Formative Assessments

Formative Item Sets Overview

Mathematics

Grades 3–8

COGNIA ASSESSMENTS

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Revised 08/20

Formative Item Sets—Mathematics

Purpose

Cognia formative item sets are designed to help teachers quickly gauge students' understanding of key concepts and skills that are emphasized by college and career readiness standards. The item sets support formative assessment practices and provide evidence of student understanding. Educators may administer the items as frequently as they like to engage students in the learning and quickly generate data that can be used to inform instruction.

Number of Item Sets per Grade Level							
Grade	3	4	5	6	7	8	Total
Sets	11	12	11	10	9	10	63

Item Set Components

Each formative item set includes the following three components:

- **Blueprints**—Outline the specifications of each item set and include the following elements for each item (question):
  - College and career readiness standard(s)
  - The domain, cluster, and mathematical standards
  - Learning targets, to clarify learning expectations for students
  - DOK (Depth of Knowledge) level for each item
  - Item type
  - Position of the item within the item set
- **Scoring Guide**—Materials for the teacher to score student responses. Elements of the scoring guide include:
  - Answer key
  - Distractor rationales that describe the misconception associated with the answer option.
  - Scoring rubric
  - Scoring notes
- **Student Item Set**—Printable forms that can be downloaded from the Formative Content Library for students to record their responses. Online forms are available in the Formative Assessments program within the online administration platform.

Design Specifications

Each mathematics item set aligns to a mathematics domain and is focused on one specific cluster within that domain. Clusters are standards that are grouped together to represent key concepts and skills emphasized within a domain. Mathematics item sets are designed to help educators integrate formative assessment into instruction while learning is still occurring.

Each mathematics item set assesses a range of cognitive complexities and encourages students to apply their understanding of key skills and concepts.

Each item set is aligned to a cluster of college and career readiness standards. Each item set consists of two parts to provide flexibility for instructional planning. Part A consists of four to eight multiple-choice, mutiple-select, and short-answer items, and Part B consists of one extended constructed-response item.

Items

Each mathematics item set consists of multiple-choice, multiple-select, short-answer, and constructed-response items. Educators can easily administer the items in a single class period, or administer each part separately in approximately 10 minutes.

Item Details

The following table provides the approximate administration time for each item type.

Item Type	Number of Points	Administration Time (minutes)
Multiple Choice (MC)	1	1–2
Multiple Select (MS)	1	1–2
Short Answer (SA)	1	2
Constructed Response (CR)	4	8–10

Depth of Knowledge

Each item is coded to a depth of knowledge level, from level 1 through level 4. A description of an example of the expectations at each level is provided below.

DOK	Description
Level 4	Using extended thinking to synthesize information or apply it to real-world applications.
Level 3	Employing strategic thinking through the use of reasoning or decision making.
Level 2	Conceptual knowledge, or the ability to put facts into context.
Level 1	The ability to recall facts.

Mathematics Item Set Index

The following tables provide domain, cluster, number of items and item types, Depth of Knowledge and learning targets for each item set by grade level.

