



District of Columbia
Office of the State Superintendent of Education



**DC
CAPE**

DC COMPREHENSIVE
ASSESSMENTS OF
PROGRESS IN EDUCATION

DC Math Performance Level Descriptors - Grades 3-5

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Products and Quotients: 3.OA.1, 3.OA .2, 3.OA .4, 3.OA .6, 3.OA.7-1, 3.OA.7-2			
Understands and interprets products and quotients of whole numbers.	Interprets products and quotients of whole numbers.	Interprets products and quotients of whole numbers.	Determines products and quotients of whole numbers within 100.
Determines the unknown whole number in a multiplication or division problem by relating multiplication and division. Both factors are greater than 5 and less than or equal 10.	Determines the unknown whole number in a multiplication or division problem by relating multiplication and division. One factor is greater than or equal to 5.	Determines the unknown whole number in a multiplication or division problem by relating multiplication and division, with both factors less than or equal to 5, or with one factor of 10.	Determines the unknown whole number in a multiplication or division problem by relating multiplication and division, with both factors less than or equal to 5, or with one factor of 10.
Represents a multiplication or division situation as an equation.			
Accurately multiplies and divides within 100, using strategies relating multiplication and division or properties of operations.	Accurately multiplies and divides within 100, using strategies relating multiplication and division or properties of operations.	Multiplies and divides within 100, using strategies relating multiplication and division or properties of operations.	
Multiplication and Division: 3.OA.3-1, 3.OA.3-2, 3.OA.3-3, 3.OA.3-4			
Uses multiplication and division within 100 to solve word problems involving equal groups, arrays, area, and measurement quantities other than area. Both factors are greater than 5 and less than or equal to 10.	Uses multiplication and division within 100 to solve word problems involving equal groups and arrays. One factor is greater than or equal to 5.	Given a visual aid, uses multiplication and division within 100 to solve word problems involving equal groups and arrays , with both factors less than or equal to 5, or with one factor of 10.	Given a visual aid, uses multiplication and division within 100 to solve word problems involving equal groups. Both factors are less than or equal to 5, with both factors less than or equal to 5, or with one factor of 10.
Identifies multiple contexts given a numerical expression involving multiplication and division.			

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Two-Step Problems: 3.OA.8, 3.Int.1, 3.Int.2			
Solves two-step un scaffolded word problems using the four operations, including rounding where appropriate , in which the unknown is in a variety of positions. Both values for each operation performed is substantial (towards the upper limits as defined by the standard assessed).	Solves two-step scaffolded word problems using the four operations in which the unknown is in a variety of positions . One of the values for each operation performed is substantial (towards the upper limits as defined by the standard assessed).	Solves two-step scaffolded word problems using the four operations and in which the sum, difference, product or quotient is always the unknown. One of the values for each operation performed is substantial (towards the upper limits as defined by the standard assessed) .	Solves two-step scaffolded word problems using the four operations and in which the sum, difference, product or quotient is always the unknown.
Fraction Equivalence: 3.NF.3a-1, 3.NF.3a-2, 3.NF.3b-1, 3.NF-3c, 3.NF-3d, 3.NF.A.Int.1			
Understands, recognizes and generates equivalent fractions with denominators of 2, 3, 4, 6 and 8.	Understands, recognizes and generates equivalent fractions using denominators of 2, 4, and 8.	Given a visual model, understands , recognizes and generates equivalent fractions with denominators of 2, 4 and 8.	Given a visual model recognizes equivalent fractions with denominators of 2, 4 and 8.
Expresses whole numbers as fractions and recognize fractions that are equivalent to whole numbers.	Expresses whole numbers as fractions.	Expresses whole numbers as fractions.	Expresses the number 1 as a fraction.
Compares two fractions that have the same numerator or same denominator using symbols to justify conclusions. Plots the location of equivalent fractions on a number line . The student must recognize that two fractions must refer to the same whole in order to compare.	Compares two fractions that have the same numerator or same denominator using symbols and justifies conclusions by using a visual model . The student must recognize that two fractions must refer to the same whole in order to compare.	Compares two fractions that have the same numerator or same denominator using symbols. The student must recognize that two fractions must refer to the same whole in order to compare.	
Given a whole number and two fractions in a real-world situation,			

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Content (Sub-Claim A)

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Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
plots all three numbers on a number line and determines which fraction is closest to the whole number. Justifies the comparison by plotting points on a number line.			
Fractions as Numbers: 3.NF.1, 3.NF.2, 3.NF.A.Int.1			
Understands $1/b$ is equal to one whole that is partitioned into b equal parts – limiting the denominators to 2, 3, 4, 6 and 8	Understands $1/b$ is equal to one whole that is partitioned into b equal parts – limiting the denominators to 2, 4 and 8.	Understands $1/b$ is equal to one whole that is partitioned into b equal parts – limiting the denominators to 2 and 4.	Understands $1/b$ is equal to one whole that is partitioned into b equal parts – limiting the denominators to 2 and 4.
Represents $1/b$ on a number line diagram by partitioning the number line between 0–1 into b equal parts recognizing that b is the total number of parts.	Represents $1/b$ on a number line diagram by partitioning the number line between 0–1 into b equal parts recognizing that b is the total number of parts.	Represents $1/b$ on a number line diagram by partitioning the number line between 0–1 into b equal parts recognizing that b is the total number of parts.	Identifies $1/b$ on a number line diagram when partitioned between 0 and 1 into b equal parts.
Demonstrates the understanding of the quantity a/b by marking off a parts of $1/b$ from 0 on the number line and states that the endpoint locates the number a/b.	Demonstrates the understanding of the quantity a/b by marking off a parts of $1/b$ from 0 on the number line.	Represents fractions in the form a/b using a visual model.	
Applies the concepts of $1/b$ and a/b in real-world situations.			
Describes the number line that best fits the context.			
Time: 3.MD.1-1, 3.MD.1-2			
Tells, writes and measures time to the nearest minute.	Tells, writes and measures time to the nearest minute.	Tells, writes and measures time to the nearest minute.	Tells, writes and measures time to the nearest minute.

