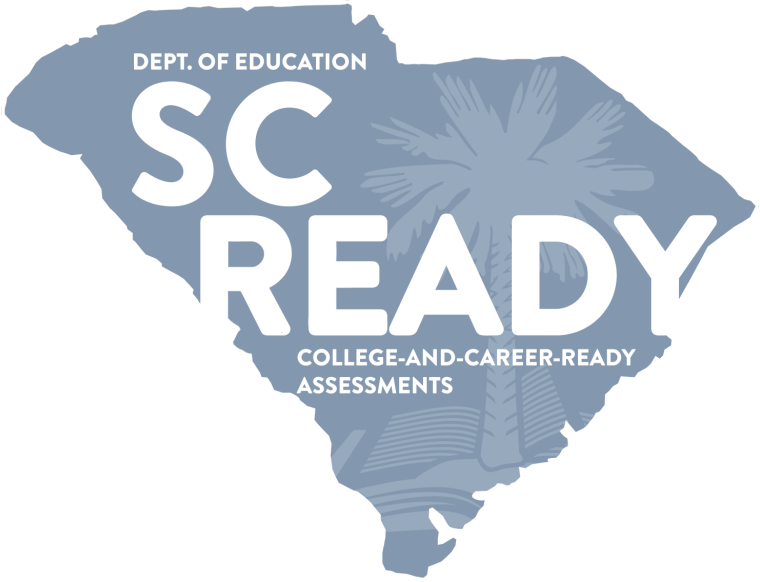
SOUTH CAROLINA
DEPARTMENT OF EDUCATION



Mathematics Assessment Specifications for Teachers
6th Grade

Office of Assessment and Standards

Updated September 2025

South Carolina Department of Education

Contents

Introduction

The SC READY Mathematics Assessment Specifications for Teachers is based upon the development of the South Carolina College- and Career-Ready Assessments (SC READY) that measures the 2025 South Carolina College- and Career-Ready (SC CCR) Mathematics Standards. The assessment specifications provide important information regarding the content to be measured. The assessment specifications also serve as a road map to guide South Carolina educators in the development and subsequent review of test items that best measure the 2025 SC CCR Math Standards for a given grade-level. These documents are intended as a guide for test item developers working in and with the Office of Assessment and Standards and not as a curriculum or instructional guide. The information found within these documents reflects the content limits and the foundational knowledge targets addressed by the state assessment. *Please note: This document is reviewed and updated annually to ensure alignment with current standards and assessment practices*.

Each test item specification is aligned to the given strand, standard, and grade-level indicator, and includes the following key information:

- Example Tasks
- Assessment Guidelines
- Webb's Depth of Knowledge (DOK) or cognitive level(s)
- Item types

Assessment Specifications Descriptions

Strands: This document is divided into four major strands: Data, Probability, and Statistical Reasoning (DPSR); Measurement, Geometry, and Spatial Reasoning (MGSR); Numerical Reasoning (NR); and Patterns, Algebra, and Functional Reasoning (PAFR).

Standards and Indicators: According to the *Procedures for Cyclical Review of South Carolina Academic Standards*, "academic standards are statements of the most important, consensually determined expectations for student learning in a particular discipline. Each of the newly revised South Carolina standards statements will be supported by specific instructional objectives called indicators" (Barton & Spearman, 2016). Each standard contains one or more vertically articulated grade-level indicators. The grade-level indicators set the end-of-year learning expectation.

***Math Vocabulary for Assessment*:** The words included are academic terms related to the assessment. It is important to note that the Math Vocabulary for Assessment is *not an exhaustive list*.

Indicator Insights: Indicator Insights provide an understanding of the indicator for the classroom teacher. These insights provide teachers with clarifying information about the expectations and/or the content of the indicator. Some insights may provide connections to indicators in other standards or strands.

Example Tasks: The intent of this section is to describe examples of how the attached indicator may be assessed. The example tasks are *not an exhaustive list*.

Assessment Guidelines: Parameters that define the learning expectations. These guidelines provide a measurable framework for assessing student's knowledge, skills, and abilities, however, classroom work *should extend beyond these limits*. Prior knowledge such as key words/terms, phrases, classifications, etc., from previous grade level standards is an expectation and may be assessed in test items.

