



Mathematics Assessment Specifications for Teachers 7th Grade

Office of Assessment and Standards

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South Carolina Department of Education

Contents

| | |
|---|----|
| Introduction | 1 |
| Assessment Specifications Descriptions | 1 |
| Calculator | 4 |
| Editorial Suggestions..... | 4 |
| Acknowledgment | 4 |
| Data, Probability, and Statistical Reasoning (DPSR) | 5 |
| Measurement, Geometry, and Spatial Reasoning (MGSR)..... | 13 |
| Numerical Reasoning (NR) | 24 |
| Patterns, Algebra, and Functional Reasoning (PAFR)..... | 26 |
| Appendix: Student Reference Sheet..... | 38 |

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 7.DPSR.1

Analyze data sets to identify their statistical elements.

Math Vocabulary for Assessment: stem-and-leaf plot, mean, mean absolute deviation, measure of variability (spread) and center, histogram, key, interval, bin, frequency, frequency table

| | |
|----------------------------------|---|
| Indicator | 7.DPSR.1.1 Create stem-and-leaf plots to represent numerical data sets in mathematical and real-world situations. |
| Indicator Insight | Teach using data displays, not just numerical sets. This is the students' first exposure to stem-and-leaf plots. |
| Assessment Specifications | |
| Example Tasks | Students will be able to create stem-and-leaf plots. |
| Assessment Guidelines | Assessment items should include a key. (Ex: 3 0 means 30 students). Data displays could include tables or dot plots. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|--|
| Indicator | 7.DPSR.1.2 Use the shape of the graph to select the measure of center (mean, median, or mode) that best describes the data set. |
| Indicator Insight | This indicator continues the work with spread and center started in sixth grade. The shape includes right skew, left skew, symmetric, uniform, bimodal (two modes), and outliers. This is students' first introduction to mean. |
| Assessment Specifications | |
| Example Tasks | Students will be able to determine the measure of center that best describes a data set based on the shape of the graph. |
| Assessment Guidelines | Students are expected to see mean here, as this is an expansion from sixth grade. (6.DPSR.1.3) Students are not expected to calculate values; they are only expected to decide which is best and/or explain why. A data point that is an outlier in an assessment item should be obviously more than 1.5 times the IQR below Q1 or above Q3. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|--|
| Indicator | 7.DPSR.1.3 Calculate and interpret the measures of center (mean, median, mode) and spread (mean absolute deviation, interquartile range, range) in mathematical and real-world situations. |
| Indicator Insight | <p>“Measure of spread” and “measure of variability” should be used interchangeably.</p> <p>Compare the difference between mean, median, and mode. Include all rational numbers in the data sets.</p> <p>This is the students’ first exposure to mean absolute deviation.</p> |
| Assessment Specifications | |
| Example Tasks | <p>Students will be able to</p> <ul style="list-style-type: none"> • calculate measures of center and spread • interpret measures of center and spread. • compare measures of center. |
| Assessment Guidelines | <p>Students are expected to see a variety of rational numbers in data sets.</p> <p>Assessment should focus on measures of center of mean, median and mode and measures of spread of mean absolute deviation, interquartile range, and range.</p> |
| DOK(s) | 1, 2, 3 |
| Item Types | <p>Selected-Response</p> <p>Technology-Enhanced</p> <p>Technology-Enhanced Constructed-Response</p> |

| | |
|----------------------------------|---|
| Indicator | 7.DPSR.1.4 Create histograms to represent data sets and interpret histograms to answer questions or draw conclusions about data sets |
| Indicator Insight | Connecting a stem-and-leaf plot to a histogram can be helpful for students. Intervals are also called bins |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • create histograms. • interpret and draw conclusions from histograms. |
| Assessment Guidelines | Students are not expected to find the mean, median, mean absolute deviation or IQR from histograms. Students may be able to identify a bin as the modal bin and possibly find the range or a close estimate. Assessment should focus on creating histograms only when provided the bin size or the number of bins to use. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

Standard 7.DPSR.2

Calculate and interpret probability.

