Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
1. Concepts and Procedures	Priority Cluster	**E. Apply and extend previous understandings of arithmetic to algebraic expressions.** (Target Description) Tasks for this target will ask students to write and evaluate expressions (numerical expressions with whole-number exponents; algebraic expressions; and expressions arising from formulas in real-world problems). Other tasks will ask students to identify or generate equivalent expressions using understanding of properties or operations. (Evidence Required) 1. The student evaluates numerical expressions involving whole-number exponents. 2. The student writes numerical expressions involving whole-number exponents, algebraic expressions, and expressions from formulas in real-world problems. 3. The student uses mathematical terms to describe expressions. 4. The student evaluates algebraic expressions and expressions from formulas in real-world problems. 5. The student creates equivalent expressions by applying properties of operations. 6. The student identifies when expressions are equivalent by utilizing properties of operations. (Range ALDs) **Level 1** Students should be able to evaluate numerical expressions without exponents; write one- or two-step numerical expressions; and identify parts of an expression, using terms (e.g., coefficient, term, sum, product, difference, quotient, factor). **Level 2** Students should be able to evaluate numerical expressions with nonnegative integer exponents that do not need to be distributed across a set of parentheses. They should be able to apply and extend previous understandings of arithmetic to evaluate expressions with variables that do not contain exponents. They should also be able to write one- and two-step algebraic expressions that introduce a variable and identify equivalent expressions. **Level 3** Students should be able to write and evaluate numerical expressions with nonnegative integer exponents and expressions from formulas in real-world problems, and they should be able to apply and extend previous	1	5-6	0	16-19

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		understandings of arithmetic to evaluate expressions with variables that include nonnegative integer exponents. They should be able to apply properties of operations to generate equivalent expressions. **Level 4** Students should be able to apply the understanding of the properties of operations and use the properties to show why two expressions are equivalent.				
		F. Reason about and solve one-variable equations and inequalities. (Target Description) Tasks for this target will ask students to solve and write one-variable equations and inequalities, some of which provide substitution of given numbers as an entry point to a solution. Claim 3 tasks will tap into students' abilities to explain that there are infinitely many solutions to an inequality. (Evidence Required) 1. The student uses substitution in one-variable equations and inequalities. 2. The student writes one-variable equations and inequalities and solves one-variable equations in real-world and mathematical problems. 3. The student represents solutions of inequalities in real-world and mathematical problems on a number line. (Range ALDs) **Level 1** Students should be able to use substitution to determine when a given number makes an equation or inequality true. **Level 2** Students should be able to solve one-variable equations and inequalities of the form $x + p = \leq/\geq/</> q$ or $px = \leq/\geq/</> q$, where p and q are nonnegative rational numbers. They should be able to identify and use variables when writing equations. **Level 3** Students should be able to write one-variable equations and inequalities of the form $x + p = \leq/\geq/</> q$ or $px = \leq/\geq/</> q$, where p and q are nonnegative rational numbers. They should be able to reason about and solve equations and inequalities by writing and graphing their solutions on a number line. **Level 4** Students should be able to solve equations and inequalities of the form $x + p = \leq/\geq/</> q$ or $px = \leq/\geq/</> q$, where p and q are rational numbers. They should be able to write and graph solutions on the number line.	1, 2			
		A. Understand ratio concepts and use ratio reasoning to solve problems. (Target Description) Tasks for this target will require students to make sense of problems that use	1, 2	3-4		

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		ratio and rate language and to find unit rates associated with given ratios. Students will be asked to display equivalent ratios in tables and as coordinate pairs, using information to compare ratios or find missing values. Other tasks for this target ask students to find a percent as a rate per hundred. Problems involving rates, ratios, percents (finding the whole, given a part and the percent), and measurement conversions that use ratio reasoning will also be assessed in Claims 2–4. (Evidence Required) 1. The student uses ratio language to describe a ratio relationship. 2. The student determines the unit rate associated with a real-world ratio. 3. The student finds missing values in tables of equivalent ratios. 4. The student plots coordinate pairs to represent equivalent ratios. 5. The student makes tables of equivalent ratios relating quantities with whole-number measurements. 6. The student solves real-world problems involving unit rate. 7. The student solves mathematical problems involving finding the whole, given a part and the percent. 8. The student solves real-world and mathematical problems involving finding a percent of a quantity as a rate per 100. 9. The student uses ratio reasoning to manipulate and transform units appropriately when multiplying or dividing quantities. (Range ALDs) **Level 1** Students should be able to describe a ratio relationship between two whole number quantities, find missing values in tables that display a proportional relationship, and plot the pairs of values from a table on the coordinate plane. They should be able to find a percent as a rate per hundred and convert measurement units. **Level 2** Students should be able to understand the concept of unit rate in straightforward, well-posed problems and solve straightforward, well-posed, one-step problems requiring ratio reasoning. **Level 3** Students should be able to use ratio reasoning to solve and understand the concept of unit rates in unfamiliar or multi-step problems, including instances of unit pricing and constant speed, and solve percent problems by finding the whole, given a part and the percent. They should be able to describe a ratio relationship between any two number quantities				

