Triangle Congruence

Jonathan R. Bacolod

Sauyo High School

What are Congruent Triangles?

Two triangles are congruent if their parts can be paired so that the corresponding sides and the corresponding angles are congruent.

What are the Properties of Congruence?

What are the Properties of Congruence?

1. Reflexive Property: $\triangle ABC \cong \triangle ABC$

What are the Properties of Congruence?

1. Reflexive Property: $\triangle ABC \cong \triangle ABC$
2. Symmetric Property: If $\triangle ABC \cong \triangle XYZ$, then $\triangle XYZ \cong \triangle ABC$.
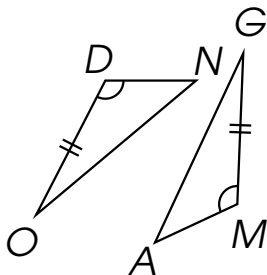
What are the Properties of Congruence?

1. Reflexive Property: $\triangle ABC \cong \triangle ABC$
2. Symmetric Property: If $\triangle ABC \cong \triangle XYZ$, then $\triangle XYZ \cong \triangle ABC$.
3. Transitive Property: If $\triangle ABC \cong \triangle DEF$ and $\triangle DEF \cong \triangle XYZ$, then $\triangle ABC \cong \triangle XYZ$.
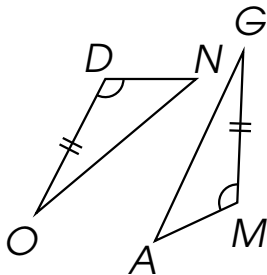
Example 1

Given: $\triangle NOD \cong \triangle AGM$
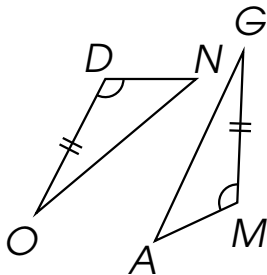Write down the six pairs of congruent corresponding parts.

Example 1

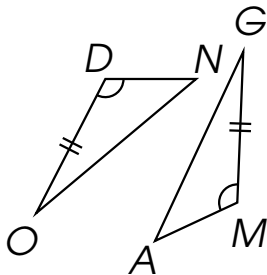Given: $\triangle NOD \cong \triangle AGM$

Example 1

Given: $\triangle NOD \cong \triangle AGM$
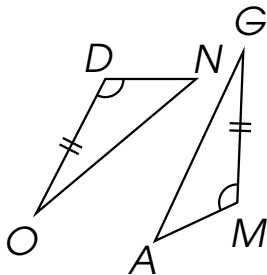
Sides

Example 1

Given: $\triangle NOD \cong \triangle AGM$

Sides

$\overline{NO} \cong \overline{AG}$
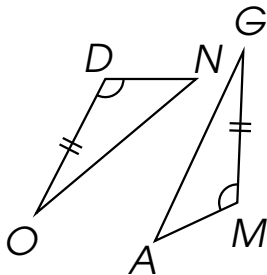
Example 1

Given: $\triangle NOD \cong \triangle AGM$

Sides

$\overline{NO} \cong \overline{AG}$

$\overline{DO} \cong \overline{MG}$

Example 1

Given: $\triangle NOD \cong \triangle AGM$

Sides

$\overline{NO} \cong \overline{AG}$

$\overline{DO} \cong \overline{MG}$

$\overline{DN} \cong \overline{MA}$

Example 1

Given: $\triangle NOD \cong \triangle AGM$

Sides

$\overline{NO} \cong \overline{AG}$

$\overline{DO} \cong \overline{MG}$

$\overline{DN} \cong \overline{MA}$

Angles

Example 1

Given: $\triangle NOD \cong \triangle AGM$

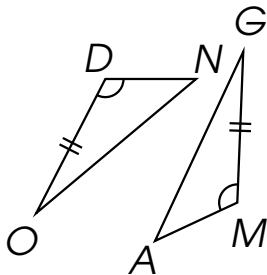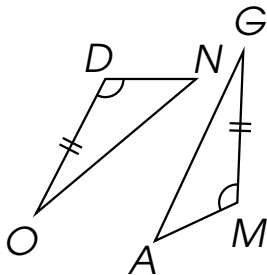| **Sides**	**Angles**
$\overline{NO} \cong \overline{AG}$	$\angle D \cong \angle M$
$\overline{DO} \cong \overline{MG}$	
$\overline{DN} \cong \overline{MA}$	
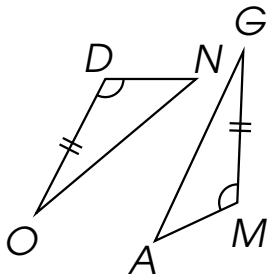
Example 1

