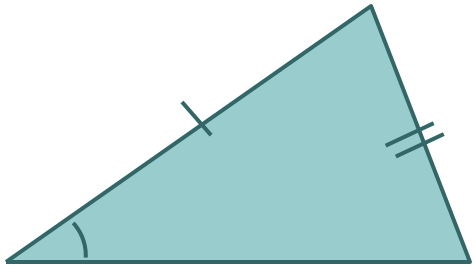
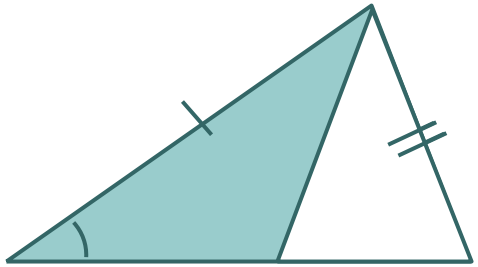
4-6 Congruence in Right Triangles

Think…

- Why does SSA not prove congruent △s?



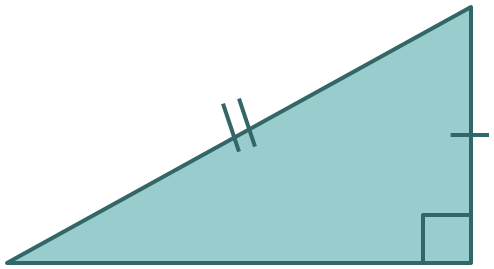


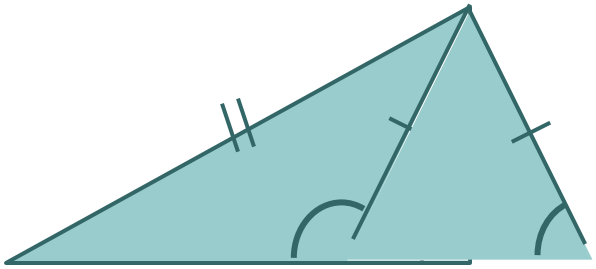
Click Here to see other △

- Video: Why is SSA NOT a congruence theorem?
  - Video: Why is HL a congruence theorem?

Why?

- BUT…. SSA _____work when the non-included angle is a _____angle!





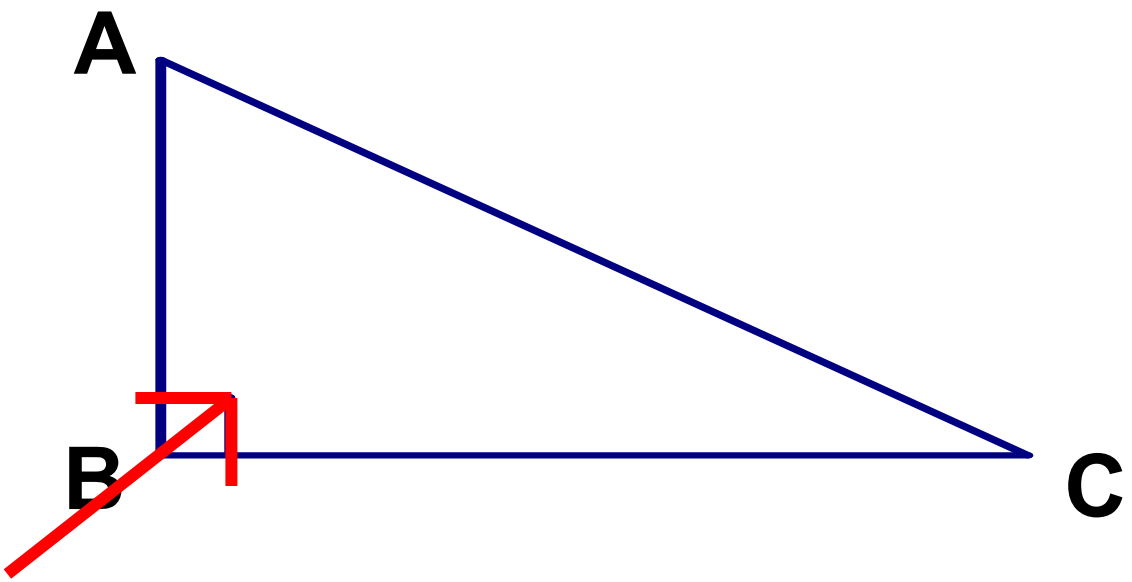
Click Here to see why

- The only triangle possible with the two fixed sides and _____ angle, is congruent to the original triangle.

