Performance Level Descriptors – Grade 8 Mathematics

PLD	Domain	Below Basic	Basic	Proficient	Advanced
Reporting		**Below Basic do not yet demonstrate proficiency in the knowledge and skills** necessary at this grade level/course of learning, as specified in content expectations. The students need substantial academic support to be prepared for the next grade level or course and to be on track for *college and career readiness.*	**Basic demonstrate partial proficiency in the knowledge and skills** necessary at this grade level/course of learning, as specified in content expectations. The students need additional academic support to ensure success in the next grade level or course and to be on track for *college and career readiness.*	**Proficient demonstrate proficiency in the knowledge and skills** necessary at this grade level/course of learning, as specified in content expectations, and uses clear and precise language when communicating mathematical understanding. The students are prepared for the next grade level or course and are on track for *college and career readiness.*	**Advanced demonstrate advanced proficiency in the knowledge and skills** necessary at this grade level/course of learning, as specified in content expectations. The students are well prepared for the next grade level or course and are well prepared for *college and career readiness.*
		A student who performs at the **Below Basic** level demonstrates minimal command of the grade-level expectations.	A student who performs at the **Basic** level demonstrates partial command of the grade-level expectations.	A student who performs at the **Proficient** level demonstrates proficiency of the grade-level expectations.	A student who performs at the **Advanced** level demonstrates advanced proficiency of the grade-level expectations.
Range	**Number Sense and Operations**	Recognizes examples of irrational numbers	Approximates the value of irrational square roots between two integers on a number line; locates rational and irrational numbers on a number line; converts fractions to repeating decimals or percent	Represents irrational numbers as a category distinct from rational numbers and recognizes that rational numbers are expressible as a quotient of two integers; recognizes that irrational numbers are not expressible as a quotient of two integers	Converts a repeating decimal into a fraction

PLD	Domain	Below Basic	Basic	Proficient	Advanced
	Expressions, Equations and Inequalities	Evaluates a numerical expression with an integer exponent; represents whole number multiples of ten in scientific notation	Recognizes and uses integer exponents; expresses quantities in scientific notation; calculates square and cube roots; graphs proportional relationship and linear equations in slope-intercept form; solves given linear equations and inequalities; approximates the solution to a system of equations represented graphically	Uses multiple properties of exponents to generate equivalent expressions; represents linear equations in multiple ways; understands and solves problems that involve scientific notation, proportional relationships, the slope of a graph, square and cubed roots and linear equations; solves systems of linear equations	Solves complex problems involving scientific notation; determines the most efficient methods to solve equations and systems of equations; models, interprets and analyzes solutions to problems in a context
Range	Functions	Determines from graphs and tables if relations are functions	Identifies linear and non-linear functions from tables, graphs, and equations	Determines if relations are functions; defines, creates, evaluates, graphs, and compares functions; uses functions to model relationships between quantities, in multiple representations	Analyzes interprets and communicates key differences between functions represented in multiple ways
	Geometry and Measurement	Recognizes congruent and similar figures and possible translations between the figures; plots and translates figures in the Cartesian coordinate plane	Recognizes and identifies congruence and similarity using physical models, transparencies, or geometry software; applies the Pythagorean theorem in two-dimensions; recognizes and applies single reflections; calculates the volume of figures	Solves problems involving congruent and similar figures; solves problems involving the angles in a triangle; identifies congruent angles when parallel lines are cut by a transversal; applies the Pythagorean theorem in context; uses models to demonstrate a proof of the Pythagorean theorem; describes and creates rigid and non-rigid transformations; determines the volume and surface area of figures to solve problems	Understands and analyzes problems involving parallel lines and triangles; describes and creates sequences of rigid and non-rigid transformations; understands the relationships between the volumes of different three-dimensional models; interprets the Pythagorean theorem in three-dimensions; solves real-world volume problems

PLD	Domain	Below Basic	Basic	Proficient	Advanced
	Data Analysis, Statistics and Probability	Recognizes association in given bivariate data; constructs scatter plots; determines informally whether a trend line models bivariate data represented graphically	Describes association in bivariate data in context; estimates graphically a linear model for data	Constructs a two-way table summarizing bivariate data; describes and creates linear functions to model data and interprets the parameters of the model; investigates patterns of association in bivariate data	Describes and analyzes patterns of association in bivariate categorical data; interprets data in a two-way table; interprets the quality of data models in a context; uses the student-generated data model to make predictions