Similarity Encyclopedia Article

Similarity

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Geometric figures that are considered to be similar have the same exact shape, but differ in size. Similarity in geometric figures means the ratio of lengths of any two corresponding sides in the figures is the same, and all corresponding angles are equal. For triangles, there are several theorems that allow triangles to be proven similar. The first is the "angle-angle similarity" **theorem**. This theorem states that if two angles in one **triangle** are congruent to two corresponding angles in a second triangle, the triangles are similar. It might also be that the triangles are congruent, but based on this particular theorem, there is not enough information to prove that. The second similarity theorem is the "side-included-angle-side similarity" theorem. This theorem states that if two **sets** of sides in two triangles are in proportion and their included angles are congruent, then the triangles are similar. Finally, the third similarity theorem is the "side-side-side similarity" theorem. This theorem says that if all three sets of sides in two triangles are in proportion, then the triangles are similar. If the proportion is one, the triangles are also congruent.

Similarity plays a large role in the study of **fractals**. This branch of mathematics studies the irregular patterns made of parts of a figure that are in some way similar to the whole figure. The leaves on a fern are an example of self-similarity. If a leaf is examined, it is possible to see that the pattern present in the larger leaf is present as the area examined is further and further reduced. It is possible to see the continued replication of the pattern in smaller and smaller form.