



# Mathematics Focused Interim Assessment Blocks Blueprint

as of July 2022

The Smarter Balanced Focused Interim Assessment Blocks (FIABs) are one type of interim assessment being made available by the Consortium; the other types are the Interim Comprehensive Assessment (ICAs) which are similar in structure and follow the same blueprint as the summative assessment, and the Interim Assessment Blocks (IABs) which are snapshots of student performance on multiple targets. FIABs are short, focused sets or blocks of items that measure one or more Claim 1 assessment targets. Results from these assessments provide information about a student's strengths or needs in relation to the Common Core State Standards (CCSS) and, therefore, generate more detailed information for instructional purposes than the summative assessment or ICAs alone. All types of interim assessments are currently available as fixed forms. The fixed forms are administered online, using the same delivery software as the summative assessments.

This blueprint presents the specific blocks that are available by grade level for mathematics beginning at grade 3 and continuing through high school. Each block-level blueprint contains information about claim(s), assessment target(s), and depth of knowledge (DOK) level(s) addressed by the items in that block as well as the numbers of items allocated to each of those categories.

The blueprint can be used by educators to plan how to integrate the IABs and FIABs effectively within classroom instruction or to better understand results that are reported. Users of the blueprint can become familiar with the number of IABs/FIABs for each grade level, the general focus of each, (i.e., which assessment targets are addressed in a specific IAB or FIAB and the emphasis of each target relative to the other targets in the block). A fifth-grade teacher, for example, may wish to collect more information regarding her students' knowledge about geometry. The teacher could use this blueprint to see that there is a block for geometry composed of 13 machine-scored items across the four claims—concepts and procedures, problem solving, modeling and data analysis, and communicating reasoning. After reading the blueprint, she will have a better understanding of the meaning of the geometry block.

Finally, educators can use these FIAB as well as the IAB blueprints in conjunction with the summative and ICA blueprints to support more comprehensive classroom-level instruction and assessment plans.

## Mathematics Focused Interim Assessment Blocks

Grade 3	Grade 4	Grade 5
Multiplication and Division: Interpret, Represent, and Solve	Four Operations: Interpret, Represent, and Solve	Numerical Expressions
Properties of Multiplication and Division	Fraction Equivalence and Ordering	Operations with Whole Numbers and Decimals
Multiply and Divide within 100	Fractions and Decimal Notation	Add and Subtract with Equivalent Fractions
Number and Operations – Fractions	Geometry	Geometry
Number and Operations in Base Ten	Factors and Multiples	Place Value System
Geometry	Generate and Analyze Patterns	Convert Measurements
Four Operations: Interpret, Represent, and Solve	Place Value and Multidigit Whole Numbers	Volume Concepts
Time, Volume, and Mass	Multidigit Arithmetic: Place Value and Operations	
Linear and Area Measurement	Build Fractions from Unit Fractions	

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Grade 6	Grade 7	Grade 8
Divide Fractions by Fractions	Equivalent Expressions	Proportional Relationships, Lines, and Linear Equations
One-Variable Expressions and Equations	Algebraic Expressions and Equations	Analyze and Solve Linear Equations
Dependent and Independent Variables	Geometric Figures	Congruence and Similarity
Ratios and Proportional Relationships	Ratios and Proportional Relationships	Expression and Equations II
Geometry	The Number System	The Number System
Statistics and Probability	Statistics and Probability	Functions
Multidigit Numbers, Factors, and Multiples	Angles, Areas, and Volume	Volume of Cylinders, Cones, and Spheres
Rational Number System II		
Algebraic Expressions		

High School	
Equations and Reasoning	Number and Quantity
Solve Equations and Inequalities: Linear and Exponential	Interpreting Functions
Solve Equations and Inequalities: Quadratic	Seeing Structure in Expressions/Polynomial Expressions
Geometry and Right Triangle Trigonometry	Statistics and Probability
Create Equations: Linear and Exponential	Create Equations: Quadratic

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### GRADE 3 – Multiplication and Division: Interpret, Represent, and Solve (12 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	OA	A. Represent and solve problems involving multiplication and division. <ul style="list-style-type: none"> <li>The student uses multiplication and division within 100 to solve straightforward one-step word problems in situations involving equal groups, arrays, and measurement quantities such as length, liquid volume and masses of objects.</li> <li>The student determines an unknown whole number in a multiplication or division equation relating three whole numbers with single-digit factors within 100.</li> </ul>	1	8	8
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems in pure mathematics and arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>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).</li> </ul> C. Interpret results in the context of a situation. <ul style="list-style-type: none"> <li>The student reports a number other than the direct result of the computations implied by the problem context because the context provides additional constraints on the allowable answers.</li> </ul>	2, 3	2	2
3. Communicating Reasoning	Communicating Reasoning	D. Use the technique of breaking an argument into cases. <ul style="list-style-type: none"> <li>The student is given a problem that has a finite number of possible solutions, some of which work and some of which don't.</li> </ul> E. Distinguish correct logic or reasoning from that which is flawed and - if there is a flaw in the argument - explain what it is. <ul style="list-style-type: none"> <li>Some flawed reasoning or student work is presented and the student identifies and/or corrects the error or flaw.</li> <li>The student is presented with valid or invalid reasoning and asked to determine its validity. If the reasoning is flawed, the student will explain or correct the flaw.</li> </ul>	2	2	2

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**GRADE 3 – Properties of Multiplication and Division (11 items)**

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	OA	B. Understand properties of multiplication and the relationship between multiplication and division. <ul style="list-style-type: none"> <li>The student uses the properties of operations (Commutative Property of Multiplication, Associative Property of Multiplication, and Distributive Property of Multiplication) as strategies to multiply and divide.</li> <li>The student will represent division as an unknown-factor problem.</li> </ul>	1	9	9
3. Communicating Reasoning	Communicating Reasoning	D. Use the technique of breaking an argument into cases. <ul style="list-style-type: none"> <li>Items 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.</li> </ul>	2, 3	2	2

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### GRADE 3 – Multiply and Divide within 100 (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	OA	C. Multiply and divide within 100. <ul style="list-style-type: none"> <li>The student accurately multiplies single-digit factors within 100.</li> <li>The student accurately divides within 100 using single-digit divisors and single-digit quotients.</li> <li>The student connects multiplication and division to target fluencies.</li> </ul>	1	14	14

### GRADE 3 – Number and Operations – Fractions (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NF	F. Develop understanding of fractions as numbers. <ul style="list-style-type: none"> <li>The student identifies a fraction <math>1/b</math> as 1 part of a whole that is partitioned into <math>b</math> equal parts, and a fraction <math>a/b</math> as the quantity formed by <math>a</math> parts of size <math>1/b</math> using a model. For this evidence statement, <math>a/b</math> may be greater than, less than, or equal to 1.</li> <li>The student identifies and represents fractions on a number line using the interval 0-1 as the whole with or without partitioning.</li> <li>The student identifies two fractions as equal if they are the same size or the same point on a number line.</li> <li>The student generates simple equal fractions using a visual fraction model.</li> <li>The student expresses whole numbers as fractions and recognizes fractions equal to whole numbers.</li> <li>The student compares two fractions with the same numerator or the same denominator using the symbols <math>&lt;</math>, <math>=</math>, <math>&gt;</math>.</li> </ul>	1, 2	13	13
3. Communicating Reasoning	Communicating Reasoning	C. State logical assumptions being used. <ul style="list-style-type: none"> <li>Items for this target 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.</li> </ul>	3	1	1

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### GRADE 3 – Number and Operations in Base Ten (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NBT	<p>E. Use place value understanding and properties of operations to perform multi-digit arithmetic.</p> <ul style="list-style-type: none"> <li>The student solves non-contextual problems using place value understanding to round whole numbers to the nearest 10 or 100.</li> <li>The student solves non-contextual problems by adding and/or subtracting within 1000, using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> <li>The student solves non-contextual computation problems by multiplying one-digit whole numbers by multiples of 10 in the range 10–90 using strategies based on place value and properties of operations.</li> </ul>	1	12	12
2. Problem Solving	Problem Solving	<p>A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>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.</li> <li>Understandings from geometry or measurement may be needed to determine the operations to be performed.</li> </ul>	2	2	2

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### GRADE 3 – Geometry (12 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	G	K. Reason with shapes and their attributes. <ul style="list-style-type: none"> <li>The student identifies, draws, and classifies shapes (e.g., rhombuses, rectangles, and others) according to their attributes (e.g., having four sides), and recognizes that shared attributes can define a classification category.</li> <li>The student partitions shapes into parts with equal areas and can express the area of each part as a unit fraction of the whole.</li> </ul>	1	12	12

