Name: Kelly

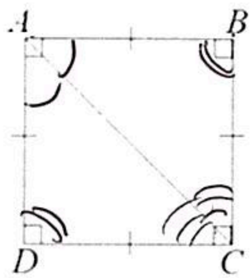
UNIT 2

Date: ____________

LESSON 10

AIM: HOW DO WE IDENTIFY SEQUENCES OF RIGID MOTIONS OFF THE COORDINATE PLANE?

Do Now: $ABCD$ is a square, and $\overline{AC}$ is one diagonal of the square. ΔABC is a reflection of ΔADC across line segment AC. Complete the table below identifying the missing corresponding angles and sides.



Corresponding angles	Corresponding sides
$\angle BAC \rightarrow \angle DAC$	$AB \rightarrow AD$
$\angle ABC \rightarrow \angle CDA$	$BC \rightarrow DC$
$\angle BCA \rightarrow \angle DCA$	$AC \rightarrow AC$

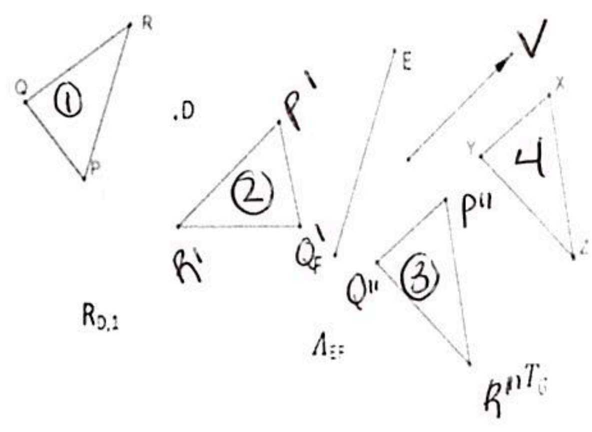
Is $\Delta ABC \cong \Delta ADC$? Use the properties of rigid motions to justify your response.

yes. A reflection is a rigid motion which ~~maps~~ preserves distance + ∡ measure

Consider the diagram below that shows the transformation of ΔPRQ to ΔXYZ.

What are the steps that it took to map ΔPRQ onto ΔXYZ?

STEP 1	Rotate about point D counter-clockwise until Δ PQR maps onto Δ P'Q'R'
STEP 2	A reflection over line E until Δ P'Q'R' maps onto Δ P''Q''R''
STEP 3	a translation along vector $\vec{V}$

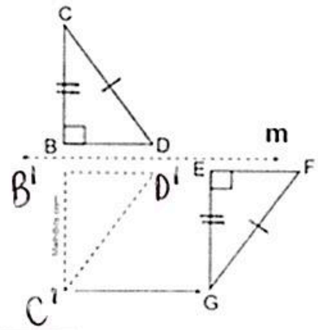


Use the properties of rigid motion to explain why $\Delta PRQ \cong \Delta XYZ$:

A rotation, reflection + translation are rigid motions which ~~map~~ preserve distance + ∡ measure

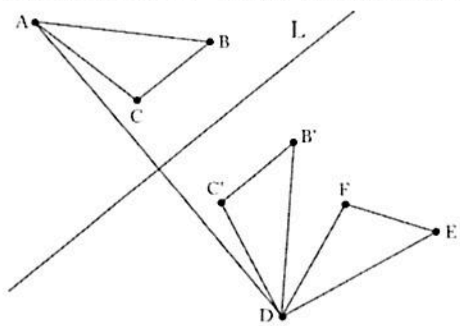
PRACTICE:

1. Triangle *BCD* and triangle *EFG* are drawn below. Write a sequence of transformations that maps triangle *BCD* onto triangle *EGF*.



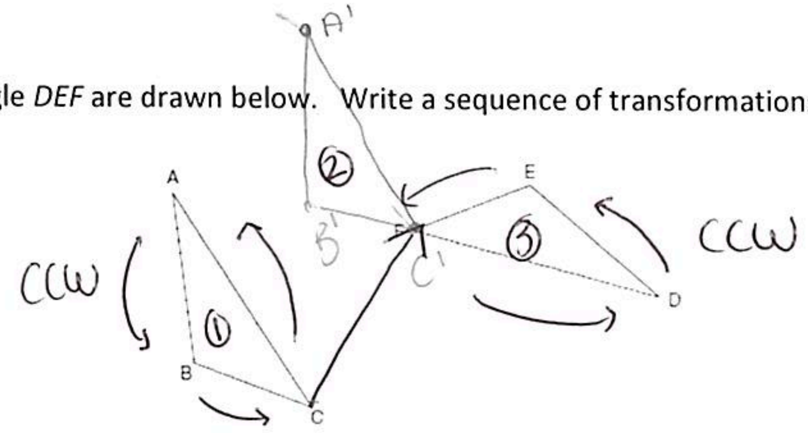
A reflection over line m such that ΔBCD maps onto $\Delta B'C'D'$ followed by a translation along vector $\overrightarrow{CG}$ until $\Delta B'C'D'$ maps onto ΔEFG.

2. Triangle *ABC* and triangle *DEF* are drawn below. Write a sequence of transformations that maps triangle *ABC* onto triangle *DEF*.



A reflection over line L such that ΔABC maps onto $\Delta A'B'C'$ followed by a rotation about point D that maps $\Delta A'B'C'$ onto ΔDEF.

