Demo Sample Huson 1

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The Power Laws of Area and Volume

When objects are dilated, their dimensions are scaled by a linear factor, *k*. The surface area and volume of the object, however, do not scale in a simple, linear way, however. Instead, they follow a power law. Area measures scale in proportion to and volumes in proportion to . An example in terms of a cube’s dimensions, the area of each of its faces, and its volume is shown below in Table 1.

Figure 1: Two overlapping similar triangles showing the lengths of corresponding sides

Corresponding angles are congruent, , and , by the reflexive property, so the two triangles are similar by *AA* Similarity, . The scale factor can be calculated from the ratios of the corresponding sides. and .