Algebra I	Keystone Performance Level Descriptors	
Basic	**Proficient**	**Advanced**
An Algebra I student performing at this level solves simple mathematical problems by applying fundamental skills and procedures in Algebra I. Students performing at this level demonstrate these abilities by identifying and simplifying operations with real numbers and operations with expressions. They solve and graph simple linear equations and linear inequalities. Students identify solutions of simple linear systems of equations (including solutions using graphs) and inequalities. They identify characteristics of functions and write equations of functions involving substitution of constant values (e.g., slope), including the use of coordinate geometry. Students use data analysis to answer fundamental questions.	An Algebra I student performing at this level demonstrates an understanding of the skills, concepts, and procedures in Algebra I and is able to model and solve real-world problems. Students performing at this level demonstrate these abilities by simplifying, using properties, and performing operations with real numbers and operations with expressions. They solve, graph, write, and interpret linear equations and linear inequalities. Students solve linear systems of equations and interpret graphs of linear systems of inequalities. They identify, use, describe, graph, and write functions, and convert between multiple representations of functions, including the use of coordinate geometry. Students use data analysis to analyze, calculate, interpret, and make predictions.	An Algebra I student performing at this level demonstrates an in-depth understanding of the skills, concepts, and procedures in Algebra I and is able to model, analyze, solve, and evaluate complex problems, including real-world problems. Students performing at this level demonstrate these abilities by justifying the use of properties involving operations with real numbers and by simplifying complex expressions. They justify reasoning when solving complex linear equations and linear inequalities and interpret the results. Students write, solve, and graph linear systems of equations and inequalities and interpret the results. They interpret and make predictions using functions, including the use of coordinate geometry. Students use data analysis to analyze, calculate, interpret, and make predictions based on multiple sets of data.
A student at this level is able to do the following: • Orders and simplifies real numbers. • Identifies multiple representations of rational numbers. • Evaluates expressions with exponents, roots, or absolute values. • Simplifies expressions using non-negative exponential values. • Performs operations on and simplifies polynomial expressions (up to monomials multiplied by trinomials). • Factors polynomial expressions with no more than two factors. • Solves and graphs multistep linear equations or inequalities with integer coefficients and constants. • Solves and graphs linear equations and inequalities. • Identifies the solutions of systems of equations and inequalities. • Solves systems of equations by graphing. • Identifies the domains and ranges of relations given in ordered pairs and tables. • Graphs linear functions given equations, sets of ordered pairs, or tables. • Identifies and computes the rates of change (slopes) of lines. • Identifies and computes the y-intercepts of lines. • Writes slope-intercept forms of linear equations when given the graph or the slope and the y-intercept of lines. • Writes point-slope forms of linear equations when given the graph or the slope and a point. • Draws and identifies lines of best fit for scatter plots. • Identifies and finds the ranges, quartiles, and interquartile ranges given a box-and-whisker plot. • Answers questions based on displayed data. • Finds probabilities for compound events with replacement.	**A student at this level is able to do the following:** • Orders and simplifies real numbers written as expressions. • Uses multiple representations of real numbers. • Uses properties of exponents to simplify terms. • Uses estimations in problem-solving situations. • Performs operations on and simplifies polynomial expressions (up to binomials multiplied by binomials). • Factors polynomial expressions. • Solves and graphs multistep linear equations or inequalities and absolute value equations. • Writes, solves, graphs, and interprets linear equations and inequalities in problem-solving situations. • Solves systems of equations. • Interprets graphical representations of systems of two linear inequalities. • Interprets solutions to problem-solving situations. • Recognizes functions and identifies the domains and ranges of relations given in ordered pairs and tables. • Converts between multiple representations of linear functions. • Describes, computes, and/or uses the rates of change (slopes) of lines. • Describes, computes, and/or uses the y-intercepts of lines. • Writes slope-intercept or point-slope forms of linear equations when given the graph, two points, or the slope and a point. • Identifies the equations for lines of best fit for scatter plots. • Makes predictions from lines of best fit for scatter plots. • Calculates the ranges, quartiles, and interquartile ranges given data or data displays. • Analyzes data, makes predictions, and answers questions based on displayed data. • Finds probabilities for compound events.	**A student at this level is able to do the following:** • Uses estimations to make predictions in problem-solving situations. • Performs multistep operations on and simplifies polynomial expressions. • Simplifies rational algebraic expressions. • Solves and graphs absolute value inequalities. • Uses and identifies properties to justify steps in equation-solving processes. • Writes and solves systems of equations in problem-solving situations, and interprets the results. • Writes, solves, and graphs systems of linear inequalities in problem-solving situations, and interprets the results. • Recognizes functions, and identifies the domains and ranges of relations given in graphs, ordered pairs, and tables. • Interprets, describes, computes, and/or uses the rates of change (slopes) of lines. • Interprets, describes, computes, and/or uses the intercepts of lines. • Writes standard forms of linear equations when given the graph, two points, or the slope and a point. • Writes the equations for lines of best fit for scatter plots and makes predictions. • Calculates and interprets the ranges, quartiles, and interquartile ranges given data or data displays. • Analyzes data, makes predictions, and answers questions based on multiple displays of data.