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Angular Ratio Transference. Preliminary report.

Students are taught in high school plane geometry how to transfer certain spatial relationships from a reference figure to a similar given figure - using only an unmarked straightedge and compass. However, present plane geometry techniques do not address the transfer of ratios between noncongruent angles. This paper presents a general approach for constructing a constant ratio within dissimilar angles over a broad range of angular values. A given angle is constructed in a special way on the circumference of a random circle. An inscribed angle is then drawn inside the given angle in such a way that a unique relationship exists between the two angles. The absolute correlation of these two figures also addresses angular trisection - one of Euclidean geometry's most famous construction problems and provides a fresh viewpoint in approaching related problems of angular ratio comparison and transference. (Received August 21, 2000)