

Ordered Pairs in All Four Quadrants

Lesson 9-5

Name: _____

Date: _____

Class: _____

Key Vocabulary

Level 1 support

Picture first, then the word, then a plain-language meaning. Say each word out loud.

I (+, +) top-right, II (-, +) top-left, III (-, -) bottom-left, IV (+, -) bottom-right

Quadrant

One of the four parts of a coordinate grid, numbered I to IV.

(-3, 2) means 3 left and 2 up from the origin

Negative coordinate

A coordinate less than zero. It means left or below the center point.

(3, 2) reflected over the y-axis is (-3, 2) – same distance, opposite side

Reflection

A flipped, mirror image of a point across a line.

The x-axis goes left-right; the y-axis goes up-down; they cross at (0, 0)

Axis

A line on the grid. The x-axis goes across; the y-axis goes up.

..., -3, -2, -1, 0, 1, 2, 3, ...

Integer

Whole numbers and their opposites, like -2, -1, 0, 1, 2.

Key Ideas & Notes

- Captain Vega realized her treasure map only covered one corner of the island!
- She needs to expand the map in all directions — north, south, east, and west of the base camp at the origin $(0, 0)$.
- Now clues can have negative coordinates: $(-4, 3)$ means 4 units west and 3 units north.
- A clue at $(2, -5)$ means 2 units east and 5 units south.
- Plot each treasure clue on the expanded map and identify which quadrant it falls in.

Think About It

- How do you know which quadrant a point is in by looking at the signs of its coordinates?
- What do negative x-values and negative y-values mean on the map?
- Where is the point $(0, 0)$ on the expanded map?

My Notes

Guided Examples

Example 1

In which quadrant is the point $(-4, 5)$?

Solution: The x-coordinate is negative (left) and the y-coordinate is positive (up). Left and up is Quadrant II.

Answer: B. Quadrant II

Example 2

A point has a positive x-coordinate and a negative y-coordinate. Which quadrant is it in?

Solution: Positive x (right) and negative y (down) = Quadrant IV (bottom-right).

Answer: D. Quadrant IV

Example 3

Which point is located on the x-axis?

Solution: A point is on the x-axis when its y-coordinate is 0. $(4, 0)$ is on the x-axis.

Answer: A. $(4, 0)$

Write About the Math

The Writing Revolution

I can explain my work using the words quadrant, negative coordinate, reflection, and axis.

1. Kernel Sentence subject + verb

Model: Quadrant is one of the four parts of a coordinate grid, numbered I to IV.

Cuadrante es una de las cuatro partes de una cuadrícula de coordenadas, numeradas I a IV.

Write a kernel sentence about quadrant. Use a subject and a verb.

Escribe una oración base sobre cuadrante. Usa un sujeto y un verbo.

2. Sentence Expansion because · but · so

Kernel: Quadrant matters in math

Cuadrante importa en matemáticas

Expand the kernel three ways. Add a reason, a contrast, and a result.

because
porque

Quadrant matters in math because ____.

Cuadrante importa en matemáticas porque ____.

but
pero

Quadrant matters in math, but ____.

Cuadrante importa en matemáticas, pero ____.

so
entonces

Quadrant matters in math, so ____.

Cuadrante importa en matemáticas, entonces ____.

3. Sentence Types 4 ways to write a math idea

Statement
Afirmación

Tell one true fact about quadrant.
Di un hecho verdadero sobre quadrant.

Quadrant ____.

Question
Pregunta

Ask a question about quadrant.
Haz una pregunta sobre quadrant.

How does ____ ?

¿Cómo ____ ?

Exclamation
Exclamación

Show excitement about quadrant.
Muestra entusiasmo sobre quadrant.

Wow, ____ !

¡Guau, ____ !

Command
Mandato

Tell a partner what to do with quadrant.
Dile a un compañero qué hacer con quadrant.

First, ____ .

Primero, ____ .

4. Explain Your Reasoning use a sentence starter

The point is in quadrant ____ **because** ____ .

El punto está en el cuadrante ____ *porque* ____ .

Both signs are ____ .

Ambos signos son ____ .

Four quadrants matter when ____ .

Los cuatro cuadrantes importan cuando ____ .

Try It

Solve on your own. Check the answer key when you are done.

1. Which point is located on the x-axis?

- A. (4, 0)
- B. (0, 4)
- C. (4, 4)
- D. (-4, -4)

Show your work:

2. Point A is at (-5, 3). If you move 8 units to the right, what are the new coordinates?

- A. (3, 3)
- B. (-13, 3)
- C. (-5, 11)
- D. (-5, -5)

Show your work:

Stretch Your Thinking

Level 2 enrichment

Challenge task — explain your reasoning in full sentences.

A point starts in Quadrant I at (4, 6). Describe a move that puts it in Quadrant III. What must happen to both coordinates? Can you give the exact new coordinates after your move?

Sentence starter: To move from Quadrant I to Quadrant III, both coordinates must become _____. Starting at (4, 6), I could move _____ units left and _____ units down to reach (____, ____), which is in Quadrant III because _____.

Show your work:

Reflect — Exit Ticket

A point has a negative x-coordinate and a negative y-coordinate. Which quadrant is it in?

- A. Quadrant I
- B. Quadrant II
- C. Quadrant III
- D. Quadrant IV

Your answer:

Answer Key & Teacher Guide

1. **Try It 1:** A. $(4, 0)$ — *A point is on the x-axis when its y-coordinate is 0. $(4, 0)$ is on the x-axis.*
2. **Try It 2:** A. $(3, 3)$ — *Moving right means adding to the x-coordinate: $-5 + 8 = 3$. The y stays the same. New point: $(3, 3)$.*
3. **Exit Ticket:** C. Quadrant III — *Quadrant III is where both x and y are negative. This means the point is left of the origin and below the origin.*

Writing (TWR) — what to look for

- **Kernel sentence:** A complete sentence needs a subject and a verb. Example: Quadrant is one of the four parts of a coordinate grid, numbered I to IV.
- **Expansion:** *because* gives a reason, *but* shows a contrast or exception, *so* shows a result. Answers vary; each must keep the kernel idea and add the correct kind of detail.
- **Sentence types:** Statement ends with a period, question with "?", exclamation with "!", and a command starts with an action verb (a "bossy" verb).