

Nevada Grade 5 Mathematics Item Specifications

Grade 5 CRT Item Specifications – Number and Operations		
Content Standard 1.0 Students will accurately calculate and use estimation techniques, number relationships, operation rules, and algorithms; they will determine the reasonableness of answers and the accuracy of solutions to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.		
“Enduring and Important Knowledge” identified in previous grade-levels may be included within the context of some problems.		
Assessed Indicators	Depth of Knowledge Essence (*)	Item Specifications and Assessment Development Notes
1.5.1 Place Value Identify and use place value positions of whole numbers and decimals to hundredths.	DOK 1	Limit whole numbers up to 999,999,999. Items may ask students to identify place value positions, identify the value of a given digit, and change the standard form of a number to its expanded form and vice versa.
1.5.2 Fractions Add and subtract fractions with like denominators using models, drawings, and numbers. Compare fractions with unlike denominators using models and drawings, and by finding common denominators. Identify, model, and compare improper fractions and mixed numbers.	DOK 2	Fractions are limited to denominators less than or equal to 16. Comparing and computation are limited to fraction and fraction, mixed number and mixed number, or improper fraction and improper fraction. Items may use the caret symbol (^) as a distracter. The number 1 may be expressed as a fraction or a whole number. Answers are not to be simplified. Items do not have to include a model. Items may not require regrouping.
1.5.5 Facts Use multiples of 10 to expand knowledge of basic multiplication and division facts.	DOK 1	Items should use multiplication and corresponding division facts up to 12×12 in multiples of 10 (e.g., $20 \times 40 = 800$ or $800 \div 40 = 20$). Limited to two factors.
1.5.7 Computation Add and subtract decimals. Multiply and divide decimals by whole numbers in problems representing practical situations. Use order of operations to evaluate expressions with whole numbers.	DOK 1	Decimals through the hundredths may be used. For division with decimals, limit divisor to a two-digit whole number. Decimal remainders must be terminating (through the hundredths). Expressions used to assess order of operations may contain parentheses, but not exponents. Adding and subtracting money amounts is assessed in 3.5.4.
1.5.8 Solving Problems Generate and solve addition, subtraction, multiplication, and division problems using whole numbers and decimals in practical situations.	DOK 2	Items may use up to two different operations. Remainders may be expressed as whole numbers, terminating decimals (through the hundredths), or fractions. Distracters for items should focus on selecting the correct operation.

(*) = 50% of the assessed items must be at or above the Depth of Knowledge Essence

Nevada Grade 5 Mathematics Item Specifications

Grade 5 CRT Item Specifications - Algebra		
Content Standard 2.0 Students will use various algebraic methods to analyze, illustrate, extend, and create numerous representations (words, numbers, tables, and graphs) of patterns, functions and algebraic relations as modeled in practical situations to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.		
“Enduring and Important Knowledge” identified in previous grade-levels may be included within the context of some problems.		
Assessed Indicators	Depth of Knowledge Essence (*)	Item Specifications and Assessment Development Notes
<p>2.5.2 Variables and Unknowns Find possible solutions to an inequality involving a variable using whole numbers as a replacement set.</p> <p>Solve equations with whole numbers using a variety of methods, including inverse operations, mental math, and guess and check.</p>	DOK 1	<p>Only whole numbers may be used.</p> <p>Variables do not have to be isolated.</p> <p>Variables may be open boxes.</p>
<p>2.5.3 Number Sentences Complete number sentences with the appropriate words and symbols including \geq, \leq and \neq.</p>	DOK 1	<p>The following symbols, and their corresponding words, may be used: +, -, \times, \div, >, <, =, \geq, \leq, and \neq.</p> <p>Items may use ^ as a distracter when needed.</p> <p>Comparing fractions is assessed in 1.5.2.</p>

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Nevada Grade 5 Mathematics Item Specifications

Grade 5 CRT Item Specifications - Measurement		
Content Standard 3.0 Students will use appropriate tools and techniques of measurement to determine, estimate, record, and verify direct and indirect measurements to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.		
“Enduring and Important Knowledge” identified in previous grade-levels may be included within the context of some problems.		
Assessed Indicators	Depth of Knowledge Essence (*)	Item Specifications and Assessment Development Notes
3.5.1 Estimation and Conversion Estimate and convert units of measure for weight and volume/capacity within the same measurement system (customary and metric).	DOK 1	Customary units for weight include ounce, pound, and ton. Metric units for weight include milligram, gram, and kilogram. Customary units for volume include cup, pint, quart, and gallon. Metric units for volume include milliliter, liter, and kiloliter. Conversions are limited to one unit. Items should have conversion factor embedded.
3.5.3 Formulas Describe the difference between perimeter and area, including the difference in units of measure.	DOK 2	Items are limited to perimeter of polygons and area of rectangles (including squares) or combinations of rectangles. Items involving perimeter may ask students to determine the missing length of the side of a polygon, given the lengths of the other sides and the perimeter.
3.5.4 Money Determine totals, differences, and change due for monetary amounts in practical situations.	DOK 1	Solve problems involving sums and differences of money. Limited to two operations.
3.5.6 Time Determine equivalent periods of time, including relationships between and among seconds, minutes, hours, days, months, and years.	DOK 1	Items should have conversion factors embedded. Weeks may be used. Items may ask students to solve problems involving time relationships and/or equivalent periods of time.

