Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
1. Concepts and Procedures	Priority Cluster	**A. Use the four operations with whole numbers to solve problems.** (Target Description) Tasks for this target will require students to use the four operations to solve straightforward, one-step or multi-step contextual word problems, including problems where the remainder must be interpreted. (Evidence Required) 1. The student solves contextual problems involving multiplicative comparisons, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 2. The student solves straightforward, contextual problems using the four operations. (Range ALDs) **Level 1** Students should be able to use the four operations (add, subtract, multiply, and divide) to solve one-step problems involving equal groups and arrays. **Level 2** Students should be able to use the four operations to solve one-step problems involving an unknown number. They should be able to realize that it is appropriate to multiply or divide in order to solve familiar multiplicative comparison problems. **Level 3** Students should be able to use the four operations (add, subtract, multiply, and divide) to solve one-step problems involving equal groups and arrays, including problems where the remainder must be interpreted. They should be able to find an unknown number and represent problems using equations with a symbol representing the unknown quantity. **Level 4** Students should be able to assess the reasonableness of answers using mental computation and estimation strategies, including rounding.	1, 2	8-9	0	17-20
		E. Use place value understanding and properties of operations to perform multi-digit arithmetic. (Target Description) Tasks for this target will ask students to add and subtract multi-digit whole numbers; multiply whole numbers (up to and including four digits by one digit or two digits by two digits); and find whole number quotients and remainders (up to four-digit dividends and one-digit divisors). When possible, the focus should be on the strategies students use when solving multiplication and division problems.	1,2			

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		(Evidence Required) 1. The student adds or subtracts multi-digit whole numbers in non-contextual mathematics problems. 2. The student multiplies whole numbers (up to four digits by one digit or two digits by two digits) using strategies based on place value and the properties of operations. 3. The student finds whole numbers quotients and remainders (up to four-digit dividends and one-digit divisors) using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. (Range ALDs) **Level 1** Students should be able to add and subtract one- and two-digit whole numbers using strategies based on place value; multiply two one-digit whole numbers based on place value and properties of operations; and find whole-number quotients with no remainders with up to two-digit dividends and one-digit divisors using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. **Level 2** Students should be able to use place value understanding to add and subtract two- and three-digit whole numbers using a standard algorithm; multiply whole numbers up to and including four digits by one digit based on place value and properties of operations; find whole-number quotients and remainders with up to two-digit dividends and one-digit divisors using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division; and illustrate multiplication and division by using equations, arrays, and/or area models. **Level 3** Students should be able to fluently add and subtract multi-digit whole numbers using the standard algorithm; multiply whole numbers including two digits by two digits based on place value and properties of operations; find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using strategies based on place value understanding, the properties of operations, and/or the relationship between multiplication and division; and explain multiplication and division using equations, arrays, and/or area models. **Level 4** No Descriptor				
		F. Extend understanding of fraction equivalence and ordering. (Target Description) Tasks for this target will ask students to recognize and generate equivalent	1, 2			

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		fractions or compare fractions with different numerators and different denominators, sometimes using <, =, and >. These may include the use of visual fraction models or number lines to tap student understanding of equivalence and relative size with respect to benchmarks, such as 1/2. (Evidence Required) 1. The student recognizes when two or more fractions are equivalent. 2. The student generates equivalent fractions given an initial fraction or fraction model. 3. The student uses the symbols <, >, and = to compare fractions with different numerators and different denominators. (Range ALDs) **Level 1** Students should be able to recognize that fraction comparisons are valid only when the two fractions are referring to the same whole. **Level 2** Students should be able to compare two fractions with different numerators and different denominators using <, >, and = by comparing to a benchmark fraction such as 1/2 and recognize equivalent fractions using visual models. **Level 3** Students should be able to extend understanding to compare two fractions with different numerators and different denominators using <, >, and = by creating common denominators or numerators and recognize and generate equivalent fractions using visual models. **Level 4** Students should be able to extend understanding to compare two fractions with different numerators and different denominators using <, >, and = and justify the conclusions using a visual fraction model.				
		G. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. (Target Description) Tasks for this target will ask students to identify and generate equivalent forms of a fraction *a/b* with *a*>1, including mixed numbers with like denominators. Some tasks should incorporate unit fractions and the operations addition and subtraction to express equivalent forms. Other tasks should represent *a/b* as multiplication of a whole number and unit fraction, with *a/b* sometimes expressed as the product of a whole number and fraction One-step, contextual word problems involving addition and subtraction of fractions referring to the same whole and having like denominators and those	1, 2	2-3		