Depth of Knowledge (DOK): Depth of knowledge involves the cognitive complexity, or the nature of thinking, required for a given test item. Webb's DOK levels are used in the development of test items to assess cognitive demand. Therefore, when developing test items with DOK in mind, each test item should be as demanding cognitively as what the actual standard describes. Webb's DOK includes four levels, arranged from low (basic recall) to high (extended thinking). Each test item in the SC READY Mathematics assessment is written to one of the following three levels of cognitive complexity:

- Level 1: Recall
- Level 2: Application of a Skill/Concept
- Level 3: Strategic Thinking

Item Types: The SC READY Mathematics assessments are composed of various test item types

- **Selected-Response (SR) Items:** Students are presented with a test item and four possible answer options. Students demonstrate their knowledge by selecting the one correct answer. A correct response to an SR test item is worth one score point in the SC READY Mathematics assessment.
- **Multi-Select (MS) Items**: Students are presented with a test item and 5-6 possible answer options. Students demonstrate their knowledge by selecting only the two correct answers.
- **Technology-Enhanced (TE) Items:** TE items share the same functional structure as traditional test items. All test items are worth one score point. TE items include, but are not limited to, the following:

Type of Item	Description
Drag and Drop Input	Students click on selectable objects and sort them into groups, steps, or other arrangements to demonstrate their knowledge. Some examples of selectable objects include single numerical values, numerical expressions or equations, algebraic equations or expressions, graphs, statements, operational signs, geometric figures, and tables.
Drop-Down Input	Students are expected to select their response from a drop-down list or drop-down menu.
Hot Spot	Students interact with selectable objects to demonstrate their knowledge, skills, and abilities to answer a question. Selectable objects include whole or parts of figures, graphs, tables, verbal descriptions, or symbolic representations.
Matching	Students demonstrate their knowledge by connecting a line from each response in a set of graphics on the left side of the screen to a response in a set of graphics on the right side of the screen.
Match Interaction Table	Students are presented with a matrix consisting of mathematical or English statements across the columns and rows. Students demonstrate their knowledge by selecting one or more correct answers per row to associate correct statements in the matrix.

- **Technology-Enhanced (TE) Constructed-Response Items**: TE Constructed-Response items require students to construct their own response, rather than selecting from predetermined options. All test items are worth one score point. TE Constructed-Response items include, but are not limited to, the following:

Type of Item	Description
Angle Draw Input	Students are presented with a horizontal line. The students demonstrate their knowledge by drawing an appropriate angle as the response.
Graphing Input	The student is presented with a graph. The student is expected to respond by plotting points, drawing a line, or labeling parts of the graph.

Type of Item	Description
Keypad Input	Students are presented with a test item. The student is asked to respond by writing their numerical answer or writing a mathematical expression or equation to answer the test item.
Number Line Input	The student is presented with a number line. The student is expected to respond by plotting points, drawing a line, or labeling parts of the number line.
Statistical Graph Response	Students are presented with a test item. The students demonstrate their knowledge by constructing bar graphs or histograms to answer statistical test items.

Calculator

The SC READY Mathematics Grades 6 – 8 assessment has two sections. A No Calculator section followed by a Calculator section. The No Calculator section, where students may not use a calculator, will be presented first. The second section will be the Calculator section where students may use calculators. Grade 6 students will have access to both the Desmos four-function (basic) and scientific calculators that are embedded into the online testing platform. Students may also use a handheld four-function or scientific calculator on the SC READY Mathematics assessment. Guidance on calculator use during testing can be found on the Calculator Requirements page.

Note: *Any* indicator may be assessed on *either* section of the test—unless the indicator specifically designates otherwise.

Editorial Suggestions

If you have editorial suggestions for annual edits on this document, please complete our form: Mathematics Assessment Specifications for Teachers Editorial Suggestions located on our Quick Links for Teachers page, or scan the QR code.

Acknowledgment

The SCDE Office of Assessment and Standards would like to thank the South Carolina teachers and content specialists who have served on our various assessment committees. Without your expertise and input, this resource would not have been possible.

Data, Probability, and Statistical Reasoning (DPSR)

Standard 6.DPSR.1

Analyze data sets to identify their statistical elements.

Math Vocabulary for Assessment: sample size, box plot, data set, median, upper and lower extreme, quartiles (first, second, third, fourth), measure of spread and center, statistical measure, right skew, left skew, symmetric, uniform, bimodal, outliers, interquartile range

