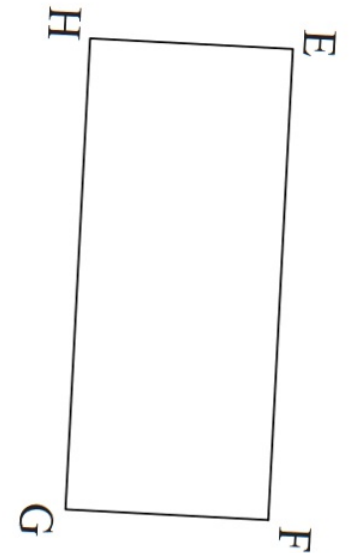
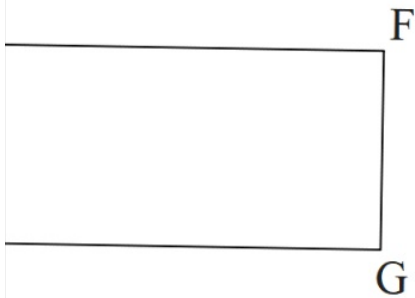
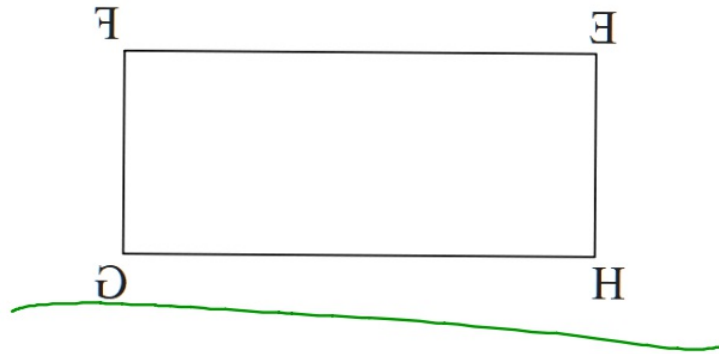
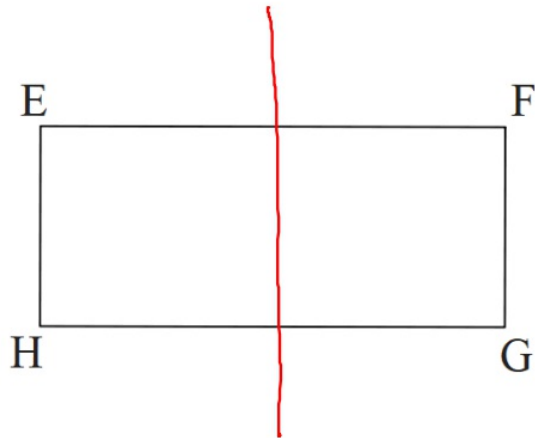


Test Prep Question

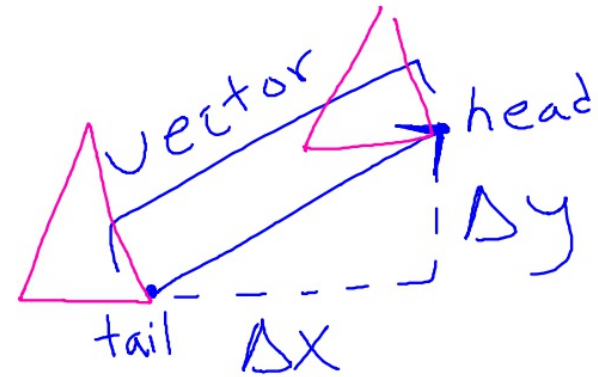
Rectangle EFGH is reflected across a vertical line, then a horizontal line, then rotated 90° CCW. Which side of the rectangle is on top after the sequence of transformations?



Translations and Vectors

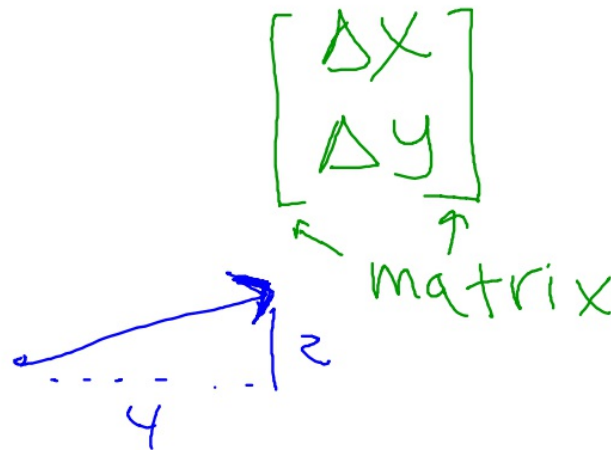
What is a vector?

