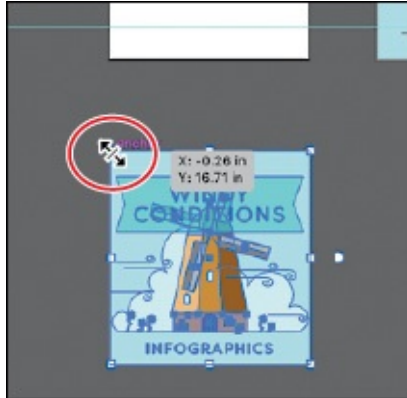CONDITIONS" beneath the artboards.

2. With the Selection tool (▶) selected, click to select the group. Move the pointer over the upper-left corner of the selected group. If you were to drag right now, you would resize the content.

3. Choose View > Hide Bounding Box.

   This command hides the bounding box around the group and makes it so you can't resize the group by dragging anywhere on the bounding box with the Selection tool.

4. Move the pointer over the upper-left point of the group again, and drag it onto the upper-left corner of the Front artboard. You'll find that being zoomed out can make it more difficult to be precise with placement.
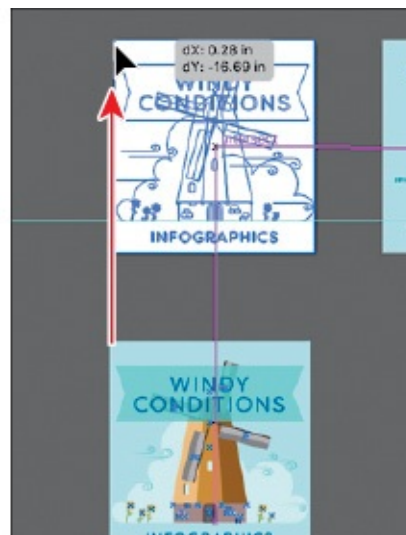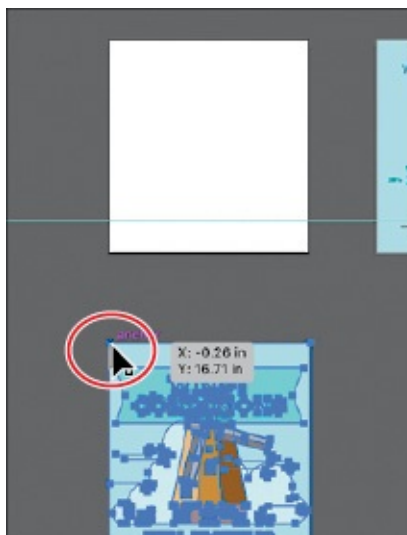
5. Choose View > Show Bounding Box.

Positioning artwork using the Properties panel

At times, you may want to position objects more precisely—relative either to other objects or to the artboard. You could use the alignment options, like you saw in Lesson 2, "Techniques for Selecting Artwork," but you can also use

Smart Guides and Transform options in the Properties panel to move objects to exact coordinates on the x- and y-axes and to control the position of objects in relation to the edge of the artboard. Next, you'll add content to the background of an artboard and position that content precisely.

1. Choose View > Fit All In Window to see all of the artboards. Click in the blank artboard that's farthest to the right to make it the active artboard.

Transformation commands, like you are about to learn, apply to the active artboard.

2. Click to select the blue shape with the WINDMILL logo on top, beneath the artboards. In the Transform section of the Properties panel, click the upper-left point of the reference point locator (⬚). Change the X value to **0** and the Y value to **0**, and press Return or Enter.
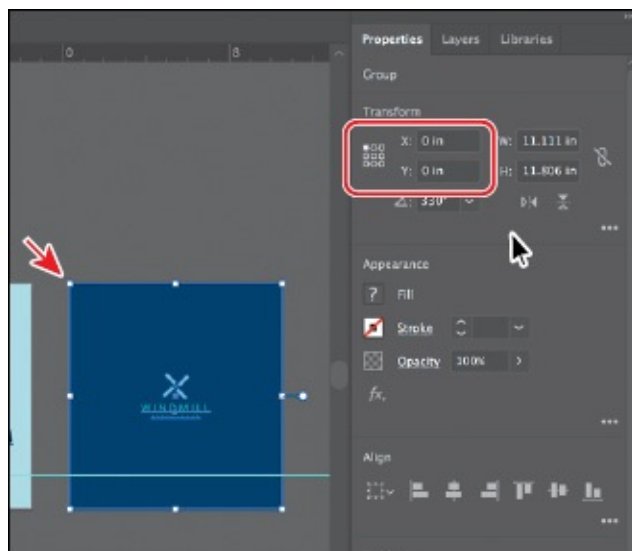
The group of content is moved into the upper-left corner of the active artboard. The points in the Reference Point locator map to the points of the bounding box for the selected content. For instance, the upper-left reference point refers to the upper-left point of the bounding box.

▶ **Tip:** You could have also aligned the content to the artboard using the alignment options available. You'll find there are at least a few ways to accomplish most tasks in Illustrator.
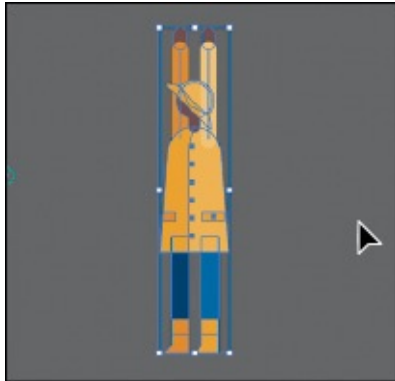
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3. Choose Select > Deselect and then choose File > Save.

Scaling objects

So far in this book, you've scaled most content with the selection tools. In this part of the lesson, you'll use several other methods for scaling artwork.

1. Press Command+– (macOS) or Ctrl+– (Windows) (or View > Zoom Out),

if you need, to see the person in the raincoat off the bottom edge of the artboards.

