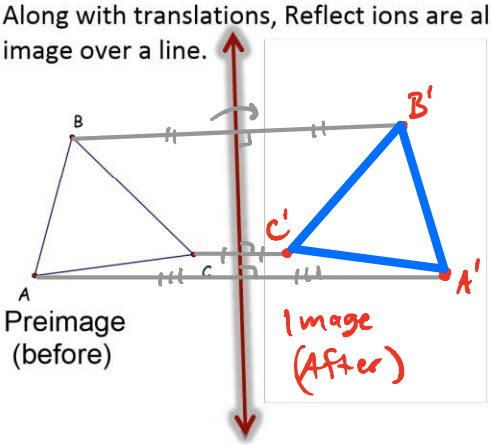
Transformations – Reflections

G.CO.A.5 Notes Section 20.2 Name_____

Write your questions here!

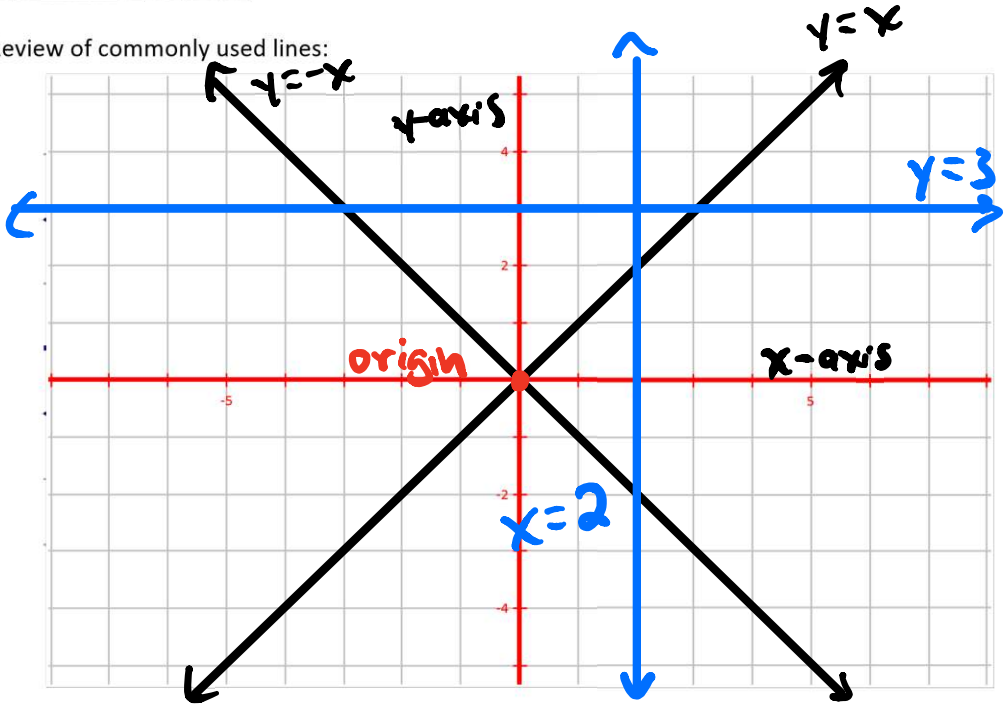
Along with translations, Reflect ions are also an __(Symetry__. Reflections "flip" an image over a line.



We say $\Delta ABC \rightarrow \Delta A'B'C'$
or ΔABC is mapped to $\Delta A'B'C'$

A reflection involves a __FLIP__ of an image, usually over the x or y-axis. It may also be flipped over other lines, such as y = x or x = 2, etc. The best way to graph the image of a reflection is to simply graph the pre-image, measure the distance to the line, and find the image __the same distance__ on the other side of the line.

Review of commonly used lines:



Use these examples as a reference when reflecting images.

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Example 1:

Graph and reflect the preimage ΔA(5, 0), B(3,-1) and C(4, -3) in the *x-axis*.