Math Vocabulary for Assessment: sample space, theoretical probability, experimental probability, probability model, trials

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|----------------------------------|---|
| Indicator | 7.DPSR.2.1 Identify the sample space for a simple event. |
| Indicator Insight | Simple events were introduced in fifth grade. Distinguish between sample size (sixth grade) and sample space (unique outcomes). |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none">• identify the sample space for a simple event.• distinguish the difference between sample size and sample space. |
| Assessment Guidelines | Sample space is defined as the set of all possible unique outcomes. Since sample space is a set, outcomes should not be repeated in this list. |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|---|
| Indicator | 7.DPSR.2.2 Calculate and interpret the theoretical probability of a simple random event. |
| Indicator Insight | This is the students' introduction to theoretical probability. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • calculate theoretical probability of a simple event. • interpret theoretical probability of a simple event. |
| Assessment Guidelines | Students are expected to be able to work with a probability represented as a fraction, decimal, or percent. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|--|
| Indicator | 7.DPSR.2.3 Calculate and interpret the experimental probability of a random event related to a simple experiment. |
| Indicator Insight | Conduct actual probability experiments and interpret the results. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • calculate the experimental probability of a random event • interpret the experimental probability of a random event. • make a prediction based on experimental probability. |
| Assessment Guidelines | Students are expected to be able to work with a probability represented as a fraction, decimal, or percent. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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| Indicator | 7.DPSR.2.4 Compare and contrast the experimental and theoretical probabilities for a simple experiment. |
| Indicator Insight | Simple experiments include randomly selecting a card from a deck, tossing a coin, rolling a die, spinning a spinner, and randomly selecting a colored tile from a bag. Represent the probability as a fraction, decimal, or percent. Use P(event) notation. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • compare experimental probability and theoretical probability. • calculate both experimental and theoretical probability for a situation. • determine if a probability generator is performing as expected. |
| Assessment Guidelines | Students are expected to be able to work with a probability represented as a fraction, decimal, or percent. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

Measurement, Geometry, and Spatial Reasoning (MGSR)

Standard 7.MGSR.1

Determine the measurements of geometric figures.

Math Vocabulary for Assessment: circle, center, radius, diameter, chord, pi (π), circumference, exact circumference, exact area, Triangle Inequality Theorem, trapezoidal prism

