Analytic Geometry   *2/3/16*
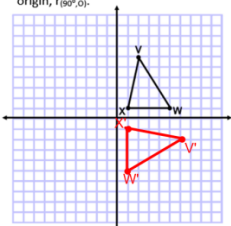
Triangle Congruency - CPCTC

EQ: Why is it important to know how to mark congruence on a diagram?
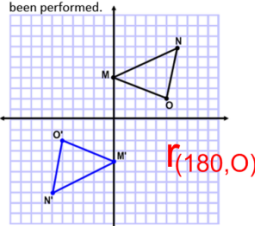
MCC9-12.G.CO.7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
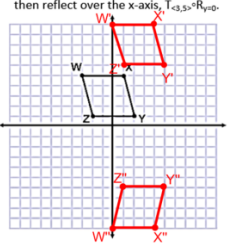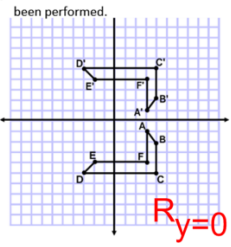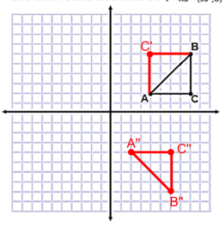
Apr 12-3:48 PM

Homework Answers

1) Rotate ΔVWX 90° clockwise about the origin, $r_{(90°,O)}$.

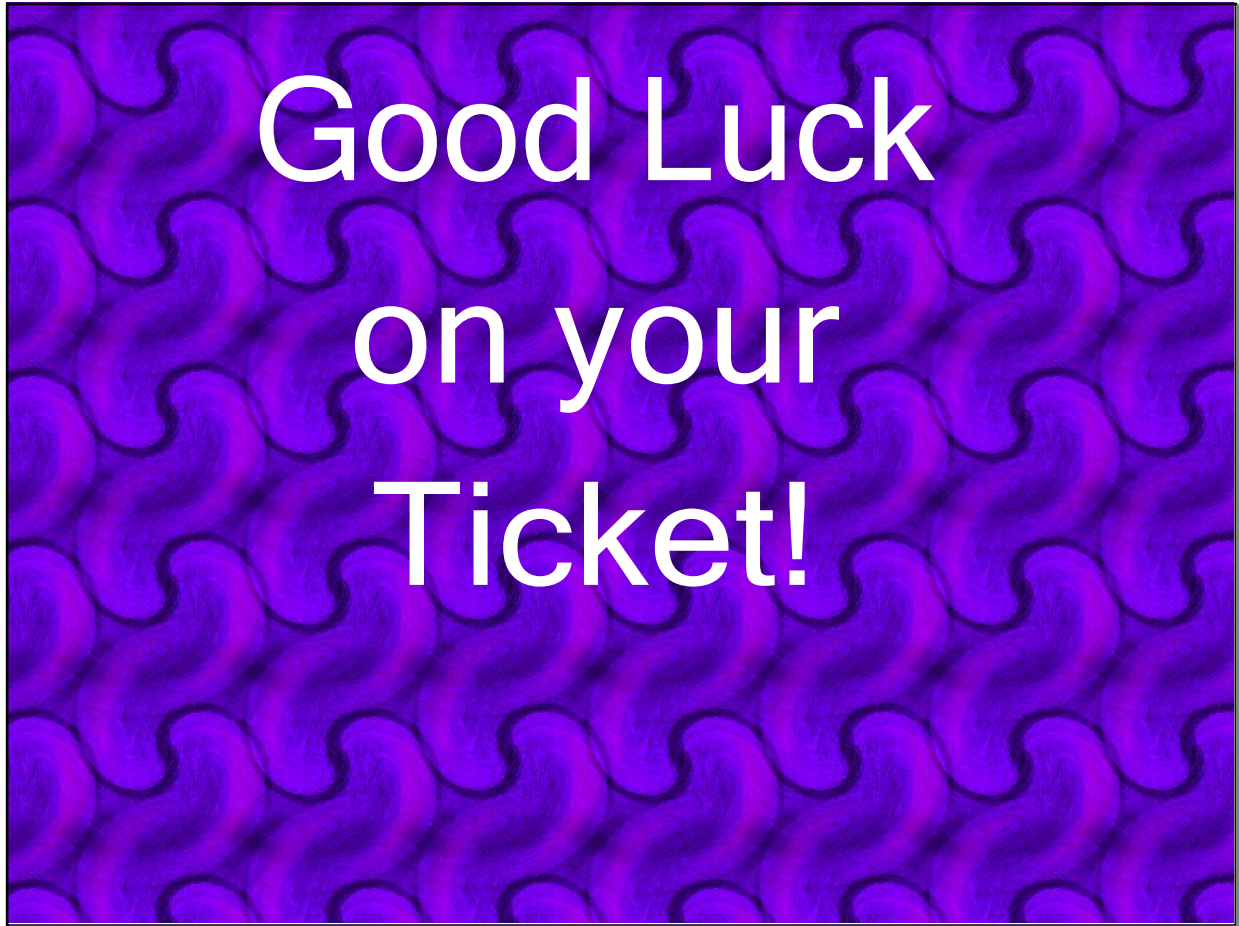2) Determine the transformation that has been performed.

