

• You should always keep in mind exactly how much information you need to define a facet. This will help you understand whether a certain circumstance demands a meet point, for example. Geometry buffs know the answer: you need three bits of information to define a plane, and hence a program like GemCAD needs three numbers to lock down a facet. Table 16-1 shows the most common combinations. Note that, given sufficient information, GemCAD will happily generate a cutting angle and index. However, you might have to adjust things somewhat. For example, clicking on three points in the cutting diagram will produce an angle and an index wheel setting, but the latter might not be a whole number. See the GemCAD manual for more information.

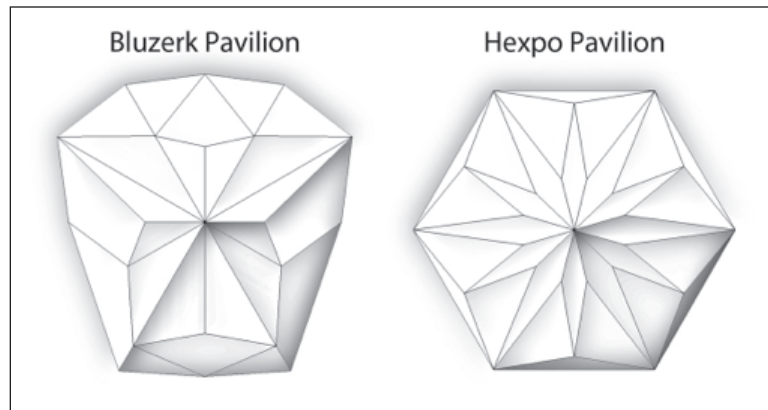


Figure 16-32 In my eyes, the design on the left is awful, while the one on the right is quite pleasing. This is not just a question of symmetry. Triangles and kite-shaped facets look nice. Quadrilaterals do not, unless they are long, thin, and hence kite shaped. Those quadrilaterals on the sides of Bluzerk look sloppy to me. I feel that mixing broad and narrow facets is a no-no as well. Ok, I am a bit weird, and for what it's worth, I am responsible for both designs. You can find them online at [www.boghome.com](http://www.boghome.com).

Table 16-1 The most common ways of supplying three pieces of information to define a facet and what you should watch out for.

Information	Things to Check
1 angle + 1 index + 1 point	Presumably input values are fine
2 points + 1 index	Verify that the resulting cutting angle is Ok
2 points + 1 angle	Verify that the resulting index is Ok (whole number)
3 points	Check both the cutting angle and index

- Longer gemstone designs – those with a larger LW ratio – will require a greater range of cutting angles. This may not be obvious at first glance, but a little playing around with GemCAD should make it clear. Since all sides of a gemstone have to converge at the culet or keel starting from the same girdle, the sides closer to the culet / keel must do so in less physical space and are hence steeper. This phenomenon connects directly to the next tip.
- Higher index materials can tolerate a greater range of cutting angles, a fact discussed in detail in Chapters 12.5.1 and 10.4. Coupled with the previous tip, this means that it can be a challenge to make a long design work in low index materials. Splitting facets can help somewhat. Note that many elongated gem cuts seek to emphasize colour, not sparkle, and hence reduced scintillation performance may be acceptable.
- Adjacent facets with closely spaced angles and index wheel settings make cutting and polishing more difficult. For example, small cutting angle errors can blow up (Figure 16-33) and agglomeration can cause scratching (Figure 8-31). Also, tweaking the polish on adjacent facets with similar angle and index settings can lead to rounding and even curving of the facet edges (see “Throwing a Curveball” on page 333 of Volume 1). Closely-spaced facets can be very useful in tying together a gem design, however, so such effects may be hard to avoid.