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|----------------------------------|--|
| Indicator | 7.MGSR.1.1 Identify the parts of a circle. Limit the parts to <i>center, radius, diameter, and chord</i> . |
| Indicator Insight | Understand the definition of a circle. Be able to distinguish between diameter and other chords. Understand the relationship between radius and diameter |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none">• identify parts of a circle.• label a circle with the names of each part. |
| Assessment Guidelines | Assessment should focus on the following parts; center, radius, diameter, and chord. |
| DOK(s) | 1 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|---|
| Indicator | 7.MGSR.1.2 Describe the relationship between the radius, diameter, and circumference of a circle. |
| Indicator Insight | Physically explore the attributes of the circumference of a circle as a measure of length using concrete materials. Identify π through a variety of patterns and relationships. These relationships are another application of proportional reasoning. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • describe the relationship between radius and circumference of a circle. • describe the relationship between diameter and circumference of a circle. • find radius given the diameter and vice versa. |
| Assessment Guidelines | Assessments may focus on the symbolic representations and/or verbal descriptions when describing these relationships. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|---|
| Indicator | 7.MGSR.1.3 Solve mathematical and real-world situations involving circumference or area of circles. |
| Indicator Insight | Practice finding the exact area or circumference of a circle using Pi. Find estimates of area and circumference using the approximations for π ($\pi \approx 3.14$, $\pi \approx 3$, or $\pi \approx 22/7$). Use the formulas to find missing parts in the circumference formula. Find the area from a given circumference. The expectation is not to find the radius or diameter when given the area because that involves finding the square root, and seventh grade indicators do not include finding square roots. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • find the circumference of a circle. • find the area of a circle. • solve mathematical or real-world situations involving circumference or area of a circle. |
| Assessment Guidelines | Students are expected to write answers using the symbol for pi (exact measurement) or the calculator approximation of pi. Test items where students are expected to use an approximation for pi should include the approximation used in the test item. Students are expected to find missing parts in the circumference formula but not a missing radius or diameter in an area formula. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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| Indicator | 7.MGSR.1.4 Determine if three given side lengths can form a triangle using the Triangle Inequality Theorem |
| Indicator Insight | Use exploration activities to discover patterns to form a triangle leading to the Triangle Inequality Theorem. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • determine if three given side lengths can form a triangle. • given two side lengths, determine possible values for the third side. |
| Assessment Guidelines | Students are not expected to write the solutions as compound inequalities. Instead, they can be written as two separate inequalities. |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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| Indicator | 7.MGSR.1.5 In mathematical and real-world situations, find the volume of right prisms and right pyramids having triangular or quadrilateral bases. |
| Indicator Insight | Include trapezoidal bases. The formula was discovered in sixth grade. A trapezoid is defined as a quadrilateral with exactly one pair of parallel sides. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • find the volume of a right prism having triangular or quadrilateral bases. • find the volume of a right pyramid having a triangular or a quadrilateral base. |
| Assessment Guidelines | Students are expected to know the formulas or be able to discover them through exploration. Students are expected to be able to solve problems involving trapezoidal bases. Students are only responsible for learning about “right” prisms and “right” pyramids, not oblique prisms or pyramids. Right prisms can be defined as prisms whose bases are congruent and parallel, and all the faces meet the base at right angles. Right pyramids can be defined as pyramids made with an apex directly over the center of the base that meets the base at a right angle with the center of the base. <i>Note: Not all right triangular prisms and right triangular pyramids need to have right triangles as bases.</i> |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|---|
| Indicator | 7.MGSR.1.6 In mathematical and real-world situations, find the surface area of right prisms and right pyramids having triangular or quadrilateral bases. |
| Indicator Insight | Include trapezoidal bases. Find actual measurements of some figures using rulers to continue the practice from elementary grades. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • find the surface area of right prisms with triangular or quadrilateral bases. • find the surface area of right pyramids with triangular or quadrilateral bases. |
| Assessment Guidelines | <p>Students are expected to know the formulas or be able to discover them through exploration.</p> <p>Students are expected to be able to solve problems involving trapezoidal bases.</p> <p>Students are only responsible for learning about “right” prisms and “right” pyramids, not oblique prisms or pyramids. Right prisms can be defined as prisms whose bases are congruent and parallel, and all the faces meet the base at right angles. Right pyramids can be defined as pyramids made with an apex directly over the center of the base that meets the base at a right angle with the center of the base.</p> <p><i>Note: Not all right triangular prisms and right triangular pyramids need to have right triangles as bases.</i></p> <p>Students will be expected to use the embedded online ruler found on the Online Tutorial Training (OTT) from the DRC Insight Assessment platform.</p> |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

Standard 7.MGSR.2

Determine angle and/or side relationships.

Math Vocabulary for Assessment: Triangle Sum Theorem, scale drawing, scale factor, similar figures, vertical angles, adjacent angles