Indicator	**6.DPSR.1.1** Identify the sample size for a numerical set of data in mathematical and real-world situations.
Indicator Insight	This is the introduction to the term sample size.
	Assessment Specifications
Example Tasks	Students will be able to • find sample size given a numerical data set. • determine the sample size given a description of a real-world situation.
Assessment Guidelines	Students are not expected to determine sample size from data displays. Students are expected to be comfortable working with data sets involving any positive rational numbers.
DOK(s)	1
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.DPSR.1.2** Create box plots to represent numerical data sets in mathematical and real-world situations
Indicator Insight	This is the first exposure to box plots. Use the terms *upper extreme* and *lower extreme* rather than maximum and minimum. Teach using data displays, not just numerical sets. Make connections between the second quartile and the median.
Assessment Specifications	
Example Tasks	Students will be able to • find the upper and lower extremes, first and third quartiles, and median from a numerical data set or data display. • create a box plot to represent a data set. • connect median to second quartile.
Assessment Guidelines	Students are expected to work with mathematical and real-world situations. Students are expected to solve problems that involve tables and dot plots, but not double dot plots. Assessment should focus on numerical data sets with positive whole numbers. When calculating first and third quartile, the median is excluded.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.DPSR.1.3** Use the shape of the graph to determine whether median or mode best describes the data set
Indicator Insight	This indicator introduces spread and center. The shape includes right skew, left skew, symmetric, uniform, bimodal (two modes), and outliers. This is the introduction to outliers. Discuss how outliers affect the data
6.DPSR.1.2	**Assessment Specifications**
Example Tasks	Students will be able to • identify the shape of a data display • determine whether median or mode is more appropriate to describe the data based on the shape.
Assessment Guidelines	Note: A data point that is an outlier in a test item should be obviously more than 1.5 times the IQR below Q1 or above Q3. Assessment should be limited when given numerical data to positive rational numbers (decimals to the hundredths).
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.DPSR.1.4** Calculate and interpret the median, mode, range, interquartile range in mathematical and real-world situations.
Indicator Insight	Compare differences between median and mode. Include positive rational numbers in the data sets.
6.DPSR.1.2	**Assessment Specifications**
Example Tasks	Students will be able to • calculate median, mode, range, and interquartile range. • interpret median, mode, range, and interquartile range in mathematical and real-world situations.
Assessment Guidelines	Students are expected to be exposed to rational numbers not just integers.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Standard 6.DPSR.2

Calculate and interpret probability.

Math Vocabulary for Assessment: probability, simple event, random, likelihood, impossible, unlikely, equally likely, likely, certain, complement

Indicator	**6.DPSR.2.1** Given the probability of a random event, expressed as a number from 0 to 1, state the likelihood of the event occurring.
Indicator Insight	Likelihood is defined as: certain (probability of 1), impossible (probability of 0), likely, equally likely, or unlikely. Probabilities closer to 1 being likely, and those closer to 0 being unlikely events. Probability can be written as a fraction, decimal, or percent. *Likelihood* was introduced in third grade.
6.DPSR.2.1	**Assessment Specifications**
Example Tasks	Students will be able to state the likelihood of an event using appropriate vocabulary.
Assessment Guidelines	Students are expected to be familiar with seeing probabilities given as fractions, decimals, or percents. Students should not have mixed presentations of numbers in one test item. Assessments should focus on likelihood defined as certain (probability of 1), impossible (probability of 0), likely, equally probable, or unlikely. Probabilities closer to 1 being likely, and those closer to 0 being unlikely events.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.DPSR.2.2** Find the probability of simple events in mathematical and real-world situations. Limit denominators to 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.
Indicator Insight	In Grade 5, finding probabilities of simple events (as fractions only) was introduced. Probability can be written as a fraction, decimal, or percent.
6.DPSR.2.2	**Assessment Specifications**
Example Tasks	Students will be able to find the probability of simple events.
Assessment Guidelines	Assessments should focus on fractions with denominators of 2, 4, 5, 8, 10, 20, 25, 50, and 100.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.DPSR.2.3** Given the probability of an event, identify and calculate the complement of that event.
Indicator Insight	The probabilities of complementary events add up to 1.
Assessment Specifications	
Example Tasks	Students will be able to • identify the complement of an event. • calculate the probability of the complement of an event when given the probability of the event. • recognize that the probability of an event and the probability of the complement of the event add to 1.
Assessment Guidelines	Students are expected to be exposed to rational numbers not just integers.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Measurement, Geometry, and Spatial Reasoning (MGSR)

Standard 6.MGSR.1

Determine the measurements of geometric figures.

