

# Grade 6 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 6 RICAS Achievement Level Descriptors - General Performance

Grade 6	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>
<b>Conceptual Understanding and Procedural Knowledge</b>	<ul style="list-style-type: none"> <li>• demonstrates partial understanding of the numeration system</li> <li>• performs some calculations and estimations</li> <li>• identifies examples of basic math concepts</li> <li>• reads and constructs graphs, tables,</li> <li>• and charts</li> </ul>	<ul style="list-style-type: none"> <li>• demonstrates solid understanding of the numeration system</li> <li>• performs most calculations and estimations</li> <li>• defines concepts and generates examples and counterexamples of concepts</li> <li>• represents data and mathematical relationships in multiple forms</li> <li>• (e.g., equations, graphs)</li> </ul>	<ul style="list-style-type: none"> <li>• connects concepts from various areas of mathematics, and uses concepts to develop generalizations</li> <li>• performs complex calculations and estimations</li> <li>• selects the best representations for a given set of data and purpose</li> </ul>
<b>Problem Solving</b>	<ul style="list-style-type: none"> <li>• applies learned procedures to solve routine problems</li> </ul>	<ul style="list-style-type: none"> <li>• applies learned procedures and mathematical concepts to solve a variety of problems, including multi-step problems</li> </ul>	<ul style="list-style-type: none"> <li>• generates unique strategies and procedures to solve non-routine problems</li> </ul>
<b>Mathematical Reasoning</b>	<ul style="list-style-type: none"> <li>• applies some reasoning methods to solve simple problems</li> </ul>	<ul style="list-style-type: none"> <li>• uses a variety of reasoning methods to solve problems</li> <li>• explains steps and procedures</li> </ul>	<ul style="list-style-type: none"> <li>• uses multiple reasoning methods to solve complex problems</li> <li>• justifies strategies and solutions</li> </ul>
<b>Mathematical Communication</b>	<ul style="list-style-type: none"> <li>• identifies and uses basic mathematical terms</li> </ul>	<ul style="list-style-type: none"> <li>• uses various forms of representation (e.g., text, graphs, symbols) to illustrate steps to a solution</li> </ul>	<ul style="list-style-type: none"> <li>• uses various forms of representation (e.g., text, graphs, symbols) to justify solutions and solution strategies</li> </ul>

### Grade 6 RICAS Achievement Level Descriptors – Content Specific

Grade 6	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>
<b>The Number System</b>	<ul style="list-style-type: none"> <li>• Interprets quotients of fractions to solve problems</li> <li>• Identifies greatest common factors or least common multiples</li> <li>• Uses positive and negative numbers to describe quantities having opposite directions or values</li> <li>• Solves mathematical problems by using all operations on multi-digit decimals</li> <li>• Graphs ordered pairs in all four quadrants to solve problems</li> <li>• Interprets statements of order for rational numbers</li> </ul>	<ul style="list-style-type: none"> <li>• Computes quotients of fractions to solve problems</li> <li>• Uses prime factorization to find the greatest common factors, least common multiples to solve problems</li> <li>• Represents quantities in real-world context on a number line, explaining the meaning of zero</li> <li>• Uses the understanding of structure to explain the standard algorithm to divide multi-digit numbers</li> <li>• Uses the standard algorithm to fluently operate on multi-digit decimals</li> <li>• Finds the absolute value of a rational number by recognizing its distance from zero on the number line</li> <li>• Uses the standard algorithm to divide multi-digit numbers</li> <li>• Computes all operations on multi-digit decimals</li> <li>• Solve problems by graphing in all four quadrants and finds distances between points with same first coordinate or same second coordinate</li> <li>• Interprets and writes statements of order for rational numbers</li> </ul>	<ul style="list-style-type: none"> <li>• Applies interpretation of quotients of fractions to solving word problems</li> <li>• Uses visual fraction models to solve word problems involving computing quotients of fractions</li> <li>• Applies number theory concepts to the solution of problems.</li> <li>• Solves problems involving order and absolute value of rational numbers</li> </ul>

