

CLAIM 1: CONCEPTS AND PROCEDURES

TARGET GUIDE



GRADE
5

★ PRIORITY CLUSTER

TARGET A	Write and interpret numerical expressions.	5.OA.1 5.OA.2
TARGET B	Analyze patterns and relationships.	5.OA.3
★ TARGET C	Understand the place value system.	5.NBT.1 – 5.NBT.4
★ TARGET D	Perform operations with multi-digit whole numbers and with decimals to hundredths.	5.NBT.5 – 5.NBT.7
★ TARGET E	Use equivalent fractions as a strategy to add and subtract fractions.	5.NF.1 5.NF.2
★ TARGET F	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	5.NF.3 – 5.NF.7
TARGET G	Convert like measurement units within a given measurement system.	5.MD.1
TARGET H	Represent and interpret data.	5.MD.2
★ TARGET I	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.	5.MD.3 – 5.MD.5
TARGET J	Graph points on the coordinate plane to solve real-world and mathematical problems.	5.G.1 5.G.2
TARGET K	Classify two-dimensional figures into categories based on their properties.	5.G.3 5.G.4

SMARTER BALANCED ASSESSMENT VOCABULARY

GRADE
5

acute	hour	quart
area array		quotient
area model	inch	
array	interval	remainder
associative property		right
	kilogram(s) (kg)	right rectangular prism
centimeter(s)	kilometer(s)	round
coordinate pair		
coordinate plane	length	second
coordinate system	less than	sequence
coordinates	line of symmetry	sum
cube	line plot	symmetrical
cup	line segment(s)	
	liter(s) (L)	table
data set		time
denominator(s)	mass	
difference	measurement	unit fraction
digit(s)	meter(s)	
dividend	mile	value
divisor	milliliter(s)	volume
	minute	
equal to	mixed number(s)	weight
equation		width
equivalent	numerator(s)	word form
equivalent fractions		
expanded form	obtuse	x-axis
expression	ordered pair(s)	x-coordinate
	origin	
factor	ounce	y-axis
first quadrant		y-coordinate
foot	parallel	yard
fraction	pattern	
	pint	
gallon	pound	
gram(s) (g)	product	
greater than	perpendicular	
	point	

Grade 5 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target A: Write and interpret numerical expressions.

Content Domain: Operations and Algebraic Thinking

Claim 1 Priority Cluster

Standards Assessed in Target A:

5.OA.1: Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

5.OA.2: Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product.*

Achievement Level Descriptors

Level 1	Students should be able to evaluate numerical expressions that have either parentheses, brackets, or braces.
Level 2	Students should be able to write and evaluate numerical expressions having two non-nested sets of parentheses, brackets, or braces.
Level 3	Students should be able to write, evaluate, and interpret numerical expressions having any number of non-nested sets of parentheses, brackets, or braces.
Level 4	No Descriptor.

Construct-Relevant Vocabulary

dividend, divisor, factor, quotient, sum

Allowable Stimulus Materials

numerical and verbal expressions

Grade 5 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target B: Analyze patterns and relationships.

Content Domain: Operations and Algebraic Thinking

Claim 1 Priority Cluster

Standards Assessed in Target B:

5.OA.3: Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

Achievement Level Descriptors

Level 1	Students should be able to generate two numerical patterns using two given rules involving addition, subtraction, or multiplication.
Level 2	Students should be able to generate two numerical patterns using two given rules involving all operations. When working with two whole number numerical patterns, they should be able to graph the corresponding whole number ordered pairs on the coordinate plane.
Level 3	Students should be able to compare and analyze two related numerical patterns and explain the relationship within sequences of ordered pairs, and they should be able to graph the ordered pairs on the coordinate plane.
Level 4	Students should be able to compare two related numerical patterns and explain the relationship within sequences of ordered pairs that are rational numbers.

Construct-Relevant Vocabulary

coordinates, ordered pairs, pattern, sequence

Allowable Stimulus Materials

coordinate plane model in quadrant I only

Grade 5 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target C: Understand the place value system.

Content Domain: Numbers and Operations in Base Ten

Claim 1 Priority Cluster

Standards Assessed in Target C:

5.NBT.1: Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $1/10$ of what it represents in the place to its left.

5.NBT.2: Explain patterns in the number of zeroes of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

5.NBT.3: Read, write, and compare decimals to thousandths.

a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.

b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.

5.NBT.4: Use place value understanding to round decimals to any place.

