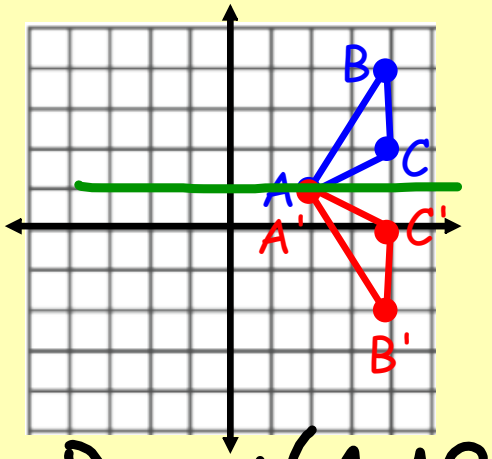
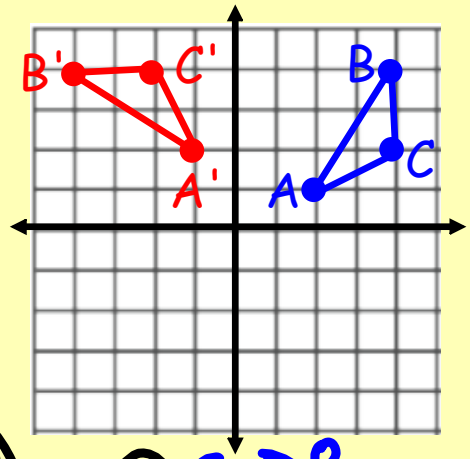
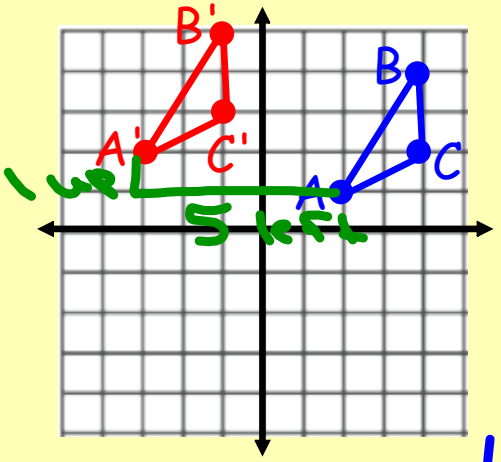
# 2/25/20 - Warm Up Problem

Describe each transformation using function notation.



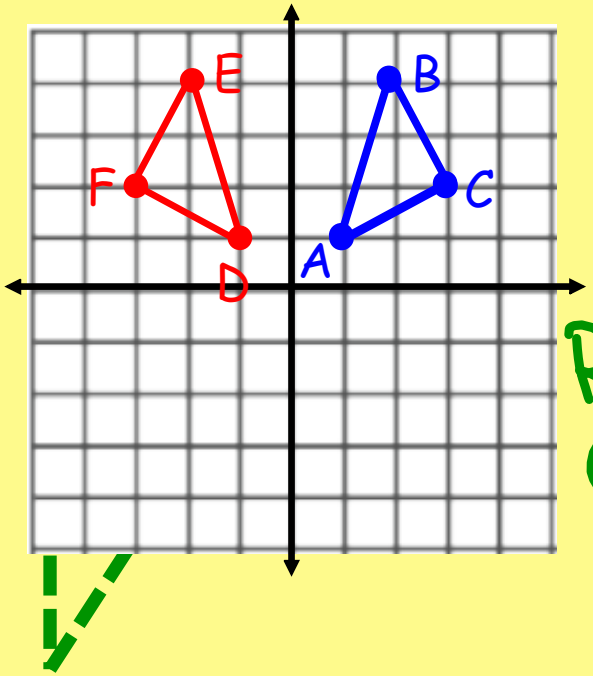




$R_{y=1}(\Delta ABC)$ $r_{90°}(\Delta ABC)$ $T_{\langle -5,1\rangle}(\Delta ABC)$

# Concept 21 - Congruence Transformations

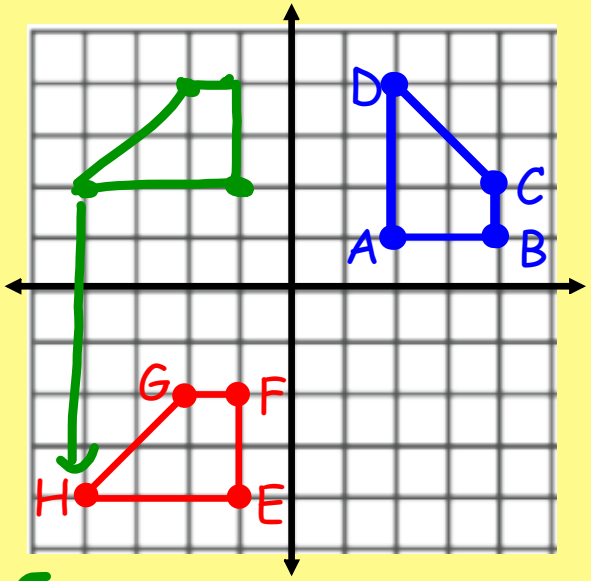
**Goal:** draw and identify compositions of transformations