2. With the Selection tool (▶) selected, click the artwork of the person in the yellow raincoat.

3. Press Command++ (macOS) or Ctrl++ (Windows) a few times to zoom in.

4. In the Properties panel, click the center reference point of the reference point locator (▦), if it's not selected, to resize from the center. Ensure that Constrain Width And Height Proportions is set (🔗), type **30%** in the Width (W) field, and then press Enter or Return to decrease the size of the artwork.
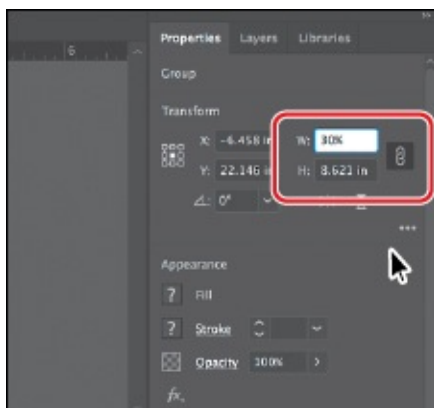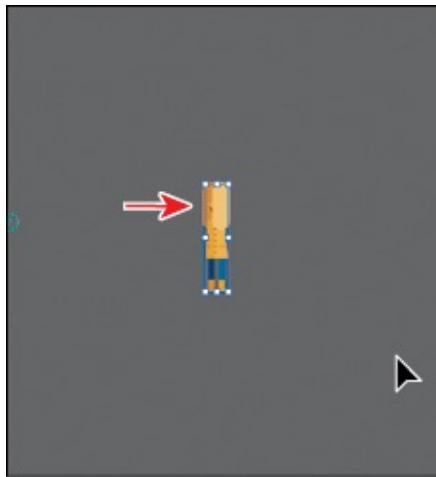

▶ **Tip:** When typing values to transform content, you can type different units such as percent (%) or pixels (px), and they will be converted to the default unit, which is inches (in) in this case.

5. Choose View > Hide Edges so you hide the inside edges.

Notice that the artwork is smaller, but the arms of the person are still the same width. That's because they are a path with a stroke applied. By default, strokes and effects, like drop shadows, are *not* scaled along with objects. For instance, if you enlarge a circle with a 1-pt stroke, the stroke remains 1 pt. By selecting Scale Strokes & Effects before you scale—and then scaling the object—that 1-pt stroke would scale (change) relative to the amount of scaling applied to the object.

6. Choose View > Show Edges so you show the inside edges again.

7. Choose Edit > Undo Scale.

8. In the Properties panel, click Show More (■■■) in the Transform section to see more options. Select Scale Strokes & Effects. Type **30%** in the Width (W) field and then press Enter or Return to decrease the size of the artwork.
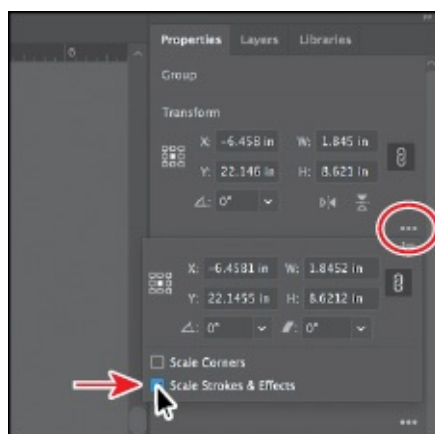
Now, the stroke applied to the paths that make up the arms, are scaled as well.

● **Note:** The figure shows selecting the Scale Strokes & Effects option only.

9. Press the spacebar to select the Hand tool, and drag to the right so you can see the flower to the left of the person.

0. With the Selection tool (▶) selected, click to select the flower artwork.

In the Tools panel on the left, you should see the Scale tool (⊡). The Scale tool is used to scale content by dragging. For a lot of the transform tools, like the Scale tool, you can also double-click the tool to edit selected content in a dialog box. This is similar to choosing Object > Transform > Scale.

1. Double-click the Scale tool (⊡) in the Tools panel. In the Scale dialog box, change Uniform to **20%**, and select Scale Strokes & Effects, if it isn't already selected. Toggle Preview on and off to see the change in size. Click OK.
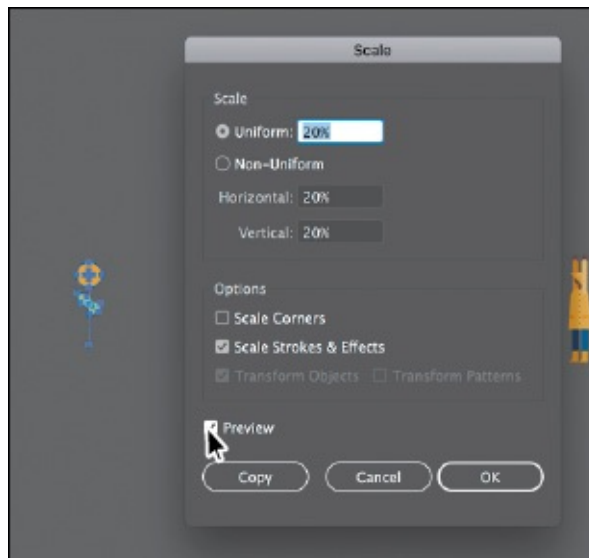

This method of scaling artwork may be useful, for instance, if there is a lot of overlapping artwork, when precision matters, you need to scale content non-uniformly, and more.


▶ **Tip:** You could also choose Object > Transform > Scale to access the Scale dialog box.

