

Common Core Standards Plus[®] – Mathematics – Grade 5

Domain: Geometry

Focus: Plotting Points on a Coordinate Grid

Lesson: 1

Standard: 5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

Lesson Objective: The students will use a pair of axes to define a coordinate system and understand how a point is determined within that plane by using ordered pairs or coordinates.

Introduction: “Today we will learn about the coordinate grid system and how to find specific points within that system by using ordered pairs or coordinates.”

Instruction: Direct students’ attention to the Example at the top of the student page. “We have seen and used number lines that are drawn left to right and that are drawn up and down. In a *coordinate system* there are two *axes* that are numbered in equal intervals. The horizontal axis is called the *x-axis* and the vertical axis is called the *y-axis*. Let’s label the x- and y-axis. (Model.) The *x-axis* and the *y-axis* are perpendicular to each other and intersect or cross at a point called the *origin* at (0,0). Let’s draw a point at the origin at (0,0). (Model.) We call the labels for each point on the *plane* (grid) *ordered pairs* or *coordinates*. By using the *x-coordinate* or point along the *x-axis* and the *y-coordinate* or space along the *y-axis* we are able to identify each point within the *plane*.”

Guided Practice: “Now we will look at a set of ordered pairs or coordinates and mark points on the coordinate plane. When we graph or plot a point, we use the first number in the ordered pair to move along the x-axis—left or right (horizontal). In our first ordered pair we have the number 2, so we will move two spaces to the right along the x-axis. Next we use the second number in the ordered pair to move along the y-axis—up or down (vertical). The second number in our ordered pair is a 3, so we will move up three spaces on the line that goes through the two on the x-axis. At the intersection of the two lines we will draw a point and label it with an A.” Repeat the process for points B (9,3) and C (5,8). Have the students connect the three points (triangle).

Independent Practice: “Now you will complete problems 1 and 2 independently. Look at each set of points for each coordinate plane and plot them on the graph. Remember to label each point. Connect the points and answer the questions about each graph.”

Review: Allow students to share how they plotted each point as you review the location of each. Ask students to share how they defined each figure graphed on the plane (e.g., I knew it was a square because each point is the same number of squares apart. Since squares have equal sides, I knew it was a square.).

Closure: “Today we learned about the coordinate grid system and how to find specific points within that system by using ordered pairs or coordinates.”

Answers:

1. Point A labeled at (3,3); Point B labeled at (6,3); Point C labeled at (3,6); Point D labeled at (6, 6). Lines connected to form a square. Students state that the length of each side is the same, which is how they determined it to be a square. They may also reference parallel sides.
2. Point A labeled at (2,10); Point B labeled at (2,1); Point C labeled at (5,10); Point D labeled at (5,1). Lines connected to form a rectangle. Students should state that the parallel sides are the same length and they form right angles.

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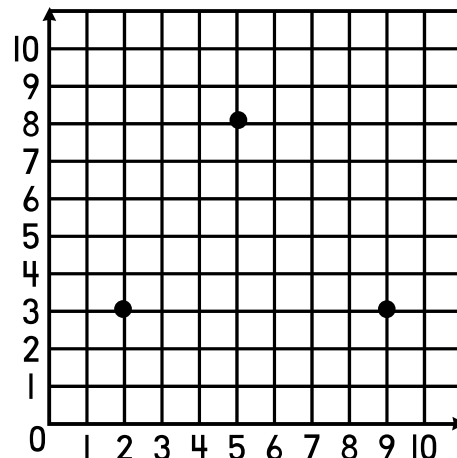
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Example:

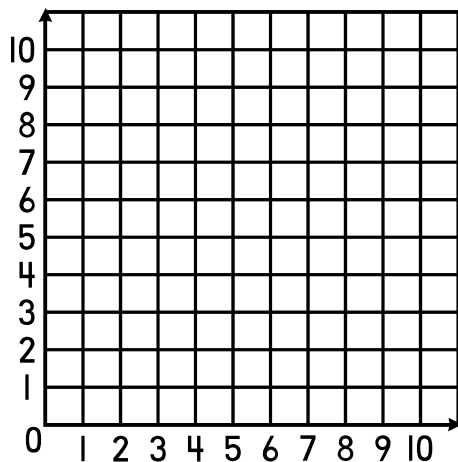
Word Bank: *x-axis, y-axis, origin at (0,0)*

- Point A: (2,3)
- Point B: (9,3)
- Point C: (5,8)
- Connect each point.
- What shape do you see? _____



Directions: Look at each set of points for each coordinate plane and graph or plot them. Remember to label each point, connect the points and answer the questions about each graph.

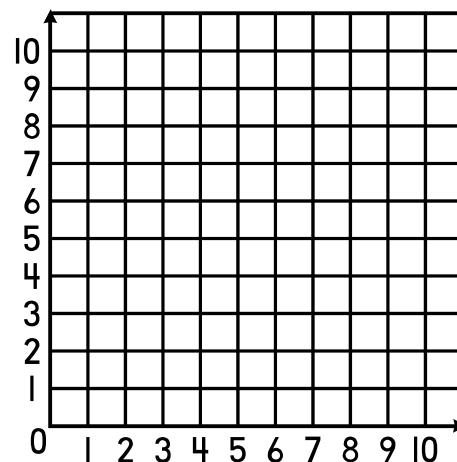
1.



- Point A: (3,3)
- Point B: (6,3)
- Point C: (3,6)
- Point D: (6,6)

What shape is graphed? _____
 Explain how you know: _____

2.



- Point A: (2,10)
- Point B: (2,1)
- Point C: (5,10)
- Point D: (5,1)

What shape is graphed? _____
 Explain how you know: _____