NSCAS NEBRASKA STUDENT-CENTERED ASSESSMENT SYSTEM

Summative Assessment
Mathematics Grade 5 Range Achievement Level Descriptors

What are Range Achievement Level Descriptors?

Range Achievement Level Descriptors (ALDs) demonstrate how skills described in the Nebraska College and Career Ready Standards for Mathematics likely change and become more sophisticated as ability and performance increases. The ALDs also describe the evidence needed to help infer where a student is along the range. This range is defined by Nebraska using three levels:

- Developing – not yet demonstrating proficiency
- On Track – demonstrating proficiency
- Advanced– demonstrating advanced proficiency

The ALDs help show the within-standard reasoning complexity that increases in sophistication as the achievement levels increase. Such skill advancement is often related to increases in content difficulty, increases in reasoning complexity, and a reduction in the supports required for students to demonstrate what they know within a task or item.

The Range ALDs provide a way to communicate a progression that is visible and usable to all stakeholders, while also providing a foundation for a robust bank of assessment items that meets the needs of all Nebraska students.

How were the Nebraska's Mathematics Range ALDs updated for the new standards?

Draft Range ALDs for the new standards were created and reviewed by panels comprised of Nebraska educators during Spring of 2023. The updated ALDs were shared with NDE and their feedback was applied.

How will Nebraska's ELA Range ALDs change in relation to the new standards?

The updated ALDs were revised to reflect the new standards. The updated ALDs will be taken to the 2023 Item Writing Workshop where they will be used to help facilitate item writing. Feedback will be recorded at the upcoming Item Writing Workshop from Nebraska educators based on their use of the ALDs for writing items and at the upcoming standard setting from panelists. This feedback will then be used to update the ALDs. The updated ALDs will be shared with NDE to obtain their final recommendations.

Indicator	Developing learners do not yet demonstrate proficiency in the knowledge and skills necessary at this grade level, as specified in the assessed Nebraska College and Career Ready Standards. A developing learner . . .	On-Track learners demonstrate proficiency in the knowledge and skills necessary at this grade level, as specified in the assessed Nebraska College and Career Ready Standards. An on-track learner…	Advanced Benchmark learners demonstrate advanced proficiency in the knowledge and skills necessary at this grade level, as specified in the assessed Nebraska Advanced Standards. An advanced learner…
NUMBER: Students will solve problems and reason with number concepts using multiple representations, make connections within math and across disciplines, and communicate their ideas.			
5.N.1 Numeric Relationships: Students will understand the place value system.			
5.N.1.a Read, write, and demonstrate multiple equivalent representations for multi-digit whole numbers and decimals through the thousandths place using standard form and expanded form.	None at level (Refer to 4.N.1.a for whole numbers within the range of 100,000–1,000,000 and decimals within the range of 0.01–99,999.99.) Max DOK: 1	Determines the expanded form/notation or a visual representation of a number containing decimals to the thousandths (0.001 to 999,999.999) given in word form. DOK: 1 Determines another form/representation (standard, expanded, visual) of a whole number greater than 1,000,000 given in standard form, word form, expanded form/notation, or in a visual representation. DOK: 1 Determines another form/representation (standard, visual) of a number containing decimals to the thousandths (0.001 to 999,999.999) given in standard form or in a visual representation. DOK: 1 Determines another form/representation (standard, visual) of a number containing decimals to the thousandths (0.001 to 999,999.999) given in expanded form/notation. DOK: 1 Max DOK: 1	Analyzes representations of whole numbers greater than 1,000,000 and numbers containing decimals to the thousandths (0.001 to 999,999.999). DOK: 2 Ex: Explain why 30 + 2 + 0.04 + 0.007 is not the expanded form of 30.247. Max DOK: 2
5.N.1.b Recognize a digit in one place represents 1/10 what it represents in the place to its left.	Assessed at the local level		
5.N.1.c Use whole number exponents to denote powers of 10.	Determines equivalent expressions for 10, 100, and 1,000 using exponents of 10. DOK: 2 Max DOK: 2	Determines equivalent expressions for powers of 10 where the exponent is a whole number greater than 3. DOK: 2 Max DOK: 2	Uses powers of 10 to indicate place value in the expanded form of a number (e.g., 600 = 6 x 10^2). DOK: 2 Max DOK: 2
5.N.2 Fractions and Decimals: Students will extend understanding of fraction and decimal equivalence and ordering.			