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Solves two-step word problems involving addition and subtraction of time intervals in minutes.	Solves one-step word problems involving addition or subtraction of time intervals in minutes.	Solves one-step word problems involving addition or subtraction of time intervals in minutes, with scaffolding, such as a number line diagram.	
Volumes and Masses: 3.MD.2-1, 3.MD.2-2, 3.MD.2-3, 3.Int.5			
Using grams, kilograms or liters, measures, estimates and solves multi-step word problems involving liquid volumes and masses of objects using any of the four basic operations. Number values should be towards the higher end of the acceptable values for each operation.	Using grams, kilograms or liters, measures and estimates liquid volumes and masses of objects using any of the four basic operations.	Using grams, kilograms or liters, measures and estimates liquid volumes and masses of objects using concrete objects (beakers, measuring cups, scales) to develop estimates.	Using grams, kilograms or liters, measures liquid volumes and masses of concrete objects (beakers, measuring cups, scales).
Uses estimated measurements to compare answers to one-step word problems.	Uses estimated measurements, when indicated, to answer one-step word problems.		
Evaluates usefulness and accuracy of estimations.			
Geometric Measurement: 3.MD.5, 3.MD.6, 3.MD.7b-1, 3.MD.7d			
Recognizes area as an attribute of plane figures.	Recognizes area as an attribute of plane figures.	Recognizes area as an attribute of plane figures.	Recognizes area as an attribute of plane figures.
Understands area is measured using square units. Describes a visual model to show understanding that area that can be found by covering a plane figure without gaps or	With a visual model, understands area is measured using square units. Determines area by covering a plane figure without gaps or overlaps with unit squares and counting them.	With a visual model, understands area is measured using square units. Determines area by covering a plane figure without gaps or overlaps with unit squares and counting them.	With a visual model, understands area is measured using square units. Determines area by counting unit squares.

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
overlaps with unit squares and counting them.			
Connects counting squares to multiplication when finding area.			
Represents the area of a plane figure as “n” square units.	Represents the area of a plane figure as “n” square units.		

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Content (Sub-Claim B)

The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Multi-Digit Arithmetic: 3.NBT.2, 3.NBT.3			
Accurately adds and subtracts within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	Accurately adds and subtracts within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	Adds and subtracts within 1000, using strategies and algorithms based on place value, properties of operations with scaffolding, and/or the relationship between addition and subtraction.	Adds and subtracts within 1000, using strategies and algorithms based on place value, properties of operations with scaffolding, and/or the relationship between addition and subtraction.
Multiplies one-digit whole numbers by multiples of 10 in the range 10–90 using strategies based on place value	Uses repeated addition to multiply one-digit whole numbers by multiples of 10 in the range 10–90 using strategies based on place value and properties of operations.	Uses repeated addition to multiply one-digit whole numbers by multiples of 10 in the range 10–90 using strategies based on place value and properties of operations.	
Scaled Graphs: 3.MD.3–1, 3.MD.3–3, 3.Int.4			
Completes a scaled picture graph and a scaled bar graph to represent a data set.	Completes a scaled picture graph and a scaled bar graph to represent a data set.	Completes a scaled picture graph and a scaled bar graph to represent a data set, with scaffolding, such as using a model as a guide.	Identifies a correctly scaled picture graph and a correctly scaled bar graph to represent a data set.
Solves one- and two-step “how many more” and “how many less” problems, requiring a substantial addition, subtraction or multiplication step , using information presented in scaled bar graphs.	Solves one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.	Solves one-step “how many more” and “how many less” problems using information presented in scaled bar graphs.	Solves one-step “how many more” and “how many less” problems using information presented in scaled bar graphs.
Measurement Data: 3.MD.4			
Generates measurement data by measuring lengths to the nearest half and fourth inch.	Generates measurement data by measuring lengths to the nearest half inch.	Generates measurement data by measuring lengths to the nearest half inch.	Identifies correct measurement from figures with appropriate scale provided.

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Content (Sub-Claim B)

The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Shows the data by making a line plot, where the horizontal scale is marked in appropriate units of whole numbers, halves or quarters .	Shows the data by making a line plot, where the horizontal scale is marked in appropriate units of whole numbers or halves.	Shows the data by making a line plot, where the horizontal scale is marked in appropriate units of whole numbers or halves, with scaffolding.	
Uses the line plot to answer questions or solve problems.			
Understanding Shapes: 3.G.1			
Understands the properties of quadrilaterals and the subcategories of quadrilaterals.	Understands the properties of quadrilaterals and the subcategories of quadrilaterals.	Identifies examples of quadrilaterals and the subcategories of quadrilaterals.	Identifies examples of quadrilaterals and the subcategories of quadrilaterals.
Recognizes and sorts examples of quadrilaterals that have shared attributes and shows that the shared attributes can define a larger category.	Recognizes examples of quadrilaterals that have shared attributes and that the shared attributes can define a larger category.	Recognizes examples of quadrilaterals that have shared attributes and that the shared attributes can define a larger category.	
Draws examples and non-examples of quadrilaterals with specific attributes.	Draws examples of quadrilaterals with specific attributes.		
Perimeter and Area: 3.G.2, 3.MD.8, 3.Int.3			
Solves real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and provides examples of rectangles with the same perimeter and different areas or with the same area and different perimeters. A	Solves mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length , and provides examples of rectangles with the same area and different perimeters.	Solves mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, and identifying rectangles with the same area and different perimeters.	Solves mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths.

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Content (Sub-Claim B)

The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
substantial addition, subtraction, or multiplication step with number values towards the higher end of the acceptable values for each operation			
Partitions shapes into parts with equal areas and expresses the area as a unit fraction of the whole.			