Math Vocabulary for Assessment: parallelogram, trapezoid, compose/decompose, two and three dimensional, right rectangular prism (incl. cubes), right triangular prism, right rectangular pyramid (incl. square pyramid), right triangular pyramid, net, surface area, volume, composite figure, base, lateral side, square units, cubic units, expression

Indicator	**6.MGSR.1.1** Find the area of a triangle, square, rectangle, parallelogram, and trapezoid.
Indicator Insight	Use composition and decomposition of the shapes as well as applications of properties and formulas. Find actual measurements using rulers to continue the practice from elementary grades. A trapezoid is defined as a quadrilateral with exactly one pair of parallel sides.
Assessment Specifications	
Example Tasks	Students will be able to • find the area of 2D shapes using formulas and/or decomposition into other shapes. • find the missing side length of a 2D shape using formulas and/or decomposition.
Assessment Guidelines	Students are expected to be able to measure side lengths using a ruler before finding the area. Students will be expected to use the embedded online ruler found on the Online Tutorial Training (OTT) from the DRC Insight Assessment platform. Students are expected to be able to solve problems involving fractional edge lengths. Students are not provided the formulas in a reference sheet or in the items. Assessment should be limited in terms of products and quotients of positive fractions and mixed numbers.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.MGSR.1.2** Create nets to represent three-dimensional shapes
Indicator Insight	Include prisms and pyramids. Some examples should include labeled side measures
Assessment Specifications	
Example Tasks	Students will be able to create nets to represent three-dimensional shapes.
Assessment Guidelines	Students are expected to see prisms and pyramids with and without labels. Assessment should focus on rectangular prisms, right triangular prisms, rectangular pyramids, and right triangular pyramids.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.MGSR.1.3** Calculate the surface area of right rectangular prisms, right triangular prisms, right rectangular pyramids, and right triangular pyramids using two-dimensional nets.
Indicator Insight	Connect through patterns to the formula for surface area. Procedural use of the formula is not an expectation of this indicator. Find actual measurements of some nets using rulers to continue the practice from elementary grades.
6.MGSR.1.2	**Assessment Specifications**
Example Tasks	Students will be able to find the surface area of 3D shapes using nets.
Assessment Guidelines	Students are expected to be able to measure side lengths using a ruler before finding the surface area. Students will be expected to use the embedded online ruler found on the Online Tutorial Training (OTT) from the DRC Insight Assessment platform. Students are **not** provided the formulas in a reference sheet or in the items. Assessment should focus on rectangular prisms, right triangular prisms, rectangular pyramids, and right triangular pyramids.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.MGSR.1.4** Find the area of composite figures by decomposing them into triangles and rectangles to solve mathematical and real-world situations.
Indicator Insight	In fifth grade, students found perimeter and area of composite figures composed of rectangles
Assessment Specifications	
Example Tasks	Students will be able to decompose a composite shape to find the area.
Assessment Guidelines	Students are expected to be able to decompose using triangles and rectangles – decomposing using triangles is new for 6th grade. Students are **not** provided the formulas in a reference sheet or in the items.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.MGSR.1.5** Calculate the volume of a right rectangular prism using the formula (V = Bh) in mathematical and real-world situations.
Indicator Insight	In fifth grade, students explored volume conceptually by filling right rectangular prisms with unit cubes and multiplying the number of unit cubes in the lowest layer (area of the base) by the number of layers of cubes (height of the prism). In sixth grade, students are deepening and applying their understanding of volume.
Assessment Specifications	
Example Tasks	Students will be able to • find the volume of a right rectangular prism. • find a missing side length given a volume and other dimensions.
Assessment Guidelines	Students are expected to see problems with rational side lengths. Students are not provided the formulas in a reference sheet or in the items.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Standard 6.MGSR.2

Determine angle and/or side relationships.

Math Vocabulary for Assessment: complementary angles, supplementary angles, protractor

Indicator	**6.MGSR.2.1** Determine if two angles are complementary or supplementary.
Indicator Insight	Relate supplementary angles to the measure of straight angles and the measure of complementary angles to right angles. This is the students' first exposure to *complementary* and *supplementary*.
6.MGSR.2.1	**Assessment Specifications**
Example Tasks	Students will be able to • identify supplementary angles. • identify complementary angles. • find the angle measure of a supplementary angle or a complementary angle. • explain why two angles are not supplementary or complementary. • explain why two angles are supplementary or complementary.
Assessment Guidelines	Students are expected to solve problems involving adjacent angles and non-adjacent angles. Assessment should focus on angle measures that are positive whole numbers.
DOK(s)	1, 2,
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.MGSR.2.2** Determine the measure of angles using a protractor.
Indicator Insight	Include straight angles when addressing this indicator. This is the students' first time using a protractor.
6.MGSR.2.2	**Assessment Specifications**
Example Tasks	Students will be able to • measure an angle with a protractor. • identify and create acute, obtuse, straight and right angles. • create angles of a specific measure.
Assessment Guidelines	Students are expected to measure angles to the nearest whole number. Students will be expected to use the embedded online protractor found on the Online Tutorial Training (OTT) from the DRC Insight Assessment platform.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Standard 6.MGSR.3

Graph on the coordinate plane.

