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Congruence in Right Triangles

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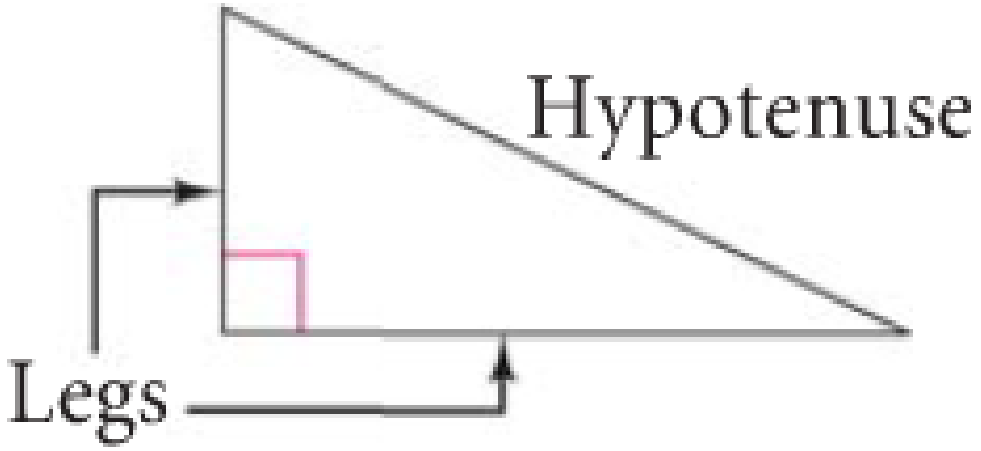
Right Triangles



Learning Target:
To prove right triangles congruent by the HL Theorem.

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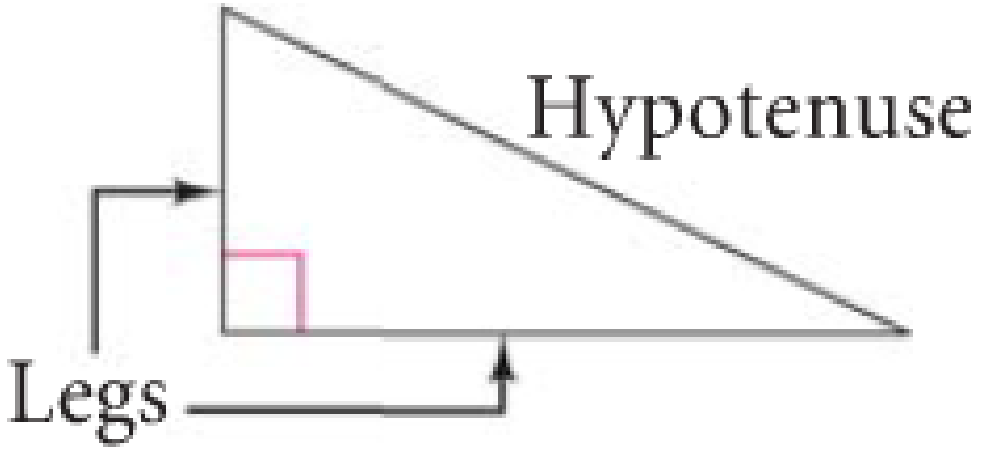
Right Triangles



Hypotenuse: the longest side of a right triangle

Legs: The sides of a right triangle that are not the hypotenuse

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Theorem ☺

Hypotenuse-Leg (HL) Theorem: If the hypotenuse and a leg of one right triangle are congruent to the hypotenuse and a leg of another right triangle, then the triangles are congruent.