Given: $\triangle NOD \cong \triangle AGM$

Sides

$\overline{NO} \cong \overline{AG}$

$\overline{DO} \cong \overline{MG}$

$\overline{DN} \cong \overline{MA}$

Angles

$\angle D \cong \angle M$

$\angle N \cong \angle A$

Example 1

Given: $\triangle NOD \cong \triangle AGM$

Sides	**Angles**
$\overline{NO} \cong \overline{AG}$	$\angle D \cong \angle M$
$\overline{DO} \cong \overline{MG}$	$\angle N \cong \angle A$
$\overline{DN} \cong \overline{MA}$	$\angle O \cong \angle G$

Example 2

Given: $\triangle HIJ \cong \triangle XYZ$
Write down the six pairs of congruent
corresponding parts.

Example 2

Given: $\triangle HIJ \cong \triangle XYZ$

Example 2

Given: $\triangle HIJ \cong \triangle XYZ$

Sides

Example 2

Given: $\triangle HIJ \cong \triangle XYZ$

Sides

$\overline{HI} \cong \overline{XY}$

Example 2

Given: $\triangle HIJ \cong \triangle XYZ$

Sides

$\overline{HI} \cong \overline{XY}$

$\overline{IJ} \cong \overline{YZ}$

Example 2

Given: $\triangle HIJ \cong \triangle XYZ$

Sides

$\overline{HI} \cong \overline{XY}$

$\overline{IJ} \cong \overline{YZ}$

$\overline{HJ} \cong \overline{XZ}$

Example 2

Given: $\triangle HIJ \cong \triangle XYZ$

Sides	**Angles**
$\overline{HI} \cong \overline{XY}$	
$\overline{IJ} \cong \overline{YZ}$	
$\overline{HJ} \cong \overline{XZ}$	

Example 2

Given: $\triangle HIJ \cong \triangle XYZ$

Sides

$\overline{HI} \cong \overline{XY}$

$\overline{IJ} \cong \overline{YZ}$

$\overline{HJ} \cong \overline{XZ}$

Angles

$\angle H \cong \angle X$

Example 2

Given: $\triangle HIJ \cong \triangle XYZ$

Sides

$\overline{HI} \cong \overline{XY}$

$\overline{IJ} \cong \overline{YZ}$

$\overline{HJ} \cong \overline{XZ}$

Angles

$\angle H \cong \angle X$

$\angle I \cong \angle Y$

Example 2

Given: $\triangle HIJ \cong \triangle XYZ$

Sides	**Angles**
$\overline{HI} \cong \overline{XY}$	$\angle H \cong \angle X$
$\overline{IJ} \cong \overline{YZ}$	$\angle I \cong \angle Y$
$\overline{HJ} \cong \overline{XZ}$	$\angle J \cong \angle Z$

Example 3

Given: $\triangle KFC \cong \triangle JLB$
Write down the six pairs of congruent
corresponding parts.

