

Objective: The students will complete assignment 17.2 Reflections and will demonstrate their understanding with an accuracy rate of 70% or higher on Quiz-17 tomorrow.*

Standards

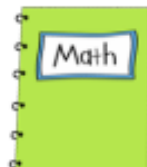
G-CO. Experiment with transformations in the plane.


Mathematics I

WHAT DO YOU NEED?

 A working *Chromebook*

 Math Notebook



 **17.2 Reflections - Class & Homework**

 **TURN IN LATE OR MISSING WORK**

**If accuracy of 70% or higher is not achieved, the student(s) will be required to retake it.*



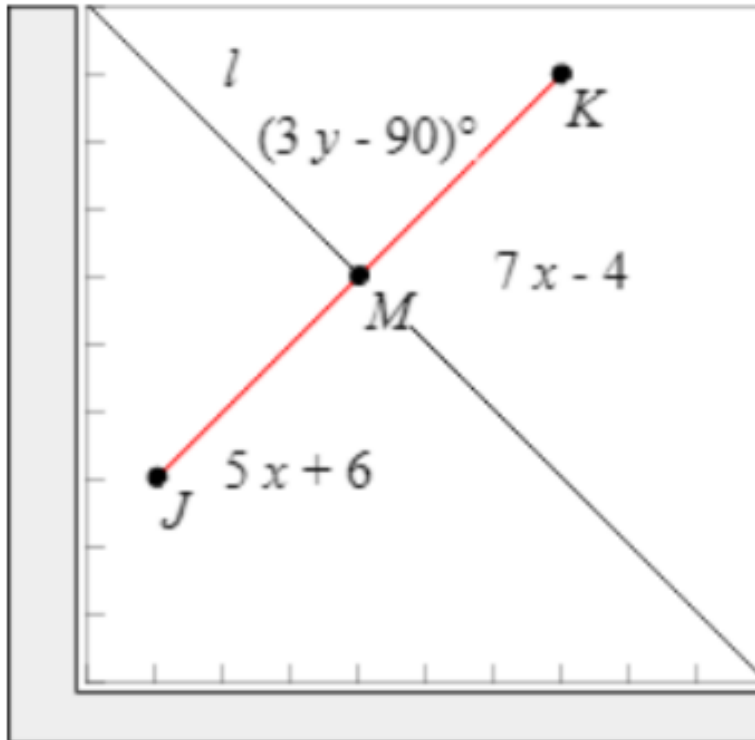
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17.2 Reflections - Class & Homework

17.2



In the figure, point K is the image of point J under a reflection across line l . Enter the value of y .