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2. Select the Selection tool, and drag the flower up onto the artboard, just above the gray line that the windmill and other artwork is sitting on. You may need to zoom out.
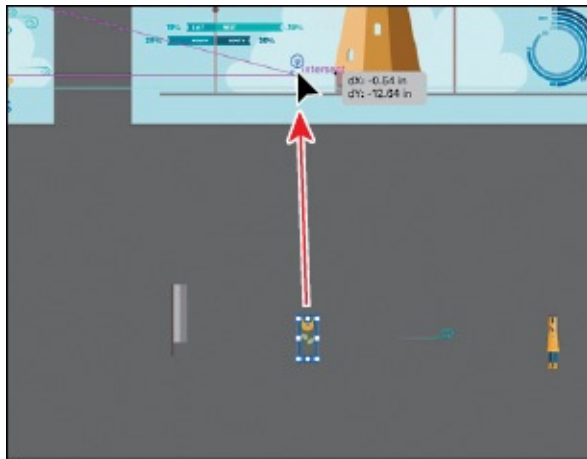
3. Choose View > Fit Artboard In Window.

4. Press the Option key (macOS) or Alt key (Windows), and drag the flower to the right. Release the mouse button and then the key to make a copy. Do this several times to place copies along the line on the artboard.
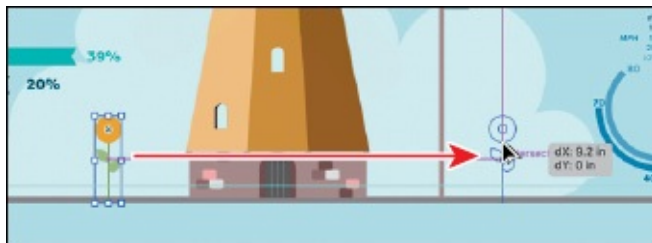
Reflecting objects

When you *reflect* an object, Illustrator flips the object across an invisible vertical or horizontal axis. In a similar way to scaling and rotating, when you reflect an object, you either designate the reference point or use the object's center point, by default. Next, you'll copy artwork and use the Reflect tool (▷|◁) to flip artwork 90° across an axis.


▶ **Tip:** You could also choose Object > Transform > Reflect to access the Reflect dialog box.

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1. Choose View > Fit All In Window.

2. Select the Zoom tool (🔍) in the Tools panel, and drag from left to right across the curly green shape below the artboards to zoom in.

3. Select the Selection tool (▶), and click to select the curly green shape.

4. Choose Edit > Copy and then choose Edit > Paste In Place to create a copy on top of the selected shape.

5. Select the Reflect tool (▷|◁), which is nested within the Rotate tool (↻) in the Tools panel. Click the straight part of the path to set the invisible axis

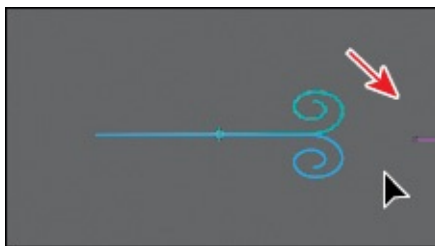that the shape will reflect around, rather than the center, which is the default.
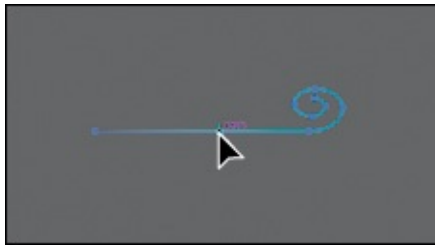
6. With the artwork still selected, position the pointer off the right edge and drag clockwise. As you drag, press the Shift key to constrain the rotation to 45° as the artwork is reflected. When the artwork looks like the figure, release the mouse button and then release the modifier key.
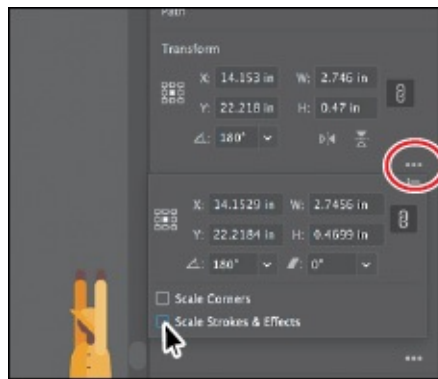
7. Select the Selection tool (▶) in the Tools panel, and with the shape still selected, click More Options (•••) in the Transform area of the Properties panel and make sure Scale Strokes & Effects is *not* selected.

8. Drag the lower-right point of the bounding box away from the center to make the shape larger.

9. Drag across the two curly shapes and choose Object > Group to keep them together.

0. Choose View > Fit All In Window.

1. Drag the group onto the middle artboard.

2. Press the Option key (macOS) or Alt key (Windows) and drag the group to another area of the artboard. Release the mouse button and then the key to make a copy. You can do this several times to place copies around the artboard, if you like.


Rotating objects

There are lots of ways to rotate artwork, including methods that range from

more precise to more freeform rotation. In previous lessons, you learned that you can rotate selected content with the Selection tool. By default, objects are rotated around a designated reference point in the center of content. In this part of the lesson, you'll learn about the Rotate tool and the Rotate command.

1. Choose View > Fit All In Window.

2. With the Selection tool (▶) selected, click to select the artwork of the person in the yellow raincoat. Press Command++ (macOS) or Ctrl++ (Windows) a few times to zoom in.

3. Move the pointer off of one of the corners of the bounding box, and when the rotate arrow (↖) appears, click and drag counterclockwise to rotate it. As you drag, press the Shift key to constrain the rotation to 45 degrees. When you see 90 degrees in the measurement label next to the pointer, release the mouse button and then the key.
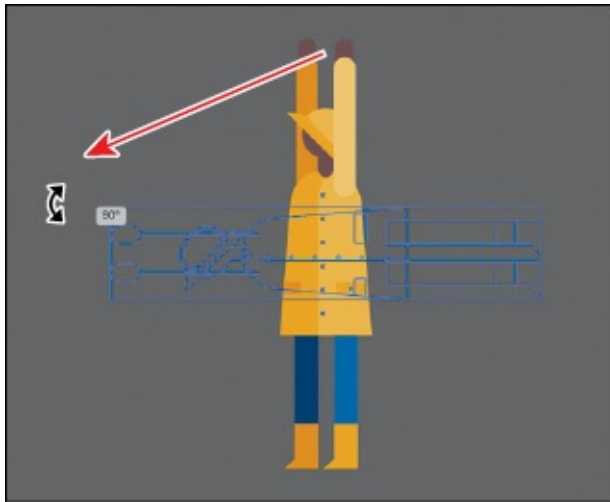

The Selection tool rotates content around the center, by default. Next, you'll use the Rotate tool, which allows you to rotate around a different point.

