

Grade 8 RICAS Mathematics Achievement Level Descriptors

(Updated March 2022)

Student results on the RICAS assessments are reported according to four achievement levels:

- **Exceeding Expectations**
A student who performed at this level exceeded grade-level expectations by demonstrating mastery of the subject matter.
- **Meeting Expectations**
A student who performed at this level met grade-level expectations and is academically on-track to succeed in the current grade in this subject.
- **Partially Meeting Expectations**
A student who performed at this level partially met grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should consider whether the student needs additional academic assistance to succeed in this subject.
- **Not Meeting Expectations**
A student who performed at this level did not meet grade-level expectations in this subject. The school, in consultation with the student's parent/guardian, should determine the coordinated academic assistance and/or additional instruction the student needs to succeed in this subject.

The descriptors included in the table below illustrate the knowledge and skills students demonstrate on RICAS at each level. Knowledge and skills are cumulative at each level. No descriptors are provided for the *Not Meeting Expectations* achievement level because students' work at this level, by definition, does not meet the criteria of the *Partially Meeting Expectations* level.



Grade 8 RICAS Achievement Level Descriptors – General Performance

Grade 8	Partially Meets Expectations <i>On RICAS, a student at this level:</i>	Meeting Expectations <i>On RICAS, a student at this level:</i>	Exceeding Expectations <i>On RICAS, a student at this level:</i>
Conceptual Understanding and Procedural Knowledge	<ul style="list-style-type: none"> demonstrates partial understanding of the numeration system performs some calculations and estimations identifies examples of basic math concepts reads and constructs graphs, tables, and charts 	<ul style="list-style-type: none"> demonstrates solid understanding of the numeration system performs most calculations and estimations defines concepts and generates examples and counterexamples of concepts represents data and mathematical relationships in multiple forms (e.g., equations, graphs) 	<ul style="list-style-type: none"> connects concepts from various areas of mathematics, and uses concepts to develop generalizations performs complex calculations and estimations selects the best representations for a given set of data and purpose
Problem Solving	<ul style="list-style-type: none"> applies learned procedures to solve routine problems 	<ul style="list-style-type: none"> applies learned procedures and mathematical concepts to solve a variety of problems, including multi-step problems 	<ul style="list-style-type: none"> generates unique strategies and procedures to solve non-routine problems
Mathematical Reasoning	<ul style="list-style-type: none"> applies some reasoning methods to solve simple problems 	<ul style="list-style-type: none"> uses a variety of reasoning methods to solve problems explains steps and procedures 	<ul style="list-style-type: none"> uses multiple reasoning methods to solve complex problems justifies strategies and solutions
Mathematical Communication	<ul style="list-style-type: none"> identifies and uses basic mathematical terms 	<ul style="list-style-type: none"> uses various forms of representation (e.g., text, graphs, symbols) to illustrate steps to a solution 	<ul style="list-style-type: none"> uses various forms of representation (e.g., text, graphs, symbols) to justify solutions and solution strategies

Grade 8 RICAS Achievement Level Descriptors – Content Specific

Grade 8	Partially Meets Expectations <i>On RICAS, a student at this level:</i>	Meeting Expectations <i>On RICAS, a student at this level:</i>	Exceeding Expectations <i>On RICAS, a student at this level:</i>
The Number System	<ul style="list-style-type: none"> Distinguishes between rational and irrational numbers 	<ul style="list-style-type: none"> Recognizes that rational and irrational numbers have decimal expansions Uses rational approximations of irrational numbers to compare the size of irrational numbers Finds approximate location of irrational numbers on the number line Finds rational approximations of irrational numbers 	<ul style="list-style-type: none"> Estimates the values of expressions with irrational numbers Converts a decimal expansion which repeats eventually to a rational number
Expressions and Equations	<ul style="list-style-type: none"> Identifies the properties of integer exponents Know that $\sqrt{2}$ is irrational Uses and evaluates square roots of small squares Graphs proportional relationships, and identifies the unit rate as the slope Solves one-variable linear equations with one or many solutions Recognizes that the point of intersection of two linear equations is the solution 	<ul style="list-style-type: none"> Applies the properties of integer exponents to generate equivalent expressions Performs operations with decimals and scientific notation Uses and evaluates cube roots of small cubes Uses numbers in the form of a single digit times an integer power of 10 to estimate the magnitude and relationships of quantities Uses scientific notation and chooses appropriate units of measurement for varying magnitudes Uses linear equations and systems of linear equations to represent and solve problems. Compares proportional relationships represented in different ways 	<ul style="list-style-type: none"> Uses numbers in the form of a single digit times an integer power of 10 to estimate the magnitude and interpret relationships of quantities in word problems Uses linear equations and systems of linear equations to represent, analyze, and solve problems. Use similar triangles to explain why the slope is the same between any two distinct points on a non-vertical line in the coordinate plane Derives the equation $y=mx$ for a line through the origin and the equation $y=mx + b$ for a line intercepting the vertical axis b Estimates solutions to systems of two equations from a graph