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		involving multiplication of a fraction by a whole number should also be included in this target. (Evidence Required) 1. The student adds and subtracts fractions with like denominators by joining and separating parts referring to the same whole. 2. The student expresses an equivalent form of a fraction or mixed number by considering each as a sum of fractions with the same denominator. 3. The student solves contextual problems involving addition and subtraction of fractions referring to the same whole and having like denominators by using visual fraction models and equations to represent the problem. 4. The student represents a fraction *a/b* as a multiple of 1/*b*. 5. The student multiplies a fraction by a whole number. 6. The student solves contextual problems involving the multiplication of a fraction by a whole number by using visual fraction models and equations to represent the problem. (Range ALDs) **Level 1** Students should be able to understand that a fraction *a/b* with *a* > 1 is the sum of its unit fractional parts by extending previous understandings of addition on whole numbers. They should be able to identify fractions using visual models. **Level 2** Students should be able to understand that a fraction *a/b* is a multiple of 1/*b* by extending previous understanding of multiplication on whole numbers; solve one-step problems involving addition and subtraction of fractions referring to the same whole with like denominators; and use visual fraction models and/or equations to represent the problem. **Level 3** Students should be able to identify and generate equivalent forms of a fraction including mixed numbers with like denominators and solve one-step problems involving multiplication of a fraction by a whole number. **Level 4** No Descriptor				
		D. Generalize place value understanding for multi-digit whole numbers. (Target Description) Tasks for this target will ask students to compare multi-digit numbers using >, =, and <. Tasks should tap into students' understanding of place value (e.g., by asking students to give a possible digit for the empty box in 4357 < 43□9 that would make the inequality true). A smaller number of these tasks will incorporate student understanding of rounding (e.g., explaining why rounding	1, 2	1-2		

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		to a certain place would change the symbol < or > to =). In Claims 2–4, students should see contextual problems associated with this target that highlight issues with precision, including problems in Claim 3 that ask students to explain how improper estimation can create unacceptable levels of precision and/or lead to flawed reasoning. (Evidence Required) 1. The student compares two multi-digit whole numbers in the same form using >, <, and = symbols. 2. The student rounds multi-digit whole numbers to any place. 3. The student identifies multi-digit whole numbers that, when rounded to a given place value, will be closest to a given number. 4. The student compares two multi-digit whole numbers in different forms. 5. The student explains the difference between the values of a numeral in the tens and the ones place, the hundreds place and the tens place, or the thousands place and the hundreds place in mathematical situations. (Range ALDs) **Level 1** Students should be able to read and write multi-digit whole numbers less than or equal to 1000 using base-ten numerals, number names, and expanded form; compare multi-digit numbers up to 1000 using <, >, and =; and round multi-digit whole numbers up to 1000 to any place. **Level 2** Students should look for and use repeated reasoning to generalize place value understanding to be able to read and write multi-digit whole numbers less than or equal to 100,000 using base-ten numerals, number names, and expanded form; compare multi-digit numbers up to 100,000 using <, >, and =; and round multi-digit whole numbers up to 100,000 to any place. **Level 3** Students should look for and use repeated reasoning to generalize place value understanding to be able to read and write multi-digit whole numbers less than or equal to 1,000,000 using base-ten numerals, number names, and expanded form; compare multi-digit numbers up to 1,000,000 using <, >, and =; round multi-digit whole numbers up to 1,000,000 to any place; and recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. **Level 4** No Descriptor				