4. Press the spacebar to access the Hand tool, and drag to the right to see the group to the far left of the person (see the following figure).

5. With the Selection tool selected, click to select the group.

6. Select the Rotate tool (↻) in the Tools panel (it's under the Reflect tool [▷|◀]). Position the pointer on the bottom edge of the selected artwork, and click to set the reference point (where it will rotate around). Look at the figure for where to click.
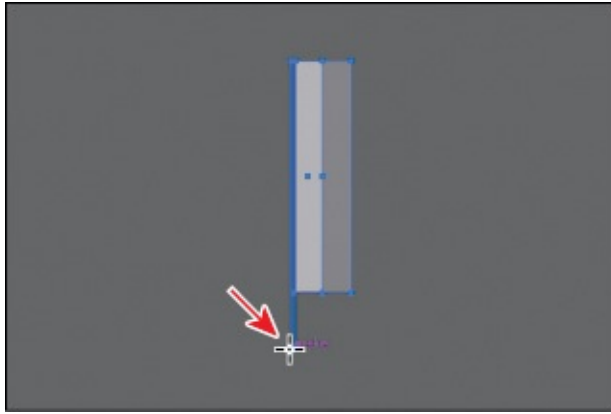
By default, the rotate-around point is in the center of selected artwork. The Rotate tool allows you to rotate content around a different reference point.

7. Move the pointer off the right side of the selected artwork and begin dragging clockwise. As you drag, press Option+Shift (macOS) or Alt+Shift (Windows) to copy the artwork as you rotate it, and constrain the rotation to 45 degrees. Release the mouse button and then the keys when you see –90 degrees in the measurement label.
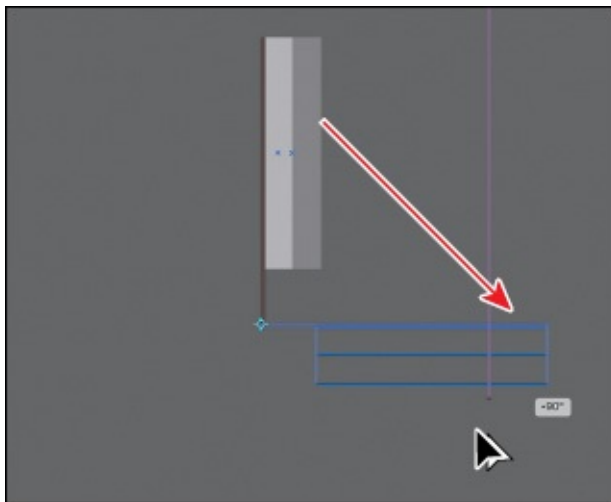

● **Note:** The measurement label you see may look different than the figure, and that's okay.

The Properties panel (or Control panel or Transform panel) is another place to rotate artwork precisely. In the Transform panel, you can always see the angle of rotation and change it later for individual objects.

8. Choose Object > Transform > Transform Again, *twice,* to repeat the previous transformations on the selected shape.

9. Select the Selection tool (▶), and drag across all four groups to select them.

0. Choose Object > Group.

1. With the group still selected, double-click the Rotate tool in the Tools panel. In the Rotate dialog box that appears, change the Angle value to **45°**, and click OK.
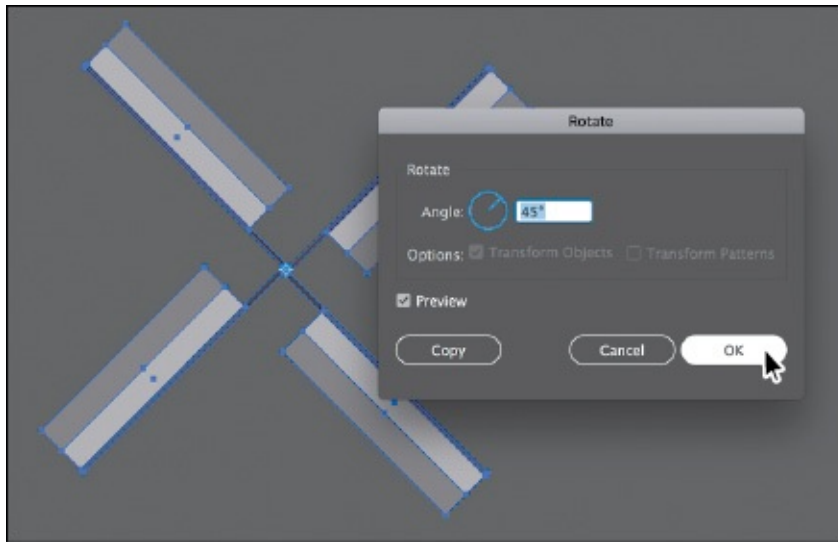
▶ **Tip:** After transforming content using various methods, including rotation, you will notice that the bounding box may be rotated. You can choose Object > Transform > Reset Bounding Box to reset the bounding box around the artwork again.

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2. Choose View > Fit All In Window.

3. With the Selection tool (▶) selected, drag the selected group up, on top of the windmill artwork.

Distorting objects with effects

You can distort the original shapes of objects in different ways, using various tools. Now you'll distort part of the flower and other artwork using effects. These are different types of transformations because they are applied as

effects, which means you could ultimately edit the effect later or remove it in the Appearance panel.