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		(denominators less than or equal to 12). **Level 4** Students should be able to solve unfamiliar or multi-step problems by finding the whole, given a part and the percent; explain ratio relationships between any two number quantities; and identify relationships between models or representations.				
		G. Represent and analyze quantitative relationships between dependent and independent variables. (Target Description) Tasks for this target will ask students to select or write an equation that expresses one quantity in terms of another. Some tasks will target the relationship between the variables in an equation and their representation in a table or graph. (Evidence Required) 1. The student writes an equation to express one quantity versus another quantity using dependent and independent variables. 2. The student identifies the relationship between dependent and independent variables from graphs and tables and relates them to equations. (Range ALDs) **Level 1** Students should be able to identify a table that represents a relationship between two variables of the forms $y = kx$ and $y = x \pm c$ with rational numbers and plot points corresponding to equations on coordinate planes. **Level 2** Students should be able to use variables to represent and analyze two quantities that change in relationship to each other of the form $y = kx$ or $y = x \pm c$ with rational numbers; identify and create an equation that expresses one quantity in terms of another; and use graphs and tables to represent the relationship. **Level 3** Students should be able to use graphs, tables, or context to analyze the relationship between dependent and independent variables and relate them to a linear equation. **Level 4** Students should be able to use graphs, tables, or context to analyze nonlinear polynomial relationships between dependent and independent variables and relate them to nonlinear polynomial equations.	2	2		
		B. Apply and extend previous understandings of multiplication and division to divide fractions by fractions. (Target Description)	1, 2			

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		Tasks for this target will ask students to divide fractions by fractions, including using this as a strategy to solve one-step contextual problems. (Evidence Required) 1. The student interprets quotients of fractions using visual fraction models, equations, and the relationship between multiplication and division. 2. The student solves real-world and mathematical one-step problems involving division of fractions by fractions. (Range ALDs) **Level 1** Students should be able to apply and extend previous understandings of multiplication and division to multiply a fraction by a fraction, divide a fraction by a whole number, and be able to connect to a visual model. They should understand the effect that a fraction greater than or less than 1 has on a whole number when multiplied and use or create visual models when multiplying a whole number by a fraction between 0 and 1. **Level 2** Students should be able to apply and extend previous understandings of multiplication and division to divide a whole number by a fraction between 0 and 1, divide a mixed number by a whole number, and be able to connect to a visual model. **Level 3** Students should be able to apply and extend previous understandings of multiplication and division to divide a fraction by a fraction and be able to connect to a visual model. **Level 4** Students should be able to use visual models in settings where smaller fractions are divided by larger fractions. They should also understand and apply the fact that a fraction multiplied or divided by 1 in the form of *a/a* is equivalent to the original fraction.				
		D. Apply and extend previous understandings of numbers to the system of rational numbers. (Target Description) Tasks for this claim will ask students to place numbers on a number line (positive and negative rational numbers, including those expressed using absolute value notation). Some tasks will ask students to interpret the meaning of zero in a context related to other given quantities in the problem. Claim 3 tasks will integrate the work of this target by incorporating students' understanding of interpretations and explanations of common misconceptions related to inequalities for negative rational numbers (e.g.,	1, 2	2		

