

## Performance Level Descriptors – Grade 5 Mathematics

	<b>Grade 5 Math : Sub-Claim A</b>			
	The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.			
	<b>Level 5: Distinguished Command</b>	<b>Level 4: Strong Command</b>	<b>Level 3: Moderate Command</b>	<b>Level 2: Partial Command</b>
<b>Addition and Subtraction Operations with Decimals</b>  5.NBT.7-1 5.NBT.7-2	<p>Adds or subtracts two decimals to hundredths using concrete models, drawings or strategies based on place value, properties of operations and/or the relationship between addition and subtraction.</p> <p><b>Applies this concept to a real-world context</b>, relates the strategy to a written method and explains the reasoning used.</p>	<p>Adds or subtracts two decimals to hundredths using concrete models, drawings or strategies based on place value, properties of operations and/or the relationship between addition and subtraction.</p> <p><b>Relates the strategy to a written method and explain the reasoning used.</b></p>	<p><b>Adds or subtracts two decimals to hundredths using concrete models, drawings or strategies based on place value</b>, properties of operations and/or the relationship between addition and subtraction.</p>	<p>Adds or subtracts (without regrouping) two decimals to hundredths using concrete models, drawings or strategies based on place value and/or the relationship between addition and subtraction.</p>
<b>Adding and Subtracting in Context with Fractions</b>  5.NF.2-1 5.NF.2-2	<p><b>Creates</b> word problems involving addition and subtraction of fractions, referring to the same whole in cases of unlike denominators by using visual fraction models and equations.</p> <p>Assesses and justifies reasonableness using benchmark fractions and number sense of fractions.</p>	<p>Solves word problems involving addition and subtraction of fractions, referring to the same whole in cases of unlike denominators by using visual fraction models or equations.</p> <p><b>Assesses reasonableness using benchmark fractions and number sense of fractions.</b></p>	<p>Solves word problems involving addition and subtraction of fractions, referring to the same whole <b>in cases of unlike denominators</b> by using visual fraction models or equations.</p>	<p>Solves word problems involving addition and subtraction of fractions using benchmark fractions with unlike denominators, referring to the same whole by using visual fraction models or equations.</p>

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<b>Fractions with Unlike Denominators</b>  5.NF.1-1 5.NF.1-2 5.NF.1-3 5.NF.1-4 5.NF.1-5	Adds and subtracts <b>more than three</b> fractions and mixed numbers with unlike denominators in such a way as to produce an equivalent sum or difference with like denominators.	Adds and subtracts up to <b>three</b> fractions and adds and subtracts two mixed numbers with unlike denominators in such a way as to produce an equivalent sum or difference with like denominators.	<b>Adds and subtracts two fractions or mixed numbers with unlike denominators in such a way as to produce an equivalent sum or difference with like denominators.</b>	Adds or subtracts two fractions or mixed numbers with unlike denominators using only fractions with denominators of 2,4, 5 or 10 in such a way as to produce an equivalent sum or difference with like denominators.*  *below grade level.
<b>Multiplication and Division Operations with Decimals</b>  5.NBT.7-3 5.NBT.7-4 5.NBT.Int.1	Multiplies tenths by tenths or tenths by hundredths and divides in problems involving tenths and/or hundredths <b>using strategies based on place value, properties of operations and/or the relationship between addition and subtraction.</b>  Performs exact and approximate multiplications and divisions by mentally applying place value strategies when	Multiplies tenths by tenths or tenths by hundredths and divides in problems involving tenths <b>and/or hundredths</b> using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction.  <b>Performs exact and approximate multiplications and divisions by mentally</b>	Multiplies tenths by tenths and divides in problems involving tenths using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction.  <b>Relates the strategy to a written method.</b>	Multiplies tenths by tenths and divides in problems involving tenths using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction.