Grade 8 RICAS Achievement Level Descriptors – Content Specific

Grade 8	Partially Meets Expectations <i>On RICAS, a student at this level:</i>	Meeting Expectations <i>On RICAS, a student at this level:</i>	Exceeding Expectations <i>On RICAS, a student at this level:</i>
Expressions and Equations		<ul style="list-style-type: none"> • Recognizes the difference between proportional and non-proportional in linear relationships • Solves one-variable linear equations with rational coefficients • Solves systems of two linear equations algebraically or graphically in real-world and mathematical problems 	<ul style="list-style-type: none"> • Uses understanding of a proportional relationship and structure to interpret the meaning of b, the vertical axis intercept
Functions	<ul style="list-style-type: none"> • Identifies a relationship as a function • Interprets the equation of a linear function 	<ul style="list-style-type: none"> • Determines the rate of change and initial value of a function from a table or graph • Compares the properties of functions represented in different ways • Writes a function to model a linear relationship • Determines the rate of change of a function from a table, graph or description • Describes or sketches functional relationships represented graphically 	<ul style="list-style-type: none"> • Identifies functions as linear and non-linear from graphs or equations • Interprets the rate of change of a function from a table, graph, equation or description

Grade 8 RICAS Achievement Level Descriptors – Content Specific

Grade 8	Partially Meets Expectations <i>On RICAS, a student at this level:</i>	Meeting Expectations <i>On RICAS, a student at this level:</i>	Exceeding Expectations <i>On RICAS, a student at this level:</i>
Geometry	<ul style="list-style-type: none"> Identifies the properties of rotations, reflections and translations Uses the relationship among the sides of a right triangle to solve problems Translates and reflects two dimensional figures Uses Pythagorean theorem to find the hypotenuse 	<ul style="list-style-type: none"> Describes the congruence relationship between two congruent figures Describes the effect of transformations on two-dimensional figures using coordinates Describes the similarity relationship between two similar figures Rotates two-dimensional figures around the origin Finds angle sum and exterior angle of triangles, angles created when parallel lines are cut by a transversal, and angle-angle criterion for similarity of triangles Applies the Pythagorean theorem to find distances between points on the coordinate plane Applies the Pythagorean theorem to determine the unknown side lengths in right triangles in mathematical and real-world problems Solves mathematical and real-world problems involving volume of cones, cylinders, and spheres 	<ul style="list-style-type: none"> Use informal arguments to establish facts about the angle sum and exterior angle of triangles, angles created when parallel lines are cut by a transversal, and angle-angle criterion for similarity of triangles Justifies Pythagorean theorem and its converse Given the volume of a cone, finds unknown dimensions of the cone Given the volume of a cylinder, finds unknown dimensions of the cylinder Given the volume of a sphere, finds unknown dimensions of the sphere
	<ul style="list-style-type: none"> Describes the patterns associated with bivariate data Identifies and constructs a line of best fit 	<ul style="list-style-type: none"> Constructs and interprets scatter plots Constructs and interprets two-way tables Uses the equation of a linear model to solve problems 	<ul style="list-style-type: none"> Interprets the slope and intercept of linear models Analyzes scatter plots Analyzes relative frequencies in two-way tables