### 5th Grade Mathematics — Performance Level Descriptors

<table>
<thead>
<tr>
<th>Reporting Categories</th>
<th>Needs Support</th>
<th>Close</th>
<th>Ready</th>
<th>Exceeding</th>
</tr>
</thead>
</table>
| **Operations and Algebraic Thinking** Focus is on numerical expressions. Students compare patterns, developing early function reasoning. | A student performing at the Needs Support level:  
- writes simple numerical expressions composed of two operations that record calculations with numbers.  
- expresses the relationship between two terms in a number sentence or pattern. | A student performing at the Close level:  
- translates verbal descriptions of up to three numerical operations to symbolic expressions, including expressions involving parentheses.  
- compares two numerical patterns, describing the relationship between the corresponding terms.  
- expresses the relationship between terms in a given verbal number sentence or numerical pattern. | A student performing at the Ready level:  
- interprets numerical expressions without evaluating them.  
- writes expressions involving parentheses, including from a real-world problem.  
- plots ordered pairs in the first quadrant of a coordinate plane derived from the relationship between corresponding terms of two numerical patterns.  
- makes sense of a real-world problem involving any of the four operations and writes an expression that reflects that given situation. | A student performing at the Exceeding level:  
- writes and evaluates expressions involving multiple sets of parentheses, including from a real-world problem.  
- describes the relationships between ordered pairs by using coordinates from a graph.  
- makes sense of a real-world problem involving any of the four operations and writes an expression that reflects that given situation and then uses the expression to solve the problem. |
| **Number and Operations in Base Ten** Focus is on understanding the place-value structure of the base-ten system and on developing fluency with basic operations. | A student performing at the Needs Support level:  
- recognizes that in a multi-digit whole number the place value of any digit represents 10 times as much as the place value of the digit to its right.  
- reads and writes decimal numbers to hundredths.  
- interprets a given model representing a decimal to the hundredths place. | A student performing at the Close level:  
- recognizes and explains the patterns in the number of zeros in the product when multiplying by powers of 10.  
- compares decimal numbers to hundredths.  
- adds, subtracts, multiplies, or divides decimal numbers to the hundredths using models, place value, or properties of operations.  
- constructs a model, such as a number line, to round decimals to the hundredths place. | A student performing at the Ready level:  
- recognizes that in a multi-digit number the place value of any digit represents 1/10 times as much as the place value of the digit to the left.  
- recognizes and explains patterns in placement of the decimal point when multiplying or dividing by powers of 10.  
- uses and explains a standard algorithm to multiply multi-digit whole numbers.  
- rounds decimal numbers to the hundredths place.  
- uses place-value understanding to rewrite decimal numbers in expanded form.  
- calculates accurately when using the standard algorithms to multiply multi-digit whole numbers and decimals to hundredths, and rounds as appropriate. | A student performing at the Exceeding level:  
- compares numbers written in expanded or standard form.  
- solves multi-step problems involving all four operations with decimals and division of whole numbers with up to four-digit dividends and two-digit divisors.  
- rounds decimal numbers to any place value.  
- solves multi-step problems involving decimals to hundredths accurately and efficiently. |
| **Number and Operations—Fractions** Focus is on deepening understanding of fraction multiplication and division, and on developing fluency with fraction addition and subtraction through equivalent fractions. | A student performing at the Needs Support level:  
- uses a model to multiply a fraction by a fraction.  
- uses a model, such as fraction bars or an area model, to represent problems involving addition and subtraction of fractions with common denominators or multiplication of fractions by a whole number. | A student performing at the Close level:  
- solves mathematical or real-world problems involving addition and subtraction of fractions and mixed numbers with unlike denominators of 2, 3, 4, 5, or 10.  
- divides a fraction by a whole number or a whole number by a fraction.  
- understands or evaluates a model to show equivalent fractions. | A student performing at the Ready level:  
- multiplies a fraction between zero and one by a whole number and explains why the result is smaller than the original whole number.  
- solves mathematical or real-world problems involving addition and subtraction of fractions and mixed numbers with unlike denominators.  
- makes sense of a real-world problem using addition and subtraction of fractions and mixed numbers with unlike denominators to find a solution. | A student performing at the Exceeding level:  
- solves real-world problems involving multiplication of fractions and mixed numbers.  
- solves multi-step mathematical and real-world problems involving addition and subtraction of fractions with unlike denominators.  
