	IT'S IN THE SYSTEM Systems of Linear Equations and Inequalities	
Instructional Time and Investigations	17 days	• Inv. 1: Linear Equations With Two Variables (3 Problems) • Inv. 2: Solving Linear Systems Symbolically (3 Problems) • Inv. 3: Systems of Functions and Inequalities (3 Problems) • Inv. 4: Systems of Linear Inequalities (4 Problems)
Goals	**Linear Equations:** Develop understanding of linear equations and systems of linear equations. • A system of linear equations can be used to solve problems when two or more equations that represent constraints on the variables in a situation are identified. • The solution to a system of linear equations can be found graphically or algebraically. Analyzing the equations and the situation can help you to determine which strategy is most appropriate to apply.	**Linear Inequalities:** Develop understanding of graphic and symbolic methods for solving linear inequalities with one and two variables. • The strategies for solving linear equations, linear inequalities, and systems of linear equations can be extended to solving systems of linear inequalities using the properties of inequality.
Common Core Standards	**Common Core Standards for Mathematical Practice** **MP.1:** Make sense of problems and persevere in solving them. **MP.2:** Reason abstractly and quantitatively. **MP.3:** Construct viable arguments and critique the reasoning of others. **MP.4:** Model with mathematics. **MP.5:** Use appropriate tools strategically. **MP.6:** Attend to precision. **MP.7:** Look for and make use of structure. **MP.8:** Look for and express regularity in repeated reasoning.	**Common Core Content Standards** **8.EE.C.8:** Analyze and solve pairs of simultaneous linear equations. **8.EE.C.8a:** Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. **8.EE.C.8b:** Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. **8.EE.C.8c:** Solve real-world and mathematical problems leading to two linear equations in two variables. **8.F.A.3:** Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. **Also A-CED.A.1, A-CED.A.2, A-CED.A.3, A-CED.A.4, A-REI.B.3, A-REI.B.4, A-REI.B.4b, A-REI.C.5, A-REI.C.6, A-REI.C.7, A-REI.D.10, A-REI.D.12**

	IT'S IN THE SYSTEM Systems of Linear Equations and Inequalities	
	Content Connections to Other Units	
Goals of the Unit	**Prior Work**	**Future Work**
Linear Equations: Develop understanding of linear equations and systems of linear equations.	• Formulating, reading, and interpreting symbolic rules (*Variables and Patterns; Comparing and Scaling; Moving Straight Ahead; Thinking With Mathematical Models; Say It With Symbols*) • Solving problems in geometric and algebraic contexts (*Shapes and Designs; Moving Straight Ahead; Thinking With Mathematical Models; Say It With Symbols; Frogs, Fleas, and Painted Cubes*) • Solving linear equations (*Variables and Patterns; Comparing and Scaling; Moving Straight Ahead; Thinking With Mathematical Models; Growing, Growing, Growing; Say It With Symbols*)	• Using constraints to interpret a real-world situation in linear and nonlinear contexts (*High School*) • Finding areas of bounded regions in the coordinate plane (*High School; College*) • Solving systems of equations beyond linear equations (e.g., a quadratic and a polynomial); solving multi-dimensional systems of linear equations; using matrices and Cramer's Rule to solve systems of linear equations (*High School; College*)
Linear Inequalities: Develop understanding of graphic and symbolic methods for solving linear inequalities with one and two variables.	• Working with the triangle inequality (*Shapes and Designs*) • Solving linear equations (*Variables and Patterns; Comparing and Scaling; Moving Straight Ahead; Thinking With Mathematical Models; Growing, Growing, Growing; Say It With Symbols*)	• Solving multi-dimensional inequalities (*High School; College*) • Finding minimum and maximum values through linear programming; solving systems of inequalities beyond linear functions (*High School*)