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Nevada Grade 5 Mathematics Item Specifications

Grade 5 CRT Item Specifications - Geometry		
Content Standard 4.0 Students will identify, represent, verify, and apply spatial relationships and geometric properties to solve problems, communicate, and make connections within and beyond the field of mathematics.		
“Enduring and Important Knowledge” identified in previous grade-levels may be included within the context of some problems.		
Assessed Indicators	Depth of Knowledge Essence (*)	Item Specifications and Assessment Development Notes
<p>4.5.1 Two-Dimensional Shapes Identify, classify, compare, and draw triangles and quadrilaterals based on their properties.</p> <p>Identify and draw circles and parts of circles, describing the relationships between the various parts.</p>	DOK 1	<p>Triangles may be acute, right, obtuse, scalene, isosceles, and equilateral. Quadrilaterals may be a parallelogram, trapezoid, rhombus, rectangle, or square. Quadrilaterals may be regular or irregular. Parts of circles are limited to central angle, arc, diameter, and radius.</p> <p>Items may ask students to determine the diameter of a circle when given the radius of the circle, and vice versa.</p> <p>Note that there are currently two definitions of a trapezoid accepted by the math community.</p>
<p>4.5.2 Congruence, Similarity and Transformations Represent concepts of congruency, similarity, and/or symmetry using a variety of methods including dilation (enlargement/reduction) and transformational motions.</p>	DOK 1	<p>Items are limited to one dilation/transformation only.</p> <p>Rotations may be 90° or 180°. Shapes may be on a grid.</p> <p>Items may ask students to select the diagram that shows the named dilation/transformation.</p> <p>Items may ask students to look at an example of a dilation/transformation and then identify the dilation/transformation by name. Trace may be used as a distracter.</p>
<p>4.5.3 Coordinate Geometry Graph coordinates representing geometric shapes in the first quadrant.</p>	DOK 2	<p>Grids may be scaled by whole numbers only. Identify the coordinates of a point that could be the missing vertex of a figure.</p> <p>Note that there are currently two definitions of a trapezoid accepted by the math community.</p>

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Nevada Grade 5 Mathematics Item Specifications

Assessed Indicators	Depth of Knowledge Essence (*)	Item Specifications and Assessment Development Notes
<p>4.5.4 Three-Dimensional Shapes Predict and describe the effects of combining, dividing, and changing shapes into other shapes</p>	DOK 2	<p>Two-dimensional shapes include circles, triangles, rectangles, squares, rhombi, hexagons, octagons, and trapezoids.</p> <p>Note that there are currently two definitions of a trapezoid accepted by the math community.</p> <p>Three-dimensional shapes include: cubes, spheres, rectangular prisms, triangular prisms, cylinders, cones, and square-based pyramids.</p>
<p>4.5.6 Lines, Angles and their Properties Identify, draw, label, and describe planes, parallel lines, intersecting lines and perpendicular lines.</p>	DOK 1	
<p>4.5.9 Logic Represent relationships using Venn diagrams.</p>	DOK 2	<p>Items may ask students to select the correct Venn diagram given a set of data.</p> <p>Items may ask a simple question about data displayed in a Venn diagram.</p> <p>Items may ask students to solve problems based on data represented in a Venn diagram.</p> <p>Venn diagrams are limited to 2 circles.</p>

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Nevada Grade 5 Mathematics Item Specifications

Grade 5 CRT Item Specifications – Data Analysis		
Content Standard 5.0 Students will collect, organize, display, interpret, and analyze data to determine statistical relationships and probability projections to solve problems, communicate, reason, and make connections within and beyond the field of mathematics.		
“Enduring and Important Knowledge” identified in previous grade-levels may be included within the context of some problems.		
Assessed Indicators	Depth of Knowledge Essence (*)	Item Specifications and Assessment Development Notes
<p>5.5.1 Data Collection and Organization <i>Pose questions that can be used to guide the collection of categorical and numerical data.</i> <i>(Not tested on state CRT)</i></p> <p>Organize and represent data using a variety of graphical representations including stem-and-leaf plots and histograms.</p>	DOK 2	<p>Data displays may include tables/charts, single and double bar graphs, number lines, frequency tables, pictographs, line plots, stem-and-leaf plots, or histograms. Histograms must use ranges on the horizontal axis.</p> <p>Items may ask students to select the correct data display given a set of data. Items may demand computation prior to creating the display. Items may ask students to read a display.</p> <p>Constructed Response Items may ask students to construct a data display that represents a given set of data.</p>
<p>5.5.2 Central Tendency Compute range.</p> <p>Model and compute the measures of central tendency for mean, median, and mode</p>	DOK 1	<p>Items assessing mean may include up to six data points. Items assessing median, mode, or range may contain up to ten data points. Items assessing mode must use a data set that has exactly one mode. Data sets may only be shown in a list or in a table/chart.</p>
<p>5.5.3 Interpretation of Data Interpret data and make predictions using stem-and-leaf plots and histograms.</p>	DOK 2	<p>Items that ask students to interpret data and make predictions are limited to stem-and-leaf, histograms and frequency tables. Histograms must use ranges on the horizontal axis. Items may ask students to make an inference or prediction based on a data display. Items may ask students to compare data in a data display or to perform calculations to answer questions about a data display (e.g., How many more students chose blue than red?).</p>
<p>5.5.4 Combinations Represent and solve problems involving combinations using a variety of methods.</p>	DOK 2	<p>Items may ask students to identify all possible outcomes of an activity with 1 or 2 events. Outcomes may be listed using tree diagrams and lists.</p> <p>Activities may include up to 12 possible outcomes.</p> <p>Items may ask a question about a sample space represented by a diagram or an organized list</p>

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