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	<p>appropriate.</p> <p>Relates the strategy to a written method.</p> <p><b>Applies this concept in the context of metric measurement (e.g., find the area of a rectangle with length=0.7cm and width=0.4cm.)</b></p>	<p><b>applying place value strategies when appropriate.</b></p> <p>Relates the strategy to a written method.</p>		
<p><b>Multiply with Whole Numbers</b></p> <p>5.NBT.5-1 5.Int.1 5.Int.2 5.NBT.Int.1</p>	<p>Solves <b>multi-step</b> unscaffolded word problems involving multiplication and multiplies three-digit by two-digit whole numbers using the standard algorithm.</p> <p>Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate.</p>	<p>Solves two-step <b>unscaffolded</b> word problems involving multiplication and multiplies three-digit by <b>two-digit</b> whole numbers <b>using the standard algorithm.</b></p> <p><b>Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate.</b></p>	<p>Solves two-step scaffolded word problems involving multiplication <b>of a three-digit by a one-digit whole number.</b></p>	<p>Solves one-step word problems involving multiplication.</p>

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<b>Quotients and Dividends</b>  5.NBT.6 5.NBT.Int.1	<p>Divides whole numbers up to four-digit dividends and two-digit divisors using strategies based on place value, the properties of operations and/or the relationship between multiplication and division.</p> <p>Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate.</p> <p>Illustrates and explains the calculations by using equations, rectangular arrays, and area models.</p> <p><b>Identifies correspondences between different approaches.</b></p> <p>Checks reasonableness of answers by using multiplication or estimation.</p>	<p>Divides whole numbers up to four-digit dividends and <b>two-digit</b> divisors using strategies based on place value, the properties of operations and/or the relationship between multiplication and division.</p> <p><b>Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate.</b></p> <p><b>Illustrates and explains the calculations by using equations, rectangular arrays, and area models.</b></p> <p><b>Checks reasonableness of answers by using multiplication or estimation.</b></p>	<p>Divides whole numbers up to <b>four-digit</b> dividends and one-digit divisors which are multiples of ten using strategies based on place value, the properties of operations and/or the relationship between multiplication and division.</p>	<p>Divides whole numbers up to three-digit dividends and one-digit divisors which are multiples of ten using strategies based on place value, the properties of operations and/or the relationship between multiplication and division.</p>

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<b>Multiplying and Dividing with Fractions</b>  5.NF.4a-1 5.NF.4a-2 5.NF.4b-1 5.NF.6-1 5.NF.6-2 5.NF.7a 5.NF.7b 5.NF.7c	<b>Creates</b> real-world problems, by multiplying a mixed number by a fraction, a fraction by a fraction, and a whole number by a fraction; dividing a fraction by a whole number and a whole number by a fraction and creating context for the mathematics and equations.	<b>Solves real-world problems, by multiplying a mixed number by a fraction, a fraction by a fraction and a whole number by a fraction; dividing a fraction by a whole number and a whole number by a fraction using visual fraction models and creating context for the mathematics, including rectangular areas; and interpreting the product and/or quotient.</b>	Multiplies a fraction or a whole number by a fraction and divides a fraction by a whole number – or whole number by a fraction – using visual fraction models and creating context for the mathematics, including rectangular areas.	Multiplies a fraction or a whole number by a fraction and divide a fraction by a whole number or whole number by a fraction using visual fraction models.
<b>Interpreting Fractions</b>  5.NF.3-1 5.NF.3-2	Solves word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.  Interprets the fraction as division of the numerator by the denominator.  <b>Creates a model representing the situation.</b>	Solves word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.  Interprets the fraction as division of the numerator by the denominator.  <b>Identifies a simple model representing the situation.</b>	Solves word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.  <b>Interprets the fraction as division of the numerator by the denominator.</b>	Solves word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers by using manipulatives or visual models to identify between which two whole numbers the answer lies.

