

Congruent Triangles

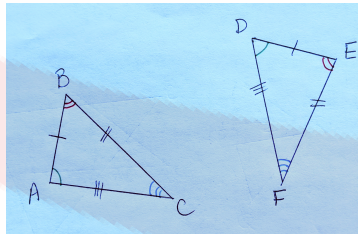
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## Congruent Triangles

Two triangles are **congruent** if they have the same size and shape. That is, if one triangle can be repositioned so it fits exactly on another triangle, then the two triangles are congruent. We don't need to know that all angles and all sides of two triangles are the same to know that two triangles are congruent. Let's consider the example below.



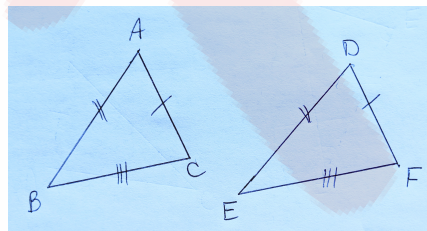
From the above two congruent triangles we have the following,

$$\begin{array}{ll} \angle B = \angle E & AB = DE \\ \angle A = \angle D & BC = EF \\ \angle C = \angle F & CA = FD \end{array}$$

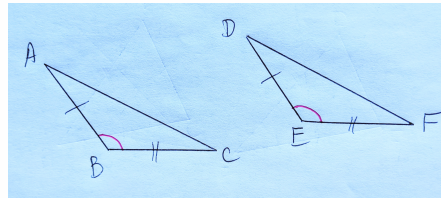
So,  $\triangle ABC \cong \triangle DEF$ . There are minimum conditions that two triangles must satisfy in order for them to be congruent.

### Conditions for congruent triangles

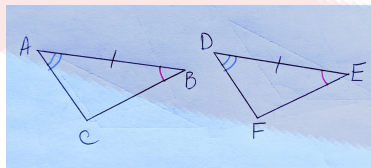
**Side Side Side (SSS) Congruence** If all 3 pairs of corresponding sides are equal then the triangles are congruent.



**Side Angle Side (SAS) Congruence** If two pairs of corresponding sides are equal and the contained angles are equal then the two triangles are congruent.



**Angle Side Angle (ASA) congruence** If two pairs of corresponding angles are equal and the contained sides are equal, then the triangles are congruent.



## Exercises

1. From the triangle below, list pairs of congruent triangles and by which congruence property, SSS, SAS or ASA, they are congruent.

