Learn and be inspired.

Template Shapes: 104
Useful Shapes in the Template Library

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Sometimes framers need functional shapes besides rectangles and ovals.

They will not be used every day, so it is good to have a reference to know where they are, and how to make them. Plus, some of the tools we use and the changes we make along the way will help with many other projects, too.

Triangles

Template 504 generates a triangle shape with the flat side along the bottom. There are no parameters, and the measurements are obvious.

Rotating

There will be times when the flat side of the triangle needs to be on the top. In fact, rotating turns out to be a big part of using many of these handy shapes.

In this illustration, see that there is a **Rotation** field on the left of the **Properties** tab. It is possible to enter a rotation angle in this field to rotate the opening.
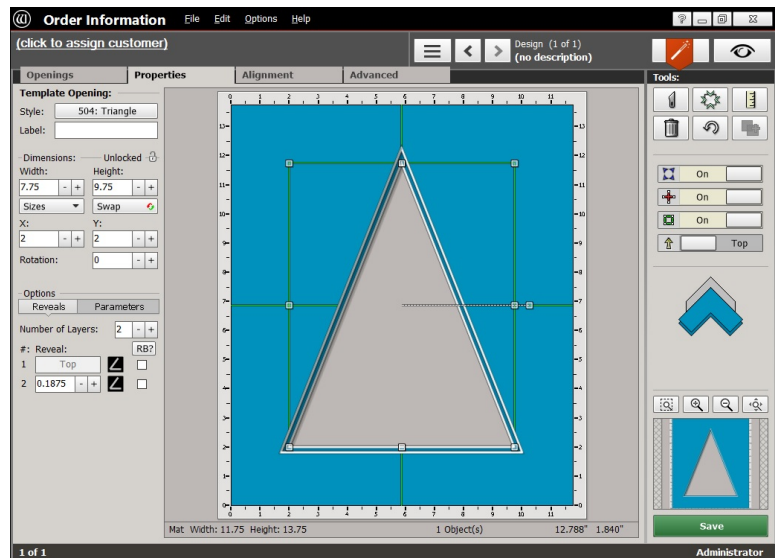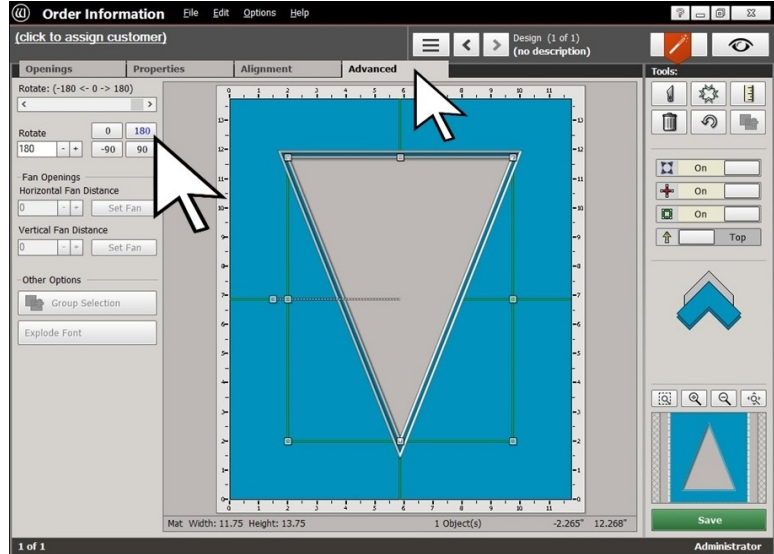
‣ Click the **Advanced** tab and all the Rotation features are there.

At the top is a **Rotation** slider. Move it left to right and watch the opening rotate.

Below is a field to enter the **Rotation** angle.

To the right are 4 buttons to rotate the opening to the 4 most common angles.

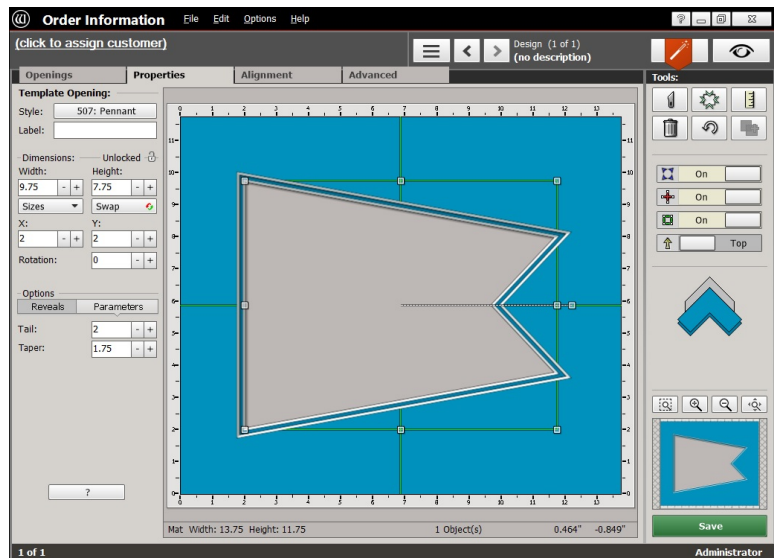Here, the **180° Button** is clicked.