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Properties of Operations: 3.C.1-1, 3.C.1-2, 3.C.1-3, 3.C.2			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a complete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns <p>Response may include:</p> <ul style="list-style-type: none"> • a logical/defensible approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an efficient and logical progression of steps with appropriate justification • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a complete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns <p>Response may include:</p> <ul style="list-style-type: none"> • a logical/defensible approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • a logical progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluating, interpreting and critiquing the validity of other's responses, reasonings, and 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions • a logical, but incomplete, progression of steps • minor calculation errors • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • evaluating the validity of other's responses, approaches and conclusions. 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates an incomplete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns <p>Response may include:</p> <ul style="list-style-type: none"> • an approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> determination of whether an argument or conclusion is generalizable evaluating, interpreting and critiquing the validity of other’s responses, reasonings, and approaches, utilizing mathematical connections (when appropriate). Provides a counter-example where applicable. 	<p>approaches, utilizing mathematical connections (when appropriate).</p>		
Concrete Referents and Diagrams: 3.C.3-1, 3.C.3-2, 3.C.6-1, 3.C.6-2			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student 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"> a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student 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"> a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) a logical progression of steps 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a 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"> a logical approach based on a conjecture and/or stated assumptions a logical, but incomplete, progression of steps minor calculation errors 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student 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"> a conjecture and/or stated or faulty assumptions an incomplete or illogical progression of steps an intrusive calculation error

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> an efficient and logical progression of steps with appropriate justification precision of calculation correct use of grade-level vocabulary, symbols and labels justification of a conclusion determination of whether an argument or conclusion is generalizable evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning, and providing a counter- example where applicable 	<ul style="list-style-type: none"> precision of calculation correct use of grade-level vocabulary, symbols and labels justification of a conclusion evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning. 	<ul style="list-style-type: none"> some use of grade-level vocabulary, symbols and labels partial justification of a conclusion based on own calculations. evaluating the validity of other's responses, approaches and conclusions 	<ul style="list-style-type: none"> limited use of grade-level vocabulary, symbols and labels partial justification of a conclusion based on own calculations accepting the validity of other's responses
Distinguish Correct Explanation/ Reasoning from that which is Flawed: 3.C.4-1, 3.C.4-2, 3.C.4-3, 3.C.4-4, 3.C.4-5, 3.C.4-6, 3.C.5-1, 3.C.5-2, 3.C.4-7			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a well-organized and complete response by:</p> <ul style="list-style-type: none"> presenting and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a well-organized and complete response by:</p> <ul style="list-style-type: none"> presenting and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a complete response by:</p> <ul style="list-style-type: none"> presenting solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates an incomplete response by:</p> <ul style="list-style-type: none"> presenting solutions to scaffolded two-step problems in the form of valid chains of reasoning, sometimes using symbols such as equal signs appropriately

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> • evaluating explanation/reasoning; if there is a flaw in the argument • presenting and defending corrected reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an efficient and logical progression of steps with appropriate justification • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting, and critiquing the validity of other's responses, approaches and reasoning, and providing a counter-example where applicable. 	<ul style="list-style-type: none"> • distinguishing correct explanation/reasoning from that which is flawed • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • a logical progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluating, interpreting and critiquing the validity of other's responses, approaches and reasoning. 	<ul style="list-style-type: none"> • distinguishing correct explanation/reasoning from that which is flawed • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions • a logical, but incomplete, progression of steps • minor calculation errors • some use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • evaluating the validity of other's responses, approaches and conclusions. 	<ul style="list-style-type: none"> • distinguishing correct explanation/reasoning from that which is flawed • identifying an error in reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a conjecture based on faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Modeling (Sub-Claim D)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Modeling: 3.D.1, 3.D.2			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • analyzing and/or creating constraints, relationships and goals • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • justifying and defending models which lead to a conclusion 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • illustrating relationships between important quantities by using provided tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in a simplified context • reflecting on whether the results make sense • modifying the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities by using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an arithmetic expression or equation to describe a situation

GRADE 3 MATHEMATICS

Performance Level Descriptors

Grade 3 Math: Modeling (Sub-Claim D)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • improving the model if it has not served its purpose • writing a concise arithmetic expression or equation to describe a situation 	<ul style="list-style-type: none"> • modifying and/or improving the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation 		

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Fractions and Decimals: 4.NF.1-2, 4.NF.2-1, 4.NF.A.Int.1, 4.NF.5, 4.NF.6, 4.NF.7, 4.NF.Int.1, 4.NF.Int.2			
Compares decimals to hundredths; uses decimal notations for fractions with denominators 10 or 100. Compares fractions, with like or unlike numerators and denominators, by creating equivalent fractions with common denominators, comparing to a benchmark fraction and generating equivalent fractions.	Given a visual model and/or manipulatives, compares decimals to hundredths: <ul style="list-style-type: none"> • Expresses a fraction with denominator 10 as an equivalent fraction with denominator 100. • Uses decimal notation for fractions with denominators 10 or 100. • Compares fractions, with like or unlike numerators and denominators, by creating equivalent fractions with common denominators and comparing to a benchmark fraction. 	Given a visual model and/or manipulatives, compares decimals to hundredths; uses decimal notations for fractions (tenths and hundredths); compares fractions, with like or unlike numerators and denominators by comparing to a benchmark fraction.	Given a visual model and/or manipulatives, compares decimals to hundredths; uses decimal notations for fractions (tenths and hundredths); compares fractions with like denominators.
Recognizes that decimals and fractions must refer to the same whole in order to compare.	Recognizes that decimals and fractions must refer to the same whole in order to compare.	Recognizes that decimals and fractions must refer to the same whole in order to compare.	
Shows results using symbols.	Shows results using symbols.	Shows results using symbols.	
Demonstrates the use of conceptual understanding of fractional equivalence and ordering when solving simple word problems requiring fraction comparison.	Solves simple word problems requiring fraction comparison.	Solves simple word problems requiring fraction comparison with scaffolding.	
Converts a simple fractions to a denominator of 10 or 100 and writes			

