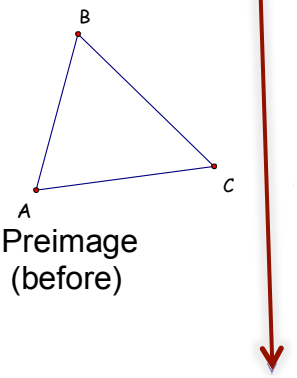
Name_____

Write your questions here!

Reflections

Look! A Reflection!

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

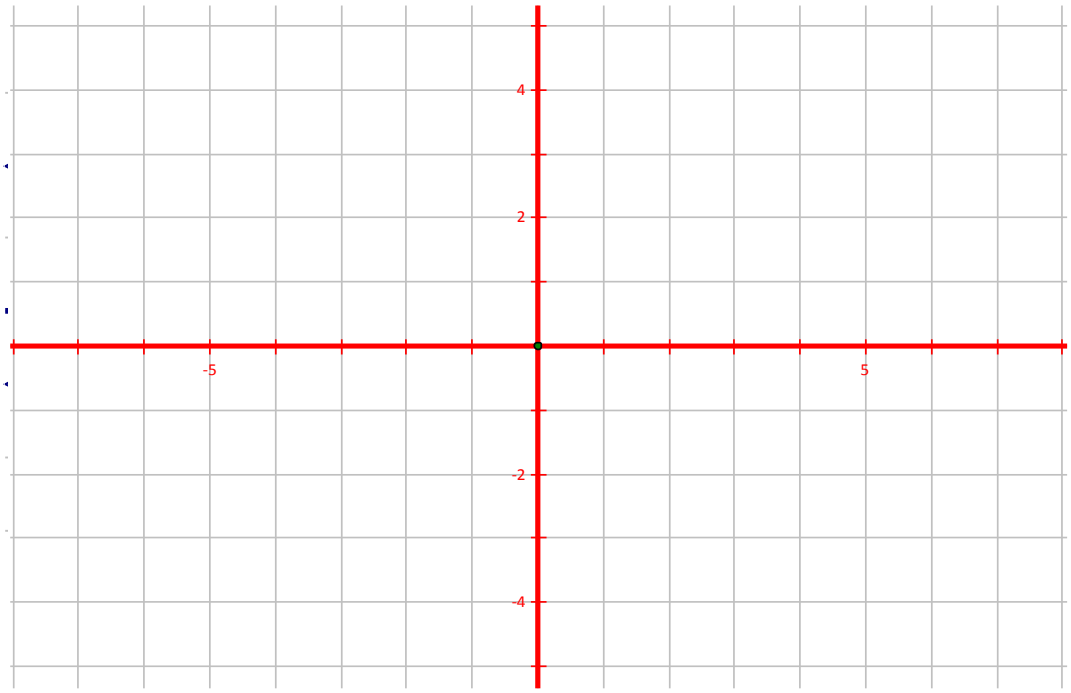


Preimage
(before)

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

A reflection involves a _____ 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 _____ on the other side of the line.

Review of commonly used lines:



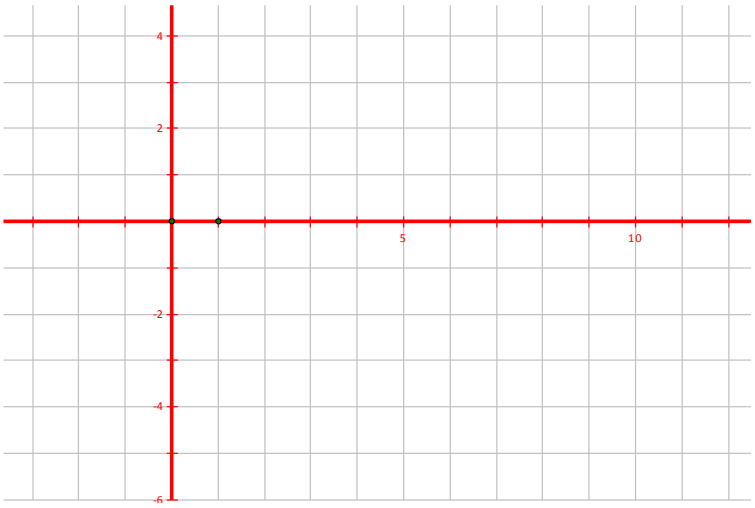
Use these examples as a reference when reflecting images.

PACKET 8.2: REFLECTIONS

Write your questions here!

