

Coordinate Mirror Moves

Use signs to locate and reflect points.

GRADE 6 • 6.NS.C.6b

CCSS.Math.Content.6.NS.C.6b "Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs..."

NAME _____

DATE _____

SIGNS SHOW LOCATION

In an ordered pair (x, y) , the sign of x tells whether a point is right or left of the y -axis, and the sign of y tells whether it is above or below the x -axis. A reflection across the y -axis changes only the x sign, a reflection across the x -axis changes only the y sign, and a reflection across both axes changes both signs.

WORKED EXAMPLE

Reflect the point $(9, -4)$ across the y -axis.

1. Start with $(x, y) = (9, -4)$.
2. A reflection across the y -axis changes the x sign only.
3. Change 9 to -9 and keep -4 the same.

Answer: $(-9, -4)$

PRACTICE 6 problems

1 What quadrant contains the point $(-5, 7)$?

ANSWER _____

2 What quadrant contains the point $(6, -1)$?

ANSWER _____

3 Reflect $(2, 8)$ across the y -axis.

ANSWER _____

4 Reflect $(-7, -3)$ across the x -axis.

ANSWER _____

5 Reflect $(5, -6)$ across both axes.

ANSWER _____

6 How are the points $(1, -8)$ and $(-1, 8)$ related?

ANSWER _____

APPLY IT Show your work

- 1** On a video game map, Jordan's base is at $(3, -2)$. A mirror portal reflects locations across the y -axis. What are the coordinates of the reflected base?

WORK SPACE

ANSWER _____

- 2** On a skateboard park map, the snack stand is at $(-6, 5)$. A new sign is placed at the stand's reflection across both axes. What are the coordinates of the new sign?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Point T is at $(7, 2)$. List the coordinates of its reflection across the y -axis, across the x -axis, and across both axes. Then explain which signs change for each reflection.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	What quadrant contains the point $(-5, 7)$?	Quadrant II
2	What quadrant contains the point $(6, -1)$?	Quadrant IV
3	Reflect $(2, 8)$ across the y-axis.	$(-2, 8)$
4	Reflect $(-7, -3)$ across the x-axis.	$(-7, 3)$
5	Reflect $(5, -6)$ across both axes.	$(-5, 6)$
6	How are the points $(1, -8)$ and $(-1, 8)$ related?	They are reflections across both axes.

PART 2 • APPLY IT

1. **$(-3, -2)$** A reflection across the y-axis changes the x-coordinate from 3 to -3. The y-coordinate stays -2.
2. **$(6, -5)$** A reflection across both axes changes both signs. The x-coordinate becomes 6 and the y-coordinate becomes -5.

CHALLENGE

Across the y-axis: $(-7, 2)$. Across the x-axis: $(7, -2)$. Across both axes: $(-7, -2)$. Across the y-axis, only the x sign changes. Across the x-axis, only the y sign changes. Across both axes, both signs change.

Accept quadrant names or Roman numerals. Ordered pairs must keep the x-coordinate first and the y-coordinate second.