LESSON MAKER PRO

Mirror Grid Moves

Reflect polygons across the x-axis or y-axis.

GRADE 8 · 8.MG.3.e

8.MG.3.e "Sketch the image of a polygon that has been reflected over the x- or y-axis."

NAME _____ DATE _____

REFLECTION RULES

A reflection makes a mirror image across an axis. Over the x-axis, keep x the same and change the sign of y. Over the y-axis, keep y the same and change the sign of x.

WORKED EXAMPLE

Quadrilateral ABCD has vertices A(12,-13), B(15,-13), C(15,-16), and D(12,-16). Sketch its reflection over the x-axis.

1. For an x-axis reflection, use (x,y) -> (x,-y).
2. Keep each x-coordinate the same.
3. Change each y-coordinate to its opposite: A'(12,13), B'(15,13), C'(15,16), D'(12,16).

Answer: A'(12,13), B'(15,13), C'(15,16), D'(12,16)

PRACTICE 6 problems

1 Triangle ABC has vertices A(1,2), B(6,2), and C(3,7). Sketch its reflection over the x-axis.

ANSWER _____

2 Rectangle DEFG has vertices D(-1,1), E(-1,6), F(-7,6), and G(-7,1). Sketch its reflection over the y-axis.

ANSWER _____

3 Triangle HIJ has vertices H(-2,-3), I(0,-6), and J(-6,-3). Sketch its reflection over the y-axis.

ANSWER _____

4 Rectangle KLMN has vertices K(2,-1), L(7,-1), M(7,-3), and N(2,-3). Sketch its reflection over the x-axis.

ANSWER _____

5 Pentagon PQRST has vertices P(-6,1), Q(-2,1), R(-1,3), S(-3,6), and T(-6,4). Sketch its reflection over the y-axis.

ANSWER _____

6 Quadrilateral UVWX has vertices U(0,2), V(3,2), W(3,0), and X(1,-2). Sketch its reflection over the x-axis.

ANSWER _____

APPLY IT Show your work

1 A student creates a triangular logo for an esports team on a coordinate grid. The logo has vertices A(-7,2), B(-3,2), and C(-5,6). To make a matching logo on the other side of the screen, reflect the triangle over the y-axis. What are the image vertices?

WORK SPACE

ANSWER _____

2 For a skate park map, a ramp zone is drawn as quadrilateral RSTU with vertices R(1,-6), S(6,-6), T(6,-2), and U(1,-2). The map designer reflects the zone over the x-axis. What are the image vertices?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Triangle ABC has vertices A(-2,1), B(-6,3), and C(-3,6). Its image has vertices A'(2,1), B'(6,3), and C'(3,6). Which axis was used for the reflection? Explain how the coordinates show your answer.

_____

_____

ANSWER KEY

Mirror Grid Moves

GRADE 8 · 8.MG.3.e

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Triangle ABC has vertices A(1,2), B(6,2), and C(3,7). Sketch its reflection over the x-axis.	**A'(1,-2), B'(6,-2), C'(3,-7)**
2	Rectangle DEFG has vertices D(-1,1), E(-1,6), F(-7,6), and G(-7,1). Sketch its reflection over the y-axis.	**D'(1,1), E'(1,6), F'(7,6), G'(7,1)**
3	Triangle HIJ has vertices H(-2,-3), I(0,-6), and J(-6,-3). Sketch its reflection over the y-axis.	**H'(2,-3), I'(0,-6), J'(6,-3)**
4	Rectangle KLMN has vertices K(2,-1), L(7,-1), M(7,-3), and N(2,-3). Sketch its reflection over the x-axis.	**K'(2,1), L'(7,1), M'(7,3), N'(2,3)**
5	Pentagon PQRST has vertices P(-6,1), Q(-2,1), R(-1,3), S(-3,6), and T(-6,4). Sketch its reflection over the y-axis.	**P'(6,1), Q'(2,1), R'(1,3), S'(3,6), T'(6,4)**
6	Quadrilateral UVWX has vertices U(0,2), V(3,2), W(3,0), and X(1,-2). Sketch its reflection over the x-axis.	**U'(0,-2), V'(3,-2), W'(3,0), X'(1,2)**

PART 2 · APPLY IT

1. **A'(7,2), B'(3,2), C'(5,6)** For a reflection over the y-axis, change each x-coordinate to its opposite and keep each y-coordinate the same.
2. **R'(1,6), S'(6,6), T'(6,2), U'(1,2)** For a reflection over the x-axis, keep each x-coordinate and change the sign of each y-coordinate.

CHALLENGE

The triangle was reflected over the y-axis. Each x-coordinate changes to its opposite, while each y-coordinate stays the same.

Accept correctly plotted mirror images even if students list the vertices in a different order. Points on the reflecting axis stay in the same location.