

Proving Triangles Congruent

9th Grade

Five shortcuts that work, and the two that look like they should but do not.

Two triangles are congruent if you can establish any one of these five combinations of equal parts.

SSS · SAS · ASA · AAS · HL

SSS

three sides equal

Rigid — only one triangle is possible.

SAS

two sides and the angle between

The angle must be between the two sides.

ASA / AAS

two angles and a side

The side's position matters for naming, not for validity.

HL

right triangles only

Hypotenuse and one leg.

THE COMMON MISTAKE

× **SSA proves congruence**

✓ **SSA does not**

Two different triangles can share two sides and a non-included angle. It is called the ambiguous case.

AAA proves similarity, never congruence — the shapes match but the sizes need not.