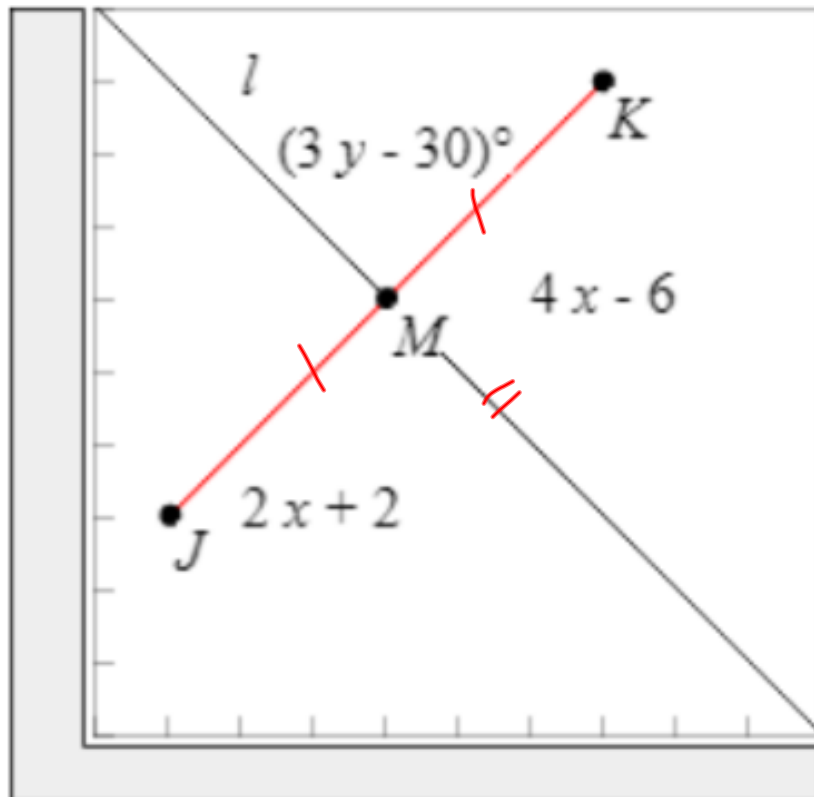


Since l is the line of reflection, it is perpendicular to JK , so each angle formed by the intersection of line l and JK measures 90° .

$$\begin{array}{r} 3y - 90 = 90 \\ + 90 \\ \hline 3y = 180 \\ y = 60 \end{array}$$

2

In the figure, point K is the image of point J under a reflection across line l . Enter the length of JM .



Since l is the line of reflection, it bisects JK , so $JM = KM$.

Solve for x .

$$\begin{array}{r}
 2x + 2 \\
 \underline{-2} \\
 2x \\
 \underline{-4x} \\
 -2x \\
 \underline{-2} \\
 -2x - 2
 \end{array}
 =
 \begin{array}{r}
 4x - 6 \\
 \underline{-2} \\
 4x - 8 \\
 \underline{-4x} \\
 -8
 \end{array}$$

$x = 4$

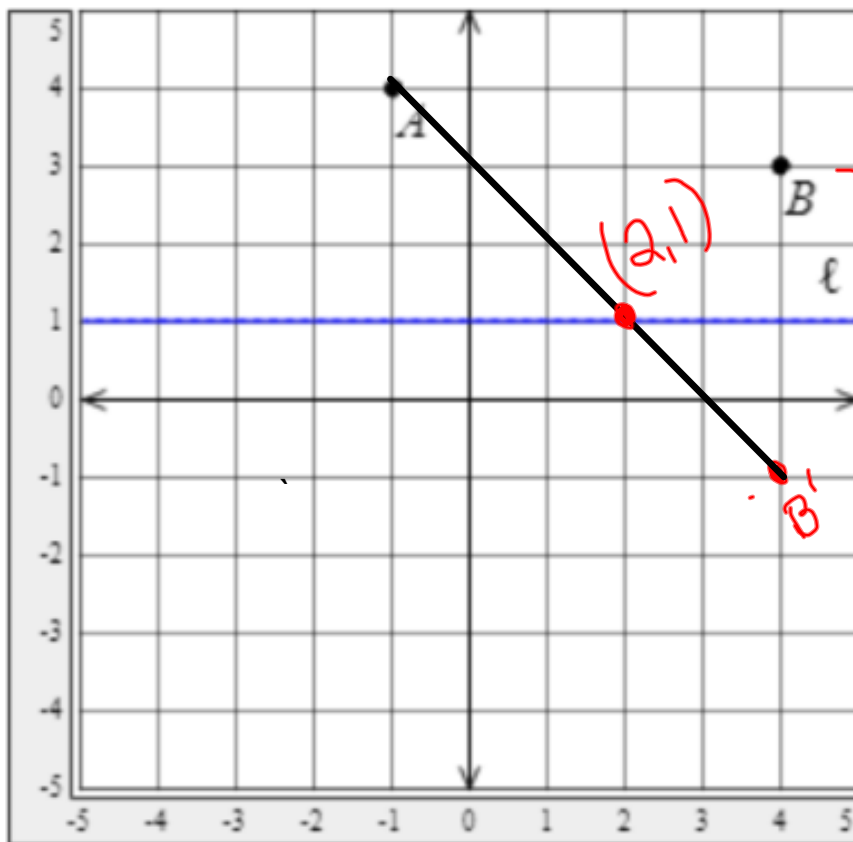
Substitute 4 into the equation of JM .

$$\begin{aligned}
 JM &= 2x + 2 \\
 &= 2(4) + 2 \\
 &= 10
 \end{aligned}$$

So, the length of JM is 10.