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|----------------------------------|---|
| Indicator | 7.MGSR.2.1 Determine the measure of the third angle given the measure of the other two angles of a triangle using the Triangle Sum Theorem. |
| Indicator Insight | The intent of this indicator is to develop a conceptual understanding of the angles inside of a triangle. Write equations to find the missing angle measure |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none">• determine a missing angle in a triangle.• solve for a variable in an expression that represents an angle measure.• write an equation to represent the missing angle measure. |
| Assessment Guidelines | Students are not expected to solve problems involving variables on both sides of the equation for this indicator. |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|---|
| Indicator | 7.MGSR.2.2 Solve mathematical and real-world situations involving dimensions and areas of geometric figures including scale drawings and scale factors. |
| Indicator Insight | Find the scale factor of similar figures using both the sides and the areas. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • find the scale factor when side lengths are known. • find scale factor when the areas are known. • scale figures when scale factors are provided. • determine the area when a figure is scaled. |
| Assessment Guidelines | Include scale drawings and scale factors. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|---|
| Indicator | 7.MGSR.2.3 Identify the relationships and measures among angles formed by two intersecting lines, given the measure of one angle. Limit to supplementary, complementary, vertical, and adjacent relationships |
| Indicator Insight | Use given angle measurements to solve for unknown angle measurements. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • identify what the relationship is between two angles. • determine the measure of an angle given the measure of another angle and the relationship to the first angle. • identify angles that share a given relationship. |
| Assessment Guidelines | Students are not expected to solve algebraic expressions/equations Assessment should focus on supplementary, complementary, vertical, and adjacent relationships. Figures may include more than two intersecting lines, and/or rays. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|---|
| Indicator | 7.MGSR.2.4 Write and solve equations to solve mathematical and real-world situations involving the relationships among angles formed by two intersecting lines. Limit to supplementary, complementary, vertical, and adjacent relationships |
| Indicator Insight | Instead of a measurement of the angle, there is an algebraic expression that will be used to find the angle measurement. It is not the expectation of this indicator to have variables on both sides of the equation. |
| Assessment Specifications | |
| Example Tasks | The student will be able to <ul style="list-style-type: none"> • write equations to represent relationships among angles. • solve equations that represent relationships among angles |
| Assessment Guidelines | Students are not expected to solve problems involving variables on both sides of the equation for this indicator. Assessment should focus on supplementary, complementary, vertical, and adjacent relationships. Figures may include more than two intersecting lines, and/or rays. |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

Standard 7.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, x-coordinate, y-coordinate

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|----------------------------------|---|
| Indicator | 7.MGSR.3.1 Find distances between ordered pairs on the coordinate plane, limited to the same x-coordinate or the same y-coordinate. |
| Indicator Insight | Connect to finding the area and perimeter of polygons by calculating vertical and horizontal distances. Make connections to <i>absolute value</i> . |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none">• find the distance between ordered pairs with the same x-coordinate in the coordinate plane.• find the distance between ordered pairs with the same y-coordinate in the coordinate plane.• plot a point a specific distance from a given point with the same x-coordinate or same y-coordinate.• determine the perimeter of a rectangle or square where the x-coordinates and y-coordinates are the same between points. |
| Assessment Guidelines | Determining the correct response will require an understanding of ordered pairs and distance in the coordinate plane. Limit to points having the same x-coordinate or the same y-coordinate. |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

Numerical Reasoning (NR)

Standard 7.NR.1

Translate among multiple representations of rational numbers.

Math Vocabulary for Assessment: repeating decimals, bar notation, positive/negative fractions, positive/negative decimals

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|----------------------------------|--|
| Indicator | 7.NR.1.1 Convert rational numbers into equivalent forms among fractions (including mixed numbers), decimals, and percentages. Exclude the conversion of repeating decimals to fractions |
| Indicator Insight | In sixth grade, denominators were limited. There is no limit to denominators in this indicator. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • convert a fraction to a decimal or vice versa. • convert a fraction to a percent or vice versa. • convert a decimal to a percent or vice versa. |
| Assessment Guidelines | Students are not expected to convert repeating decimals to fractions. |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

Standard 7.NR.2

Utilize rational numbers in mathematical and real-world situations

Math Vocabulary for Assessment: is greater than or equal to (\geq), is less than or equal to (\leq)

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|----------------------------------|---|
| Indicator | 7.NR.2.1 Compare two rational numbers and write statements using is equal to ($=$), is not equal to (\neq), is less than ($<$), is greater than or equal to (\geq), and/or is less than or equal to (\leq) in mathematical and real-world situations. |
| Indicator Insight | Include negative rational numbers. Practice placing all rational numbers on a number line. |
| Assessment Specifications | |
| Example Tasks | The student will be able to <ul style="list-style-type: none">• compare two rational numbers.• write statements comparing rational numbers using $<$, $>$, $=$, \leq, or \geq.• order rational numbers |
| Assessment Guidelines | Assessment should be limited to no more than five rational numbers. |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