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		explaining that $-3^{o}C$ is warmer than $-7^{o}C$). Claims 2 and 4 will include items that ask students to solve problems in the four quadrants of the coordinate plane, including distances between points with the same first and second coordinate. (Evidence Required) 1. The student uses positive and negative numbers to represent quantities in real-world contexts. 2. The student can identify the location of ordered pairs on the coordinate plane based on the signs of the numbers in an ordered pair. 3. The student locates and positions integers and other rational numbers on a number line. 4. The student positions ordered pairs of integers and other rational numbers on a coordinate plane. 5. The student writes and interprets statements about the order of rational numbers in real-world contexts. 6. The student represents the absolute value of a rational number as the distance from zero on a number line. 7. The student can make comparisons of absolute value from statements about order. 8. The student solves real-world and mathematical problems by graphing ordered pairs on a coordinate plane and using coordinates and absolute value to find the distances between points with same first coordinate or same second coordinate. (Range ALDs) **Level 1** Students should be able to place all integers on a number line and integer pairs on a coordinate plane with one-unit increments on both axes. **Level 2** Students should be able to apply and extend previous understandings of whole numbers to order rational numbers and interpret statements of their order in the context of a situation. They should be able to place all rational numbers on a number line and integer pairs on a coordinate plane with various axis increments. They should be able to relate changes in sign to placements on opposite sides of the number line and understand the absolute value of a number as its distance from zero on a number line. **Level 3** Students should be able to apply and extend previous understandings of numbers to relate statements of inequality to relative positions on a number line, place points with rational coordinates on a coordinate plane,				

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		and solve problems involving the distance between points when they share a coordinate. They should be able to understand absolute value and ordering by using number lines and models and relate reflection across axes to changes in sign. **Level 4** No descriptor				
	Supporting Cluster	**C. Compute fluently with multi-digit numbers and find common factors and multiples.** (Target Description) Tasks for this target will ask students to divide multi-digit numbers and add, subtract, multiply, and divide multi-digit decimals. Other tasks will ask students to find the greatest common factor of two whole numbers less than or equal to 100; find the least common multiple of two whole numbers less than or equal to 12; and express the sum of two whole numbers 1-100 with a common factor as a multiple of the sum of two whole numbers with no common factor, or find the missing value in an equation representing such equivalence (see connections to 6.EE Targets E and F to generate items with greater range of difficulty). (Evidence Required) 1. The student divides multi-digit numbers. 2. The student adds, subtracts, multiplies, and divides multi-digit decimals. 3. The student determines the greatest common factor of two whole numbers. 4. The student determines the least common multiple of two whole numbers. 5. The student uses the distributive property to express a sum of two whole numbers with a common factor as a multiple of a sum of two whole numbers with no common factor. (Range ALDs) **Level 1** Students should be able to add, subtract, and multiply multi-digit whole numbers and decimals to hundredths. They should be able to use the distributive property to express the sum of two whole numbers with a common factor. **Level 2** Students should be able to divide multi-digit whole numbers and add and subtract multi-digit decimal numbers. They should be able to find common factors of two numbers less than or equal to 100 and multiples of two numbers less than or equal to 12. **Level 3** Students should be able to fluently divide multi-digit numbers and	1, 2	4-5		

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		add, subtract, multiply, and divide multi-digit decimal numbers. They should be able to find the greatest common factor of two numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. **Level 4** Students should be able to make generalizations regarding multiples and factors of sets of numbers (e.g., state that a particular set of numbers is relatively prime).				
		H. Solve real-world and mathematical problems involving area, surface area, and volume. (Target Description) Tasks for this target will ask students to find area (triangles, special quadrilaterals, and polygons) using composition and decomposition; to find volume of right rectangular prisms with fractional edge lengths (see connections to 6.NS Target B); identify and use nets of three-dimensional figures to find surface area; and draw polygons in the coordinate plane with given coordinates or determine the length of a side of a polygon given the coordinates for the vertices. (Evidence Required) 1. The student determines the area of triangles, special quadrilaterals, and polygons using composition and decomposition in solving real-world and mathematical problems. 2. The student determines the volume of right rectangular prisms with fractional edge lengths in solving real-world and mathematical problems. 3. The student draws polygons in the coordinate plane, given coordinates for the vertices in the context of solving real-world and mathematical problems. 4. The student determines the length of a side of a polygon in the coordinate plane, given coordinates for the vertices in the context of solving real-world and mathematical problems. 5. The student determines the surface area of three-dimensional figures formed by nets of polygons in the context of solving real-world and mathematical problems. (Range ALDs) **Level 1** Students should be able to find areas of right triangles; draw polygons with positive coordinates on a grid with a scale in one-unit increments, given nonnegative integer-valued coordinates for the vertices; and find the volume of right rectangular prisms with one side expressed as a fraction or a mixed	1 ,2			