3

A trail designer is planning two trails that connect campsites A and B to a point on the river, line ℓ . She wants the total length of the trails to be as short as possible. At what point should the trails meet the river? Use a problem-solving model to design the trails and check your answer for reasonableness.

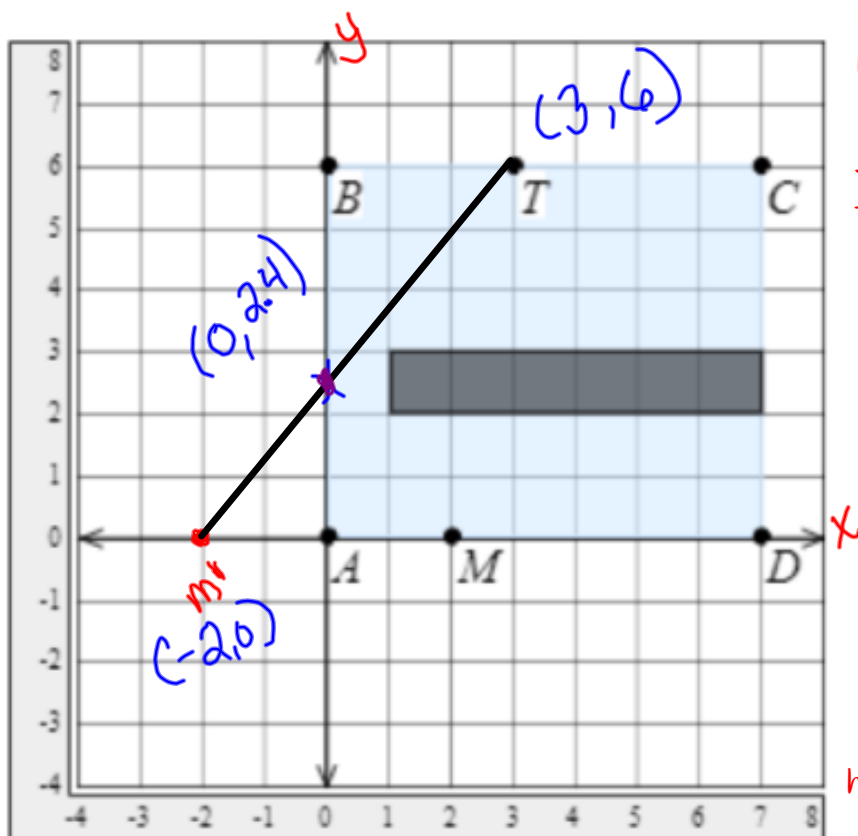


*Let B' be the reflection of point B across line ℓ .
Locate point X where AB' intersects the river.*

The trail designer will have the trails meet the river at $(2, 1)$.

4

Jamar is playing a video game. The object of the game is to roll a marble into a target. In the figure, the shaded rectangular area represents the video screen and the black rectangle is a barrier. Because of the barrier, it is not possible to roll the marble M directly into the target T . At what point should Jamar aim the marble so that it will bounce off a wall and roll into the target?



Locate Point X , where TM' intersects the side Rail.

Jamar should aim for point X along the edge of the screen.

$(3, 4)$ $(-2, 0)$

Copy and Paste this link!