### GRADE 3 – Four Operations: Interpret, Represent, and Solve (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	OA	D. Solve problems involving the four operations, and identify and explain patterns in arithmetic. <ul style="list-style-type: none"> <li>The student identifies arithmetic patterns including input/output models, number lines, addition tables, and multiplication tables.</li> <li>The student solves one-step, real-world contextual problems using addition and subtraction within 1000.</li> </ul>	1, 2	11	11
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>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.</li> <li>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).</li> </ul>	2	2	3
4. Modeling and Data Analysis	Modeling and Data Analysis	D. Interpret results in the context of a situation. <ul style="list-style-type: none"> <li>The student must solve a problem that results in a numerical answer and interpret the number in the context of the problem.</li> </ul>	2	1	

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**GRADE 3 – Time, Volume, and Mass (13 items)**

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	MD	G. Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. <ul style="list-style-type: none"> <li>The student tells and writes time to the nearest minute.</li> <li>The student solves one-step word problems with addition and subtraction including time intervals in minutes.</li> <li>The student solves one-step word problems involving liquid volume (liters) and mass (grams, kilograms) using the four operations.</li> </ul>	1, 2	10	10
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>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.</li> <li>The student solves a multi-step problem with the four operations in a context involving measurement quantities.</li> </ul>	2	2	3
4. Modeling and Data Analysis	Modeling and Data Analysis	D. Interpret results in the context of a situation. <ul style="list-style-type: none"> <li>The student must solve a problem that results in a numerical answer and interpret the number in the context of the problem.</li> </ul>	3	1	

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### GRADE 3 – Linear and Area Measurement (12 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	MD	I. Geometric measurement: understand concepts of area and relate area to multiplication and to addition. <ul style="list-style-type: none"> <li>The student measures areas by counting unit squares.</li> <li>The student finds areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts.</li> <li>The student finds the area of a rectangle with whole-number side lengths by tiling it, and shows that the area is the same as would be found by multiplying the side lengths.</li> </ul>	2	2	10
1. Concepts and Procedures	MD	J. Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. <ul style="list-style-type: none"> <li>The student solves real-world and mathematical problems involving finding the perimeter of a polygon given the side lengths.</li> <li>The student distinguishes between area and perimeter of a rectangle.</li> </ul>	1	8	
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>Understandings from geometry or measurement may be needed to determine the operations to be performed.</li> </ul>	2	1	2
4. Modeling and Data Analysis	Modeling and Data Analysis	D. Interpret results in the context of a situation. <ul style="list-style-type: none"> <li>The student must solve a problem that results in a numerical answer and interpret the number in the context of the problem.</li> </ul>	3	1	

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**GRADE 4 – Four Operations: Interpret, Represent, and Solve (14 items)**

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	OA	<p>A. Use the four operations with whole numbers to solve problems.</p> <ul style="list-style-type: none"> <li>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.</li> <li>The student solves straightforward, contextual problems using the four operations.</li> </ul>	1, 2	11	11
2. Problem Solving	Problem Solving	<p>A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>The student interprets base-ten numbers in terms of the context.</li> </ul>	2	1	2
4. Modeling and Data Analysis	Modeling and Data Analysis	<p>F. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flow charts, or formulas).</p> <ul style="list-style-type: none"> <li>The student is asked to solve a problem that may require the integration of concepts and skills from multiple domains.</li> </ul>	2	1	
3. Communicating Reasoning	Communicating Reasoning	<p>C. State logical assumptions being used.</p> <ul style="list-style-type: none"> <li>Items 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.</li> </ul>	2	1	1

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### GRADE 4 – Fraction Equivalence and Ordering (13 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NF	F. Extend understanding of fraction equivalence and ordering. <ul style="list-style-type: none"> <li>The student recognizes when two or more fractions are equivalent.</li> <li>The student generates equivalent fractions given an initial fraction or fraction model.</li> <li>The student uses the symbols <math>&lt;</math>, <math>&gt;</math>, and <math>=</math> to compare fractions with different numerators and different denominators.</li> </ul>	1, 2	10	10
3. Communicating Reasoning	Communicating Reasoning	A. Test propositions or conjectures with specific examples. <ul style="list-style-type: none"> <li>Items 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.</li> </ul> B. Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. <ul style="list-style-type: none"> <li>The student is asked a mathematical question and is asked to identify or construct reasoning that justifies his or her answer.</li> </ul> D. Use the technique of breaking an argument into cases. <ul style="list-style-type: none"> <li>The student is given a proposition and an exhaustive list of cases and asked to determine in which of those cases the proposition is true.</li> </ul>	2, 3	3	3

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### GRADE 4 – Fractions and Decimal Notation (13 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NF	H. Understand decimal notation for fractions, and compare decimal fractions. <ul style="list-style-type: none"> <li>The student expresses a fraction with denominator 10 as an equivalent fraction with denominator 100.</li> <li>The student adds two fractions with respective denominators 10 and 100.</li> <li>The student uses decimal notation to represent fractions with denominators 10 or 100.</li> <li>The student locates decimal numbers to the hundredths place on a number line.</li> <li>The student compares two decimals to the hundredths place by reasoning about their size, using the symbols <math>&lt;</math>, <math>&gt;</math>, or <math>=</math>.</li> </ul>	1, 2	11	11
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>Items the student to identify quantities of interest and map their relationships, often via diagrams or equations.</li> </ul>	2	1	1
3. Communicating Reasoning	Communicating Reasoning	D. Use the technique of breaking an argument into cases. <ul style="list-style-type: none"> <li>The student is given a problem that has a finite number of possible solutions, some of which work and some of which don't.</li> </ul>	2	1	1

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### GRADE 4 – Geometry (11 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	G	L. Draw and identify lines and angles, and classify shapes by properties of their lines and angles. <ul style="list-style-type: none"> <li>The student draws points, lines, line segments, rays, and angles and identifies these in two-dimensional figures.</li> <li>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.</li> <li>The student identifies and draws lines of symmetry in line-symmetric figures, and distinguishes line-symmetric figures from line-asymmetric figures.</li> </ul>	1, 2	11	11

### GRADE 4 – Factors and Multiples (11 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	OA	B. Gain familiarity with factors and multiples. <ul style="list-style-type: none"> <li>The student determines one or more factors or factor pairs for a given whole number (from 1 to 100).</li> <li>The student recognizes that a whole number (from 1 to 100) is a multiple of each of its factors.</li> <li>The student determines if a whole number (from 1 to 100) is a multiple of a given one-digit number.</li> <li>The student determines if a whole number (from 1 to 100) is prime or composite.</li> </ul>	1, 2	11	11

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### GRADE 4 – Generate and Analyze Patterns (8 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	OA	C. Generate and analyze patterns. <ul style="list-style-type: none"> <li>The student generates number patterns.</li> <li>The student generates shape patterns.</li> <li>The student analyzes a number pattern or shape pattern, showing understanding of the pattern rule and features other than the pattern rule.</li> </ul>	2, 3	8	8

### GRADE 4 – Place Value and Multidigit Whole Numbers (13 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NBT	D. Generalize place value understanding for multi-digit whole numbers. <ul style="list-style-type: none"> <li>The student compares two multi-digit whole numbers in the same form using <math>&gt;</math>, <math>&lt;</math>, and <math>=</math> symbols.</li> <li>The student rounds multi-digit whole numbers to any place.</li> <li>The student identifies multi-digit whole numbers that, when rounded to a given place value, will be closest to a given number.</li> <li>The student compares two multi-digit whole numbers in different forms.</li> <li>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.</li> </ul>	1, 2	12	12
3. Communicating Reasoning	Communicating Reasoning	E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. <ul style="list-style-type: none"> <li>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.</li> </ul>	3	1	1

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**GRADE 4 – Multidigit Arithmetic: Place Value and Operations (12 items)**

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NBT	E. Use place value understanding and properties of operations to perform multi-digit arithmetic. <ul style="list-style-type: none"> <li>The student adds or subtracts multi-digit whole numbers in non-contextual mathematics problems.</li> <li>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.</li> <li>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.</li> </ul>	1, 2	11	11
3. Communicating Reasoning	Communicating Reasoning	A. Test propositions or conjectures with specific examples. <ul style="list-style-type: none"> <li>The student is presented with a proposition or conjecture and asked to give examples and non-examples if the claim is sometimes true.</li> </ul>	2	1	1