an object with magnitude and direction
usually a directed line segment (arrow)



Notation:

$\langle \Delta x, \Delta y \rangle$
ex: $\langle 4, 2 \rangle$



Translate the triangle by vector $\langle -3, 1 \rangle$

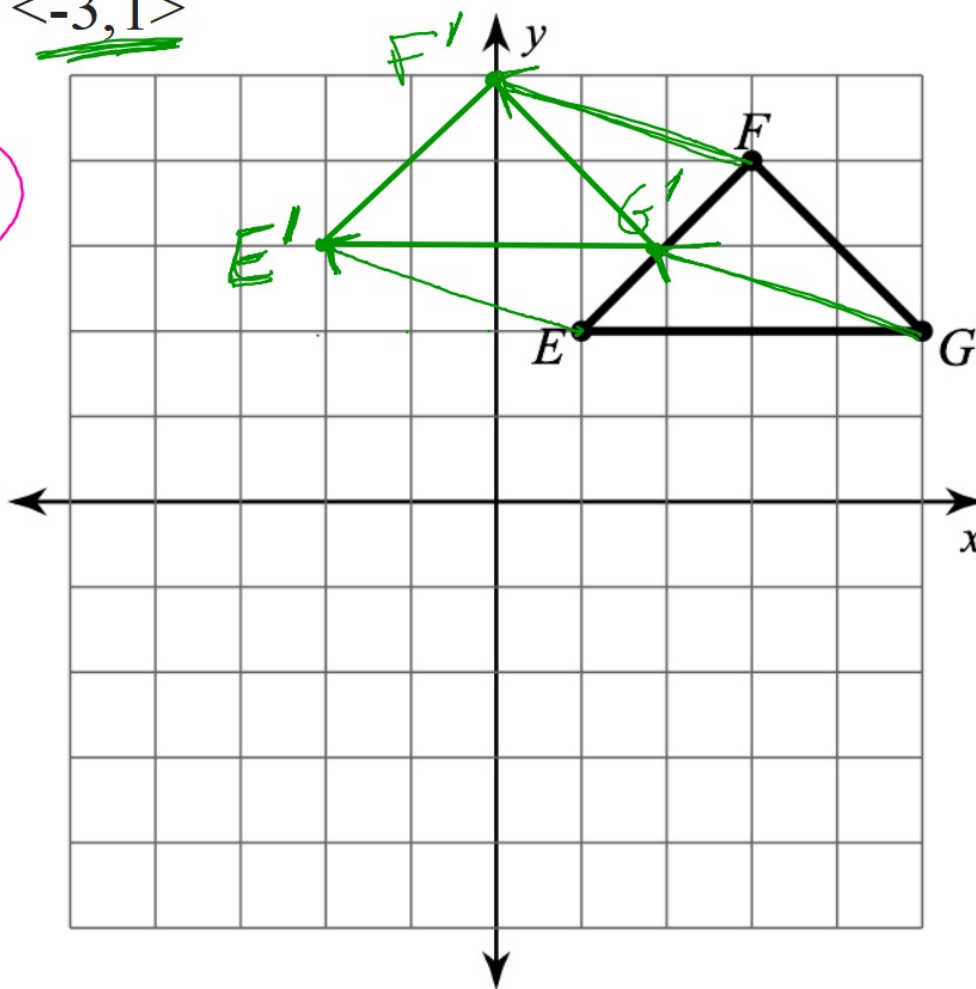
the same as
 $(x, y) \rightarrow (x - 3, y + 1)$

