

Similar Polygons and Triangles

Two Conditions:

1. *The ratios of the measures of corresponding sides are equal.*
2. *Corresponding angles are congruent.*

The symbol “ \sim ” is used to signify similarity.

If two polygons are similar, the ratio of their perimeters equals the ratio of the lengths of any pair of corresponding sides.

If two angles of one triangle are congruent to two angles of another triangle, the triangles are similar. (*AA Postulate*)

If two right triangles have an acute angle of one triangle congruent to an acute of the other, the triangles are similar.

If two isosceles triangles have congruent vertex angles, the triangles are similar.

A common method of proving that the lengths of four segments are in proportion is to prove that two triangles which contain those segments as sides are similar.

A common method of proving that the product of the lengths of two segments is equal to the product of the lengths of two other segments is to prove triangles similar, write a proportion, and then apply the property of proportions.

If a line is parallel to one side of a triangle and intersects the other two sides, it divides them proportionally.

If a ray bisects an angle of a triangle, it divides the opposite side into segments whose lengths are proportional to the lengths of the other two sides.

If two triangles are similar, the lengths of corresponding altitudes have the same ratio as the lengths of any pair of corresponding sides.