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<b>Recognizing Volume</b>  5.MD.3 5.MD.4	<p>Recognizes volume as an attribute of solid figures and understands volume is measured using cubic units and can be found by packing a solid figure with unit cubes and counting them.</p> <p>Represents the volume of a solid figure as “n” cubic units.</p> <p>Creates an equation that illustrates the unit cube pattern.</p>	<p>Recognizes volume as an attribute of solid figures and understands volume is measured using cubic units and can be found by packing a solid figure with unit cubes and counting them.</p> <p>Represents the volume of a solid figure as “n” cubic units.</p>	<p>Recognizes volume as an attribute of solid figures and understands volume is measured using cubic units and can be found by packing a solid figure with unit cubes and counting them.</p>	<p>Recognizes volume as an attribute of solid figures and with a visual model understands that volume is measured using cubic units and can be found by packing a solid figure with unit cubes and counting them.</p>
<b>Finding Volume</b>  5.MD.5b 5.MD.5c	<p>Applies the formulas for volume, relates volume to the operations of multiplication and addition, and recognizes volume is additive by finding the volume of solid figures of two or more non-overlapping parts.</p> <p>Creates real-world and mathematical problems that</p>	<p>Solves real-world and mathematical problems by applying the formulas for volume, relating volume to the operations of multiplication and addition, and recognizing volume is additive by finding the volume of solid figures of two non-overlapping parts.</p>	<p>Given a visual model, solves real-world and mathematical problems by applying the formulas for volume, relating volume to the operations of multiplication and addition, and recognizing volume is additive by finding the volume of solid figures of two non-overlapping parts.</p>	<p>Given a visual model and the formulas for finding volume, solves real-world and mathematical problems by applying the formulas for volume (<math>V = l \times w \times h</math> and <math>V = B \times h</math>).</p>

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	would be solved by finding volume.			
<b>Read, Write and Compare Decimals</b>  5.NBT.3a 5.NBT.3b 5.NBT.4 5.NBT.Int.1	Reads, writes and compares decimals <b>to any place</b> using numerals and symbols and rounds to any place and <b>chooses appropriate context given a rounded number.</b>  Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate.	Reads, writes and compares decimals to the <b>thousandths</b> using numerals, number names, expanded form and symbols (>, <, =) and rounds to any place.  <b>Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate.</b>	Reads, writes and compares decimals to the <b>hundredths</b> using numerals, number names, expanded form and symbols (>, <, =), and <b>rounds to any place</b>	Reads, writes and compares decimals to the tenths using numerals, number names, expanded form and symbols (>, <, =), and rounds to any place with scaffolding.
<b>Place Value</b>  5.NBT.1 5.NBT.2-2 5.NBT.A.Int.1	In any multi-digit number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left, uses whole number exponents to denote powers of 10 and	In any multi-digit number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left and uses whole number exponents to denote powers of 10.	In any multi-digit number, recognizes a digit in one 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 and uses whole number exponents to denote powers of 10.	In any multi-digit number, recognizes a digit in one 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 by using manipulatives or visual models.

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	uses symbols to compare two powers of 10 expressed exponentially (compare $10^2$ to $10^5$ ).			
<b>Multiplication Scaling</b>  5.NF.5a	Interprets multiplication scaling by comparing the size of the product to the size of one factor on the basis of the size of the second factor without performing the indicated multiplication with <b>two fractions</b> .	Interprets multiplication scaling by comparing the size of the product to the size of one factor on the basis of the size of the second factor without performing the indicated multiplication, focusing on one factor being a fraction greater than or less than one.	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor by performing the indicated multiplication <b>where one factor is a fraction less than one</b> .	Interprets multiplication scaling by comparing the size of a product to the size of one factor on the basis of the size of the second factor by performing the indicated multiplication where one factor is a fraction less than one using manipulatives or visual models.
<b>Write and Interpret Numerical Expressions</b>  5.OA.1 5.OA.2-1 5.OA.2-2	Uses parentheses, brackets, or braces with no greater depth than two, to write, evaluate and <b>create</b> numerical expressions.  Interprets numerical expressions without evaluating them.	Uses parentheses, brackets, or braces <b>with no greater depth than two</b> , to write and <b>evaluate</b> numerical expressions.  <b>Interprets numerical expressions without evaluating them.</b>	Uses parentheses, brackets, or braces to <b>write numerical expressions</b> .  Interprets simple numerical expressions without evaluating them.	Uses parentheses, brackets, or braces to write simple numerical expressions.