- makes sense of multi-step problems involving several related parts of a whole. |
| **Measurement and Data** Focus is on the concept of volume and relates to multiplication and division. Students convert measures to different units and continue to represent and interpret data. | A student performing at the Needs Support level:  
- converts among the units within the metric system in order to solve basic mathematical problems.  
- solves single step mathematical and real-world problems involving volume of right rectangular prisms.  
- uses operations on fractions with like denominators of 2 and 4 to solve problems involving information presented in line plots.  
- uses unit cubes to model the volume of a right rectangular prism. | A student performing at the Close level:  
- converts among the units within the metric system in order to solve single-step real-world or mathematical problems.  
- counts unit cubes to find the volumes of composite right measurements.  
- solves two-step mathematical and real-world problems involving volume of right rectangular prisms.  
- uses addition and subtraction on fractions with like denominators of 2, 4, and 8 to solve problems involving information presented in line plots.  
- finds the volume of a right rectangular prism by multiplying side lengths.  
- uses a model of an irregular rectangular prism and reason abstractly to understand the complete structure of the shape in order to find volume. | A student performing at the Ready level:  
- converts among the units within a non-metric measurement system in order to solve single-step real-world or mathematical problems.  
- determines and uses an appropriate system of units for a given measurement.  
- solves multi-step mathematical and real-world problems involving volume of right rectangular prisms.  
- uses all four operations on fractions with unlike denominators of 2, 4, and 8 and referring to the same whole to solve problems involving information presented in line plots.  
- makes sense of an irregular rectangular prism to find the sides lengths and then uses a volume formula to find the volume of the shape. | A student performing at the Exceeding level:  
- converts among the units within a non-metric measurement system in order to solve multi-step real-world or mathematical problems.  
- solves multi-step mathematical and real-world problems involving the volume of a composite figure composed of two or more non-overlapping right rectangular prisms.  
- constructs line plots to display a data set of measurements in fractions with denominators of 2, 4, and 8.  
- makes sense of quantities and units, using the units as a way to attend to the meaning of the quantities. |
| **Geometry** Focus is on categories of 2-dimensional figures based on properties. The coordinate plane is introduced. | A student performing at the Needs Support level:  
- identifies triangles, squares, rectangles, and trapezoids.  
- measures the properties of triangles and quadrilaterals in order to recognize them. | A student performing at the Close level:  
- graphs the coordinates of the order pair for a given point in the first quadrant of the coordinate plane.  
- classifies triangles as isosceles, equilateral, scalene, right, acute, or obtuse.  
- classifies parallelograms, squares, rectangles, rhombuses, parallelograms, kites, and trapezoids based on their properties.  
- interprets a graph model by identifying coordinate pairs in the first quadrant of a coordinate plane.  
- constructs a viable argument to classify and compare triangles and quadrilaterals based on their properties. | A student performing at the Ready level:  
- identifies the coordinates of the ordered pair for a given point in the first quadrant of the coordinate plane.  
- classifies and compares triangles, squares, rectangles, rhombuses, parallelograms, kites, and trapezoids based on their properties.  
- interprets a graph model by identifying coordinate pairs in the first quadrant of a coordinate plane.  
- constructs a viable argument to classify and compare triangles and quadrilaterals based on their properties. | A student performing at the Exceeding level:  
- represents real-world problems by graphing points in the first quadrant of the coordinate plane and interprets the coordinate values in the context of the situation.  
- uses properties to explain and justify the classifications of polygons.  
- creates a graph to model a real-world problem on a coordinate plane and then interprets a value.  
- constructs a viable argument to justify the classification of polygons by using clear definitions and examples. |
| **Modeling** Producing, interpreting, understanding, evaluating, and improving mathematical models. | A student performing at the Needs Support level:  
- uses manipulatives to represent a problem or concept. | A student performing at the Close level:  
- uses manipulatives to interpret a problem or concept. | A student performing at the Ready level:  
- evaluates a manipulative model to solve a problem or explain a concept. | A student performing at the Exceeding level:  
- uses manipulatives to improve a model of a problem or concept. |
### Justification and Explanation

**Giving reasons, explaining "Why?"

A student performing at the Needs Support level:

- identifies an error in reasoning.
- uses two or more specific statements to draw a conclusion.
- uses two or more specific statements to support a claim.