Vocabulary
Parts of a Right Triangle

_____: longest side

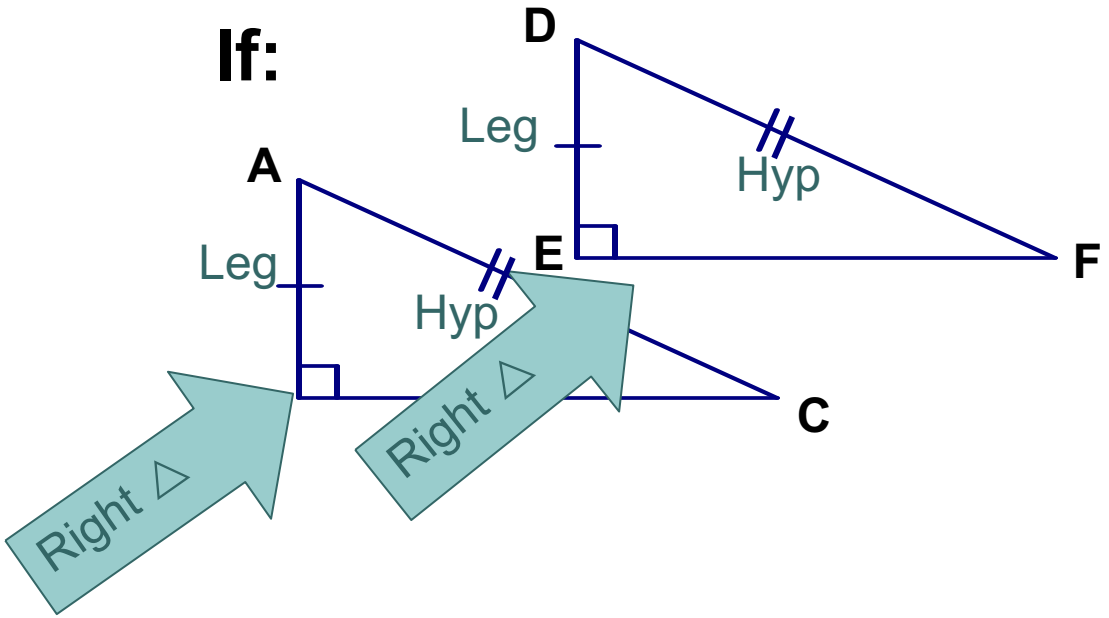
_____: one of the two shorter sides



The right angle box makes an arrow pointing to the hypotenuse!

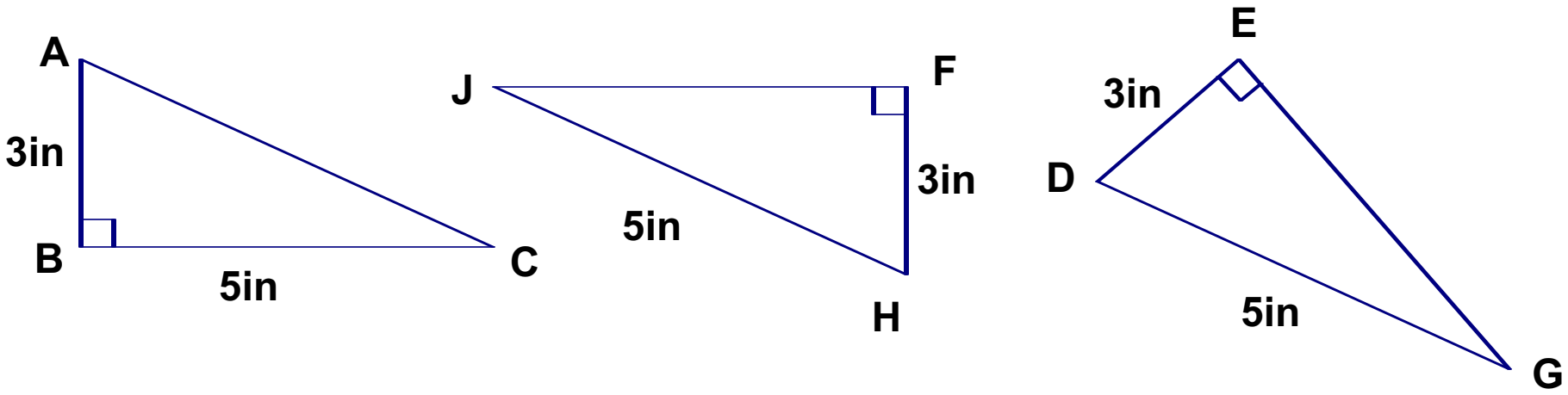
Hypotenuse-Leg Theorem (_____)