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		number in halves or fourths. **Level 2** Students should be able to find areas of special quadrilaterals and triangles; draw polygons in the four-quadrant coordinate plane with scales in one-unit increments, given integer-valued coordinates for the vertices; and find the volume of right rectangular prisms with one side expressed as a fraction or a mixed number. **Level 3** Students should be able to solve problems that involve finding areas of polygons and special quadrilaterals and triangles and find the volume of right rectangular prisms with all sides expressed as a fraction or a mixed number. They should be able to solve problems by drawing polygons in the four-quadrant coordinate plane with scales in various integer increments, given integer-valued coordinates for the vertices or coordinates containing a mix of integers and half, quarter, or tenth units. **Level 4** Students should be able to solve problems by finding surface areas of three-dimensional shapes composed of rectangles and triangles. They should be able to find the volume of a compound figure composed of right rectangular prisms to solve problems.				
		I. Develop understanding of statistical variability. (Target Description) Tasks for this target will ask students to identify questions that lead to variable responses; identify a reasonable center and/or spread for a given context. (Evidence Required) 1. The student recognizes a statistical question as one that anticipates variability. 2. The student identifies statements that describe the center and/or spread, and/or overall shape of a set of data. 3. The student recognizes that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. (Range ALDs) **Level 1** Students should be able to identify questions that lead to variable responses posed in familiar contexts and recognize that such questions are statistical questions. **Level 2** Students should be able to recognize that questions that lead to variable responses are statistical questions and vice versa, and they should	2			

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		relate the concept of varying responses to the notion of a range of possible responses. They should develop an understanding that the responses to a statistical question will have a representative center and a given set of numerical data. They should be able to identify a reasonable measure of central tendency with respect to a familiar context. **Level 3** Students should be able to pose statistical questions and understand that the responses to a statistical question have a distribution described by its center, spread, and overall shape. They should also understand that a measure of center summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. They should be able to identify a reasonable center and spread with respect to a context. **Level 4** Students should be able to justify the reasonableness of their identified center and spread with respect to an unfamiliar context. They should be able to create or complete a data set with given measures (e.g., mean, median, mode, interquartile range).				
		J. Summarize and describe distributions. (Target Description) Tasks for this target will ask students to create number lines, dot plots, histograms, and box plots. The reporting of quantitative measures (median and/or mean, interquartile range and/or mean absolute deviation) may be included in these tasks or delivered as separate tasks. Other tasks for this target will ask students to match the shape of a data distribution to its quantitative measures. (Evidence Required) 1. The student displays numerical data on line plots, dot plots, histograms, and box plots. 2. The student summarizes numerical data sets by describing the nature of the attribute under investigation, including how it was measured, its units of measurement, and number of observations. 3. The student summarizes numerical data sets by determining quantitative measures of center (median and/or mean) and variability (interquartile range, range, and/or mean absolute deviation).	1, 2			

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		(Range ALDs) **Level 1** Students should be able to summarize or display numerical data on a number line, in dot plots, and in histograms; find the median of an odd number of data points; and find the mean when data points are nonnegative integers. **Level 2** Students should be able to calculate mean and median, understand that mean and median can be different or the same, and use the measure of center to summarize data with respect to the context. **Level 3** Students should be able to summarize or display data in box plots and find the interquartile range. They should be able to use the interquartile range along with the angle and measures of center to describe overall patterns in a data distribution, such as symmetry and clusters, and any striking deviations. They should also be able to examine a data set in context and explain the choice of the mean or median, as it relates to the data. **Level 4** Students should be able to relate choice of measures of center and variability to the shape of the data distribution in context of the data; find mean absolute deviation and identify outliers with reference to the context of the situation; and predict effects on the mean and median, given a change in data points.				
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 a context from 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, in Grades 6-7, understanding of and proficiency with ratios, rates and proportional relationships, the number system, or expressions and equations; in Grade 8, understanding of and proficiency with expressions and equations, functions, and geometry and geometric measurement. 4. Understandings from statistics, probability, and geometry may be needed to set up the problem, but are not the primary focus of the problem (except that geometry is a legitimate primary focus in Grade 8). Claim 4 is the proper place for problems whose primary focus is statistics or probability. 5. The task does not indicate by key words or other scaffolding which	2, 3	2	1-2	8-10

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		arithmetic and algebraic operations, and which geometry constructions or transformations, are to be performed or in what order. 6. Difficulty of the task may be varied by varying (a) the difficulty of extracting information from the context (b) the number of steps or (c) the complexity of the expressions, equations, functions, or geometric figures or measurements used.				
		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. Tasks aligned to this task model focus on using tools to solve problems or making strategic choices about which tool to use or whether to use a tool to solve a problem. 3. Difficulty of the task may be varied 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 is asked to interpret the solution of a well-posed problem arising in a context from everyday life, society, or the workplace, and then to interpret the solution in terms of the context. 2. Possible interpretations include: giving the units of an answer and explaining their meaning, interpreting parts of an expression, and interpreting the solution to an equation. Problems involving interpreting data are more likely to fit into Claim 4C than Claim 2C. 3. Because the focus is on interpreting the solution, items in this task model will generally have lower cognitive demand in the problem solving aspects than items in task models for 2A and 2B. 4. 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. 5. Solving the problem requires either using units, writing an expression in an equivalent form, setting up and solving an equation or system of equations, or calculating geometric measures. 6. Difficulty of the task may be varied by varying (a) the difficulty of extracting information from the context (b) the number of steps (c) the complexity of	1, 2, 3	1		