Example 1:

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

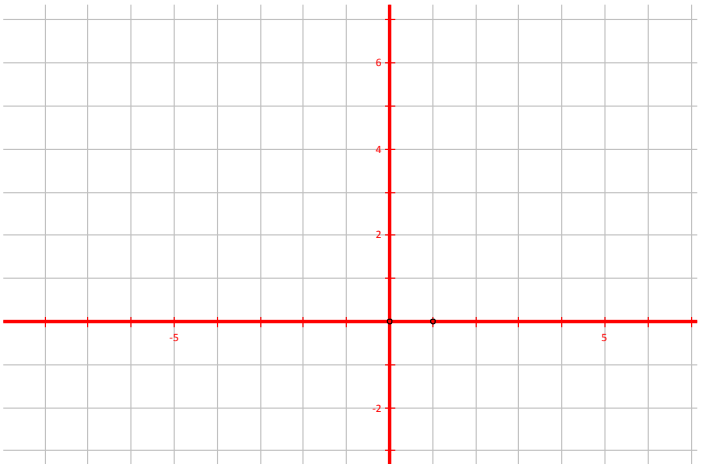


Did you?:

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

Example 2:

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



Did you?:

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

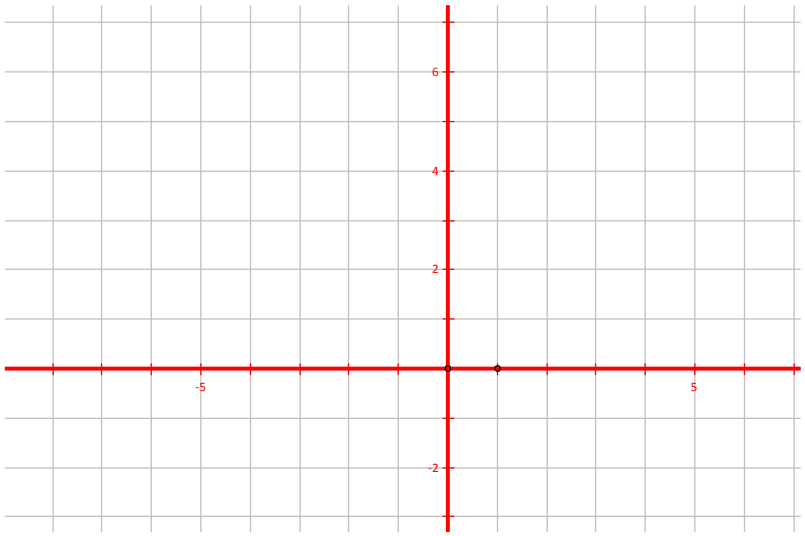
Common Rules of Reflections

Type of reflection	Abbreviation	Rule
Reflection in the x-axis		(x, y) →
Reflection in the y-axis		(x, y) →
Reflection in the y = x		(x, y) →
Reflection in the y = -x		(x, y) →

Write your questions here!

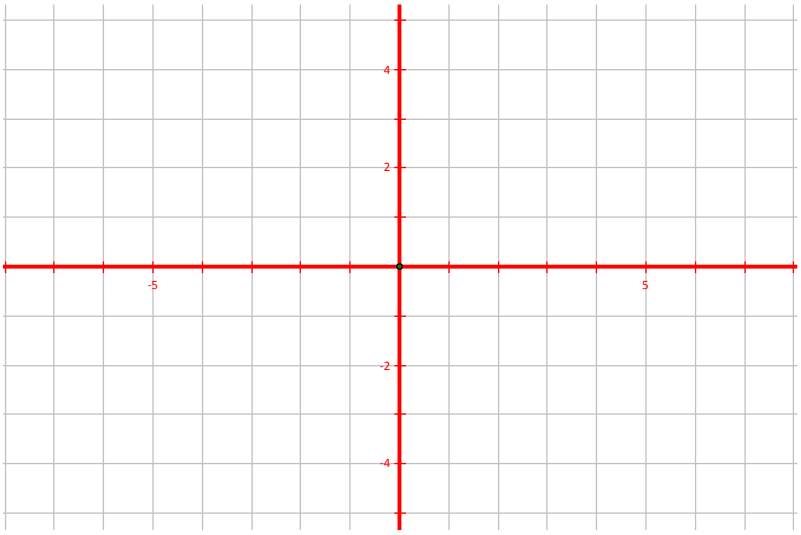
Example 3:

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.



