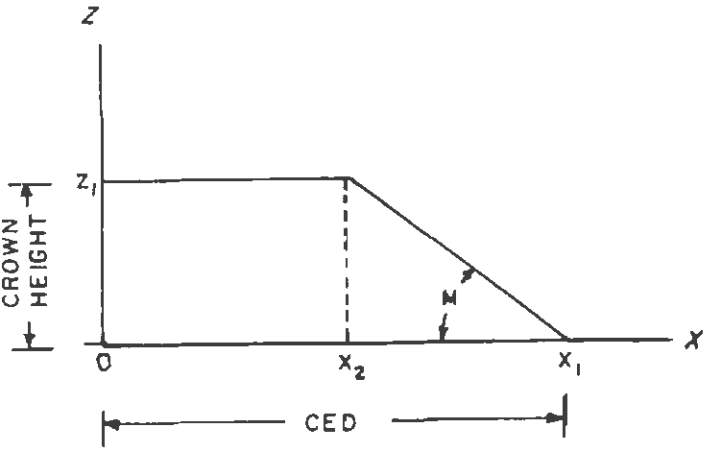

Figure 2 PARTIAL ELEVATION VIEW OF STANDARD BRILLIANT CROWN SHOWING TRUE SIZE OF MAIN FACET

In Figure 2 we are looking at part of an elevation view of the Standard Brilliant in which the "main" facet appears as an edge. In such a view CED (Center-to-Edge Distance) and Crown Height also appear true size. In this view Z_1 is the height of the Table (Crown Height) and X_1 is the point where the main facet meets the girdle i.e. CED. Angle M is the true size of the elevation angle associated with the "Main". Point $(X_2,0)$ is the projection of point (Z_1,X_2) where the "Main" meets the "Table".

Eq (1) $\quad \text{Tan M} = Z_1 / (X_1 - X_2)$

Since all "X" dimensions are constant by definition $(X_1 - X_2)$ must also be constant.

Eq (2) $\quad Z_1 / \text{Tan M} = K \quad$ (a constant)

If we extend this arguement to two stones which have different "main" angles but identical "X" dimensions:

Eq (3) $\quad Z_{11} / \text{Tan } M_1 = Z_{12} / \text{Tan } M_2$

Consequently, if we know the height of the first stone we can calculate the new height by using the "Tangent Ratio"

Eq (4) $\quad Z_{12} = Z_{11} \ (\text{Tan } M_2 / \text{Tan } M_1)$

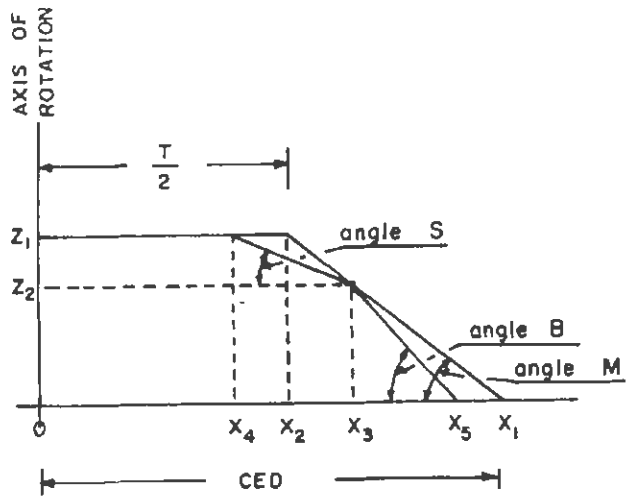

Figure 3 PARTIAL ELEVATION VIEW OF STANDARD BRILLIANT CROWN WITH STAR AND BREAK FACET ROTATED ABOUT A VERTICAL AXIS

In Figure 3, the same view as Figure 2 except one of the star facets and one of the break facets have been rotated about a vertical axis of rotation so that they appear true size as the "main" angle does. All three facets (planes) have a common intersection point and a common height (Z_2). Considering angle (B) and angle (M) together:

Eq (5) $\quad Z_2 / (X_5 - X_3) = \text{Tan B}$

Eq (6) $\quad Z_2 / (X_1 - X_3) = \text{Tan M}$

By rearranging and equating equals:

Eq (7) $\quad \text{Tan M} / \text{Tan B} = (X_5 - X_3) / (X_1 - X_3)$

Again, since we are not permitting "x" dimensions to change, it follows that the ratio of the tangents is also constant. Here we have a method of translating any angles from one design to another e.g. if we know the relationship of the old angle to any other angle ON THE SAME STONE.

Eq (8) $\quad \text{Tan } B_{new} = \text{Tan } M_{new} \ (\text{Tan B} / \text{Tan M})$

The "K" factor of the translation tables is the "Tangent Ratio" part of Eq (8).(or Eq (4))