

Objective

Locate points on a coordinate plane.

Common Core State Standards

- **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).
- **5.G.2** Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Geometry

Points on a Coordinate Plane

Students have been learning about distance, location, and direction. Now they will build on their knowledge as well as deepen their understanding of these concepts. Students are ready to learn that the numbers of an ordered pair are used to identify specific points on a coordinate plane. Using ordered pairs to identify and name points on a coordinate grid prepares students to find and navigate distances between points on a coordinate plane.

Try It! Perform the Try It! activity on the next page.

Talk About It

Discuss the Try It! activity.

- **Say:** An ordered pair tells the location of a point on a grid. **Ask:** What does the first number tell us? What does the second number tell us?
- **Ask:** If two ordered pairs are (4, 3) and (3, 4), are they referring to the same location on the coordinate grid? Why or why not?
- **Ask:** What if a coordinate grid had the letters A through D along the side instead of numbers? How would that have changed the ordered pairs you named?

Solve It

With students, reread the problem. Have them answer the question by writing a short paragraph. Tell students to be sure to use the term *ordered pair* and explain what it means in their answers by giving examples.

More Ideas

For other ways to teach about locating points on a coordinate plane—

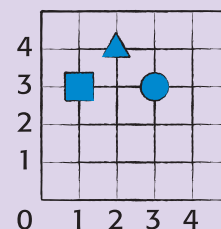
- Have students use rubber bands to create simple shapes on Geoboards and then write down the coordinates for each peg that the rubber band touches.
- Have students gently toss five Two-Color Counters onto a Coordinate Grid (BLM 2). Students will record the coordinates indicating the locations of the counters that landed red side up. If a counter does not land exactly on a point, tell students to find the pair closest to where the counter landed.

Formative Assessment

Have students try the following problem.

Which ordered pair tells the location of the triangle?

- A. (2, 4)
- B. (1, 3)
- C. (3, 3)
- D. (4, 2)



Try It! 20 minutes | Pairs

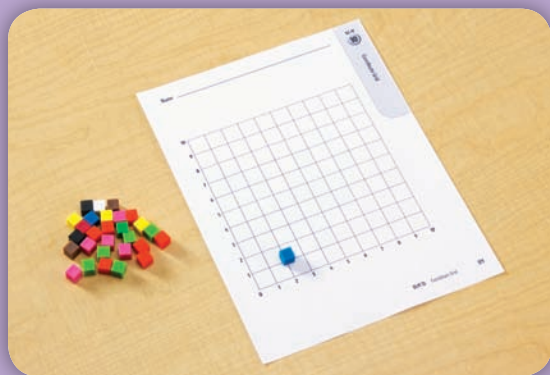
Here is a problem about locating points on a coordinate plane.

In the game Treasure Search, players mark secret spots on a grid where their treasure is. Then players take turns guessing the locations of their partner's treasure. If you are playing Treasure Search with a partner, how can you tell your partner which spot on the grid you are guessing without pointing to it?

Introduce the problem. Then have students do the activity to solve the problem. Distribute Centimeter Cubes, Coordinate Grids (BLM 2), and textbooks or folders to students.

Materials

- Centimeter Cubes (1 each of 3 different colors per student)
- Coordinate Grid (BLM 2; 2 per pair)
- large textbook or folder (1 per pair)



1. Say: *Ordered pairs tell you about locations on a grid. They have two numbers. The first one tells you how far right you should go. The second tells you how far up you should go.* Explain that ordered pairs always describe a location where two lines intersect. Have students find the ordered pair (2, 1) on their grids.



3. Have pairs take turns guessing the locations of each other's cubes. Each time a student makes a guess, he or she should use an ordered pair to describe the location. Tell students that the partner who finds all three of his or her partner's cubes first wins the game.



2. Instruct students to stand a textbook or folder on end between them, and place their Coordinate Grids on either side of the book so that neither partner can see the other's grid. Have students place each of their three cubes at a different point on the grid and label that point with the correct ordered pair.

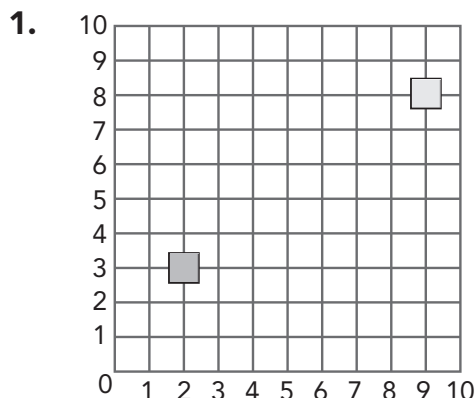
Look Out!

Students may have difficulty remembering which coordinate indicates the vertical position and which indicates the horizontal position on a plane. To help them remember to go over first and then up, relate the movements to climbing a tree. First, students must go over to the tree, and then they can climb *up* the tree.



Use Centimeter Cubes to match each model. Write the ordered pair that corresponds to the location of the cube.

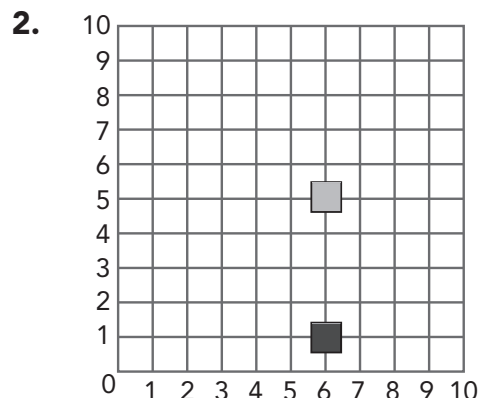
(Check students' work.)