1. Select the Selection tool (▶), and click one of the flowers. Press Command++ (macOS) or Ctrl++ (Windows) several times to zoom in closely.

2. Double-click the flower group to enter isolation mode; then click to select the larger orange circle.

3. Click the Effect button (fx.) in the Properties panel.

**4.** Choose Distort & Transform > Pucker & Bloat in the menu that appears.
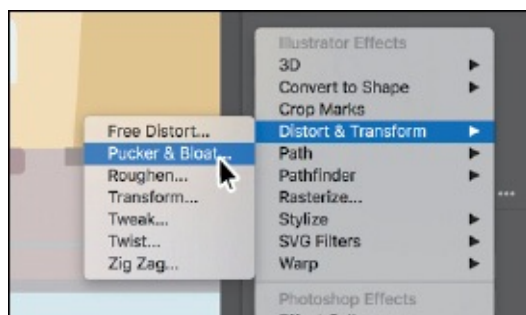
5. In the Pucker & Bloat dialog box, select Preview, and drag the slider to the right to change the value to roughly 35%, which distorts the shape. Click OK.
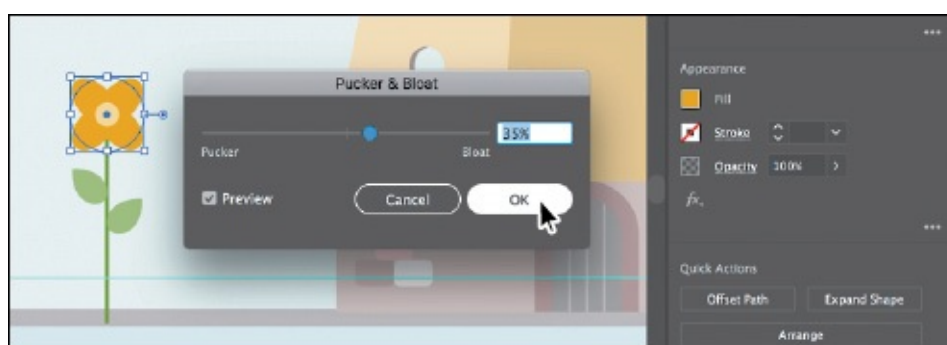
Effects you apply to shapes are live, which means they can be edited or

removed at any time. You can access the effect(s) applied to selected artwork in the Appearance panel (Window > Appearance).

6. Press Esc to exit Isolation mode.

7. Press the spacebar, and drag to the left to see the DAYS PER YEAR flags.

8. Click to select the top flag shape. You may need to zoom out.

9. Click the Effect button (fx.) in the Properties panel, and choose Distort & Transform > Twist.
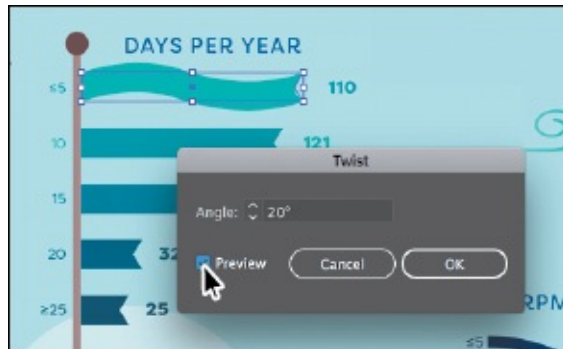
0. In the Twist dialog box, change Angle to **20**, select Preview to see the effect, and then click OK.

1. Click the banner below the selected banner; then press the Shift key, and click the remaining three banner shapes to select them all.

2. Choose Effect > Apply Twist.

Choosing Apply Twist applies the last applied effect with the same options. If you were to choose Effect > Twist, the last applied effect would be applied, but the dialog box would open so you could set options.
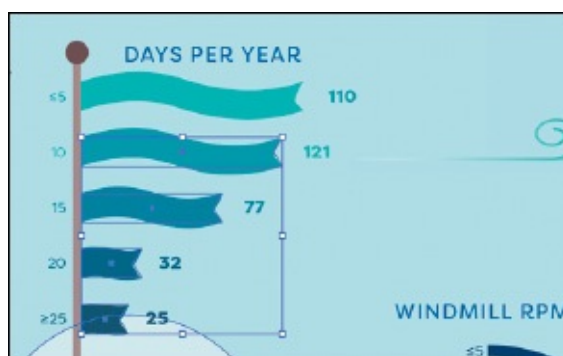
Transforming with the Free Transform tool

The Free Transform tool ( ) is a multipurpose tool that allows you to distort an object, combining functions like moving, scaling, shearing, rotating, and distorting (perspective or free). The Free Transform tool is also touch-enabled, which means you can control transformation using touch controls on
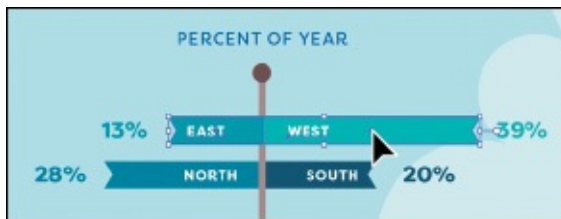
certain devices.

1. Press the spacebar to select the Hand tool, and drag in the Document window until you see the "PERCENT OF YEAR" text to the left of the windmill.

2. With the Selection tool (▶) selected, click to select the shape labeled "EAST WEST."

3. Click and hold down on the Puppet Warp tool ( ), and select the Free Transform tool ( ) in the Tools panel.

With the Free Transform tool selected, the Free Transform widget appears in the Document window. This widget, which is free-floating and can be repositioned, contains options to change how the Free Transform tool works. By default, the Free Transform tool allows you to move, shear, rotate, and scale objects. By selecting other options, like Perspective Distort, you can change how the tool works.

