

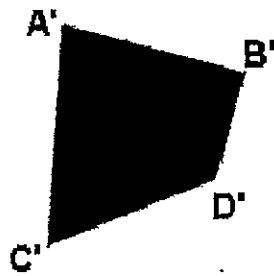
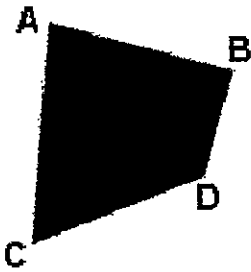
A **reflection** can be seen in water, in a mirror, in glass, or in a shiny surface. An object and its reflection have the **same shape and size**, but the **figures face in opposite directions**. In a mirror, for example, right and left are switched.

☆FLJPA

Do the diagrams below illustrate line reflections?

1.		<p>Is this a reflection?</p> <input checked="" type="checkbox"/> yes <input type="checkbox"/> no
2.		<p>Is this a reflection?</p> <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <p>Dilation.</p>
3.		<p>Is this a reflection?</p> <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <p>Dilation</p>
4.		<p>Is this a reflection?</p> <input checked="" type="checkbox"/> yes <input type="checkbox"/> no

5.



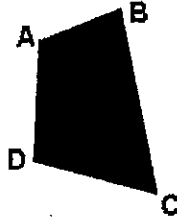
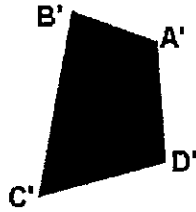
Is this a reflection?

yes

no

translation

6.



Is this a reflection?

yes

no

7.



Is this a reflection?

yes

no

Dilation.

A. Reflect over the x-axis.

1. a) Graph triangle ABC.
 A(-2, 1) B(0, 4) C(-5, 4)
- b) Reflect triangle ABC over the x-axis.

- c) Write the coordinates of the reflection of triangle ABC.

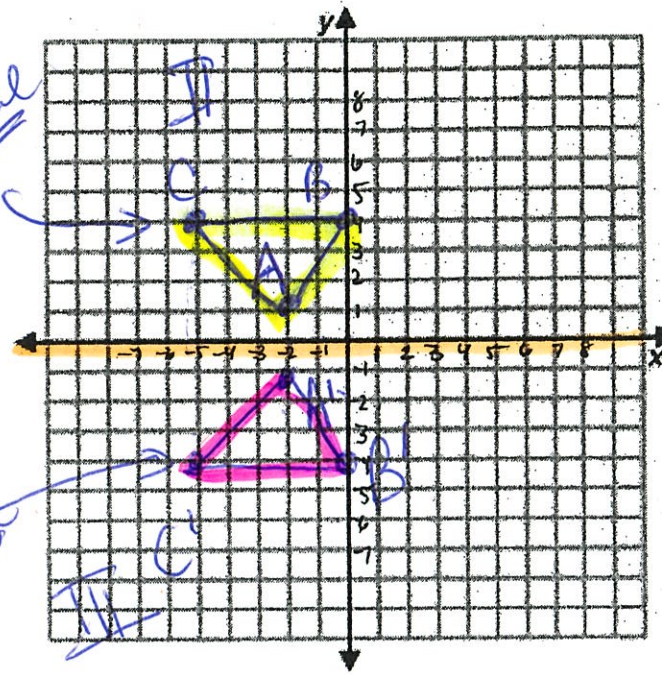
A' (-2, -1) B' (0, -4)
 C' (-5, -4)

- d) How did the coordinates change?

