5 TRANSFORMING ARTWORK

Lesson overview

In this lesson, you'll learn how to do the following:

- Add, edit, rename, and reorder artboards in an existing document.
- Navigate artboards.
- Work with rulers and guides.
- Position and align content with Smart Guides.
- Position objects with precision.
- Move, scale, rotate, reflect, and shear objects using a variety of methods.
- Use the Free Transform tool to distort an object.
- Work with the Puppet Warp tool.

This lesson will take about 60 minutes to complete. Please log in to your account on peachpit.com to download the files for this lesson, or go to the "Getting Started" section at the beginning of this book and follow the instructions under "Accessing the lesson files and Web Edition." Store the files on your computer in a convenient location.

Your Account page is also where you'll find any updates to the lessons or to the lesson files. Look on the Lesson & Update Files tab to access the most current content.

You can modify objects in many ways as you create artwork by quickly and precisely controlling their size, shape, and orientation. In this lesson, you'll explore creating and editing artboards, the various Transform commands, and specialized tools while creating several pieces of artwork.

Starting the lesson

In this lesson, you'll transform artwork and use it to complete an infographic. Before you begin, you'll restore the default preferences for Adobe Illustrator and then open a file containing the finished artwork to see what you'll create.

Note: If you have not already downloaded the project files for this lesson to your computer from your Account page, make sure to do so now. See the "Getting Started" section at the beginning of the book.

1. To ensure that the tools function and the defaults are set exactly as described in this lesson, delete or deactivate (by renaming) the Adobe Illustrator CC preferences file. See "Restoring default preferences" in the "Getting Started" section at the beginning of the book.
2. Start Adobe Illustrator CC.
3. Choose File > Open, and open the L5_end.ai file in the Lessons > Lesson05 folder on your hard disk.

This file contains the three artboards that make up the front, back cover, and center for an infographic pamphlet. Any data presented is purely fictitious.

4. Choose View > Fit All In Window, and leave the artwork on-screen as you work.
5. Choose File > Open. In the Open dialog box, navigate to the Lessons > Lesson05 folder, and select the L5_start.ai file on your hard disk. Click Open.

6. Choose File > Save As. In the Save As dialog box, name the file **Infographic.ai**, and navigate to the Lesson05 folder. Leave Adobe Illustrator (ai) chosen from the Format menu (macOS) or Adobe Illustrator (*.AI) chosen from the Save As Type menu (Windows), and click Save.

Note: If you don't see Reset Essentials in the Workspace menu, choose Window > Workspace > Essentials before choosing Window > Workspace > Reset Essentials.

7. In the Illustrator Options dialog box, leave the Illustrator options at their default settings and then click OK.
8. Choose Window > Workspace > Reset Essentials.

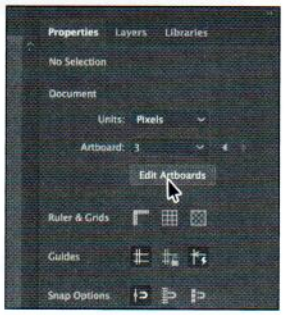
Working with artboards

Artboards represent the regions that can contain printable or exportable artwork, similar to pages in Adobe InDesign or artboards in Adobe Photoshop or Adobe Experience Design. You can use artboards for creating a variety of project types, such as multiple-page PDF files, printed pages with different sizes or different elements, independent elements for websites or apps, or video storyboards, for instance.

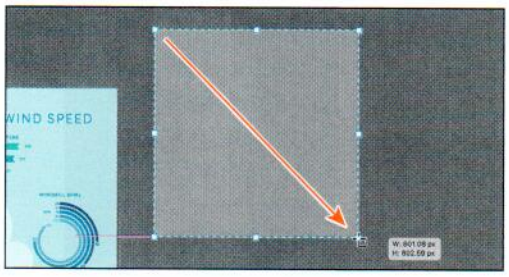
Adding artboards to a document

You can add and remove artboards at any time while working in a document. Artboards can be created in different sizes, you can resize them in Artboard Editing mode, and you can position them anywhere in the Document window. All artboards are numbered and can be renamed. Next, you'll add a few artboards to the Infographic.ai document.

1. Choose View > Fit Artboard In Window and then press Command and – (macOS) or Ctrl and – (Windows) twice to zoom out.
2. Press the spacebar to temporarily access the Hand tool (✋). Drag the artboard to the left to see more of the darker canvas to the right of the artboard.
3. Select the Selection tool (▶) in the Tools panel.
4. Click the Edit Artboards button in the Properties panel on the right to enter Artboard Editing mode and to select the Artboard tool in the Tools panel.



5. Move the pointer to the right of the existing artboard, and drag down and to the right. When the measurement label next to the pointer shows an approximate width of 800 pixels and height of 800 pixels, release.



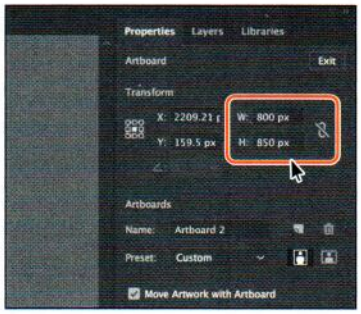
The new artboard should be selected. You can tell it's selected because of the dashed bounding box surrounding it. In the Properties panel on the right, you'll see properties for the selected artboard like position (X, Y) and size (width and height), name, and more.

● **Note:** You cannot have content selected in order to see the Document options in the Properties panel. If need be, choose Select > Deselect.

▶ **Tip:** You can also simply select the Artboard tool (⧉) in the Tools panel to enter Artboard Editing mode.

● **Note:** If a message appears after drawing the artboard, click Okay to close it.

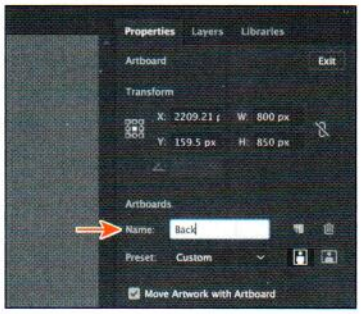
6 In the Properties panel on the right, select the width value, and type **800**. Select the height value, and type **850**. Press Return or Enter to accept the height.