4. With the Free Transform tool selected, click the Perspective Distort option ( ) in the Free Transform widget (circled in the following figure).

5. Choose View > Smart Guides to temporarily turn them off.

   With the Smart Guides off, you can adjust the artwork without it snapping to everything else in the document.

6. Position the pointer over the lower-right corner of the bounding box, and the pointer changes in appearance (![icon]). Drag down a little, until it looks something like the figure.
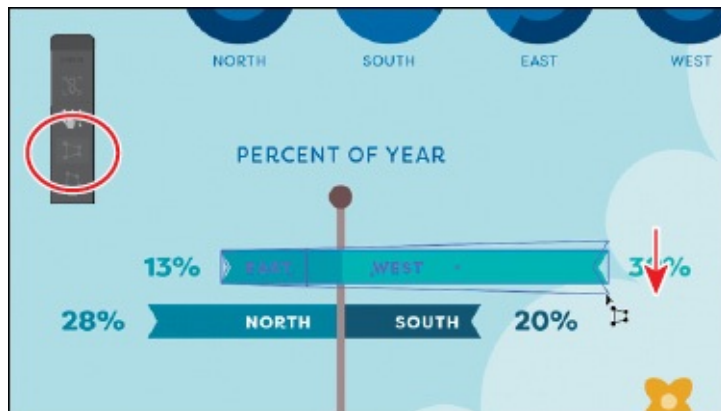
7. Press the Command key (macOS) or Ctrl key (Windows) to temporarily select the Selection tool and click to select the shape labeled "NORTH SOUTH." Release the key to return to the Free Transform tool.

8. With the Perspective Distort option (![icon]) in the Free Transform widget still selected, drag the lower-left point down a little, until it looks like the figure. Leave the group selected.

9. Choose View > Smart Guides to turn them back on.

0. Choose File > Save.

Shearing objects

Shearing an object slants, or skews, the sides of the object along the axis you specify, keeping opposite sides parallel and making the object asymmetrical. Next, you'll apply shear to the selected sign artwork.

1. With the group labeled "NORTH SOUTH" still selected, select the Shear tool (![icon]), nested within the Scale tool (![icon]) in the Tools panel.


▶ **Tip:** You can set a reference point, shear, and even copy in one step. With the Shear tool (![icon]) selected, Option-click (macOS) or Alt-click (Windows) to set the reference point and to open the Shear dialog box,

where you can set options and even copy if necessary.

2. Move the pointer off the right side of the group, press the Shift key to constrain the artwork to its original width, and drag up. Release the mouse button and then the Shift key when you see a shear angle (S) of *approximately –20*.
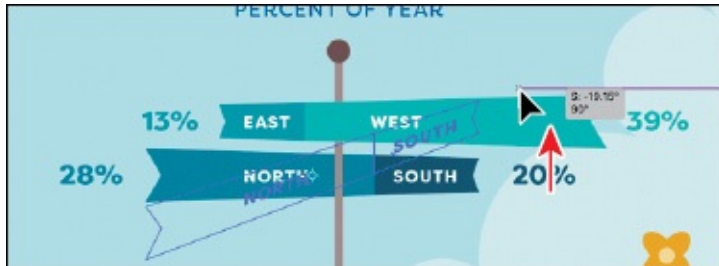
3. Press the Command key (macOS) or Ctrl key (Windows) to temporarily select the Selection tool. Click to select the shape labeled "EAST WEST." Release the key to return to the Shear tool.

4. Press the Shift key to constrain the artwork to its original width, and drag from off the right side of the group, down. Release the mouse button and then the Shift key when you see a shear angle (S) of *approximately –160*.
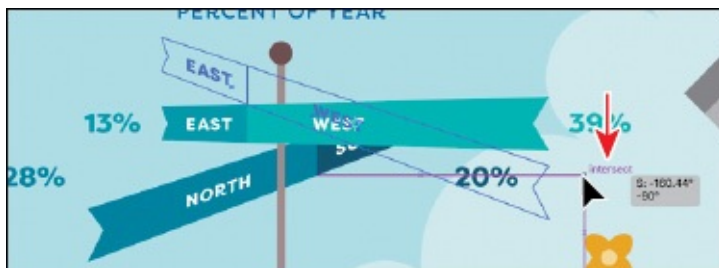

5. Select the Selection tool ( ), and drag the "NORTH SOUTH" group and then the "EAST WEST" group so they are each aligned with the sign pole like you see in the following figure.
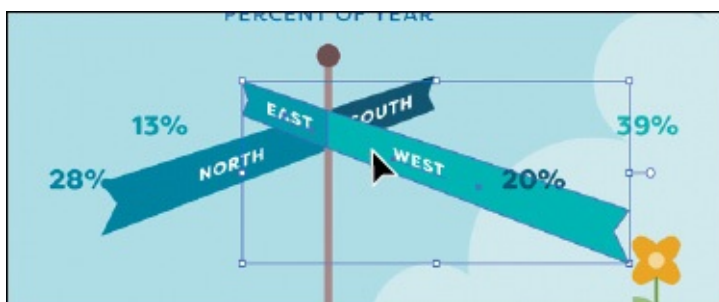
6. Click the NORTH SOUTH group to select it. Click the Ungroup button in the Properties panel to the right.

7. Choose Select > Deselect.

8. Click the NORTH text to select that group.

9. Choose Object > Arrange > Bring To Front.
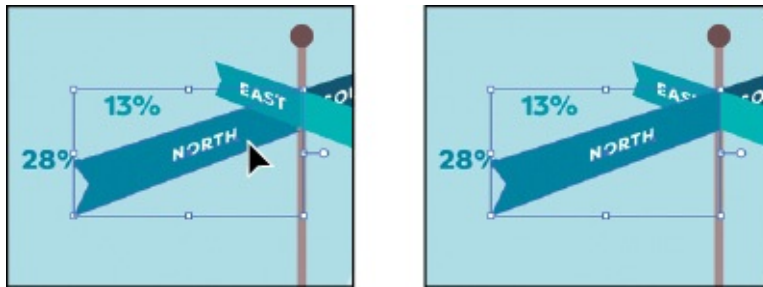
0. Drag each of the numbers with percent (%) next to the ends of the signs. I moved the flower to the right as well.