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	<b>Grade 5 Math: Sub-Claim B</b>			
	The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.			
	<b>Level 5: Distinguished Command</b>	<b>Level 4: Strong Command</b>	<b>Level 3: Moderate Command</b>	<b>Level 2: Partial Command</b>
<b>Graphing on the Coordinate Plane</b>  5.G.1 5.G.2 5.OA.3	<b>Creates</b> real-world and mathematical problems which require locating and graphing points in the first quadrant of a coordinate plane and interprets coordinate values of points in the context of the situation.	Represents real-world and mathematical problems by locating and graphing points in the first quadrant of a coordinate plane and <b>interprets coordinate values of points in the context of the situation.</b>	Represents real-world and mathematical problems by locating <b>and</b> graphing points in the first quadrant of a coordinate plane.	Represents real-world and mathematical problems by locating or graphing points in the first quadrant of a coordinate plane.
<b>Two-Dimensional Figures</b>  5.G.3 5.G.4	Classifies two-dimensional figures in a hierarchy based on properties.  <b>Demonstrates</b> that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.  Uses appropriate tools to determine similarities and differences between categories and subcategories.	Classifies two-dimensional figures in a hierarchy based on properties.  Understands that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	Classifies two-dimensional figures in a <b>hierarchy</b> based on properties.  <b>Understands that shared attributes categorize two-dimensional figures.</b>	Classifies two-dimensional figures based on properties.

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<b>Conversions</b>  5.MD.1-1 5.MD.1-2	Converts among different-sized standard measurement units within a given measurement system and uses these conversions to <b>create</b> real-world, multi-step problems.  Chooses the appropriate measurement unit based on the given context.	Converts among different-sized standard measurement units within a given measurement system and uses these conversions to solve real-world, <b>multi-step</b> problems.	Converts among different-sized standard measurement units within a given measurement system <b>and uses these conversions to solve real-world</b> , single-step problems.	Converts among different-sized standard measurement units within a given measurement system and solves single-step problems by using manipulatives or visual models.
<b>Data Displays</b>  5.MD.2-1 5.MD.2-2	Makes a line plot to display a data set of measurements in fractions of a unit with denominators limited to 2, 4 and 8, uses operations on fractions to solve problems involving information in line plots and <b>interprets the solution in relation to the data.</b>	Makes a line plot to display a data set of measurements in fractions of a unit with denominators limited to 2, 4 and <b>8</b> , and <b>uses operations on fractions</b> to solve problems involving information in line plots.	Makes a line plot to display a data set of measurements in fractions of a unit with <b>denominators limited to 2 and 4, and uses operations on fractions with denominators of 2 and 4</b> to solve problems involving information in line plots.	Makes a line plot to display a data set of measurements in fractions of a unit with like denominators of 2 or 4, and uses operations on fractions with like denominators of 2 or 4 to solve problems involving information in line plots.

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	<b>Grade 5 Math: Sub-Claim C</b>			
	The student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	<b>Level 5: Distinguished Command</b>	<b>Level 4: Strong Command</b>	<b>Level 3: Moderate Command</b>	<b>Level 2: Partial Command</b>
<p><b>Properties of Operations</b></p> <p>5.C.1-1 5.C.1-2 5.C.1-3 5.C.2-1 5.C.2-2 5.C.2-3 5.C.2-4</p>	<p>Constructs and communicates a well-organized and complete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> <li>• properties of operations</li> <li>• relationship between addition and subtraction</li> <li>• relationship between multiplication and division</li> </ul> <p>Response may include:</p> <ul style="list-style-type: none"> <li>• a logical/defensible approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate)</li> <li>• an <b>efficient</b> and logical progression of steps <b>with appropriate</b></li> </ul>	<p>Constructs and communicates a <b>well-organized</b> and complete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> <li>• properties of operations</li> <li>• relationship between addition and subtraction</li> <li>• relationship between multiplication and division</li> </ul> <p>Response may include:</p> <ul style="list-style-type: none"> <li>• a logical/<b>defensible</b> approach based on a conjecture and/or stated assumptions, <b>utilizing mathematical connections (when appropriate)</b></li> <li>• a logical progression of steps</li> <li>• <b>precision of calculation</b></li> </ul>	<p>Constructs and communicates a complete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> <li>• properties of operations</li> <li>• relationship between addition and subtraction</li> <li>• relationship between multiplication and division</li> </ul> <p>Response may include:</p> <ul style="list-style-type: none"> <li>• a <b>logical</b> approach based on a conjecture and/or stated assumptions</li> <li>• a logical, but incomplete, progression of steps</li> <li>• <b>minor</b> calculation errors</li> <li>• <b>some</b> use of grade-level vocabulary, symbols</li> </ul>	<p>Constructs and communicates an <b>incomplete</b> written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> <li>• properties of operations</li> <li>• relationship between addition and subtraction</li> <li>• relationship between multiplication and division</li> </ul> <p>Response may include:</p> <ul style="list-style-type: none"> <li>• an approach based on a conjecture and/or stated or faulty assumptions</li> <li>• an incomplete or illogical progression of steps</li> <li>• an intrusive calculation error</li> <li>• limited use of grade-</li> </ul>