5.N.2.a Generate equivalent forms of commonly used fractions and decimals (e.g., halves, fourths, fifths, and tenths).	Determines equivalent decimal forms for fractions and mixed numbers with a denominator of 10. May include visual representations. DOK: 1 Determines equivalent, simplified fractions and mixed numbers with a denominator of 10 from decimal form. May include visual representations. DOK: 1 Max DOK: 1	Determines equivalent representations between fractions and between decimals and fractions with denominators 2, 4, and 5. May include visual representations. DOK: 2 Determines equivalent decimal forms for fractions and mixed numbers with denominators 2, 4, or 5. May include visual representations. DOK: 1 Determines equivalent, simplified fractions and mixed numbers with denominators 2, 4, or 5 from decimal form. May include visual representations. DOK: 1 Max DOK: 2	Determines fractions and decimals for whole numbers or fractions with denominators of 8. May include visual representations. DOK: 2 Explains or justifies conversions between fractions and decimals for fractions or mixed numbers with denominators 2, 4, or 5. DOK: 2 Max DOK: 2
5.N.2.b Represent and justify comparisons of whole numbers, fractions, mixed numbers, and decimals through the thousandths place using number lines, reasoning strategies, and/or equivalence.	Uses symbols to represent comparisons of two whole numbers when at least one value is greater than 1,000,000. May include a number line. DOK: 1 Orders three or more whole numbers with at least one value being greater than 1,000,000 (may or may not use symbols). May include a number line. DOK: 1 (Refer to MA 4.N.1.b for whole numbers within the range of 10,000–1,000,000 and decimals within the range of 0.01–99,999.99.) Max DOK: 1	Uses symbols to represent comparisons of two decimals between 0.001 and 999,999.999 when both values are thousandths (e.g., compare 1.015 and 100.017). May include a number line. DOK: 1 Uses symbols to represent comparisons of two numbers when one value is a mixed number or a decimal up to the thousandths (0.001 to 999,999.9999) and the other value is a fraction, whole number, or a decimal to the tenths or hundredths (e.g., compare 0.2 and 5/6). May include a number line. DOK: 2 Uses symbols to represent comparisons of two numbers when both values are a mixed number or one value is a mixed number and the other value is a decimal to the thousandths (0.001 to 999,999.999). May include a number line. DOK: 2 Orders three numbers (whole number, mixed number, fraction, decimal) where at least one value is a mixed number or decimal up to the thousandths. May include a number line. DOK: 2 Max DOK: 2	Orders more than three numbers up to 1,000,000 with at least two values being a mixed number or decimal to the thousandths (0.001 to 999,999.999). May include a number line. DOK: 2 Analyzes and justifies comparisons between two numbers (whole number, mixed number, fraction, decimal) where at least one value is a mixed number or is a decimal to the tenths or hundredths. DOK: 2 Ex: Which two numerators could replace the question mark to make the comparison true? Justify your answer. 0.65 > ?/4 Max DOK: 2
5.N.3 Operations with Fractions and Decimals: Students will apply and extend previous understandings of whole number operations to add, subtract, multiply, and divide fractions and decimals.			
5.N.3.a Interpret a fraction as division of the numerator by the denominator.	Assessed at the local level		

5.N.3.b Multiply a whole number by a fraction or a fraction by a fraction, including mixed numbers, using visual fraction models and properties of operations.	Multiplies a non-unit fraction by a whole number with or without a visual model. Products may be represented as a mixed number or improper fraction. DOK: 1 Multiplies a unit fraction by a unit fraction with the use of an appropriate visual model. DOK: 1 Max DOK: 1	Multiplies a unit fraction by a non-unit fraction with the use of an appropriate visual model. DOK: 1 Multiplies two non-unit fractions given a visual model. DOK: 1 Max DOK: 1	Creates a visual model to represent multiplication of a fraction with another number that is a unit fraction, non-unit fraction, whole number, or a mixed number. DOK: 2 Analyzes multiplication of two fractions based on visual representations (e.g., given the visual representation, explain how to use the representation to determine the product). DOK: 3 Evaluates a visual model to determine if it matches a given multiplication expression with fractions. DOK: 3 Max DOK: 3
5.N.3.c Divide a unit fraction by a whole number and a whole number by a unit fraction using visual fraction models and properties of operations.	Divides a whole number by a unit fraction given a representation of the whole number that is decomposed into fractional parts. DOK: 1 Max DOK: 1	Divides a unit fraction by a whole number and vice versa. May include the use of visual representations. DOK: 2 Max DOK: 2	Creates a visual model that represents division of a unit fraction by a whole number or a whole number by a unit fraction. DOK: 2 Analyzes division of a unit fraction by a whole number or a whole number by a unit fraction. May include the use of visual representation. (e.g., Explain why the quotient of 4 divided by 1/5 is greater than the quotient of 4 divided by 1/3). DOK: 3 Evaluates a visual model to determine if it matches a given division expression involving a whole and a unit fraction. DOK: 3 Max DOK: 3