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### GRADE 4 – Build Fractions from Unit Fractions (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NF	<p>G. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.</p> <ul style="list-style-type: none"> <li>The student adds and subtracts fractions with like denominators by joining and separating parts referring to the same whole.</li> <li>The student expresses an equivalent form of a fraction or mixed number by considering each as a sum of fractions with the same denominator.</li> <li>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.</li> <li>The student represents a fraction <math>a/b</math> as a multiple of <math>1/b</math>.</li> <li>The student multiplies a fraction by a whole number.</li> <li>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.</li> </ul>	1, 2	12	12
2. Problem Solving	Problem Solving	<p>A. Apply mathematics to solve well-posed problems in pure mathematics and those arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>The student solves a multi-step problem with the four operations in a context involving measurement quantities.</li> <li>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).</li> </ul>	2, 3	2	2

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### GRADE 5 – Numerical Expressions (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	OA	A. Write and interpret numerical expressions. <ul style="list-style-type: none"> <li>The student writes or identifies a numerical expression that records a calculation represented with words.</li> <li>The student interprets numerical expressions in words without evaluating them.</li> <li>The student evaluates numerical expressions with grouping symbols.</li> </ul>	1, 2	14	14

### GRADE 5 – Operations with Whole Numbers and Decimals (12 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NBT	D. Perform operations with multi-digit whole numbers and with decimals to hundredths. <ul style="list-style-type: none"> <li>The student multiplies multi-digit whole numbers.</li> <li>The student determines whole-number quotients of whole numbers with 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.</li> <li>The student adds, subtracts, multiplies, and divides decimals to the hundredths using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> </ul>	1, 2	11	11
3. Communicating Reasoning	Communicating Reasoning	C. State logical assumptions being used. <ul style="list-style-type: none"> <li>The student will be given one or more definitions or assumptions and be asked to reason from that set of definitions and assumptions.</li> </ul>	3	1	1

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### GRADE 5 – Add and Subtract with Equivalent Fractions (15 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NF	E. Use equivalent fractions as a strategy to add and subtract fractions. <ul style="list-style-type: none"> <li>The student adds or subtracts fractions with unlike denominators (including mixed numbers) by using visual fraction models or equations to represent the problem.</li> <li>The student identifies and explains the use of equivalent fractions when adding or subtracting fractions with unlike denominators (including mixed numbers).</li> </ul>	1, 2	13	13
3. Communicating Reasoning	Communicating Reasoning	E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. <ul style="list-style-type: none"> <li>Items for this target 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.</li> <li>The student is presented with valid or invalid reasoning and asked to determine its validity. If the reasoning is flawed, the student will explain or correct the flaw.</li> </ul>	2	2	2

- Claim 1 Target Descriptions are illustrated by the Evidence Required statements which are provided comprehensively.
- Claim 2, 3, and 4 Targets Descriptions are illustrated by the Task Model Expectations which are aligned to individual interim items.

### GRADE 5 – Geometry (13 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	G	J. Graph points on the coordinate plane to solve real-world and mathematical problems. <ul style="list-style-type: none"> <li>The student interprets coordinate values of points graphed on a coordinate plane, or in the context of a given situation.</li> <li>The student graphs points on the coordinate plane representing real-world or mathematical problems.</li> </ul>	1	5	9
	G	K. Classify two-dimensional figures into categories based on their properties. <ul style="list-style-type: none"> <li>The student classifies two-dimensional figures into categories and/or subcategories based on their properties.</li> </ul>	2	4	
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>Items require the student to identify quantities of interest and map their relationships, often via diagrams or equations.</li> </ul>	2	1	2
4. Modeling and Data Analysis	Modeling and Data Analysis	F. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flow charts, or formulas). <ul style="list-style-type: none"> <li>The student is asked to solve a problem that may require the integration of concepts and skills from multiple domains.</li> </ul>	2	1	
3. Communicating Reasoning	Communicating Reasoning	E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. <ul style="list-style-type: none"> <li>The student is presented with valid or invalid reasoning and asked to determine its validity. If the reasoning is flawed, the student will explain or correct the flaw.</li> </ul> C. State logical assumptions being used. <ul style="list-style-type: none"> <li>The student is asked to identify an unstated assumption that would make the problem well-posed or allow them to solve a problem using a given method.</li> </ul>	2, 3	2	2

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— Claim 2, 3, and 4 Targets Descriptions are illustrated by the Task Model Expectations which are aligned to individual interim items.

### GRADE 5 – Place Value System (11 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NBT	C. Understand the place value system. <ul style="list-style-type: none"> <li>The student represents powers of 10 by using whole-number exponents.</li> <li>The student reads and writes decimals to the thousandths using base-ten numerals, number names, and expanded form.</li> <li>The student compares two decimals to the thousandths by using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols.</li> <li>The student rounds decimals to the nearest whole number, tenth, or hundredth.</li> </ul>	1, 2	10	10
3. Communicating Reasoning	Communicating Reasoning	A. Test propositions or conjectures with specific examples. <ul style="list-style-type: none"> <li>The student is presented with a proposition or conjecture and asked to give examples and non-examples if the claim is sometimes true.</li> </ul>	2	1	1

- Claim 1 Target Descriptions are illustrated by the Evidence Required statements which are provided comprehensively.
- Claim 2, 3, and 4 Targets Descriptions are illustrated by the Task Model Expectations which are aligned to individual interim items.

### GRADE 5 – Convert Measurements (13 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	MD	G. Convert like measurement units within a given measurement system. <ul style="list-style-type: none"> <li>The student converts units of linear measure within a single measurement system.</li> <li>The student converts units of weight/mass measure within a single measurement system.</li> <li>The student converts units of liquid volume measure within a single measurement system.</li> <li>The student converts units of time measure within a single measurement system.</li> </ul>	1	6	6
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems in pure mathematics and those arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>The student solves a multi-step problem with the four operations in a context involving measurement quantities.</li> </ul> B. Select and use appropriate tools strategically. <ul style="list-style-type: none"> <li>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.</li> </ul> D. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). <ul style="list-style-type: none"> <li>The student is asked to solve a problem that may require the integration of concepts and skills from multiple domains.</li> <li>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.</li> </ul>	2	4	5
4. Modeling and Data Analysis	Modeling and Data Analysis	C. State logical assumptions being used. <ul style="list-style-type: none"> <li>Tasks 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).</li> </ul>	2	1	
3. Communicating Reasoning	Communicating Reasoning	B. Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures. <ul style="list-style-type: none"> <li>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.</li> </ul> C. State logical assumptions being used. <ul style="list-style-type: none"> <li>The student must explicitly identify assumptions that make a particular solution method viable.</li> </ul>	2	2	2

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### GRADE 5 – Volume Concepts (11 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	MD	I. Geometric measurement: understand concepts of volume and relate volume to multiplication and division. <ul style="list-style-type: none"> <li>The student determines the volume of a right rectangular prism with whole-number side lengths by counting or packing unit cubes.</li> <li>The student applies the formulas <math>V = l \times w \times h</math> and <math>V = b \times h</math> to solve real-world and mathematical problems involving volumes of right rectangular prisms.</li> </ul>	1, 2	9	9
2. Problem Solving	Problem Solving	D. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). <ul style="list-style-type: none"> <li>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.</li> </ul>	2	1	1
3. Communicating Reasoning	Communicating Reasoning	D. Use the technique of breaking an argument into cases. <ul style="list-style-type: none"> <li>The student is given a problem that has a finite number of possible solutions, some of which work and some of which don't.</li> </ul>	2	1	1

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### GRADE 6 – Divide Fractions by Fractions (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NS	B. Apply and extend previous understandings of multiplication and division to divide fractions by fractions. <ul style="list-style-type: none"> <li>The student interprets quotients of fractions using visual fraction models, equations, and the relationship between multiplication and division.</li> <li>The student solves real-world and mathematical one-step problems involving division of fractions by fractions.</li> </ul>	1, 2	12	12
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>Solving the problem requires understanding of and proficiency with ratios, rates and proportional relationships, the number system, or expressions and equations.</li> </ul>	2	1	2
4. Modeling and Data Analysis	Modeling and Data Analysis	D. Interpret results in the context of a situation. <ul style="list-style-type: none"> <li>The student interprets the solution to the problem in terms of the model or compares the results of the model with the real-world data it represents.</li> </ul>	3	1	

