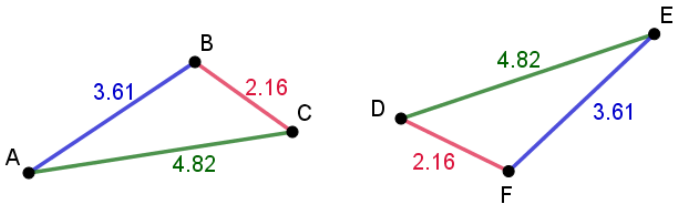
Triangles
Congruence | Similarity

Congruence of Triangles Criteria

SSS criterion – Side, Side, Side

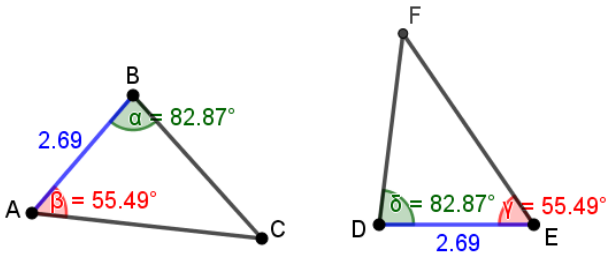
Two triangles are congruent if they have, from one to the other, the three sides congruent.



The triangles $[ABC]$ and $[DEF]$ are congruent because $\overline{AB} = \overline{EF}$; $\overline{BC} = \overline{FD}$ and $\overline{CA} = \overline{DE}$.

ASA criterion – Angle, Side, Angle

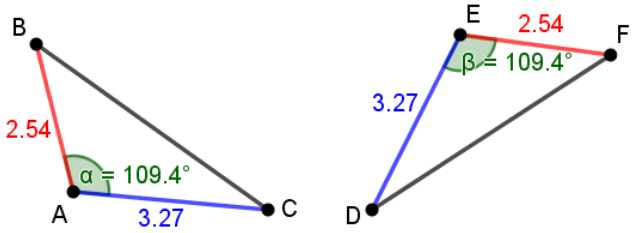
Two triangles are congruent if they have, from one to the other, a congruent side and the two adjacent angles to this side are also congruent.



The triangles $[ABC]$ and $[DEF]$ are congruent because $\overline{AB} = \overline{DE}$; $\alpha = \delta$ and $\beta = \gamma$.

SAS criterion – Side, Angle, Side

Two triangles are congruent if they have, from one to the other, two congruent sides and the angle formed by them is also congruent.

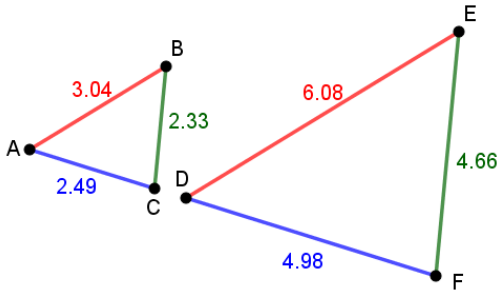


The triangles $[ABC]$ and $[DEF]$ are congruent because $\overline{AB} = \overline{EF}$; $\overline{CA} = \overline{DE}$ and $\alpha = \beta$.

Similarity of Triangles Criteria

SSS criterion – Side, Side, Side

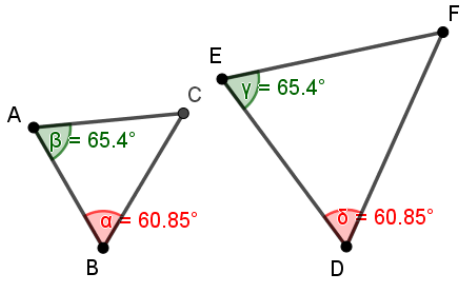
Two triangles are similar if they have, from one to the other, the three sides proportional.



The triangles $[ABC]$ and $[DEF]$ are similar because $\frac{\overline{DE}}{\overline{AB}} = \frac{\overline{EF}}{\overline{BC}} = \frac{\overline{FD}}{\overline{CA}} = 2$.

AA criterion – Angle, Angle

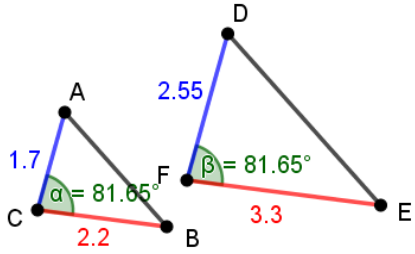
Two triangles are similar if they have, from one to the other, two corresponding angles congruent.



The triangles $[ABC]$ and $[DEF]$ are similar because $\beta = \gamma$ and $\alpha = \delta$.

SAS criterion – Side, Angle, Side

Two triangles are similar if they have, from the one to the other, two sides proportional and the angle formed by them is congruent.



The triangles $[ABC]$ and $[DEF]$ are similar because $\frac{\overline{EF}}{\overline{BC}} = \frac{\overline{FD}}{\overline{CA}} = 1.5$ and $\alpha = \beta$.