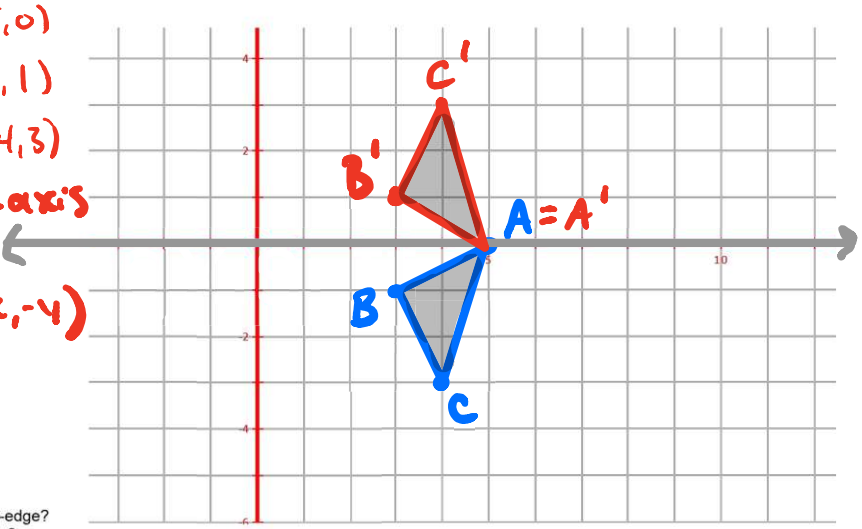
$(5,0) \rightarrow (5,0)$

$(3,-1) \rightarrow (3,1)$

$(4,-3) \rightarrow (4,3)$

x-axis

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



Did you?:

- ✓ Use a straight-edge?
- ✓ Label all points?

Example 2:

Graph and reflect the preimage of Δ*RAC*, R(-5, 1), A(-4, -3), C(1, 1)

Graph and reflect

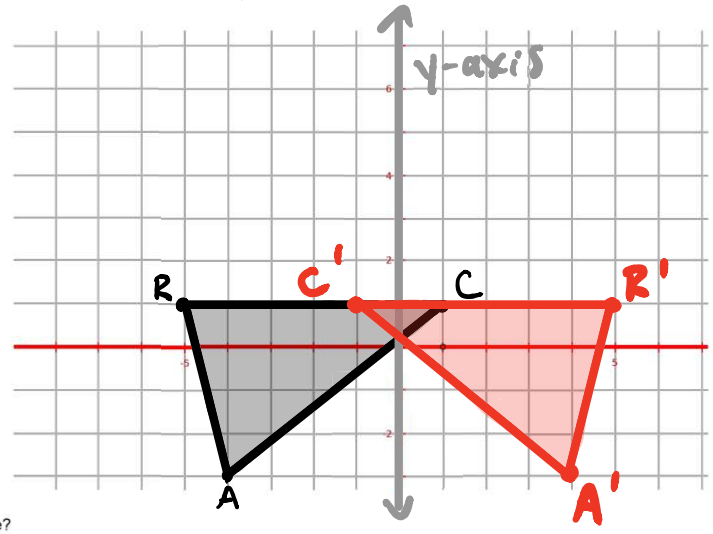
R(-5,1), A(-4,-3), C(1,1) over y-axis.

$(-5,1) \rightarrow (5,1)$

$(-4,-3) \rightarrow (4,-3)$

$(1,1) \rightarrow (-1,1)$

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



Did you?:

- ✓ Use a straight-edge?
- ✓ Label all points?

Type of reflection	Abbreviation	Rule
Reflection in the x-axis	$r_{x\text{-axis}}$	(x, y) → (x,-y)
Reflection in the y-axis	$r_{y\text{-axis}}$	(x, y) → (-x,y)
Reflection in the y = x	$r_{y=x}$	(x, y) → (y,x)
Reflection in the y = -x	$r_{y=-x}$	(x, y) → (-y,-x)

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Example 3:

Parallelogram A(-2, 4), B(-3, 2), C(1, 3), D(2, 5) is reflected over the line $y = -x$. Graph the preimage and the image and label the coordinates.