5.N.3.d Solve authentic problems involving addition, subtraction, and multiplication of fractions and mixed numbers with like and unlike denominators.	Divides a whole number by a unit fraction given a representation of the whole number that is decomposed into fractional parts. DOK: 1 Max DOK: 1	Solves authentic problems involving the addition of fractions and/or mixed numbers with unlike denominators with or without regrouping. DOK: 2 Solves authentic problems involving subtraction of fractions and/or mixed numbers with unlike denominators without regrouping (e.g., 6 4/5 – 4 1/2). DOK: 2 Solves authentic problems involving subtracting a fraction and/or mixed number from a whole number (e.g., 5 – 3 4/7). DOK: 2 Solves authentic problems involving the multiplication of fractions and/or mixed numbers. DOK: 2 Max DOK: 2	Solves authentic problems involving both addition and subtraction of fractions and/or mixed numbers with unlike denominators with regrouping required for the subtraction (e.g., 2 1/4 + 3 1/8 – 1 1/2). DOK: 2 Solves authentic problems involving subtraction of mixed numbers with unlike denominators or subtraction of fractions and mixed numbers with unlike denominators with regrouping (e.g., 5 1/4 – 2 7/8). DOK: 2 Solves authentic problems involving multiplication followed by either addition or subtraction of fractions and/or mixed numbers with unlike denominators with or without regrouping (e.g., 3/2 * 2/5 – 1/2). DOK: 2 Solves authentic problems involving both addition and subtraction of fractions and/or mixed numbers with unlike denominators and no regrouping required for the subtraction (e.g., 1 7/10 + 4 1/2 – 2 1/5). DOK: 2 Solves authentic problems involving multiplication followed by either addition or subtraction of fractions and/or mixed numbers with like denominators without regrouping (e.g., 3/2 * 2/5 – 1/5). DOK: 2 Analyzes solutions to authentic addition, subtraction, and/or multiplication problems with fractions and mixed numbers with unlike denominators (e.g., explains or justifies why a solution is or is not correct). DOK: 3 Max DOK: 3
5.N.3.e Add and subtract fractions and mixed numbers with unlike denominators without simplifying.	Adds fractions with unlike denominators without regrouping and without simplifying. DOK: 1 Adds mixed numbers with unlike denominators without regrouping and without simplifying. DOK: 1 Subtracts fractions with unlike denominators without regrouping and without simplifying. DOK: 1 Subtracts mixed numbers with unlike denominators without regrouping and without simplifying. DOK: 1 (Refer to MA 4.N.3.c for adding and subtracting fractions with like denominators.) Max DOK: 1	Adds fractions with unlike denominators with regrouping and without simplifying. DOK: 1 Adds two mixed numbers with unlike denominators with regrouping and without simplifying. DOK: 1 Subtracts fractions with unlike denominators with regrouping and without simplifying. DOK: 1 Subtracts two mixed numbers with unlike denominators with or without regrouping and without simplifying. DOK: 1 Adds or subtracts a mixed number and a fraction with unlike denominators with or without regrouping and without simplifying. DOK: 1 Max DOK: 1	Adds and subtracts a combination of fractions and mixed numbers containing three or more terms with at least two having unlike denominators and without simplifying. DOK: 1 Analyzes addition and subtraction of fractions and mixed numbers with unlike denominators without simplifying (e.g., explain how to subtract 1 2/3 from 5 1/12). DOK: 3 Max DOK: 3