Math Vocabulary for Assessment: coordinate plane, Quadrant I, II, III, IV, ordered pair, origin, coordinates, x-axis, y-axis

Indicator	**6.MGSR.3.1** Plot ordered pairs in all four quadrants and identify points on a graph by writing ordered pairs.
Indicator Insight	This is the students' first introduction to all four quadrants. The first quadrant of the coordinate plane was introduced in fifth grade. Label quadrants using Roman numerals. Given a point on the graph, students need to be able to identify the ordered pair as well as graph the ordered pairs.
6.MGSR.3.1	**Assessment Specifications**
Example Tasks	Students will be able to • plot points given an ordered pair. • write ordered pairs when given points. • identify quadrants by name using Roman numerals.
Assessment Guidelines	Assessment should focus on ordered pairs involving integers and graphs that show all four quadrants.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.MGSR.3.2** Graph a polygon on a coordinate plane given the coordinates of the vertices.
Indicator Insight	Include the use of a table (horizontal and vertical) when graphing points (x, y).
Assessment Specifications	
Example Tasks	Students will be able to • graph a polygon given the coordinates of the vertices. • determine the coordinates of a point to create a polygon.
Assessment Guidelines	Students are expected to see vertices in tables both horizontally and vertically. Assessment should focus on ordered pairs involving integers.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Numerical Reasoning (NR)

Standard 6.NR.1

Translate among multiple representations of rational numbers.

Math Vocabulary for Assessment:
terminating decimal, percent

Indicator	**6.NR.1.1** Convert positive rational numbers into equivalent forms among terminating decimals, fractions (including mixed numbers), and percentages. Limit fractions to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.
Indicator Insight	The expectation of this indicator excludes the conversion of repeating decimals to fractions. This indicator is students' first introduction to percentages.
6.NR.1.1	**Assessment Specifications**
Example Tasks	Students will be able to • convert between terminating decimals and fractions. • convert between fractions and percents. • convert between terminating decimals and percents
Assessment Guidelines	Students are expected to see examples with mixed numbers as well. Assessment should focus on positive rational numbers. Fraction denominators should focus on 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Standard 6.NR.2

Utilize rational numbers in mathematical and real-world situations

Math Vocabulary for Assessment: ascending/descending, real number, rational number, is equal to (=), is not equal to (≠), is less than (<), is greater than (>), integers, opposite, positive/negative, absolute value

Indicator	**6.NR.2.1** Compare two positive rational numbers and write statements using the symbols for is equal to (=), is not equal to (≠), is less than (<) in mathematical and real-world situations. Limit fractions to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.
Indicator Insight	Comparisons should include real-world situations
Assessment Specifications	
Example Tasks	Students will be able to • compare two positive rational numbers. • write statements of comparison for two positive rational numbers involving the symbols =, > or <.
Assessment Guidelines	Students are expected to be familiar with seeing a variety of forms of rational numbers including integers, fractions, mixed numbers, and decimals when comparing two rational numbers. Students are not expected to know how to convert repeated decimals to fractions. Assessment should focus on statements that include the symbols =, ≠, <, or > and limit fractions to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200. Students are expected to see items with and without context.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.NR.2.2** Sort a set of positive rational numbers in ascending and/or descending order in mathematical and real-world situations. Limit sets to no more than 5 numbers. Limit fractions to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.
Indicator Insight	Use number lines to help students visualize placing positive rational numbers in order.
6.NR.2.2	**Assessment Specifications**
Example Tasks	Students will be able to • sort positive rational numbers in ascending and/or descending order. • explain the reasoning behind a particular ordering of positive rational numbers.
Assessment Guidelines	Students are expected to be familiar with seeing a variety of forms of rational numbers including integers, fractions, mixed numbers, and decimals in the same set of numbers to order. Students are not expected to know how to convert repeated decimals to fractions. Assessments should focus on sets of at most 5 numbers with fractions limited to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.NR.2.3** Represent quantities with integers in real-world situations and explain the meaning of zero.
Indicator Insight	This is an introduction to the understanding of negative numbers and zero. Explain how integers and rational numbers fit into the Real Number System. Model integers using concrete materials, drawings, number lines (horizontal and vertical), symbols, and words.
6.NR.2.3	**Assessment Specifications**
Example Tasks	Students will be able to • represent quantities in real-world situations with negative numbers • explain the meaning of zero based on a real-world situation.
Assessment Guidelines	Students are not expected to solve addition or subtraction problems in this standard but have more of a conceptual understanding of negative numbers and zero in context. Assessment should focus on integers only.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.NR.2.4** Identify and compare the opposite value and absolute value of positive and negative rational numbers.
Indicator Insight	Use horizontal and vertical number lines to explain concepts of opposite and absolute value. Represent opposite and absolute value numbers with real-world situations such as temperature, financial literacy, and distances. This is the introduction to absolute value.
6.NR.2.4	**Assessment Specifications**
Example Tasks	Students will be able to • identify opposite values of rational numbers. • identify absolute values of rational numbers. • compare opposites and/or absolute values of rational numbers
Assessment Guidelines	Students are expected to be exposed to both horizontal and vertical number lines. Students are expected to be familiar with seeing a variety of forms of rational numbers including integers, fractions, mixed numbers, and decimals. Students are not expected to know how to convert repeated decimals to fractions. Assessment should focus on statements that include the symbols =, <, or > and limit fractions to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Patterns, Algebra, and Functional Reasoning (PAFR)

