Grade: 4 **Subject:** Mathematics	**Unit 8: Patterns, Functions, and Graphs**
Big Idea/Rationale:	• This unit builds upon previously learned concepts and skills involving patterns and equations. Growing patterns lead students to explore the mathematical idea of functions. Identifying patterns and completing function tables leads students to write the rule for the table in words and as an equation. Students will create ordered pairs from the table and graph them in the coordinate plane.
Enduring Understanding (Mastery Objective):	Students will understand that: • Patterns and relationships can be represented graphically, numerically, symbolically, or verbally. • Models can be used to clarify mathematical relationships. • Coordinate geometry can be used to represent and verify geometric/algebraic relationships. • The symbolic language of algebra is used to communicate and generalize the patterns in mathematics.
Essential Questions (Instructional Objective):	• How are function patterns of change related to the behavior of functions? • How can patterns, relations, and functions be used as tools to best describe and help explain real-life situations? • How are patterns of change related to the behavior of functions? • How can we best represent and verify geometric/algebraic relationships?
Content (Subject Matter & Learning Objectives):	• Describe, extend, and make generalizations, about repeating and growing patterns. • Identify and extend repeating, growing and shrinking patterns. • Extend a pattern in more than one way. • Given the input of a function, use an operation or its reverse to find an output. • Write input or output values for functions that represent one or two operations. • Make a function table to represent a problem, and write a rule and an equation for it. • Read and plot points in the first quadrant of the coordinate plane. • Determine the side lengths of two-dimensional figures. • Plot points. • Draw the graph of a function. • Extend a graph to solve a problem. • Analyze continuous data in tables and graphs. • Make a line graph.

Standards	• **4.G.A.3:** Recognize a line of symmetry for a two-dimensional figures as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetry figures and draw lines of symmetry. • **Mathematical Practices**
Materials and Resources	• Math Expressions, Student Journals, Manipulatives, Math themed literature, BrainPop, IXL Mathematics