The sign of the y-coordinates are opposite

(x, y)
 ↓
 -y
 ↑
 -y

original

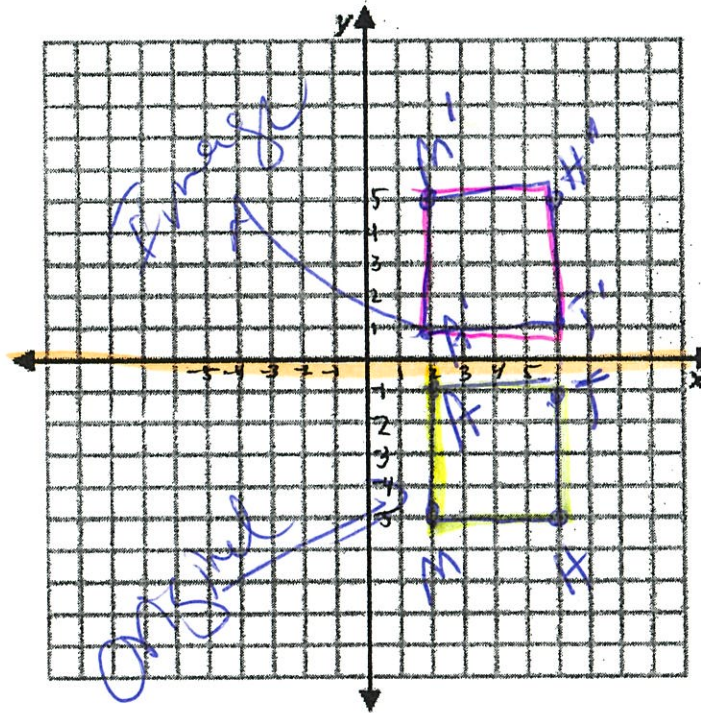


2. a) Graph rectangle MATH.
- M(2, -5) A(2, -1)
 T(6, -1) H(6, -5)
- b) Reflect rectangle MATH over the x-axis.
- c) Write the coordinates of the reflection of rectangle MATH.

M' (2, 5) A' (2, 1)
 T' (6, 5) H' (6, 1)

- d) How did the coordinates change?

The sign of the y-coordinates are opposite



When a point is reflected over the x-axis, negate the y value.

$$r_{x\text{-axis}} (x, y) \rightarrow (x, -y)$$

3. Write the reflection of each point in the x-axis.

a) (-2, 6) b) (9, 10) c) (-3, -4)

(-2, -6) (9, -10) (-3, 4)

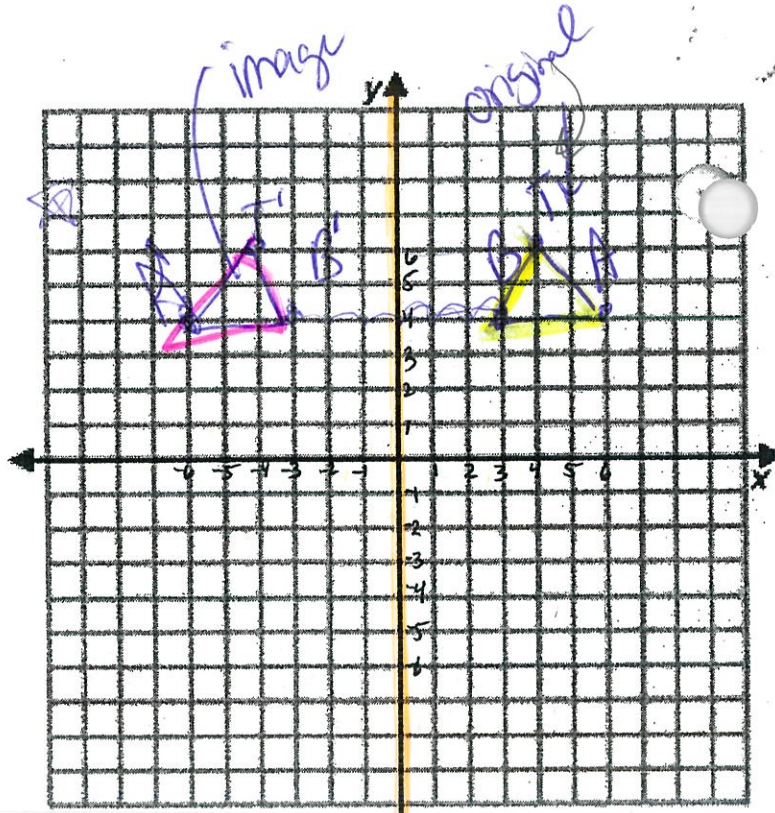
(change the sign of the y)

B. Reflect over the y-axis.

4. a) Graph triangle BAT.
 $B(3, 4)$ $A(6, 4)$ $T(4, 6)$
 $\rightarrow \uparrow$ $\rightarrow \uparrow$ $\rightarrow \uparrow$
- b) Reflect triangle BAT over the y-axis.
- c) Write the coordinates of the reflection of triangle BAT.

