

Grade 5 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 5 RICAS Achievement Level Descriptors – General Performance

Grade 5	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 5 RICAS Achievement Level Descriptors – Content Specific

Grade 5	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>
Operations and Algebraic Thinking	<ul style="list-style-type: none"> Recognizes when parentheses, brackets, or braces are appropriately used in numerical expressions Given two rules, generates numerical patterns 	<ul style="list-style-type: none"> Uses parentheses, brackets, or braces to write, interpret and evaluate numerical expressions Interprets numerical expressions without evaluating Given two rules, identifies the relationship between corresponding terms 	<ul style="list-style-type: none"> Given two rules, forms and graphs ordered pairs and interprets the relationship between corresponding terms
Number and Operations in Base Ten	<ul style="list-style-type: none"> Recognizes that in a multi-digit number, including a decimal, a digit in any place represents 10 times as much as it represents in the place to its right or 1/10 of what it represents in the place to its left Reads decimals to thousandths using base 10 numerals, number names, and expanded form Identifies which comparison symbols to use when comparing decimals to hundredths Uses various strategies to solve problems involving all operation with whole numbers including quotients with division limited to four digit dividends and 2 digit divisors Solves problems involving addition and subtraction with decimals to tenths Identifies the quotient of whole numbers 	<ul style="list-style-type: none"> Uses whole number exponents to denote powers of 10 Uses place value to round decimals to any place Fluently multiplies multi-digit whole numbers Writes decimals to thousandths using base ten numerals, number names, expanded form and comparison symbols Compares decimals using base ten numerals, number names and comparison symbols $<$, $>$ and $=$ Uses various strategies to solve problems involving all operation with whole numbers including quotients with division limited to four digit dividends and 2 digit divisors and explains using rectangular arrays and/or area models Applies understanding of models for decimals, place value, and properties of operations to add, subtract, multiply, and divide decimals to the hundredths. 	<ul style="list-style-type: none"> Uses place value understanding of multi-digit numbers including decimals to explain patterns in the number of zeros and the placement of the decimal point, when multiplying a number by powers of 10. Compares decimals using expanded form Makes reasonable estimates of decimal results Explains understandings of models for decimals, decimal notation, and properties of operations to add, subtract, multiply and divide decimals to hundredths Uses the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers to understand and explain why the procedures for multiplying and dividing finite decimals make sense.

Grade 5 RICAS Achievement Level Descriptors – Content Specific

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Number and Operations in Base Ten		<ul style="list-style-type: none"> Solves mathematical and real-world problems involving multiplication of whole numbers and decimals to hundredths using the standard algorithm. Uses models to find the quotients of whole numbers. Solves problems involving all operations on decimals to hundredths. 	
Number and Operations - Fractions	<ul style="list-style-type: none"> Adds and subtracts fractions with like denominators (including mixed numbers) Uses visual fraction models to multiply fractions or whole numbers by fractions Finds areas or rectangles with fractional side lengths by tiling with unit squares Recognizes multiplication as scaling by comparing the factors with computation 	<ul style="list-style-type: none"> Adds and subtracts fractions with unlike denominators (including mixed numbers) Uses visual fraction models to solve real-world problems by multiplying fractions or whole numbers by fractions, and fractions by mixed numbers Shows that the area of rectangles with fractional side lengths, found by tiling with unit squares, is the same as multiplying the side lengths Recognizes multiplication as scaling by comparing the factors without computation Interprets division of a unit fraction by a non-zero whole number and division of a whole number Solves real-world and mathematical problems involving division of a unit fraction by a non-zero whole number and a whole number by a unit fraction 	<ul style="list-style-type: none"> Applies understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators in the context of solving word problems. Uses understanding of fraction equivalence to make sense of sums and differences of fractions and makes reasonable estimates of them. Uses the relationship between multiplication and division of fractions to solve and explain mathematical and real-world problems including finding the area of rectangles with fractional side lengths, finding quotients of division of non-zero whole number by unit fractions

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Measurement and Data	<ul style="list-style-type: none"> Converts among different-sized measurement units within a given measurement system Interprets and represents data presented in line plots (dot plots) to solve problems Recognizes volume as an attribute of solid figures and calculates volume of right rectangular prisms by packing it with unit cubes, counting unit cubes, and with standard and non-standard units 	<ul style="list-style-type: none"> Applies conversion among different-sized measurement units within a given measurement system to solve multi-step real-world problems Uses a line plot (dot plot) to represent data and uses operations on fractions to solve problems involving the line plots Recognizes volume as additive and calculates volume by finding the total number of same-size units of volume required to fill a space without gaps or overlaps. Decomposes three-dimensional shapes and finds volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes 	<ul style="list-style-type: none"> Uses appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume with application of the volume formula Decomposes three-dimensional shapes and finds volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes and relate to the volume formula Solves real world application problems requiring the application of $V = lwh$ and $V = Bh$
Geometry	<ul style="list-style-type: none"> Represents mathematical and real-world problems by locating points in the first quadrant Identifies two-dimensional figures based on properties 	<ul style="list-style-type: none"> Represents mathematical and real-world problems by locating and graphing in the first quadrant Classifies two-dimensional figures in a hierarchy based on properties 	<ul style="list-style-type: none"> Solves mathematical and real-world problems by graphing in the first quadrant and interpreting the coordinate values of points based on the context of the situation Applies knowledge of number and length to the order and distance relationships of a coordinate plane