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
as a decimal (e.g. $\frac{1}{2} = \frac{5}{10} = .5$, $\frac{1}{4} = \frac{25}{100} = 0.25$, $\frac{1}{20} = \frac{5}{100} = 0.05$).			
Adds fractions with denominators of 10 and 100.			
Building Fractions: 4.NF.3a, 4.NF.3b-1, 4.NF.3c, 4.NF.3d, 4.NF.Int.1, 4.Int.6			
Understands and solves mathematical and real-world problems involving the addition and subtraction of fractions and mixed numbers with like denominators by joining and separating parts referring to the same whole, and justifying the solution by using a visual model.	Using visual models and/or manipulatives, solves mathematical and word problems involving the addition and subtraction of fractions and mixed numbers with like denominators by joining and separating parts referring to the same whole.	Using visual models and/or manipulatives, solves mathematical problems involving the addition and subtraction of fractions with like denominators by joining and separating parts referring to the same whole.	Using visual models and/or manipulatives, solves mathematical problems involving the addition and subtraction of fractions with like denominators by joining and separating parts referring to the same whole.
Decomposes a fraction into a sum of fractions with the same denominator in more than one way and records the decomposition using an equation.	Decomposes a fraction into a sum of fractions with the same denominator in more than one way and records the decomposition using an equation.	Decomposes a fraction into a sum of fractions with the same denominator in more than one way and records the decomposition using an equation.	
Multiplying Fractions: 4.NF.4a, 4.NF.4b-1, 4.NF.4b-2, 4.NF.4c, 4.NF.Int.1			
Describes a visual fraction model and solves mathematical and real-world problems by recognizing that fraction a/b is a multiple of $1/b$ and uses that construct to multiply a fraction by a whole number.	Using visual models and/or manipulatives, solves mathematical and real-world problems by recognizing that fraction a/b is a multiple of $1/b$ and uses that construct to multiply a fraction by a whole number.	Using visual models and/or manipulatives, solves mathematical problems by recognizing that fraction a/b is a multiple of $1/b$ and uses that construct to multiply a fraction by a whole number.	Using visual models and/or manipulatives, solves mathematical problems by recognizing that fraction a/b is a multiple of $1/b$.

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Solving with Multiplication: 4.OA.1-1, 4.OA.1-2, 4.OA.2			
Interprets multiplication equations as comparisons and represents statements of multiplicative comparisons as multiplicative equations.	Interprets multiplication equations as comparisons or represents statements of multiplicative comparisons as multiplicative equations.	Interprets multiplication equations as comparisons or represents statements of multiplicative comparisons as multiplicative equations.	Interprets multiplication equations as comparisons or represents statements of multiplicative comparisons as multiplicative equations.
Distinguishes multiplicative comparisons.			
Uses multiplication or division to solve multi-step word problems involving multiplicative comparisons.	Uses multiplication or division to solve one- or two-step word problems involving multiplicative comparisons.	Uses multiplication or division to solve scaffolded word problems involving multiplicative comparisons.	
Uses a symbol for the unknown number.			
Multi-step Problems: 4.OA.3-1, 4.OA.3-2, 4.NBT.5-1, 4.NBT.5-2, 4.NBT.6-1, 4.NBT.6-2, 4.Int.2, 4.Int.3, 4.Int.4, 4.Int.5			
Solves multi-step word problems using the four operations with whole numbers: in multiplying a three- or four-digit by a one-digit number or two two-digit numbers.	Solves two-step word and other problems using the four operations with whole numbers: in multiplying a three-digit by a one-digit number or two two-digit numbers	Solves one- or two-step word problems using the four operations with whole numbers: in multiplying a three-digit by a one-digit number or two two-digit numbers.	Solves one-step mathematical problems using the four operations with whole numbers: in multiplying a three-digit by a one-digit number or two two-digit numbers.
Finds whole number quotients and remainders with up to four -digit dividends and one-digit divisors and interprets remainders as appropriate.	Finds whole number quotients and remainders with up to three-digit dividends and one-digit divisors and interprets remainders as appropriate.	Finds whole number quotients and remainders with up to three-digit dividends and one-digit divisors.	Finds whole number quotients and remainders with up to three-digit dividends and one-digit divisors.
Chooses from a variety of strategies to solve these problems and selects an appropriate context for the task.	Chooses from a variety of strategies to solve these problems.	Chooses from a variety of strategies to solve these problems. Can only	

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
		solve two-step problems when scaffolding is provided for each step.	
Place Value: 4.NBT.1, 4.NBT.2, 4.NBT.3, 4.NBT.Int.1			
In any multi -digit whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right.	In any four-digit whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right.	In any three-digit whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right.	In any three-digit whole number, recognizes a digit in one place represents 10 times as much as it represents in the place to its right.
Reads, writes and compares multi-digit whole numbers using base-10 numerals, number names in expanded form and inequality symbols ($>$, $<$, $=$), rounds to any place and chooses appropriate context given a rounded number.	Reads, writes and compares four-digit whole numbers using base-10 numerals, number names in expanded form and inequality symbols ($>$, $<$, $=$), and rounds to any place.	Reads, writes and compares three-digit whole numbers using base-10 numerals, number names in expanded form and inequality symbols ($>$, $<$, $=$), and rounds to any place with scaffolding.	
Performs computations by applying conceptual understanding of place value, rather than by applying multi-digit algorithms.			
Addition and Subtraction: 4.NBT.4-1, 4.NBT.4-2, 4.Int.7, 4.Int.8			
Solves multiple -step word and other problems by adding or subtracting multi-digit whole numbers using the standard algorithm.	Solves two -step word problems and other problems by adding and subtracting multi-digit whole numbers using the standard algorithm.	Solves one-step word problems and other problems by adding and subtracting multi-digit whole numbers using the standard algorithm with accuracy.	Solves one-step word problems and other problems by adding and subtracting multi-digit whole numbers using the standard algorithm with limited accuracy.
Operations and Factors: 4.OA.4-1, 4.OA.4-2, 4.OA.4-3, 4.OA.4-4			
Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100, finds all	Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100 finds	Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100 finds	Recognizes that a whole number is a multiple of each of its factors, and within the range of 1-100 identifies

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
factor pairs and determines multiples of whole numbers.	factor pairs or determines multiples of whole numbers.	factor pairs or determines multiples of whole numbers.	factor pairs or multiples of whole numbers.
Determines whether a whole number in the range 1-100 is prime or composite.	Determines whether a whole number in the range 1-100 is prime or composite.	Determines, with scaffolding, whether a whole number in the range 1-100 is prime or composite.	