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### GRADE 6 – One-Variable Expressions and Equations (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	EE	F. Reason about and solve one-variable equations and inequalities. <ul style="list-style-type: none"> <li>The student uses substitution in one-variable equations and inequalities.</li> <li>The student writes one-variable equations and inequalities and solves one-variable equations in real-world and mathematical problems.</li> <li>The student represents solutions of inequalities in real-world and mathematical problems on a number line.</li> </ul>	1, 2	13	13
3. Communicating Reasoning	Communicating Reasoning	C. State logical assumptions being used. <ul style="list-style-type: none"> <li>The student will be given one or more definitions or assumptions and be asked to reason from that set of definitions and assumptions.</li> </ul>	2	1	1

### GRADE 6 – Dependent and Independent Variables (11 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	EE	G. Represent and analyze quantitative relationships between dependent and independent variables. <ul style="list-style-type: none"> <li>The student writes an equation to express one quantity versus another quantity using dependent and independent variables.</li> <li>The student identifies the relationship between dependent and independent variables from graphs and tables and relates them to equations.</li> </ul>	2	9	9
3. Communicating Reasoning	Communicating Reasoning	E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. <ul style="list-style-type: none"> <li>Two or more approaches or chains of reasoning are given and the student is asked to identify the correct method and justification OR identify the incorrect method/reasoning and the justification.</li> </ul> G. Determine conditions under which an argument does and does not apply. <ul style="list-style-type: none"> <li>Items for this target focus on the core mathematical work that students are doing around ratios and proportional relationships, the rational number system, and equations and expressions.</li> </ul>	3	2	2

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## GRADE 6 – Ratios and Proportional Relationships (13 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	RP	<p>A. Understand ratio concepts and use ratio reasoning to solve problems.</p> <ul style="list-style-type: none"> <li>The student uses ratio language to describe a ratio relationship.</li> <li>The student determines the unit rate associated with a real-world ratio.</li> <li>The student finds missing values in tables of equivalent ratios.</li> <li>The student plots coordinate pairs to represent equivalent ratios.</li> <li>The student makes tables of equivalent ratios relating quantities with whole-number measurements.</li> <li>The student solves real-world problems involving unit rate.</li> <li>The student solves mathematical problems involving finding the whole, given a part and the percent.</li> <li>The student solves real-world and mathematical problems involving finding a percent of a quantity as a rate per 100.</li> <li>The student uses ratio reasoning to manipulate and transform units appropriately when multiplying or dividing quantities.</li> </ul>	1, 2	11	11
2. Problem Solving	Problem Solving	<p>A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>Students use ratios, rates or proportional relationships to solve a problem arising in a real-world context.</li> </ul>	2	1	1
3. Communicating Reasoning	Communicating Reasoning	<p>G. Determine conditions under which an argument does and does not apply.</p> <ul style="list-style-type: none"> <li>Items for this target focus on the core mathematical work that students are doing around ratios and proportional relationships, the rational number system, and equations and expressions.</li> </ul>	2	1	1

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### GRADE 6 – Geometry (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	G	H. Solve real-world and mathematical problems involving area, surface area, and volume. <ul style="list-style-type: none"> <li>The student determines the area of triangles, special quadrilaterals, and polygons using composition and decomposition in solving real-world and mathematical problems.</li> <li>The student determines the volume of right rectangular prisms with fractional edge lengths in solving real-world and mathematical problems.</li> <li>The student draws polygons in the coordinate plane, given coordinates for the vertices in the context of solving real-world and mathematical problems.</li> <li>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.</li> <li>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.</li> </ul>	1, 2	11	11
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>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.</li> </ul>	2	1	2
4. Modeling and Data Analysis	Modeling and Data Analysis	B. Construct, autonomously, chains of reasoning to justify mathematical models used, interpretations made, and solutions proposed for a complex problem. <ul style="list-style-type: none"> <li>The student is presented with a multi-step problem with little or no scaffolding.</li> </ul>	2	1	
3. Communicating Reasoning	Communicating Reasoning	G. Determine conditions under which an argument does and does not apply. <ul style="list-style-type: none"> <li>The student is asked a mathematical question and is asked to identify or construct reasoning that justifies his or her answer.</li> </ul>	3	1	1

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### GRADE 6 – Statistics and Probability (13 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	SP	I. Develop understanding of statistical variability. <ul style="list-style-type: none"> <li>The student recognizes a statistical question as one that anticipates variability.</li> <li>The student identifies statements that describe the center and/or spread, and/or overall shape of a set of data.</li> <li>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.</li> </ul>	2	3	13
1. Concepts and Procedures	SP	J. Summarize and describe distributions. <ul style="list-style-type: none"> <li>The student displays numerical data on line plots, dot plots, histograms, and box plots.</li> <li>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.</li> <li>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).</li> </ul>	1, 2	10	

### GRADE 6 – Multidigit Numbers, Factors, and Multiples (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NS	C. Compute fluently with multi-digit numbers and find common factors and multiples. <ul style="list-style-type: none"> <li>The student divides multi-digit numbers.</li> <li>The student adds, subtracts, multiplies, and divides multi-digit decimals.</li> <li>The student determines the greatest common factor of two whole numbers.</li> <li>The student determines the least common multiple of two whole numbers.</li> <li>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.</li> </ul>	1, 2	14	14

- Claim 1 Target Descriptions are illustrated by the Evidence Required statements which are provided comprehensively.
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### GRADE 6 – Rational Number System II (11 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NS	<p>D. Apply and extend previous understandings of numbers to the system of rational numbers.</p> <ul style="list-style-type: none"> <li>The student uses positive and negative numbers to represent quantities in real-world contexts.</li> <li>The student can identify the location of ordered pairs on the coordinate plane based on the signs of the numbers in an ordered pair.</li> <li>The student locates and positions integers and other rational numbers on a number line.</li> <li>The student positions ordered pairs of integers and other rational numbers on a coordinate plane.</li> <li>The student writes and interprets statements about the order of rational numbers in real-world contexts.</li> <li>The student represents the absolute value of a rational number as the distance from zero on a number line.</li> <li>The student can make comparisons of absolute value from statements about order.</li> <li>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.</li> </ul>	1, 2	5	5
3. Communicating Reasoning	Communicating Reasoning	<p>C. State logical assumptions being used.</p> <ul style="list-style-type: none"> <li>The student will be given one or more definitions or assumptions and be asked to reason from that set of definitions and assumptions.</li> </ul> <p>D. Use the technique of breaking an argument into cases.</p> <ul style="list-style-type: none"> <li>The student is given a proposition and asked to determine in which cases the proposition is true.</li> <li>The student is given a problem that has a finite number of possible solutions, some of which work and some of which don't.</li> </ul> <p>E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is.</p> <ul style="list-style-type: none"> <li>The student is presented with valid or invalid reasoning and asked to determine its validity. If the reasoning is flawed, the student will explain or correct the flaw.</li> </ul> <p>F. Base arguments on concrete referents such as objects, drawings, diagrams, and actions.</p> <ul style="list-style-type: none"> <li>The student uses concrete referents to help justify or refute an argument.</li> <li>Items may focus on the use of number lines.</li> </ul>	2, 3	6	6

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### GRADE 6 – Algebraic Expressions (12 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	EE	<p>E. Apply and extend previous understandings of arithmetic to algebraic expressions.</p> <ul style="list-style-type: none"> <li>The student evaluates numerical expressions involving whole-number exponents.</li> <li>The student writes numerical expressions involving whole-number exponents, algebraic expressions, and expressions from formulas in real-world problems.</li> <li>The student uses mathematical terms to describe expressions.</li> <li>The student evaluates algebraic expressions and expressions from formulas in real-world problems.</li> <li>The student creates equivalent expressions by applying properties of operations.</li> <li>The student identifies when expressions are equivalent by utilizing properties of operations.</li> </ul>	1, 2	9	9
4. Modeling and Data Analysis	Modeling and Data Analysis	<p>F. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas).</p> <ul style="list-style-type: none"> <li>The student is asked to solve a problem that may require the integration of concepts and skills from multiple domains.</li> </ul>	1	1	1
3. Communicating Reasoning	Communicating Reasoning	<p>A. Test propositions or conjectures with specific examples.</p> <ul style="list-style-type: none"> <li>The student is presented with one or more propositions or conjectures and several examples and asked which examples support or refute one or more of the propositions.</li> </ul> <p>B. Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures.</p> <ul style="list-style-type: none"> <li>The student is asked a mathematical question and is asked to identify or construct reasoning that justifies his or her answer.</li> </ul>	2	2	2