Achievement Level Descriptors

Level 1	Students should be able to read and write decimals to the thousandths using base-ten numerals, number names, and expanded form and round decimals to the hundredths.
Level 2	Students should be able to use repeated reasoning to understand that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $1/10$ of what it represents in the place to its left. They should be able to explain patterns in numbers of zeroes and/or placement of a decimal point when a number is multiplied or divided by 10.
Level 3	Students should be able to use whole-number exponents to denote powers of 10; use repeated reasoning to understand and explain patterns in numbers of zeroes and/or placement of a decimal point when a number is multiplied or divided by powers of 10; read, write, and compare two decimals to the thousandths using base-ten numerals, number names, and expanded form, using the symbols $>$, $=$, and $<$ to record the results of the comparison; and round decimals to any place.
Level 4	Students should be able to combine multiplying by powers of 10, comparing, and rounding to highlight essential understandings.

Construct-Relevant Vocabulary

digit, equal to, equivalent, expanded form, expression, greater than, less than, round, value, word form

Allowable Stimulus Materials

$>$, $<$, or $=$ symbols; multi-digit numbers less than or equal to 1,000,000; base-ten models; decimals to the thousandths (except when rounding, which can be to the hundredths)

Grade 5 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target D: Perform operations with multi-digit whole numbers and with decimals to hundredths.

Content Domain: Numbers and Operations in Base Ten

Claim 1 Priority Cluster

Standards Assessed in Target D:

5.NBT.5: Fluently multiply multi-digit whole numbers using the standard algorithm.

5.NBT.6: Find 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. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

5.NBT.7: Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Achievement Level Descriptors

Level 1	Students should be able to multiply one- and two-digit whole numbers and find whole-number quotients of whole numbers with up to three-digit dividends and one-digit divisors, using arrays or area models. They should be able to perform the four operations on decimals to the tenths and a whole number, e.g., 1.3×7 .
Level 2	Students should be able to multiply three- and four-digit whole numbers; find whole-number quotients of whole numbers with up to three-digit dividends and two-digit divisors; and perform the four operations on decimals to the tenths or on decimals to the hundredths and a whole number, e.g., 3.42×12 .
Level 3	Students should be able to fluently multiply multi-digit whole numbers using the standard algorithm, find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, and perform the four operations on decimals to the hundredths. They should be able to relate the strategy to a written method and explain the reasoning used.
Level 4	No Descriptor.

Construct-Relevant Vocabulary

area model, array, dividend, divisor, equation, factor, product, quotient, remainder

Allowable Stimulus Materials

base-10 array model, equations

Grade 5 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target E: Use equivalent fractions as a strategy to add and subtract fractions.

Content Domain: Numbers and Operations - Fractions

Claim 1 Priority Cluster

Standards Assessed in Target E:

5.NF.1: Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.)*

5.NF.2: Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result $2/5 + 1/2 = 3/7$, by observing that $3/7 < 1/2$.*

Achievement Level Descriptors

Level 1	Students should be able to add two fractions and mixed numbers with unlike denominators and subtract two fractions with unlike denominators when one denominator is a factor of the other in mathematical problems (denominators < 12). They should be able to use benchmark fractions (1/4s and 1/2s) and number sense with fractions to estimate mentally and assess the reasonableness of answers.
Level 2	Students should be able to add fractions and mixed numbers with unlike denominators (denominators ≤12) in mathematical problems, subtract a mixed number from a whole number (denominators up to 4), and use benchmark fractions to estimate mentally and assess the reasonableness of answers (denominators ≤12).
Level 3	Students should be able to add and subtract fractions and mixed numbers with unlike denominators in word problems and use number sense of fractions to estimate mentally and assess the reasonableness of answers.
Level 4	No Descriptor.

Construct-Relevant Vocabulary

denominators, equivalent fractions, mixed numbers, numerators

Allowable Stimulus Materials

visual fraction models, equations

Grade 5 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target F: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Content Domain: Numbers and Operations - Fractions

Claim 1 Priority Cluster

Standards Assessed in Target F:

5.NF.3: Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

5.NF.4: Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)*

b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5.NF.5: Interpret multiplication as scaling (resizing), by:

a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.

5.NF.6: Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

5.NF.7: Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.

b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.*

c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally?

Achievement Level Descriptors

Level 1	Students should be able to apply their previous understandings of multiplication to multiply a fraction by a fraction; know the effect that whole number multiplication has on fractions; use or create visual models when multiplying a whole number by a fraction between 0 and 1; and interpret and perform division of a whole number by $\frac{1}{2}$ or $\frac{1}{3}$.
Level 2	Students should be able to multiply a whole number by a mixed number; know the effect that a fraction greater than or less than 1 has on a whole number when multiplied; use or create visual models when multiplying two fractions between 0 and 1; extend their previous understandings of division to divide a unit fraction by a whole number; and understand that division of whole numbers can result in fractions.
Level 3	Students should be able to multiply a mixed number by a mixed number; know the effect that a fraction has on another fraction when multiplied (proper and improper fractions); use or create visual models when multiplying two fractions, including when one fraction is larger than 1; and interpret and perform division of any unit fraction by a whole number.
Level 4	Students should be able to understand and use the fact that a fraction multiplied by 1 in the form of $\frac{a}{a}$ is equivalent to the original fraction.