$B'(-3, 4)$ $A'(-6, 4)$
 $T'(-4, 6)$

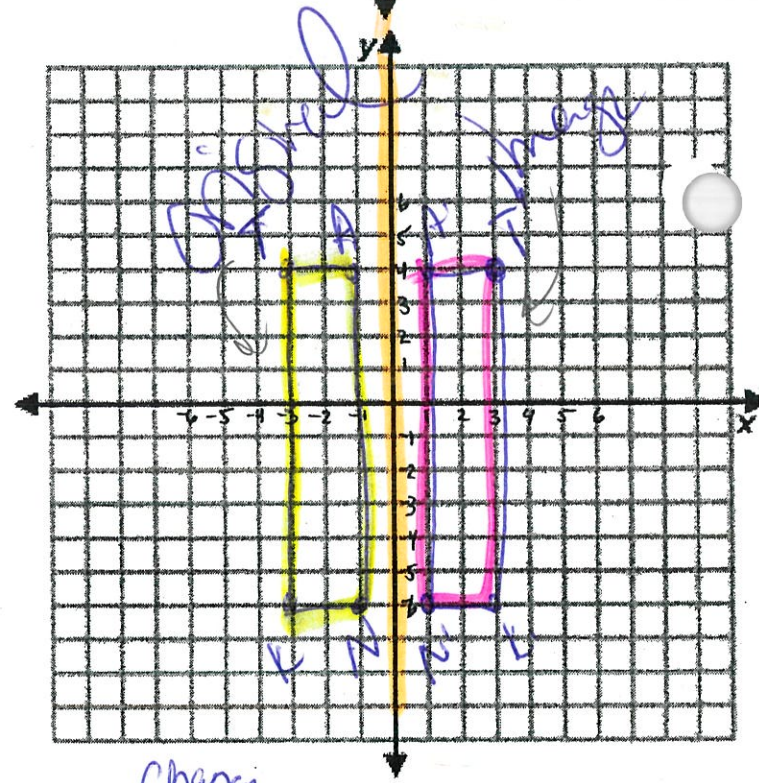
d) How did the coordinates change?
The sign of the x-coordinates are opposite



5. a) Graph rectangle TANK.
 $T(-3, 4)$ $A(-1, 4)$
 $N(-1, -6)$ $K(-3, -6)$
- b) Reflect rectangle TANK over the y-axis.
- c) Write the coordinates of the reflection of rectangle TANK.

$T'(3, 4)$ $A'(1, 4)$
 $N'(1, -6)$ $K'(3, -6)$

d) How did the coordinates change?
The sign of the x-coordinates are opposite



When a point is reflected over the y-axis, negate the x value.
 $R_{y\text{-axis}} (X, Y) \rightarrow (-X, Y)$

6. Write the reflection of each point in the y-axis. *(change the sign of the x)*
- a) $(-2, 6)$ $(2, 6)$
 b) $(9, 10)$ $(-9, 10)$
 c) $(-3, -4)$ $(3, -4)$

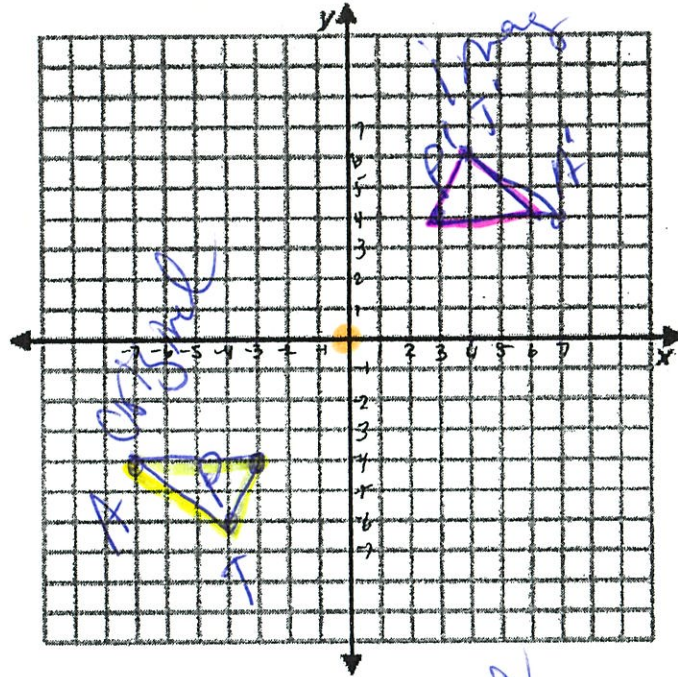
C. Reflect over the origin.

→ Reflect over Both x & y

When a point is reflected over the origin, negate both x and y.
 $r_{\text{origin}} (X, Y) \rightarrow (-X, -Y)$ *Exchange the sign of both the x & y*