Grade 3 | Formative Item Sets

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
G Quadrilateral Attributes G3	Geometry	Reason with shapes and their attributes	1	MC	1	I can identify a quadrilateral.
			2	MC	1	I can identify a quadrilateral using their attributes.
			3	SA	1	I can identify a quadrilateral using their attributes.
			4	MS	2	I can reason about the attributes of quadrilaterals.
			5	MC	1	I can describe the area of a part of a shape divided into equal parts.
			6	MS	1	I can identify shapes divided into equal areas.
			7	CR	2	I can reason about quadrilaterals using their attributes.
MD Area Unit Sq Decompose G3	Measurement and Data	Geometric measurement: understand concepts of area and relate area to multiplication and to addition	1	MC	1	I can find the area of a unit square.
			2	MC	1	I can measure area by counting unit squares.
			3	MC	2	I can find the area of a rectangle by multiplying the two side lengths.
			4	MC	1	I can understand area by relating counting unit squares to multiplication.
			5	MC	2	I can find the area of a shape by breaking it down into smaller rectangles and then adding those areas to find the total area.
			6	MC	2	I can use models to show that the area of a rectangle can be found by using the distributive property.
			7	CR	2	I can write equations to find the areas of rectangles.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
MD Geometry Perimeter G3	Measurement and Data	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures	1	MC	2	I can find the perimeter of a rectangle made of unit blocks.
			2	MS	2	I can solve and compare like perimeters of shapes with different values.
			3	MC	2	I can add values to find perimeter of a shape.
			4	SA	2	I can find the perimeter of a shape when given a value.
			5	MS	2	I can find side lengths when given the perimeter of a rectangle.
			6	MC	2	I can solve for perimeter given side lengths of different shapes.
			7	SA	2	I can find the side length of a square knowing the area of a rectangle.
			8	MC	2	I can find the missing lengths of a shape that have same perimeters but different areas.
			9	CR	2	I can find the area of rectangles and find missing lengths of new shapes with the same perimeter.
MD Picture Bar Graphs G3	Measurement and Data	Represent and interpret data	1	SA	2	I can read a picture graph and compare data.
			2	SA	2	I can read a bar graph and solve a small unit subtraction problem.
			3	SA	2	I can read a bar graph and solve a small unit subtraction problem.
			4	MC	2	I can read a bar graph and solve a small unit subtraction problem.
			5	MC	2	I can read a line plot and solve a small unit addition problem.
			6	MC	2	I can read a line plot and solve a small unit addition and subtraction problem.
			7	MC	2	I can measure an object against a ruler to the 1/2 inch.
			8	CR	2	I can read a picture graph and solve small unit multiplication problems.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
MD Time Mass Volume G3	Measurement and Data	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects	1	MC	2	I can solve word problems about telling time by reading a clock and adding and subtracting minutes.
			2	SA	2	I can solve word problems about telling time by adding and subtracting minutes.
			3	MC	2	I can use multiplication and division to solve word problems about mass.
			4	MC	2	I can use addition to solve word problems about mass shown on two scales.
			5	MC	2	I can use repeated addition or multiplication to solve word problems about volume.
			6	CR	2	I can show how to solve word problems about telling time by reading a clock and adding and subtracting minutes.
NBT Place Value Operations G3	Numbers and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic	1	MC	1	I can use place value to help me round numbers to the nearest 10.
			2	MC	2	I can use place value to help me round numbers to the nearest 100.
			3	SA	1	I can use place value to add two two-digit numbers.
			4	SA	1	I can use place value to subtract a two-digit number from a three-digit number.
			5	SA	1	I can multiply a one-digit whole number by a multiple of 10.
			6	MC	2	I can identify different ways to multiply a whole number by a multiple of 10.
			7	CR	2	I can add a three-digit and two-digit number and find the missing number in a multiplication expression that equals the sum of the addition expression.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
NF Number Line Equiv Frac G3	Number and Operations – Fractions	Develop understanding of fractions as numbers	1	MC	1	I can identify the fraction of a shape that is shaded.
			2	MC	1	I can identify the fraction of a shape that is shaded.
			3	MC	1	I can label a fraction on a number line.
			4	SA	1	I can label a fraction on a number line.
			5	MC	2	I can compare two fractions with the same numerator.
			6	SA	2	I can write equivalent fractions.
			7	MC	1	I can identify a fraction equivalent to a whole number.
			8	CR	2	I can find two equivalent fractions and compare them to a third fraction.
OA Fluency Multiply Divide G3	Operations and Algebraic Thinking	Multiply and divide within 100	1	MC	1	I can multiply and divide by 4.
			2	SA	1	I can multiply by 5 and 7.
			3	SA	1	I can divide by 9.
			4	MS	1	I can identify multiplication and division facts.
			5	MS	1	I can identify multiplication facts.
			6	MC	3	I can understand how multiplication can be used to solve division problems.
			7	CR	2	I can solve problems involving multiplications and division.
OA Multiply Divide Eqn G3	Operations and Algebraic Thinking	Understand properties of multiplication and the relationship between multiplication and division	1	MC	1	I can identify different ways to multiply three numbers.
			2	MC	1	I can find an equivalent expression when multiplying two numbers.
			3	MS	1	I can use properties to identify expressions that are equivalent to an expression multiplying two numbers.
			4	MC	2	I can find the answer to a division problem by thinking of the missing factor in a multiplication problem.
			5	MC	1	I can find a related multiplication equation to solve a division equation.
			6	MC	1	I can find a related multiplication equation to solve a division equation.
			7	CR	2	I can solve a word problem by using division and check the answer using multiplication.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
OA Mult Div Word Problems G3	Operations and Algebraic Thinking	Represent and solve problems involving multiplication and division	1	MC	2	I can describe a context for a multiplication problem.
			2	MC	2	I can describe a context for a division problem.
			3	SA	2	I can solve a division word problem.
			4	MC	2	I can solve a word problem involving division.
			5	MS	2	I can solve a word problem involving multiplication.
			6	MC	1	I can find an unknown number in a multiplication problem.
			7	MC	1	I can find an unknown number in a division problem.
			8	CR	2	I can write a number sentence for a given group of objects.
OA Two Step Patterns G3	Operations and Algebraic Thinking	Solve problems involving the four operations, and identify and explain patterns in arithmetic	1	MC	2	I can solve a two-step problem using addition and division.
			2	MC	2	I can use estimation to add and subtract 2- and 3-digit numbers.
			3	MC	2	I can use different operations to create a number sentence.
			4	SA	2	I can solve a two-step problem using addition and division.
			5	SA	2	I can determine the next number in a pattern.
			6	MC	2	I can identify a pattern of odd and even numbers based on a rule.
			7	MC	2	I can use a multiplication table to determine patterns.
			8	CR	3	I can use operations and two steps to solve real-life problems.