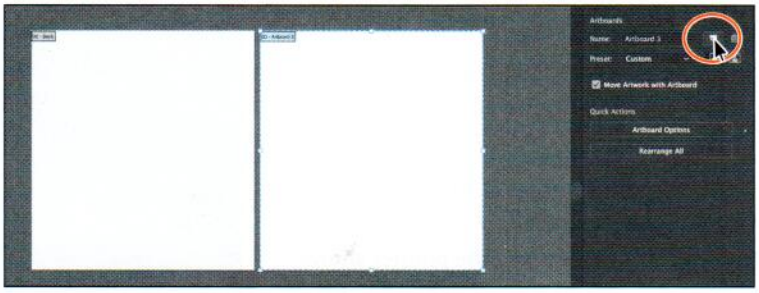


7 Change the name to **Back** in the Artboards section of the Properties panel. Press Return or Enter to make the change.

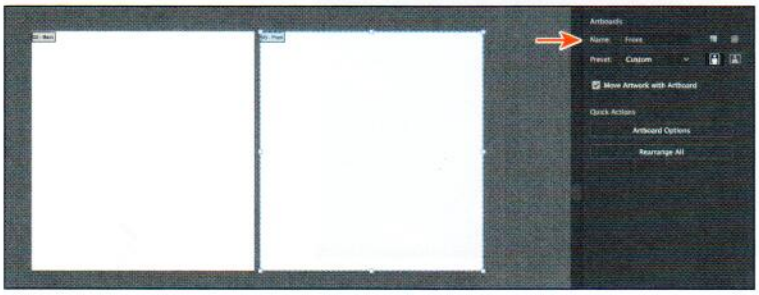
Next, you'll create another artboard that's the same size.

8 Click the New Artboard button ( ) in the Properties panel on the right to create a new artboard that is the same size as the selected artboard (named Back) and just to its right.





9 Change the name of the new artboard to **Front** in the Properties panel.



When editing artboards, in Artboard Editing mode, you can see the name of each artboard in the upper-left corner of the artboard.

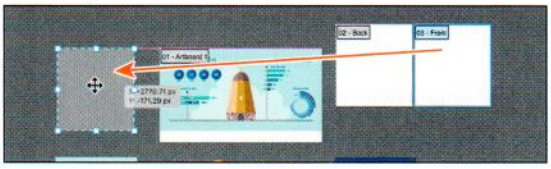
Editing artboards

After creating artboards, you can edit or delete them by using the Artboard tool (⊡), menu commands, Properties panel, or the Artboards panel. Next, you'll reposition and change the size of an artboard.

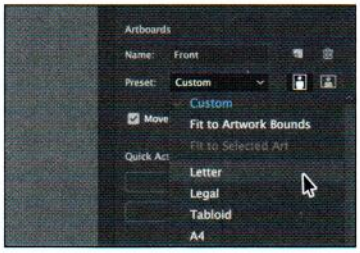
1 Choose View > Fit All In Window to see all of your artboards.

2 Press Command and – (macOS) or Ctrl and – (Windows) twice to zoom out.

3 While still in Artboard Editing mode and with the Artboard tool (⊡) still selected in the Tools panel, drag the artboard named Front to the left of the original artboard. Don't worry about its exact position yet, but make sure it doesn't cover any artwork.



In the Properties panel on the right, in Artboard Editing mode, you'll see lots of options for editing the selected artboard. When an artboard is selected, the Preset menu lets you change the artboard to a set size. The sizes in the Preset menu include typical print, video, tablet, and web sizes. You can also switch the orientation of, rename, or delete the artboard.

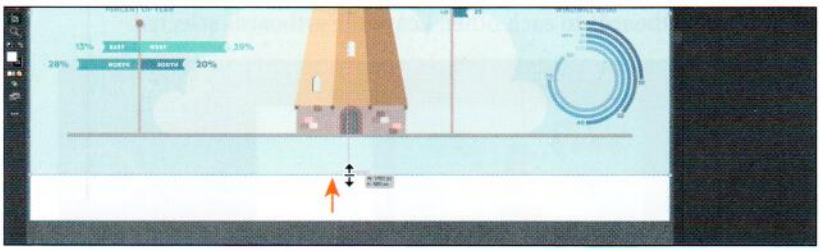


Tip: To delete an artboard, select it with the Artboard tool (⊡), and either press Delete or Backspace or click the Delete Artboard button (🗑) in the Properties panel. You can delete all but one artboard.

4 Click in the larger, original artboard in the center, and choose View > Fit Artboard In Window to fit that artboard in the Document window.

Commands such as View > Fit Artboard In Window typically apply to the selected or *active* artboard.

5 Drag the bottom-middle point of the artboard up to resize it. When the point snaps to the bottom of the blue shape, release the mouse button.

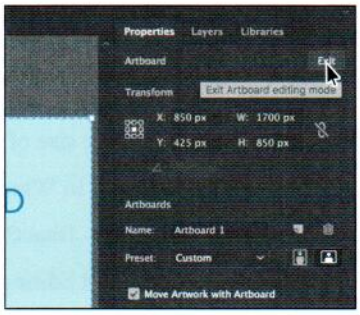


Tip: You can also transform multiple selected artboards at one time.

▶ **Tip:** To exit Artboard Editing mode, you can also select another tool in the Tools panel besides the Artboard tool (⬚) or press the Escape key.

6 Click the Exit button at the top of the Properties panel to exit Artboard Editing mode.

Exiting Artboard Editing mode will deselect all artboards and also select the Selection tool (▶) in the Tools panel on the left.



7 Choose View > Fit All In Window to fit all of the artboards in the Document window.

Aligning artboards

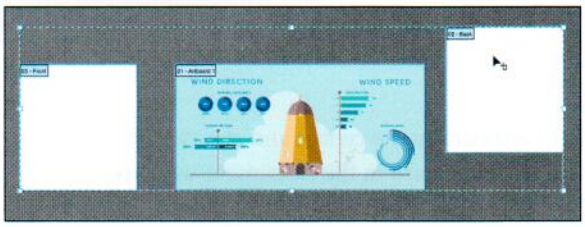
To organize the artboards in your document, maybe to keep similar artboards next to each other, you can move and align artboards to suit your working style. Next, you'll select all of the artboards and align them.