To use the HL Theorem, you must show that three conditions are met:

- There are two right triangles
- The triangles have congruent hypotenuses
- There is one pair of congruent legs

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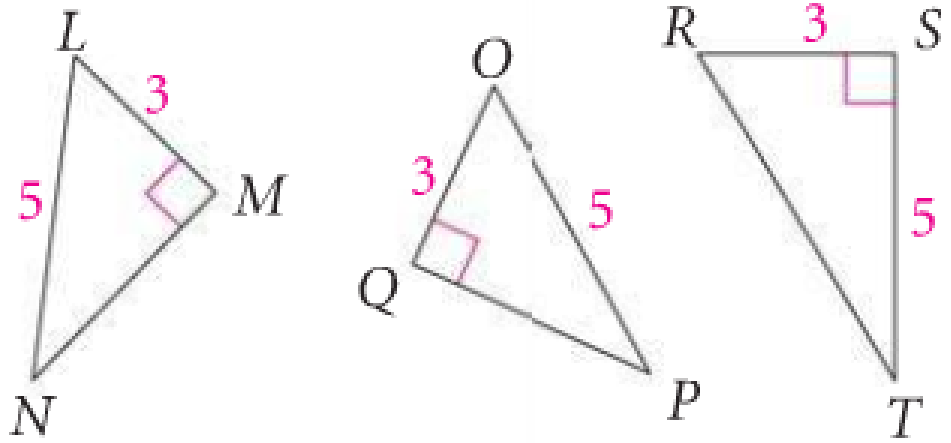
Using the HL Theorem

Which two triangles are congruent by the HL Theorem? Write a correct congruence statement.



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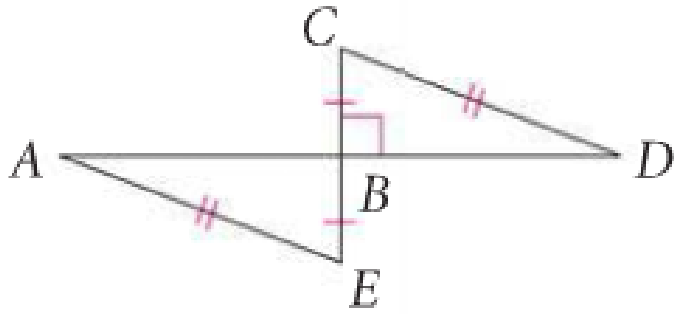
Using the HL Theorem

Given: $\overline{CD} \cong \overline{EA}$, $\overline{AD}$ is the perpendicular bisector of $\overline{CE}$.

Prove: $\triangle CBD \cong \triangle EBA$



Statements	Reasons
1. $\overline{AD}$ is the $\perp$ bisector of $\overline{CE}$, $\overline{CD} \cong \overline{EA}$	1.
2.	2. Defn. of $\perp$
3. ΔCBD & ΔEBA are rt. Δs	3.
4. $\overline{CB} \cong \overline{EB}$	4.
5.	5. HL Thm.

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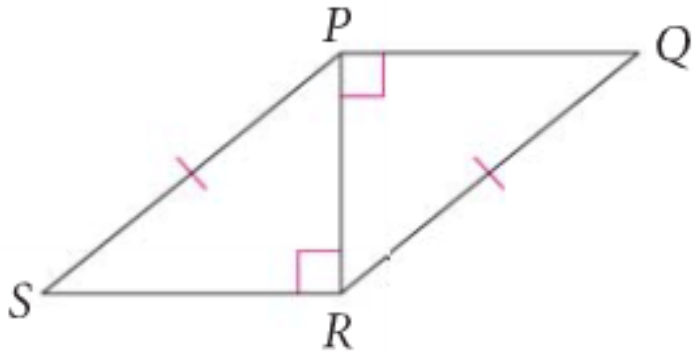
Using the HL Theorem

Given: $\angle PRS$ and $\angle RPQ$ are right angles, $\overline{SP} \cong \overline{QR}$.

Prove: $\triangle PRS \cong \triangle RPQ$



Statements	Reasons
1. $\angle PRS$ and $\angle RPQ$ are rt $\angle$s $\overline{SP} \cong \overline{QR}$	1.
2.	2. Defn. of rt Δs
3.	3. Refl. Prop. of $\cong$
4. $\Delta PRS \cong \Delta RPQ$	4.