1. Choose View > Fit All In Window and then choose File > Save.

Using Puppet Warp

In Illustrator, you can easily twist and distort artwork naturally, into different positions, using the Puppet Warp tool. In this section, you'll warp the artwork of the person in the yellow raincoat using the Puppet Warp tool.

1. With the Selection tool (▶) selected, drag the artwork of the person in the yellow rain jacket onto the artboard above, to the right of the windmill, like you see in the figure.

Make sure the hands of the person are directly on the flagpole. The idea is to have the person appear to be holding on to the DAYS PER YEAR flag pole, as the wind blows them to the right.
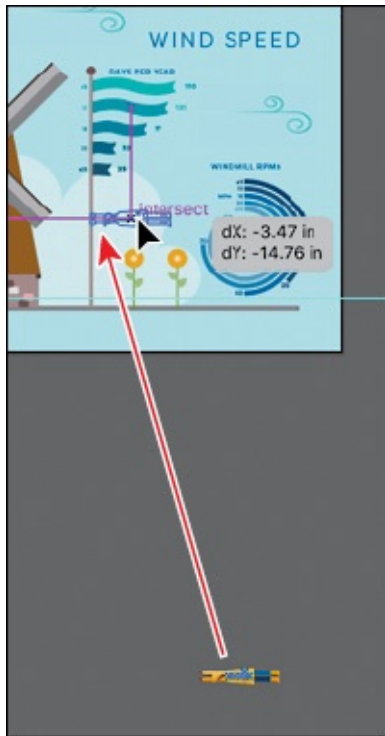

🟢 **Note:** It's difficult to see exactly where to drag the person in the figure. If you look at the figures on the next page, you may get a better idea of what I mean by "Make sure the hands of the person are directly on the flagpole."

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

3. Press and hold on the Free Transform tool (◗▯) in the Tools panel, and select the Puppet Warp tool (✦).

Using the Puppet Warp tool, you'll start by bending the arm of the person. To do that, you'll need to set pins. Pins are a way to hold part of the selected artwork to the artboard. You can rotate the artwork around a pin, reposition pins to move artwork, and more.

4. Move the pointer over the top hand of the person, and when the pointer shows a plus (+) next to it, click to add a pin. On the same arm, click roughly halfway down the arm, where the elbow might be. Finally, click to set a pin in the middle of the raincoat.
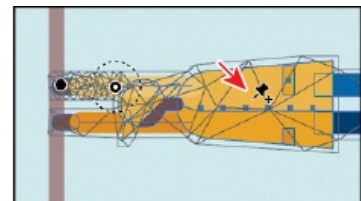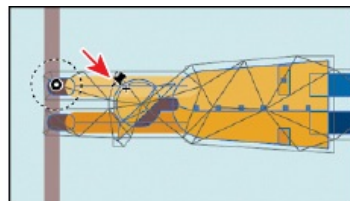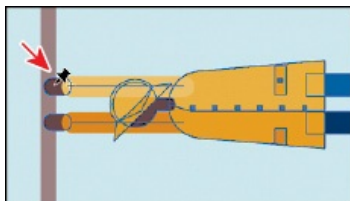

As you add pins, you can see a mesh showing on the artwork.

5. In the Properties panel on the right, you should see Puppet Warp options. Deselect Show Mesh. That will make it easier to see the pins and provide a clearer view of transformations you make.
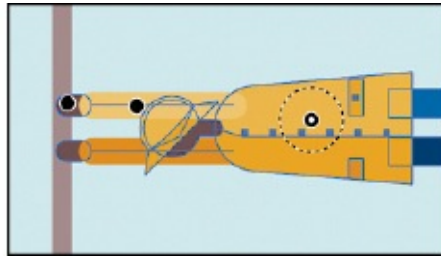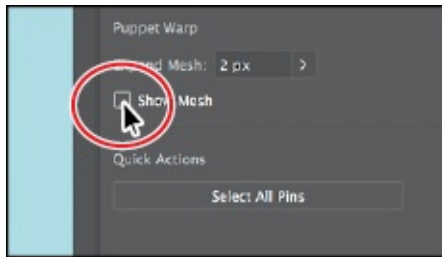
6. Click the pin you added to the hand to select it. You can tell that a pin is selected because it has a white dot in the center. Drag the selected pin up to move the hand and not the rest of the artwork.
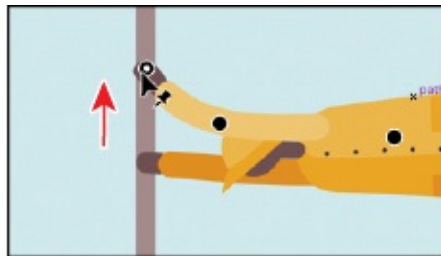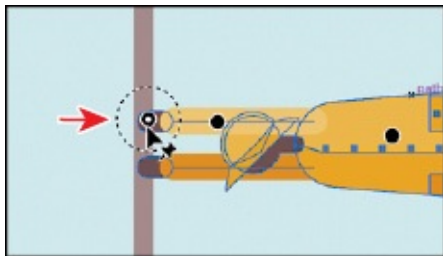

You set the pin on the hand so you could move it. The pin farther down the arm, near the "elbow," was for a pivot point or to ensure that only from that point to the hand moved. The third pin on the body was to keep the body in place without moving it. Setting at least three pins like this usually achieves a better result.