Pennant

Template 507 has parameters that can fashion many common flag shapes.

The **Tail** parameter controls the indentation at the right.

The **Taper** parameter controls how much narrower the right side is compared to the left.
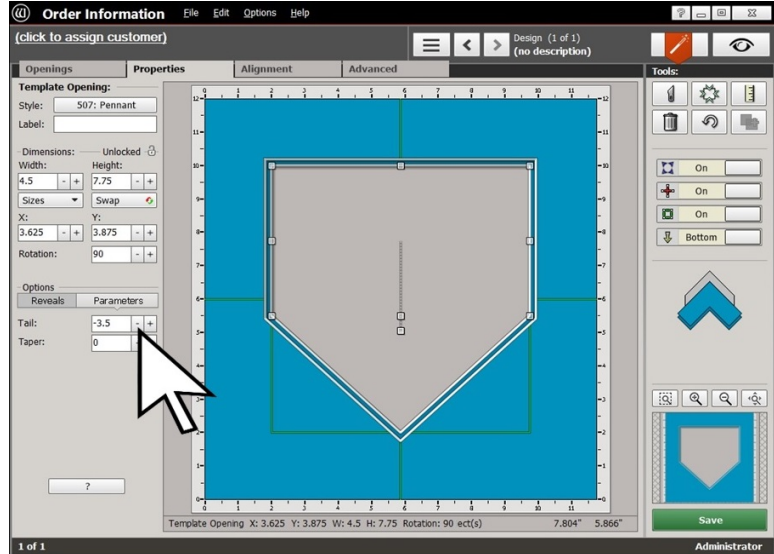
The pennant shape can also be rotated 180° to show the flag flying in the opposite direction.

The flag shape can also be rotated 90° to make a hanging banner shape.

Here, the **Tail** parameter is set to a negative value so that the point is outward rather than inward, forming this home plate shape.


Fan Shapes

There are 2 fan templates in the **Template Library**.

Template 505 has only a parameter to control the arc across the top. Its bottom is a point.

Template 509 *(shown here)* is far more versatile with the possibility of its bottom arc. The shape can be formed to display a normal fan, as in this example.

Using the **Bottom Arc Height** and **Bottom Arc Width** parameters, the shape can also be set to display a fanned arrangement of multiple items like cards or pictures.
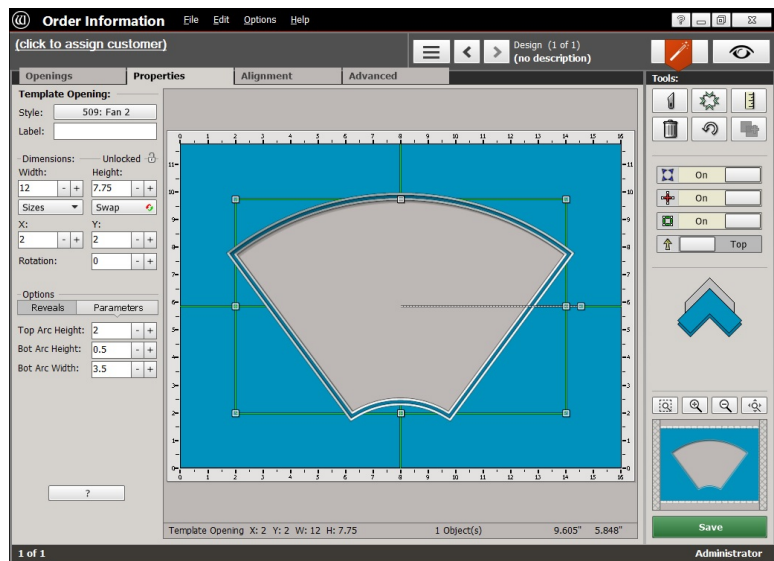
As always, negative parameter settings form surprising, but still useful, shapes.