Standard 6.PAFR.1

Use tables, graphs, verbal descriptions, or equations to represent a function.

Math Vocabulary for Assessment: independent variable, dependent variable, function, input/output table, function table

Indicator	**6.PAFR.1.1** Use tables, graphs, verbal descriptions, and equations to represent the relationship between independent and dependent variables of functions.
Indicator Insight	This is an introduction to functions and the relationship between *independent (input)* and *dependent (output)* variables. Fifth grade introduced function tables as input/output tables.
6.PAFR.1.1	**Assessment Specifications**
Example Tasks	Students will be able to • represent the relationship between independent and dependent variables in a form. • translate from one representation of a function to another representation of a function.
Assessment Guidelines	Students should be familiar working with multiple forms of functions including tables, graphs, verbal descriptions, and equations.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.1.2** Identify the independent and dependent variable of a function in mathematical and real-world situations
Indicator Insight	Use multiple representations of functions. Connect *independent variables* to *input* and *dependent variables* to *output* (from *input/output tables*).
Assessment Specifications	
Example Tasks	Students will be able to • identify the independent and dependent variable of a function. • compare the independent and dependent variables to input and output.
Assessment Guidelines	Students are expected to see items with and without context.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Standard 6.PAFR.2

Write, simplify, and evaluate algebraic expressions; write and solve algebraic equations and inequalities.

Math Vocabulary for Assessment: numerical expression, algebraic expression, equation, Order of Operations, inequality, solution, sum, difference, term, variable, product, factor, quotient, coefficient, constant, power, exponent, base, squared, cubed, ratio, rate, unit rate, dimensional analysis, metric system, customary system