Patterns, Algebra, and Functional Reasoning (PAFR)

Standard 7.PAFR.1

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

Math Vocabulary for Assessment:

proportional reasoning, proportional relationship, constant of proportionality, function, percentage, markups (percent increase), markdowns (percent decrease), tips, tax, sale, sale price, coupons, discounts, commission, percent error, depreciation, simple interest

| | |
|----------------------------------|--|
| Indicator | 7.PAFR.1.1 Apply proportional reasoning to solve problems in mathematical and real-world situations involving ratios and percentages |
| Indicator Insight | Use a variety of situations, including, but not limited to, markups (percent increase), markdowns (percent decrease), tips, tax, coupons, discounts, commission, percent error, depreciation, and simple interest. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • solve problems using proportional reasoning in mathematical or real-world situations. • determine percent change in various situations. |
| Assessment Guidelines | Students are expected to be familiar with situations involving markups, markdowns, tips, tax, coupons, discounts, commission, percent error, depreciation, and simple interest. All those contexts and terms should be familiar to students. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|---|
| Indicator | 7.PAFR.1.2 Create a model with functions that address a proportional relationship in real-world situations |
| Indicator Insight | Models should include tables, functions and their graphs, equations, diagrams, and verbal descriptions. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • create a model with functions to represent a proportional relationship in a real-world situation. • determine which function is represented by a given model. |
| Assessment Guidelines | Students are expected to see proportional relationships in various forms including tables, functions, graphs, equations, diagrams, and verbal descriptions. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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|----------------------------------|---|
| Indicator | 7.PAFR.1.3 Identify the constant of proportionality within proportional relationships. |
| Indicator Insight | The constant of proportionality is the unit rate. Use tables, graphs, and equations to identify the constant of proportionality. Introduce $y = kx$. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • identify the constant of proportionality for a proportional relationship. • determine which table, graph or equation has a given constant of proportionality. |
| Assessment Guidelines | Students are expected to view proportional relationships presented as tables, graphs, or equations. |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

Standard 7.PAFR.2

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

Math Vocabulary for Assessment: multi-step equation, multi-step inequality, like terms, complex fraction (compound fractions)

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| Indicator | 7.PAFR.2.1 Write and solve multi-step equations and inequalities in one variable involving rational numbers in mathematical and real-world situations. |
| Indicator Insight | Include a fraction bar as a grouping symbol. Combine like terms, but do not include variables on both sides; one side only |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none">• write multi-step equations or inequalities.• solve multi-step equations or inequalities.• graph solutions to inequalities on a number line. |
| Assessment Guidelines | Assessment should focus on one-variable and variables on one side. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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| Indicator | 7.PAFR.2.2 Write and evaluate expressions in one variable that model mathematical and real-world situations. |
| Indicator Insight | Include all rational numbers when writing and evaluating expressions. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • write one-variable expressions to model mathematical or real-world situations. • evaluate one-variable expressions that model mathematical or real-world situations. |
| Assessment Guidelines | Students are expected to see all types of rational numbers. |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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| Indicator | 7.PAFR.2.3 Compute unit rates, including those involving complex fractions with like or different units. |
| Indicator Insight | Introduce complex fractions also known as compound fractions. |
| Assessment Specifications | |
| Example Tasks | Students will be able to determine the unit rate for a situation. |
| Assessment Guidelines | Students are expected to solve situations including like or different units and complex fractions. |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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| Indicator | 7.PAFR.2.4 Use dimensional analysis to convert units between metric and customary systems. |
| Indicator Insight | Include problems with measures of mass, weight, length, and liquid. Convert from metric to customary and customary to metric systems. |
| Assessment Specifications | |
| Example Tasks | Students will be able to <ul style="list-style-type: none"> • convert units between metric and customary systems. • use dimensional analysis to determine the resulting units in a real-world context. |
| Assessment Guidelines | <p>Students are provided with a reference sheet for the conversions which is provided at the end of this document.</p> <p>Students are expected to be able to solve problems involving conversions before and after the conversion between measurement systems.</p> <p>Students are expected to be able to solve problems involving more than one conversion between systems as a rate.</p> |
| DOK(s) | 1, 2, 3 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