A student performing at the Close level:

- draws conclusions using both a specific and general evidentiary statement.
- uses conditional statements and incorporates justification techniques such as explaining errors in reasoning or calculations, providing counterexamples, applying relevant classification schemes, and/or verifying statements or claims used to draw a conclusion.

A student performing at the Ready level:

- draws conclusions using both a specific and general evidentiary statement.
- uses general support for a claim in order to reach a conclusion.
- uses and cites conditional statements, specific aspects of created visual representations, and/or computations or procedures to clarify an argument or draw a conclusion.

A student performing at the Exceeding level:

- provides a coherent, logical argument or solution pathway by providing evidence to support claims.
- provides thorough justification and defends conclusions by using multiple, connected statements and incorporating justification techniques such as explaining errors in reasoning or calculations, providing counterexamples, applying relevant classification schemes, and/or verifying statements or claims used to draw a conclusion.

**Integrating Essential Skills

Integrate and continue to grow with topics from prior grades.

### Mathematical Practices

**Collected PLs that focus on mathematical practices.

A student performing at the Needs Support level:

- uses two or more specific statements to draw a conclusion.
- uses general support for a claim in order to reach a conclusion.
- uses and cites conditional statements, specific aspects of created visual representations, and/or computations or procedures to clarify an argument or draw a conclusion.

A student performing at the Close level:

- uses or provides a counterexample.
- evaluates a manipulative model to solve a problem or explain a concept.
- uses manipulatives to improve a model of a problem or concept.

A student performing at the Ready level:

- evaluates a manipulative model to solve a problem or explain a concept.
- uses manipulatives to improve a model of a problem or concept.
- uses and cites conditional statements, specific aspects of created visual representations, and/or computations or procedures to clarify an argument or draw a conclusion.

A student performing at the Exceeding level:

- evaluates a manipulative model to solve a problem or explain a concept.
- uses manipulatives to improve a model of a problem or concept.
- provides a coherent, logical argument or solution pathway by providing evidence to support claims.

---

**Reporting Categories Needs Support Close Ready Exceeding

<table>
<thead>
<tr>
<th>Mathematical Practices</th>
<th>Needs Support</th>
<th>Close</th>
<th>Ready</th>
<th>Exceeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>A student performing at the Needs Support level:</td>
<td>uses two or more specific statements to draw a conclusion.</td>
<td>uses general support for a claim in order to reach a conclusion.</td>
<td>uses and cites conditional statements, specific aspects of created visual representations, and/or computations or procedures to clarify an argument or draw a conclusion.</td>
<td>provides a coherent, logical argument or solution pathway by providing evidence to support claims.</td>
</tr>
<tr>
<td>A student performing at the Close level:</td>
<td>uses standard algorithms to add and subtract multi-digit whole numbers.</td>
<td>uses general support for a claim in order to reach a conclusion.</td>
<td>uses and cites conditional statements, specific aspects of created visual representations, and/or computations or procedures to clarify an argument or draw a conclusion.</td>
<td>provides a coherent, logical argument or solution pathway by providing evidence to support claims.</td>
</tr>
<tr>
<td><strong>Integrating Essential Skills</strong></td>
<td>uses a model of an irregular rectangular prism and reasons abstractly to understand the complete structure of the shape in order to find volume.</td>
<td>uses general support for a claim in order to reach a conclusion.</td>
<td>uses and cites conditional statements, specific aspects of created visual representations, and/or computations or procedures to clarify an argument or draw a conclusion.</td>
<td>provides a coherent, logical argument or solution pathway by providing evidence to support claims.</td>
</tr>
</tbody>
</table>