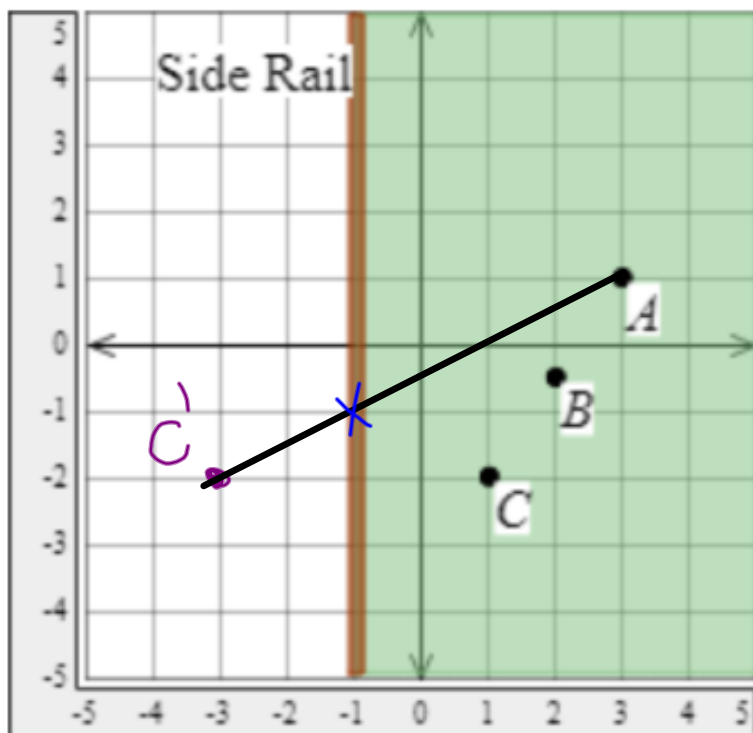


<https://www.desmos.com/calculator/rtpu7lx3oo>

Jamar should aim for the point $(0, 2.4)$ along the edge of the screen.

5

Cara is playing pool. She wants to use the cue ball C to hit the ball at point A without hitting the ball at point B . To do so, she has to bounce the cue ball off the side rail and into the ball at point A . Find the coordinates of the exact point along the side rail that Cara should aim for.



Reflect point C across the side rail to locate C' .

The coordinates of C' are $(-3, -2)$.

Locate point X where AC' intersects the side rail.

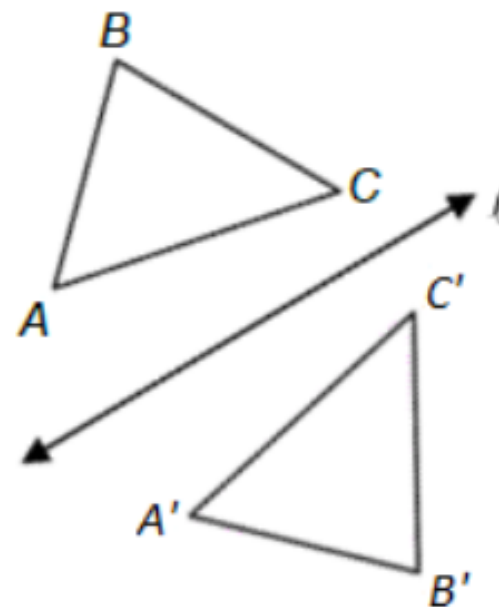
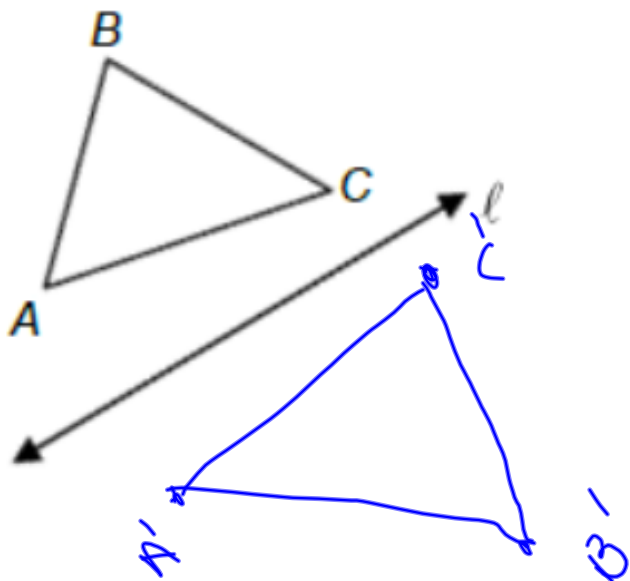
The coordinates of point X are $(-1, 1)$.