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Content (Sub-Claim B)

The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Measurement and Conversion: 4.MD.1, 4.MD.2-1, 4.MD.2-2, 4.MD.3, 4.Int.6			
Solves measurement word problems involving whole numbers which include calculation of area and perimeter – including those in which side lengths are missing – using all four operations.	Solves measurement word problems involving whole numbers which include calculation of area and perimeter – when information about side lengths is provided – using all four operations.	Solves mathematical measurement problems involving whole numbers using all four operations.	Solves mathematical measurement problems involving whole numbers using all four operations.
Solves measurement word problems which include calculation of area and perimeter – including those in which side lengths are missing – using addition, subtraction, and multiplication of simple fractions.	Solves measurement word problems which include calculation of area and perimeter – when information about side lengths is provided – using addition, subtraction, and multiplication of simple fractions.	Solves mathematical measurement problems using addition, subtraction, and multiplication of simple fractions.	Solves mathematical measurement problems using addition and subtraction of simple fractions.
Records measurement equivalents in a two-column table.	Records measurement equivalents in a two-column table.	Records measurement equivalents in a two-column table.	
Uses knowledge of measurement units within one system to solve word problems, real-world problems, and mathematical problems involving converting from larger units to smaller units.	Uses knowledge of measurement units within one system to solve word problems, real-world problems and mathematical problems involving converting from larger units to smaller units.	Uses knowledge of measurement units within one system to convert from larger units to smaller units.	
Represents measurement quantities using diagrams such as number line diagrams that require students to provide the appropriate measurement scale given the context.	Represents measurement quantities using diagrams such as number line diagrams that feature a measurement scale.		

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Content (Sub-Claim B)

The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Represent and Interpret Data: 4.MD.4-1, 4.MD.4-2			
Makes a line plot to display a data set of measurements in fractions of a unit with like denominators limited to 2, 4 and 8, (including mixed numbers) and uses addition and subtraction of fractions to solve problems involving information in the line plots and evaluates the solution in relation to the data.	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 addition and subtraction of fractions to solve problems involving information in the line plot.	Makes a line plot to display a data set of measurements in fractions of a unit with like denominators of 2 or 4.	Identifies a correct line plot that displays a data set of measurements in fractions of a unit with like denominators of 2 or 4.
Geometric Measurement: 4.MD.5, 4.MD.6, 4.MD.7			
Recognizes how angles are formed and that angle measures are additive.	Understands and applies concepts of angle measurement.	Understands and applies concepts of angle measurement.	Understands and identifies concepts of angle measurement.
Understands and applies concepts of angle measurement recognizing that angles are measured in reference to a circle.			
Uses a protractor to measure and sketch angles.	Uses a protractor to measure and sketch angles.	Uses a protractor to measure angles.	
Solves mathematical and real- world problems by composing and decomposing angles.	Solves mathematical and real-world problems by composing and decomposing angles.		
Solves mathematical and real- world angle problems, including problems that require the use of equations with a symbol for the unknown angle measure.			

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Content (Sub-Claim B)

The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Lines, Angles and Shapes: 4.G.1, 4.G.2, 4.G.3			
Draws and identifies points, lines, line segments, rays, angles (right, obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles, and use any of these to classify or describe two-dimensional figures.	Draws and identifies points, lines, line segments, rays, angles (right, obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles, and use some of these to classify two-dimensional figures .	Identifies points, lines, line segments, rays, angles (right, obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles, and use some of these to classify quadrilaterals and triangles .	Identifies points, lines, line segments, rays, angles (right, obtuse and acute), perpendicular lines, parallel lines, lines of symmetry and right triangles.
Generate and Analyze Patterns: 4.OA.5			
Generates a number or shape pattern that follows a given rule and identifies apparent features of the pattern that were not explicit in the rule itself and describes the rule for generating the number or shape pattern .	Generates a number or shape pattern that follows a given rule and identifies explicit features of the pattern .	Generates a number or shape pattern that follows a given rule.	Identifies a number or shape pattern that follows a given rule.

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Properties of Operations: 4.C.1-1, 4.C.1-2, 4.C.2, 4.C.3			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a complete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns <p>Response may include:</p> <ul style="list-style-type: none"> • a logical/defensible approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an efficient and logical progression of steps with appropriate justification • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a complete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns <p>Response may include:</p> <ul style="list-style-type: none"> • a logical/defensible approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • a logical progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions • a logical, but incomplete, progression of steps • minor calculation errors • some use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • evaluating the validity of other's responses, approaches and conclusions. 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates an incomplete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division • identification of arithmetic patterns <p>Response may include:</p> <ul style="list-style-type: none"> • an approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> evaluation of whether an argument or conclusion is generalizable evaluating, interpreting and critiquing the validity of other's responses, reasonings, and approaches, utilizing mathematical connections (when appropriate). Provides a counter-example where applicable. 	<ul style="list-style-type: none"> evaluating, interpreting and critiquing the validity of other's responses, reasonings, and approaches, utilizing mathematical connections (when appropriate). 		
Concrete Referents and Diagrams: 4.C.4-1, 4.C.4-2, 4.C.4-3, 4.C.4-4, 4.C.4-5, 4.C.7-1, 4.C.7-2, 4.C.7-3, 4.C.7-4			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student 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"> a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student 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"> a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) a logical progression of steps 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a complete 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"> a logical approach based on a conjecture and/or stated assumptions a logical, but incomplete, progression of steps minor calculation errors 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student 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"> a conjecture and/or stated or faulty assumptions an incomplete or illogical progression of steps an intrusive calculation error