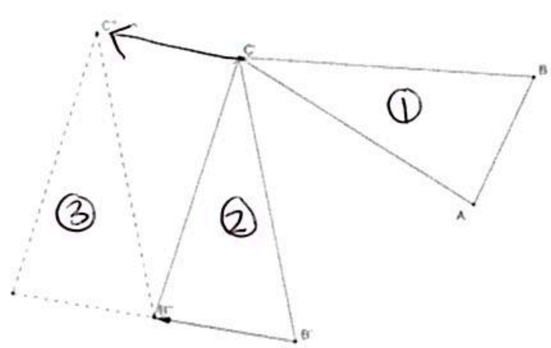
3. Triangle *ABC* and triangle *DEF* are drawn below. Write a sequence of transformations that maps triangle *ABC* onto triangle *DEF*.



a translation along vector $\overrightarrow{CF}$ such that ΔABC maps onto $\Delta A'B'C'$ followed by a rotation about point F such that $\Delta A'B'C'$ maps onto ΔDEF.

For exercises 4-5, each shows a sequence of rigid motions that map a pre-image onto a final image.
a) Identify each rigid motion in the sequence
b) Write a statement about the congruence of the pre-image to the final image.

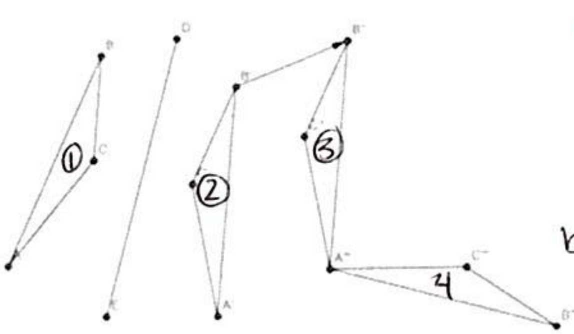
4.



a) A rotation about point C such that ΔABC maps onto $\Delta A'B'C'$ followed by a translation along vector $\overrightarrow{C'C''}$ such that $\Delta A'B'C'$ maps onto $\Delta A''B''C''$.

b) $\Delta ABC \cong \Delta A''B''C''$ b/c a rotation & a translation are rigid motions which preserve distance & ∡ measure

5.



a) a reflection over line $\overline{DE}$ followed by a translation along vector $\overrightarrow{B'B''}$ followed by a rotation about A'' until $\Delta A''B''C''$ maps onto $\Delta A'''B'''C'''$.

b) $\Delta ABC \cong \Delta A'''B'''C'''$ b/c a reflection, translation & rotation are rigid motions which preserve distance & ∡ measure

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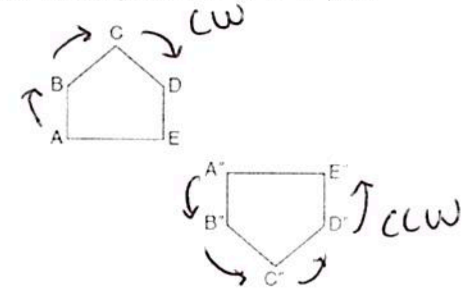
UNIT 2

LESSON 10 HOMEWORK

1. Identify which sequence of transformations could map pentagon *ABCDE* onto pentagon *A"B"C"D"E"*, as shown below.



~~1)~~ dilation followed by a rotation

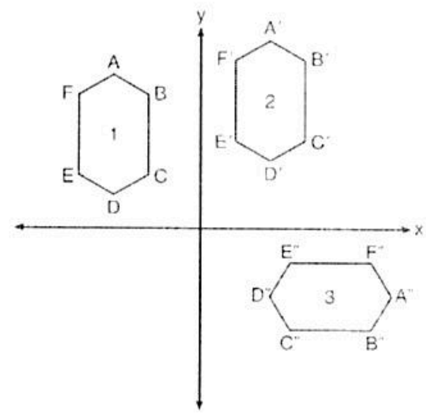
~~2)~~ translation followed by a rotation

3) line reflection followed by a translation

4) line reflection followed by a line reflection

REFLECTION!

2. In the diagram below, congruent figures 1, 2, and 3 are drawn. Which sequence of transformations maps figure 1 onto figure 2 and then figure 2 onto figure 3?



1) a reflection followed by a translation

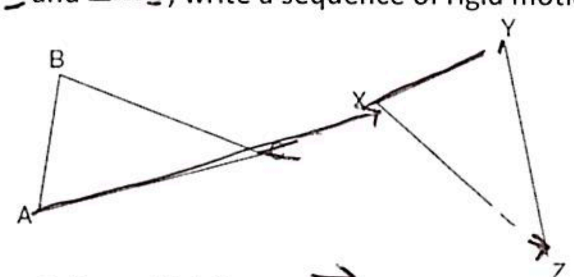
2) a rotation followed by a translation

3) a translation followed by a reflection

4) a translation followed by a rotation

oops! repeat question!

3. In the diagram below of $\triangle ABC$ and $\triangle XYZ$, write a sequence of rigid motions maps triangle *ABC* onto triangle *XYZ*.



a translation along vector $\overrightarrow{AX}$ followed by a rotation about point X until $\Delta A'B'C'$ maps onto ΔXYZ.