Cara should aim for the point $(-1, 1)$ along the side rail.

Cara should aim for the point along the side rail.

6

Use tracing paper to copy the figure and line l . Then fold the paper to draw and label the image of the figure after a reflection across line l .



7 Reflect the figure with the given vertices across the given line.

$$A(-3, -1), B(-2, -2), C(-2, -5); y = -x$$

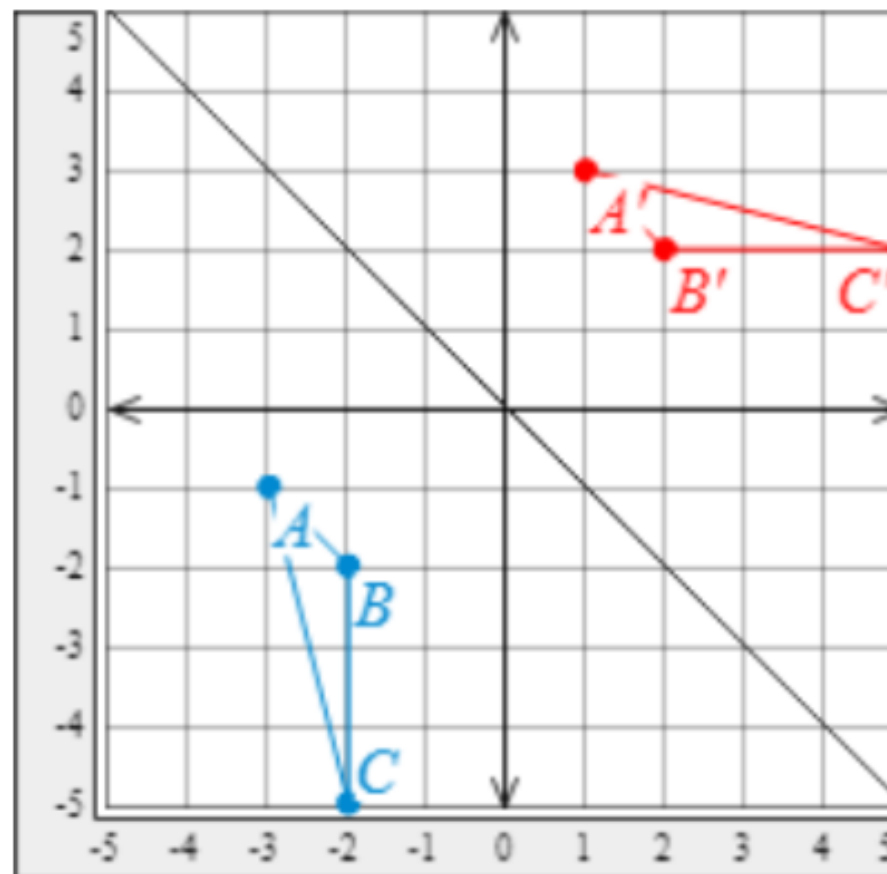
Find the coordinates of the vertices of the image.

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

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

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

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



8

Reflect the figure with the given vertices across the given line.

$$D(-1, 1), E(3, 1), F(4, -1), G(-1, -3); y = x$$

Find the coordinates of the vertices of the image.

