Number Lines and the Coordinate Plane Worksheet

Grade 6 · Common Core 6.NS.C.6

> Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

Practice

Builds the skill step by step.

1. On a number line, point A is at -4. What number is the same distance from 0 on the other side?

2. Write the ordered pair for a point 3 units right of the origin and 5 units up.

3. Write the ordered pair for a point 2 units left of the origin and 6 units down.

4. In which quadrant is the point $(-3, 4)$?
   A. Quadrant I
   B. Quadrant III
   C. Quadrant IV
   D. Quadrant II

5. In which quadrant is the point $(5, -1)$?
   A. Quadrant I
   B. Quadrant IV
   C. Quadrant II
   D. Quadrant III

6. What number is halfway between -3 and 3 on a number line?

7. Point B is at 2.5 on a number line. What is the opposite of B's value?

8. Write the ordered pair for the point on the x-axis 7 units left of the origin.

9. Write the ordered pair for the point on the y-axis 4 units up from the origin.

10. Which point is in Quadrant III?

    A. $(-1, -8)$

    B. $(1, 8)$

    C. $(-1, 8)$

    D. $(1, -8)$

ALBERT

Name _____ Date _____

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On Level

Grade-level practice.

1. Point (4, 7) is reflected across the x-axis. What are the coordinates of the new point?

2. Point (−5, 2) is reflected across the y-axis. What are the coordinates of the new point?

3. Point (3, −6) is reflected across the x-axis and then across the y-axis. What are the coordinates of the final point?

4. The points (a, b) and (−a, b) are reflections of each other across which line?

   A. The x-axis

   B. The y-axis

   C. The line y = x

   D. They are not reflections

5. On a number line, what number is $\frac{3}{4}$ of the way from 0 to −8?

6. What is the opposite of the opposite of −11.5?

7. A point has a negative x-coordinate and a y-coordinate of 0. Where is it?

8. Write the ordered pair that is 3 units left and 2 units up from the point $(1, -4)$.

9. Which number line point is located at $-\frac{1}{2}$?

   A. Halfway between 0 and 1

   B. At -2

   C. Halfway between -1 and 0

   D. Halfway between -2 and -1

10. Point M is the reflection of $(-2, -9)$ across the x-axis. In which quadrant is M?

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Challenge

Multi-step and word problems that stretch it.

1. A rectangle has vertices at (2, 3), (2, −3) and (−4, 3). What are the coordinates of the fourth vertex?

2. Point P is (−6, 5). Point Q is the reflection of P across the y-axis, and point R is the reflection of Q across the x-axis. What are the coordinates of R?

3. On a number line, point A is at −7 and point B is at 5. What number is exactly halfway between them?

4. Which statement is always true about a point and its reflection across the x-axis?

   A. They have the same y-coordinate, and their x-coordinates are opposites.

   B. Both coordinates are opposites.

   C. They are in the same quadrant.

   D. They have the same x-coordinate, and their y-coordinates are opposites.

5. A point is in Quadrant IV. It is reflected across the y-axis. In which quadrant is the new point?

6. A map uses a coordinate grid with the school at the origin. The library is at $(-3, 4)$. The park is the library's reflection across the x-axis. Give the park's coordinates.

7. Leo plots $(-2, 5)$ by going 2 units right and 5 units up. What mistake did he make, and where should the point be?

8. Points $(a, 4)$ and $(-3, 4)$ are reflections of each other across the y-axis. What is a?

9. On a number line, the number n is 3 units from 0 and is to the left of -1. What is n?

10. A square has vertices at $(-1, 1)$, $(-1, -3)$ and $(3, -3)$. Find the fourth vertex.