This baseball diamond shape is made by setting the **Bottom Arc Height** to a small value and the **Bottom Arc Width** to a negative value.
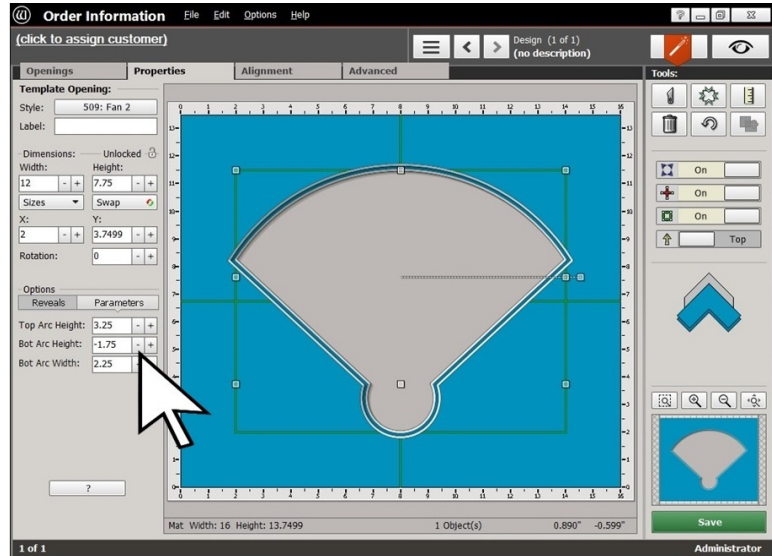
Hearts

Whether they are decorative additions or shapes for openings, hearts are important in our culture's decorative vocabulary.

There are 2 heart templates, but ignore **Template 501**. It has no parameters to refine the shape. As a result, it looks amateurish.
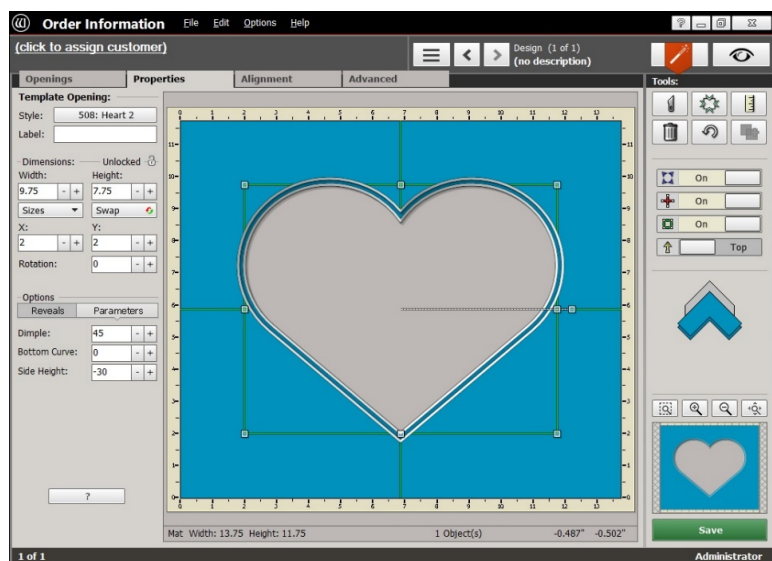
Template 508 has 3 parameters to alter the shape.

Dimple sets the amount of plunge between the arcs at the top.

Bottom Curve creates arcs at the diagonal sides at the bottom.

Side Height raises or lowers the point where the diagonal sides meet the arcs.

The values for these parameters are not measurements—think of them as percentages.

Exposing More of the Image

The obvious function of the parameters is to make the heart as attractive as it can be for the required size.

A secondary function is to maximize the amount of the image seen through the shape. The heart shape crops a picture mercilessly, after all.