1 Select the Artboard tool (⬚) in the Tools panel on the left.

This is another way to enter Artboard Editing mode and can be useful when artwork is selected since you can't see the Edit Artboards button in the Properties panel with artwork selected.

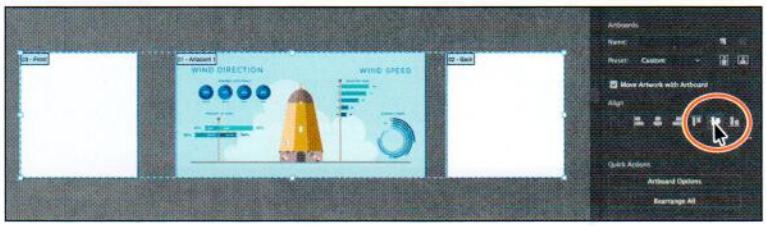
▶ **Tip:** With the Artboard tool (⬚) selected, you can press the Shift key and drag across a series of artboards to select them.

2 Click in the leftmost artboard labeled "03-Front" to select it. Press the Shift key, and click in the other two artboards to the right, one at a time, to select all three.



The Shift key allows you to add artboards to the selection, rather than draw an artboard, when the Artboard tool is selected.

3 Click the Vertical Align Center button (⬚) in the Properties panel on the right to align the artboards to each other. Leave the artboards selected.

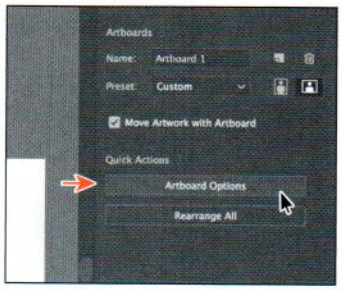


Renaming artboards

By default, artboards are assigned a number and a name, as you've seen. When you navigate the artboards in a document, it can be helpful to name them. Next, you'll rename artboards so that the names are more useful.

1 While still in Artboard Editing mode, click to select the middle (largest) artboard.

2 Click the Artboard Options button in the Properties panel.

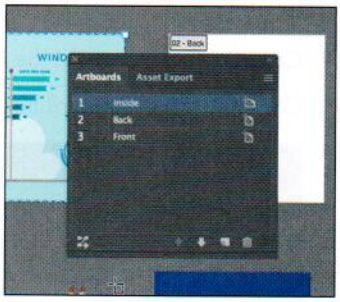


3 In the Artboard Options dialog box, change the name to **Inside**, and click OK.

The Artboard Options dialog box has a lot of extra options for artboards, as well as a few you've already seen, like width and height.

4 Choose Window > Artboards to open the Artboards panel.

The Artboards panel allows you to see a list of all of the artboards in the document. It also allows you to reorder, rename, add, and delete artboards and to choose many other options related to artboards without being in Artboard Editing mode.

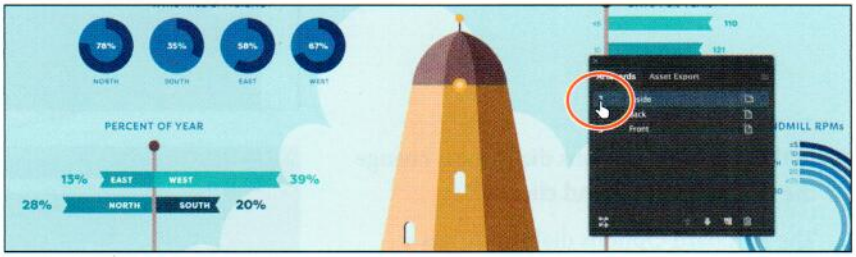


5 Choose File > Save, and keep the Artboards panel showing for the next steps.

Reordering artboards

You can navigate between artboards in your document using the Next Artboard (▶) and Previous Artboard (◀) buttons in the Properties panel with the Selection tool selected, with nothing selected, and while not in Artboard Editing mode, or you can do this from below the Document window. By default, artboards appear according to the order in which they are created, but you can change that order. Next, you'll reorder the artboards in the Artboards panel so that if you use the Next or Previous Artboard buttons, you navigate in an artboard order you determine.

1 With the Artboards panel open, double-click the number 2 to the left of the name "Back" and then double-click the number 1 to the left of the name "Inside" in the Artboards panel.



Double-clicking the number to the left of an artboard name that isn't selected in the Artboards panel makes that artboard the *active* artboard and fits it in the Document window.

2 Drag the "Front" artboard name up until a line appears above the artboard named "Inside." Release the mouse button.

This makes the Front artboard the first artboard in the list.

3 Choose View > Fit Artboard In Window to fit the Front artboard in the Document window, if necessary.

4 Click the Exit button in the Properties panel to exit Artboard Editing mode.

5 Click the Next Artboard button (▶) in the Properties panel.

▶ **Tip:** You can also reorder the artboards by selecting an artboard in the Artboards panel and clicking the Move Up (▲) or Move Down (▼) button at the bottom of the panel.

▶ **Tip:** The Artboard Options icon (⚙) appears to the right of the name of each artboard in the Artboards panel. It not only allows access to the artboard options for each artboard but also indicates the orientation (vertical or horizontal) of the artboard.

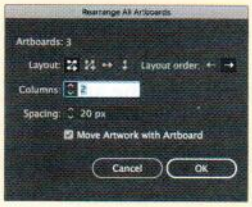
This fits the next artboard in the Artboards panel list, named "Inside," in the Document window. If you hadn't changed the order of the artboards in the Artboards panel, the Next Artboard button in the previous step would have been dimmed (you couldn't select it) because the Front artboard was the last artboard in the Artboards panel list.

6 Click the X at the top of the Artboards panel group to close it.

Now that the artboards are set up, you will concentrate on transforming artwork to create the content for your project.

Rearranging artboards

In Artboard Editing mode (with the Artboard tool selected in the Tools panel), you can click the Rearrange All button in the Properties panel to open the Rearrange All Artboards dialog box.



In the Rearrange All Artboards dialog box, you can arrange your artboards in columns and set the spacing between each artboard to a set amount. For instance, if you have a document with six artboards and set the columns to 3, the artboards would be arranged in two rows (or two columns) of three artboards.

You can also click the Rearrange All Artboards button at the bottom of the Artboards panel (Window > Artboards) or choose Object > Artboards > Rearrange All Artboards.