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	<p><b>justification</b></p> <ul style="list-style-type: none"> <li>• precision of calculation</li> <li>• correct use of grade-level vocabulary, symbols and labels</li> <li>• justification of a conclusion</li> <li>• evaluation of whether an argument or conclusion is generalizable</li> <li>• evaluating, interpreting and critiquing the validity of other’s responses, reasonings, and approaches, utilizing mathematical connections (when appropriate). <b>Provides a counter-example where applicable.</b></li> </ul>	<ul style="list-style-type: none"> <li>• <b>correct</b> use of grade-level vocabulary, symbols and labels</li> <li>• <b>justification of a conclusion</b></li> <li>• <b>evaluation of whether an argument or conclusion is generalizable</b></li> <li>• evaluating, <b>interpreting and critiquing</b> the validity of other’s responses, <b>reasonings, and approaches, utilizing mathematical connections (when appropriate).</b></li> </ul>	<p>and labels</p> <ul style="list-style-type: none"> <li>• partial justification of a conclusion based on own calculations</li> <li>• <b>evaluating the validity of other’s responses, approaches and conclusions.</b></li> </ul>	<p>level vocabulary, symbols and labels</p> <ul style="list-style-type: none"> <li>• partial justification of a conclusion based on own calculations</li> </ul>

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<b>Place Value</b>  5.C.3	<p>Clearly constructs and communicates a well-organized and complete response based on place value system including:</p> <ul style="list-style-type: none"> <li>a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate)</li> <li>an efficient and logical progression of steps with appropriate justification</li> <li>precision of calculation</li> <li>correct use of grade-level vocabulary, symbols and labels</li> <li>justification of a conclusion</li> <li>evaluation of whether an argument or conclusion is generalizable</li> </ul>	<p><b>Clearly</b> constructs and communicates a <b>well-organized</b> and complete response based on place value system including:</p> <ul style="list-style-type: none"> <li>a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate)</li> <li>a logical progression of steps</li> <li>precision of calculation</li> <li>correct use of grade-level vocabulary, symbols and labels</li> <li><b>justification of a conclusion</b></li> <li><b>evaluation of whether an argument or conclusion is generalizable</b></li> <li>evaluating, interpreting and critiquing the</li> </ul>	<p>Constructs and communicates a <b>complete response</b> based on place value system including:</p> <ul style="list-style-type: none"> <li>a logical approach based on a conjecture and/or stated assumptions</li> <li>a logical, but incomplete, progression of steps</li> <li>minor calculation errors</li> <li>some use of grade-level vocabulary, symbols and labels</li> <li>partial justification of a conclusion based on own calculations</li> <li>evaluating the validity of other’s responses, approaches and conclusions.</li> </ul>	<p>Constructs and communicates an incomplete response based on place value system which may include:</p> <ul style="list-style-type: none"> <li>an approach based on a conjecture and/or stated or faulty assumptions</li> <li>an incomplete or illogical progression of steps</li> <li>an intrusive calculation error</li> <li>limited use of grade-level vocabulary, symbols and labels</li> <li>partial justification of a conclusion based on own calculations</li> </ul>

