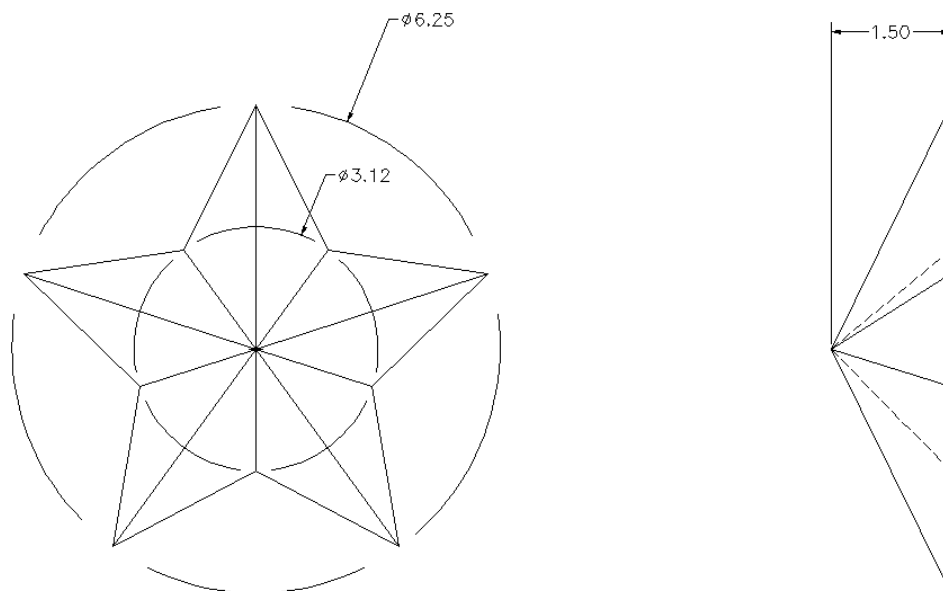# Star Project

Design your star by choosing the number of prongs desired, followed by the size you wish the outer diameter, inner diameter, and finally, the depth to be.

You will draw a multi-view design showing the front and side views of your star. Then create a pattern which will be used to fabricate your final model. The model may be paper of any color, card stock, or even sheet metal, if you wish.

To draw the detailed multi-view drawing, you may use 2D CAD or draw it manually with the use of paper, pencil, scale, compass, and protractor. Materials to fabricate the model will require either scissors, X-ACTO blades, or sheet metal cutting tools.

Let's start by discussing your design, then drawing the multi-view detail. The sample provided has five prongs of the star, 6.25 outer diameter, 3.12 inner diameter, and 1.50 depth as shown in figure one. Start the front view by creating the prongs of the star. Notice, when selecting 5 prongs, each is 72° apart or a total of 360°. Each length will be 3.125, providing the 6.25 outer diameter. The inner diameter shown as 3.12 will result by bisecting the 72° or at an angle of 36°. The length of each line will be 1.56. Connect each outer point to complete the perimeter.

The side view is solved by projecting each point from the front view. Notice that a depth of 1.50 was chosen. The star's base will be flat, shown as a vertical line. The center of the star

shall be connected to each prong along the vertical line. Notice hidden lines represent where the inner diameter projects from the front view. One line is shown as an object (visible) line in this case.
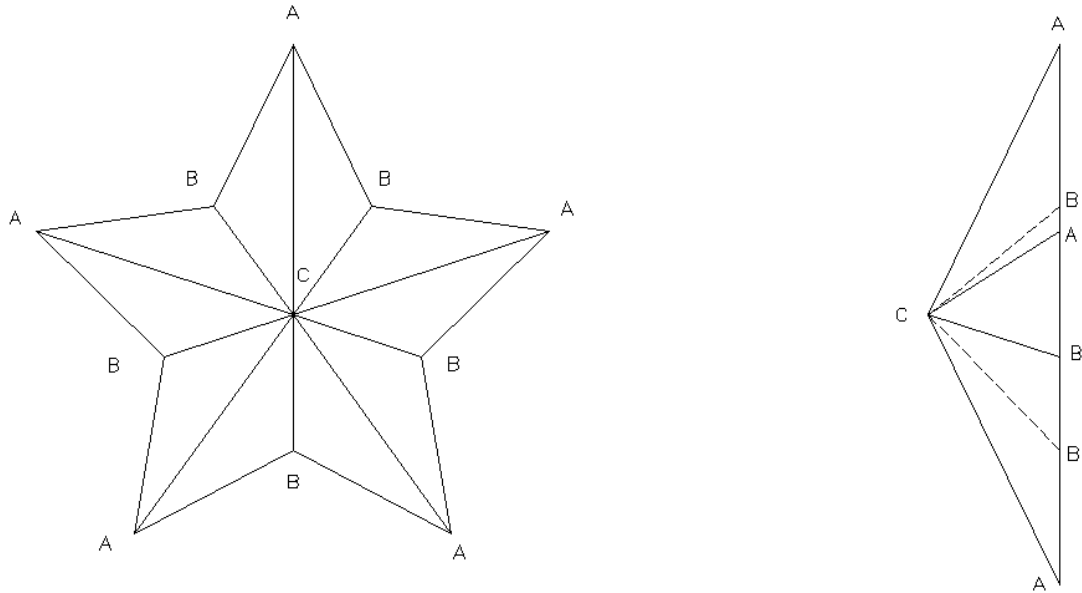