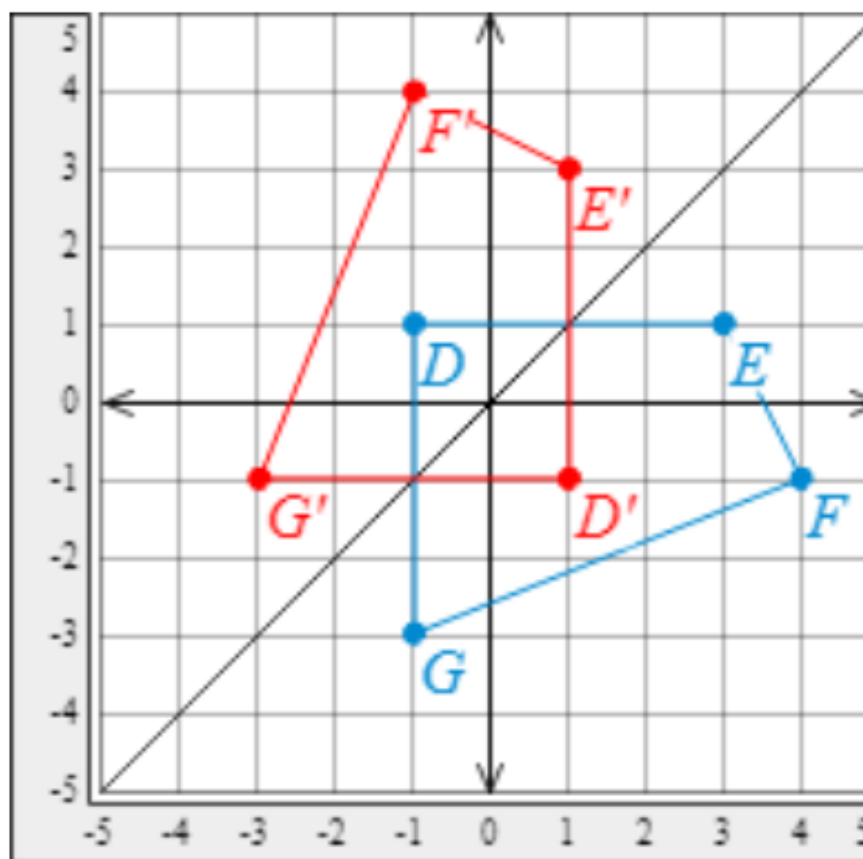
$$A(x, y) \rightarrow A'(y, x)$$

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

$$E(3, 1) \rightarrow E'(1, 3)$$

$$F(4, -1) \rightarrow F'(-1, 4)$$

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



9

Reflect the figure with the given vertices across the given line.

$A(-3, -3), B(1, 3), C(3, -1); y$ -axis

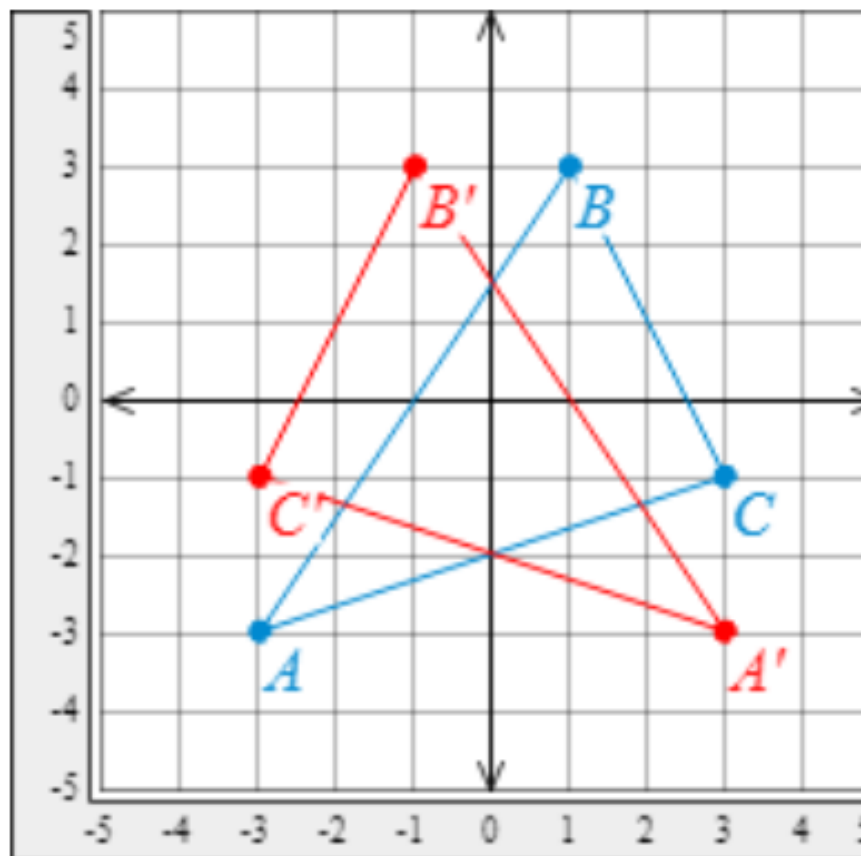
Find the coordinates of the vertices of the image.