Working with rulers and guides

With the artboards set up, next you'll learn about aligning and measuring content using rulers and guides. *Rulers* help you accurately place and measure objects and distances. They appear along the top and left sides of the Document window and can be shown and hidden. There are two types of rulers in Illustrator: *artboard rulers* and *global rulers*. The point on each ruler (horizontal and vertical) where the 0 (zero) appears is called the *ruler origin*. Artboard rulers set the ruler origin to the upper-left corner of the *active* artboard. Global rulers set the ruler origin to the upper-left corner of the *first* artboard, or the artboard that is at the top of the list in the Artboards panel, no matter which artboard is active. By default, rulers are set to artboard rulers, which means the origin is in the upper-left corner of the active artboard.

Note: You could switch between the artboard and global rulers by choosing View > Rulers > and selecting Change To Global Rulers or Change To Artboard Rulers, depending on which option is currently chosen, but don't do that now.

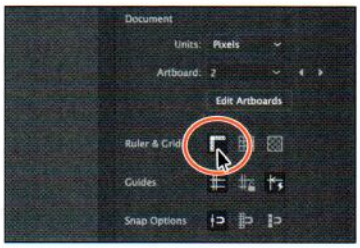
Creating guides

Guides are nonprinting lines created from the rulers that help you align objects. Next, you'll create a guide so later you can more accurately align content on an artboard.

1 Choose View > Fit All In Window.

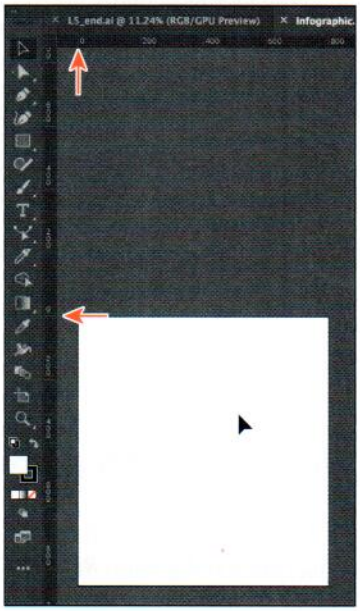
Tip: You can also choose View > Rulers > Show Rulers.

2 With nothing selected and the Selection tool (▶) selected, click the Show Rulers button (▣) in the Properties panel to the right to show the page rulers.



3 Click each of the artboards, and as you do, look at the horizontal and vertical rulers (along the top and left sides of the Document window).

Notice that 0 (zero) for each ruler is in the upper-left corner of the active (selected) artboard (the last artboard you clicked in). The point on each ruler (horizontal and vertical) where the 0 appears is called the *ruler origin*. By default, the ruler origin is in the upper-left corner of the *active* (selected) artboard. As you can see, the 0 point on both rulers corresponds to the edges of the active artboard.



4 With the Selection tool, click in the leftmost artboard, named "Front."

Notice the subtle black outline around the Front artboard, with "1" showing in the Artboard Navigation menu (below the Document window) and in the Document section of the Properties panel to the right of the document, all of which indicate that the Front artboard is the currently active artboard. There can be only one active artboard at a time. Commands such as View > Fit Artboard In Window apply to the active artboard.

5 Choose View > Fit Artboard In Window.

That fits the active artboard in the window, and the ruler origin (0,0) is in the upper-left corner of that same artboard. Next you'll create a guide on the active artboard.

6 Click and drag from the top ruler down, into the artboard. When the guide reaches 600 pixels on the ruler, release the mouse button. Don't worry about the guide being at exactly 600 pixels. The units for this document are set to pixels.

After creating a guide, it's selected, and when selected, its color matches the color of the layer that it's associated with (darker blue in this case) when you move the pointer away from it.

7 With the guide still selected (in this case, it will be blue, if selected), change the Y value in the Properties panel to **600**, and press Return or Enter.

8 Click away from the guide to deselect it.

9 Click the Units menu in the Properties panel, and choose Inches to change the units for the entire document. You can now see that the rulers show inches instead of pixels.

10 Choose File > Save.

Tip: Dragging from a ruler while pressing the Shift key "snaps" a guide to the measurements on the ruler.

Tip: You can double-click the horizontal or vertical ruler to add a new guide.

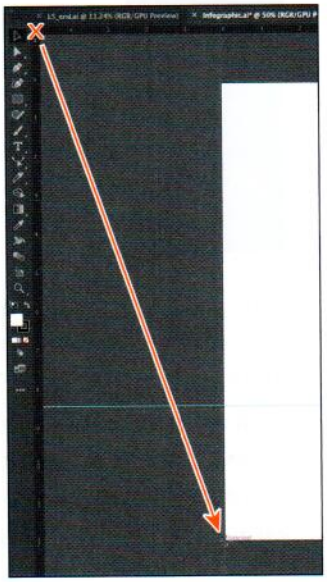
Tip: To change the units for a document (inches, points, etc.), you can also right-click either ruler and choose the new units.

Editing the ruler origin

On the horizontal ruler, measurements to the right of 0 (zero) are positive and to the left are negative. On the vertical ruler, measurements below 0 (zero) are positive and above are negative. You can move the ruler origin to start the horizontal and/or vertical measurements at another location, which is what you'll do next.

1 Choose View > Zoom Out.

2 Drag from the upper-left corner of the Document window, where the rulers intersect (■), to the lower-left corner of the Front artboard.



This sets the ruler origin (0,0) to the lower-left corner of the artboard. In other words, the measurements start in the lower-left corner of the artboard.

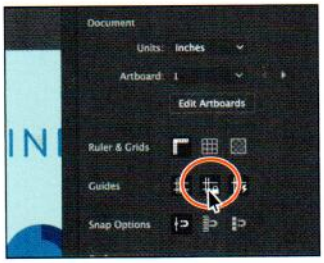
3 With the Selection tool (▶) selected, move the pointer over the guide, and click to select it.

4 Look in the Properties panel on the right to see the Y value. Right now, because you moved the ruler origin (0,0), the Y shows the vertical distance from the bottom of the artboard. Change the Y value to **–1.75** (inches), and press Return or Enter.

5 Move the pointer in the upper-left corner of the Document window, where the rulers intersect (■), and *double-click* to reset the ruler origin to the upper-left corner of the artboard.