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 $y = x$.

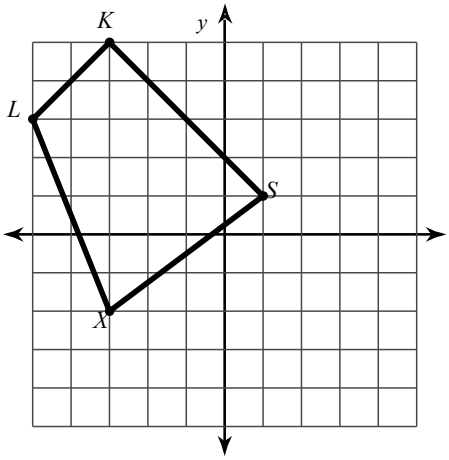
F(5, -2), R(10, 0) E(-5, 12), D(0, -3)

Now, summarize your notes here!

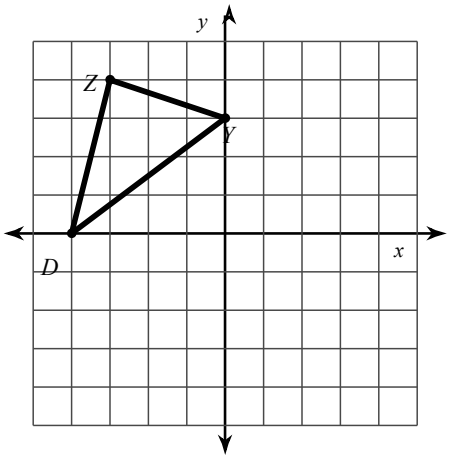
Practice 8.2

Graph and label the image of the figure using the transformation given.

1) reflection across $y = x$



2) reflection across the x-axis



Find the coordinates of the vertices of each figure after the given transformation.

3) reflection across $x = 4$
$F(3, -5)$, $C(3, -4)$, $P(5, -4)$

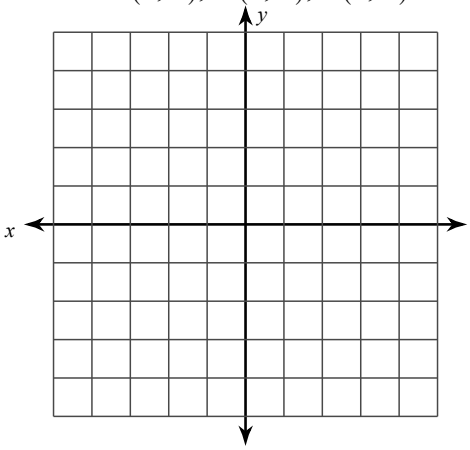
4) reflection across $y = -x$
$X(-4, -3)$, $M(-3, -2)$, $I(-1, -5)$

5) reflection across the y-axis
$N(-3, 1)$, $G(0, 4)$, $B(-1, 1)$

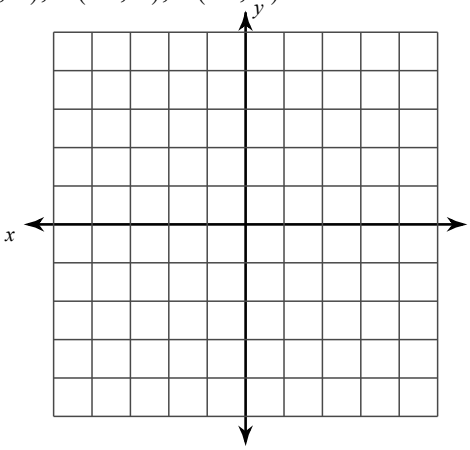
6) reflection across the x-axis
$W(-4, 4)$, $U(1, 5)$, $K(0, 0)$

Graph the image and the preimage of the figure using the transformation given.

