Mr. Baroody's Web Page

Congruent Supplements and Complements - Lesson 2-4

Today, we'll talk about theorems 4 - 7. These should make sense to you if you just think about them a little bit....remember to draw pictures!

Theorem 4 - If angles are supplementary to the same angle, then they are congruent.

Theorem 5 - If angles are supplementary to congruent angles, then they are congruent.

Theorem 6 - If angles are complementary to the same angle, then they are congruent.

Theorem 7 - If angles are complementary to congruent angles, then they are congruent.

We're going to start by taking on the task of proving Theorem 6. This is where things often get a little dicey for many of you. Don't resist the whole idea of proving something. For now, just make sure that you can follow the logic of the proof shown below. It's really important for you to not get too frustrated and for you to not resist this stuff....if you take the time to follow it step by step, you'll see that it really does make sense. You're not going to be comfortable with these things for quite a while, but you will get there eventually. Hang in there! My suggestion to you would be to make sure you can follow this proof and then try proving theorems 4, 5, and 7. You can do it!!

Theorem 6 - If angles are complementary to the same angle, then they are congruent.

Given: ∠A is compl. to ∠X
              ∠B is compl. to ∠X

Prove: ∠A ≅ ∠B
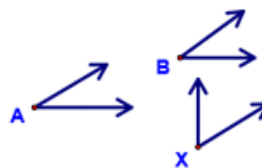
Statements	Reasons
1. ∠A is compl. to ∠X	1. Given
2. m∠A + m∠X = 90°	2. If two angles are complementary, then the sum of their measures is 90°.
3. m∠A = 90° - m∠X	3. Subtraction Property of Equality
4. ∠B is compl. to ∠X	4. Given
5. m∠B + m∠X = 90°	5. Same as 2.
6. m∠B = 90° - m∠X	6. Same as 3.
7. ∠A ≅ ∠B	7. If two angles have the same measure, then they are congruent.

Here are blanks for Theorems 4, 5 & 7:

Theorem 4 - **If angles are supplementary to the same angle, then they are congruent.**

Given: ∠A is supp. to ∠X
∠B is supp. to ∠X

Prove: ∠A ≅ ∠B

Statements | **Reasons**

Theorem 5 - If ∠s are supplementary to ≅ ∠s, then they are ≅

Given: ∠AYZ ≅ ∠BYX

Prove: ∠1 ≅ ∠2
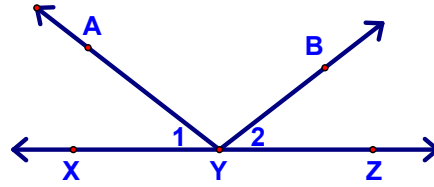
Statements	Reasons

Theorem 7 - **If ∠s are complementary to ≅ ∠s, then they are ≅**

Given: $\overrightarrow{YS} \perp \overleftrightarrow{XZ}$
∠3 ≅ ∠4

Prove: ∠1 ≅ ∠2
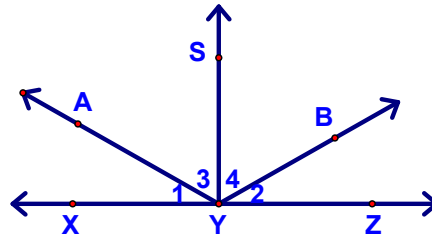
Statements

Reasons

Lastly, I want to remind you that during our video lessons, we'll be doing a lot of ***proving theorems***, but that in classwork, we'll often be ***using theorems to prove other things***. Typically, the latter is more straight forward for students than is the former. Don't worry too much, because you'll get better and better at recognizing when you're doing each of these. For now, think to yourself, "if I'm proving a theorem, I'm going to be using measures of things, but if I'm using theorems, I won't be doing that." All the classwork problem sets allow you to use theorems, so they will be shorter proofs!! Then, on occasion, I'll ask you to prove a theorem…that's really just a memorization task.