— Claim 1 Target Descriptions are illustrated by the Evidence Required statements which are provided comprehensively.  
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### GRADE 7 – Equivalent Expressions (10 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	EE	C. Use properties of operations to generate equivalent expressions. <ul style="list-style-type: none"> <li>The student adds and subtracts linear expressions with rational coefficients.</li> <li>The student factors linear expressions with rational coefficients.</li> <li>The student expands linear expressions with rational coefficients.</li> <li>The student generates equivalent linear expressions using a combination of addition and subtraction, factoring, and expansion.</li> </ul>	1, 2	8	8
3. Communicating Reasoning	Communicating Reasoning	A. Test propositions or conjectures with specific examples. <ul style="list-style-type: none"> <li>Items focus on the core mathematical work that students are doing around ratios and proportional relationships, the rational number system, and equations and expressions.</li> </ul> E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. <ul style="list-style-type: none"> <li>Some flawed reasoning or student work is presented and the student identifies and/or corrects the error or flaw.</li> </ul>	3	2	2

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## GRADE 7 – Algebraic Expressions and Equations (13 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	EE	<p>D. Solve real-life and mathematical problems using numerical and algebraic expressions and equations.</p> <ul style="list-style-type: none"> <li>• The student identifies equivalency between two rational numbers.</li> <li>• The student applies properties of operations to evaluate numeric expressions, including converting between different forms of rational numbers.</li> <li>• The student solves word problems leading to equations of the form <math>px + q = r</math> and <math>p(x + q) = r</math>, where <math>p</math>, <math>q</math>, and <math>r</math> are specific rational numbers.</li> <li>• The student solves word problems leading to inequalities of the form <math>px + q &gt; r</math> and <math>px + q &lt; r</math>, where <math>p</math>, <math>q</math>, and <math>r</math> are specific rational numbers.</li> <li>• The student graphs the solution set of an inequality on a number line.</li> </ul>	1, 2	11	11
2. Problem Solving	Problem Solving	<p>A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>• 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.</li> </ul>	2	1	1
4. Modeling and Data Analysis	Modeling and Data Analysis	<p>A. Apply mathematics to solve problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>• The student solves a multi-step problem involving the four operations with rational numbers or solving equations.</li> <li>• The student identifies needed information and chooses which operations to perform or which equation to solve. The student may <ul style="list-style-type: none"> <li>○ ignore irrelevant information,</li> <li>○ request or conduct research to find missing information,</li> <li>○ identify constraints that are not explicitly stated, and/or</li> <li>○ make an estimate for one or more quantities and use that estimate to solve the problem.</li> </ul> </li> </ul>	2	1	1

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## GRADE 7 – Geometric Figures (11 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	G	E. Draw, construct, and describe geometrical figures and describe the relationships behind them. <ul style="list-style-type: none"> <li>The student creates scale drawings.</li> <li>The student solves problems involving scale drawings using proportional reasoning.</li> <li>The student draws, constructs, or describes geometric shapes given certain conditions.</li> <li>The student describes a two-dimensional figure resulting from slicing a three-dimensional figure by a plane.</li> </ul>	1, 2	10	10
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>Understandings from statistics, probability, and geometry may be needed to set up the problem, but are not the primary focus of the problem.</li> </ul>	2	1	1

- Claim 1 Target Descriptions are illustrated by the Evidence Required statements which are provided comprehensively.
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## GRADE 7 – Ratios and Proportional Relationships (13 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	RP	A. Analyze proportional relationships and use them to solve real-world and mathematical problems. <ul style="list-style-type: none"> <li>The student computes unit rates and finds the constant of proportionality of proportional relationships in various forms.</li> <li>The student determines whether two quantities, shown in various forms, are in a proportional relationship.</li> <li>The student represents proportional relationships between quantities using equations.</li> <li>The student interprets specific values from a proportional relationship in the context of a problem situation.</li> <li>The student computes with percentages in context.</li> </ul>	2	10	10
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems in pure mathematics and those arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>Solving the problem requires understanding of and proficiency with ratios, rates and proportional relationships, the number system, or expressions and equations.</li> </ul>	2	1	2
4. Modeling and Data Analysis	Modeling and Data Analysis	E. Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. <ul style="list-style-type: none"> <li>Students construct an expression, equation, proportional relationship, linear function, or geometric figure that models a given problem.</li> </ul>	3	1	
3. Communicating Reasoning	Communicating Reasoning	D. Use the technique of breaking an argument into cases. <ul style="list-style-type: none"> <li>The student is given a problem that has a finite number of possible solutions, some of which work and some of which don't.</li> </ul>	2	1	1

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## GRADE 7 – The Number System (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NS	B. Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. <ul style="list-style-type: none"> <li>The student interprets rational number values on a number line, including modeling addition and subtraction expressions.</li> <li>The student applies properties of operations as strategies to add and subtract rational numbers.</li> <li>The student applies properties of operations as strategies to multiply and divide rational numbers.</li> <li>The student converts from a fractional form of rational numbers to a decimal form of rational numbers.</li> <li>The student solves real-world and mathematical problems involving the four operations with rational numbers.</li> </ul>	1, 2	10	11
1. Concepts and Procedures	EE	D. Solve real-life and mathematical problems using numerical and algebraic expressions and equations. <ul style="list-style-type: none"> <li>The student identifies equivalency between two rational numbers.</li> <li>The student applies properties of operations to evaluate numeric expressions, including converting between different forms of rational numbers.</li> <li>The student solves word problems leading to equations of the form <math>px + q = r</math> and <math>p(x + q) = r</math>, where <math>p</math>, <math>q</math>, and <math>r</math> are specific rational numbers.</li> <li>The student solves word problems leading to inequalities of the form <math>px + q &gt; r</math> and <math>px + q &lt; r</math>, where <math>p</math>, <math>q</math>, and <math>r</math> are specific rational numbers.</li> <li>The student graphs the solution set of an inequality on a number line.</li> </ul>	1	1	
4. Modeling and Data Analysis	Modeling and Data Analysis	E. Analyze the adequacy of and make improvements to an existing model or develop a mathematical model of a real phenomenon. <ul style="list-style-type: none"> <li>The student constructs a mathematical model to solve the problem.</li> </ul>	3	1	1
3. Communicating Reasoning	Communicating Reasoning	D. Use the technique of breaking an argument into cases. <ul style="list-style-type: none"> <li>The student is given a problem that has a finite number of possible solutions, some of which work and some of which don't.</li> </ul> F. Base arguments on concrete referents such as objects, drawings, diagrams, and actions. <ul style="list-style-type: none"> <li>The student uses concrete referents to help justify or refute an argument.</li> </ul>	2, 3	2	2

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### GRADE 7 – Statistics and Probability (15 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	SP	G. Use random sampling to draw inferences about a population. <ul style="list-style-type: none"> <li>The student determines whether a sample is representative of a population.</li> <li>The student draws inferences about a population using data from a random sample.</li> </ul>	1, 2	3	13
1. Concepts and Procedures	SP	H. Draw informal comparative inferences about two populations. <ul style="list-style-type: none"> <li>The student makes comparisons between two numerical data distributions.</li> </ul>	2	4	
1. Concepts and Procedures	SP	I. Investigate chance processes and develop, use, and evaluate probability models. <ul style="list-style-type: none"> <li>The student understands the likelihood of an event as a probability between 0 and 1.</li> <li>The student finds probabilities of simple events.</li> <li>The student compares predicted probabilities to observed frequencies.</li> <li>The student finds probabilities of compound events.</li> </ul>	1, 2	6	
4. Modeling and Data Analysis	Modeling and Data Analysis	C. State logical assumptions being used. <ul style="list-style-type: none"> <li>The student provides a reasoned estimate of a quantity needed to solve the problem.</li> </ul> F. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flow charts, or formulas). <ul style="list-style-type: none"> <li>The student is asked to solve a problem that may require the integration of concepts and skills from multiple domains.</li> </ul>	2, 3	2	2

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**GRADE 7 – Angles, Areas, and Volume (11 items)**

