# Mr. Baroody's Web Page

## The HL Theorem - Lesson 3-8

Here's our warmup!

**Given:**   ∠SWT ≅ ∠STW
            ∠BTW ≅ ∠BWT

**Prove:**   $\overline{SF} \cong \overline{SK}$

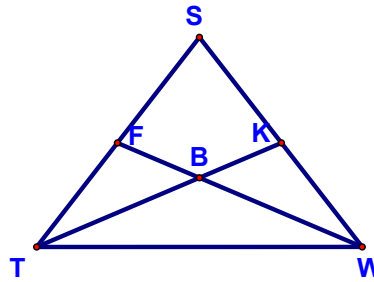| Statements | Reasons |
|---|---|
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As we discussed, you can do this proof in a few ways…see if you can do it one of the other ways here:

**Given:** ∠SWT ≅ ∠STW
∠BTW ≅ ∠BWT

**Prove:** $\overline{SF} \cong \overline{SK}$

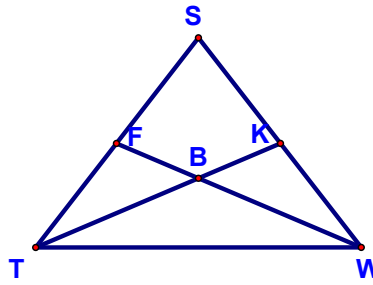|              Statements              |              Reasons              |
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|                                      |                                   |

And the last of the three ways here! (remember…practice makes perfect!!)
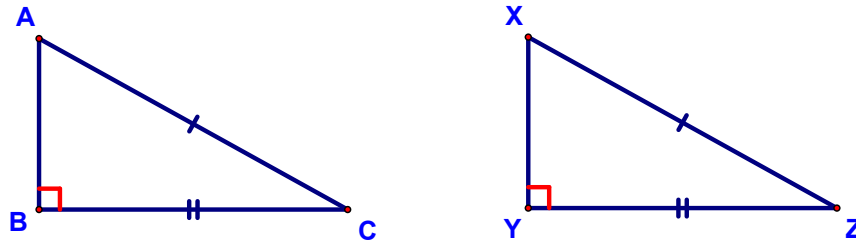
**Given:** $\angle$**SWT $\cong$ $\angle$STW**
$\angle$**BTW $\cong$ $\angle$BWT**

**Prove:** $\overline{SF} \cong \overline{SK}$

| Statements | Reasons |
| --- | --- |
| | |

OK...to wrap up Chapter 3, we're going to learn another theorem...this one is called HL (Hypotenuse, Leg):



*Theorem 22* - **If there exists a correspondence between the vertices of two right triangles such that the hypotenuse and a leg of one triangle are congruent to the corresponding parts of the other triangle, the two right triangles are congruent (HL).**

Let's see if you can prove HL, remember that you can't use a theorem to prove it!

**Given:** ∠**ABC** & ∠**ADC are right** ∠**s**
$\overline{AB} \cong \overline{AD}$
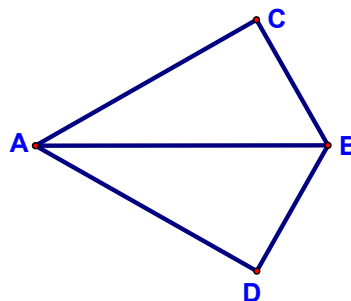
**Prove:** △**ABC** ≅ △**ADC**
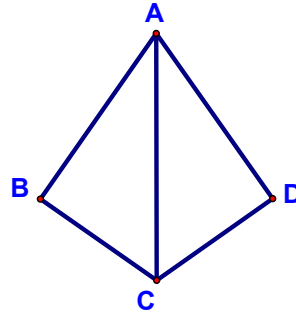
| Statements | Reasons |
|---|---|
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Now let's over an example that used this theorem.  Make sure that when you use this as a reason in a proof, you correctly reference the numbers of the previous steps that allow you to use it (they should be in the order of right angles, hypotenuse, legs).

**Given:** $\overline{BC} \perp \overline{AC}$
$\overline{BD} \perp \overline{AD}$
$\overline{AC} \cong \overline{AD}$

**Prove:** $\overrightarrow{AB}$ bisects $\angle CAD$

| Statements | Reasons |
|---|---|
|  |  |

Woohoo!! We've finished Chapter 3!!