6 Choose Select > Deselect to deselect the guide.

7 Click the Lock Guides button (■) in the Properties panel to lock all guides and prevent them from being selected.



▶ **Tip:** You can also lock guides by choosing View > Guides > Lock Guides. You can hide guides by clicking the Hide Guides button in the Properties panel or pressing Command+; (macOS) or Ctrl+; (Windows).

Transforming content

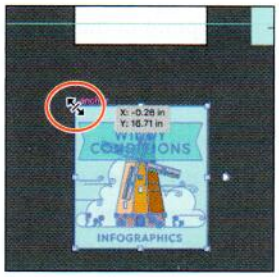
In Lesson 4, "Editing and Combining Shapes and Paths," you learned how to take simple paths and shapes and create more complex artwork by editing and combining that content. That was a form of transforming artwork. In this lesson, you'll learn how to scale, rotate, and transform content in other ways, using a variety of tools and methods.

Working with the bounding box

As you've seen in this lesson and previous lessons, a bounding box appears around selected content. You can transform content using the bounding box, but you can also turn it off. This makes it so you can't resize content by dragging anywhere on the bounding box with the Selection tool.

1 With the Front artboard showing, choose View > Zoom Out until you see the group of artwork that contains the text headline "WINDY CONDITIONS" beneath the artboards.

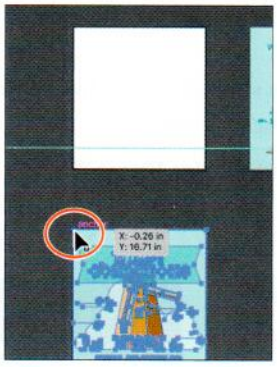
2 With the Selection tool (▶) selected, click to select the group. Move the pointer over the upper-left corner of the selected group. If you were to drag right now, you would resize the content.

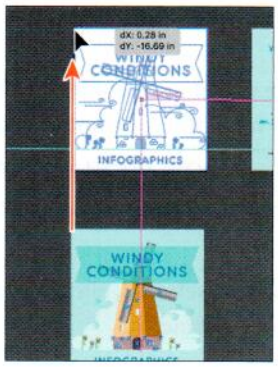


3 Choose View > Hide Bounding Box.

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

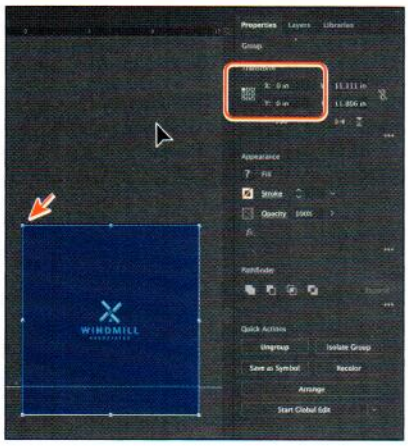
At times, you may want to position objects more precisely—relative either to other objects or to the artboard. You could use the alignment options, as you saw in Lesson 2, "Techniques for Selecting Artwork," but you can also use Smart Guides and Transform options in the Properties panel to move objects to exact coordinates on the x- and y-axes and to control the positioning of objects relative 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.

2 Click in the blank artboard that's farthest to the right to make it the active artboard. Transformation commands, as you are about to learn, apply to the active artboard.

Tip: You could have also aligned the content to the artboard using the alignment options. You'll find there are at least a few ways to accomplish most tasks in Illustrator.

3 Click to select the blue shape with the WINDMILL logo on it, 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.

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

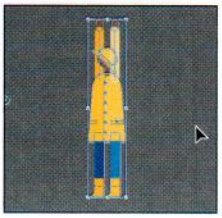
Scaling objects

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.

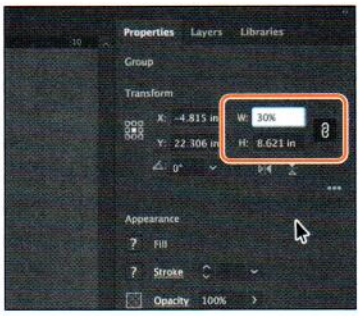
1 Press Command and – (macOS) or Ctrl and – (Windows) (or View > Zoom Out), if necessary, to see the person in the raincoat off of the bottom edge of the artboards.

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

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



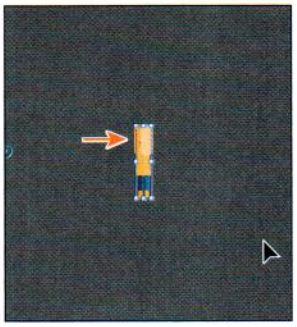
4 In the Properties panel, click the center reference point of the reference point locator (▦), if it's not selected, to resize from the center. Ensure that Constrain Width And Height Proportions is set (🔗), type **30%** in the Width (W) field, and then press Enter or Return to decrease the size of the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

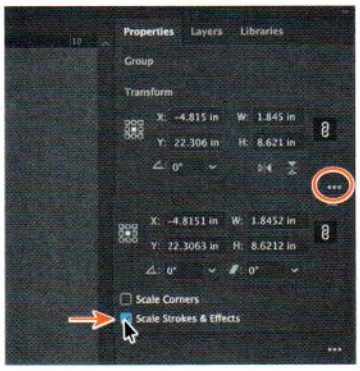


6 Choose View > Show Edges so you show the inside edges again.

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, if you don't already.

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

11 Press and hold on the Rotate tool (↻) in the Tools panel, and choose the Scale tool (⤢).

● **Note:** You may see the Reshape tool (↘) instead of the Rotate tool in the Tools panel. If that's the case, press and hold on the Reshape tool to select the Scale tool.

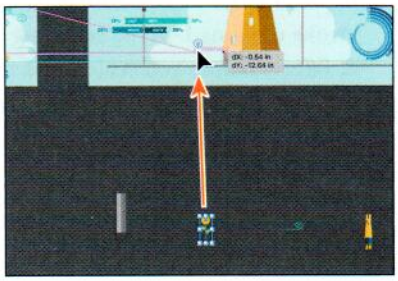
The Scale tool is used to scale content by dragging. For a lot of the transform tools, like the Scale tool, you can also double-click the tool to edit selected content in a dialog box. This is similar to choosing Object > Transform > Scale.

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

12 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.