Indicator	**6.PAFR.2.1** Identify parts of an algebraic expression using the mathematical terms *sum, difference, term, variable, product, factor, quotient, coefficient, and constant*.
Indicator Insight	This indicator is the introduction to terms associated with algebraic expressions.
6.PAFR.2.1	**Assessment Specifications**
Example Tasks	Students will be able to • identify parts of an algebraic expression using mathematical terms. • write an algebraic expression containing specific mathematical characteristics.
Assessment Guidelines	Students are expected to know the following vocabulary: sum, difference, term, variable, product, factor, quotient, coefficient, and constant. Assessment should focus on expressions with terms with two factors at most, positive integer coefficients, and variables with an exponent of 1.
DOK(s)	1
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.2.2** Write and evaluate numerical expressions containing powers. Limit to positive whole number bases and positive whole number exponents
Indicator Insight	This indicator extends the understanding of exponents beyond powers of 10 introduced in fifth grade. Identify the parts of a power.
Assessment Specifications	
Example Tasks	Students will be able to • rewrite expressions containing powers. • evaluate expressions containing powers
Assessment Guidelines	Students are not expected to solve items in this standard using Order of Operations or Laws of Exponents. Assessment should focus on numerical expressions with positive whole number bases and positive whole number exponents. Items should include powers and/or multiplication only. For example, $4 \cdot 4 \cdot 4 = 4^3 = 64$, as this is students' introduction to exponents beyond powers of 10.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.2.3** Evaluate numerical expressions with positive whole number bases and positive whole number exponents using the Order of Operations
Indicator Insight	This is where students are formally introduced to the Order of Operations. Grouping symbols such as brackets and parentheses should be used in the expressions. Only parentheses were used in fifth grade. Provide opportunities to build conceptual understanding of the process, not just an acronym like GEMDAS
6.PAFR.2.3	**Assessment Specifications**
Example Tasks	Students will be able to evaluate numerical expressions using the order of operations.
Assessment Guidelines	Students are not expected to be familiar with the fraction bar as a grouping symbol until 7th grade. Students are not expected to be familiar with the Laws of Exponents with *this* indicator. Assessment should focus on numerical expressions with positive whole number bases and positive whole number exponents when applicable.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.2.4** Write and evaluate expressions using variables to represent quantities in mathematical and real-world situations
Indicator Insight	Discuss the difference between an expression and an equation. Be careful of leaning on key words and phrases too much. The mathematical meaning can change based on the placement of key words and phrases
6.PAFR.2.4	**Assessment Specifications**
Example Tasks	Students will be able to • write expressions using variables based on mathematical or real-world situations. • evaluate expressions using variables based on mathematical or real-world situations.
Assessment Guidelines	When evaluating, note the restrictions in 6.PAFR.2.3.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.2.5** Write and solve one-step equations and inequalities with one variable involving positive rational numbers in mathematical and real-world situations.
Indicator Insight	Discuss why inequalities have a set of solutions, and how to graph them. Connect to 6.PAFR.3.1. Fifth graders only used substitution to find a solution to an equation.
Assessment Specifications	
Example Tasks	Students will be able to • write one-step equations from a mathematical or real-world situation. • solve one-step equations from a mathematical or real-world situation. • write one-step inequalities from a mathematical or real-world situation. • solve one-step inequalities from a mathematical or real-world situation.
Assessment Guidelines	Students are not expected to graph the solution to an inequality. Assessments should focus on equations and inequalities with one variable. Equation and inequalities should also focus on positive rational numbers. Inequalities should be limited strictly to these symbols (<) and (>).
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.2.6** Interpret the concept of a ratio as the relationship between two quantities, including part-to-part and part-to-whole.
Indicator Insight	Determine ratios using concrete models, drawings, and words. Use the following notations: $\frac{a}{b}$, a to b, and a:b, and explain that all read "a to b." This is students' introduction to ratios and ratio reasoning.
6.PAFR.2.6	**Assessment Specifications**
Example Tasks	Students will be able to • identify the ratio that represents a situation. • convert a ratio in one form to another form. • interpret a ratio as a relationship between two quantities.
Assessment Guidelines	Students are expected to be familiar with $\frac{a}{b}$, a to b and a:b as notation for ratios.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.2.7** Explain the relationship between ratios and rates, including unit rates.
Indicator Insight	Rates should be kept in context.
Assessment Specifications	
Example Tasks	Students will be able to • compare ratio and rate. • understand and explain the relationship between ratio, rates, and unit rate. • determine what is unique about unit rates.
Assessment Guidelines	Assessment should be limited in terms of rate and unit rates to division of positive integers.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.2.8** Solve ratio and rate problems in real-world situations.
Indicator Insight	Use models to build conceptual understanding of proportionality before moving to the percent proportion and equation.
Assessment Specifications	
Example Tasks	Students will be able to • solve ratio problems in real-world situations. • solve rate problems in real-world situations. • explain whether an answer makes sense given the context of the problem.
Assessment Guidelines	Students are expected to use percent proportion, equations, and equivalent ratios to solve ratio and rate. Assessment should be limited in terms of rate and unit rates to division of positive integers.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.2.9** Use one-step dimensional analysis to convert units within the metric or customary systems.
Indicator Insight	Include mass, weight, length, and liquid measures.
Assessment Specifications	
Example Tasks	Students will be able to • convert units within the metric system using one-step dimensional analysis. • convert units within the customary system using one-step dimensional analysis.
Assessment Guidelines	Students are provided with a reference sheet which is provided at the end of this document. Students are not expected to convert between customary and metric units. Assessment should focus on one-step problems. Students are expected to be familiar with abbreviations for both customary and metric systems.
DOK(s)	1, 2, 3
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Standard 6.PAFR.3

Apply mathematical patterns, properties, and algorithms to the set of rational numbers to find sums, differences, products, and quotients and to write equivalent expressions.

Math Vocabulary for Assessment: numerical expression, algebraic expression, equation, inequality, solution, multiplicative inverse property, additive inverse property, identity, commutative, associative, and distributive properties