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	G	F. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. <ul style="list-style-type: none"> <li>The student solves real-life and mathematical problems for the circumference and area of circles.</li> <li>The student solves real-life and mathematical problems involving angle measure including problems requiring writing and solving equations.</li> <li>The student solves real-life and mathematical problems for the area of two-dimensional objects composed of polygons.</li> <li>The student solves real-life and mathematical problems for the volume and surface area of three-dimensional objects composed of right prisms and cubes.</li> </ul>	1, 2	9	9
2. Problem Solving	Problem Solving	D. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flowcharts, or formulas). <ul style="list-style-type: none"> <li>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.</li> </ul>	2	1	1
3. Communicating Reasoning	Communicating Reasoning	C. State logical assumptions being used. <ul style="list-style-type: none"> <li>The student is asked to identify an unstated assumption that would make the problem well-posed or allow them to solve a problem using a given method.</li> </ul>	3	1	1

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**GRADE 8 – Proportional Relationships, Lines, and Linear Equations (10 items)**

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	EE	<p>C. Understand the connections between proportional relationships, lines, and linear equations.</p> <ul style="list-style-type: none"> <li>The student graphs proportional relationships.</li> <li>The student interprets the unit rate as the slope of the graph of a proportional relationship.</li> <li>The student compares two different proportional relationships represented in different formats.</li> <li>The student finds the equation <math>y = mx</math> or <math>y = mx + b</math> for a line.</li> </ul>	2	8	8
3. Communicating Reasoning	Communicating Reasoning	<p>E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is.</p> <ul style="list-style-type: none"> <li>The student is presented with valid or invalid reasoning and asked to determine its validity. If the reasoning is flawed, the student will explain or correct the flaw.</li> </ul> <p>F. Base arguments on concrete referents such as objects, drawings, diagrams, and actions.</p> <ul style="list-style-type: none"> <li>The student uses concrete referents to help justify or refute an argument.</li> </ul>	2	2	2

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## GRADE 8 – Analyze and Solve Linear Equations (12 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	EE	<p>D. Analyze and solve linear equations and pairs of simultaneous linear equations.</p> <ul style="list-style-type: none"> <li>The student identifies and writes examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions.</li> <li>The student solves linear equations in one variable with rational coefficients, including equations with solutions that require expanding expressions using the distributive property and collecting like terms.</li> <li>The student estimates solutions by graphing systems of two linear equations in two variables.</li> <li>The student recognizes when a system of two linear equations in two variables has one solution, no solution, or infinitely many solutions.</li> <li>The student solves a system of two linear equations in two variables algebraically, or solves real-world and mathematical problems leading to two linear equations in two variables.</li> </ul>	1, 2	7	7
2. Problem Solving	Problem Solving	<p>A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>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.</li> </ul> <p>D. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flow charts, or formulas).</p> <ul style="list-style-type: none"> <li>The student is asked to solve a problem that may require the integration of concepts and skills from multiple domains.</li> </ul>	2, 3	2	2
3. Communicating Reasoning	Communicating Reasoning	<p>D. Use the technique of breaking an argument into cases.</p> <ul style="list-style-type: none"> <li>The student is given a problem that has a finite number of possible solutions, some of which work and some of which don't.</li> </ul> <p>E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is.</p> <ul style="list-style-type: none"> <li>Some flawed reasoning or student work is presented and the student identifies and/or corrects the error or flaw.</li> </ul>	2, 3	3	3

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### GRADE 8 – Congruence and Similarity (12 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	G	<p>G. Understand congruence and similarity using physical models, transparencies, or geometry software.</p> <ul style="list-style-type: none"> <li>The student verifies that rigid transformations preserve distance and angle measures.</li> <li>The student describes sequences of rotations, reflections, translations, and dilations that can verify whether two-dimensional figures are similar or congruent to each other.</li> <li>The student constructs a new figure that is the result of dilating, rotating, reflecting, or translating the original figure.</li> <li>The student describes the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.</li> </ul>	1, 2	7	7
3. Communicating Reasoning	Communicating Reasoning	<p>D. Use the technique of breaking an argument into cases.</p> <ul style="list-style-type: none"> <li>The student is given a problem that has a finite number of possible solutions, some of which work and some of which don't.</li> </ul> <p>E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is.</p> <ul style="list-style-type: none"> <li>Some flawed reasoning or student work is presented and the student identifies and/or corrects the error or flaw.</li> </ul> <p>F. Base arguments on concrete referents such as objects, drawings, diagrams, and actions.</p> <ul style="list-style-type: none"> <li>Items for this target focus on graphs of linear equations and systems of linear equations and geometric contexts related to transformations of the plane or the Pythagorean Theorem.</li> <li>The student uses concrete referents to help justify or refute an argument.</li> </ul>	2, 3	5	5

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### GRADE 8 – Expressions and Equations II (13 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	EE	<p>D. Analyze and solve linear equations and pairs of simultaneous linear equations.</p> <ul style="list-style-type: none"> <li>The student identifies and writes examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions.</li> <li>The student solves linear equations in one variable with rational coefficients, including equations with solutions that require expanding expressions using the distributive property and collecting like terms.</li> <li>The student estimates solutions by graphing systems of two linear equations in two variables.</li> <li>The student recognizes when a system of two linear equations in two variables has one solution, no solution, or infinitely many solutions.</li> <li>The student solves a system of two linear equations in two variables algebraically, or solves real-world and mathematical problems leading to two linear equations in two variables.</li> </ul>	2	5	10
1. Concepts and Procedures	SP	<p>J. Investigate patterns of association in bivariate data.</p> <ul style="list-style-type: none"> <li>The student interprets patterns of association between two quantities in a scatter plot (clustering in reference to the line of best fit, positive or negative association, linear association, nonlinear association, and the effect of outliers) and interprets the slope and y-intercept in terms of the context.</li> <li>The student identifies the slope (rate of change) and intercept (initial value) of a line suggested by examining bivariate measurement data in a scatter plot.</li> <li>The student constructs and interprets a two-way table summarizing data on two categorical variables collected from the same subjects.</li> <li>The student uses relative frequencies calculated for rows or columns to describe possible association between the two variables.</li> </ul>	1, 2	5	
2. Problem Solving	Problem Solving	<p>A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>The student solves a real world and mathematical problems using expressions, equations, and functions.</li> </ul>	2	1	2
4. Modeling and Data Analysis	Modeling and Data Analysis	<p>C. State logical assumptions being used.</p> <ul style="list-style-type: none"> <li>The student identifies information or assumptions needed to solve the problem.</li> </ul>	2	1	
3. Communicating Reasoning	Communicating Reasoning	<p>D. Use the technique of breaking an argument into cases.</p> <ul style="list-style-type: none"> <li>The student is given a proposition and asked to determine in which cases the proposition is true.</li> </ul>	2	1	1

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### GRADE 8 – The Number System (13 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NS	A. Know that there are numbers that are not rational, and approximate them by rational numbers. <ul style="list-style-type: none"> <li>The student classifies real numbers as rational or irrational.</li> <li>The student converts repeating decimals to fractions.</li> <li>The student writes approximations of irrational numbers as rational numbers.</li> <li>The student compares the sizes of irrational numbers by using rational approximations of irrational numbers.</li> <li>The student approximates the locations of irrational numbers on the number line by using rational approximations of irrational numbers.</li> </ul>	1, 2	13	13

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### GRADE 8 – Functions (15 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	F	E. Define, evaluate, and compare functions. <ul style="list-style-type: none"> <li>The student recognizes that a function is a rule that assigns to each input exactly one output.</li> <li>The student identifies or produces input and output pairs for given functions.</li> <li>The student recognizes the same function written in different functional forms (algebraic, graphic, tabular, or verbal).</li> <li>The student compares properties of two functions, each represented in a different way (algebraic, graphic, tabular, or verbal).</li> <li>The student recognizes and gives examples of functions that are not linear.</li> </ul>	1, 2	6	11
1. Concepts and Procedures	F	F. Use functions to model relationships between quantities. <ul style="list-style-type: none"> <li>The student constructs a function to model a linear relationship between two quantities.</li> <li>The student determines the rate of change and initial value of a function, either from a description of a relationship or from two <math>(x, y)</math> values, including reading the rate of change and/or the value of the function from a table or a graph.</li> <li>The student interprets the rate of change and the initial value of a linear function in terms of the situation it models, its graph, or a table of values.</li> <li>The student qualitatively describes the functional relationship between two quantities by analyzing a graph (e.g., whether the function is increasing or decreasing, or whether the graph is linear or nonlinear).</li> <li>The student draws a graph that exhibits the qualitative features of a function that has been described in writing.</li> </ul>	1, 2	5	
2. Problem Solving	Problem Solving	D. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flow charts, or formulas). <ul style="list-style-type: none"> <li>The student is asked to solve a problem that may require the integration of concepts and skills from multiple domains.</li> </ul>	2	1	2
4. Modeling and Data Analysis	Modeling and Data Analysis	D. Interpret results in the context of a situation. <ul style="list-style-type: none"> <li>The student interprets the solution to the problem in terms of the model or compares the results of the model with the real-world data it represents.</li> </ul>	2	1	

Continued on the next page...

