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P.I. G.G.54: Define, investigate, justify, and apply isometries in the plane (reflections)

1. The x -axis is *not* the line of reflection for which of the following pairs of points?

[A] $R'(1, 5) \rightarrow R'(1, -5)$

[B] $R'(-2, -4) \rightarrow R'(-2, 4)$

[C] $R'(-9, 4) \rightarrow R'(9, -4)$

[D] $R'(3, -2) \rightarrow R'(3, 2)$

2. What is the reflection of $(-2, 3)$ in the line $y = -x$?

[A] $(3, -2)$

[B] $(3, 2)$

[C] $(-3, 2)$

[D] $(-3, -2)$

3. The graph of a pentagon is in Quadrant I.
- Describe a reflection that will result in a pentagon in Quadrant IV.
 - Describe a reflection that will result in a pentagon in Quadrant II.
 - Describe a reflection that will result in a pentagon in Quadrant III.

4. Reflect $\triangle ABC$ in \overline{BC} . What kind of figure will result? How would your answer change if $\triangle ABC$ is isosceles? a right triangle with right angle at A ? a right isosceles triangle with right angle at A ?

5. A reflection maps $ABCD \rightarrow A'B'C'D'$, where the coordinates of $A'B'C'D'$ are the reverse of those of $ABCD$; that is, if $A = (x, y)$, then $A' = (y, x)$. Which of the following statements is not true?

[A] If $ABCD$ has a clockwise orientation, then $A'B'C'D'$ has a counterclockwise rotation.

[B] If B is not on line $y = x$, then $y = x$ is the perpendicular bisector of BB' .

[C] It is a reflection in the line $x = 0$.

[D] $ABCD \cong A'B'C'D'$

6. The endpoints of \overline{OA} are $O(0, 0)$ and $A(4, 3)$. \overline{OA} is reflected in the x -axis. Find the area of $\triangle OAA'$.

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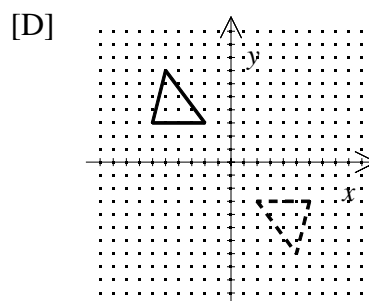
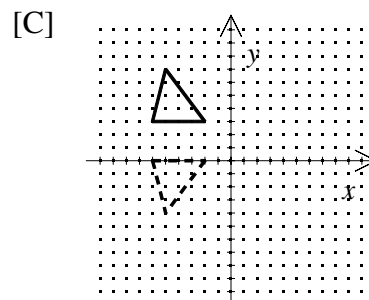
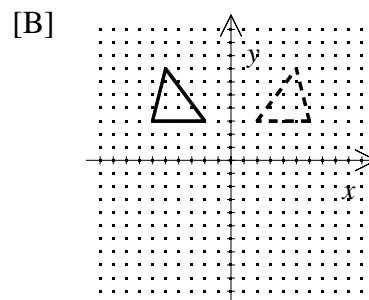
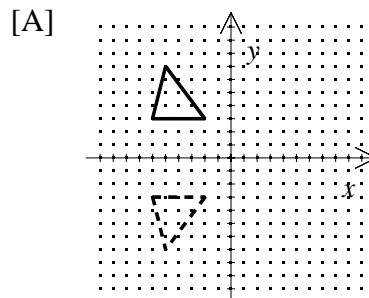
7. The area of a triangle graphed in the first quadrant is 15 sq units. What is the area after a reflection in the line $x = -1$?

8. Given points $A(0, 3)$, $B(-2, 4)$, and $C(-3, -2)$, draw $\triangle ABC$ and its reflection image in the line $x = y$.

9. Plot five points and find their reflections in the line $y = x$. Then find their reflections in the line $y = -x$. Write a conjecture about the reflections of (x, y) in each line.

10. A pattern for a wall stencil was graphed on a coordinate plane. This quadrilateral has the following vertices: $J(2, -1)$; $K(5, 1)$; $L(4, 4)$; and $M(1, 3)$. Find the coordinates of the reflection of $JKLM$ over the y -axis. Graph this reflection on the same coordinate plane.

11. Graph the triangle with vertices $(-6, 3)$, $(-2, 3)$, and $(-5, 7)$. Then, draw its image after a reflection across the x -axis.



[1] C

[2] C

A. a reflection in the x -axis

B. a reflection in the y -axis

[3] C. a reflection in the line $y = -x$

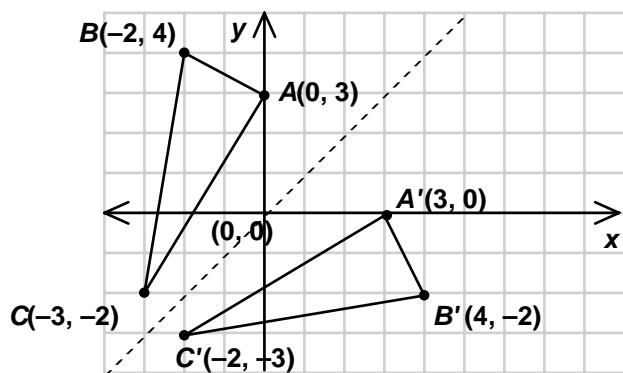
A quadrilateral unless either B or C is a right angle, in which case it will be a triangle; rhombus if \overline{BC} is

[4] the unequal side or if the triangle is isosceles; quadrilateral; square

[5] C

[6] 12 units²

[7] 15 sq units

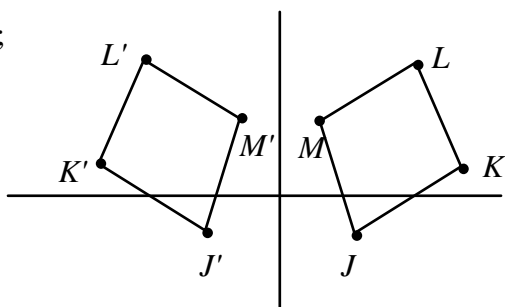


[8]

for $y = x$: $(x, y) \rightarrow (y, x)$

[9] for $y = -x$: $(x, y) \rightarrow (-y, -x)$

$J'(-2, -1)$, $K'(-5, 1)$, $L'(-4, 4)$, $M'(-1, 2)$;



[10]

[11] A