Next, we must find "true length" lines to create a pattern. True length, is always shown as a perpendicular line in the adjacent view. Notice, in the next figure, each point has been labeled with an A, B, or C. C indicates the center of the star, while A indicates the outer prong. B is placed at each bisector, or inner diameter position.

Can you find true lengths of AB, AC, and BC? Examine the two views, to ensure each is shown perpendicular in the opposite view. Carefully use each true length line to create the pattern as shown in the following figure.
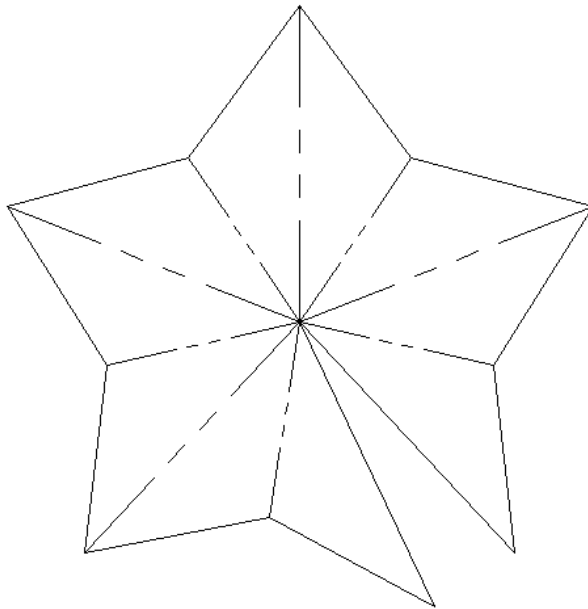
The pattern is created by the development method known as "triangulation". Using true length lines AB, AC, and CB draw a triangle. Repeat this method until the entire pattern is complete. Phantom lines represent fold, or crease, lines.

Usually, the design requires two patterns, as shown in the final figure. Our sample is possible using one pattern. You may notice when two-and-a-half prongs are developed if you've exceeded 180°. If not, you may choose a single pattern, as shown.

Finally, when the pattern is complete, cut along the outline, including a tab, if you wish. When folding, alternate creases; the prongs shall be inner folds, while the bisectors will be outer folds.
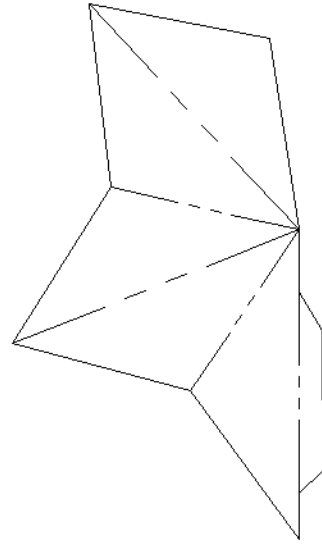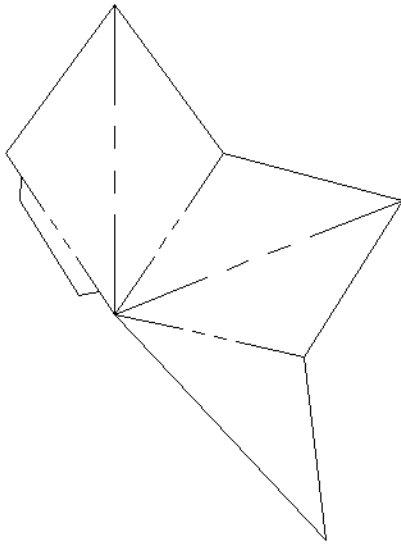
Follow upcoming methods while we'll consider alternate star designs using a variety of development methods.