

Geometry

Unit 3 Lesson 2 Sirimanne Edition

Name:

Date:

Period: 1 2 3 4 5 6

Standards: 2.0, 13.0

Holt: 1-4 Pairs of Angles p.29

Objective To write a proof involving supplementary and complementary as demonstrated by guided practice, independent work, and homework.

- Warm Up** 1.) If $\angle 1$ and $\angle 2$ are supplementary, then what is $\angle 2$ when $\angle 1 = 47^\circ$
2.) If $\angle 1$ and $\angle 2$ are complementary, then what is $\angle 1$ when $\angle 2 = 37^\circ$

Supplementary + Complementary

Q1: What does it mean for two angles to be supplementary?

It means that they add up to 180°

Q2: How do you know that for sure? Because the definition of supplementary says

▼ **Application:** $\angle 1$ and $\angle 2$ are supplementary

Statement	Reason
$\angle 1$ and $\angle 2$ are supplementary	
$\angle 1 + \angle 2 = 180^\circ$	definition of supplementary

Q3: What does it mean for two angles to be complementary?

It means that they add up to 90°

Q4: How do you know that for sure? Because the definition of complementary says

▼ **Application:** $\angle 1$ and $\angle 2$ are complementary

Statement	Reason
$\angle 1$ and $\angle 2$ are complementary	
$\angle 1 + \angle 2 = 90^\circ$	definition of complementary

Example 1 Given: $\angle 1$ and $\angle 2$ are supplementary
 $\angle 2$ and $\angle 3$ are supplementary
Prove: $\angle 1 \cong \angle 3$

Statements	Reasons
1. $\angle 1$ and $\angle 2$ are supplementary	Given
2. $m\angle 1 + m\angle 2 = 180^\circ$	Def of supplementary
3. $\angle 2$ and $\angle 3$ are supplementary	Given
4. $m\angle 2 + m\angle 3 = 180^\circ$	Def of supplementary
5. $m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3$	Substitution Property
6. $m\angle 1 = m\angle 3$	Subtraction Property
7. $\angle 1 \cong \angle 3$	Def of Congruent Angles