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

$$A(-3, -3) \rightarrow A'(3, -3)$$

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

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



10 Reflect the figure with the given vertices across the given line.

$S(3, 3)$, $T(3, 1)$, $U(-2, 1)$, $V(-2, 3)$; x -axis

Find the coordinates of the vertices of the image.

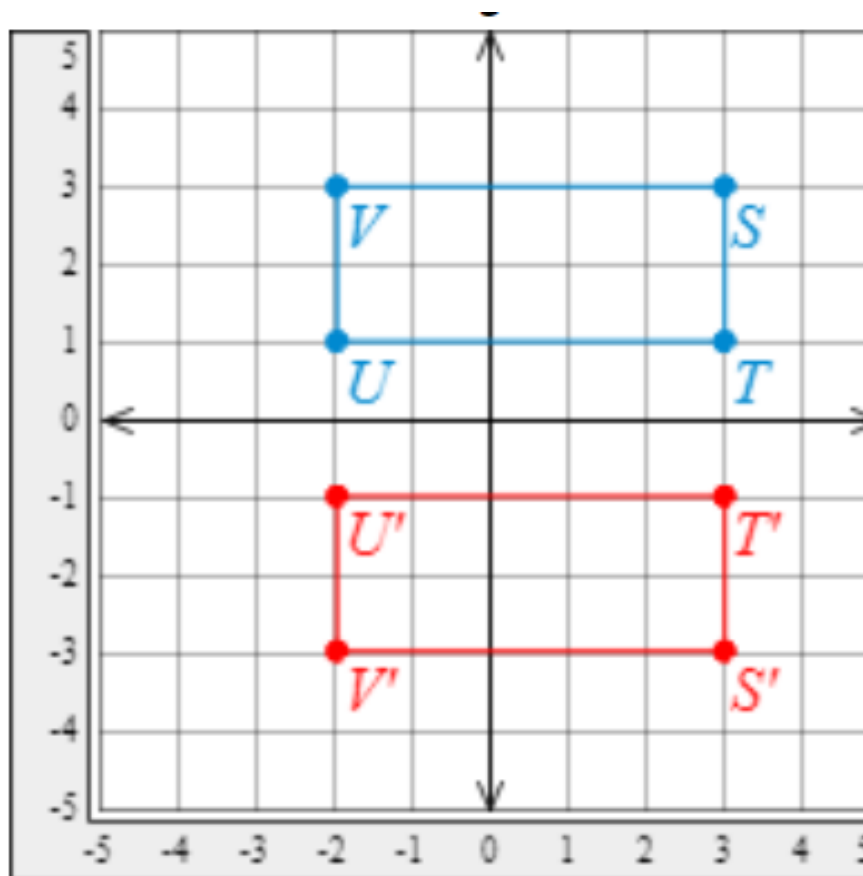
$$(x, y) \rightarrow (x, -y)$$

$$S(3, 3) \rightarrow S'(3, -3)$$

$$T(3, 1) \rightarrow T'(3, -1)$$

$$U(-2, 1) \rightarrow U'(-2, -1)$$

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





Never say,
"I can't"
Always say,
"I'll try"