Is $\Delta ABC$ congruent to $\Delta DEF$?




$R_{y\text{-axis}}(\Delta ABC)$

Is ABCD congruent to EFGH?




$r_{(90°,O)}$ then $T_{\langle 0,-6\rangle}(\Delta ABC)$

# Congruence Transformation:

Two figures are congruent if and only if there is a sequence of one or more rigid motions that maps one figure onto the other.

↳ translate
reflect
rotate

**Composition:** A combination of two or more transformations

$$T_{\langle 0,-6\rangle}(r_{(90,\,O)}(ABCD))$$

or

$$(T_{\langle 0,-6\rangle} \circ r_{(90,\,O)})(ABCD)$$

2nd 1st

Read the transformations from right to left

The translation is done TO the rotated figure, so the rotation must happen first.

# Writing Compositions

- the transformation closest to the name of the figure gets done first

EXAMPLE #1 :

$(R_{\text{x-axis}} \circ T_{\langle 2,-3\rangle})(\Delta ABC)$ (2nd, 1st)

means Translate 2 right and 3 down, then reflect over x-axis

$(T_{\langle -1,4\rangle} \circ r_{(90°,0)})(\Delta ABC)$ (2nd, 1st)

means rotate 90° CCW then translate 1 left and 4 up

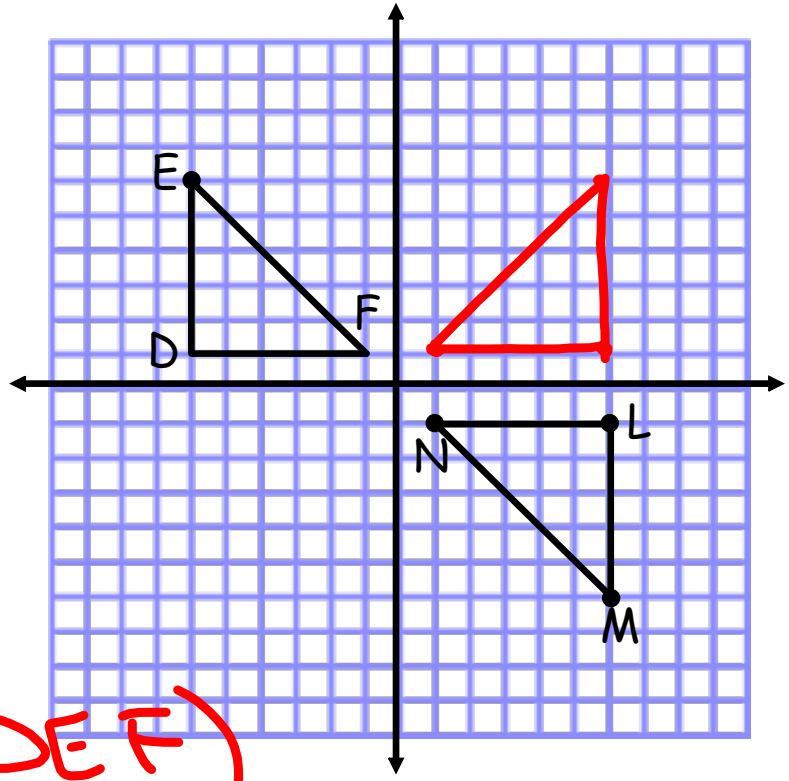
# Write a Congruence Transformation

What congruence transformation maps ΔDEF onto ΔLMN?

