

LESSON
4.3
Study Guide

For use with pages 233–239

GOAL Use the side lengths to prove triangles are congruent.

Vocabulary

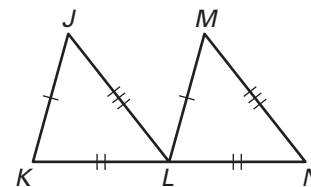
Postulate 19 Side-Side-Side (SSS) Congruence Postulate: If three sides of one triangle are congruent to three sides of a second triangle, then the two triangles are congruent.

EXAMPLE 1 Use the SSS Congruence Postulate

 Prove that $\triangle JKL \cong \triangle MLN$.

Solution

The marks on the diagram show that $\overline{JK} \cong \overline{ML}$, $\overline{KL} \cong \overline{LN}$, and $\overline{JL} \cong \overline{MN}$.

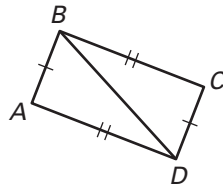


So, by the SSS Congruence Postulate, $\triangle JKL \cong \triangle MLN$.

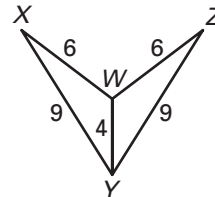
Exercises for Example 1

Decide whether the congruence statement is true. Explain your reasoning.

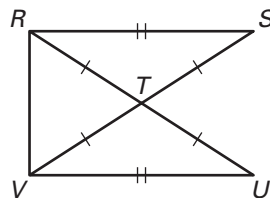
1. $\triangle ABD \cong \triangle CDB$



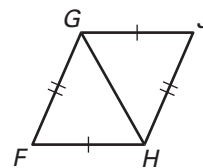
2. $\triangle XWY \cong \triangle WZY$



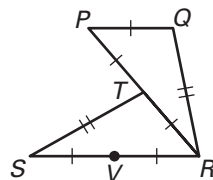
3. $\triangle RST \cong \triangle VUT$



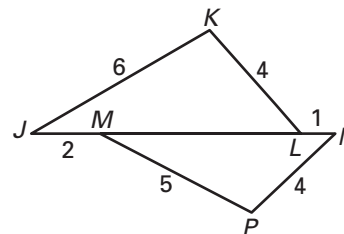
4. $\triangle FGH \cong \triangle JHG$



5. $\triangle PQR \cong \triangle RTS$

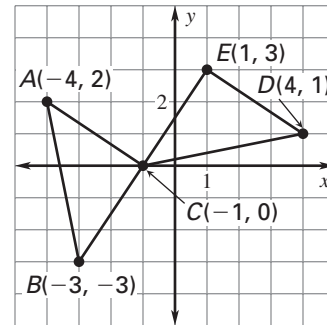


6. $\triangle JKL \cong \triangle MPN$



LESSON
4.3**Study Guide** *continued*
For use with pages 233–239**EXAMPLE 2** Congruent triangles in a coordinate plane

Use the SSS Congruence Postulate to show that $\triangle ABC \cong \triangle CDE$.

**Solution**

Use the Distance Formula to show that corresponding sides are the same length.

$$\begin{aligned} AB &= \sqrt{(-3 - (-4))^2 + (-3 - 2)^2} \\ &= \sqrt{1^2 + (-5)^2} \\ &= \sqrt{26} \end{aligned}$$

$$\begin{aligned} CD &= \sqrt{(4 - (-1))^2 + (1 - 0)^2} \\ &= \sqrt{5^2 + 1^2} \\ &= \sqrt{26} \end{aligned}$$

So, $AB = CD$, and hence $\overline{AB} \cong \overline{CD}$.

$$\begin{aligned} BC &= \sqrt{(-1 - (-3))^2 + (0 - (-3))^2} \\ &= \sqrt{2^2 + 3^2} \\ &= \sqrt{13} \end{aligned}$$

$$\begin{aligned} DE &= \sqrt{(1 - 4)^2 + (3 - 1)^2} \\ &= \sqrt{(-3)^2 + 2^2} \\ &= \sqrt{13} \end{aligned}$$

So, $BC = DE$, and hence $\overline{BC} \cong \overline{DE}$.

$$\begin{aligned} CA &= \sqrt{(-4 - (-1))^2 + (2 - 0)^2} \\ &= \sqrt{(-3)^2 + 2^2} \\ &= \sqrt{13} \end{aligned}$$

$$\begin{aligned} EC &= \sqrt{(-1 - 1)^2 + (0 - 3)^2} \\ &= \sqrt{(-2)^2 + (-3)^2} \\ &= \sqrt{13} \end{aligned}$$

So, $CA = EC$, and hence $\overline{CA} \cong \overline{EC}$.

So, by the SSS Congruence Postulate, you know that $\triangle ABC \cong \triangle CDE$.

Exercise for Example 2

7. Prove that $\triangle ABC \cong \triangle DEF$.

