

12.1 online hw due Monday
 Week #8 Packet due Tuesday

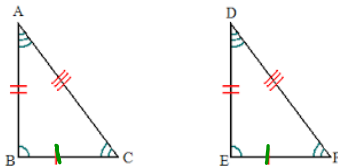
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Essential Question

How can you show/prove that two polygons are congruent?

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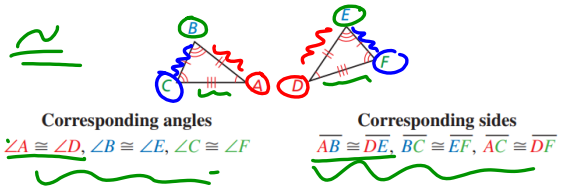
Two polygons are congruent when they are the same shape and same size. **All corresponding sides and angles must be congruent.** (one polygon maps to the other by rigid motion transformations)



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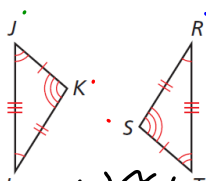
Identify all congruent corresponding angles and sides

$\triangle ABC \cong \triangle DEF$



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Identify all pairs of congruent corresponding parts (sides and angles).



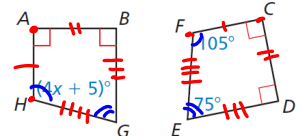
Write a congruence statement for the triangles.

angle: $\angle K \cong \angle S, \angle L \cong \angle T, \angle J \cong \angle R$
 Lines: $\overline{JK} \cong \overline{ST}, \overline{KL} \cong \overline{RS}, \overline{JL} \cong \overline{RT}$

Example 1

In the diagram, $\triangle ABG \cong \triangle CDE$.

Identify all pairs of congruent corresponding parts.



$4x + 5 = 105$
 $4x = 100$
 $x = 25$

Find the value of x.

Monitoring Progress 1-2

In the diagram, $DEFG \cong SPQR$.
 Find the value of x .

$2x - 4 = 12$
 $+4$
 $2x = 16$
 $x = 8$

Find the value of y .

$6y + x = 68$
 $6y + 8 = 68$
 -8
 $6y = 60$
 $y = 10$

Example 2

You divide the wall into orange and blue sections along \overline{JK} . Will the sections of the wall be the same size and shape? Explain.

Example 3

Show that $\triangle PTS \cong \triangle RTQ$.
 Hint: Explain how you know all corresponding sides and angles are congruent...

Statement	Reason
1. $\overline{PS} \parallel \overline{QR}$	1. Given
2. $\angle PTQ \cong \angle RTQ$	2. Given
3. $\overline{PT} \cong \overline{RT}$	3. Given

Anything marked in the picture - say "given" when listing a reason in the proof...

Monitoring Progress 3

Theorem

Properties of Triangle Congruence
 Triangle congruence is reflexive, symmetric, and transitive.

Reflexive For any triangle $\triangle ABC$, $\triangle ABC \cong \triangle ABC$.

Symmetric If $\triangle ABC \cong \triangle DEF$, then $\triangle DEF \cong \triangle ABC$.

Transitive If $\triangle ABC \cong \triangle DEF$ and $\triangle DEF \cong \triangle JKL$, then $\triangle ABC \cong \triangle JKL$.

Proof BigIdeasMath.com

Theorem

Theorem

Third Angles Theorem
 If two angles of one triangle are congruent to two angles of another triangle, then the third angles are also congruent.

Proof Ex. 19, p. 600

If $\angle A \cong \angle D$ and $\angle B \cong \angle E$, then $\angle C \cong \angle F$.

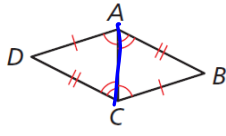
Theorem

Find $m\angle BDC$.
 Hint: Draw triangles ACD and BDC separately

$30 + 45 = 75$
 $180 - 75 = 105$

Example 4

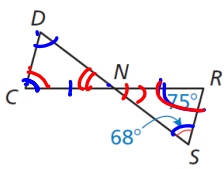
Use the information in the figure to prove that $\triangle ACD \cong \triangle CAB$.



Statement	Reason
1. $AD \cong CB$	1. Given
2. $AB \cong DC$	2. Given
3. $\angle DAC \cong \angle ACB$	3. Given
4. $\angle ADC \cong \angle CAB$	4. Given
5. $\angle ADC \cong \angle CAB$	5. 2 nd Angle Th.
6. $AC \cong AC$	6. Reflexive
7. $\triangle DAC \cong \triangle ABC$	

Example 5

Find $m\angle DCN = 76^\circ$

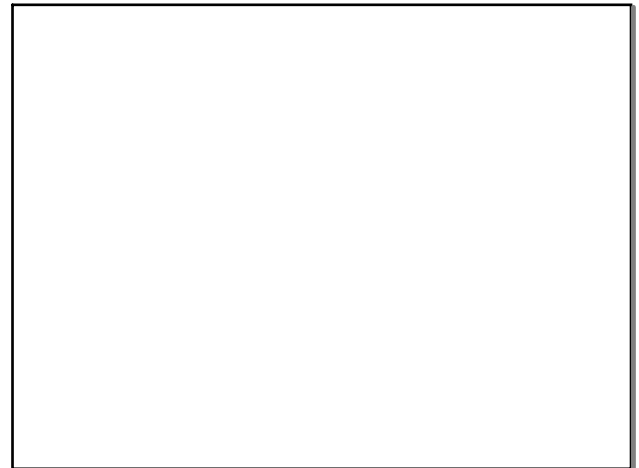


What additional information is needed to conclude that $\triangle NDC \cong \triangle NSR$?

Monitoring Progress 4-5

due Tuesday
 12.2 online hw
 Pg 599-600 #s 1, 2, 3-17 odd, 22, 26-29

Jan 4-10:18 PM



Jan 17-8:24 AM