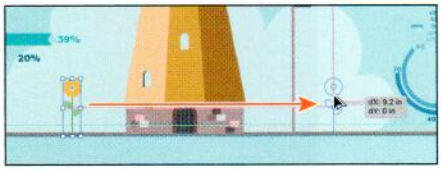
This method of scaling artwork may be useful if there is a lot of overlapping artwork, for instance, or when precision matters or when you need to scale content nonuniformly, and more.

13 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.



14 Choose View > Fit Artboard In Window.

15 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

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

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.

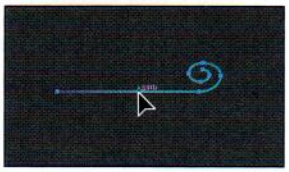
1 Choose View > Fit All In Window.

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.

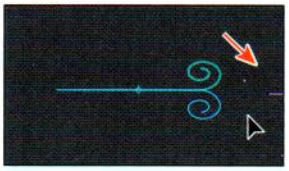
3 Select the Selection tool (▶), and click to select the curly green shape.

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 Scale 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, move 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, making sure Scale Strokes & Effects is *not* selected.

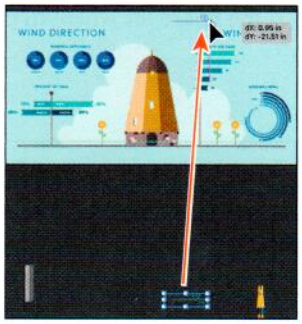
8 Press and drag the lower-right point of the bounding box away from the center to make the shape larger.

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

10 Choose View > Fit All In Window.

11 Drag the group onto the middle artboard.

12 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.



● **Note:** You may need to pan in the Document window to see the curly green shape. Press the spacebar, drag in the Document window, then release the spacebar.

▶ **Tip:** If all you want to do is flip content in place, you can also click either the Flip Along Horizontal Axis button (▷◁) or the Flip Along Vertical Axis button (△▽) in the Properties panel.

▶ **Tip:** If you want to copy artwork and reflect artwork as you drag, begin dragging artwork with the Reflect tool. As you drag, hold down the Option (macOS) or Alt (Windows) key. When the artwork is where you want it, release the mouse button and then the keys. Pressing Shift+Option (macOS) or Shift+Alt (Windows) will copy the reflected artwork and constrain the reflection angle to 45°.

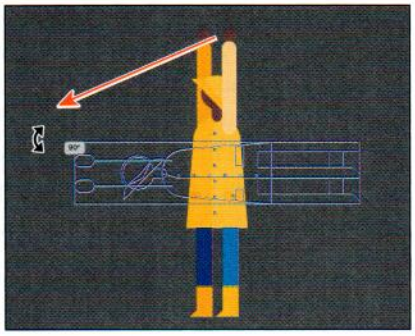
Rotating objects

There are lots of ways to rotate artwork, including methods that range from precise to free-form 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 and + (macOS) or Ctrl and + (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°. When you see 90° in the measurement label next to the pointer, release the mouse button and then the key.

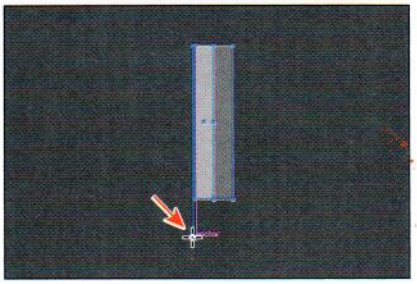


The Selection tool rotates content around the center by default. Next, you'll use the Rotate tool, which allows you to rotate around a different point.

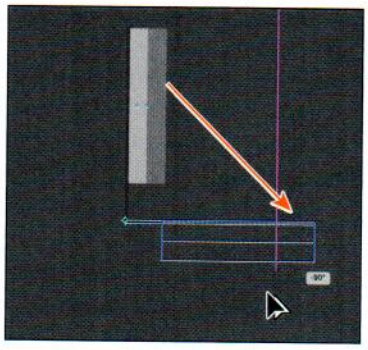
4 Press the spacebar to access the Hand tool, and drag to the right to bring the group at the far left into view (see the following figure).

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 [⇋]). Move the pointer over 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.



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°. Release the mouse button and then the keys when you see –90° in the measurement label.



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

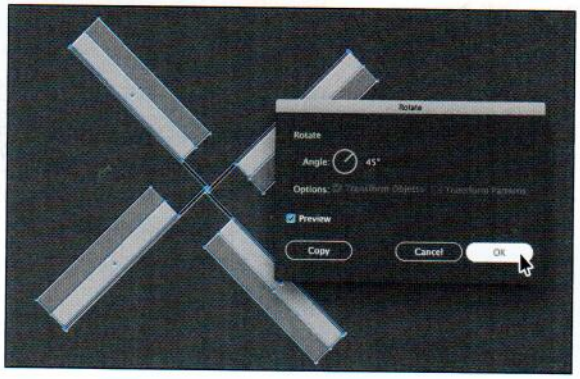
The Properties panel (or Control panel or Transform panel) is another way to rotate artwork precisely. In the Transform panel, you can always see the angle of rotation and change it later for individual objects.

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.

10 Click the Group button in the Properties panel to group them together.

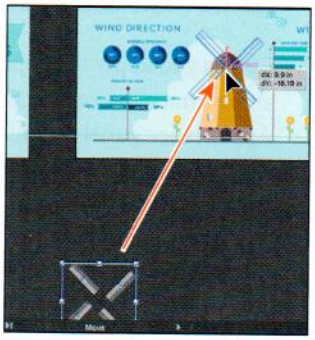
11 With the group still selected, double-click the Rotate tool in the Tools panel. In the Rotate dialog box that appears, change the Angle value to **45°**, and click OK.



▶ **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.

12 Choose View > Fit All In Window.

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



Distorting objects with effects

Note: To learn more about effects, see Lesson 12, "Exploring Creative Uses of Effects and Graphic Styles."

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.

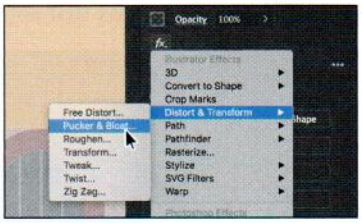
1 With the Selection tool (▶) selected, click one of the flowers. Press Command and + (macOS) or Ctrl and + (Windows) several times to zoom in closely.