$r_{(180,O)}$

3) Translate the figure right 3 and up 5 and then reflect over the x-axis, $T_{<3,5>} \circ R_{y=0}$.

4) Determine the transformation that has been performed.

$R_{y=0}$

5) Reflect the figure over the hypotenuse AB and then rotate clockwise 90°, $R_{AB} \circ r_{(90°,O)}$.

Sep 16-4:12 PM

Good Luck on your Ticket!

Sep 16-5:43 PM

Key Concepts:

If a rigid motion or a series of rigid motions, including translations, rotations, or reflections, is performed on a triangle, then the transformed triangle is __congruent__ to the original.

When two triangles are congruent, the __corresponding angles__ have the same measure and the __corresponding sides__ have the same lengths.

Congruent triangles have __3__ pairs of corresponding angles and __3__ pairs of corresponding sides, for a total of __6__ pairs of corresponding parts.

If two or more triangles are proven congruent, then all of their corresponding parts are congruent as well.

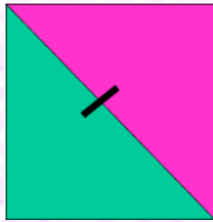This postulate is known as "Corresponding Parts of Congruent Triangles are Congruent (__CPCTC__).

The corresponding angles and sides can be determined by the order of the __letters__ & __markings__.

Name the congruent parts in ΔABC and ΔDEF.

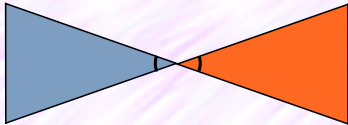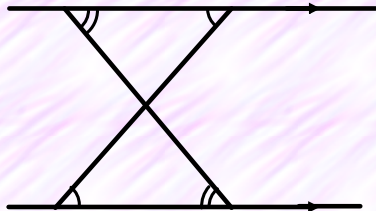|			
<A	__<D__	$\overline{AB}$	__DE__
<B	__<E__	$\overline{BC}$	__EF__
<C	__<F__	$\overline{AC}$	__DF__

Feb 8-1:43 PM

Here are three things you need to know when working with congruent triangles:

Overlapping sides are congruent in each triangle by the ___reflexive___ property

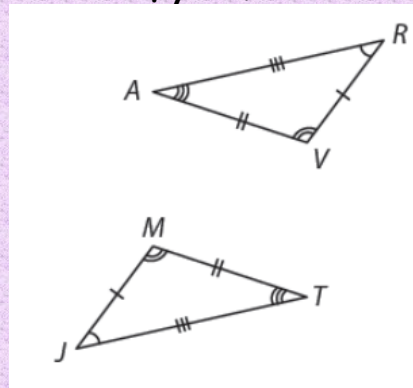___Vertical Angles___ are congruent

___Alternate Interior Angles___ are congruent given parallel lines

Feb 8-1:42 PM

Example 1:

Use corresponding parts to identify the congruent triangles.

ΔRVA   ΔJMT

Example 2:

Given ΔBDF   ΔHJL, name the corresponding angles and sides of the congruent triangles.

<B	<H	$\overline{BD}$	$\overline{HJ}$
<D	<J	$\overline{DF}$	$\overline{JL}$
<F	<L	$\overline{BF}$	$\overline{HL}$

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Example 3:

Complete the congruence
statement

△ACB ≅ △ ECD

Example 4:

Complete the congruence
statement

△GHK ≅ △ GTK

Example 5:

If △CAT ≅ △DOG, then ∠A ≅ ∠O because of CPCTC.

If △FJH ≅ △QRS, then $\overline{JH}$ ≅ RS and ∠F ≅ ∠Q because of CPCTC.

If △XYZ ≅ △ABC, then $\overline{ZX}$ ≅ CA and ∠Y ≅ ∠B because of CPCTC.

Jan 28-2:12 PM

Example 6:   *****DRAW THE PICTURE*****

Given △CAT ≅ △DOG, CA = 14, AT = 18,
TC = 21, and DG = 2x + 7, find the value of x.

x=7

Example 7:   *****DRAW THE PICTURE*****

Given △BLU ≅ △RED, m∠L = 57º, m∠R = 64º,
and m∠U = 5x + 4, find the value of x.

x=11

Sep 16-5:38 PM

HOMEWORK
Worksheet

On-line and textbook help references: p. 148 - 153; 193
- http://www.sparknotes.com/math/geometry2/congruence/section1.rhtml

- https://www.khanacademy.org/math/geometry/congruent-triangles/cong_triangle/v/congruent-triangle-proof-example

- http://www.mathopenref.com/cpctc.html

Oct 10 - 12:29 PM