

MA.5.GR.4.1

Overarching Standard: MA.5.GR.4 *Plot points and represent problems on the coordinate plane*

Benchmark of Focus

MA.5.GR.4.1 Identify the origin and axes in the coordinate system. Plot and label ordered pairs in the first quadrant of the coordinate plane.

Benchmark Clarifications

Clarification 1: Instruction includes the connection between two-column tables and coordinates on a coordinate plane.

Clarification 2: Instruction focuses on the connection of the number line to the x - and y -axis.

Clarification 3: Coordinate planes include axes scaled by whole numbers. Ordered pairs contain only whole numbers.

Related Benchmark/Horizontal Alignment

- MA.5.AR.3.2
- MA.5.DP.1.1

Vertical Alignment

Previous Benchmarks
MA.4.NSO.1.3

Next Benchmarks
MA.6.GR.1.1/1.2/1.3

Terms from the K-12 Glossary

- Coordinate Plane (first quadrant)
- Origin
- x -axis
- y -axis

Purpose and Instructional Strategies

The purpose of this benchmark is for students to extend their thinking from Grade 4 (MA.4.NSO.1.3) about horizontal and vertical number lines to plot and label whole number ordered pairs on a coordinate plane. In addition, students will make a connection between a twocolumn table and the ordered pairs represented on the coordinate plane. In Grade 6 (MA.6.GR.1.1), students plot rational number pairs in all four quadrants of the coordinate plane.

• During instruction, teachers should relate the coordinate plane as the intersection of two axes – a horizontal number line called the x -axis and a vertical number line called the y -axis. The number lines that form the axes are perpendicular and meet at the origin, labeled by the ordered pair (0, 0) (K12.MTR.5.1).

- When students learn to plot ordered pairs represented in a two-column table, they should understand that the ordered pair (x, y) represents how far to travel from the origin along the x - and y -axes. For example, students should understand that in the ordered pair $(2, 4)$, the point travels along the x -axis 2 whole units to the right, and then vertically (parallel to the y -axis) 4 units up (K12.MTR.5.1).
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Common Misconceptions or Errors

- Students can confuse the x - and y - values in an ordered pair and move vertically along the y -axis before moving horizontally along the x -axis. For example, they may mean to plot and label the ordered pair $(2, 4)$, but plot and label $(4, 2)$ instead. To assist students with this misconception, have students practice with creating directions for their student peers to follow to allow them to gain a better understanding of the direction and distance on the coordinate plane.
 - Some students may not understand what an x - or y - coordinate value of 0 represents. During instruction, students should justify why ordered pairs with a 0 will plot on the x -axis or y -axis.
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Questions to ask students:

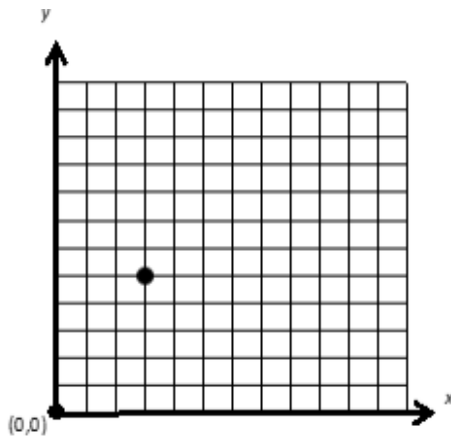
- *Describe how to find the ordered pair $(4,5)$.*
 - Sample answer that indicates understanding: Starting at the origin $(0,0)$, move along the x -axis first to get to 4 then travel vertically up the y -axis to get to 5. Then you will arrive at ordered pair $(4,5)$.
 - Sample answer that indicates an incomplete understanding or a misconception: Go over 5 and up 4.
 - *Are $(2,3)$ and $(3,2)$ the same point on a coordinate plane? Explain your thinking.*
 - Sample answer that indicates understanding: They are not the same at all. The point $(2,3)$ indicates 2 away along the x -axis from the point of origin $(0,0)$ and 3 along the y -axis. The ordered pair $(3,2)$ is found 3 units away from $(0,0)$ along the x -axis and 2 units to travel along the y -axis.
 - Sample answer that indicates an incomplete understanding or a misconception: They are basically the same, just the numbers are reversed.
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Instructional Tasks

Instructional Task 1

Part A. A point has coordinates $(3, 5)$. If you were to graph this point on a coordinate plane, what does the 3 tell you to do?

Part B. Consider the same point with coordinates $(3, 5)$. What does the 5 tell you to do?



Part C. The point above has coordinates $(3, 5)$. Which of these is the x - coordinate? Which of these is the y -coordinate?

Instructional Items

Instructional Item 1

What ordered pair represents the origin of a coordinate plane?

- a. $(0, 0)$
- b. $(1, 0)$
- c. $(0, 1)$
- d. $(1, 1)$

Instructional Item 2

A point has coordinates $(1, 6)$. If you were to plot this point on a coordinate plane, what does the 1 tell you to do?

- a. From the origin, move along the x -axis 1 unit up.
 - b. From the origin, move along the y -axis 1 unit up.
 - c. From the origin, move along the x - axis 1 unit right.
 - d. From the origin, move along the y -axis 1 unit right.
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Achievement Level Descriptors

Benchmark		Context	Assessment Limits
MA.5.GR.4.1 Identify the origin and axes in the coordinate system. Plot and label ordered pairs in the first quadrant of the coordinate plane Clarification 1: Instruction includes the connection between two-column tables and coordinates on a coordinate plane. Clarification 2: Instruction focuses on the connection of the number line to the xx - and yy -axis. Clarification 3: Coordinate planes include axes scaled by whole numbers. Ordered pairs contain only whole numbers.		Mathematical	Items may not require directions between two given points
ALD 2	ALD 3	ALD 4	ALD 5
N/A	Identifies the origin and axes in the first quadrant of a coordinate system	Identifies the origin and axes in the coordinate system; plots and labels ordered pairs in the first quadrant of the coordinate plane	N/A

Additional Resources:

CPALMS [MA.5.GR.4.1 - Identify the origin and axes in the coordinate system. Plot and label ordered pairs in the first quadrant of the coordinate plane. \(cpalms.org\)](#)

LearnZillion: [Use a model to identify parts of a coordinate plane | LearnZillion](#)

LearnZillion: [Read coordinates of a point on the coordinate plane | LearnZillion](#)

Resources/Tasks to Support Your Child at Home:

Khan Academy: [Introduction to the coordinate plane \(video\) | Khan Academy](#)

Khan Academy: [Points on the coordinate plane \(practice\) | Khan Academy](#)