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	<ul style="list-style-type: none"> <li>evaluating, interpreting and critiquing the validity of other’s responses, approaches and reasoning, and providing a counter-example where applicable.</li> </ul>	<p>validity of other’s responses, approaches and reasoning.</p>		
<p><b>Concrete Referents and Diagrams</b></p> <p>5.C.4-1 5.C.4-2 5.C.4-3 5.C.4-4 5.C.5-1 5.C.5-2 5.C.5-3 5.C.6</p>	<p>Clearly constructs and communicates a well-organized and complete response based on operations using concrete referents such as diagrams – including number lines (whether provided in the prompt or constructed by the student) and connecting the diagrams to a written (symbolic) method, which may include:</p> <ul style="list-style-type: none"> <li>a logical approach based on a conjecture and/or stated assumptions, utilizing</li> </ul>	<p><b>Clearly</b> constructs and communicates a <b>well-organized</b> and complete response based on operations using concrete referents such as diagrams – including number lines (<b>whether provided in the prompt or constructed by the student</b>) and connecting the diagrams to a written (symbolic) method, which may include:</p> <ul style="list-style-type: none"> <li>a logical approach based on a conjecture and/or stated assumptions, <b>utilizing</b></li> </ul>	<p>Constructs and communicates a <b>complete response</b> based on operations using concrete referents such as diagrams – including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include:</p> <ul style="list-style-type: none"> <li>a <b>logical approach based on a conjecture and/or stated assumptions</b></li> </ul>	<p>Constructs and communicates an incomplete response based on operations using concrete referents such as diagrams – including number lines (provided in the prompt) – connecting the diagrams to a written (symbolic) method, which may include:</p> <ul style="list-style-type: none"> <li>a conjecture and/or stated or faulty assumptions</li> </ul>

## Performance Level Descriptors – Grade 5 Mathematics

Grade 5 Math: Sub-Claim C				
The student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.				
	Level 5: Distinguished Command	Level 4: Strong Command	Level 3: Moderate Command	Level 2: Partial Command
	<p>mathematical connections (when appropriate)</p> <ul style="list-style-type: none"> <li>an <b>efficient</b> and logical progression of steps <b>with appropriate justification</b></li> <li>precision of calculation</li> <li>correct use of grade-level vocabulary, symbols and labels</li> <li>justification of a conclusion</li> <li>evaluation of whether an argument or conclusion is generalizable</li> <li>evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning, and <b>providing a counter-example where applicable.</b></li> </ul>	<p><b>mathematical connections (when appropriate)</b></p> <ul style="list-style-type: none"> <li>a logical progression of steps</li> <li><b>precision of calculation</b></li> <li><b>correct</b> use of grade-level vocabulary, symbols and labels</li> <li><b>justification of a conclusion</b></li> <li><b>evaluation of whether an argument or conclusion is generalizable</b></li> <li>evaluating, <b>interpreting, and critiquing</b> the validity of other's responses, approaches, and <b>reasoning.</b></li> </ul>	<ul style="list-style-type: none"> <li>a <b>logical</b>, but incomplete, progression of steps</li> <li><b>minor</b> calculation errors</li> <li><b>some</b> use of grade-level vocabulary, symbols and labels</li> <li>partial justification of a conclusion based on own calculations.</li> <li><b>evaluating</b> the validity of other's responses, <b>approaches and conclusions</b></li> </ul>	<ul style="list-style-type: none"> <li>an incomplete or illogical progression of steps</li> <li>an intrusive calculation error</li> <li>limited use of grade-level vocabulary, symbols and labels</li> <li>partial justification of a conclusion based on own calculations</li> <li>accepting the validity of other's responses</li> </ul>