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		H. Understand decimal notation for fractions, and compare decimal fractions. (Target Description) Tasks for this target will ask students to express a fraction with denominator 10 as an equivalent fraction with denominator 100 and express fractions with either denominator as decimals. Some tasks will ask students to add fractions with unlike denominators (limited to 10 and 100). Other tasks will ask students to compare decimals to hundredths, using symbols (<, =, or >) or by location on a number line. Tasks written for Claim 2 or 4 will contextualize the concepts in this target using measurement conversion and displaying data as described in 4.MD Targets I and J. Problems for Claim 3 may explicitly connect addition of decimals to reasoning about fractions with denominators 10 and 100, using flawed reasoning or justification. (Evidence Required) 1. The student expresses a fraction with denominator 10 as an equivalent fraction with denominator 100. 2. The student adds two fractions with respective denominators 10 and 100. 3. The student uses decimal notation to represent fractions with denominators 10 or 100. 4. The student locates decimal numbers to the hundredths place on a number line. 5. The student compares two decimals to the hundredths place by reasoning about their size, using the symbols <, >, or =. (Range ALDs) **Level 1** No Descriptor **Level 2** Students should be able to express a fraction with denominator 10 as an equivalent fraction with denominator 100 and express those fractions as decimals. **Level 3** Students should be able to add two fractions with respective denominators 10 and 100 by first converting to two fractions with like denominators; compare two decimals to the hundredths using >, <, =, or on a number line; and compare decimals by reasoning about their size. **Level 4** Students should be able to compare two decimals to the hundredths using <, >, and = and justify the conclusions by using visual models.	1, 2	1		

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
	Supporting Cluster	**I. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.** (Target Description) Tasks for this target generally require students to solve straightforward one-step contextual word problems using the four operations in a situation involving one or more of the following: measurement conversion within a single system (including decimal representations, such as expressing 62 centimeters as 0.62 meters), distances, time intervals, liquid volume in liters, mass, money, area and perimeter of rectangles. Tasks written for Claims 2 and 4 will connect the concepts from this target to the operations described in 4.OA Target A and 4.NF Targets G and H. (Evidence Required) 1. The student converts measurements from larger units to smaller units **within** a single system of units. 2. The student records measurement equivalents in a two-column table. 3. The student identifies measurement quantities from diagrams, such as number line diagrams that feature a measurement scale, and uses the information to solve word problems. 4. The student applies the area and perimeter formulas for rectangles to solve mathematical and real-world problems. (Range ALDs) **Level 1** Students should be able to know relative sizes of measurement units within one system of units, including in, ft, yd; km, m, cm; kg, g; lb, oz.; L, mL; and hr, min, sec. **Level 2** Students should be able to express measurements in a larger unit in terms of a smaller unit within a single system of measurement, record measurement equivalents in a two-column table, and apply the perimeter formula to rectangles in mathematical problems. **Level 3** Students should be able to use the four operations to solve problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit; represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale; and apply the area formula to rectangles in mathematical problems.	1 ,2	2-3		