$r_{(180,0)}(\Delta DEF)$

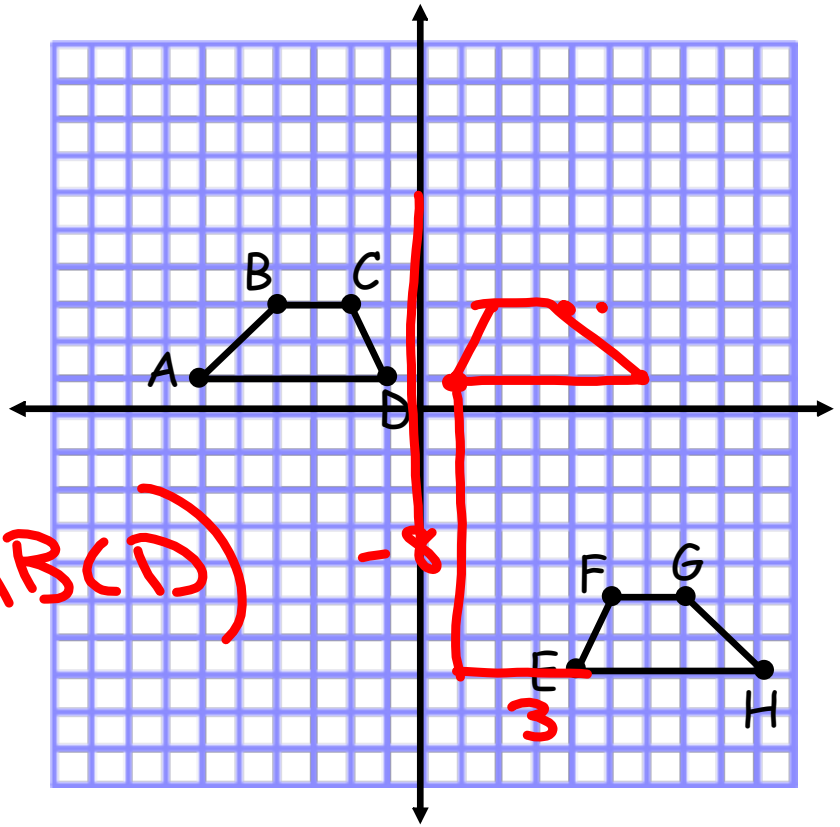
Could there be more than one correct answer?

$(R_{x\text{-axis}} \circ R_{y\text{-axis}})(\Delta DEF)$



**Do this one in your notes.**

What congruence transformation maps ABCD onto EFGH?




$(T_{\langle 3,-8\rangle} \circ R_{y\text{-axis}})(ABCD)$

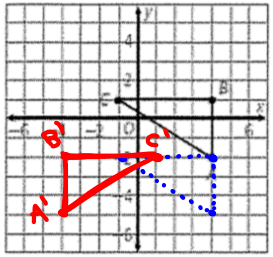
## Assignment:

Concept 21 Worksheet (#31-40)

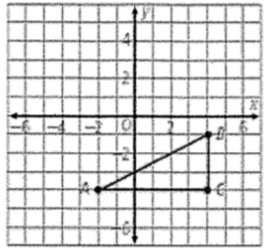
CONGRUENCE TRANSFORMATIONS

**Graph each composition of transformations.**

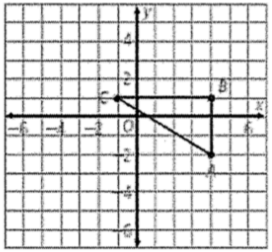
**31.** $(R_{y\text{-axis}} \circ T_{\langle 0,-3\rangle})(\Delta ABC)$



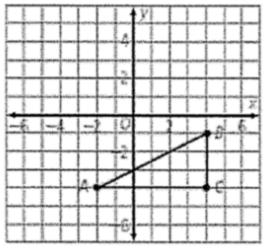

**32.** $(R_{y=-1} \circ T_{\langle 1,-1\rangle})(\Delta ABC)$



**33.** $(T_{\langle 2,-1\rangle} \circ r_{(90°,\,0)})(\Delta ABC)$

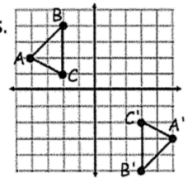


**34.** $(R_{x=1} \circ R_{x\text{-axis}})(\Delta ABC)$

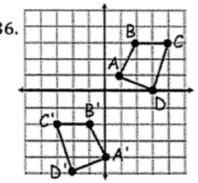


**Write a composition of transformations in function notation that maps each preimage onto its image.**

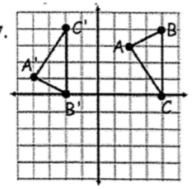
**35.**



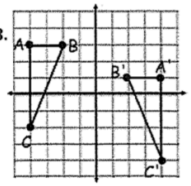
**36.**



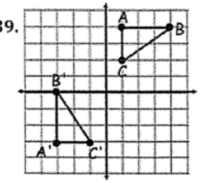
**37.**



**38.**



**39.**



**40.**