(9, 8)



(2, 3)



(6, 5)



(6, 1)

Using Centimeter Cubes and the coordinate grid, locate the point for each ordered pair. Then plot the point on the grid. Label each point.

3. A (1, 7)

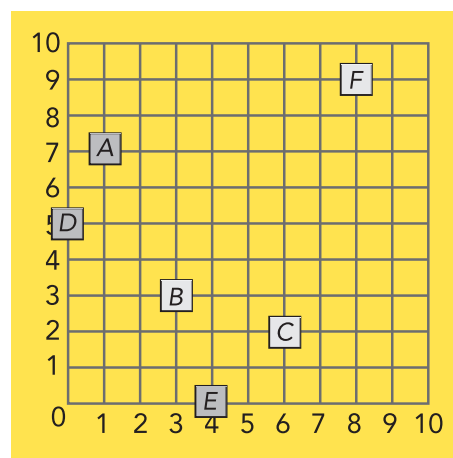
4. B (3, 3)

5. C (6, 2)

6. D (0, 5)

7. E (4, 0)

8. F (8, 9)



Graph each point on the coordinate grid. Label each point.

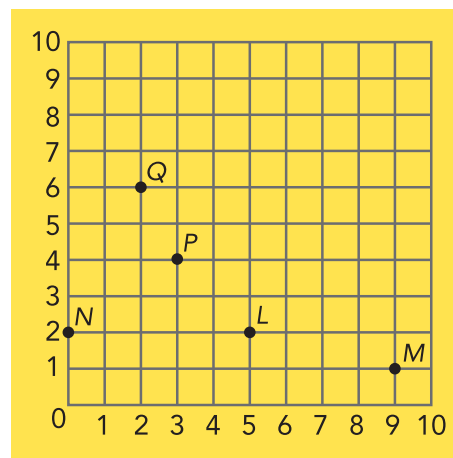
9. L (5, 2)

10. M (9, 1)

11. N (0, 2)

12. P (3, 4)

13. Q (2, 6)



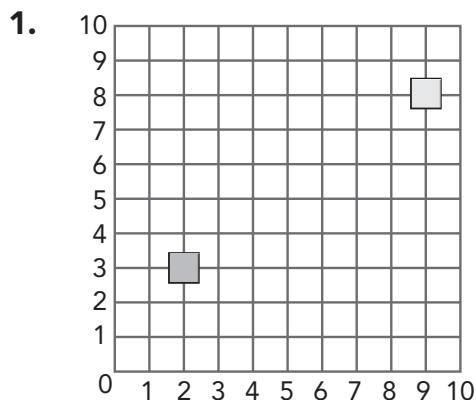
Answer Key

Challenge! Describe to a friend how to graph an ordered pair on a coordinate grid.

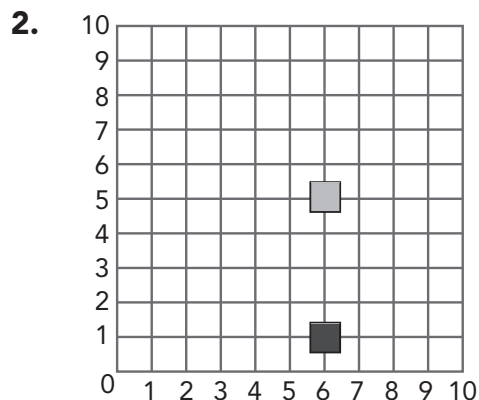
Challenge: (Sample) Begin at the origin (0, 0). The first number of the ordered pair tells you how many places to move to the right. From that point, move up the number of places indicated by the second number.

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Use Centimeter Cubes to match each model. Write the ordered pair that corresponds to the location of the cube.









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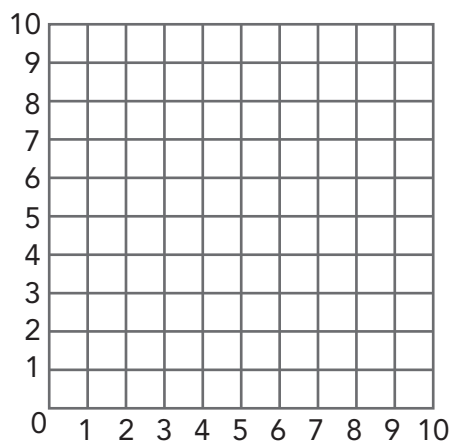
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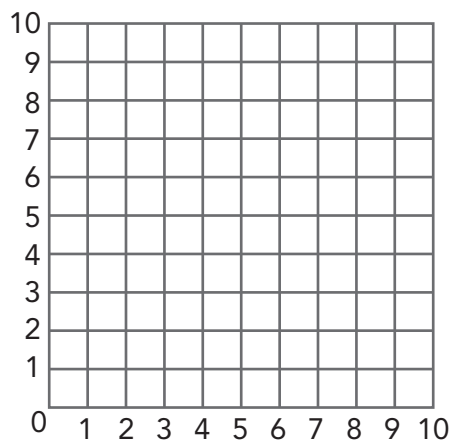
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Name _____

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Name _____