Grade 4 | Formative Item Sets

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
G Lines Shapes Symmetry G4	Geometry	Draw and identify lines and angles, and classify shapes by properties of their lines and angles	1	MC	1	I can identify a ray.
			2	MC	1	I can identify parallel lines on a drawing.
			3	MC	1	I can identify perpendicular lines in a figure.
			4	MC	2	I can identify a figure based on its sides.
			5	MC	1	I can identify a right triangle.
			6	MC	1	I can identify a line of symmetry.
			7	MS	2	I can identify lines of symmetry.
			8	CR	3	I can explain why a statement about symmetry is true or false.
MD Angle Measures G4	Measurement and Data	Geometric measurement: understand concepts of angle and measure angles	1	MC	2	I can solve a word problem to find the number of degrees needed to complete a circle.
			2	MC	2	I can explain the measure of the angle formed by hands on a clock.
			3	MC	1	I can measure angles in whole-number degrees using a protractor.
			4	MC	2	I can add to find the sum of angles on a diagram.
			5	MC	2	I can identify the equation needed to find the unknown angle on a diagram.
			6	SA	2	I can add or subtract to find the unknown angle on a diagram.
			7	CR	3	I can add or subtract to find the unknown angle on a diagram.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
MD Interpret Line Plots G4	Measurement and Data	Represent and Interpret Data	1	MC	2	I can solve problems involving subtracting fractions using data from a line plot.
			2	MC	2	I can solve problems involving adding fractions using data from a line plot.
			3	MC	2	I can solve problems involving adding fractions using data from a line plot.
			4	MS	2	I can find two fractions that have a sum of 1 using data from a line plot.
			5	SA	1	I can construct a line plot to represent given data.
			6	CR	2	I can solve problems involving adding and subtracting fractions using data from a line plot.
MD Measurement Conversions G4	Measurement and Data	Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit	1	MC	1	I can convert customary measurements from a larger unit to a smaller unit.
			2	MC	1	I can convert metric measurements from a larger unit to a smaller unit.
			3	SA	2	I can convert customary measurements from a larger unit to a smaller unit.
			4	MC	2	I can solve word problems involving elapsed time.
			5	SA	2	I can convert measurements of money from dollars to cents to solve word problems.
			6	SA	2	I can convert metric measurements from a larger unit to a smaller unit to solve word problems.
			7	MS	2	I can find the length and width of rectangles given the area.
			8	SA	2	I can determine the width of a rectangle given the length and the perimeter.
			9	CR	2	I can apply area and perimeter formulas for rectangles to solve word problems.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
NBT PlaceValue Operations G4	Number and Operations in Base Ten	Use place value understanding and properties of operations to perform multi-digit arithmetic	1	MC	1	I can find the sum of two multi-digit whole numbers.
			2	SA	1	I can find the difference of two multi-digit whole numbers.
			3	MC	2	I can add and subtract multi-digit whole numbers.
			4	MS	1	I can multiply a three-digit number by a one-digit number.
			5	MC	1	I can multiply a two-digit number by a two-digit number.
			6	SA	1	I can multiply a one-digit number by a four-digit number.
			7	MC	1	I can divide a three-digit number by a one-digit number.
			8	SA	1	I can divide a four-digit number by a one-digit number.
			9	MS	1	I can find division expressions that are equivalent to a given quotient.
			10	CR	2	I can add, subtract, multiply, and divide multi-digit whole numbers to solve problems.
NBT Value Compare Round G4	Numbers and Operations in Base Ten	Generalize place value understanding for multi-digit whole numbers	1	MC	2	I can relate the value of the same digit in two numbers.
			2	MC	2	I can relate the value of the same digit in two numbers.
			3	MC	1	I can identify the number form of a number given the expanded form.
			4	MC	1	I can identify the word form of a number given the number form.
			5	MC	1	I can identify a number that is less than the one given.
			6	MC	1	I can identify a number that is less than the one given.
			7	MC	1	I can round a four-digit number to the nearest hundred.
			8	MC	1	I can round a six-digit number to the nearest thousand.
			9	CR	3	I can write numbers in number form given the expanded and word forms. I can compare multi-digit whole numbers. I can relate the value of the same digit in two numbers.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