## Performance Level Descriptors – Grade 5 Mathematics

	<b>Grade 5 Math: Sub-Claim C</b>			
	The student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.			
	<b>Level 5: Distinguished Command</b>	<b>Level 4: Strong Command</b>	<b>Level 3: Moderate Command</b>	<b>Level 2: Partial Command</b>
<p><b>Distinguish Correct Explanation/ Reasoning from that which is Flawed</b></p> <p>5.C.7-1 5.C.7-2 5.C.7-3 5.C.8-1 5.C.8-2 5.C.9</p>	<p>Clearly constructs and communicates a well-organized and complete response by:</p> <ul style="list-style-type: none"> <li>analyzing and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately</li> <li><b>evaluating</b> explanation/reasoning if there is a flaw in the argument</li> <li>presenting <b>and defending</b> corrected reasoning</li> </ul> <p>Response may include:</p> <ul style="list-style-type: none"> <li>a logical approach based on a conjecture</li> </ul>	<p><b>Clearly</b> constructs and communicates a <b>well-organized</b> and complete response by:</p> <ul style="list-style-type: none"> <li>analyzing and <b>defending</b> solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately</li> <li>distinguishing correct explanation/reasoning from that which is flawed</li> <li>identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems</li> <li>presenting corrected reasoning</li> </ul> <p>Response may include:</p> <ul style="list-style-type: none"> <li>a logical approach</li> </ul>	<p>Constructs and communicates a <b>complete</b> response by:</p> <ul style="list-style-type: none"> <li>analyzing solutions to <b>multi-step</b> problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately</li> <li>distinguishing correct explanation/reasoning from that which is flawed</li> <li>identifying and <b>describing the flaw in reasoning or describing errors in solutions to multi-step problems</b></li> <li><b>presenting corrected reasoning</b></li> </ul> <p>Response may include:</p> <ul style="list-style-type: none"> <li><b>a logical approach</b></li> </ul>	<p>Constructs and communicates an incomplete response by:</p> <ul style="list-style-type: none"> <li>analyzing solutions to scaffolded two-step problems in the form of valid chains of reasoning, sometimes using symbols such as equal signs appropriately</li> <li>distinguishing correct explanation/reasoning from that which is flawed</li> <li>identifying an error in reasoning</li> </ul> <p>Response may include:</p> <ul style="list-style-type: none"> <li>a conjecture based on</li> </ul>

## Performance Level Descriptors – Grade 5 Mathematics

Grade 5 Math: Sub-Claim C				
The student expresses grade/course-level appropriate mathematical reasoning by constructing viable arguments, critiquing the reasoning of others and/or attending to precision when making mathematical statements.				
	Level 5: Distinguished Command	Level 4: Strong Command	Level 3: Moderate Command	Level 2: Partial Command
	<p>and/or stated assumptions, utilizing mathematical connections (when appropriate)</p> <ul style="list-style-type: none"> <li>• <b>an efficient</b> and logical progression of steps <b>with appropriate justification</b></li> <li>• precision of calculation</li> <li>• correct use of grade-level vocabulary, symbols and labels</li> <li>• justification of a conclusion</li> <li>• evaluation of whether an argument or conclusion is generalizable</li> <li>• evaluating, interpreting and critiquing the validity of other's responses, approaches and reasoning, and <b>providing a counter-example where applicable</b></li> </ul>	<p>based on a conjecture and/or stated assumptions, <b>utilizing mathematical connections (when appropriate)</b></p> <ul style="list-style-type: none"> <li>• <b>a logical progression of steps</b></li> <li>• <b>precision of calculation</b></li> <li>• <b>correct</b> use of grade-level vocabulary, symbols and labels</li> <li>• <b>justification of a conclusion</b></li> <li>• <b>evaluation of whether an argument or conclusion is generalizable</b></li> <li>• evaluating, <b>interpreting and critiquing</b> the validity of other's responses, approaches and <b>reasoning</b></li> </ul>	<p><b>based on a conjecture and/or stated assumptions</b></p> <ul style="list-style-type: none"> <li>• <b>a logical</b>, but incomplete, progression of steps</li> <li>• <b>minor</b> calculation errors</li> <li>• <b>some</b> use of grade-level vocabulary, symbols and labels</li> <li>• partial justification of a conclusion based on own calculations</li> <li>• <b>evaluating</b> the validity of other's responses, <b>approaches and conclusions.</b></li> </ul>	<p>faulty assumptions</p> <ul style="list-style-type: none"> <li>• an incomplete or illogical progression of steps</li> <li>• an intrusive calculation error</li> <li>• limited use of grade-level vocabulary, symbols and labels</li> <li>• partial justification of a conclusion based on own calculations</li> <li>• accepting the validity of other's responses</li> </ul>