Indicator	**6.PAFR.3.1** Represent the solutions of inequalities on a number line and explain that the solution set may contain an infinite number of solutions. Limited to the symbols for *is less than* (<) and *is greater than* (>).
Indicator Insight	Students solve inequalities in 6.PAFR.2.5.
Assessment Specifications	
Example Tasks	Students will be able to • explain that a solution may contain an infinite number of solutions. • represent a solution to an inequality on a number line.
Assessment Guidelines	Students are expected to be familiar with seeing variables on either side of the inequality symbol for example x > 3 or 3 < x and knowing that those are still represented in the same way on a number line. Students are expected to work with inequalities involving positive rational numbers. Students are not expected to solve inequalities in this indicator. Students are not expected to graph complex inequalities, for example, they are not expected to graph 3 < x < 5. Students are not expected to have an understanding of closed circles and/or inclusive inequalities. Assessments should focus on strict inequalities (<), (>) and open circles on number lines, including all answer options.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.3.2** Identify the multiplicative inverse of a number and multiply multiplicative inverses to find their product is equal to 1.
Indicator Insight	Allow students to discover this property through multiple examples that are given in context. This is students' first exposure to the Multiplicative Inverse Property.
Assessment Specifications	
Example Tasks	Students will be able to • identify the multiplicative inverse of a number. • show the product of a number and its multiplicative inverse is 1.
Assessment Guidelines	Assessment should focus on positive rational numbers excluding decimals.
DOK(s)	1
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.3.3** Identify the additive inverse of a number and add additive inverses to find their sum is equal to zero.
Indicator Insight	Allow students to discover this property through multiple examples that are given in context. Manipulatives can be used to help explain how positives and negatives create zero pairs. This is the students' first exposure to the Additive Inverse Property.
6.PAFR.3.3	**Assessment Specifications**
Example Tasks	Students will be able to • identify the additive inverse of a number. • show the sum of a number and its additive inverse is 0.
Assessment Guidelines	Assessment should focus on integers.
DOK(s)	1
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.3.4** Apply the properties of operations to create equivalent algebraic expressions and justify the properties used. Limit properties to the Identity, Inverse, Commutative, Associative, and Distributive Properties
Indicator Insight	Students were introduced to the Distributive Property in fifth grade.
6.PAFR.3.4	**Assessment Specifications**
Example Tasks	Students will be able to • identify an equivalent expression by applying properties of operations. • create equivalent algebraic expressions by applying properties of operations. • justify the steps used to create an equivalent expression using the appropriate property names. • identify the property used to create an equivalent expression.
Assessment Guidelines	Assessments should focus on using the following properties: Identity, Inverse, Commutative, Associative, and Distributive. The focus is not on integer operation rules as it relates to negative numbers.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.3.5** Add, subtract, multiply, and divide integers in mathematical and real-world situations.
Indicator Insight	Develop generalizations through multiple examples with models and finding patterns. This is an introduction to integer rules. Help students discover the rules through the use of manipulatives and strategies, including, but not limited to, human number line, two-color counters, algebra tiles. Include multi-digit integers for all operations.
Assessment Specifications	
Example Tasks	Students will be able to • add, subtract, multiply and divide integers. • solve real-world problems involving integers using the four operations. • find the distance between two numbers on a number line.
Assessment Guidelines	Students are expected to work with multi-digit integers to be on grade level. Students are expected to work with both positive and negative integers. Students are expected to have an understanding of the integer rules.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.3.6** Add, subtract, multiply, and divide positive fractions, including mixed numbers in mathematical and real-world situations.
Indicator Insight	Division of a fraction by a fraction is new to students in sixth grade. Strategies should make the connection from models in fifth grade
Assessment Specifications	
Example Tasks	Students will be able to • add, subtract, multiply and divide positive fractions including mixed numbers. • solve real-world problems involving positive fractions using the four operations.
Assessment Guidelines	Students are expected to see problems involving mixed numbers but are limited to positive fractions.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Indicator	**6.PAFR.3.7** Add, subtract, multiply, and divide multi-digit positive decimals, up to the thousandths place, to solve problems in mathematical and real-world situations.
Indicator Insight	Strategies should make the connection from models in fifth grade to a standard algorithm.
Assessment Specifications	
Example Tasks	Students will be able to • add, subtract, multiply and divide multi-digit decimals. • solve real-world problems involving multi-digit decimals using the four operations.
Assessment Guidelines	Assessments should focus on positive decimals up to the thousandths place.
DOK(s)	1, 2
Item Types	Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response

Appendix: Student Reference Sheet

A reference sheet of appropriate conversions is provided to students in Grade 6 during testing. Below is the information provided to students.

SC READY Mathematics Reference Sheet

Grade 6

Conversions	
Metric	**Customary**
1 centimeter = 10 millimeters 1 meter = 100 centimeters 1 kilometer = 1,000 meters	1 foot = 12 inches 1 yard = 3 feet 1 mile = 5,280 feet
1 centiliter = 10 milliliters 1 liter = 100 centiliters 1 kiloliter = 1,000 liters	1 cup = 8 fluid ounces 1 pint = 2 cups 1 quart = 2 pints 1 gallon = 4 quarts
1 centigram = 10 milligrams 1 gram = 100 centigrams 1 kilogram = 1,000 grams	1 pound = 16 ounces 1 ton = 2,000 pounds

Time
60 seconds = 1 minute 60 minutes = 1 hour