7) reflection across x = -1
$Z(0, 2)$, $U(0, 5)$, $B(3, 2)$

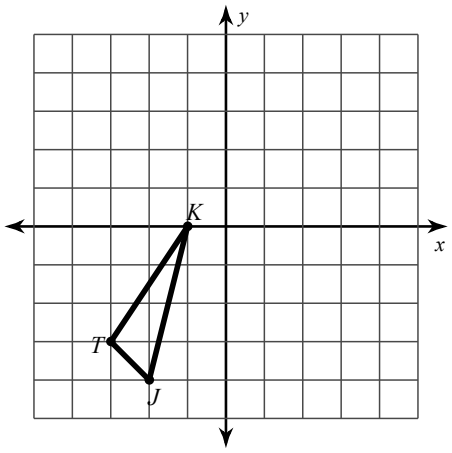


8) reflection across $y = x$
$C(-4, 2)$, $V(-2, 5)$, $T(-2, 1)$

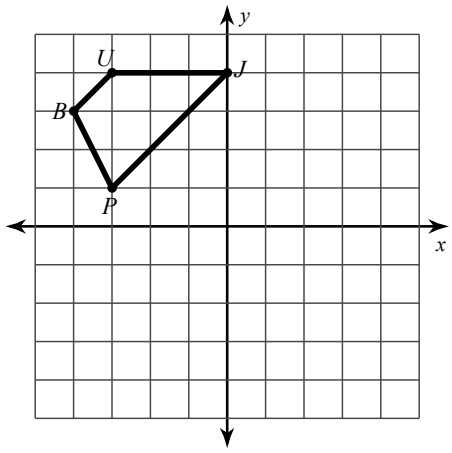


Graph the image and the preimage of the figure using the transformation given.

9) reflection across $y = -1$

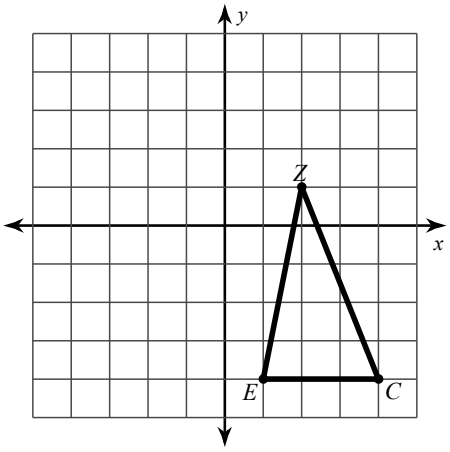


10) reflection across the y-axis

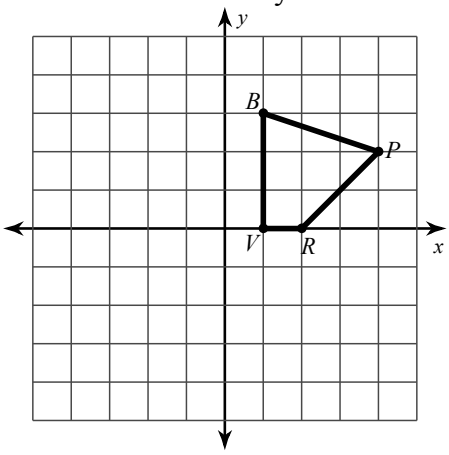


Find the coordinates of the vertices of each figure after the given transformation. Then graph the reflection.

11) reflection across $x = 1$



12) reflection across the y-axis



13) reflection across $x = -1$

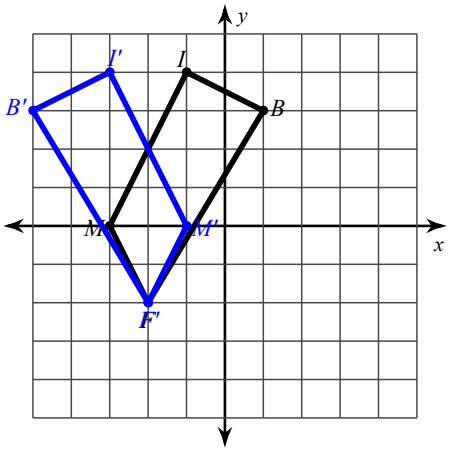
$N(-3, 2), J(-2, 5), B(0, 4), V(-2, 1)$

14) reflection across $y = -1$

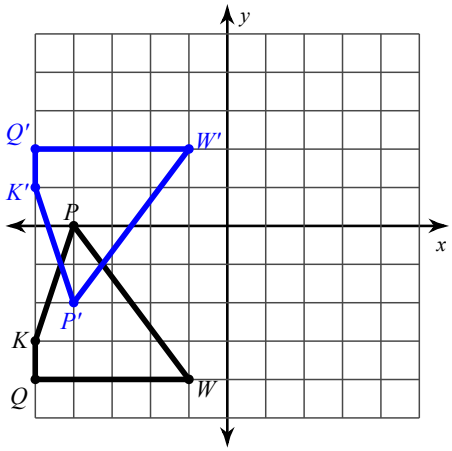
$L(1, -2), V(2, 2), F(5, -1), D(4, -5)$

Tell the type of reflection that describes each transformation.