## Performance Level Descriptors – Grade 5 Mathematics

Grade 5 Math: Sub-Claim D				
The student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.				
	Level 5: Distinguished Command	Level 4: Strong Command	Level 3: Moderate Command	Level 2: Partial Command
<b>Modeling</b>  5.D.1 5.D.2	Devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: <ul style="list-style-type: none"> <li>• using stated assumptions or making assumptions and using approximations to simplify a real-world situation</li> <li>• <b>analyzing and/or creating constraints, relationships and goals</b></li> <li>• mapping relationships between important quantities by selecting appropriate tools to create models</li> <li>• analyzing relationships mathematically between important quantities to draw conclusions</li> </ul>	Devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: <ul style="list-style-type: none"> <li>• using stated assumptions or <b>making assumptions</b> and using approximations to simplify a real-world situation</li> <li>• <b>mapping relationships between important quantities by selecting appropriate tools to create models</b></li> <li>• analyzing relationships mathematically between important quantities to draw conclusions</li> <li>• interpreting mathematical results in the context <b>of the</b></li> </ul>	Devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: <ul style="list-style-type: none"> <li>• using stated assumptions and approximations to simplify a real-world situation</li> <li>• <b>illustrating relationships between important quantities by using provided tools to create models</b></li> <li>• analyzing relationships mathematically <b>between important quantities</b> to draw conclusions</li> <li>• <b>interpreting mathematical results in a simplified context</b></li> </ul>	Devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by: <ul style="list-style-type: none"> <li>• using stated assumptions and approximations to simplify a real-world situation</li> <li>• identifying important quantities</li> <li>• using provided tools to create models</li> <li>• analyzing relationships mathematically to draw conclusions</li> <li>• writing an arithmetic expression or equation to describe a situation</li> </ul>

## Performance Level Descriptors – Grade 5 Mathematics

Grade 5 Math: Sub-Claim D				
The student solves real-world problems with a degree of difficulty appropriate to the grade/course by applying knowledge and skills articulated in the standards for the current grade/course (or for more complex problems, knowledge and skills articulated in the standards for previous grades/courses), engaging particularly in the Modeling practice, and where helpful making sense of problems and persevering to solve them, reasoning abstractly, and quantitatively, using appropriate tools strategically, looking for the making use of structure and/or looking for and expressing regularity in repeated reasoning.				
Level 5: Distinguished Command	Level 4: Strong Command	Level 3: Moderate Command	Level 2: Partial Command	
<ul style="list-style-type: none"> <li>• <b>justifying and defending models which lead to a conclusion</b></li> <li>• interpreting mathematical results in the context of the situation</li> <li>• reflecting on whether the results make sense</li> <li>• improving the model if it has not served its purpose</li> <li>• writing <b>a concise</b> arithmetic expression or equation to describe a situation</li> </ul>	<p style="text-align: center;"><b>situation</b></p> <ul style="list-style-type: none"> <li>• reflecting on whether the results make sense</li> <li>• modifying <b>and/or improving</b> the model if it has not served its purpose</li> <li>• writing an arithmetic expression or equation to describe a situation</li> </ul>	<ul style="list-style-type: none"> <li>• <b>reflecting on whether the results make sense</b></li> <li>• <b>modifying the model if it has not served its purpose</b></li> <li>• writing an arithmetic expression or equation to describe a situation</li> </ul>		

## Performance Level Descriptors – Grade 5 Mathematics

	<b>Grade 5 Math: Sub-Claim E</b>			
	The student demonstrates fluency in areas set forth in the Standards for Content in grades 3-6.			
	<b>Level 5: Distinguished Command</b>	<b>Level 4: Strong Command</b>	<b>Level 3: Moderate Command</b>	<b>Level 2: Partial Command</b>
<b>Fluency</b>  5.NBT.5	Accurately and <b>quickly</b> multiplies whole numbers and decimals to hundredths using the standard algorithm and assesses reasonableness of the product.  Knows from memory 100 percent of the products on items <b>in less than the allotted time</b> on items which are timed.	Accurately and <b>in a timely manner</b> multiplies multi-digit whole numbers using the standard algorithm.  Knows from memory <b>100 percent</b> of the products on items <b>in the allotted time</b> on items which are timed	Accurately multiplies multi-digit whole numbers using the standard algorithm.  Knows from memory <b>more than 80 percent and less than 100 percent</b> of the multiplication and division facts within 100 on items which are timed.	Multiplies multi-digit whole numbers using the standard algorithm with some level of accuracy.  Knows from memory greater than or equal to 70 percent and less than or equal to 80 percent of the multiplication and division facts within 100 on items which are timed.