Standard 7.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: laws of exponents, Product of Powers, Quotient of Powers, Power of a Power, Power of a Product, Power of a Quotient, Zero Power, Negative Exponent, linear expression, factor, positive/negative fractions, positive/negative decimals

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| Indicator | 7.PAFR.3.1 Simplify numerical expressions that include integer exponents using the laws of exponents: the Product of Powers, Quotient of Powers, Power of a Power, Power of a Product, Power of a Quotient, Zero Power, and Negative Exponent. |
| Indicator Insight | Expose students to expressions and models to look for patterns to create a generalization through examples. Provide experiences to discover the rules. |
| Assessment Specifications | |
| Example Tasks | Students will be able to use the laws of exponents to simplify numerical expressions with integer exponents. |
| Assessment Guidelines | Students are not expected to simplify algebraic expressions. Assessment should focus on integer exponents. Limit to rules of Product of Powers, Quotient of Powers, Power of a Power, Power of a Product, Power of a Quotient, Zero Power, and Negative Exponent. |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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| Indicator | 7.PAFR.3.2 Identify linear expressions that are equivalent. |
| Indicator Insight | Combine like terms when needed to show equivalence. |
| Assessment Specifications | |
| Example Tasks | Students will be able to create an equivalent form of a linear expression. |
| Assessment Guidelines | Equivalent does not mean “in simplified form.” |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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| Indicator | 7.PAFR.3.3 Recognize that algebraic expressions may have a variety of equivalent forms and determine an appropriate form for a given real-world situation. |
| Indicator Insight | Use the context to determine an equivalent expression that best matches the situation. Know that there can be multiple forms of the same expression. |
| Assessment Specifications | |
| Example Tasks | Students will be able to determine the appropriate form of an expression for a given real-world situation. |
| Assessment Guidelines | <p>Test items may involve defining more than one variable within the context of the problem.</p> <p>Use all types of rational numbers.</p> <p>Expressions may involve division written horizontally, such as $(y + z) \div (.75y - 3.75z)$</p> |
| DOK(s) | 1, 2 |
| Item Types | <p>Selected-Response</p> <p>Technology-Enhanced</p> <p>Technology-Enhanced Constructed-Response</p> |

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| Indicator | 7.PAFR.3.4 Factor linear expressions with integer coefficients using the greatest common factor (GCF). |
| Indicator Insight | Students learned GCF in fifth grade. |
| Assessment Specifications | |
| Example Tasks | Students will be able to factor linear expressions with integer coefficients. |
| Assessment Guidelines | Students are expected to work with a variable in the linear expressions to expand on GCF from 5 th grade. |
| DOK(s) | 1, 2 |
| Item Types | Selected-Response Technology-Enhanced Technology-Enhanced Constructed-Response |

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| Indicator | 7.PAFR.3.5 Apply all operations with rational numbers to solve problems in mathematical and real-world situations. |
| Indicator Insight | Include positive and negative fractions and decimals. Develop generalizations through multiple examples with models to find patterns. |
| Assessment Specifications | |
| Example Tasks | Students will be able to solve problems in mathematical and real-world situations. |
| Assessment Guidelines | Students are expected to be able to solve problems involving all rational numbers and all four operations. No limitations on denominators. |
| DOK(s) | 1, 2, 3 |
| 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 7 during testing. Below is the information provided to students.

SC READY Mathematics Reference Sheet

Grade 7

| 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 |

| Approximate Conversions | | |
|---------------------------|----|------------------|
| Metric | to | Customary |
| 2.54 centimeter | = | 1 inch |
| 1.609 kilometer | ≈ | 1 mile |
| 0.946 liter | ≈ | 1 quart |
| 4.929 milliliter | ≈ | 1 teaspoon |
| 0.454 kilogram | ≈ | 1 pound |
| 1.609 kilometers per hour | ≈ | 1 miles per hour |