Observations

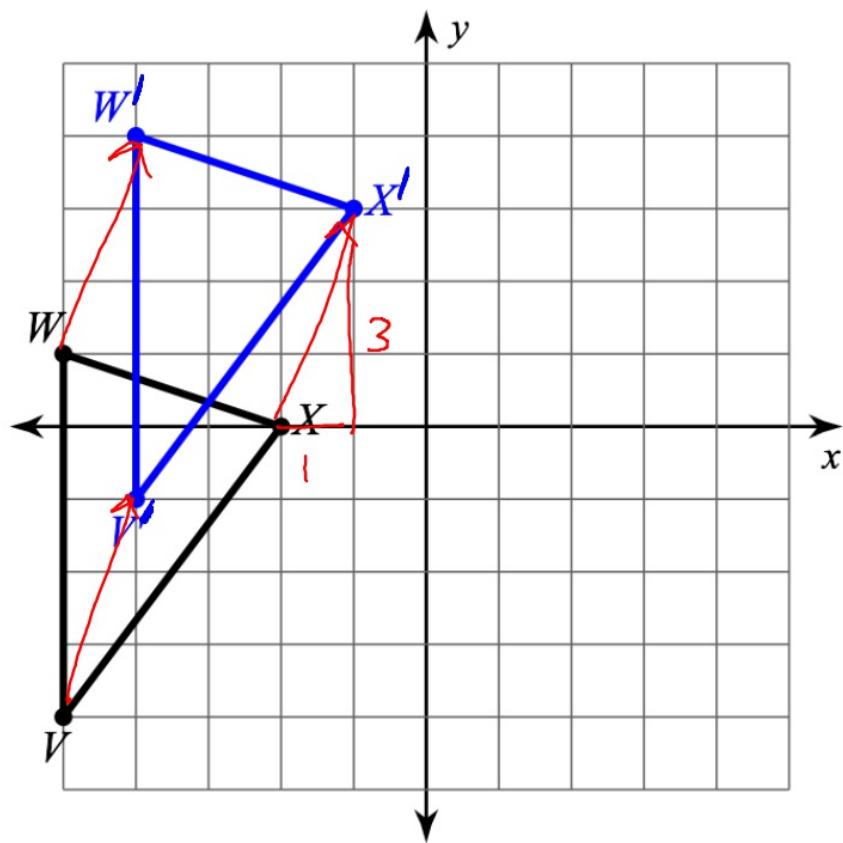
- all 3 vectors are the same length.
- all 3 vectors are parallel.

parallel segments

every pt moves the same amount



Write the vector that describes the translation shown



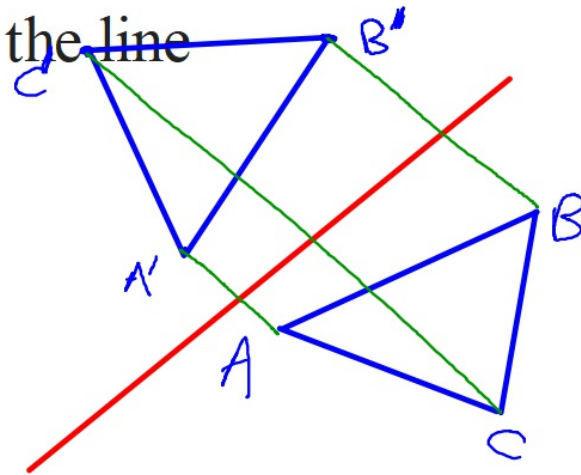
$$\langle 1, 3 \rangle$$

or

$$\begin{bmatrix} 1 \\ 3 \end{bmatrix}$$

Reflections

Every point travels across the line of reflection the same distance as it is from the line



Reflections

A reflection is a flip across a line of reflection that takes a pre-image input and creates an image output so that the segments connecting corresponding points are perpendicularly bisected by the reflection line.

