

Mirror Map Moves

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

GRADE 8 • 8.MG.3.b

8.MG.3.b "Given a preimage in the coordinate plane, identify the coordinates of the image of a polygon that has been reflected over the x- or y-axis."

NAME _____

DATE _____

REFLECTION RULES

A reflection over the x-axis keeps the x-coordinate the same and changes the sign of the y-coordinate. A reflection over the y-axis keeps the y-coordinate the same and changes the sign of the x-coordinate. Match each image vertex to its preimage vertex.

WORKED EXAMPLE

Triangle ABC has vertices A(2, 7), B(5, 3), and C(1, 4). Reflect the triangle over the y-axis.

1. A reflection over the y-axis changes the sign of each x-coordinate.
2. A(2, 7) becomes A'(-2, 7).
3. B(5, 3) becomes B'(-5, 3), and C(1, 4) becomes C'(-1, 4).

Answer: A'(-2, 7), B'(-5, 3), C'(-1, 4)

PRACTICE 6 problems

- 1** Trapezoid PQRS has vertices P(6, 8), Q(10, 8), R(9, 11), and S(7, 11). Reflect the trapezoid over the y-axis.

ANSWER _____

- 2** Triangle DEF has vertices D(-8, 12), E(-6, 9), and F(-11, 10). Reflect the triangle over the y-axis.

ANSWER _____

- 3** Rectangle GHIJ has vertices G(14, 6), H(17, 6), I(17, 9), and J(14, 9). Reflect the rectangle over the x-axis.

ANSWER _____

- 4** Quadrilateral KLMN has vertices K(-13, -8), L(-9, -8), M(-10, -12), and N(-14, -11). Reflect the quadrilateral over the x-axis.

ANSWER _____

- 5** Triangle RST has vertices R(15, -9), S(18, -6), and T(16, -11). Reflect the triangle over the y-axis.

ANSWER _____

- 6** Pentagon VWXYZ has vertices V(-16, 10), W(-13, 12), X(-11, 9), Y(-12, 6), and Z(-15, 6). Reflect the pentagon over the x-axis.

ANSWER _____

APPLY IT Show your work

1

A game design club maps a shield icon as quadrilateral ABCD with vertices A(20, 14), B(24, 14), C(23, 18), and D(21, 18). To make a matching icon below the horizontal axis, the club reflects the shield over the x-axis. What are the coordinates of A', B', C', and D'?

WORK SPACE

ANSWER _____

2

A skate park planning app shows a ramp boundary as triangle EFG with vertices E(-22, 15), F(-19, 17), and G(-18, 13). The app reflects the boundary over the y-axis to place a matching ramp on the other side. What are the coordinates of E', F', and G'?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Triangle JKL has vertices J(25, -16), K(28, -19), and L(23, -21). First reflect the triangle over the x-axis. Then reflect its image over the y-axis. What are the final coordinates of J'', K'', and L''? Explain what happened to the signs of the coordinates.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Trapezoid PQRS has vertices P(6, 8), Q(10, 8), R(9, 11), and S(7, 11). Reflect the trapezoid over the y-axis.	P'(-6, 8), Q'(-10, 8), R'(-9, 11), S'(-7, 11)
2	Triangle DEF has vertices D(-8, 12), E(-6, 9), and F(-11, 10). Reflect the triangle over the y-axis.	D'(8, 12), E'(6, 9), F'(11, 10)
3	Rectangle GHIJ has vertices G(14, 6), H(17, 6), I(17, 9), and J(14, 9). Reflect the rectangle over the x-axis.	G'(14, -6), H'(17, -6), I'(17, -9), J'(14, -9)
4	Quadrilateral KLMN has vertices K(-13, -8), L(-9, -8), M(-10, -12), and N(-14, -11). Reflect the quadrilateral over the x-axis.	K'(-13, 8), L'(-9, 8), M'(-10, 12), N'(-14, 11)
5	Triangle RST has vertices R(15, -9), S(18, -6), and T(16, -11). Reflect the triangle over the y-axis.	R'(-15, -9), S'(-18, -6), T'(-16, -11)
6	Pentagon VWXYZ has vertices V(-16, 10), W(-13, 12), X(-11, 9), Y(-12, 6), and Z(-15, 6). Reflect the pentagon over the x-axis.	V'(-16, -10), W'(-13, -12), X'(-11, -9), Y'(-12, -6), Z'(-15, -6)

PART 2 • APPLY IT

- A'(20, -14), B'(24, -14), C'(23, -18), D'(21, -18)** A reflection over the x-axis keeps each x-coordinate. Change the sign of every y-coordinate.
- E'(22, 15), F'(19, 17), G'(18, 13)** A reflection over the y-axis keeps each y-coordinate. Change the sign of every x-coordinate.

CHALLENGE

J'(-25, 16), K'(-28, 19), L'(-23, 21). The first reflection changes each y-coordinate sign, and the second reflection changes each x-coordinate sign, so both signs change from the original coordinates.

Accept correctly paired image coordinates written in any clear format. Each vertex label must match its corresponding reflected point.