10-8

Name _____ Date _____

Reflections (Pages 460–463)

A design is symmetric if you can fold the design so that the two halves coincide. The fold line is called the line of symmetry. One half of the design is the reflection of the other. Some figures have the x-axis or the y-axis as a line of symmetry.

Reflection over the *x*-axis	To reflect a point over the x-axis, use the same x-coordinate and multiply the y-coordinate by -1. (x, y) becomes $(x, -y)$.
Reflection over the *y*-axis	To reflect a point over the y-axis, multiply the x-coordinate by -1 and use the same y-coordinate. (x, y) becomes $(-x, y)$.

EXAMPLES

A When you reflect the point $A(2, 1)$ over the x-axis, what are the new coordinates?

Use 2 for the x-coordinate and multiply the y-coordinate by -1. The reflection is $A'(2, -1)$.

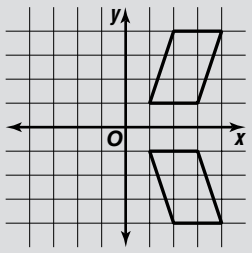
B When you reflect the point $A(2, 1)$ over the y-axis, what are the new coordinates?

Multiply the x-coordinate by -1, so 2 becomes -2. Keep the same y-coordinate. The reflection is $A'(-2, 1)$.

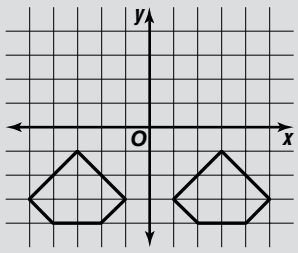
Try These Together

Name the line of symmetry for each pair of figures.

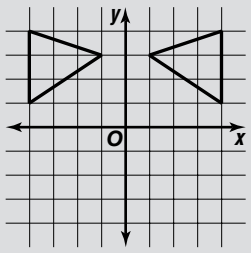
1.



2.



3.



PRACTICE

Graph each figure. Then draw its reflection over the given axis.

4. triangle JKL with vertices $J(2, 4)$, $K(4, 1)$, and $L(0, 1)$; x-axis

5. square $QRST$ with vertices $Q(1, -1)$, $R(1, -4)$, $T(4, -1)$, and $S(4, -4)$; y-axis

6. trapezoid $ABCD$ with vertices $A(-2, 4)$, $B(-4, 4)$, $C(-6, 2)$, and $D(-1, 2)$; x-axis

7. **Standardized Test Practice** Akela is making a quilt. Her design uses diamonds. If her first diamond has vertices $D(2, 0)$, $E(4, -2)$, $F(2, -4)$, and $G(0, -2)$, and her second diamond is the reflection of the first across the y-axis, what will be the coordinates of E'?

A $(4, 2)$ **B** $(-4, -2)$ **C** $(0, -2)$ **D** $(0, 0)$

Answers: **1.** x-axis **2.** y-axis **3.** y-axis **4–6.** See Answer Key. **7.** B