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<b>Ratios and Proportional Relationships</b>	<ul style="list-style-type: none"> <li>Identifies part to part and part to whole relationships</li> <li>Uses rate language in the context of a ratio relationship</li> <li>Sometimes solves unit rate problems</li> </ul>	<ul style="list-style-type: none"> <li>Solves problems requiring part to part ratios to be converted to part to whole ratios</li> <li>Consistently solves unit rate problems</li> <li>Uses rate reasoning to solve problems</li> <li>Finds the percent of a quantity</li> <li>Uses ratio reasoning to convert measurement units within measurement systems</li> <li>Interprets and manipulates models with ratios such as tape diagrams, tables and double number lines to compare ratios</li> </ul>	<ul style="list-style-type: none"> <li>Determines what percent of a quantity is a given amount</li> <li>Explains when to use part to part ratios, and when to use part to whole ratios to solve problems</li> <li>Uses ratio reasoning to convert measurement units between measurement systems</li> <li>Creates models with ratios such as tape diagrams, tables and double number lines to compare ratios</li> <li>Relates mass of an object to its volume to solve problems</li> </ul>
<b>Expressions and Equations</b>	<ul style="list-style-type: none"> <li>Evaluates given expressions and equations involving whole-number exponents to solve problems</li> <li>Identifies parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient)</li> </ul>	<ul style="list-style-type: none"> <li>Interprets, evaluates and writes expressions and equations involving whole-number exponents</li> <li>Views one or more parts of an expression as a single entity</li> <li>Generate and identify equivalent expressions</li> <li>Relates tables and graphs to equations</li> <li>Writes and solves equations of the form <math>x + p = q</math> and <math>px = q</math></li> <li>Solves and graphs inequalities that represent a constraint or condition in a mathematical or real-world problem.</li> <li>Analyzes the relationships between dependent and independent variables in real-world problems.</li> </ul>	<ul style="list-style-type: none"> <li>Writes and graphs inequalities that represent a constraint or condition in a mathematical or real-world problem</li> <li>Creates equations of the form <math>x + p = q</math> and <math>px = q</math> from a given situation</li> <li>Uses equations to describe relationships between quantities</li> </ul>

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<b>Geometry</b>	<ul style="list-style-type: none"> <li>Solves mathematical problems involving areas of triangles, including right triangles and quadrilaterals</li> <li>Solves mathematical problems involving volume of right rectangular prisms with whole number edge lengths</li> <li>Represents three-dimensional figures using nets</li> <li>Given coordinates of a polygon, draws the polygon on a coordinate plane</li> </ul>	<ul style="list-style-type: none"> <li>Solves real-world problems involving areas of triangles, including right triangles and quadrilaterals by decomposing shapes, rearranging or removing pieces, and relating shapes to rectangles</li> <li>Finds volume of right rectangular prisms with fractional edge lengths</li> <li>Uses nets of three-dimensional figures to find the surface area</li> <li>Given coordinates of a polygon on a coordinate plane, finds lengths of the sides of the polygon</li> </ul>	<ul style="list-style-type: none"> <li>Reasons about geometric shapes and their measurements</li> <li>Develops, and justifies formulas to solve mathematical and real-world problems that involve areas of triangles, including right triangles, and quadrilaterals</li> <li>Applies the formula for volume of right rectangular prisms with fractional edge lengths</li> <li>Applies knowledge of nets to solve mathematical and real-world problems involving surface area</li> <li>Given coordinates of a polygon (without a coordinate plane), finds lengths of the sides of the polygon and applies these techniques to solve real-world problems</li> </ul>
<b>Statistics and Probability</b>	<ul style="list-style-type: none"> <li>Recognizes a statistical question</li> <li>Visually recognizes measures of center and variability</li> <li>Interprets dot plots and histograms</li> </ul>	<ul style="list-style-type: none"> <li>Solve problems involving finding the measures of center and variability</li> <li>Constructs dot plots, histograms, box plots and circle graphs given real-world situations</li> </ul>	<ul style="list-style-type: none"> <li>Recognizes that a data distribution may not have a definite center, and different ways to measure center can yield different values, and uses this understanding to interpret a situation</li> <li>Describes and summarizes numerical data sets, identifying clusters, peaks, gaps, and symmetry in a real-world problem</li> </ul>