The **Dimple** can be set smaller. The **Side Height** can be set lower, and the **Bottom Curve** can be set to a higher value to bow the diagonal sides outward.
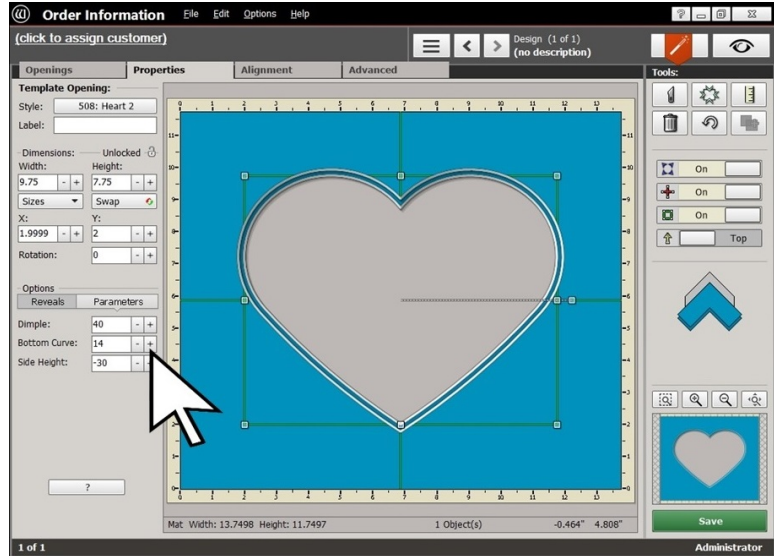
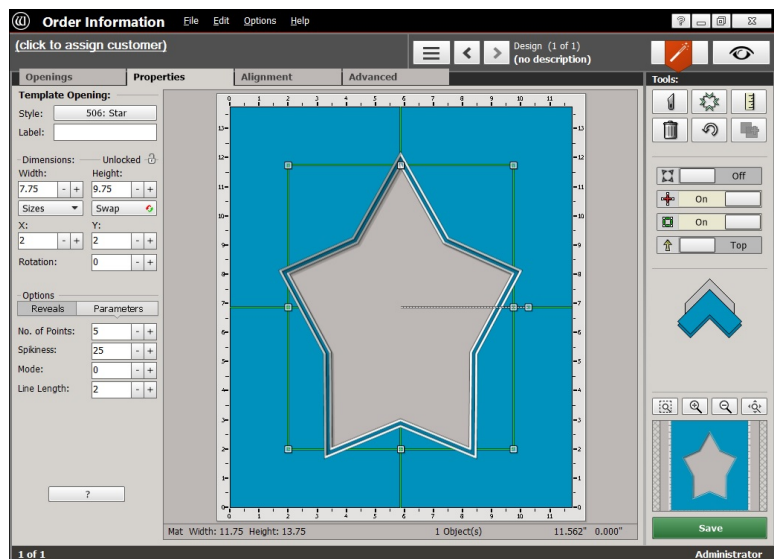*All of these changes will reveal more of the image.*

Template 506: Star

The first thought upon seeing a template named **Star** is to deduce that it is purely decorative. In reality, it is useful for shapes beyond stars, too.

Let's examine this star shape so that we understand the parameters.

Number of Points is self-explanatory.

Spikiness sets the angularity of the points.

*Like the parameters for the Heart template, **Spikiness** is a percentage, not an actual measurement.*

These are the default **Parameter** settings for the template. The shape has 5 points and it resembles a star, but everyone's first experiment is to refine the parameter settings so that the template forms a nice symmetrical 5-pointed star.

Spikiness is set to 55.

The star is improving, but some points are longer than others.

The problem is that the star is stretched to fit into the 7.75 x 9.75 inch size.
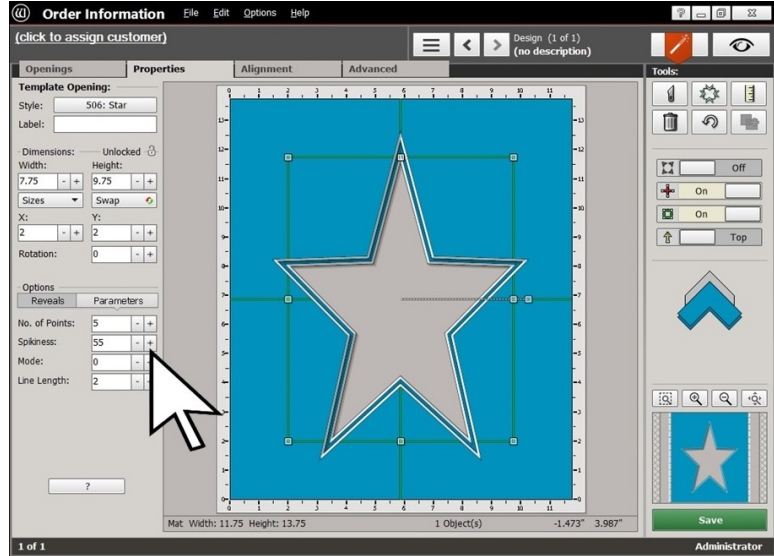
The **Mode** parameter will transform the shape (any shape created using this template) into a geometrically regular figure—where all the sides and all the equivalent angles are equal.

The Mode Settings

‣ Click the **Question Mark** at the lower left to open the **Parameter Map**. At its lower right are illustrations of the various **Modes**.

Mode Zero stretches the shape to fit into the specified size.

Mode 1 transforms the shape into a geometrically regular figure that fits into the specified size.