5.N.3.f Solve authentic problems involving division of unit fractions by whole numbers and division of whole numbers by unit fractions.	Solves authentic problems involving division of a unit fraction by a non-zero whole number given a fraction model. DOK: 2 Solves authentic problems involving division of a non-zero whole number by a unit fraction given a fraction model. DOK: 2 Max DOK: 2	Solves authentic problems involving division of a unit fraction by a non-zero whole number without a given fraction model. DOK: 2 Solves authentic problems involving division of a non-zero whole number by a unit fraction without a given fraction model. DOK: 2 Max DOK: 2	Evaluates or justifies solutions to one- or two-step authentic problems involving division of a unit fraction and a non-zero whole number using fraction models, equations, or other valid methods. DOK: 2 Solves two-step authentic problems involving division of a unit fraction by a non-zero whole number without a given fraction model. DOK: 2 Solves two-step authentic problems involving division of a non-zero whole number by a unit fraction without a given fraction model. DOK: 2 Max DOK: 2
5.N.3.g Add, subtract, multiply, and divide decimals to hundredths using strategies based on place value, properties of operations, and/or algorithms.	Adds or subtracts decimals to the tenths or hundredths when provided a visual model. DOK: 1 Multiplies or divides a decimal by a whole number based on place value (e.g., only needs to determine the correct decimal placement for the product or quotient). DOK: 1 Max DOK: 1	Adds or subtracts decimals to the tenths or hundredths using strategies based on place value, properties of operations, or relationships between operations (e.g., finds an expression that is equivalent to (0.16 + 0.25) + 0.05). DOK: 2 Multiplies or divides two decimals to the tenths or hundredths using strategies based on place value, properties of operations, or relationships between operations. DOK: 2 Max DOK: 2	Analyzes addition, subtraction, multiplication, or division of decimals to the tenths or hundredths using models or strategies based on place value, properties of operations, or relationships between operations (e.g., explains how a given model relates to adding decimals and how to use the model to determine the sum). DOK: 3 Max DOK: 3
ALGEBRA: Students will solve problems and reason with algebra using multiple representations, make connections within math and across disciplines, and communicate their ideas.			
5.A.1 Operations and Algebraic Thinking: Students will extend understanding of division and apply operational properties to solve problems involving order of operations.			
5.A.1.a Multiply multi-digit whole numbers using an algorithm.	Multiplies a whole number with five or more digits by a one-digit whole number. DOK: 1 Multiplies a three-digit whole number times a two-digit whole number. DOK: 1 (Refer to 4.A.1.b for multiplying a two-, three-, or four-digit whole number by a one-digit whole number.) (Refer to 4.A.1.b for multiplying a two-digit whole number by a two-digit whole number.) Max DOK: 1	Multiplies any whole number with four or more digits by a two-digit whole number. DOK: 1 Multiplies any whole number with three or more digits by a three-digit whole number. DOK: 1 Max DOK: 1	Analyzes multiplication of multi-digit whole numbers using an algorithm. DOK: 2 Ex: When shown the steps for calculating the product using an algorithm, determine the step where an error occurred in multiplying two whole numbers and calculate the correct product. Compares two different algorithms used to solve a given problem and identify how they relate to one another. DOK: 3 Max DOK: 3
5.A.1.b Divide four-digit whole numbers by a two-digit divisor, with and without remainders, using strategies based on place value.	Divides a two- or three-digit whole number by a two-digit divisor with or without a remainder. DOK: 1 (Refer to 4.A.1.c for dividing a two-, three-, or four-digit whole number by a one-digit whole number.) Max DOK: 1	Divides a four-digit whole number by a two-digit divisor with or without a remainder. DOK: 1 Max DOK: 1	Analyzes division of two-, three-, or four-digit whole numbers by a two-digit whole number with or without a remainder (e.g., explain why the quotient of 450 divided by 15 is greater than the quotient of 450 divided by 30). DOK: 3 Max DOK: 3