Reflection across x-axis

$$(x, y) \rightarrow (x, -y)$$

Pre-image

Image

$(-3, 4)$

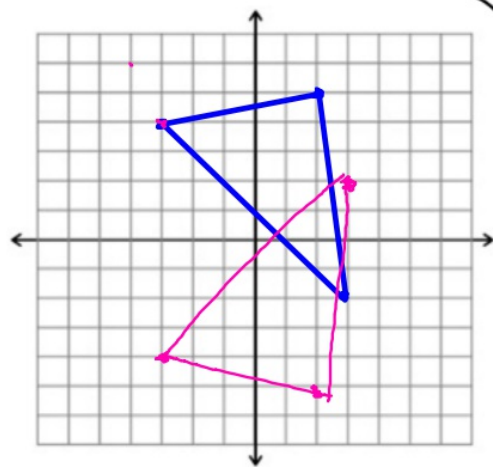
$(-3, -4)$

$(3, -2)$

$(3, 2)$

$(2, 5)$

$(2, -5)$



Reflection across y-axis

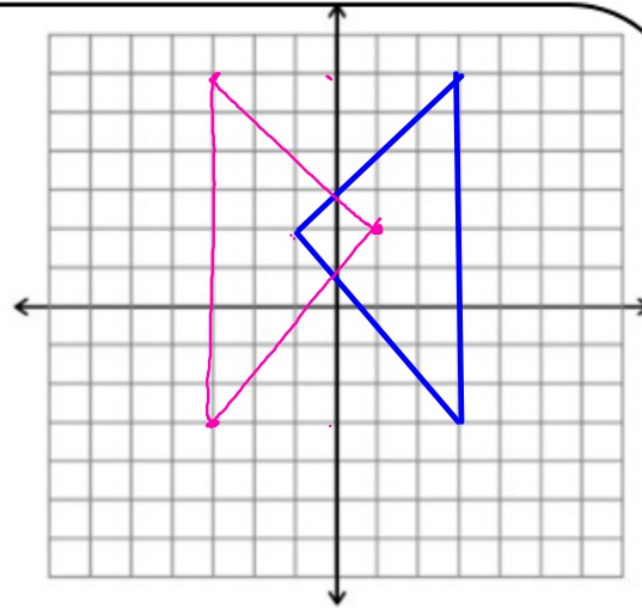
$$(x, y) \rightarrow (-x, y)$$

<u>Pre-image</u>	<u>Image</u>
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$(-1, 2)$	$(1, 2)$
-----------	----------

$(3, 6)$	$(-3, 6)$
----------	-----------

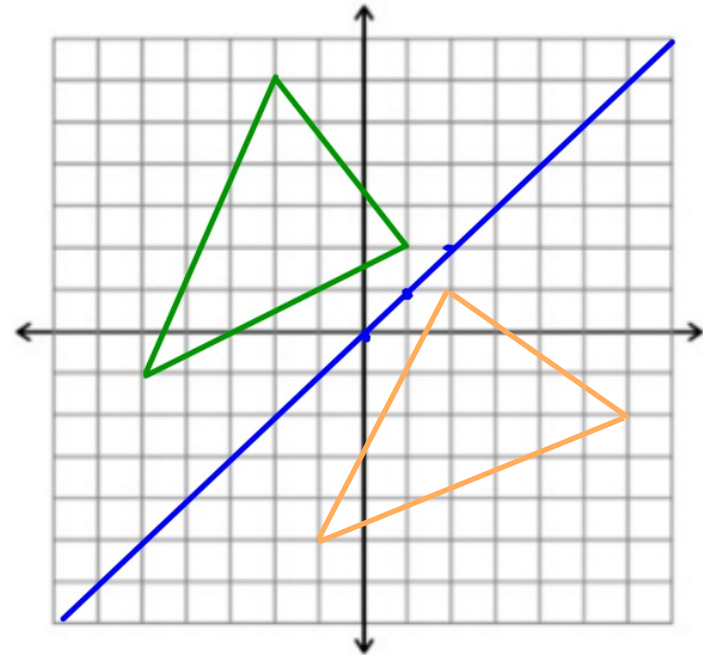
$(3, -3)$	$(-3, -3)$
-----------	------------



Reflection across $y = mx + b$
 $y = x + 0$
 $(x, y) \rightarrow (y, x)$ "y is x"

Pre-image Image

$(1, 2)$	$(2, 1)$
$(-2, 6)$	$(6, -2)$
$(-5, -1)$	$(-1, -5)$



Reflection across $y = -x + 0$
 $(x, y) \rightarrow (-y, -x)$

$$y = mx + b$$

"y is neg. x"

Pre-image

Image

$$\begin{aligned} y &= -x \\ -y &= x \end{aligned}$$

$(2, -1)$

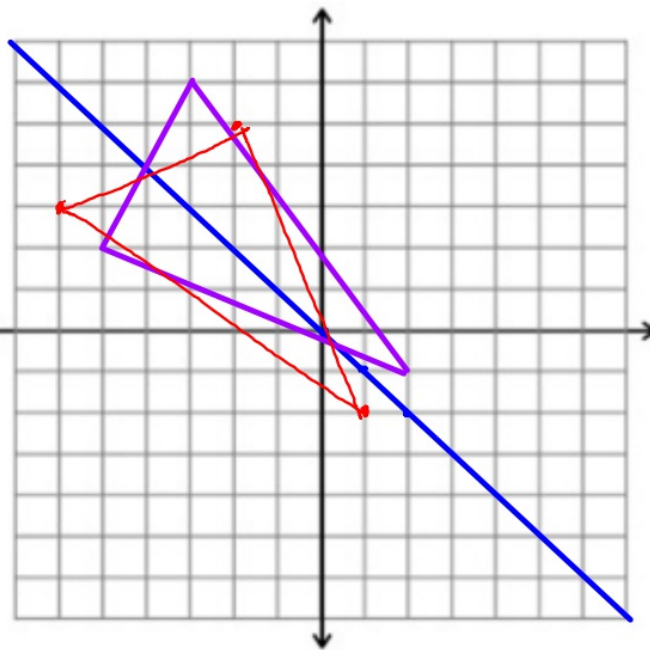
$(1, -2)$

$(-3, 6)$

$(-6, 3)$

$(-5, 2)$

$(-2, 5)$



Hw: skip 1, 6, 10, 11