Mode 2 generates a geometrically regular figure, but the size is determined by the **Line Length**.
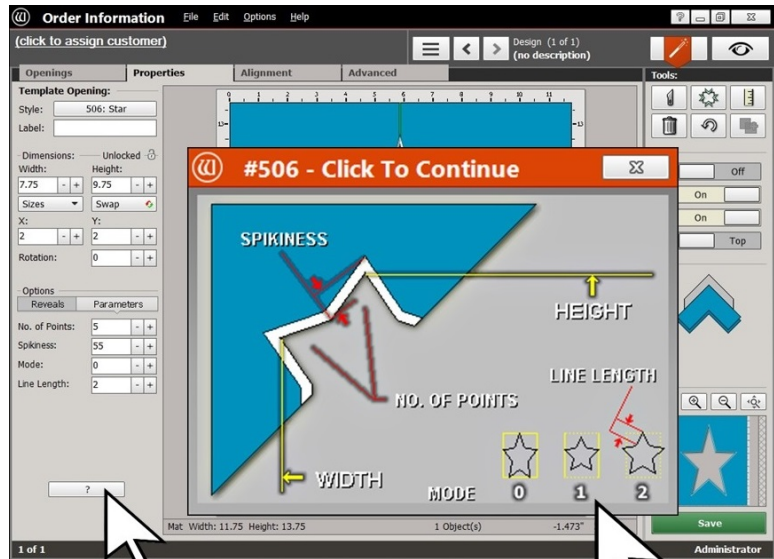
In this example, the **Line Length** parameter is set to 2 inches. That means that all the sides of the points of the star would be 2 inches long. To generate a symmetrical 5-pointed star—and to generate a geometrically regular shape for most of our projects using the **Star** template—select **Mode 1**.
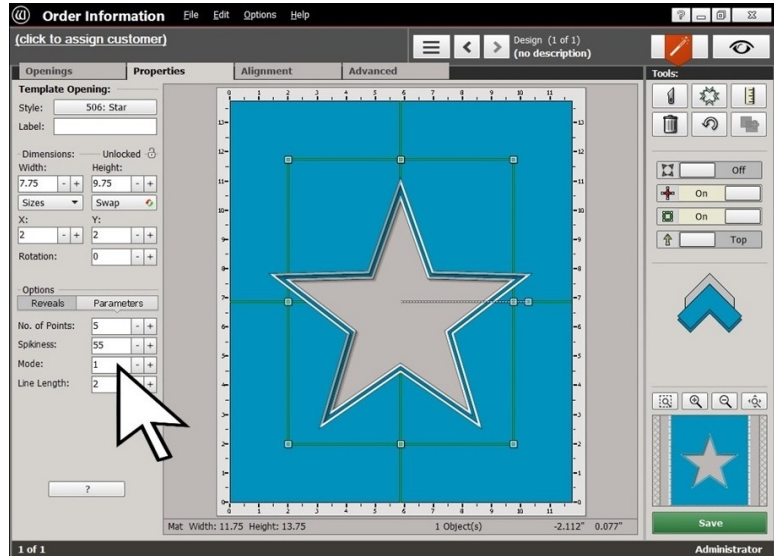
Determining the Size

Remember that **Mode 1** transforms the shape into a geometrically regular figure that fits into the specified size.

In this example, the green rectangle outlines the 7.75 x 9.75 inch size.

Note: the extreme points on the left and right of the inner layer are at the sides of the green rectangle. None of the other points are on the green rectangle.

From this we know that the width of the star is 7.75 inches, but we do not know its height. In some projects the width is critical, and in others the height might be critical.

When there is a project where the height of the star is critical, begin with a size that is the final **Height**, but set the **Width** much wider.

Here the **Height** is 9.75 inches and the **Width** is 12 inches.