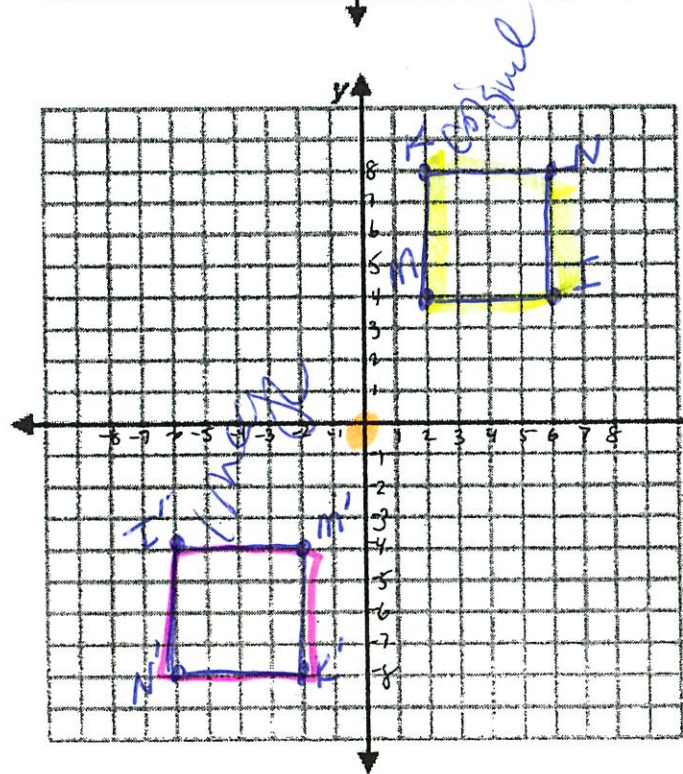
7. a) Graph triangle PAT.
 P(-3, -4) A(-7, -4) T(-4, -6)
 ← ↓ ← ↓ ← ↓
- b) Reflect triangle PAT over the origin.
- c) Write the coordinates of the reflection of triangle PAT.

P' (3, 4) A' (7, 4) T' (4, 6)



8. a) Graph rectangle MINK.
 M(2, 4) I(6, 4)
 N(6, 8) K(2, 8)
 → ↑ → ↑
- b) Reflect rectangle MINK over the origin.
- c) Write the coordinates of the reflection of rectangle MINK.

M' (-2, -4) I' (-6, -4)
 N' (-6, -8) K' (-2, -8)



9. Write the reflection of each point in the origin. *Change the sign of both x & y*
- a) (-10, 6) b) (8, 1) c) (-3, -4)

(10, -6) (-8, -1) (3, 4)

Name: _____
Mrs. Roumbos

Date: _____
8R Period _____

Mixed Examples

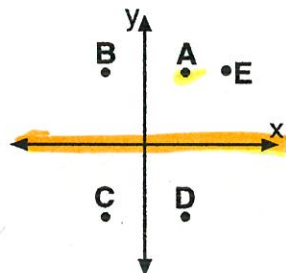
- 1) What are the coordinates of A' , the image of $A(2,3)$ after a reflection in the x -axis?

$$A'(2, -3) \quad \text{change } y\text{-sign}$$

- 2) What are the coordinates of A' , the image of point $A(-5,1)$ after a reflection in the y -axis?

$$A'(5, 1) \quad \text{change } x\text{-sign}$$

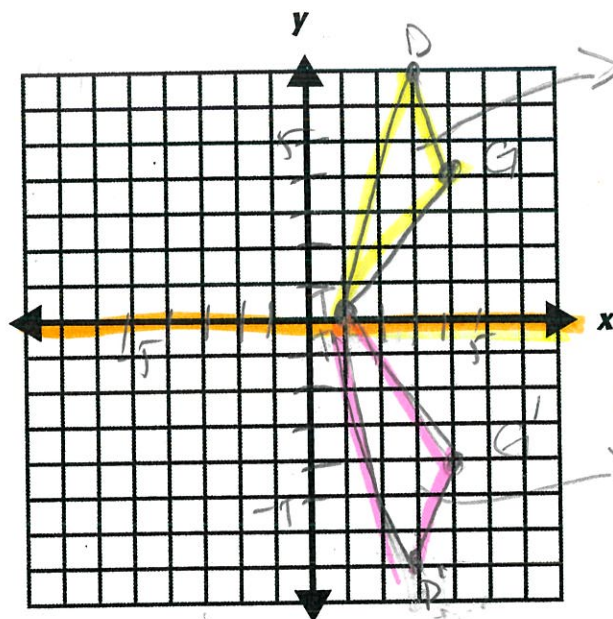
- 3) In the accompanying diagram, what point may be the image of point A after a line reflection in the x -axis?



- A) E
B) D

- C) C
D) B

- 4) Triangle DGT lies in a coordinate plane with vertices $D(3, 7)$, $G(4, 4)$, and $T(1, 0)$. Plot the vertices of the triangle obtained by reflecting DGT across the x -axis.



$$\underline{D'(3, -7)} \quad \underline{G'(4, -4)} \quad \underline{T'(1, 0)}$$