

Figure 18-12 Click on the facet intersection to set a meet point (circled at top). Then enter the correct angle and index for the second set of girdle facets (upper right). Clicking on **Cut Facet** finishes the girdle outline (bottom).

18.2.3 Turning the Outline into a Princess

You now have the correct outline of the gemstone and can begin the process of laying down the characteristic fan-like Princess facets. Referring back to the sketch in Figure 18-3, it is clear that you will need to place these facets at the appropriate girdle meet points. What is less obvious is that the fan facets must get shallower as you go from the girdle to the culet of the gem. In other words, the facets that adjoin the girdle have a larger cutting angle (that is, the quill must be more horizontal) than do the facets that meet at the culet.

You will also soon realize that the current center point will be cut away by this process. Given the desire to make this a meet point design (see Chapter 8.7), you probably want to start at the girdle and then cut the fan facets successively inward toward the culet (see Figure 18-13). You can, in fact, do the exact opposite, executing a “Clever CAM” (see page 282), and perhaps save some valuable gem rough in the bargain. The cutting prescription for Briar Rose in Chapter 19.2.8 shows both possible sequences. The following paragraphs presume the classic “outside-in” order.

The first set of fan facets, labelled “1” in Figure 18-13, meets the girdle and extends approximately $\frac{1}{4}$ of the way to the culet. You already know how to tell GemCAD about the meet point: place your mouse over the correct girdle facet intersection, look for the red circle, and then **click**. Accept the point by clicking **Use to Cut** (Figure 18-14).

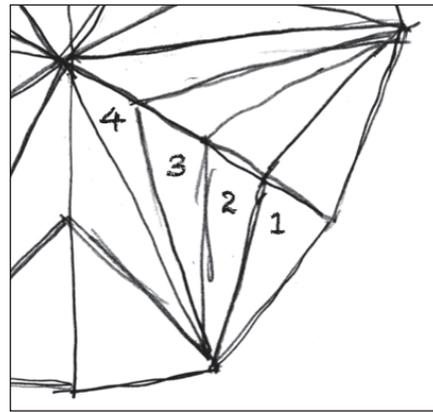


Figure 18-13 The classic cutting order for the pavilion fan facets.

The next step is less obvious. GemCAD needs more information in order to proceed (see Table 16-1), yet there are no further meet points or other guides to help. The one piece of information that you have not yet used, however, is the fact that the fan facet should end up about a quarter of the way from the girdle to the culet.

You have already used the Point on Edge dialog in placing the first girdle facets, and you can use it again to specify the location of the first fan tier. Place your mouse on the edge between the 14-index and 18-index facets as shown in Figure 18-15. The location should be approximately $\frac{1}{4}$ of the way in from the edge. **Click** to pop up the **Point on Edge** dialog. Note the field labeled **Fraction of total edge length**. I actually managed to get pretty close to the desired location. You can either accept the point as is, or type **0.25** into the field to ensure absolutely accurate placement.

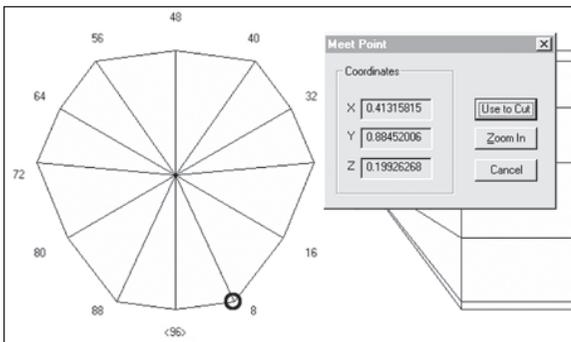


Figure 18-14 Select the correct meet point for the first fan facets.

With two points defined, you now need to figure out which index the first fan facet will have. Clearly, both 2 and 14 are excluded, since they would simply recut the existing facets on each side of the girdle meet. Experience and some playing with GemCAD also dictates that the remaining fan facets, labeled 2-3-4 in Figure 18-13, must be cut at successively smaller indices to produce the desired effect. If you don't yet have this experience or you don't believe me, now is a great time to save your work and play around a little bit. It's also yet another occasion to be thankful for the multiple Undo's in Windows GemCAD.

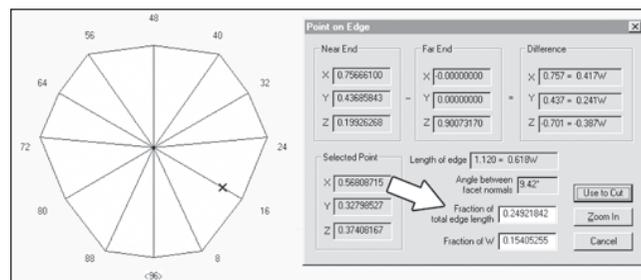


Figure 18-15 Set “Fraction of total edge length” to 0.25.

A little experimentation leads to the conclusion that index 13 is the correct choice. Enter **13** in the **Index** field of the **New Facet Info** panel, and then click **Cut Facet** to see the result (Figure 18-16).

You can place the remaining fan facets in a similar manner. For example, the next tier will require the same girdle meet point and a **Point on Edge** value of 0.333, since it will occupy