

Core Content

Cluster Title: Analyze patterns and relationships.

Standard 3: Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

MASTERY Patterns of Reasoning:**Conceptual:**

Students will understand numerical patterns.

Students will draw conclusions based on identified patterns.

Students will understand how patterns can be represented on a coordinate plane.

Procedural:

Students can generate numerical patterns.

Students can identify relationships between corresponding terms from two numerical patterns.

Students can form ordered pairs from corresponding terms.

Students can graph ordered pairs on a coordinate plane.

Students can discuss the relationship of the corresponding terms.

Representational:

Students can represent numerical patterns and identify corresponding terms.

Students can use physical models of a coordinate plane and place objects at locations specified by ordered pairs of corresponding terms.

Students can use models of a coordinate plane to extend the above pattern.

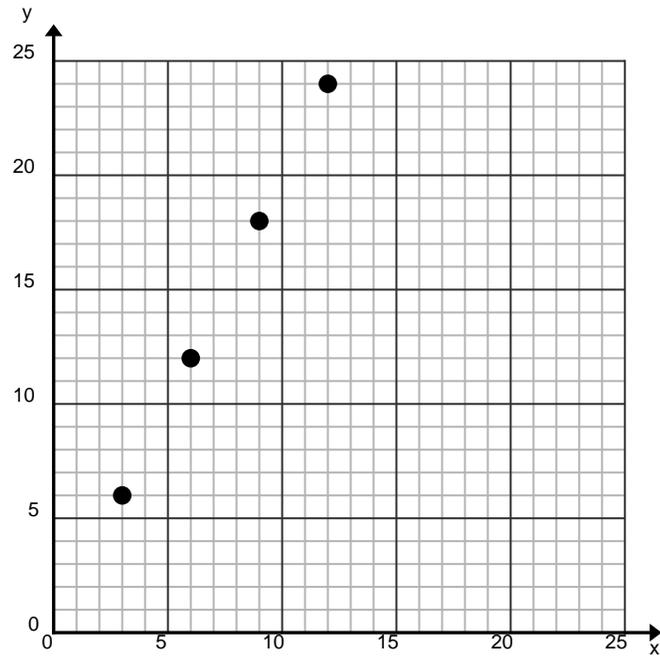
Note: At the fifth grade level, only Quadrant I of the coordinate plane is used.

Supports for Teachers

Critical Background Knowledge	
<p>Conceptual: Students can identify single numerical patterns (e.g., “Add 3,” “Multiply by 4”). Students will understand how a coordinate plane is formed (e.g., origin, x-axis, y-axis). Students can graph points in Quadrant I.</p> <p>Procedural: Students can plot points on a coordinate plane. Students can perform basic operations.</p> <p>Representational: Students can record numerical patterns.</p>	
Academic Vocabulary and Notation	
<p>corresponding terms, coordinate plane, ordered pair, coordinates, pattern, relationship, graph, origin, x-axis, y-axis</p>	
Instructional Strategies Used	Resources Used
<p>Have students generate two numerical patterns. Example: “Add 2” and “Add 4.”</p> <p>Add 2: 2, 4, 6, 8, 10, 12, 14...</p> <p>Add 4: 4, 8, 12, 16, 20, 24, 28...</p> <p>Instruct the students to:</p> <ol style="list-style-type: none"> a. Complete the patterns. b. Find corresponding terms. c. Form ordered pairs from corresponding terms. d. Graph ordered pairs on a coordinate grid. <p>Use word problems such as the following to teach this concept.</p>	<p>Patterns and Grids Resources: http://www.mathwire.com</p> <p>http://www.oswego.org/ocsd-web/games/BillyBug/bugcoord.html</p> <p>http://www.counton.org/games/virtualmathfest/dinosaur.html</p> <p><i>One Grain of Rice</i> by Demi (picture book)</p>

John and Maren are flying model airplanes. Both planes take off at the same time. John's plane climbs 3 feet every second. Maren's plane climbs 6 feet every second.

John	3	6	9	12
Maren	6	12	18	24



Assessment Tasks Used																							
<p>Skill-Based Task: Complete the table below. Identify the pattern for each row. Form ordered pairs from corresponding terms. Graph ordered pairs on a coordinate grid.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="text-align: center;">8</td> <td style="text-align: center;">16</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">4</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	8	16					2	4					<p>Problem Tasks: Russell bought 3 movie tickets for a total of \$21. Catherine bought 5 movie tickets for a total of \$35. Create a table to show the pattern of the prices of movie tickets. How much is 1 ticket, 2 tickets, and 4 tickets? Graph the corresponding terms as ordered pairs on a coordinate plane. What pattern do you see? Explain why.</p> <p>Answer:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">7</td> <td style="text-align: center;">14</td> <td style="text-align: center;">21</td> <td style="text-align: center;">28</td> <td style="text-align: center;">35</td> </tr> </table>	1	2	3	4	5	7	14	21	28	35
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