

4-2

Triangle Congruence
by SSS and SAS

Content Standard
G.SRT.5 Use congruence . . . criteria for triangles
 to solve problems and prove relationships in
 geometric figures.

Objective To prove two triangles congruent using the SSS and SAS Postulates

Essential Understanding You can prove that two triangles are congruent without having to show that *all* corresponding parts are congruent. In this lesson, you will prove triangles congruent by using (1) three pairs of corresponding sides and (2) two pairs of corresponding sides and one pair of corresponding angles.

Take note

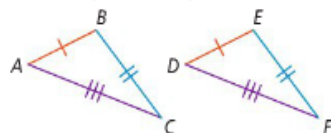
Postulate 4-1 Side-Side-Side (SSS) Postulate

Postulate

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

If . . .

$$\overline{AB} \cong \overline{DE}, \overline{BC} \cong \overline{EF}, \overline{AC} \cong \overline{DF}$$

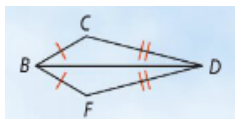


Then . . .

$$\triangle ABC \cong \triangle DEF$$

1. **Given:** $\overline{BC} \cong \overline{BF}$, $\overline{CD} \cong \overline{FD}$

Prove: $\triangle BCD \cong \triangle BFD$



Statements Reasons

1. $\overline{BC} \cong \overline{BF}$ 1. Given

$\overline{CD} \cong \overline{FD}$

2. $\overline{BD} \cong \overline{BD}$ 2. Reflexive Prop. of \cong

3. $\triangle BCD \cong \triangle BFD$ 3. SSS

Take note

Postulate 4-2 Side-Angle-Side (SAS) Postulate

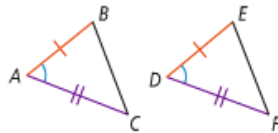
Postulate

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

If . . .

$$\overline{AB} \cong \overline{DE}, \angle A \cong \angle D,$$

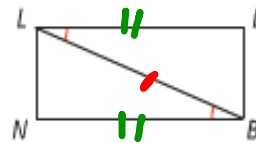
$$\overline{AC} \cong \overline{DF}$$



Then . . .

$$\triangle ABC \cong \triangle DEF$$

2. What other information do you need to prove $\triangle LEB \cong \triangle BNL$ by SAS?

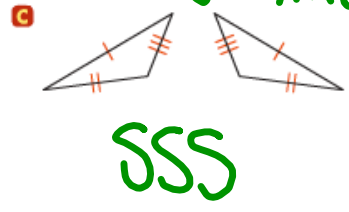
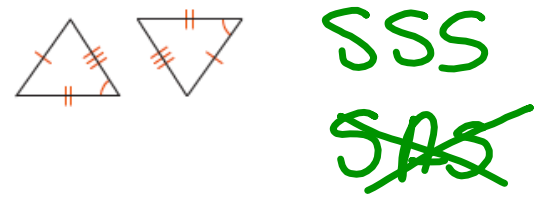
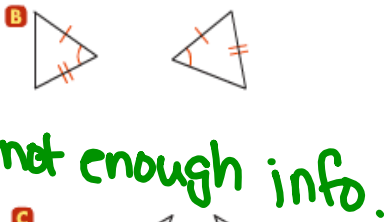
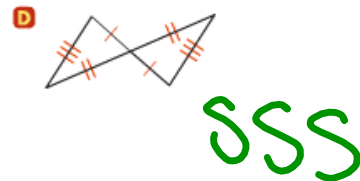
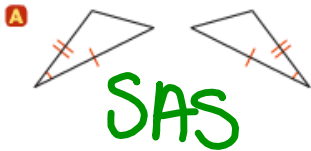


$\overline{LB} \cong \overline{LB}$ Reflexive Prop. of \cong
 $\overline{LE} \cong \overline{BN}$



Problem 3 Identifying Congruent Triangles

Would you use SSS or SAS to prove the triangles congruent? If there is not enough information to prove the triangles congruent by SSS or SAS, write *not enough information*. Explain your answer.



Name

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Notes 4.3