UNIT ARC OF LEARNING™ (AoL)

The goal of *Variables and Patterns* is to develop student ability to recognize, describe, and analyze two kinds of relationships between variables: (1) change in the value of a single variable over time and (2) change in the value of a dependent variable as it responds to change in the value of a related independent variable. Students should learn how to reason about those relationships using representations—verbal, numeric, graphs, tables, and equations. Students will also solve equations of the form $ax = b$ and $a + x = b$ using numeric reasoning, tables, or graphs. Students continue to work with equations throughout the grade 6 units and in some of the grades 7 and 8 units. Specific patterns of change such as linear, exponential, and quadratic are studied in grades 7 and 8. A detailed description of the Arc of Learning™ can be found in the *A Guide to Connected Mathematics*® 4 and the online portal.

Variables and Patterns: Introducing Algebraic Reasoning (AoL)					
■ Relationships Between Variables ■ Expressions and Equations	Introduction *Setting the Scene*	Exploration *Mucking About*	Analysis *Going Deeper*	Synthesis *Looking Across*	Abstraction *Going Beyond*
Investigation 1. Organizing a Bike Tour: Variables, Tables, and Graphs					
Problem 1.1 Organizing a Bike Tour Experiment: Variables and Tables	1.1				
Problem 1.2 Organizing a Bike Tour: Variables, Tables, and Graphs	1.2	1.2			
Problem 1.3 Atlantic City to Lewes to Chincoteague: Time, Rate, and Distance	1.3	1.3			
Problem 1.4 Chincoteague Island to Norfolk: Stories, Tables, and Graphs	1.4	1.4			
Mathematical Reflection		MR			
Investigation 2. Determining Tour Needs: Analyzing Relationships Among Variables					
Problem 2.1 Renting Bicycles: Independent and Dependent Variables	2.1	2.1			
Problem 2.2 Finding Customers: More Variables		2.2			
Problem 2.3 What's the Story?: Interpreting Graphs		2.3			
Mathematical Reflection		MR			
Investigation 3. Returning Home: Relating Variables, Expressions, and Equations					
Problem 3.1 Returning Home: Equations with One Operation	3.1 3.1	3.1			
Problem 3.2 Planning the Next Tour: More Equations with One Operation		3.2 3.2			
Problem 3.3 Planning Ahead: Connecting Equations with Tables and Graphs		3.3 3.3			
Mathematical Reflection		MR MR			