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		Level 4 Students should be able to apply the perimeter and area formulas to rectangles in word problems.				
		K. Geometric measurement: understand concepts of angle and measure angles. (Target Description) Tasks for this target will ask students to construct and measure angles using a protractor; to provide multiple ways to decompose a larger angle into two or more smaller angles that have the same sum as the original angle; and to determine an unknown angle measure in a diagram. Some tasks will connect the angle measure back to the number of adjacent one-degree angles that comprise the whole. (Evidence Required) 1. The student relates the concept of an angle to the fraction of a circular arc between two points on a circle. 2. The student uses a protractor to measure angles (composed of one-degree angles) and construct angles to whole-number degrees. 3. The student uses a protractor to measure angles (composed of one-degree angles) and construct angles to whole-number degrees. 4. The student solves addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems. (Range ALDs) **Level 1** No Descriptor **Level 2** Students should be able to recognize whole-number degrees on a protractor and measure angles in whole-number degrees using a protractor. **Level 3** Students should be able to construct angles in whole-number degrees using a protractor, use understanding of angle concepts to decompose a larger angle with two or more smaller angles that have the same sum as the original, and determine an unknown angle measure in a diagram. **Level 4** Students should be able to solve addition and subtraction problems to find unknown angles on a diagram in problems by using an equation with a symbol for the unknown angle measure.	1, 2			
		B. Gain familiarity with factors and multiples. (Target Description) Tasks for this target will ask students to find factor pairs and determine whether a whole number (1-100) is a multiple of a given one-digit number and whether a whole number (1-100) is prime or composite.	1, 2	1		

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		(Evidence Required) 1. The student determines one or more factors or factor pairs for a given whole number (from 1 to 100). 2. The student recognizes that a whole number (from 1 to 100) is a multiple of each of its factors. 3. The student determines if a whole number (from 1 to 100) is a multiple of a given one-digit number. 4. The student determines if a whole number (from 1 to 100) is prime or composite. (Range ALDs) **Level 1** Students should be able to recognize that a whole number is a multiple of each of its factors. **Level 2** Students should be able to find factor pairs for whole numbers in the range of 1-100 that are multiples of 2 or 5 and determine whether a given whole number in the range of 1-100 is a multiple of a given one-digit number. **Level 3** Students should be able to find all factor pairs for whole numbers in the range of 1-100 and determine whether a given whole number in the range of 1-100 is prime or composite. **Level 4** No Descriptor				
		C. Generate and analyze patterns. (Target Description) Tasks for this target will ask students to generate and analyze number and shape patterns. Analyses should include explanations of features of the pattern (other than the rule itself). (Evidence Required) 1. The student generates number patterns. 2. The student generates shape patterns. 3. The student analyzes a number pattern or shape pattern, showing understanding of the pattern rule and features other than the pattern rule. (Range ALDs) **Level 1** Students should be able to extend a number or shape pattern that follows a given rule. **Level 2** Students should be able to generate a number or shape pattern that follows a given rule.	2, 3			

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		Level 3 Students should be able to analyze a pattern for apparent features that are not explicit in the rule itself. **Level 4** No Descriptor.				
		J. Represent and interpret data. (Target Description) Tasks for this target will ask students to create or use a line plot and provide context for 4.NF Target G (specifically, addition and subtraction of fractions with like denominators). (Evidence Required) 1. The student completes a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). 2. The student solves problems involving addition and subtraction of fractions with like denominators by using information presented in line plots. (Range ALDs) **Level 1** Students should be able to identify data from a given line plot using whole numbers. **Level 2** Students should be able to use data from a given line plot using fractions 1/2, 1/4, and 1/8 to solve one-step problems. **Level 3** Students should be able to create a line plot to represent a data set using fractions 1/2, 1/4, and 1/8, and interpret data from a line plot to solve problems involving addition and subtraction of fractions with like denominators. **Level 4** No Descriptor	1, 2			
		L. Draw and identify lines and angles, and classify shapes by properties of their lines and angles. (Target Description) Tasks for this target will ask students to draw or identify points, lines, line segments, rays, and parallel and perpendicular lines; to classify angles as right, acute, or obtuse (often paired with 4.MD Target K); to classify two-dimensional figures based on angles and parallel or perpendicular lines; and to draw or identify lines of symmetry in two-dimensional figures. More difficult items for this target may use symmetry as the basis for classification of two-dimensional figures (e.g., What lines of symmetry does a rectangle have to have for it to be considered a square?).	1, 2	1		