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> an efficient and logical progression of steps with appropriate justification precision of calculation correct use of grade-level vocabulary, symbols and labels justification of a conclusion evaluation of whether an argument or conclusion is generalizable evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning, and providing a counter- example where applicable. 	<ul style="list-style-type: none"> precision of calculation correct use of grade-level vocabulary, symbols and labels justification of a conclusion evaluation of whether an argument or conclusion is generalizable evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning. 	<ul style="list-style-type: none"> some use of grade-level vocabulary, symbols and labels partial justification of a conclusion based on own calculations. evaluating the validity of other's responses, approaches and conclusions 	<ul style="list-style-type: none"> limited use of grade-level vocabulary, symbols and labels partial justification of a conclusion based on own calculations accepting the validity of other's responses.
Distinguish Correct Explanation/ Reasoning from that which is Flawed: 4.C.5-1, 4.C.5-2, 4.C.5-3, 4.C.5-4, 4.C.5-5, 4.C.5-6, 4.C.6-1, 4.C.6-2, 4.C.6-3			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a well-organized and complete response by:</p> <ul style="list-style-type: none"> presenting and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a well-organized and complete response by:</p> <ul style="list-style-type: none"> presenting and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a complete response by:</p> <ul style="list-style-type: none"> presenting solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates an incomplete response by:</p> <ul style="list-style-type: none"> presenting solutions to scaffolded two-step problems in the form of valid chains of reasoning, sometimes using symbols such as equal signs appropriately

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> • evaluating explanation/reasoning; if there is a flaw in the argument • presenting and defending corrected reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an efficient and logical progression of steps with appropriate justification • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's responses, approaches and reasoning, and providing a counter- example where applicable. 	<ul style="list-style-type: none"> • distinguishing correct explanation/reasoning from that which is flawed • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • a logical progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's responses, approaches and reasoning. 	<ul style="list-style-type: none"> • distinguishing correct explanation/reasoning from that which is flawed • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions • a logical, but incomplete, progression of steps • minor calculation errors • some use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • evaluating the validity of other's responses, approaches and conclusions. 	<ul style="list-style-type: none"> • distinguishing correct explanation/reasoning from that which is flawed • identifying an error in reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a conjecture based on faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses.

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Modeling (Sub-Claim D)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Modeling: 4.D.1, 4.D.2			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • analyzing and/or creating constraints, relationships and goals • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • justifying and defending models which lead to a conclusion • interpreting mathematical results in the context of the situation 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • modifying and/or improving the model if it has not served its purpose 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • illustrating relationships between important quantities by using provided tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in a simplified context reflecting on whether the results make sense • modifying the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an arithmetic expression or equation to describe a situation

GRADE 4 MATHEMATICS

Performance Level Descriptors

Grade 4 Math: Modeling (Sub-Claim D)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> • reflecting on whether the results make sense • improving the model if it has not served its purpose • writing a concise arithmetic expression or equation to describe a situation 	<ul style="list-style-type: none"> • writing an arithmetic expression or equation to describe a situation 		

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Addition and Subtraction Operations with Decimals: 5.NBT.7-1, 5.NBT.7-2			
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.	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.	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.	Adds or subtracts (without regrouping) two decimals to hundredths (both decimals presented with the same number of decimal places) using concrete models, drawings or strategies based on place value and/or the relationship between addition and subtraction.
Applies this concept to a real-world context , and relates the strategy to a written method and explain the reasoning used.			
Adding and Subtracting in Context with Fractions: 5.NF.2-1, 5.NF.2-2, 5.NF.A.Int.1			
Describes a model to represent word problems involving addition and subtraction of fractions and mixed numbers referring to the same whole in cases of unlike denominators by using visual fraction models or equations.	Solves word problems involving addition and subtraction of fractions and mixed numbers referring to the same whole in cases of unlike denominators by using visual fraction models or equations.	Solves word problems involving addition and subtraction of fractions and mixed numbers using only denominators of 2, 4, 5 or 10 or benchmark fractions with unlike denominators, referring to the same whole by using visual fraction models or equations.	Solves word problems involving addition and subtraction of fractions using only denominators of 2, 4, 5 or 10.
Assesses and justifies reasonableness using benchmark fractions and number sense of fractions.			

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Fractions with Unlike Denominators: 5.NF.1-1, 5.NF.1-2, 5.NF.1-3, 5.NF.1-4, 5.NF.1-5			
Adds and subtracts three or more 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.	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.	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.	Adds or subtracts two fractions 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.
Multiplication and Division Operations with Decimals: 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 using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction.	Multiplies tenths by tenths or tenths by hundredths and divides in problems involving tenths and/or hundredths using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction.	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.	Multiplies tenths by tenths 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.
Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate.			
Relates the strategy to a written method.	Relates the strategy to a written method.		
Multiply with Whole Numbers: 5.NBT.5, 5.Int.1, 5.Int.2			
Solves two-step unscaffolded word problems involving multiplication and multiplies four-digit by two-digit	Solves two-step scaffolded word problems involving multiplication of a	Solves one-step word problems involving multiplication of a three-digit by a one-digit whole number.	Solves one-step word problems involving multiplication.

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
whole numbers using the standard algorithm.	three-digit by a one-digit whole number.		
Performs exact and approximate multiplications and divisions by mentally applying place value strategies when appropriate.			
Accurately multiplies multi-digit whole numbers using the standard algorithm and assesses reasonableness of the product.	Accurately multiplies multi-digit whole numbers using the standard algorithm.	Multiplies multi-digit whole numbers using the standard algorithm with limited accuracy.	
Quotients and Dividends: 5.NBT.6			
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.	Divides whole numbers up to four-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.	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.	Correctly identifies the quotient of whole numbers up to three-digit dividends and one-digit divisors which are multiples of ten.
Illustrates and explains the calculations by using equations, rectangular arrays, and area models.			
Checks reasonableness of answers by using multiplication or estimation.			
Multiplying and Dividing with Fractions: 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			
Describes a model to represent and/or solve real-world problems, by multiplying a mixed number by a fraction, a fraction by a fraction and	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	Multiplies a fraction or a whole number by a fraction and divide a fraction by a whole number or whole	Multiplies a fraction or a whole number by a fraction using visual fraction models.