5.A.1.c Justify the reasonableness of computations involving whole numbers, fractions, and decimals.	Assessed at the local level		
5.A.1.d Simplify authentic numerical or algebraic expressions using order of operations (excluding exponents).	Simplifies authentic two-step numerical expressions involving the order of operations (excluding exponents). DOK: 1 Simplifies authentic three-step numerical expressions involving the order of operations (excluding exponents) when using only two different operations (e.g., 3 x 5 – 1 x 5). DOK: 1 Simplifies authentic three-step numerical expressions involving the order of operations (excluding exponents) when using up to three different operations and addition is to the left of subtraction and multiplication is to the left of division (e.g., 5 x 4 ÷ 2 + 3). DOK: 1 Substitutes a given value for a variable in an authentic algebraic expression with one or two steps and then evaluates the expression using the order of operations (excluding exponents). DOK: 2 Max DOK: 2	Simplifies authentic three-step numerical expressions involving the order of operations (excluding exponents) when using up to three different operations and subtraction is to the left of addition and division is to the left of multiplication (e.g., 18 ÷ 3 x 2 + 5). DOK: 1 Simplifies authentic numerical expressions with four or more steps involving the order of operations (excluding exponents). DOK: 1 Substitutes a given value for a variable in an authentic algebraic expression with three or more steps and then evaluates the expression using the order of operations (excluding exponents). DOK: 2 Max DOK: 2	Determines two equivalent authentic numerical expressions when one of the expressions has four or more steps involving the order of operations (excluding exponents) and the change between the expressions is not addition, multiplication, or in parenthesis. DOK: 2 Ex: Which two expressions are equivalent to 52 – 20/4 + 2 x 3? Choices include: 32/4 + 3 x 1; 52 – 5 + 3 x 1; 52 – 20/10; 52 – 5 + 6; etc. Determines the basic operation or placement of grouping symbols needed to make a three-step authentic numerical expression involving the order of operations (excluding exponents) equal a given value. DOK: 2 Determines two equivalent authentic numerical expressions when one of the expressions has four or more steps involving the order of operations (excluding exponents) and the change between the expressions is either addition, multiplication, or in parenthesis. DOK: 2 Ex: Which two expressions are equivalent to 2 x (5 – 1) + 3 x 1? Choices include: 10 – 1 + 3 x 1; 2 x 4 + 3 x 1; 2 – 1 + 3 x 1; etc. Explains or justifies the evaluation of authentic numerical or algebraic expressions using the order of operations (excluding exponents). DOK: 3 Max DOK: 3
GEOMETRY: Students will solve problems and reason with geometry using multiple representations, make connections within math and across disciplines, and communicate their ideas.			
5.G.1 Shapes and Their Attributes: Students will classify two- and three-dimensional figures into categories based on their properties.			
5.G.1.a Identify and describe faces, edges, and vertices of rectangular prisms.	Identifies the faces, edges, and/or vertices of rectangular prisms from images. DOK: 1 Determines the number of faces and/or vertices of rectangular prisms from images. DOK: 1 Determines the number of edges of a rectangular prism from an image. DOK: 1 Max DOK: 1	Determines the properties of a rectangular prism including the faces, edges, and/or vertices (e.g., determines that the faces of a cube are squares). DOK: 2 Max DOK: 2	Explains and describes how the general features of a rectangular prism compare to a non-rectangular prism (e.g., the number of faces or number of edges) and are related to the shape of the base. DOK: 3 Max DOK: 3

