CHAPTER 7
The Coordinate Plane

What You've Learned

- In earlier chapters, you learned to add, subtract, multiply, and divide decimals and fractions.

- You wrote and solved equations.

- You graphed numbers on a number line and used graphs to analyze data.

Check Your Readiness

Algebra Solving Equations
Solve each equation.

1. $a + 13 = 92$

2. $b + 12 = 43$

3. $c - 31 = 8$

4. $d - 23 = 8$

Algebra Solving Multiplication and Division Equations
Solve each equation.

5. $7g = 4.2$

6. $h \div 6 = 11$

7. $8j = 328$

8. $k \div 9 = 8$

9. $16m = 240$

10. $n \div 14 = 18$

Comparing and Ordering Fractions
Compare each pair of numbers. Use $<$, $=$, or $>$.

11. $\frac{1}{3} \; \blacksquare \; \frac{2}{5}$

12. $\frac{3}{4} \; \blacksquare \; \frac{2}{3}$

13. $\frac{2}{16} \; \blacksquare \; \frac{1}{8}$

Order each set of numbers from least to greatest.

14. $\frac{1}{8}, \frac{1}{3}, \frac{1}{12}$

15. $\frac{4}{9}, \frac{5}{6}, \frac{7}{12}$

16. $\frac{1}{4}, \frac{6}{7}, \frac{1}{2}$

What You'll Learn Next

- In this chapter, you will locate and graph points and polygons in the coordinate plane using ordered pairs.
- You will represent functions with tables, graphs, and equations.

🔊 Key Vocabulary

- coordinate plane (p. 241)
- distance (p. 246)
- function (p. 251)
- horizontal line (p. 246)
- linear function (p. 255)
- ordered pair (p. 241)
- origin (p. 241)
- quadrants (p. 241)
- vertical line (p. 246)
- reflection (p. 245)
- line of reflection (p. 245)

7-1 Points in the Coordinate Plane

What You'll Learn

CONTENT STANDARDS
6.NS.6, 6.NS.6.c, 6.NS.8

To name and graph points on a coordinate plane

🔊 **New Vocabulary** coordinate plane, quadrants, origin, ordered pair

You will need evernote today.

Why Learn This?

You can use coordinates to find and describe locations on a map.

The **coordinate plane** is a surface formed by the intersection of two number lines. The plane is divided into four regions, called **quadrants.** The **origin** is the point where the two number lines intersect.
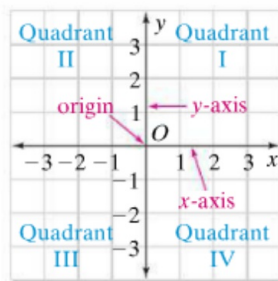
An **ordered pair** is a pair of numbers that describes the location of a point in a coordinate plane. The ordered pair $(0,0)$ describes the origin.

The x-coordinate tells how far to move right or left along the x-axis. x y The y-coordinate tells how far to move up or down along the y-axis.
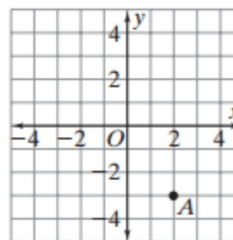

Example

❶ **Naming Coordinates** Find the coordinates of point A.

Point A is ☐ units to the right of the y-axis.

The x-coordinate is ☐.

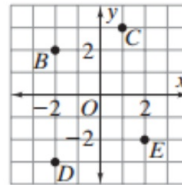Point A is ☐ units below the x-axis. The y-coordinate is -3.

The coordinates of point A are ☐.

1. Find the coordinates of each point in the coordinate plane.

a. B [   ]

b. D [   ]

c. E [   ]

Please copy this paragraph into your notes:

You can graph points if you know their coordinates. You move right from the *origin* to graph a positive *x*-coordinate and left from the *origin* to graph a negative *x*-coordinate. You move up from the *x*-axis to graph a positive *y*-coordinate and down from the *x*-axis to graph a negative *y*-coordinate.

Graphing Ordered Pairs

2 Graph point $P(3.5, 2)$ on a coordinate plane.
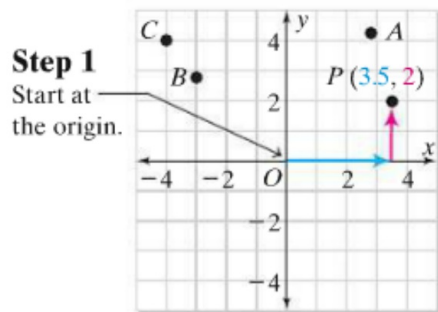
Step 1
Start at the origin.

Step 3
Move 2 units up.

Step 2
Move 3.5 units to the right.

Examples

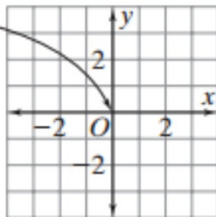2 **Graphing Ordered Pairs** Graph point $X(-1, -3)$ on a coordinate plane.

Step 1
Start at the origin.

Step 2
Move ☐ unit to the left.

Step 3
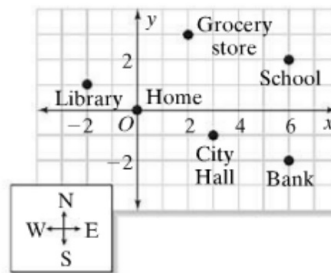Move ☐ units down.

EXAMPLE **Using Map Coordinates**

3 A student drew a map of certain locations in relation to home.
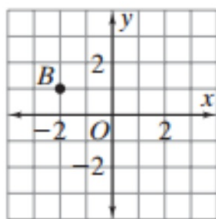
a. Identify the coordinates of the library.

The library is located at $(-2, 1)$.

b. You leave the library and ride your scooter 2 blocks north and then 4 blocks east. At which building do you arrive?

You are at the grocery store.

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3 **Using Map Coordinates** Use the coordinate grid. If you travel 2 units down and 3 units right from B, what are the coordinates of your location?

You are at ☐ .

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Practice 7-1 .... Points

Name the point with the given coordinates in the coordinate plane at the right.

1. $(2, 3)$ _____   2. $(4, 0)$ _____

3. $(-3, -5)$ _____   4. $\left(0, 6\frac{1}{2}\right)$ _____

Find the coordinates of each point at the right.

5. J _____   6. E _____

7. D _____   8. A _____

Graph each point on the coordinate plane at the right.

9. $A\ (8.5, -4)$ 10. $B\ (-4, 8)$

11. $C\ (4, 8)$ 12. $D\ (-8, -4)$

13. $E\left(8, 4\frac{1}{2}\right)$ 14. $F\ (-4, -8)$