Construct-Relevant Vocabulary

denominator, difference, equivalent, fraction, mixed number, numerator, product, sum

Allowable Stimulus Materials

visual fraction models (circles, rectangles, tape diagrams, number lines)

Grade 5 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target G: Convert like measurement units within a given measurement system.

Content Domain: Measurement and Data

Claim 1 Priority Cluster

Standards Assessed in Target G:

5.MD.1: Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Achievement Level Descriptors

Level 1	Students should be able to convert a whole number metric measurement to a different metric measurement resulting in a whole number; and convert a whole number customary measurement to a different customary measurement resulting in a whole number.
Level 2	Students should be able to convert a metric measurement to the tenths place to a different metric measurement and convert a standard measurement given to the $\frac{1}{4}$ unit (fractions/mixed numbers) from a larger measurement unit to a smaller one.
Level 3	Students should be able to convert like measurements within a system using whole numbers, fractions (standard system), and decimals (metric system).
Level 4	No Descriptor.

Construct-Relevant Vocabulary

centimeter, cup, foot, gallon, gram, hour, inch, kilogram, kilometer, length, liter, mass, meter, mile, milliliter, minute, ounce, pint, pound, quart, second, time, weight, yard

Allowable Stimulus Materials

None

Grade 5 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target H: Represent and interpret data.

Content Domain: Measurement and Data

Claim 1 Priority Cluster

Standards Assessed in Target H:

5.MD.2: Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*

Achievement Level Descriptors

Level 1	Students should be able to make a line plot and represent data sets in whole units.
Level 2	Students should be able to make a line plot and display data sets in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$).
Level 3	Students should be able to interpret a line plot to display data sets in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$) and solve problems using information from line plots that require addition, subtraction, and multiplication of fractions.
Level 4	No Descriptor.

Construct-Relevant Vocabulary

data set, interval, line plot, measurement, mixed number, table, unit fraction

Allowable Stimulus Materials

line plots, tables

Grade 5 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target I: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Content Domain: Measurement and Data

Claim 1 Priority Cluster

Standards Assessed in Target I:

5.MD.3: Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.

b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

5.MD.4: Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

5.MD.5: Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

a. Find the volume of a right rectangular prism with whole number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.

b. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems.

c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

Achievement Level Descriptors

Level 1	Students should be able to use unit cubes to find the volume of rectangular prisms with whole number edge lengths.
Level 2	Students should be able to understand the concept that the volume of a rectangular prism packed with unit cubes is related to the edge lengths.
Level 3	Students should be able to use the formulas $V = l \times w \times h$ and $V = b \times h$ to find the volume of rectangular prisms. They should be able to find the volume of two non-overlapping right rectangular prisms.
Level 4	Students should be able to find the volume of a right rectangular prism after doubling the edge length of a side and compare it to the original.

Construct-Relevant Vocabulary

area array, associative property, cube, length, right rectangular prism, volume, width

Allowable Stimulus Materials

right rectangular prism models

Grade 5 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target J: Graph points on the coordinate plane to solve real-world and mathematical problems.

Content Domain: Geometry

Claim 1 Priority Cluster

Standards Assessed in Target J:

5.G.1: Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

5.G.2: Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Achievement Level Descriptors

Level 1	Students should be able to graph whole number coordinate pairs in the first quadrant of a coordinate plane with unit axis increments.
Level 2	Students should be able to graph whole number coordinate pairs on a coordinate plane with whole number axis increments to solve problems.
Level 3	Students should be able to graph coordinate pairs where one term is a whole number and one is a fraction on a coordinate plane with whole number axis increments.
Level 4	Students should be able to graph coordinate pairs where both terms are fractions on a coordinate plane with fractional axis increments.

Construct-Relevant Vocabulary

coordinate pair, coordinate plane, coordinate system, first quadrant, ordered pair, origin, point, x-axis, x-coordinate, y-axis, y-coordinate

Allowable Stimulus Materials

visual coordinate plane

Grade 5 Smarter Balanced Assessment Item Specifications Fact Sheet

Claim 1 - Target K: Classify two-dimensional figures into categories based on their properties.

Content Domain: Geometry

Claim 1 Priority Cluster

Standards Assessed in Target K:

5.G.3: Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*

5.G.4: Classify two-dimensional figures in a hierarchy based on properties.

Achievement Level Descriptors

Level 1	No Descriptor.
Level 2	Students should be able to classify two-dimensional figures into categories by their attributes or properties.
Level 3	Students should be able to classify two-dimensional figures into subcategories by their attributes or properties.
Level 4	No Descriptor.

Construct-Relevant Vocabulary

acute, line of symmetry, line segments, obtuse, parallel, perpendicular, right, symmetrical,

Allowable Stimulus Materials

grid, two-dimensional figures, points, lines, line segments, angles