▶ **Tip:** You can press the Shift key and click multiple pins to select them or click the Select All Pins button in the Properties panel to select all of the pins.

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7. With the hand pin still selected, move the pointer over the dotted circle and drag counterclockwise a little to rotate around the pin.
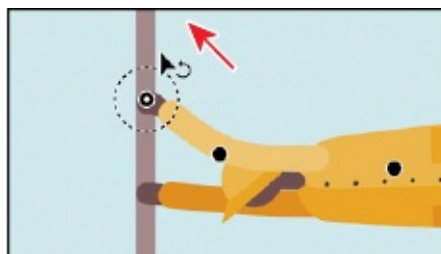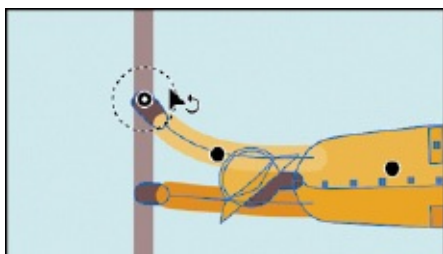

8. Click between the feet to set a pin. Press the Shift key and click the pin in the body to select the pin at the feet and in the body. Drag either pin down a little to bend the body.
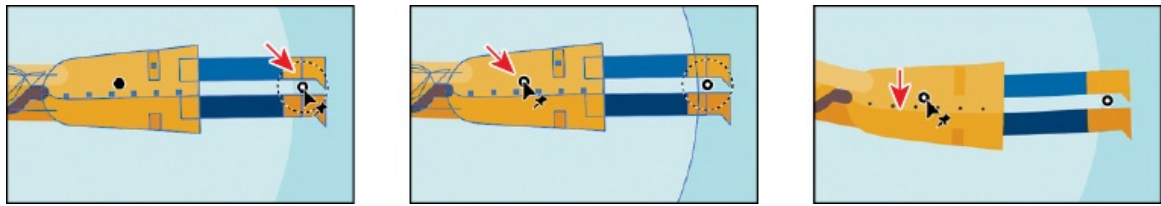
9. Click the pin at the feet to select only that pin. *Make sure it's the only pin selected.* Remember that selected pins have a white dot in the center. If the pin in the body is still selected, click the pin at the feet *again*. Drag the selected pin at the feet, up.
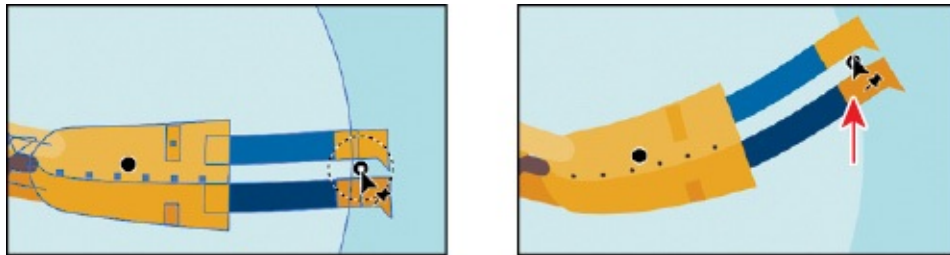
0. Move the pointer over the dotted circle of the selected pin, and drag counter-clockwise a little to rotate around the pin.
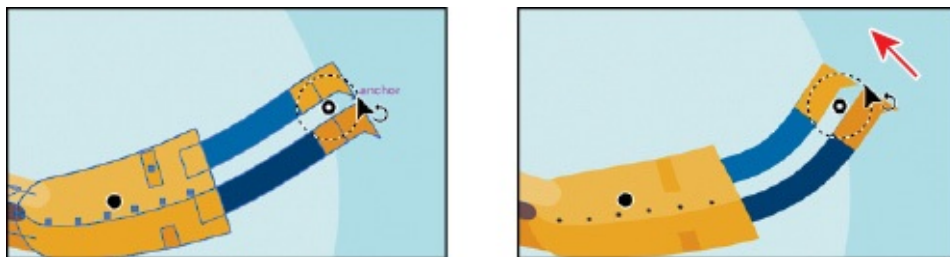
1. Choose Select > Deselect and then choose View > Fit All In Window.

2. Choose File > Save and then File > Close.

Review questions

1. Name three ways to change the size of an existing active artboard.

2. What is the *ruler origin*?

3. What is the difference between *artboard rulers* and *global rulers*?

4. Briefly describe what the Scale Strokes & Effects option in the

Properties panel or Transform panel does.

5. Briefly describe what the Puppet Warp tool does.

Review answers

1. To change the size of an existing artboard, you can do the following:

    - Double-click the Artboard tool (⌐), and edit the dimensions of the active artboard in the Artboard Options dialog box.

    - With nothing selected and the Selection tool selected, click the Edit Artboards button to enter Artboard Editing mode. With the Artboard tool selected, position the pointer over an edge or corner of the artboard, and drag to resize.

    - With nothing selected and the Selection tool selected, click the Edit Artboards button to enter Artboard Editing mode. With the Artboard tool selected, click in an artboard in the Document window, and change the dimensions in the Properties panel.

2. The ruler origin is the point where 0 (zero) appears on each ruler. By default, the ruler origin is set to be 0 (zero) in the top-left corner of the active artboard.

3. There are two types of rulers in Illustrator: artboard rulers and global rulers. Artboard rulers, which are the default rulers, set the ruler origin at the upper-left corner of the active artboard. Global rulers set the ruler origin at the upper-left corner of the first artboard, no matter which artboard is active.

4. The Scale Strokes & Effects option, which can be accessed from the Properties panel or the Transform panel, scales any strokes and effects as the object is scaled. This option can be turned on and off, depending on the current need.

5. In Illustrator, you can easily twist and distort artwork naturally, into different positions, using the Puppet Warp tool.