- If the hypotenuse and leg of one right triangle are congruent to the _____ and _____ of another right triangle, then the triangles are _____.



Ex 1:
Which are congruent by HL?

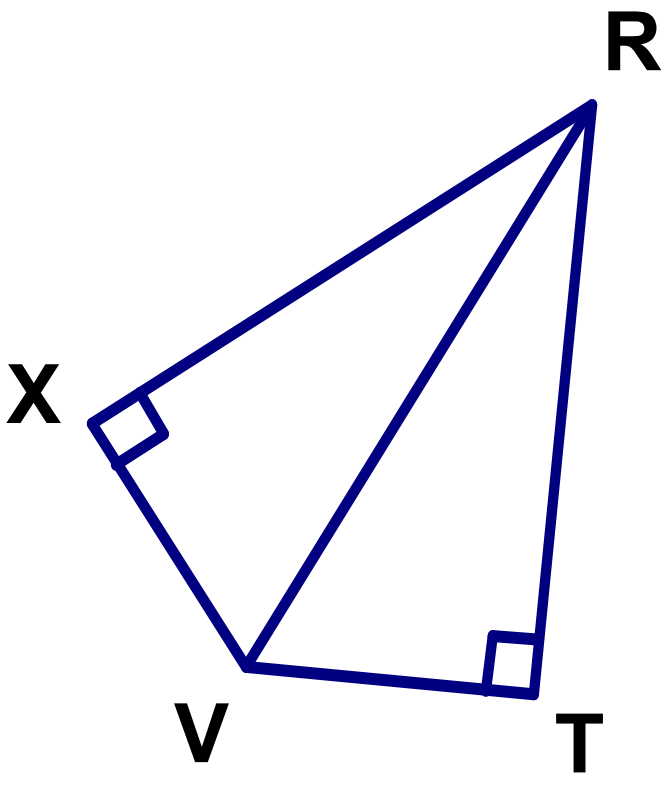
Label with H for ≅ Hypotenuse
and L for ≅ Leg



Ex 3: What else do you need to prove the triangles are congruent by HL?

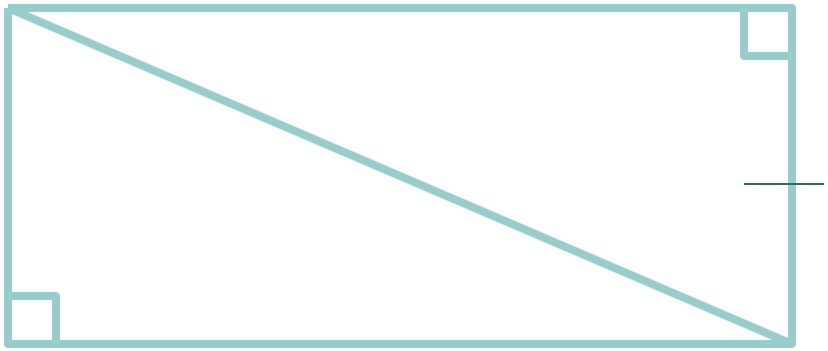
1) Draw in the implied congruent parts.

2) State any OTHER information that we would need to use HL.



Think About It!

