

same shape, different size: equal angles force proportional sides, and areas grow as the square

What similar means, exactly

- two triangles are **similar** when their corresponding angles are equal and their corresponding sides are in the same ratio
- for triangles either condition **implies the other**, so proving the angles equal is enough and the sides follow free
- similar is written with the symbol $\sim$, as in $\triangle ABC \sim \triangle PQR$, while **congruent** uses $\cong$ and means the same shape at the same size
- congruence is the special case of similarity where the ratio of sides is **exactly 1**
- the **order of the letters carries the correspondence**: $\triangle ABC \sim \triangle PQR$ says A matches P, B matches Q and C matches R, and writing them out of order makes every ratio below wrong

The three tests for similarity

AA

two angles of one triangle equal two angles of the other. The third is then equal automatically, since the angles of a triangle add to 180° . This is the test you will use most

SAS

two pairs of sides in the **same ratio** and the **included angles** equal. The angle must lie between the two sides, not anywhere else

SSS

all three pairs of corresponding sides in the same ratio. Check the ratio for every pair, since two matching pairs prove nothing on their own

Not a test

ASA and RHS belong to congruence, not similarity. For similarity the sides are proportional, never necessarily equal

AA is the shortest route in almost every question, and parallel lines or a common angle are the usual sources of the two equal angles