- Claim 1 Target Descriptions are illustrated by the Evidence Required statements which are provided comprehensively.
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### GRADE 8 – Functions (15 items) (Continued)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
3. Communicating Reasoning	Communicating Reasoning	A. Test propositions or conjectures with specific examples. <ul style="list-style-type: none"> <li>The student is presented with a proposition or conjecture and asked to give one or more supporting examples for a claim that is always true without concluding that the example(s) establish that truth.</li> </ul>	2	2	2
3. Communicating Reasoning	Communicating Reasoning	E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. <ul style="list-style-type: none"> <li>Some flawed reasoning or student work is presented and the student identifies and/or corrects the error or flaw.</li> </ul>	3		

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**GRADE 8 – Volume of Cylinders, Cones, and Spheres (10 items)**

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	G	I. Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres. <ul style="list-style-type: none"> <li>The student solves real-world problems by applying the formulas for the volumes of cylinders, cones, and spheres.</li> <li>The student solves mathematical problems by applying the formulas for the volumes of cylinders, cones, and spheres.</li> </ul>	2	8	8
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>Solving the problem requires understanding of and proficiency with expressions and equations, functions, and geometry and geometric measurement.</li> <li>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.</li> </ul>	2	2	2

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### High School – Equations and Reasoning (11 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	A	H. Understand solving equations as a process of reasoning and explain the reasoning. <ul style="list-style-type: none"> <li>The student solves radical and/or simple rational equations in one variable, including identifying the number and type of real solutions that might exist for the equation (e.g., one, two, infinite, or no real).</li> <li>The student evaluates proposed solutions to radical or simple rational equations, and recognizes where extraneous solution(s) might arise during the solving of the equation.</li> <li>The student solves radical or rational equations in multiple variables.</li> <li>The student identifies equivalent equations to an equation with rational or radical expressions.</li> </ul>	1, 2	9	9
3. Communicating Reasoning	Communicating Reasoning	E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. <ul style="list-style-type: none"> <li>Items for this target focus on the core mathematical work that students are doing around the real number system, algebra, functions, and geometry.</li> </ul>	3	2	2

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### High School – Solve Equations and Inequalities: Linear and Exponential (12 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	A	I. Solve equations and inequalities in one variable. <ul style="list-style-type: none"> <li>The student solves linear equations in one variable with numeric coefficients.</li> <li>The student solves linear inequalities in one variable with numeric coefficients.</li> <li>The student solves linear inequalities in one variable with letter coefficients or identifies appropriate value(s) of a letter coefficient given specific information about a variable in a linear equation or inequality.</li> <li>The student recognizes equivalent equations to given linear or quadratic equations in one variable.</li> </ul>	1, 2	10	10
4. Modeling and Data Analysis	Modeling and Data Analysis	D. Interpret results in the context of a situation. <ul style="list-style-type: none"> <li>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.</li> </ul>	3	1	1
3. Communicating Reasoning	Communicating Reasoning	E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. <ul style="list-style-type: none"> <li>Some flawed reasoning or student work is presented and the student identifies and/or corrects the error or flaw.</li> </ul>	3	1	1

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### High School – Solve Equations and Inequalities: Quadratic (10 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	A	I. Solve equations and inequalities in one variable. <ul style="list-style-type: none"> <li>The student solves quadratic equations in one variable by taking square roots, completing the square, using the quadratic formula, or by factoring.</li> <li>The student recognizes when the quadratic formula gives complex solutions (no real solutions).</li> <li>The student writes complex solutions for the quadratic formula in the form <math>a \pm bi</math> where <math>a</math> and <math>b</math> are real numbers.</li> <li>The student recognizes equivalent equations to given linear or quadratic equations in one variable.</li> </ul>	2	9	9
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>The student is asked to solve a well-posed problem arising in a purely mathematical context, in a thin context, which is defined to be a context that is nominally from outside mathematics but in reality serves a purely mathematical purpose, or in a context from everyday life, society, or the workplace.</li> </ul>	2	1	1

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### High School – Geometry and Right Triangle Trigonometry (15 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	G	<p>O. Define trigonometric ratios and solve problems involving right triangles.</p> <ul style="list-style-type: none"> <li>The student uses the definitions of trigonometric ratios for acute angles in a right triangle.</li> <li>The student uses similar triangles to define and determine trigonometric ratios in right triangles.</li> <li>The student explains and uses the relationship between the sine and cosine of complementary angles.</li> <li>The student uses the Pythagorean Theorem and trigonometric ratios to solve problems involving right triangles in mathematical or real-world context.</li> </ul>	1, 2	11	11
2. Problem Solving	Problem Solving	<p>A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>Solving the problem requires either using units, setting up and solving an equation or system of equations, building and interpreting equations or functions that represent relationships between quantities, finding or calculating geometric measures, or reasoning about geometric figures in the plane.</li> </ul>	3	1	1
3. Communicating Reasoning	Communicating Reasoning	<p>A. Test propositions or conjectures with specific examples.</p> <ul style="list-style-type: none"> <li>The student is presented with a proposition or conjecture and asked to give a counterexample if the claim is false.</li> </ul> <p>C. State logical assumptions being used.</p> <ul style="list-style-type: none"> <li>The student will be given one or more definitions or assumptions and will be asked to reason from that set of definitions and assumptions.</li> </ul> <p>F. Base arguments on concrete referents such as objects, drawings, diagrams, and actions.</p> <ul style="list-style-type: none"> <li>Some flawed reasoning or student work is presented and the student identifies and/or corrects the error or flaw.</li> </ul>	2, 3	3	3

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### High School – Number and Quantity (15 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NQ	A. Extend the properties of exponents to rational exponents. <ul style="list-style-type: none"> <li>The student rewrites expressions in radical form into an equivalent expression with rational exponents.</li> <li>The student will be able to rewrite expressions with rational exponents into an equivalent expression in radical form.</li> <li>The student uses the properties of exponents to write equivalent expressions involving radicals and rational exponents.</li> <li>The student solves equations that require an understanding of the definitions of radicals and rational exponents.</li> <li>The student finds exact or approximate values of numeric expressions involving rational exponents or radicals.</li> <li>The student compares expressions involving rational exponents or radicals with other numbers.</li> </ul>	1	4	11
1. Concepts and Procedures	NQ	B. Use properties of rational and irrational numbers. <ul style="list-style-type: none"> <li>The student provides examples of addition or multiplication problems that will have sums or products of a specified type (rational or irrational).</li> <li>The student determines whether the sum of two numbers is a rational number or an irrational number.</li> <li>The student determines whether the product of two numbers is a rational number or an irrational number.</li> <li>The student provides an abstract generalization that the sum or product of any two rational numbers is rational, the sum of a rational number and an irrational number is irrational, and the product of a nonzero rational number and an irrational number is irrational.</li> </ul>	1, 2	2	
1. Concepts and Procedures	NQ	C. Reason quantitatively and use units to solve problems. <ul style="list-style-type: none"> <li>The student chooses units consistently in formulas.</li> <li>The student chooses the scales for graphs and data displays.</li> <li>The student chooses appropriate quantities for answering a question in a real-world context.</li> </ul>	1, 2	5	
4. Modeling and Data Analysis	Modeling and Data Analysis	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>The student solves a multi-step problem involving number and quantity, algebra, functions, or geometric modeling of real-world phenomena.</li> </ul>	2	1	1

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### High School – Number and Quantity (Cont.)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
3. Communicating Reasoning	Communicating Reasoning	<p>D. Use the technique of breaking an argument into cases.</p> <ul style="list-style-type: none"> <li>The student is given a problem that has a finite number of possible solutions that need to be treated on a case-by-case basis.</li> </ul> <p>E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is.</p> <ul style="list-style-type: none"> <li>The student is presented with valid or invalid reasoning and asked to determine its validity. If the reasoning is flawed, the student will explain or correct the flaw.</li> </ul> <p>G. At later grades, determine conditions under which an argument does and does not apply.</p> <ul style="list-style-type: none"> <li>Items for this target focus on the core mathematical work that students are doing around the real number system, algebra, functions, and geometry.</li> </ul>	2, 3	3	3