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
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 and equations , including rectangular areas; and interpreting the product and/or quotient.	visual fraction models and creating context for the mathematics, including rectangular areas.	number by a fraction using visual fraction models.	
Interpreting Fractions: 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.	Solves word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.	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.	Solves word problems involving division of whole numbers leading to answers in the form of fractions by using manipulatives or visual models to identify between which two whole numbers the answer lies.
Interprets the fraction as division of the numerator by the denominator.	Interprets the fraction as division of the numerator by the denominator.		
Identifies a simple model representing the situation.			
Describes a model to represent the situation.			
Recognizing Volume: 5.MD.3, 5.MD.4			
Recognizes volume as an attribute of solid figures and understands volume is measured using cubic units and can be found by packing a solid	Recognizes volume as an attribute of solid figures and understands volume is measured using cubic units and can be found by packing a solid	Recognizes volume as an attribute of solid figures and with a visual model understands that volume is measured using cubic units and can	Recognizes volume as an attribute of solid figures.

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
figure with unit cubes and counting them.	figure with unit cubes and counting them.	be found by packing a solid figure with unit cubes and counting them.	
Represents the volume of a solid figure as “n” cubic units.			
Writes an equation that illustrates the unit cube pattern.			
Finding Volume: 5.MD.5b, 5.MD.5c			
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 or more non-overlapping parts.	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.	Given a visual model and the formulas for finding volume, solves real-world and mathematical problems by applying the formulas for volume ($V = l \times w \times h$ and $V = B \times h$).	Given a visual model, solves volume problems by counting unit cubes.
Read, Write and Compare Decimals: 5.NBT.3a, 5.NBT.3b, 5.NBT.4			
Reads, writes and compares decimals to any place using numerals, number names, expanded form and symbols ($>$, $<$, $=$); rounds to any place and chooses appropriate context given a rounded number.	Reads, writes and compares decimals to the hundredths using numerals, number names, expanded form and symbols ($>$, $<$, $=$), and rounds to any place.	Reads, writes and compares decimals to the hundredths using numerals, number names, expanded form and symbols ($>$, $<$, $=$), and rounds to any place with scaffolding.	Identifies the correct comparison of decimals to the hundredths using numerals, number names, expanded form and symbols ($>$, $<$, $=$).
Place Value: 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	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	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	In any multi-digit number, recognizes a digit in one place represents 10 times as much as it represents in the

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Content (Sub-Claim A)

The student solves problems involving the Major Content for grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
place to its left and uses whole number exponents to denote powers of 10 and uses symbols to compare two powers of 10 expressed exponentially (compare 10^2 to 10^5).	and uses whole number exponents to denote powers of 10.	place to its left by using manipulatives or visual models.	place to its right by using manipulatives or visual models.
Multiplication Scaling: 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, 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 without performing the indicated multiplication where one factor is a fraction 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 where one factor is a fraction less than one using manipulatives or visual models.	Identifies 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.

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Content (Sub-Claim B)

The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Write and Interpret Numerical Expressions: 5.OA.1, 5.OA.2-1, 5.OA.2-2			
Uses parentheses, brackets, or braces with no greater depth than two , to write and evaluate numerical expressions.	Uses parentheses, brackets, or braces to write numerical expressions .	Uses parentheses, brackets, or braces to write simple numerical expressions.	Uses parentheses to write simple numerical expressions.
Interprets numerical expressions without evaluating them.	Interprets simple numerical expressions without evaluating them.		
Graphing on the Coordinate Plane: 5.G.1, 5.G.2, 5.OA.3			
Represents real-world and mathematical problems by 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.	Represents real-world and mathematical problems by locating or graphing points in the first quadrant of a coordinate plane.	Represents real-world mathematical problems by locating points in the first quadrant of a coordinate plane.
Two-Dimensional Figures: 5.G.3, 5.G.4			
Classifies two-dimensional figures in a hierarchy based on properties.	Classifies two-dimensional figures in a hierarchy based on properties.	Classifies two-dimensional figures based on properties.	Identifies two-dimensional figures based on properties.
Understands that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	Understands that shared attributes categorize two-dimensional figures.	Understands that shared attributes categorize two-dimensional figures.	
Uses appropriate tools to determine similarities and differences between categories and subcategories.			

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Content (Sub-Claim B)

The student solves problems involving the Additional and Supporting Content for the grade/course with connections to the Standards for Mathematical Practice.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Conversions: 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 solve real-world, multi-step problems.	Converts among different-sized standard measurement units within a given measurement system and uses these conversions to solve real-world , 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.	Identifies the correct conversion among different-sized standard units within a given measurement system.
Chooses the appropriate measurement unit based on the given context.			
Data Displays: 5.MD.2-2			
Uses operations on fractions with denominators of 2, 4, and 8 to solve problems involving information in line plots and interprets the solution in relation to the data.	Uses operations on fractions with denominators of 2 and 4 to solve problems involving information in line plots.	Uses operations on fractions with like denominators of 2 and 4 to solve problems involving information in line plots.	Uses operations on fractions with like denominators of 2 to solve problems involving information in line plots.

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Properties of Operations: 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>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a well- organized and complete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division <p>Response may include:</p> <ul style="list-style-type: none"> • a logical/defensible approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an efficient and logical progression of steps with appropriate justification • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a well-organized and complete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division <p>Response may include:</p> <ul style="list-style-type: none"> • a logical/defensible approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • a logical progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a complete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions • a logical, but incomplete, progression of steps • minor calculation errors • some use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • evaluating the validity of other's responses, approaches and conclusions. 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates an incomplete written response based on explanations/reasoning using the:</p> <ul style="list-style-type: none"> • properties of operations • relationship between addition and subtraction • relationship between multiplication and division <p>Response may include:</p> <ul style="list-style-type: none"> • an approach based on a conjecture and/or stated or faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> evaluation of whether an argument or conclusion is generalizable evaluating, interpreting and critiquing the validity of other's responses, reasonings, and approaches, utilizing mathematical connections (when appropriate). Provides a counter-example where applicable. 	<p>responses, reasonings, and approaches, utilizing mathematical connections (when appropriate).</p>		
Place Value: 5.C.3			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a well-organized and complete response based on place value system including:</p> <ul style="list-style-type: none"> a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) an efficient and logical progression of steps with appropriate justification precision of calculation correct use of grade-level vocabulary, symbols and labels 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a well-organized and complete response based on place value system including:</p> <ul style="list-style-type: none"> a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) a logical progression of steps precision of calculation correct use of grade-level vocabulary, symbols and labels justification of a conclusion 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a complete response based on place value system including:</p> <ul style="list-style-type: none"> a logical approach based on a conjecture and/or stated assumptions a logical, but incomplete, progression of steps minor calculation errors some use of grade-level vocabulary, symbols and labels partial justification of a conclusion based on own calculations 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates an incomplete response based on place value system which may include:</p> <ul style="list-style-type: none"> an approach based on a conjecture and/or stated or faulty assumptions an incomplete or illogical progression of steps an intrusive calculation error limited use of grade-level vocabulary, symbols and labels partial justification of a conclusion based on own calculations