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		(Evidence Required) 1. The student draws points, lines, line segments, rays, and angles and identifies these in two-dimensional figures. 2. The student classifies two-dimensional figures based on the presence or absence of parallel/perpendicular line segments and angles of a specified size, including identifying right triangles. 3. The student identifies and draws lines of symmetry in line-symmetric figures, and distinguishes line-symmetric figures from line-asymmetric figures. (Range ALDs) **Level 1** Students should be able to draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines; recognize a line of symmetry for a familiar two-dimensional figure; and identify right triangles. **Level 2** Students should be able to identify points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines in two-dimensional figures and recognize all lines of symmetry in unfamiliar two-dimensional figures. **Level 3** Students should be able to draw lines of symmetry for two-dimensional figures, classify two-dimensional figures based on parallel or perpendicular lines or angles of specified lines, and recognize right triangles as a category. **Level 4** No Descriptor				
2. Problem Solving 4. Modeling and Data Analysis	Problem Solving (drawn across content domains)	**A. Apply mathematics to solve well-posed problems arising in everyday life, society , and the workplace.** (General Task Model Expectations) 1. The student is asked to solve a well-posed problem arising in a mathematical context or everyday life, society, or the workplace. 2. Mathematical information from the context is presented in a table, graph, or diagram, or is extracted from a verbal description or pictorial representation of the context. 3. Solving the problem requires one or more steps consisting of one of the four operations with whole numbers or fractions (division of fractions is limited to division of a whole number by a unit fraction or a unit fraction by a whole number). 4. Understandings from geometry or measurement may be needed to determine the operations to be performed.	2, 3	2	1-2	8-10

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		5. The task does not indicate by key words or other scaffolding which operations are to be performed or in what order. 6. Difficulty of the task may be adjusted by varying (a) the difficulty of extracting information from the context, (b) the number of steps, (c) the complexity of the numbers used, or (d) the complexity of the interpretation required.				
		B. Select and use appropriate tools strategically. (General Task Model Expectations) 1. Mathematical information from the context is presented in a table, graph, or diagram, or is extracted from a verbal description or pictorial representation of the context. 2. The student uses tools or makes strategic selection of tools. 3. Tasks may require the student to use a familiar tool in a non-standard way, for example using a ruler from a non-standard starting point or using a number line to represent time. 4. Difficulty of the task may be adjusted by varying (a) the difficulty of extracting information from the context (b) the number of steps (c) the complexity of the numbers used or (d) the complexity of the interpretation required. **C. Interpret results in the context of a situation.** (General Task Model Expectations) 1. The student provides a numeric answer to a problem where the context requires them to go beyond the result of a single computation. 2. The student may be asked to choose a value that falls into a range of acceptable values limited by information given in a real-world context. 3. The student may be asked to round up or round down based on the constraints of the context. 4. The student may be asked to interpret the meaning of mathematical computations, for example, the different interpretations of arithmetic operations. 5. The student may be asked to interpret the meaning of points on the number line or in the coordinate plane in a real-world context. 6. The student may be asked to solve a problem that requires the integration of concepts and skills from multiple domains. 7. Difficulty of the task may be adjusted by varying (a) the difficulty of extracting information from the context (b) the number of steps (c) the complexity of the numbers used or (d) the complexity of the interpretation	1, 2, 3	1		