NF Fractions Comparisons G4	Number and Operations – Fractions	Extend understanding of fraction equivalence and ordering	1	MC	1	I can identify equivalent fractions less than 1 using a number line.
			2	SA	2	I can use equivalent fractions to determine parts of a whole.
			3	MS	1	I can identify equivalent fractions less than 1 using a model.
			4	MC	1	I can identify equivalent fractions less than 1 using a model.
			5	MS	2	I can use symbols to compare fractions less than 1 with different numerators and different denominators.
			6	MS	2	I can compare fractions less than 1 with different numerators and different denominators.
			7	MC	2	I can order fractions less than 1 with different numerators and different denominators.
			8	CR	2	I can write equivalent fractions and compare fractions with different numerators and different denominators.
NF Fractions Decimals G4	Numbers and Operations – Fractions	Understand decimal notations for fractions, and compare decimal fractions	1	MC	1	I can identify an equivalent fraction with denominator 100 for a fraction with denominator 10.
			2	MC	1	I can identify an equivalent fraction with denominator 100 for a decimal.
			3	MC	1	I can identify an equivalent fraction with denominator 100 for a decimal.
			4	MC	1	I can identify the decimal represented by a point on a number line.
			5	MC	1	I can identify the equivalent decimal for a fraction with denominator 10.
			6	MC	1	I can compare two decimals.
			7	MC	2	I can identify a decimal that is greater than the one given.
			8	CR	2	I can add fractions with denominators 10 and 100. I can rewrite a fraction as an equivalent decimal.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
NF Fractions Operations G4	Numbers and Operations – Fractions	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers	1	MC	1	I can find the sum of fractions with a common denominator.
			2	MC	2	I can find the expression that represents a fraction model.
			3	MS	2	I can find the sum of two mixed numbers with common denominators.
			4	MC	2	I can find the sum and differences of fractions with like denominators.
			5	MC	2	I can find the multiplication number sentence that represents a given fraction model.
			6	MC	2	I can multiply a fraction by a whole number to solve a word problem.
			7	MC	1	I can multiply a fraction by a whole number.
			8	SA	2	I can multiply a fraction by a whole number.
			9	CR	2	I can find the sums and differences of mixed numbers to solve word problems.
OA Factors Multiples G4	Operations and Algebraic Thinking	Gain familiarity with factors and multiples	1	MS	1	I can find all factor pairs for a whole number.
			2	MC	1	I can find a multiple of a given one-digit number.
			3	SA	2	I can find multiples of given one-digit numbers.
			4	MC	1	I can determine whether a given whole number is a prime number.
			5	SA	2	I can find a prime number within a range of numbers.
			6	MS	1	I can determine whether a given whole number is a composite number.
			7	CR	2	I can find prime numbers, composite numbers, multiples, and factor pairs.
OA Gen Analyze Patterns G4	Operations and Algebraic Thinking	Generate and analyze patterns	1	MC	2	I can generate and analyze a number pattern.
			2	MC	2	I can generate and analyze a number pattern.
			3	MC	2	I can generate and analyze a shape pattern.
			4	MC	2	I can generate and analyze a number pattern.
			5	SA	2	I can generate a two-step number pattern.
			6	SA	2	I can generate a two-step number pattern.
			7	MS	2	I can generate and analyze a two-step number pattern.
			8	CR	3	I can generate and analyze number patterns.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
OA Word Problems Equations G4	Operations and Algebraic Thinking	Use the four operations with whole numbers to solve problems	1	MC	2	I can identify the equation needed to solve a word problem involving multiplicative comparisons.
			2	MC	2	I can use multiplication to solve a word problem involving multiplicative comparisons.
			3	SA	2	I can use division to solve a word problem involving multiplicative comparisons.
			4	MC	2	I can identify the situation represented by a multiplication expression.
			5	MC	2	I can identify the equation needed to solve a multistep word problem.
			6	MC	2	I can use the four operations to solve a multistep word problem.
			7	CR	2	I can use the four operations to solve multistep word problems involving multiplicative comparisons.