Example 3

Given: $\triangle KFC \cong \triangle JLB$

Example 3

Given: $\triangle KFC \cong \triangle JLB$

Sides

Example 3

Given: $\triangle KFC \cong \triangle JLB$

Sides

$\overline{KF} \cong \overline{JL}$

Example 3

Given: $\triangle KFC \cong \triangle JLB$

Sides

$\overline{KF} \cong \overline{JL}$

$\overline{FC} \cong \overline{LB}$

Example 3

Given: $\triangle KFC \cong \triangle JLB$

Sides

$\overline{KF} \cong \overline{JL}$

$\overline{FC} \cong \overline{LB}$

$\overline{KC} \cong \overline{JB}$

Example 3

Given: $\triangle KFC \cong \triangle JLB$

Sides

$\overline{KF} \cong \overline{JL}$

$\overline{FC} \cong \overline{LB}$

$\overline{KC} \cong \overline{JB}$

Angles

Example 3

Given: $\triangle KFC \cong \triangle JLB$

Sides

$\overline{KF} \cong \overline{JL}$

$\overline{FC} \cong \overline{LB}$

$\overline{KC} \cong \overline{JB}$

Angles

$\angle K \cong \angle J$

Example 3

Given: $\triangle KFC \cong \triangle JLB$

Sides

$\overline{KF} \cong \overline{JL}$

$\overline{FC} \cong \overline{LB}$

$\overline{KC} \cong \overline{JB}$

Angles

$\angle K \cong \angle J$

$\angle F \cong \angle L$

Example 3

Given: $\triangle KFC \cong \triangle JLB$

Sides	**Angles**
$\overline{KF} \cong \overline{JL}$	$\angle K \cong \angle J$
$\overline{FC} \cong \overline{LB}$	$\angle F \cong \angle L$
$\overline{KC} \cong \overline{JB}$	$\angle C \cong \angle B$

Example 4

Identify whether the following are **True** or **False** if $\triangle KHA \cong \triangle REN$.

1. $\triangle KAH \cong \triangle RNE$

Example 4

Identify whether the following are **True** or **False** if $\triangle KHA \cong \triangle REN$.

1. $\triangle KAH \cong \triangle RNE$ True

Example 4

Identify whether the following are **True** or **False** if $\triangle KHA \cong \triangle REN$.

1. $\triangle KAH \cong \triangle RNE$ True
2. $\triangle AHK \cong \triangle ERN$

Example 4

Identify whether the following are **True** or **False** if $\triangle KHA \cong \triangle REN$.

1. $\triangle KAH \cong \triangle RNE$ True
2. $\triangle AHK \cong \triangle ERN$ False

Example 4

Identify whether the following are **True** or **False** if $\triangle KHA \cong \triangle REN$.

1. $\triangle KAH \cong \triangle RNE$ True
2. $\triangle AHK \cong \triangle ERN$ False
3. $\triangle AKH \cong \triangle NRE$

Example 4

Identify whether the following are **True** or **False** if $\triangle KHA \cong \triangle REN$.

1. $\triangle KAH \cong \triangle RNE$ True
2. $\triangle AHK \cong \triangle ERN$ False
3. $\triangle AKH \cong \triangle NRE$ True

Example 4

Identify whether the following are **True** or **False** if $\triangle KHA \cong \triangle REN$.

1. $\triangle KAH \cong \triangle RNE$ True
2. $\triangle AHK \cong \triangle ERN$ False
3. $\triangle AKH \cong \triangle NRE$ True
4. $\triangle HAK \cong \triangle ENR$

Example 4

Identify whether the following are **True** or **False** if $\triangle KHA \cong \triangle REN$.

1. $\triangle KAH \cong \triangle RNE$ True
2. $\triangle AHK \cong \triangle ERN$ False
3. $\triangle AKH \cong \triangle NRE$ True
4. $\triangle HAK \cong \triangle ENR$ True

Example 4

Identify whether the following are **True** or **False** if $\triangle KHA \cong \triangle REN$.

1. $\triangle KAH \cong \triangle RNE$ True
2. $\triangle AHK \cong \triangle ERN$ False
3. $\triangle AKH \cong \triangle NRE$ True
4. $\triangle HAK \cong \triangle ENR$ True
5. $\triangle HKA \cong \triangle NRE$

Example 4

Identify whether the following are **True** or **False** if $\triangle KHA \cong \triangle REN$.

1. $\triangle KAH \cong \triangle RNE$ True
2. $\triangle AHK \cong \triangle ERN$ False
3. $\triangle AKH \cong \triangle NRE$ True
4. $\triangle HAK \cong \triangle ENR$ True
5. $\triangle HKA \cong \triangle NRE$ False

Thank you for watching.