Similar triangles

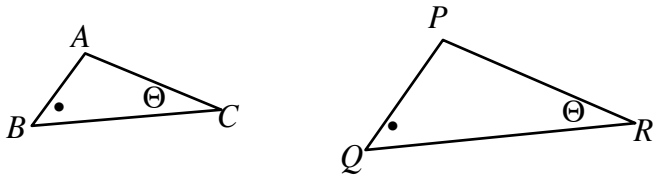
http://topdrawer.aamt.edu.au/Geometric-reasoning/Big-ideas/Similarity/Similar-triangles

- Two triangles with the same shape are similar.
- Similarity is the result of an enlargement transformation and could also involve rotations, translations and reflections.
- When naming pairs of similar triangles, the order of the letters naming the triangles must be in matching order.

Tests for similar triangles

AAA

If two angles of one triangle are respectively equal to two angles of another triangle, then the two triangles are similar.



$\Delta ABC \sim \Delta PQR \quad (\text{AAA})$

When using this test, it is sufficient to prove that just two pairs of angles are equal. The third pair of angles must then also be equal since the angle sum of any triangle is 180°.

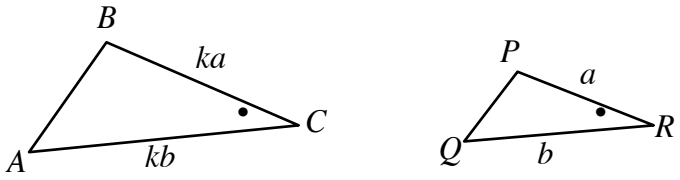
SSS

If each of the sides of one triangle can be matched up with each of the sides of another so that the ratios of matching sides are equal, then the two triangles are similar.

$\Delta ABC \sim \Delta QPR \quad (\text{SSS})$

SAS

If the ratio of the lengths of two sides of one triangle is equal to the ratio of the lengths of two sides of another triangle, and the included angles are equal, then the two triangles are similar.



$\Delta BAC \sim \Delta PQR \quad (\text{SAS})$

RHS

If the ratio of the hypotenuse and one side of a right-angled triangle is equal to the ratio of the hypotenuse and one side of another right-angled triangle, then the two triangles are similar.

$\Delta ACB \sim \Delta PQR \quad (\text{RHS})$