Grade 5 | Formative Item Sets

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
G Coordinate Planes Quad1 G5	Geometry	Graph points on the coordinate plane to solve real-world and mathematical problems	1	MC	1	I can read and interpret a coordinate plane.
			2	MC	1	I can represent real-world and mathematical problems by graphing points in the first quadrant.
			3	MC	2	I can represent real-world and mathematical problems by graphing points in the first quadrant.
			4	MC	2	I can represent real-world and mathematical problems by graphing points in the first quadrant.
			5	CR	2	I can represent real-world and mathematical problems by graphing points in the first quadrant.
G Two Dim Properties G5	Geometry	Classify two-dimensional figures into categories based on their properties	1	MC	2	I can identify quadrilaterals using their attributes.
			2	MS	2	I can identify quadrilaterals using their attributes.
			3	MS	2	I can reason about quadrilaterals.
			4	MC	2	I can reason about quadrilaterals.
			5	SA	2	I can reason about quadrilaterals.
			6	CR	3	I can reason about quadrilaterals.
MD Conversions G5	Measurement and Data	Convert like measurement units within a given measurement system	1	MC	1	I can convert centimeters to meters.
			2	MC	2	I can convert feet to yards.
			3	MS	1	I can convert pints to quarts.
			4	MC	1	I can convert milliliters to liters.
			5	MC	1	I can covert millimeters to centimeters.
			6	MC	2	I can covert gallons to cups.
			7	SA	2	I can convert cups to pints.
			8	CR	2	I can convert quarts to pints and cups.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
MD Line Plots Fractions G5	Measurement and Data	Represent and Interpret Data	1	MC	2	I can use data from a line plot, in fractions of a unit, to help solve a problem.
			2	MC	2	I can use data from a line plot, in fractions of a unit, to help solve a problem.
			3	MC	1	I can use a line plot to display a data set of measurements in fractions of a unit.
			4	MC	2	I can use operations on fractions to solve problems involving information presented in line plots.
			5	MC	2	I can use operations on fractions to solve problems involving information presented in line plots.
			6	CR	3	I can use a line plot to display a data set of measurements in fractions of a unit.
MD Vol Rectangular Prisms G5	Measurement and Data	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition	1	MC	1	I can understand volume.
			2	MC	2	I can find the number of cubes in a prism packed with unit cubes.
			3	MC	2	I can find the volume of a rectangular prism.
			4	SA	2	I can find the volume of a rectangular prism.
			5	MS	2	I can find the height, given the volume, of a rectangular prism.
			6	SA	2	I can find the height of a rectangular prism given the volume, length, and width.
			7	SA	2	I can find the volume of two non-overlapping rectangular prisms.
			8	MC	2	I can find the volume of two non-overlapping rectangular prisms.
			9	CR	2	I can find the volume and equivalent volumes of rectangular prisms.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
NBT Mult Div Whole Dec G5	Number and Operations in Base 10	Perform operations with multi-digit whole numbers and with decimals to hundredths	1	SA	1	I can divide a three-digit number by a two-digit number.
			2	MC	1	I can divide a three-digit number by a one-digit number in a real-world situation.
			3	MC	2	I can divide a three-digit number by a two-digit number in a real-world situation.
			4	MC	2	I can identify which expression to use to find a quotient.
			5	MC	2	I can find whole number quotients of whole numbers with a four-digit dividend and one-digit divisor.
			6	MC	1	I can add decimals up to the hundredths.
			7	MC	2	I can subtract decimals up to the hundredths.
			8	MC	2	I can multiply decimals up to the hundredths to find the area.
			9	CR	3	I can add and multiply decimals in a real-world problem.
NBT Place Value G5	Number and Operations in Base 10	Understand the place value system	1	MC	1	I can describe the number of zeroes in the product when multiplying a number by powers of ten.
			2	MS	2	I can multiply numbers by powers of ten.
			3	MC	2	I can write decimals from expanded form notation.
			4	MC	1	I can compare decimals.
			5	MS	1	I can compare decimals.
			6	SA	1	I can round to the nearest hundredth.
			7	MC	1	I can round to the nearest tenth.
			8	CR	3	I can compare place value and explain multiplication by powers of ten.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
NF Mult Div Fractions G5	Number and Operations – Fractions	Apply and extend previous understandings of multiplication and division to multiply and divide fractions	1	MS	2	I can interpret a fraction as division of the numerator by the denominator and solve real-world problems with division of whole numbers resulting in a fraction.
			2	MC	2	I can multiply a fraction by a whole number.
			3	MC	1	I can use a model to write an equation for multiplying a whole number by a fraction.
			4	MC	2	I can compare the value of a product to the values of the factors, without performing the multiplication.
			5	MC	2	I can explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number.
			6	MC	2	I can solve real-world problems involving multiplication of a whole number and a mixed number.
			7	MC	1	I can solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.
			8	MC	2	I can divide a whole number by a unit fraction and use the quotient to solve a real-world problem.
			9	CR	2	I can interpret a fraction as division of the numerator by the denominator and solve real-world problems with division of whole numbers resulting in a fraction.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
NF Operations Fractions G5	Fractions	Use equivalent fractions as a strategy to add and subtract fractions	1	SA	2	I can subtract fractions with unlike denominators.
			2	MS	2	I can subtract fractions with unlike denominators.
			3	MC	2	I can solve a word problem involving the addition of fractions with unlike denominators.
			4	MC	2	I can solve a word problem involving the subtraction of fractions with unlike denominators.
			5	SA	2	I can solve a word problem involving the addition of fractions with unlike denominators.
			6	MC	2	I can subtract fractions with unlike denominators to solve a word problem.
			7	MC	2	I can add fractions using a visual fraction model to assess a reasonable answer.
			8	CR	2	I can add, subtract, and compare fractions with unlike denominators to solve a word problem.
OA Analyze Number Patterns G5	Operations and Algebraic Thinking	Analyze patterns and relationships	1	MC	2	I can identify relationships between corresponding terms in two patterns.
			2	MC	2	I can create two patterns given the rules and then use this to create ordered pairs.
			3	MS	2	I can generate the numbers in two patterns given their rules and then can form ordered pairs consisting of corresponding terms from these patterns.
			4	SA	2	I can analyze patterns and relationships among given sets of numbers.
			5	MC	2	I can generate the numbers in two patterns given their rules.
			6	CR	3	I can generate the numbers in two patterns given their rules and use this information to solve problems.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
OA Order Operations Exp G5	Operations and Algebraic Thinking	Write and interpret numerical expressions	1	MC	2	I can evaluate and write expressions using parentheses, brackets, or braces in numerical expressions.
			2	MS	2	I can write expressions using parentheses, brackets, or braces in numerical expressions.
			3	MC	2	I can evaluate expressions using parentheses, brackets, or braces in numerical expressions.
			4	SA	1	I can evaluate expressions using parentheses, brackets, or braces in numerical expressions.
			5	MC	1	I can write simple expressions without evaluating them.
			6	MC	1	I can write simple expressions without evaluating them.
			7	MC	2	I can write simple expressions without evaluating them.
			8	CR	2	I can write and evaluate expressions using parentheses, brackets, or braces in numerical expressions.