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> justification of a conclusion evaluation of whether an argument or conclusion is generalizable evaluating, interpreting and critiquing the validity of other's responses, approaches and reasoning, and providing a counter-example where applicable. 	<ul style="list-style-type: none"> evaluation of whether an argument or conclusion is generalizable evaluating, interpreting and critiquing the validity of other's responses, approaches and reasoning. 	<ul style="list-style-type: none"> evaluating the validity of other's responses, approaches and conclusions. 	
Concrete Referents and Diagrams: 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>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student 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"> a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student 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"> a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) a logical progression of steps 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a complete 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"> a logical approach based on a conjecture and/or stated assumptions a logical, but incomplete, progression of steps minor calculation errors 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student 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"> a conjecture and/or stated or faulty assumptions an incomplete or illogical progression of steps an intrusive calculation error

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> an efficient and logical progression of steps with appropriate justification precision of calculation correct use of grade-level vocabulary, symbols and labels justification of a conclusion evaluation of whether an argument or conclusion is generalizable evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning, and providing a counterexample where applicable 	<ul style="list-style-type: none"> precision of calculation correct use of grade-level vocabulary, symbols and labels justification of a conclusion evaluation of whether an argument or conclusion is generalizable evaluating, interpreting, and critiquing the validity of other's responses, approaches, and reasoning. 	<ul style="list-style-type: none"> some use of grade-level vocabulary, symbols and labels partial justification of a conclusion based on own calculations. evaluating the validity of other's responses, approaches and conclusions. 	<ul style="list-style-type: none"> limited use of grade-level vocabulary, symbols and labels partial justification of a conclusion based on own calculations accepting the validity of other's responses
Distinguish Correct Explanation/ Reasoning from that which is Flawed: 5.C.7-1, 5.C.7-2, 5.C.7-3, 5.C.7-4, 5.C.8-2			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a well-organized and complete response by:</p> <ul style="list-style-type: none"> analyzing and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately evaluating explanation/reasoning if there is a flaw in the argument 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student clearly constructs and communicates a well- organized and complete response by:</p> <ul style="list-style-type: none"> analyzing and defending solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates a complete response by:</p> <ul style="list-style-type: none"> analyzing solutions to multi-step problems in the form of valid chains of reasoning, using symbols such as equal signs appropriately distinguishing correct explanation/reasoning from that which is flawed 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student constructs and communicates an incomplete response by:</p> <ul style="list-style-type: none"> analyzing solutions to scaffolded two-step problems in the form of valid chains of reasoning, sometimes using symbols such as equal signs appropriately

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Reasoning (Sub-Claim C)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> • presenting and defending corrected reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • an efficient and logical progression of steps with appropriate justification • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's responses, approaches and reasoning, and providing a counter-example where applicable 	<ul style="list-style-type: none"> • distinguishing correct explanation/reasoning from that which is flawed • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions, utilizing mathematical connections (when appropriate) • a logical progression of steps • precision of calculation • correct use of grade-level vocabulary, symbols and labels • justification of a conclusion • evaluation of whether an argument or conclusion is generalizable • evaluating, interpreting and critiquing the validity of other's responses, approaches and reasoning 	<ul style="list-style-type: none"> • identifying and describing the flaw in reasoning or describing errors in solutions to multi-step problems • presenting corrected reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a logical approach based on a conjecture and/or stated assumptions • a logical, but incomplete, progression of steps • minor calculation errors • some use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • evaluating the validity of other's responses, approaches and conclusions. 	<ul style="list-style-type: none"> • distinguishing correct explanation/reasoning from that which is flawed • identifying an error in reasoning <p>Response may include:</p> <ul style="list-style-type: none"> • a conjecture based on faulty assumptions • an incomplete or illogical progression of steps • an intrusive calculation error • limited use of grade-level vocabulary, symbols and labels • partial justification of a conclusion based on own calculations • accepting the validity of other's responses

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Modeling (Sub-Claim D)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
Modeling: 5.D.1, 5.D.2			
<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • analyzing and/or creating constraints, relationships and goals • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • justifying and defending models which lead to a conclusion • interpreting mathematical results in the context of the situation 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions or making assumptions and using approximations to simplify a real-world situation • mapping relationships between important quantities by selecting appropriate tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in the context of the situation • reflecting on whether the results make sense • modifying and/or improving the model if it has not served its purpose 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • illustrating relationships between important quantities by using provided tools to create models • analyzing relationships mathematically between important quantities to draw conclusions • interpreting mathematical results in a simplified context • reflecting on whether the results make sense • modifying the model if it has not served its purpose • writing an arithmetic expression or equation to describe a situation 	<p>In connection with the content knowledge, skills, and abilities described in Sub-claim A, the student devises a plan and applies mathematics to solve multi-step, real-world contextual word problems by:</p> <ul style="list-style-type: none"> • using stated assumptions and approximations to simplify a real-world situation • identifying important quantities • using provided tools to create models • analyzing relationships mathematically to draw conclusions • writing an arithmetic expression or equation to describe a situation

GRADE 5 MATHEMATICS

Performance Level Descriptors

Grade 5 Math: Modeling (Sub-Claim D)

In connection with content, 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.

Exceeds Expectations	Meets Expectations	Approaches Expectations	Partially or Does Not Yet Meet Expectations
<ul style="list-style-type: none"> • reflecting on whether the results make sense • improving the model if it has not served its purpose • writing a concise arithmetic expression or equation to describe a situation 	<ul style="list-style-type: none"> • writing an arithmetic expression or equation to describe a situation 		