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### High School – Interpreting Functions (14 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	NQ	<p>K. Understand the concept of a function and use function notation.</p> <ul style="list-style-type: none"> <li>The student understands that a function from one set (the domain) to another set (the range) assigns to each element of the domain exactly one element of the range (e.g., distinguish between functions and non-functions).</li> <li>The student understands that the graph of <math>f</math> is the graph of the equation <math>y = f(x)</math>.</li> <li>The student recognizes that sequences are functions whose domain is a subset of the integers.</li> </ul>	1, 2	3	10
1. Concepts and Procedures	NQ	<p>L. Interpret functions that arise in applications in terms of the context.</p> <ul style="list-style-type: none"> <li>The student interprets key features of a graph or a table representing a function modeling a relationship between two quantities.</li> <li>The student sketches graphs showing key features given a verbal description of a relationship between two quantities that can be modeled with a function.</li> <li>The student relates the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.</li> <li>The student calculates and interprets the average rate of change of a function presented symbolically or as a table and estimates the rate of change of a function from a graph.</li> </ul>	1, 2	7	
2. Problem Solving	Problem Solving	<p>C. Interpret results in the context of a situation.</p> <ul style="list-style-type: none"> <li>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.</li> </ul>	2	1	3
4. Modeling and Data Analysis	Modeling and Data Analysis	<p>A. Apply mathematics to solve problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>The student is asked to solve a problem arising in everyday life, society, or the workplace using functions, geometric modeling, probability, or statistics.</li> </ul> <p>D. Interpret results in the context of a situation.</p> <ul style="list-style-type: none"> <li>The student interprets the solution to the problem in terms of the model or compares the results of the model with the real-world data it represents.</li> </ul>	3	2	
3. Communicating Reasoning	Communicating Reasoning	<p>G. At later grades, determine conditions under which an argument does and does not apply.</p> <ul style="list-style-type: none"> <li>Items for this target focus on the core mathematical work that students are doing around the real number system, algebra, functions, and geometry.</li> </ul>	3	1	1

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### High School – Seeing Structure in Expressions/Polynomial Expressions (15 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	A	D. Interpret the structure of expressions. <ul style="list-style-type: none"> <li>The student uses the structure of an expression to identify ways of rewriting it.</li> </ul>	1, 2	4	10
1. Concepts and Procedures	A	E. Write expressions in equivalent forms to solve problems. <ul style="list-style-type: none"> <li>The student understands that the factored form of a quadratic expression reveals the zeros of the function it defines.</li> <li>The student understands that completing the square for a quadratic expression reveals the maximum or minimum value of the function it defines.</li> <li>The student uses the properties of exponents to transform exponential expressions.</li> </ul>	1, 2	4	
1. Concepts and Procedures	A	F. Perform arithmetic operations on polynomials. <ul style="list-style-type: none"> <li>The student adds or subtracts polynomials.</li> <li>The student multiplies polynomials.</li> </ul>	2	2	
4. Modeling and Data Analysis	Modeling and Data Analysis	D. Interpret results in the context of a situation. <ul style="list-style-type: none"> <li>The student interprets the solution to the problem in terms of the model or compares the results of the model with the real-world data it represents.</li> </ul>	3	1	1
3. Communicating Reasoning	Communicating Reasoning	D. Use the technique of breaking an argument into cases. <ul style="list-style-type: none"> <li>The student is given a problem that has a finite number of possible solutions that need to be treated on a case-by-case basis.</li> <li>The student is given a proposition and asked to determine in which cases the proposition is true.</li> </ul> E. Distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in the argument—explain what it is. <ul style="list-style-type: none"> <li>The student is presented with valid or invalid reasoning and asked to determine its validity. If the reasoning is flawed, the student will explain or correct the flaw.</li> </ul> F. Base arguments on concrete referents such as objects, drawings, diagrams, and actions. <ul style="list-style-type: none"> <li>The student uses concrete referents to help justify or refute an argument.</li> </ul>	3	4	4

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### High School – Statistics and Probability (12 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	SP	P. Summarize, represent, and interpret data on a single count or measurement variable. <ul style="list-style-type: none"> <li>The student will be able to represent data on the real number line with a dot plot, histogram, or box plot.</li> <li>The student will be able to use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.</li> <li>The student will be able to interpret the differences in shape, center, and spread in the context of the data sets.</li> <li>The student will be able to interpret the effects of outliers on the shape, center, and spread of a data set.</li> </ul>	2	6	6
2. Problem Solving	Problem Solving	A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace. <ul style="list-style-type: none"> <li>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.</li> </ul> B. Select and use appropriate tools strategically. <ul style="list-style-type: none"> <li>Mathematical information is presented in a table, graph, diagram, or equation or is extracted from a verbal description or pictorial representation of a context.</li> </ul>	2	3	6
4. Modeling and Data Analysis	Modeling and Data Analysis	D. Interpret results in the context of a situation. <ul style="list-style-type: none"> <li>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.</li> </ul> C. State logical assumptions being used. <ul style="list-style-type: none"> <li>Students solve problems that involve using stated assumptions, definitions, and previously established results in developing their reasoning.</li> </ul> F. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flow charts, or formulas). <ul style="list-style-type: none"> <li>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.</li> </ul>	2, 3	3	

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### High School – Create Equations: Linear and Exponential (12 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	A	<p>G. Create equations that describe numbers or relationships.</p> <ul style="list-style-type: none"> <li>The student creates one variable equations arising from linear, quadratic, simple rational, and exponential functions in one variable.</li> <li>The student creates one variable inequalities arising from linear, quadratic, simple rational, and exponential functions in one variable.</li> <li>The student graphs equations on the coordinate axes with labels and scales to represent the solution to a contextual problem.</li> <li>The student creates equations in two or more variables to represent relationships between quantities.</li> </ul>	1, 2	8	8
2. Problem Solving	Problem Solving	<p>A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>The student is asked to solve a well-posed problem arising in a purely mathematical context, in a thin context, which is defined to be a context that is nominally from outside mathematics but in reality serves a purely mathematical purpose, or in a context from everyday life, society, or the workplace.</li> <li>Solving the problem requires either using units, setting up and solving an equation or system of equations, building and interpreting equations or functions that represent relationships between quantities, finding or calculating geometric measures, or reasoning about geometric figures in the plane.</li> <li>The student sets up an equation in one variable given a real-world context and solves it to answer a question about the context.</li> </ul>	1, 2	3	4
4. Modeling and Data Analysis	Modeling and Data Analysis	<p>A. Apply mathematics to solve problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>The student solves a multi-step problem involving number and quantity, algebra, functions, or geometric modeling of real-world phenomena.</li> </ul>	2	1	

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### High School – Create Equations: Quadratic (10 items)

Claim	Content Category	Assessment Targets	DOK	Number of Items	Total Items per Reporting Category
1. Concepts and Procedures	A	<p>G. Create equations that describe numbers or relationships.</p> <ul style="list-style-type: none"> <li>The student creates one variable equations arising from linear, quadratic, simple rational, and exponential functions in one variable.</li> <li>The student creates one variable inequalities arising from linear, quadratic, simple rational, and exponential functions in one variable.</li> <li>The student graphs equations on the coordinate axes with labels and scales to represent the solution to a contextual problem.</li> <li>The student creates equations in two or more variables to represent relationships between quantities.</li> </ul>	1, 2	6	6
2. Problem Solving	Problem Solving	<p>A. Apply mathematics to solve well-posed problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>Solving the problem requires either using units, setting up and solving an equation or system of equations, building and interpreting equations or functions that represent relationships between quantities, finding or calculating geometric measures, or reasoning about geometric figures in the plane.</li> </ul> <p>C. Interpret results in the context of a situation.</p> <ul style="list-style-type: none"> <li>The student sets up an equation arising from a thin or real-world context.</li> <li>If the equation is in one variable, the student solves the equation and interprets the solution in terms of the context.</li> <li>If the equation represents a function, the student interprets a parameter in the context.</li> </ul>	2	2	4
4. Modeling and Data Analysis	Modeling and Data Analysis	<p>A. Apply mathematics to solve problems arising in everyday life, society, and the workplace.</p> <ul style="list-style-type: none"> <li>The student solves a multi-step problem involving number and quantity, algebra, functions, or geometric modeling of real-world phenomena.</li> </ul> <p>F. Identify important quantities in a practical situation and map their relationships (e.g., using diagrams, two-way tables, graphs, flow charts, or formulas).</p> <ul style="list-style-type: none"> <li>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.</li> </ul>	2, 3	2	

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