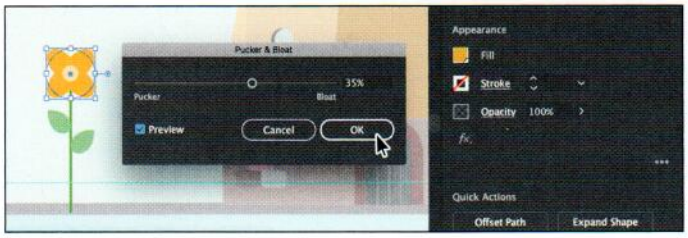
2 Double-click the flower group to enter isolation mode; then click to select the larger orange circle.

3 Click the Choose An 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).

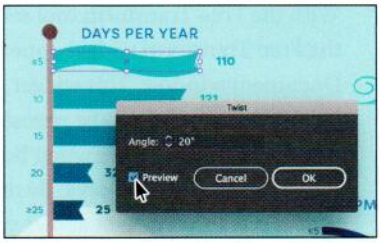
6 Press the Escape key to exit Isolation mode.

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 Choose An Effect button (fx) in the Properties panel, and choose Distort & Transform > Twist.

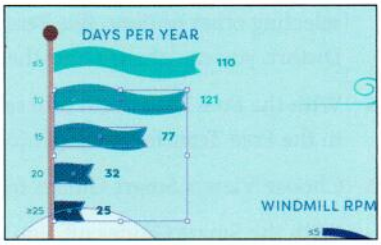
10 In the Twist dialog box, change Angle to **20**, select Preview to see the effect, and then click OK.



11 Click the banner below the selected banner; then press the Shift key, and click the remaining three banner shapes, one at a time, to select them all.

12 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.



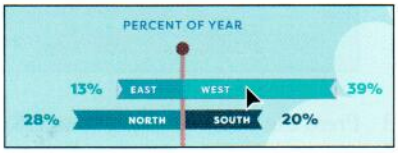
Transforming with the Free Transform tool

The Free Transform tool ( ) is a multipurpose tool that allows you to distort an object, combining functions such as 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.

Note: To learn more about touch controls, search for "Touch Workspace" in Adobe Help (Help > Illustrator Help).

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."



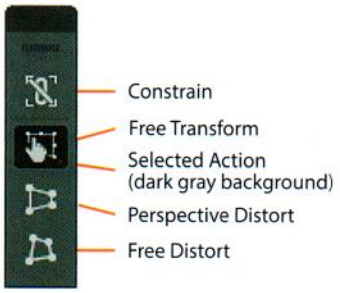
3 Click Edit Toolbar ( ) at the bottom of the Tools panel. Scroll in the menu that appears, and drag the Free Transform tool ( ) into the Tools panel on the left to add it to the list of tools. Drag the Puppet Warp tool ( ) onto the Free Transform tool to group them together.

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

Note: You may want to press the Escape key to hide the extra tools menu.

Note: To learn more about the options for the Free Transform tool, search for "Free Transform" in Adobe Help (Help > Illustrator Help).

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 for changing 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.

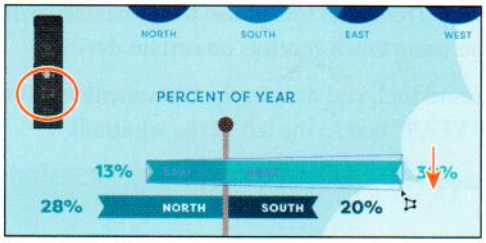


5 With the Free Transform tool selected, click the Perspective Distort option ( ) in the Free Transform widget (circled in the following figure).

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

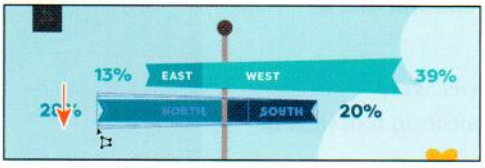
With the Smart Guides off, you can adjust the artwork without it snapping to everything else in the document.

7 Move the pointer over the lower-right corner of the bounding box, and the pointer changes in appearance ( ). Drag down a little, until it looks something like the figure.



8 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.

9 With the Perspective Distort option ( ) 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.



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

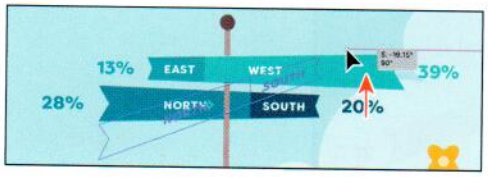
11 Choose File > Save.

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.

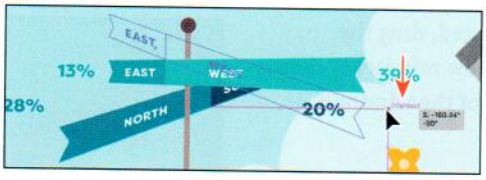
1 With the group labeled "NORTH SOUTH" still selected, select the Shear tool (), nested within the Rotate tool () in the Tools panel.

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.

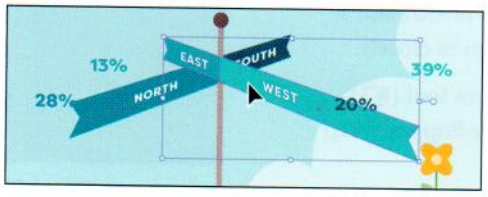


3 Press the Command key (macOS) or Ctrl key (Windows) to temporarily select the Selection tool. Click to select the shape labeled "EAST WEST." Release the key to return to the Shear tool.

4 Press the Shift key to constrain the artwork to its original width, and drag down from off the right side of the group. 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.



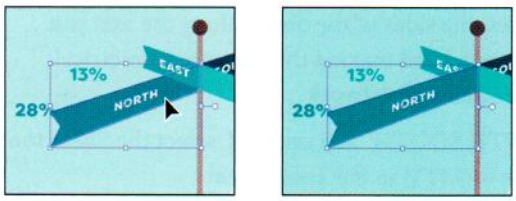
6 Click the NORTH SOUTH group to select it. Click the Ungroup button in the Properties panel to the right.

