

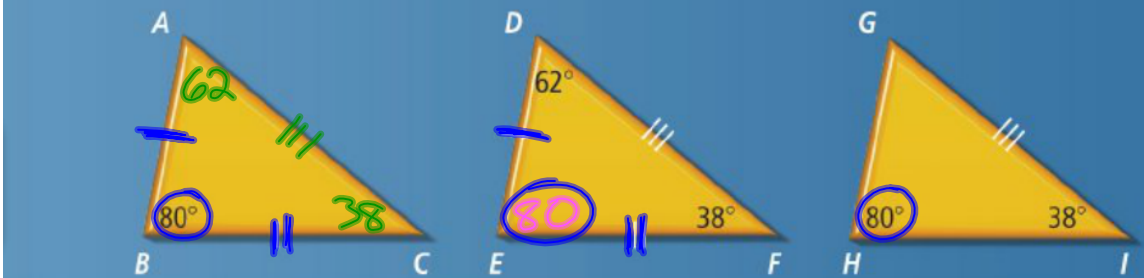
# Geometry

## Chapter 4

### Section 4-4

May 13-10:02 PM

Is  $\triangle ABC$  congruent to  $\triangle GHI$ ? How do you know?



$\triangle ABC \cong \triangle DEF$  by SAS

$\triangle DEF \cong \triangle GHI$   
by AAS

$\triangle ABC \cong \triangle GHI$  by  
AAS

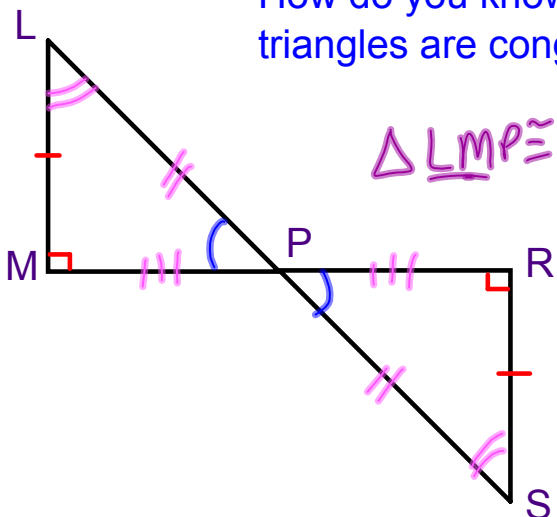
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Congruent Polygons are polygons in which all corresponding parts are congruent (angles and sides).

Two polygons are congruent if and only if all corresponding parts are congruent (angles and sides).

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### Review: Congruent Triangles



How do you know the triangles are congruent?

AAS  
 $\overline{LM} \cong \overline{SR}$   
 $\angle M = \angle R$   
 $\angle LPM \cong \angle RPS$

$\triangle LMP \cong \triangle SRP$

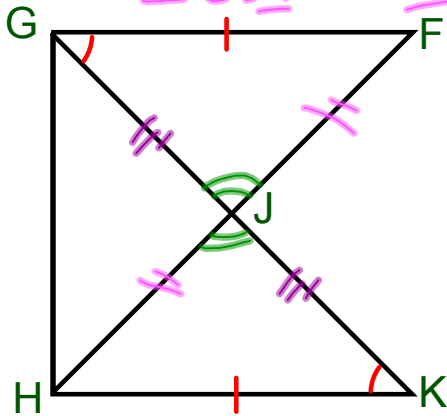
What other congruent statements can you make?

$\angle L \cong \angle S$   
 $\overline{LP} \cong \overline{SP}$   
 $\overline{MP} \cong \overline{PR}$

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### Review: Congruent Triangles

Which triangles are congruent?



$\triangle GJF \cong \triangle KJH$

$\angle GJF \cong \angle HJK$   
 $\angle FJK \cong \angle GJH$ ,  $\angle K \cong \angle JGF$   
 $\overline{GF} \cong \overline{HK}$

How do you know?

AAS

What other congruent statements can you make?

$\angle H \cong \angle F$        $\overline{GJ} \cong \overline{JK}$   
 $\overline{JF} \cong \overline{JH}$

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Given:  $AC \parallel BD$ ,  $AB \parallel CD$

Prove:  $\overline{AB} \cong \overline{CD}$

$\overline{AC} \parallel \overline{BD}$ ,  $\overline{AB} \parallel \overline{CD}$

$\angle ACB \cong \angle DBC$

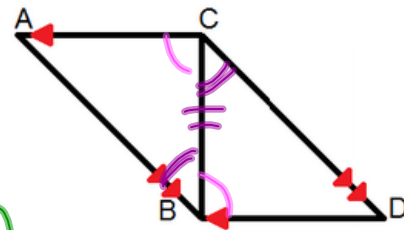
$\overline{BC} \cong \overline{BC}$

$\angle ABC \cong \angle DCB$

$\triangle ABC \cong \triangle DCB$

$\overline{AB} \cong \overline{CD}$

Given



Alt. Int  $\angle$ s Thm

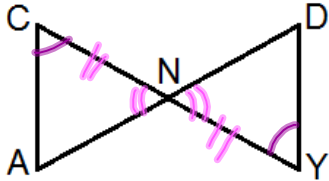
Reflexive

Alt. Int  $\angle$ s Thm

ASA

Def of  $\cong \Delta$ s

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Given: N is the midpoint of  $\overline{CY}$   
 $\angle Y \cong \angle C$   
 Prove:  $\angle A \cong \angle D$

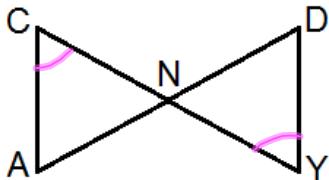
N is midpoint of  $\overline{CY}$   
 $\angle Y \cong \angle C$   
 $\overline{CN} \cong \overline{NY}$   
 $\angle CNA \cong \angle DNY$   
 $\triangle YND \cong \triangle CNA$   
 $\angle D \cong \angle A$

Given  
 Def of midpoint  
 Vertical  $\angle$ s Thm  
 ASA  
 Def  $\cong$   $\Delta$ s

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**CHALLENGE:**

Prove without using congruent triangles



Given: N is the midpoint of  $\overline{CY}$   
 $\angle Y \cong \angle C$   
 Prove:  $\angle A \cong \angle D$

$\angle Y \cong \angle C$   
 $\overline{CA} \parallel \overline{DY}$   
 $\angle A \cong \angle D$

Given  
 Converse of Alt. Int.  $\angle$ s Thm  
 Alt Int  $\angle$ s Thm

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$\overline{AK} \cong \overline{BA}$   
 $\overline{KE} \cong \overline{BE}$

} Given

$\overline{AE} \cong \overline{AE}$  Reflexive  
 $\triangle AKE \cong \triangle ABE$  SSS  
 $\angle KAS \cong \angle BAS$  Def  $\cong \Delta s$   
 $\overline{AS} \cong \overline{AS}$  Reflexive  
 $\triangle KAS \cong \triangle BAS$  SAS  
 $\angle KSA \cong \angle BSA$  Def  $\cong \Delta s$   
 $\angle KSA, \angle BSA$  supplementary Given  
 $\overline{BK} \perp \overline{AE}$   $\angle s \cong$  and supplementary

**Prove:**  $\overline{BK} \perp \overline{AE}$

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# Homework

Pages 246-248

#6, 7, 9 - 13 all, 15, 16, 19, 21

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