

# Assignment

## Write

Describe how each right triangle congruence theorem compares to one or more triangle congruence theorems in your own words.

1. Hypotenuse-Leg (HL) Congruence Theorem
2. Leg-Leg (LL) Congruence Theorem
3. Leg-Angle (LA) Congruence Theorem

## Remember

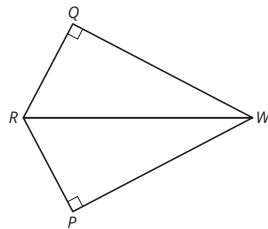
The Hypotenuse-Leg Congruence Theorem states that if the hypotenuse and leg of one right triangle are congruent to the hypotenuse and leg of another right triangle, then the triangles are congruent.

The Tangent Segment Theorem states that if two tangent segments are drawn from the same point on the exterior of a circle, then the tangent segments are congruent.

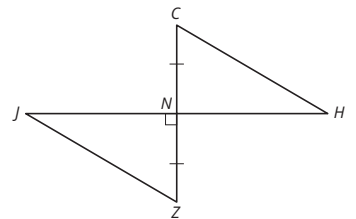
## Practice

1. Determine the information that is needed to use the indicated theorem to show that the triangles are congruent.

- a.  $\triangle RQW \cong \triangle RPW$  by HL

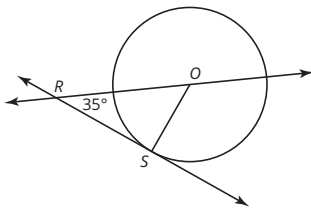


- b.  $\triangle JNZ \cong \triangle HNC$  by LA

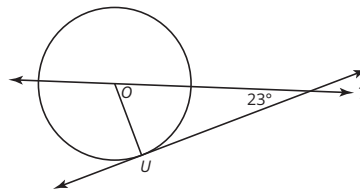


2. Calculate the measure of each angle. Explain your reasoning.

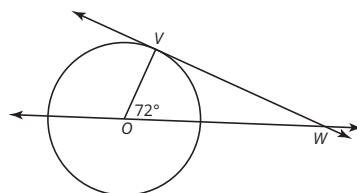
- a. If  $\overline{RS}$  is a tangent segment and  $\overline{OS}$  is a radius, what is the measure of  $\angle ROS$ ?



- b. If  $\overline{UT}$  is a tangent segment and  $\overline{OU}$  is a radius, what is the measure of  $\angle TOU$ ?

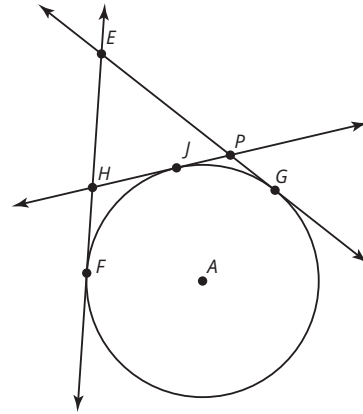


- c. If  $\overline{VW}$  is a tangent segment and  $\overline{OV}$  is a radius, what is the measure of  $\angle VWO$ ?



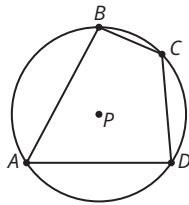
## Stretch

In the figure shown,  $\overline{EF}$  is tangent to the circle at  $F$ , and  $\overline{EG}$  is tangent to the circle at  $G$ . Line segments  $\overline{HF}$ ,  $\overline{PG}$ ,  $\overline{HJ}$ , and  $\overline{PJ}$  are also tangent segments. If  $m\overline{EF} = 10$  units, what is the perimeter of  $\triangle EHP$ ? Explain your reasoning.

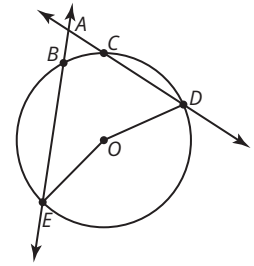


## Review

1. In the figure shown, quadrilateral  $ABCD$  is inscribed in circle  $P$ ,  $m\widehat{BC} = 55^\circ$ ,  $m\widehat{CD} = 109^\circ$ , and  $m\widehat{DA} = 91^\circ$ . What are  $m\angle A$ ,  $m\angle B$ ,  $m\angle C$ , and  $m\angle D$ ? Explain your reasoning.

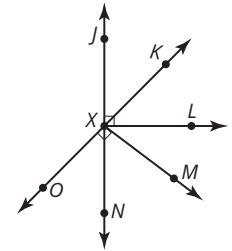


2. Consider circle  $O$ . The measure of  $\angle EOD$  is  $155^\circ$ . The measure of  $\angle A$  is  $40^\circ$ . Determine  $m\widehat{BC}$ .

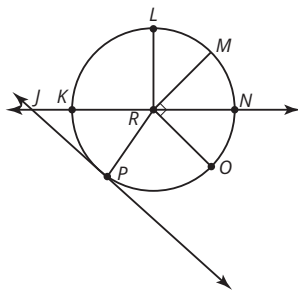


3. Identify the property that justifies the statement: If  $\angle A \cong \angle B$  and  $\angle B \cong \angle C$ , then  $\angle A \cong \angle C$ .

4. Consider the figure. What theorem tells you that  $\angle KXL \cong \angle MXN$ ?



5. Consider circle  $R$  with diameter  $\overline{KN}$ . Line  $\overline{JP}$  is tangent to circle  $R$  at point  $P$ . The measure of  $\angle J$  is  $42^\circ$ , the measure of  $\angle LRM$  is  $45^\circ$ , and the measure of  $\angle PRO$  is  $80^\circ$ . Determine the measure of  $\widehat{KL}$ .



6. In the figure shown, quadrilateral  $QRST$  is inscribed in circle  $B$ ,  $m\angle R = 98^\circ$ , and  $m\angle Q$  is  $14^\circ$  more than  $m\angle R$ . What are  $m\angle Q$ ,  $m\angle S$ , and  $m\angle T$ ? Explain your reasoning.