7 Choose Select > Deselect.

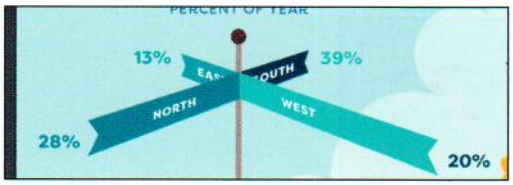
8 Click the NORTH text to select that group.

Tip: You can set a reference point, shear, and even copy in one step. With the Shear tool () 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.

9 Choose Object > Arrange > Bring To Front.



10 Drag each of the numbers with percent (%) next to the ends of the signs. I moved the flower to the right as well.



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

Using Puppet Warp

In Illustrator, you can easily twist and distort artwork 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.

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."

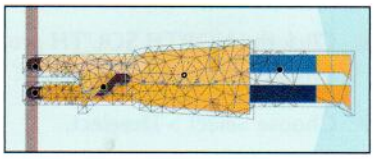
1 With the Selection tool (▶) selected, drag the artwork of the person in the yellow rain jacket onto the artboard above, to the right of the windmill, as you see in the figure.

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 him or her to the right.

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

Note: The pins Illustrator adds to the artwork by default may not look like what you see in the figure. If that is the case, pay attention to the notes along the way.

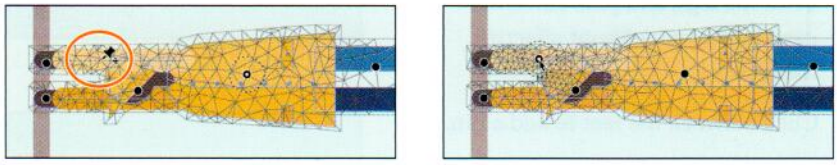
3 Press and hold the Free Transform tool (▶□) in the Tools panel, and select the Puppet Warp tool (📌).



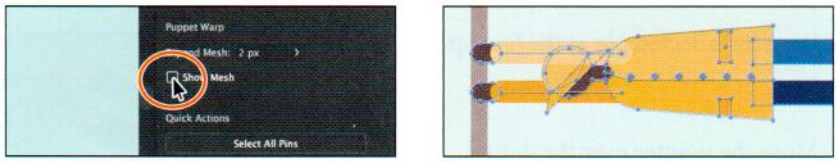
By default, Illustrator identifies the best areas to transform your artwork and automatically adds pins to the artwork. Pins are used to hold part of the selected artwork to the artboard, and you can

add or delete pins to transform your object. You can rotate the artwork around a pin, reposition pins to move artwork, and more.

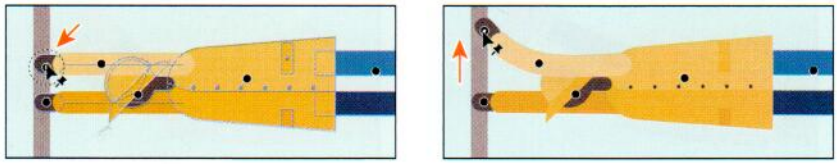
4 Move the pointer roughly halfway down the top arm—over where the elbow would be. When the pointer shows a plus (+) next to it, click to add a pin.



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 any transformations you make.

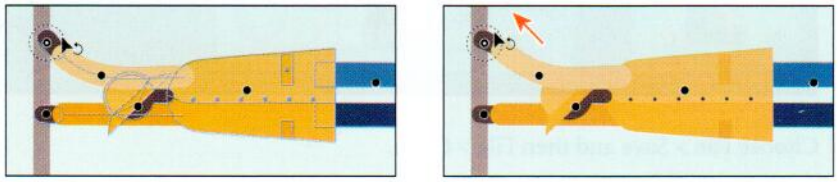


6 Click the pin on the hand to select it. You can tell that a pin is selected because it has a white dot in the center. Drag the selected pin up to move the hand and not the rest of the artwork.



The pin you set, farther down the arm near the "elbow," was a point to pivot around. The other default pins on the body help to keep the body in place without moving it. Having at least three pins on your artwork usually achieves a better result.

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

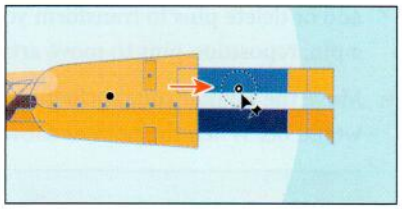


Note: If you don't see a pin on the hand, you can click to add one. If there is a pin between the hand pin you just added and the elbow pin you added previously, click to select it, then press Delete or Backspace to remove it.

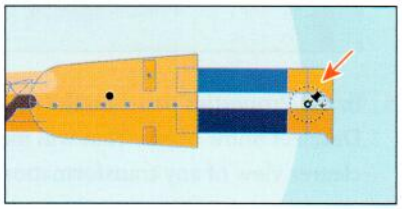
Tip: You can press the Shift key and click multiple pins to select them all or click the Select All Pins button in the Properties panel to select all of the pins.

8 Click the pin that was added to the leg, by default. Press Backspace or Delete to remove it.

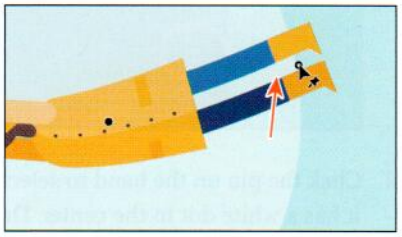
The pin is not in a good position to bend the legs, and pins currently can't be moved without affecting the artwork.



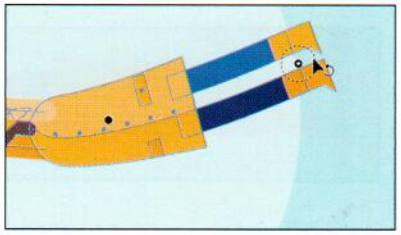
9 Click between the feet to add a pin.

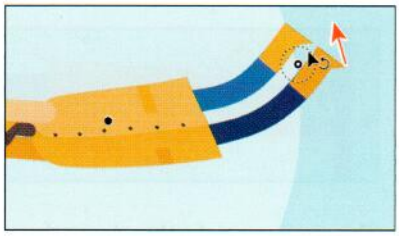


10 Drag the selected pin at the feet up.



11 Move the pointer over the dotted circle of the selected pin, and drag counterclockwise a little to rotate around the pin.





12 Choose Select > Deselect and then choose View > Fit All In Window.

13 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.