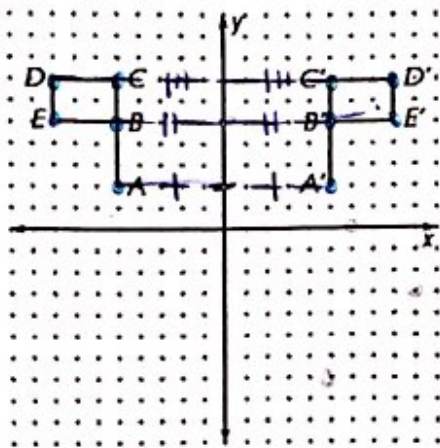


1. A flag $ABCDE$ and its reflected image across the y -axis are shown below.

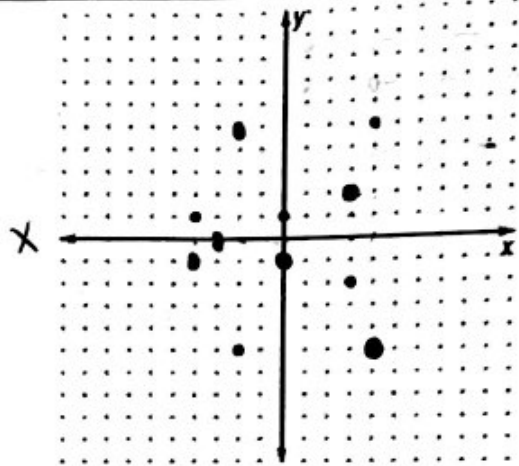


| Preimage | Reflected Image Across y -axis |
|------------|----------------------------------|
| $A(-5, 2)$ | $A'(5, 2)$ |
| $B(-5, 5)$ | $B'(5, 5)$ |
| $C(-5, 7)$ | $C'(5, 7)$ |
| $D(-8, 7)$ | $D'(8, 7)$ |
| $E(-8, 5)$ | $E'(8, 5)$ |

| | |
|--|--|
| a) Write the coordinates of each point and its' image point | (Fill in table above) |
| b) What patterns do you notice in the coordinates of preimage and image pairs under this reflection? | y values stay same x values are opposite |
| c) If you had only reflected the points, how could you have recreated the image of the flag using the new points? | connect the dots fold the paper |
| d) Write a rule you could use to reflect any point (x, y) in the coordinate plane across the y -axis. State the rule in words and in symbolic form $(x, y) \rightarrow (\underline{\quad}, \underline{\quad})$ | $(x, y) \rightarrow (-x, y)$ |
| e) Draw dashed segments to connect A to A' and D to D' . Verify that the y -axis is the <u>perpendicular bisector</u> of $\overline{AA'}$ and $\overline{DD'}$. | cross @ 90° and y -axis cuts dotted line in half |

2. The graph below shows coordinates of six preimage points.

a) Plot the image of each of these points reflected across the x-axis. Think about the x-axis being a perpendicular bisector.



b) Record the coordinates of the image points in the table

| Preimage | Reflected Image Across x-axis |
|------------|-------------------------------|
| $(-4, 1)$ | $(-4, -1)$ |
| $(3, -2)$ | $(3, 2)$ |
| $(-2, -5)$ | $(-2, 5)$ |
| $(4, 5)$ | $(4, -5)$ |
| $(0, 1)$ | $(0, -1)$ |
| $(-3, 0)$ | $(-3, 0)$ |

c) What pattern relating coordinates of preimage points to image points do you notice?

x values didn't change
y values are opposite

d) Write a rule that tells how to take any point (x, y) and find its reflected image across the x-axis. State the rule in words and symbolically.

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

3. The graph below shows coordinates of six preimage points.

a) Draw the line $y = x$ in the coordinate plane to the right. Then plot the image of each point reflected across that line. Connect each preimage/image pair with a dashed segment.

b) Record the coordinates of the image points in the table

| Preimage | Reflected Image Across $y = x$ |
|------------|--------------------------------|
| $(-4, 1)$ | $(1, -4)$ |
| $(3, -2)$ | $(-2, 3)$ |
| $(-2, -5)$ | $(-5, -2)$ |
| $(4, 5)$ | $(5, 4)$ |
| $(0, 1)$ | $(1, 0)$ |
| $(-3, 0)$ | $(0, -3)$ |

c) What pattern relating coordinates of preimage points to image points do you notice?

coordinates switch

d) Write a rule relating the coordinates of any preimage point (x, y) to its reflected image across the line $y = x$. State the rule in words and symbolically.

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

e) How is the line $y = x$ related to the segment connected a preimage point to its image point?

perpendicular bisector

3. The graph below shows coordinates of six preimage points.

| <p>a) Draw the line $y = -x$ in the coordinate plane to the right. Then plot the image of each point reflected across that line. Connect each preimage/image pair with a dashed segment.</p> | | | | | | | | | | | | | | | |
|---|--|----------|---------------------------------|-----------|-----------|-----------|-----------|------------|----------|----------|------------|----------|-----------|-----------|----------|
| <p>b) Record the coordinates of the image points in the table</p> | <table border="1"> <thead> <tr> <th>Preimage</th> <th>Reflected Image Across $y = -x$</th> </tr> </thead> <tbody> <tr> <td>$(-4, 1)$</td> <td>$(-1, 4)$</td> </tr> <tr> <td>$(3, -2)$</td> <td>$(2, -3)$</td> </tr> <tr> <td>$(-2, -5)$</td> <td>$(5, 2)$</td> </tr> <tr> <td>$(4, 5)$</td> <td>$(-5, -4)$</td> </tr> <tr> <td>$(0, 1)$</td> <td>$(-1, 0)$</td> </tr> <tr> <td>$(-3, 0)$</td> <td>$(0, 3)$</td> </tr> </tbody> </table> | Preimage | Reflected Image Across $y = -x$ | $(-4, 1)$ | $(-1, 4)$ | $(3, -2)$ | $(2, -3)$ | $(-2, -5)$ | $(5, 2)$ | $(4, 5)$ | $(-5, -4)$ | $(0, 1)$ | $(-1, 0)$ | $(-3, 0)$ | $(0, 3)$ |
| Preimage | Reflected Image Across $y = -x$ | | | | | | | | | | | | | | |
| $(-4, 1)$ | $(-1, 4)$ | | | | | | | | | | | | | | |
| $(3, -2)$ | $(2, -3)$ | | | | | | | | | | | | | | |
| $(-2, -5)$ | $(5, 2)$ | | | | | | | | | | | | | | |
| $(4, 5)$ | $(-5, -4)$ | | | | | | | | | | | | | | |
| $(0, 1)$ | $(-1, 0)$ | | | | | | | | | | | | | | |
| $(-3, 0)$ | $(0, 3)$ | | | | | | | | | | | | | | |
| <p>c) What pattern relating coordinates of preimage points to image points do you notice?</p> | <p>switch x and y both are opposite</p> | | | | | | | | | | | | | | |
| <p>d) Write a rule relating the coordinates of any preimage point (x, y) to its reflected image across the line $y = -x$. State the rule in words and symbolically.</p> | <p>$(x, y) \rightarrow (-y, -x)$</p> | | | | | | | | | | | | | | |
| <p>e) How is the line $y = -x$ related to the segment connected a preimage point to its image point?</p> | <p>perpendicular bisector</p> | | | | | | | | | | | | | | |