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		the numbers used or (d) the complexity of the interpretation 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. 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.				
	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	2, 3	1	1-3	

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		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. 5. Problems in this model may have more than one possible solution. 6. 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 is presented with a problem situation in everyday life, society, or the workplace or a mathematical model of such a situation. The student interprets the solution to the problem in terms of the context, in terms of the model, or compares the results of the model with the real-world data it represents. • Item types with a primary alignment to 4D focus on interpreting results in terms of the model or comparing the results of the model with the real-world data it represents. • It is not necessary for a student to generate a complete solution for problems with a primary alignment to this target. 2. Tasks in Targets 4A, 4C, 4E, and 4F frequently have this target as a tertiary or quaternary alignment because students must interpret their results in terms of the context. 3. The student is often required to draw upon knowledge from different domains, including knowledge from earlier grade-levels.				
		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. 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.	2, 3, 4	1		

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		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) • Evaluates a partial or complete (possibly incorrect) solution to the problem • Constructs a mathematical model to solve the problem It is not necessary that a student to generate a complete solution for problems in 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 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 to provide 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 must choose) or not enough information (and students must make a reasoned estimate). 3. The student is often required to draw upon knowledge from different domains, including knowledge from earlier grade-levels.	1, 2, 3	1		

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		4. Tasks for this target may also assess Target 4F. **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.				
		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 for a scale drawing). Constructed response items should incorporate "hyperlinked" information to provide additional detail (both relevant and extraneous).	3, 4	0		
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 ratios and proportional relationships, the rational number system, and equations and expressions in grades 6-7 and equations, functions, and geometry in grade 8. 2. In response to a claim or conjecture, the student should: • 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	2, 3	3	0-2	8-10

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		counterexamples for should draw upon frequently held mathematical misconceptions whenever possible. 4. Note: When asking students for a single example, take care to avoid mathematical language that suggests a single example proves a conjecture. **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 ratios and proportional relationships, the rational number system, and equations and expressions in grades 6-7 and equations, functions, and geometry in grade 8. 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. 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.				
		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 ratios and proportional relationships, the rational number system, and equations and expressions in grades 6-7 and equations, functions, and geometry in grade 8 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 that found in expressions and equations, ratios and proportional relationships, and the rational number system. 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 6-8, items provide less structure than items for earlier grades to focus on justifying or refuting a proposition or conjecture. 5. Many machine-scorable items for these task models can be adapted to	2, 3, 4	3		

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		increase the autonomy of student's reasoning process but would require hand-scoring. **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 ratios and proportional relationships, the rational number system, and equations and expressions in grades 6-7 and equations, functions, and geometry in grade 8. 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.				
		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 ratios and proportional relationships, the rational number system, and equations and expressions in grades 6-7 and equations, functions, and geometry in grade 8. 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) 1. The student uses concrete referents to help justify or refute an argument. 2. In grade 6, items in this task model should focus on the use of number lines. In grade 7, they should focus on number lines and graphs of	2, 3	2		

Target Sampling Mathematics Grade 6						
Claim	Content Category	Assessment Targets	DOK	Items		Total Items
				CAT	PT	
		proportional relationships. In grade 8, they should focus on graphs of linear equations and systems of linear equations and geometric contexts related to transformations of the plane or the Pythagorean Theorem. **G. At later grades, determine conditions under which an argument does and does not apply. (For example, area increases with perimeter for squares, but not for all plane figures.)** (General Task Model Expectations) Target 3G is a closely related extension of the expectations in Targets 3A, 3B, 3C, and 3D, and as with those targets, is often a tertiary alignment for items in those targets. Students often test propositions and conjectures with specific examples (as described in Target 3A) for the purpose of formulating conjectures about the conditions under which an argument does and does not apply. Students then must explicitly describe those conditions (as in Target 3C). Expectations for Target 3D include determining conditions under which an argument is true given cases—the next step is articulating those cases autonomously.				