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		required. **D. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flow charts, or formulas).** (General Task Model Expectations) 1. The student is presented with a mathematical problem in a real-world context where the quantities of interest are not named explicitly, are named but represented in different ways, or the relationship between the quantities is not immediately clear. 2. The student is asked to solve a problem that may require the integration of concepts and skills from multiple domains. 3. Target 2D identifies a key step in the modeling cycle, and is thus frequently present in problems with real-world contexts. Note that Target 2D is rarely the primary target for an item, but is frequently a Secondary or Tertiary Target for an item with primary alignment to 2A, 2B, or 2C; see example items for many of the task models in those Targets.				
	Modeling and Data Analysis (drawn across content domains)	**A. Apply mathematics to solve problems arising in everyday life, society, and the workplace.** (General Task Model Expectations) 1. The student is asked to solve a problem arising in everyday life, society, or the workplace. 2. Information needed to solve the problem has a level of complexity that is not present in items within Claim 2 Target A. For example, the student must • distinguish between relevant and irrelevant information, or • identify information that is not given in the problem and request it, or • make a reasonable estimate for one or more quantities and use that estimate to solve the problem. 3. The student must select a mathematical model independently and is not directly told what arithmetic operation or geometric structure to use to solve the problem. 4. Tasks in this model often have secondary alignments to other Claim 4 targets, in particular Target 4B, constructing autonomous chains of reasoning, Target 4D, requiring the student to interpret results in the context of the problem, and Target 4F, requiring students to identify quantities and map relationships between them.	2, 3	1	1–3	

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		5. The student is often required to draw upon knowledge from different domains, including knowledge from earlier grade-levels. **D. Interpret results in the context of a situation.** (General Task Model Expectations) 1. The student must solve a problem that results in a numerical answer and interpret the number in the context of the problem.				
		B. Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. (General Task Model Expectations) 1. The student is presented with a multi-step problem with little or no scaffolding, or 2. The student must make estimates or choose between different reasonable assumptions in order to solve the problem. 3. Note that Target 4B is never the primary target for an item, but is frequently a Tertiary or Quaternary Target for an item with primary alignment to other targets; see, for example, items in Task Models for 4A, 4C, and 4E. **E. Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon.** (General Task Model Expectations) 1. The student is presented with a problem arising in everyday life, society, or the workplace. The student either • chooses between competing mathematical models to solve the problem (which may depend on different interpretations of the problem), or • evaluates a partial or complete (possibly incorrect) solution to the problem, or • constructs a mathematical model to solve the problem. It is not necessary that a student constructs a complete solution to the problem for this target. 2. Tasks in this model can also assess Target 4B (Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem). Thus some tasks should plausibly entail a chain of reasoning to complete the task (not just a single step). For example, it might be necessary for the student to construct a two-step arithmetic expression to evaluate a model or solution, or to try out a	2, 3, 4	1		

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		geometric shape and then perform a calculation to see if it satisfies the requirements. 3. The student is often required to draw upon knowledge from different domains, including knowledge from earlier grade-levels.				
		C. State logical assumptions being used. (General Task Model Expectations) 1. The student is presented with a problem arising in everyday life, society, or the workplace. The student either • identifies information or assumptions needed to solve the problem, • researches additional information needed to solve the problem, or • provides a reasoned estimate of a quantity needed to solve the problem. It is not necessary that a student constructs a complete solution to the problem for this target. 2. Tasks in this model generally have either more information than is needed solve the problem (and students identify the relevant information) or not enough information (and students must provide a reasoned estimate). 3. The student is often required to draw upon knowledge from different domains, including knowledge from earlier grade- levels. 4. Tasks for this target may also assess Target 4B or 4D. **F. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flow charts, or formulas).** (General Task Model Expectations) 1. Students are presented with a mathematical problem in a real-world context where the quantities of interest are not named explicitly, are named but represented in different ways, or the relationship between the quantities is not immediately clear. 2. The student is asked to solve a problem that may require the integration of concepts and skills from multiple domains.	1, 2, 3	1		
		G. Identify, analyze, and synthesize relevant external resources to pose or solve problems. (General Task Model Expectations) Measured in performance tasks only, students should have access to external resources to support their work in posing and solving problems (e.g., finding or constructing a set of data or information to answer a particular question or looking up measurements of a structure to increase precision in an estimate	3, 4	0		

