

Triangle Congruence by SSS and SAS

Today I Can

1. Prove triangles congruent by SSS and SAS shortcuts.

In this section, we will learn some shortcuts to proving 2 triangles congruent.

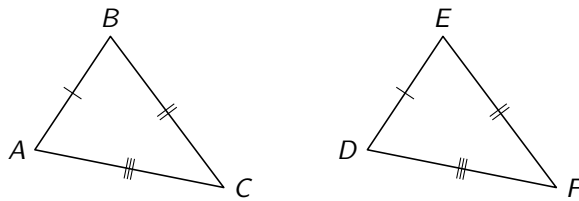
Instead of needing to prove all corresponding angle and side pairs congruent, we only need to establish

- Three pairs of congruent, corresponding sides –OR–
- Two pairs of congruent, corresponding sides and the angles between them congruent

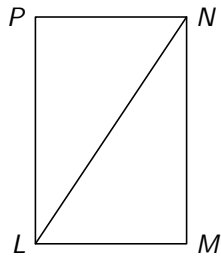
Side-Side-Side (SSS) Shortcut

If 3 sides of one triangle are congruent to 3 sides of another, then the triangles are congruent.

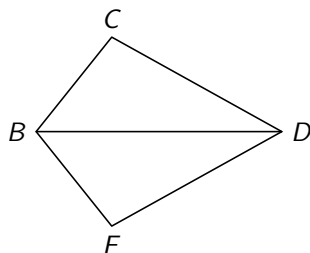
- $\triangle ABC \cong \triangle DEF$



Example 1. Given: $\overline{LM} \cong \overline{MP}$ and $\overline{LP} \cong \overline{NM}$ Prove: $\triangle LMN \cong \triangle NPL$

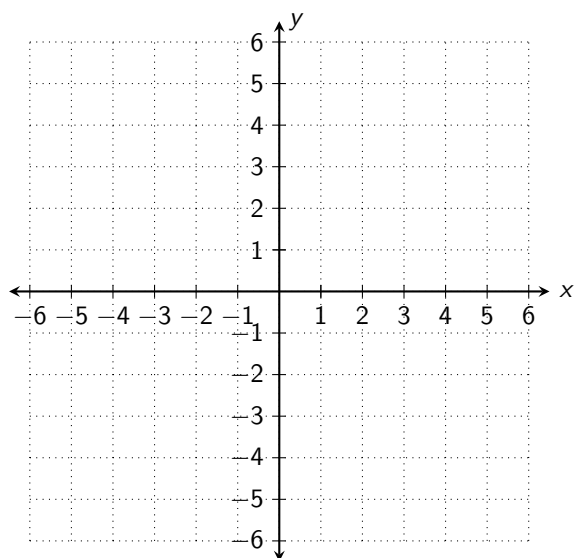


Example 2. Given: $\overline{BC} \cong \overline{BF}$ and $\overline{CD} \cong \overline{FD}$ Prove: $\triangle BCD \cong \triangle BFD$



Example 3. Prove $\triangle ABC \cong \triangle DEF$ if

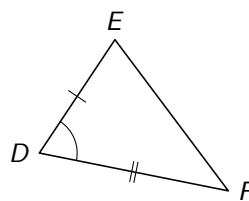
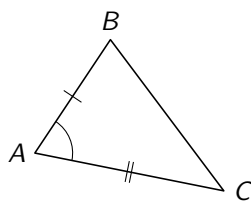
$A(1, -1), B(2, 2), C(6, 2) \quad D(-1, 1), E(-2, -2), F(-6, -2)$



Side-Angle-Side (SAS) Shortcut

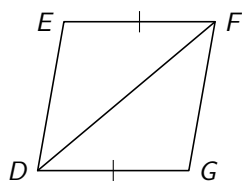
If 2 sides and the included angle of one triangle are congruent to 2 sides and the included angle of another, then the triangles are congruent.

• $\triangle ABC \cong \triangle DEF$

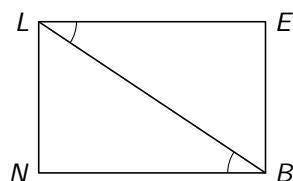


Example 4. What other information would you need to prove the triangles congruent by SAS?

(a)

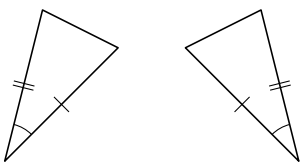


(b)

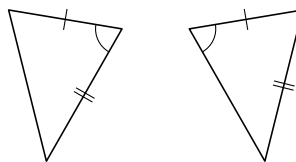


Example 5. Would you use SSS or SAS to prove the triangles congruent? If there isn't enough information to prove congruence, write *not enough info*. Justify your answers.

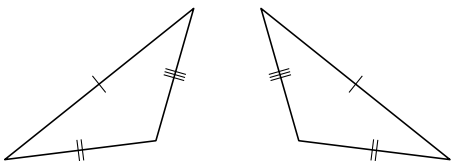
(a)



(b)



(c)



(d)