‣ Change the **Mode** parameter to 1, and now see that the top and bottom points of the star are on the green rectangle, but the left and right points are not. So we know that the height of this star is 9.75 inches.
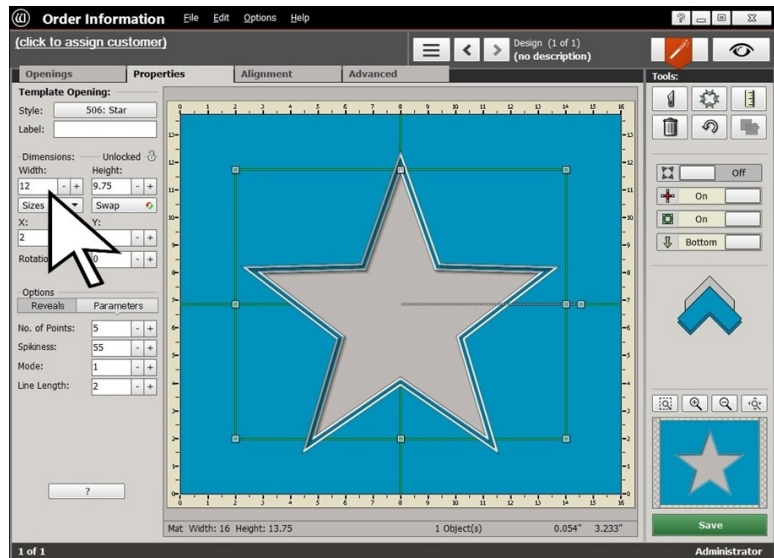
Realize that either the **Height** or the **Width** can be specified to form a geometrically regular star using **Mode 1**. However, it is impossible to specify both dimensions using **Mode 1**.

*When it is necessary to set both the **Height** and **Width**, use **Mode Zero**.*
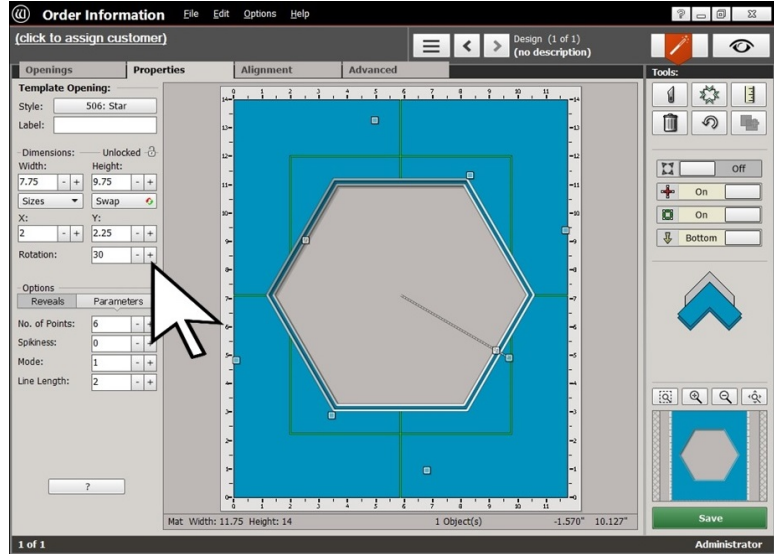
Stars That Are Not Stars

It is also possible to make shapes with any number of points.

The **Star** template's most utilitarian use is making multi sided geometric shapes—polygons.

This process normally begins by changing the **Number of Points** parameter.
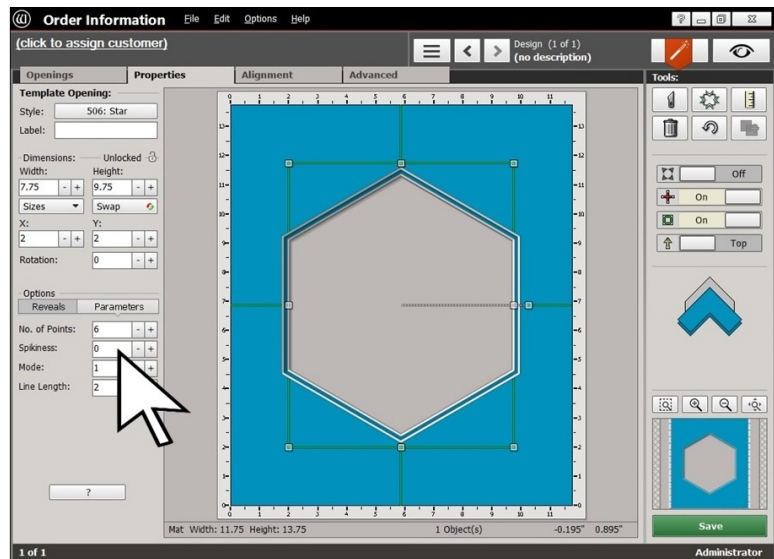

Polygons: A Hexagon

Six sided openings are an occasional matting project.

To make this geometrically regular hexagon, set the **Number of Sides** to 6.

Set the **Spikiness** to 0. This is the key to making any polygon. Zero **Spikiness** makes the sides into straight lines, not angles.

Set the **Mode** to 1. This makes the shape geometrically regular.

Note: the sides of the hexagon are on the sides if the green rectangle. This means that the width of the hexagon is 7.75 inches. This is fine because almost all hexagonal pictures are measured from their parallel sides.

