

## Core Content

<b>Cluster Title: Apply and extend previous understandings of numbers to the system of rational numbers.</b>
<b>Standard 6:</b> 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.  b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
<b>MASTERY Patterns of Reasoning:</b>
<b>Conceptual:</b> Understand that the signs of numbers in ordered pairs represent a singular location on the coordinate plane. Understand that changing the sign of one or both numbers in the ordered pair will create a reflection of the point. Understand that a reflection on the coordinate plane is defined as a transformation of a point or shape across one or both of the axes.
<b>Procedural:</b> Find reflection points across axes. Recognize the components of the coordinate plane (Quadrant I (+,+), Quadrant II (-,+), Quadrant III (-,-) Quadrant IV (+, -), x and y axes, origin)
<b>Representational:</b> Plot points in all four quadrants for any given ordered pair.

## Supports for Teachers

<b>Critical Background Knowledge</b>
<b>Conceptual:</b> Know locations of points in the first quadrant.
<b>Procedural:</b> Identify coordinates of given points in the first quadrant.

<p><b>Representational:</b> Plotting points in Quadrant I.</p>	
<p><b>Academic Vocabulary and Notation</b> (<math>x, y</math>), coordinate plane, ordered pair, point, quadrant, reflection, <math>x</math>-axis, <math>y</math>-axis</p>	
<p><b>Instructional Strategies Used</b></p> <p>Have students draw and label a coordinate plane, including quadrants and axes.</p> <p>Make a set of cards with ordered pairs that have a matching card that is a reflection of the point. Have students get in groups and pair the cards that are reflections.</p> <p>Given an ordered pair, have students identify in which quadrant the ordered pair is located.</p>	
<p><b>Resources Used</b></p>	
<p><b>Assessment Tasks Used</b></p>	
<p><b>Skill-based Task:</b> If you had a point graphed at (5, -3), what would be one ordered pair that is a reflection of the point? Students may use a coordinate plane to find a solution.</p>	<p><b>Problem Task:</b> A town was laid out using a coordinate plane. On the city plans, the library is at (3, 2). Which of the following locations is a reflection across the <math>x</math>-axis of where the library is located? Prove your answer is correct using two different methods.</p> <p>School (-3, -2) Gas Station (-3, 2) Post Office (3, -2)</p>