

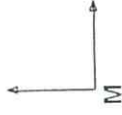
Theorem

If two angles are congruent and supplementary, then each is a right angle



Given: $\angle M \cong \angle N$

$\angle M$ and $\angle N$ are supplementary



Prove: $\angle M$ and $\angle N$ are right angles

Statements

Reasons

Substitution Property of Equality

$$2m\angle M = 180^\circ$$

Definition of supplementary

$$m\angle N = 90^\circ$$

Definition of congruent

$\angle M$ and $\angle N$ are right angles

Definition of right angles

$\angle M$ and $\angle N$ are supplementary
 $\angle M \cong \angle N$

$$m\angle M + m\angle N = 180^\circ$$

Combine like terms

$$m\angle M = m\angle N$$

Given

Division Property of Equality

$$m\angle M = 90^\circ$$

Substitution Property of Equality

$$m\angle M + m\angle M = 180^\circ$$