Grade 6 | Formative Item Sets

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
EE Equations Inequalities G6	Expressions and Equations	Reason about and solve one-variable equations and inequalities	1	SA	2	I can use substitution to determine whether a given number in a set makes an equation true.
			2	MS	2	I can use substitution to determine whether a given number in a set makes an inequality true.
			3	SA	2	I can use a one-variable expression to solve a real-world problem.
			4	MC	2	I can identify an expression with a variable to represent an unknown number.
			5	SA	1	I can solve an equation with one variable.
			6	MC	2	I can identify an inequality to represent a range of solutions.
			7	MC	2	I can represent an inequality on the number line.
			8	CR	2	I can reason about and solve equations with one variable.
EE Expressions Evaluate G6	Expressions and Equations	Apply and extend previous understandings of arithmetic to algebraic expressions	1	MC	1	I can evaluate an expression that contains exponents.
			2	MC	2	I can evaluate a mathematical expression in which letters stand for numbers.
			3	MC	1	I can identify parts of an expression using mathematical terms.
			4	SA	2	I can evaluate an expression given specific values for variables.
			5	MC	2	I can identify an equivalent expression for a given expression.
			6	MC	2	I can evaluate and discover mistakes in the steps performed to simplify an expression.
			7	MS	2	I can identify equivalent expressions.
			8	MC	2	I can identify equivalent expressions.
			9	CR	2	I can evaluate an expression that contains an exponent and reason about an exponential variable.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
EE Variable Relationships G6	Expressions & Equations	Represent and analyze quantitative relationships between dependent and independent variables	1	MC	1	I can identify a relationship of a graph.
			2	MC	2	I can identify an equation that represents a relationship.
			3	MC	2	I can identify an equation that represents a relationship.
			4	MC	2	I can identify an equation that represents a relationship.
			5	MC	2	I can represent a relationship using a table.
			6	MC	2	I can find coordinate pairs on the graph of a line representing a relationship.
			7	CR	2	I can write an equation to represent a relationship, and use the equation to find a value.
G Area Surface Area Volume G6	Geometry	Solve real-world and mathematical problems involving area, surface area, and volume	1	MC	2	I can find the area of a composite figure.
			2	MC	2	I can find the volume of a rectangular prism, given the length, width, and height.
			3	MC	2	I can find the volume of a rectangular prism, using fractional unit cubes.
			4	MS	2	I can find the side lengths of a polygon graphed on the coordinate plane.
			5	MC	1	I can graph a polygon on a coordinate plane using coordinates and side lengths.
			6	MC	2	I can find the surface area of a solid by using a net.
			7	CR	2	I can use a net to name a figure and find the surface area of that solid figure.
NS Fluency GCF LCM G6	The Number System	Compute fluently with multi-digit numbers and find common factors and multiples	1	SA	1	I can divide multi-digit numbers.
			2	MS	2	I can divide multi-digit numbers that have remainders.
			3	SA	1	I can subtract multi-digit decimals.
			4	MC	2	I can multiply multi-digit decimals.
			5	MS	2	I can add, subtract, multiply, and divide multi-digit decimals.
			6	MC	1	I can find the greatest common factor.
			7	MC	1	I can find the least common multiple.
			8	MC	1	I can use the distributive property to find an equivalent expression.
			9	CR	3	I can find the greatest common factor and the least common multiple.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
NS Mult Divide Fractions G6	The Number System	Apply and extend previous understandings of multiplication and division to divide fractions by fractions	1	MC	2	I can divide fractions to solve a problem.
			2	MC	2	I can divide a whole number by a mixed number to solve a problem.
			3	MC	2	I can select the correct multiplication expression needed to solve a problem involving the division of mixed numbers.
			4	MC	2	I can divide a fraction by a whole number to solve a problem.
			5	MC	2	I can divide a whole number by a fraction to solve a problem.
			6	CR	2	I can multiply and divide fractions and mixed numbers to solve problems.
NS System Rational Numbers G6	The Number System	Apply and extend previous understandings of numbers to the system of rational numbers	1	SA	1	I can use integers to represent real-world quantities.
			2	MC	1	I can identify the opposite of a number represented on a number line.
			3	MC	2	I can recognize the signs of both numbers in an ordered pair based on the quadrant and create reflections across the *x*-axis.
			4	SA	1	I can identify rational numbers on a number line.
			5	MS	1	I can interpret inequality statements and the relative position of two numbers on a number line.
			6	MS	2	I can interpret the meaning of integers in context.
			7	MC	2	I can understand absolute value in a real-world context.
			8	MC	2	I can understand absolute value and how it relates to comparing temperatures.
			9	MS	2	I can solve problems that involve finding the distance between points on a coordinate plane.
			10	CR	2	I can solve problems involving the perimeter of a shape on a coordinate plane.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
RP Ratios Proportions G6	Ratios & Proportional Relationships	Understand ratio concepts and use ratio reasoning to solve problems	1	MC	1	I can identify a ratio relationship between two quantities.
			2	MC	1	I can use a ratio to solve a problem.
			3	MC	2	I can use a ratio to find a unit rate.
			4	MC	2	I can use a ratio to find a unit rate.
			5	MC	2	I can use a ratio to solve a problem.
			6	MC	1	I can find the percent of a whole.
			7	CR	2	I can find the percent of a whole, and use it to solve problems.
SP Statistics Variability G6	Statistics and Probability	Develop understanding of statistical variability	1	MC	1	I can determine the difference between a statistical and non-statistical question.
			2	MC	1	I can determine the difference between a statistical and non-statistical question.
			3	MS	2	I can determine the difference between a statistical and non-statistical question.
			4	MC	2	I can answer a question about the spread and center of a given data set.
			5	SA	2	I can find the mean from a given set of data.
			6	MC	2	I can determine the difference between a statistical and non-statistical question.
			7	MC	2	I can increase the range of a data set with additional data points.
			8	CR	2	I can interpret data on a line plot and use it to determine median and mean.
SP Summative Data G6	Statistics and Probability	Summarize and describe distributions	1	MC	2	I can use a dot plot to describe data displayed as a box plot.
			2	MC	2	I can identify a box plot that represents a data set.
			3	MC	1	I can choose labels for a line graph that represents a situation.
			4	MC	2	I can find the interquartile range of a data set.
			5	MC	2	I can describe how new data added to a set will affect the mean and the median of the original data set.
			6	CR	2	I can use a bar graph to answer questions about a data set.