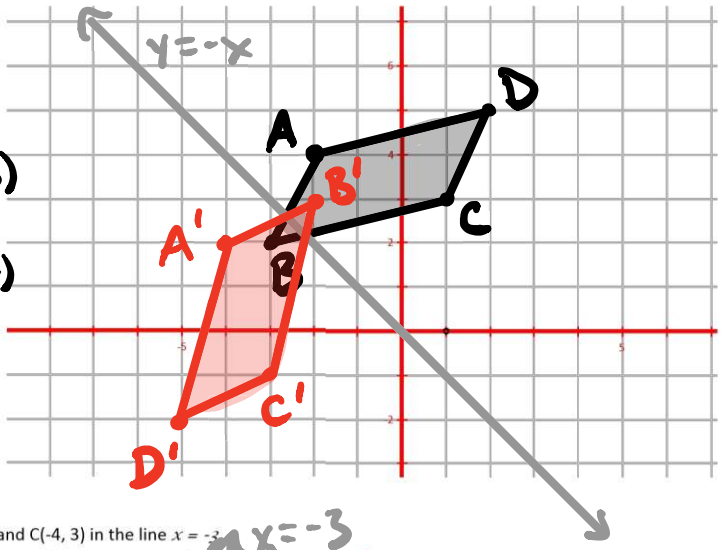
$(x, y) \rightarrow (-y, -x)$

$A(-2, 4) \rightarrow A'(-4, 2)$

$B(-3, 2) \rightarrow B'(-2, 3)$

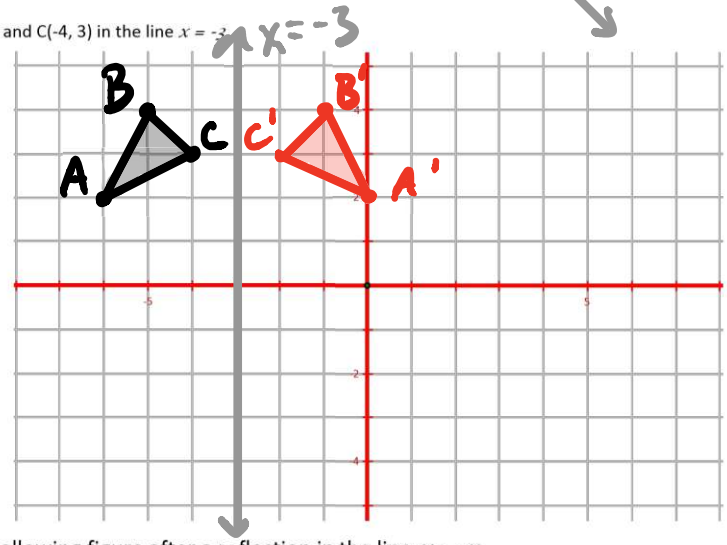
$C(1, 3) \rightarrow C'(-3, -1)$

$D(2, 5) \rightarrow D'(-5, -2)$



Example 4:

Reflect the triangle A(-6, 2), B(-5, 4) and C(-4, 3) in the line $x = -3$.



Example 5:

Find the coordinates of the following figure after a reflection in the line $y = x$.

F(5, -2), R(10, 0) E(-5, 12), D(0, -3)

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

$F'(-2, 5)$, $R'(0, 10)$, $E(12, -5)$, $D(-3, 0)$

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Algebra Review

Solve each equation for x!

1. $12 - x > 15$

$-x > 3$

$x < -3$

2. $12x - 1 - x = -4 + 2x + 12$

$11x - 1 = 2x + 8$

$9x - 1 = 8$

$9x = 9$

$x = 1$

Factor!

3. $2x^2 - 3x - 2$

$= \frac{(2x-4)(2x+1)}{2}$

$= (x-2)(2x+1)$

Factor!

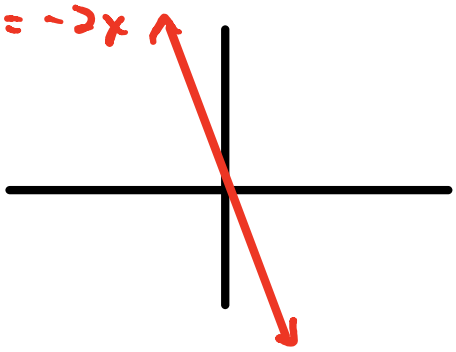
4. $(x^2 - 36)$

$= (x-6)(x+6)$

5. Graph the equation:

$y + 2 = 2 - 2x$

$y = -2x$



6. Graph the equation:

$-x - 2y = 8$

$-2y = x + 8$

$y = -\frac{1}{2}x - 4$