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		for a scale drawing). Constructed response items should incorporate "hyperlinked" information to provide additional detail (both relevant and extraneous).				
3. Communicating Reasoning	Communicating Reasoning (drawn across content domains)	**A. Test propositions or conjectures with specific examples.** (General Task Model Expectations) 1. Items for this target should focus on the core mathematical work that students are doing around numbers and operations, with mathematical content from other domains playing a supporting role in setting up the reasoning contexts. 2. Items in this task model should probe the key mathematical structures that students at that grade-level are studying, such as the structure of base-ten numbers, fractions, or the four operations and their properties. • Find a counterexample if the claim is false, • Find examples and non-examples if the claim is sometimes true, or • Provide supporting examples for a claim that is always true without concluding that the examples establish that truth, unless there are only a finite number of cases and all of them are established one-by-one. The main role for using specific examples in this case is for students to develop a hypothesis that the conjecture or claim is true, setting students up for work described in Claim 3B. 3. False or partially true claims that students are asked to find counterexamples for should frequently draw upon commonly held mathematical misconceptions. 4. Note: Use appropriate mathematical language in asking students for a single example. While a single example can be used to refute a conjecture, it cannot be used to prove one is always true unless that is the one and only case. **D. Use the technique of breaking an argument into cases.** (General Task Model Expectations) 1. Items for this target should focus on the core mathematical work that students are doing around numbers and operations, with mathematical content from other domains playing a supporting role in setting up the reasoning contexts. 2. The student is given • A problem that has a finite number of possible solutions, some of which work and some of which don't, or • A proposition that is true in some cases but not others.	2, 3	3	0-2	8-10

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		3. Items for Claim 3 Target D should either present an exhaustive set of cases to consider or expect students to consider all possible cases in turn in order to distinguish it from items in other targets. 4. In grades 3-5, the student will be given the cases to consider.				
		B. Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. (General Task Model Expectations) 1. Items for this target should focus on the core mathematical work that students are doing around numbers and operations, with mathematical content from other domains playing a supporting role in setting up the reasoning contexts. 2. Items for this target can probe a key mathematical structure such as the structure of base-ten numbers, fractions, or the four operations and their properties. 3. Items for this target can require students to solve a multi-step, well-posed problem involving the application of mathematics to a real-world context. The difference between items for Claim 2A and Claim 3B is that the focus in 3B is on communicating the reasoning process in addition to getting the correct answer. 4. Note that in grades 3-5, items can provide more structure than items for later grades to help them understand the expectations for justifying or refuting a proposition or conjecture. **E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is.** (General Task Model Expectations) 1. Items for this target should focus on the core mathematical work that students are doing around numbers and operations, with mathematical content from other domains playing a supporting role in setting up the reasoning contexts 2. The student is presented with valid or invalid reasoning and told it is flawed or asked to determine its validity. If the reasoning is flawed, the student identifies, explains, and/or corrects the error or flaw. 3. The error should be more than just a computational error or an error in counting, and should reflect an actual error in reasoning. 4. Analyzing faulty algorithms is acceptable so long as the algorithm is internally consistent and it isn't just a mechanical mistake executing a standard algorithm.	2, 3, 4	3		

Target Sampling Mathematics Grade 4						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		C. State logical assumptions being used. (General Task Model Expectations) 1. Items for this target should focus on the core mathematical work that students are doing around numbers and operations, with mathematical content from other domains playing a supporting role in setting up the reasoning contexts. 2. For some items, the student must explicitly identify assumptions that • Make a problem well-posed, or • Make a particular solution method viable. 3. When possible, items in this target should focus on assumptions that are commonly made implicitly and can cause confusion when left implicit. 4. For some items, the student will be given a definition and be asked to reason from that definition. **F. Base arguments on concrete referents such as objects, drawings, diagrams, and actions.** (General Task Model Expectations) In earlier grades, the desired student response might be in the form of concrete referents. In later grades, concrete referents will often support generalizations as part of the justification rather than constituting the entire expected response. 1. The student uses concrete referents to help justify or refute an argument. 2. Items in this task model should address content in standards that specifically call for number lines, diagrams, and contexts to be used as a basis for reasoning.	2, 3	2		