Grade 7 | Formative Item Sets

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
EE Equivalent Expressions G7	Expressions and Equations	Use properties of operations to generate equivalent expressions	1	MC	1	I can distribute terms to form equivalent expressions.
			2	MC	1	I can distribute terms to form equivalent expressions.
			3	MC	2	I can find common factors to make equivalent expressions.
			4	SA	2	I can find a common factor to make equivalent expressions.
			5	MS	2	I can find equivalent expressions to determine average cost.
			6	MC	2	I can distribute terms to form equivalent expressions.
			7	MC	2	I can model an expression to represent total cost.
			8	CR	2	I can use expressions to model cost.
EE Exp Equn Inq G7	Expressions and Equations	Solve real-life and mathematical problems using numerical and algebraic expressions and equations	1	MC	2	I can write and solve a two-step inequality represented in a word problem.
			2	MC	1	I can identify a two-step equation that represents a situation.
			3	MS	2	I can use the distributive property to identify equivalent equations.
			4	MC	2	I can identify a two-step inequality that represents a situation.
			5	MC	1	I can identify the solution to a two-step inequality that is graphed on a number line.
			6	CR	3	I can solve a multi-step problem that involves finding percent of decrease, sales tax and solving an inequality.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
G Angles Areas Volume G7	Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume	1	MC	2	I can find the circumference of a cylinder given the dimensions in a model.
			2	MC	2	I can find the area of a circle given the radius.
			3	MC	3	I can find the circumference of a circle given the relationship to the area of a different circle.
			4	MC	2	I can find the measure of an angle given a model of angle relationships.
			5	MC	2	I can use vertical angles, right angles, and the sum of angles in a triangle to find an unknown angle measure.
			6	MC	2	I can find the volume of a rectangular prism and triangular prism given the measures.
			7	MC	2	I can find the area of an irregular figure when given the side lengths.
			8	CR	3	I can find side lengths of rectangular prisms that have the same volume and find volume given the surface area.
G Scale Drawings G7	Geometry	Draw, construct, and describe geometrical figures and describe the relationship between them	1	MC	2	I can use ratios and a scale to find the height of an object.
			2	MC	2	I can use the scale of centimeters to feet to find the scale of a different scale drawing.
			3	MC	2	I can use a scale drawing of an object given in inches to find the actual area of the object given in feet.
			4	MC	1	I can identify the possible side lengths of a triangle.
			5	MC	2	I can identify an isosceles triangle and find the measures of two of its angles given the measure of two sides.
			6	MC	2	I can describe the two-dimensional shape that results from slicing a three-dimensional figure.
			7	CR	2	I can use a scale drawing and a scale factor to find actual lengths and widths. I can use scale measures and actual lengths and widths to find the scale factor.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
NS Rational Numbers G7	The Number System	Apply and extend previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers	1	MC	2	I can identify situations in which quantities combine to make zero.
			2	MC	2	I can add and subtract rational numbers.
			3	MC	2	I can multiply rational numbers and compare products and factors of rational numbers.
			4	MC	1	I can identify equivalent expressions of rational numbers.
			5	MC	1	I can convert fractions to terminating and repeating decimals.
			6	MC	2	I can add positive and negative integers to find temperature change.
			7	MC	2	I can add and multiply rational numbers to find a total amount. I can solve multi-step problems with multiplication and addition.
			8	CR	3	I can multiply fractions and integers to find the total number of coins.
RP Proportional Relationships G7	Ratio and Proportional Relationships	Analyze proportional relationships and use them to solve real-world and mathematical problems	1	MC	2	I can find a unit rate from a ratio of fractions for distance and time.
			2	MC	2	I can identify a proportional relationship and unit rate from a graph.
			3	MC	2	I can identify the rate of change from the graph of a proportional relationship.
			4	MC	2	I can identify an equation to represent a proportional relationship from a real-world problem.
			5	MC	2	I can calculate a discount and sales tax given the percent to find a total.
			6	MC	2	I can calculate a percent of decrease by subtracting a discounted price from an original price.
			7	CR	2	I can find the percent of a number or a total given the percent.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
SP Comparative Inferences G7	Statistics and Probability	Draw informal comparative inferences about two populations	1	MC	2	I can explain why variability is greater.
			2	SA	2	I can find and compare the mean absolute deviation of two sets of data.
			3	MS	2	I can compare data in two line plots.
			4	MC	2	I can compare data in two histograms.
			5	MS	2	I can interpret the meaning of mean absolute deviation.
			6	MC	2	I can make an inference comparing two line plots.
			7	MC	2	I can interpret a box-and-whisker plot to make an inference about two data sets.
			8	CR	3	I can use mean absolute deviation to compare sets of data.
SP Probability Models G7	Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models	1	MC	1	I can find the likelihood of an event occurring.
			2	MC	2	I can use probability to predict the number of items based on a sample.
			3	SA	1	I can determine simple theoretical probability.
			4	MC	2	I can find the probability of choosing a student from a group.
			5	MS	2	I can find the probability of a compound event.
			6	MC	2	I can make an organized list of the outcomes for a compound event.
			7	SA	2	I can interpret the results of a simulation to find probability.
			8	CR	2	I can find probability without replacement.
SP Random Sampling G7	Statistics and Probability	Use random sampling to draw inferences about a population	1	MC	2	I can determine a survey method that is unbiased.
			2	MS	2	I can determine a valid sample to represent a population.
			3	MC	2	I can use data from a sample to draw inferences about a population.
			4	SA	2	I can use sampling data to make an estimate about the population.
			5	MC	2	I can use survey results to make an inference.
			6	MC	2	I can use sampling data to estimate a population.
			7	MS	2	I can use sampling data to draw inferences about a population.
			8	CR	2	I can use sampling data to estimate the size of a population.

