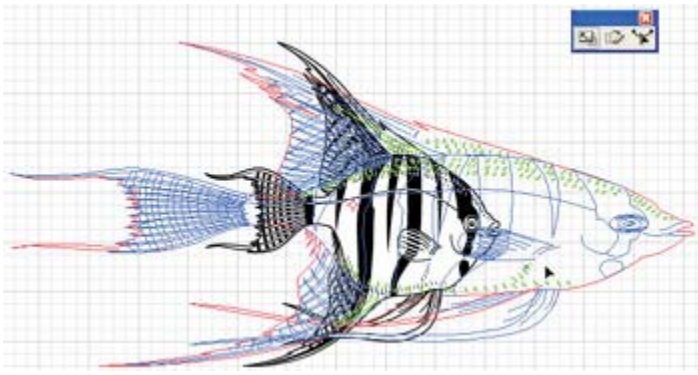


Figure 7-7: Using the shift key with the Scale tool to change only width while maintaining the original height

By default, when you resize a selected object with the Scale tool, the center of the object is used as the point from which the object is enlarged or compressed. You can change that point by clicking within a selected object with the Scale tool. Then, when you resize the object, the newly selected point is the pivot and hub from which the object is resized, as shown in [Figure 7-8](#).

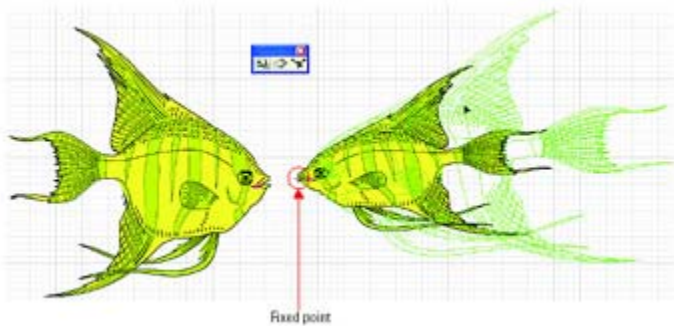


Figure 7-8: Rescaling around a point fixed by the Scale tool

The Scale dialog box resizes digitally—no clicking and dragging required. It also allows you to control whether to rescale an object's stroke (outline) proportionally as you rescale the object.

To resize using the Scale dialog box, follow these steps:

1. Select any object(s).
2. With the object(s) selected, double-click the Scale tool. The Scale dialog box appears.
3. Use the Scale box in the Uniform section to enter a percentage if you want to resize the object while maintaining the same height-to-width ratio.
4. Use the Horizontal and Vertical boxes in the Non-Uniform section of the dialog box to enter different percentages if you want to resize the height and width independently.
5. Click the Preview check box to see the object interactively resize on the artboard as you enter values in the sizing boxes.
6. Click the Scale Strokes & Effects check box if you want to proportionally resize strokes and effects.

7. Click the Objects check box to resize objects. You'll almost always want to select this option; otherwise, the object itself won't resize.

Tip For the very rare occasions when you want to resize the pattern fill in an object but not the object itself, deselect the Objects check box. You'll explore pattern fills in [Chapter 18](#).

8. Click the Patterns check box to proportionally resize patterns within a shape.
9. When your object is correctly resized, click OK (or press ENTER).

[Figure 7-9](#) shows an object rescaled with and without rescaling the associated stroke.

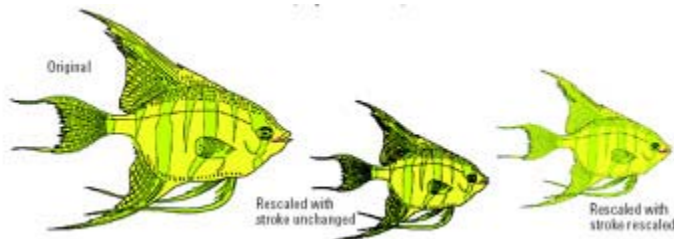


Figure 7-9: The rescaled fish with unchanged stroke now has proportionally thicker lines.

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## Rotate Objects Precisely

The Rotate tool rotates objects with the same kind of precision and control that the Scale tool uses. As with the Scale tool, you can use an associated dialog box to define rotation to a precise angle. And, as with the Scale tool, the Rotate tool can be used to define a rotation point that acts as a fulcrum as you interactively rotate an object.

To rotate a selected object (or set of objects) precisely with the Rotate dialog box, double-click the Rotate tool. The Rotate dialog box appears, as shown in [Figure 7-10](#).





Figure 7-10: Defining rotation for a selected object—the negative value in the Angle box indicates that the bird is being rotated counterclockwise

The value you enter in the Angle box of the dialog box defines the degree of rotation. The Copy button creates a second, rotated version of your selected object while leaving the original unchanged. The Preview check box allows you to view changes on the artboard as you make them in the dialog box, before you press ENTER or click OK. The Objects and Patterns check boxes allow you to elect to rotate objects and/or their fill patterns independently.

The Rotate tool also allows you to rotate around a selected anchor point in a selected object. To rotate an object around a selected anchor point, follow these steps:

1. Select the object (or objects).
2. Click the Rotate tool.
3. Click an anchor point on the selected object to establish the rotation point.
4. Click and drag a different anchor point to rotate the object around the selected point, as shown in [Figure 7-11](#).



Figure 7-11: The bird is being rotated around a defined fulcrum point.

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## Use More Transform Tools

The Rotate tool tearoff includes the Reflect tool. The Scale tool tearoff reveals the Shear and Reshape tools. All three of these tools provide more options for warping, stretching, and basically mangling any selected object(s). These tools work much as the Rotate tool does, but they produce different effects.

In the dialog boxes for the Reflect and Shear tools, the Preview check box shows your changes before you click OK or press ENTER. The Objects and Patterns check boxes, when available, determine whether objects and/or pattern fills are transformed.

The Reflect, Shear, and Reshape tools are demonstrated in [Figure 7-12](#).



Figure 7-12: The Reflect and Shear tools work on the objects in a cohesive way, while the Reshape tool works on individual elements of an object.

The Reflect tool (in the Rotate tool tearoff) allows you to mirror selected objects precisely by using a dialog box. You can flip an object upside down by choosing the Horizontal button. Choosing Vertical mirrors an object without changing the top/bottom relationship. Or you can rotate both horizontally and vertically by choosing the Value button and entering an angle in the Angle box.

The Shear tool (in the Scale tool tearoff) skews selected objects. The shearing (skewing) takes place around the center point of the object unless you first click to set an anchor point. In that case, the anchor point is fixed while the rest of the object shears. You can also define shearing for a selected object by double-clicking the Shear tool to open a dialog box similar to the Rotate dialog box.

The Reshape tool (also in the Scale tool tearoff) interactively works on selected objects to stretch and distort them. Click first to set a fixed anchor point, and then drag on another point to distort the object. The Reshape tool is not associated with a dialog box.

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