Determining the size of a regular polygon always has its questions. Hexagons are pretty easy. The next shape will have more questions—and answers.

Orientation

Note, too, that the points of the hexagon are at the top and bottom. There will be projects where the points of the hexagon need to be at the sides.

Rotation

‣ Click the **Advanced** tab at the top. The tools that rotate an item are at the left.

It is possible to move the **Rotation** slider along the top left. The hexagon will rotate, but it will not be very accurate.

‣ A better idea is to enter 30° in the **Rotate** field below the slider.

The hexagon will rotate so that its points will be at the sides and the top and bottom will be horizontal parallel lines. The distance between the hexagon's parallel sides is still 7.75 inches, however.

Polygons: An Octagon

Eight sided shapes are also common matting projects. Most often, these matting projects demand a geometrically regular octagon.

Template 103 is named **Octagon**, but generating a geometrically regular octagon with **Template 103** requires a little trigonometry.

‣ To make this geometrically regular octagon using **Template 506**, set the **Number of Sides** to 8.

‣ Set the **Spikiness** to zero.
Again, this makes the sides straight lines, not angles.

‣ Set the **Mode** to 1. This makes the shape geometrically regular.
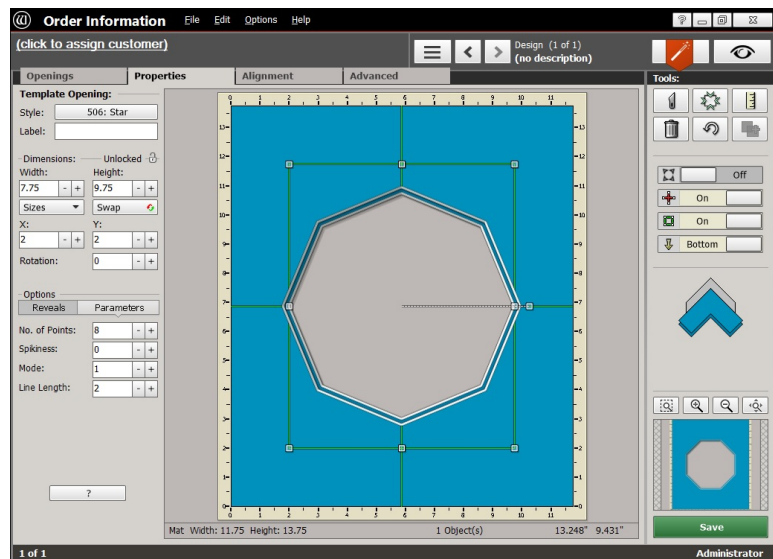
Orientation

As with the hexagon above, it is possible to rotate the octagon so that the flat sides are on the top, bottom, and sides.

The octagon is rotated 22.5°. This is the most common octagon orientation.

Measuring

Normally an octagon is measured from one flat side to the opposite flat side—as if it was a rectangle with angled corners.
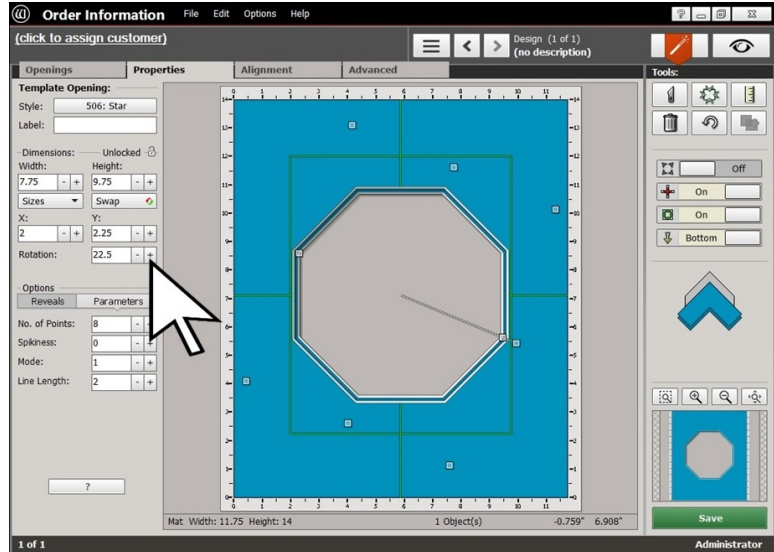
Note: in the unrotated illustration above, the points at the sides were on the green rectangle. This means that the octagon measured 7.75 inches across—from the angle apex at the left to the opposite angle apex.

Though all looks correct in this rotated illustration, it still measures 7.75 inches from one angle apex to the opposite angle apex. We need to know the measurement from left to right in this rotated octagon.