Grade 8 | Formative Item Sets

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
EE Linear Equations G8	Expressions and Equations	Understand the connections between proportional relationships, lines, and equations	1	MC	2	I can interpret a distance-time graph to calculate miles per hour.
			2	MC	2	I can compare the steepness of slopes from statements about proportional relationships.
			3	MC	2	I can identify the graph of a proportional relationship of cost per ounce.
			4	MC	1	I can find the unit rate from the graph of a proportional relationship.
			5	MC	2	I can find and compare unit rates from a table, description, equation, and graph.
			6	MC	2	I can identify the equation of a proportional relationship from a table.
			7	CR	3	I can compare the unit rate given in a statement to the slope from a graph.
EE Solve Equations Systems G8	Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations	1	MS	2	I can identify linear equations that have no solution.
			2	SA	1	I can solve equations involving the distributive property.
			3	MC	2	I can solve equations and identify an equation with the same solution.
			4	SA	1	I can identify the solution of a system of equations by reading a graph of two linear equations and locating the point of intersection.
			5	MC	1	I can solve a system of equations algebraically, with substitution or elimination.
			6	MS	2	I can identify a systems of equations that has an infinite number of solutions.
			7	MC	2	I can solve real-world problems by finding the solution of a system of equations.
			8	CR	2	I can solve real-world problems by finding the solution to an equation and a system of equations.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
EE Rad Integers Exponents G8	Expressions and Equations	Work with radicals and integer exponents	1	MC	2	I can apply the properties of integer exponents to generate equivalent expressions.
			2	MC	2	I can generate equivalent expressions from whole numbers and fractions using integer exponents.
			3	MC	2	I can use a formula to evaluate cube roots of perfect cubes to find side lengths.
			4	MC	2	I can apply the properties of integer exponents to generate equivalent expressions.
			5	MC	2	I can multiply whole numbers and numbers expressed in scientific notation.
			6	MC	1	I can convert numbers from standard form to scientific notation.
			7	CR	2	I can add numbers expressed in scientific form and make comparisons by finding percent.
F Functions G8	Functions	Define, evaluate, and compare functions	1	MC	1	I can identify a relation as a function from a set of ordered pairs.
			2	MC	1	I can determine the equation of a line from a graph or a table and interpret the slope.
			3	MC	2	I can evaluate and compare two functions from a statement and equation.
			4	MC	2	I can calculate the rate of change from a table of values and make comparisons.
			5	MC	2	I can compare two rates given in a statement and a graph.
			6	MS	2	I can define a function from two points and compare slopes and *y*-intercepts.
			7	MC	2	I can identify a function that is not linear from a set of ordered pairs.
			8	CR	2	I can define a function from a table of values and compare rates of change.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
F Model Relationships G8	Functions	Use functions to model relationships between quantities	1	MS	2	I can determine the rate of change and initial value in a linear relationship.
			2	SA	2	I can determine the initial value in a linear relationship given in a table.
			3	MC	2	I can identify the function of a relationship graphed on a coordinate plane.
			4	MC	2	I can look at a graph and determine where it is linear and decreasing.
			5	MC	2	I can identify the graph of a functional relationship based on a verbal description.
			6	MC	2	I can identify a graph based on a verbal description of its unit rate and initial value.
			7	CR	2	I can create a function to model data from a table.
G Transform Sim Congruency G8	Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software	1	SA	1	I can understand that line segments will be the same length after translations, rotations, and reflections.
			2	MC	1	I can understand that angles will have the same measure after translations, rotations, and reflections.
			3	MC	2	I can answer questions using properties of rotations of a figure on a coordinate plane.
			4	MC	2	I can identify a transformation of a two-dimensional figure on a coordinate plane given the pre-image and image.
			5	MC	2	I can determine the coordinates of a point on an image after a rotation and a dilation.
			6	MC	2	I can identify a sequence of transformations of a figure that results in the position of a given image of the original figure.
			7	MS	2	I can identify equations about the interior and exterior of a triangle that are true.
			8	CR	2	I can use transformations to prove triangles are congruent and similar.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
G Pythagorean Theorem G8	Geometry	Understand and apply the Pythagorean Theorem	1	MC	2	I can identify a set of side lengths that form a right triangle.
			2	MC	2	I can use the Pythagorean Theorem to find the length of one leg of a right triangle.
			3	MC	1	I can identify the expression that represents the hypotenuse of a right triangle on a grid.
			4	MC	2	I can apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
			5	SA	2	I can find the difference between the length of hypotenuse and the sum of the lengths of the legs of a right triangle in a coordinate system.
			6	CR	3	I can apply the Pythagorean Theorem to determine unknown side lengths in right triangles.
G Volume Cone Cyl Sphere G8	Geometry	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres	1	SA	1	I can determine the volume of spheres using formulas.
			2	MC	1	I can determine the volume of cones using formulas.
			3	MC	2	I can determine the volume of cones and cylinders using formulas.
			4	MS	2	I can compare the volume of cones, spheres, and cylinders.
			5	SA	2	I can solve a real-world mathematical problem involving determining the volume of cylinders.
			6	CR	3	I can solve a real-world mathematical problem involving determining the volume of cylinders and spheres.
NS Rational Irrat Numbers G8	The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers	1	MC	1	I can classify numbers as either rational or irrational.
			2	MS	2	I can recognize a fraction that contains a decimal expansion that terminates.
			3	MS	1	I can approximate the value of a square root.
			4	MC	2	I can approximate the location of a square root on a number line.
			5	SA	2	I can approximate irrational numbers using rational numbers.
			6	SA	2	I can approximate irrational numbers using rational numbers.
			7	CR	2	I can order rational and irrational numbers using approximation.

Name/Item Set	Domain	Cluster	Item Position	Item Type	DOK	Learning Target
SP Scatter Plots Tables G8	Statistics and Probability	Investigate patterns of association in bivariate data	1	MC	1	I can investigate patterns of association from a scatterplot.
			2	MC	2	I can interpret the line of best fit from a scatterplot of data to make a prediction.
			3	MC	1	I can interpret a scatterplot and find the line of best fit.
			4	MC	2	I can interpret the *y*-intercept of a linear model in the context of the problem.
			5	MC	2	I can interpret the slope of the equation of the best fitting line in the context of the problem.
			6	MC	2	I can read and interpret a two-way table of data to determine if an association exists.
			7	CR	2	I can interpret a two-way table of relative frequencies and determine possible associations.