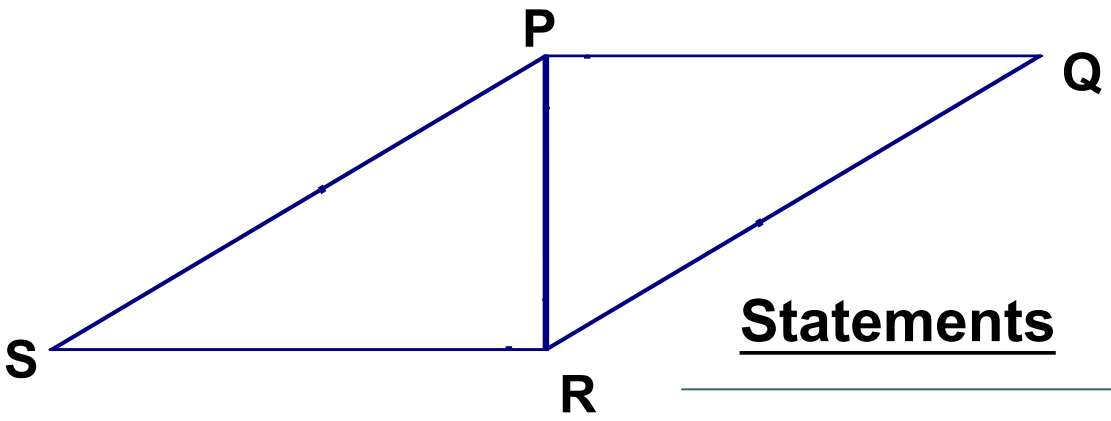
Why are the following triangles congruent by HL?



Ex 2: Prove the triangles are congruent

Given: $\angle QPR$ and $\angle SRP$ are right, $\overline{SP} \cong \overline{RQ}$

Prove: $\triangle SRP \cong \triangle QPR$

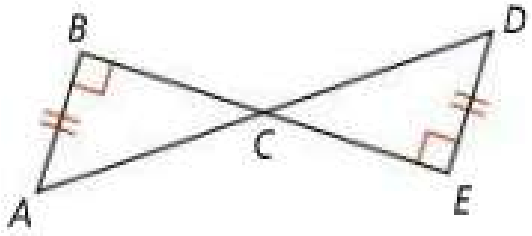


Statements	Reasons
1. $\angle QPR$ and $\angle SRP$ are right, $\overline{SP} \cong \overline{RQ}$	1. Given

Draw in given and implied info.

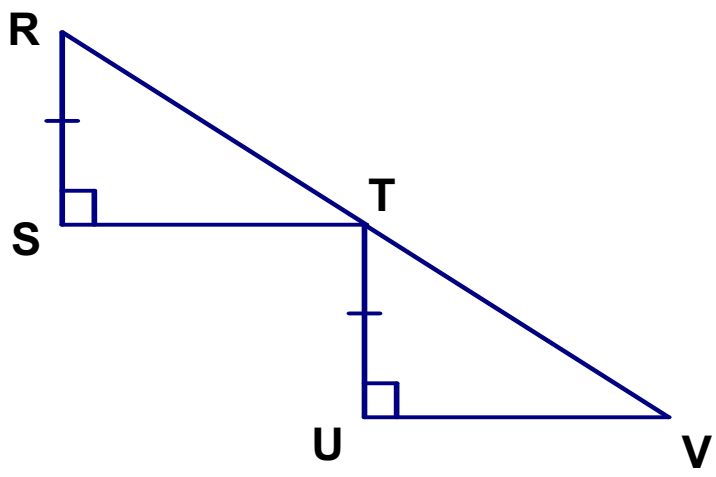
Given: $\overline{BE}$ bisects $\overline{AD}$ at C,
$\overline{AB} \perp \overline{BC}$, $\overline{DE} \perp \overline{EC}$, and $\overline{AB} \cong \overline{DE}$

Prove: $\triangle ABC \cong \triangle DEC$



Statements	Reasons
1. $\overline{BE}$ bisects $\overline{AD}$ at C, $\overline{AB} \perp \overline{BC}$, $\overline{DE} \perp \overline{EC}$, and $\overline{AB} \cong \overline{DE}$	1. Given

Ex 4: Prove the two triangles are congruent



Given: T is the midpoint of $\overline{RV}$
$\angle S$ and $\angle U$ are right angles.
$\overline{RS} \cong \overline{TU}$

Prove: $\triangle RST \cong \triangle TUV$

Statements	Reasons
1. T is the midpoint of $\overline{RV}$ $\angle S$ and $\angle U$ are right angles $\overline{RS} \cong \overline{TU}$	1. Given