Setting the Width of a Rotated Octagon

For this example, the octagon needs to be 6.75 inches from the left vertical side to the right.

Activate **Dynamic Outsides**. The borders snap to the outside of the rotated octagonal opening.

*Note: at the bottom information bar, the **Mat Width** and **Mat Height** are 11.1601 inches.*
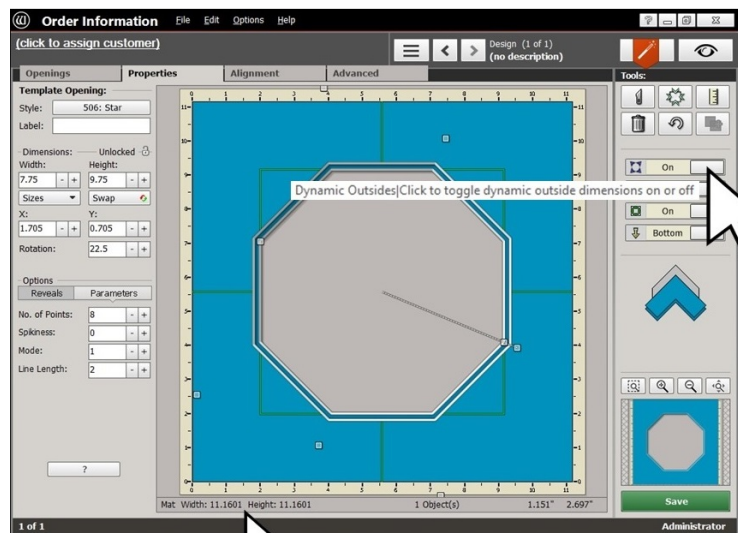
Here is how we will use the outside size to set the width of the rotated octagon. The **Borders** have been set to be 2 inches all around. Subtract 4 inches *(2 inches for the left mat border + 2 inches for the right mat border)* from 11.1601 inches *(the total outside size)* and we have calculated that the octagonal opening is 7.1601 inches wide.

With **Dynamic Outsides** still activated, click the **Minus** button beside the **Width** field until the **Mat Width** in the bottom information bar reads 10.75 inches *(6.75 inches opening width + 2 inches for the left mat border + 2 inches for the right mat border).*

In this example, it was necessary to enter 7.306 inches into the **Width** field.

The **Mat Width** in the bottom information bar reads 10.7499 inches, but no one will notice that the opening is 0.0001 inch too small.
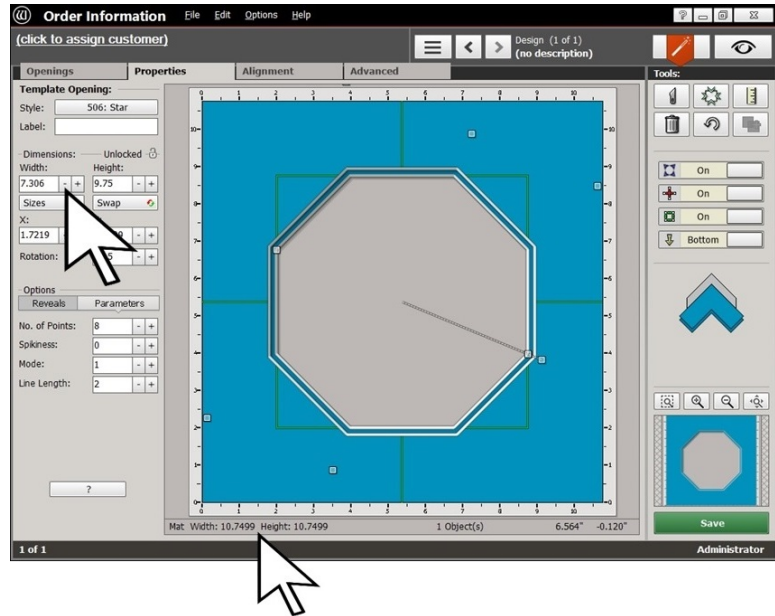
Precision to the nearest thousandths of an inch is not always necessary.

Things to Remember

Whether it is a pennant, a heart, or a 6-sided polygon, framers will be called upon to cut these shapes—and there are templates to help with them all.

★ Experiment with the **Parameters** to refine the obvious shape—and to create other useful shapes.

★ **Rotation** is usually thought of as a whimsical affectation to add informality. With these shapes, though, it is a practical, even critical tool to expand the possibilities.

★ Polygons could be a subject all their own. Though simple to design, their particulars—size and orientation, for example—often require some analysis so that they can be used properly as an opening shape. Review the ideas here and make your own examples to learn more.