15)



16)



17) $Y(-4, 0), Q(-3, 2), L(2, 0), A(-2, -3)$

to

$Q'(2, -3), L'(0, 2), A'(-3, -2), Y'(0, -4)$

18) $B(3, -1), V(2, 2), Y(5, 5), J(5, 2)$

to

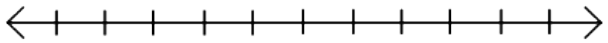
$V'(2, 2), Y'(5, 5), J'(2, 5), B'(-1, 3)$

PACKET 8.2: REFLECTIONS

Algebra Review

Solve each equation for x!

1. $12 - x > 15$



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

Factor!

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

Factor!

4. $(x^2 - 36)$

5. Graph the equation:

$y + 2 = 2 - 2x$

6. Graph the equation:

$-x - 2y = 8$

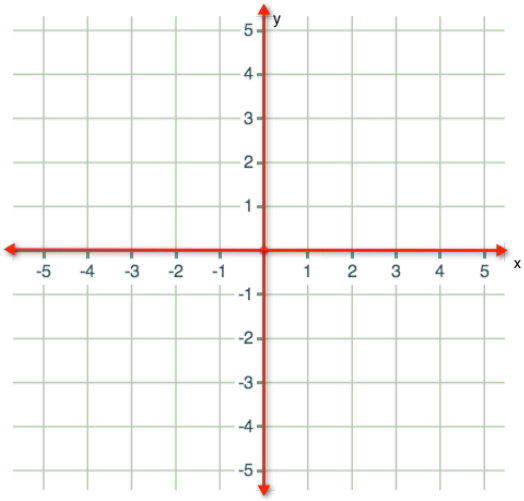
8.2 Application and Extension

1. Find the coordinates of the vertices of the figure after a reflection across **y = x** D(-3, -1), I(-2, 3), G(1, 0)

2. Find the coordinates of the vertices of the figure after a reflection across **x = 2** **Q(-4, 2), A(-2, 5), G(-1, 3)**

Symmetry from Reflections

If a figure can be reflected onto itself, that figure is said to have ***symmetry***. We will explore this concept in the application problems below.

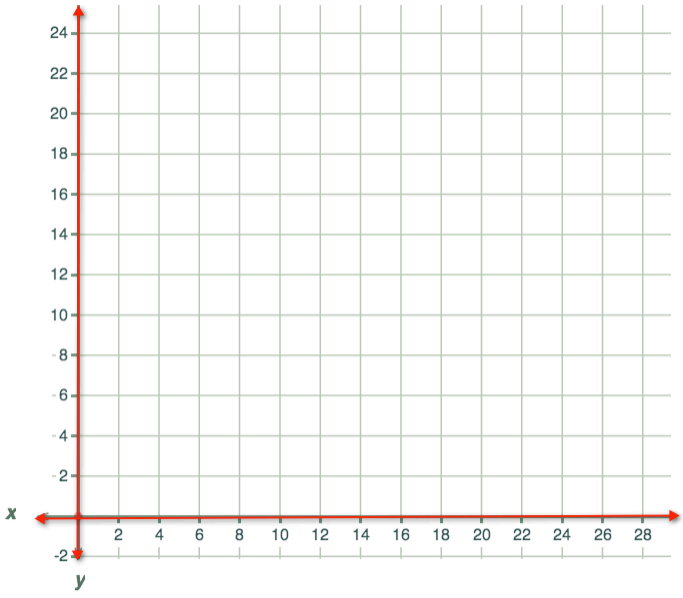


a. Graph and label the isosceles trapezoid T(-3,-1), R(1,3), A(4, 2), P(-2, -4) on the graph.

b. Reflect TRAP in the line $y = -x$. What do you notice?

c. Now reflect TRAP (your original image) in the line $y = x$. What do you notice?

d. Which line, $y = x$ or $y = -x$, is a ***line of symmetry*** for TRAP?



2. a. Graph the following points and connect, ***in order.***

Q (6, 10)
U (18, 10)
I (22, 4)
Z (16, 4)
M (8, 16)
A(12, 22)
S(16, 16)
T(12, 10)
E(8, 4)
R(2,4) (Then, back to the starting point, Q).

b. Can you find a horizontal line of symmetry?

c. Can you find a vertical line of symmetry?

(This is the logo, when colored red inside, used by Mitsubishi!)