5.G.1.b Recognize volume as an attribute of solid figures that is measured in cubic units.	Assessed at the local level		
5.G.1.c Justify the classification of two-dimensional figures in a hierarchy based on their properties.	Determines two-dimensional shapes that belong to classification categories when given properties of the categories. DOK: 2 Determines classification categories for two-dimensional shapes when given properties of the shapes. DOK: 2 Classifies polygons with five or more sides into a specific category using multiple properties (e.g., regular pentagon). DOK: 2 Max DOK: 2	Classifies triangles and quadrilaterals into a specific category using multiple properties (e.g., isosceles right triangle). DOK: 2 Explains or justifies the classification of a quadrilateral, set of quadrilaterals, or regular polygons based upon the properties of the shape(s) and categories. DOK: 3 Max DOK: 3	Explains or justifies the classification of a shape or set of shapes, beyond quadrilaterals and regular polygons, based upon the properties of the shape(s) and categories. DOK: 3 Max DOK: 3
5.G.2 Coordinate Geometry: Graph points on the coordinate plane to solve authentic problems.			
5.G.2.a Identify the origin, *x* -axis, and *y* -axis of the coordinate plane.	Assessed at the local level		
5.G.2.b Graph and name points in the first quadrant of the coordinate plane using ordered pairs of whole numbers.	Determines the graph of or graphs the point (0, 0) on the coordinate plane. DOK: 1 Determines the graph of or graphs a point within the first quadrant given ordered pairs. DOK: 1 Determines the ordered pair describing a point within the first quadrant. DOK: 1 Max DOK: 1	Determines the graph of or graphs a point along the *x* -axis or *y* -axis on the coordinate plane, given an ordered pair (0, *n*) or (*n* , 0), where *n* is a whole number. DOK: 1 Max DOK: 1	Explains or justifies how to graph a given ordered pair or name an ordered pair from its graph using the *x* - and *y* -axis. DOK: 2 Max DOK: 2
5.G.2.c Form ordered pairs from authentic problems involving rules or patterns, graph the ordered pairs in the first quadrant on a coordinate plane, and interpret coordinate values in the context of the situation.	Determines an output value when given a rule and an input value. DOK: 1 Determines an input value when given a rule and an output value. DOK: 2 Max DOK: 2	Determines which ordered pair(s) is/are formed by a given rule, where the rule is in algebraic form such as $y = x + 5$, from a given pattern or description in words. The ordered pair(s) may be in (*x* , *y*) format, in a table, or point(s) graphed in the first quadrant of the coordinate plane. The ordered pair must be in context. DOK: 2 Interprets the meaning of coordinate values within a context. DOK: 2 Max DOK: 2	Determines a combination of input and output values that correspond to given output and input values for a specific rule in a context (e.g., when given an input/output table with a combination of missing input and output values, determine the missing values based on the rule). DOK: 2 Determines the rule, where the rule is described in words within a context, when given ordered pairs as coordinates, tables, or graphed in the first quadrant of the coordinate plane. DOK: 2 Max DOK: 2
5.G.3 Measurement: Generate conversions within the customary and metric systems of measurement to solve authentic problems.			

5.G.3.a Generate conversions in authentic mathematical situations from larger units to smaller units and smaller units to larger units, within the customary and metric systems of measurement.	Determines equivalent measurements that are one step or one degree of change from a smaller to larger unit using metric units of measurement (e.g., mm to cm)—must include context. DOK: 2 (Refer to MA 4.G.2.c for one- and two-step conversions from a larger unit to a smaller unit.) Max DOK: 2	Determines equivalent measurements that are one step or one degree of change from a smaller to larger unit using customary units of measurement (e.g., inches to feet)—must include context. DOK: 2 Determines equivalent measurements that are two or more steps or two or more degrees of change from each other using metric units of measurement (e.g., millimeters to decimeters)—must include context. DOK: 2 Compares customary units of measurement within the same system using one-step conversions from a smaller unit to a larger unit—must include context. DOK: 2 Compares metric units of measurement within the same system using one or more step conversions from a smaller unit to a larger unit—must include context. DOK: 2 Max DOK: 2	Determines equivalent measurements that are two or more steps or two or more degrees of change from each other using customary units of measurement (e.g., inches to yards)—must include context. DOK: 2 Compares customary units of measurement within the same system using two or more step conversions from a smaller unit to a larger unit—must include context. DOK: 2 Explains how to determine equivalent measurements within the same system using customary or metric units when at least one step or one degree of change is moving from a smaller to a larger unit or when there are at least three steps or three degrees of change when moving from a larger unit to a smaller unit—must include context. DOK: 2 Analyzes strategies for converting measurements (e.g., number line, unit rate, etc.). DOK: 2 Max DOK: 2
5.G.4 Area and Volume: Students will extend area problems for rectangles to include fractions and build meaning for measuring volume.			
5.G.4.a Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths.	Determines the value of the unit square in a tiled rectangle with fractional side lengths. DOK: 1 Avoid exponents in units. Uses appropriate units (square cm, square m, square in, square ft, and improvised units). Max DOK: 2	Represents the area of a tiled rectangle with fractional side lengths as multiplication of the side lengths. DOK: 1 Determines or creates an image of a tiled rectangle with fractional side lengths given the area represented as multiplication of the side lengths. DOK: 2 Avoid exponents in units. Uses appropriate units (square cm, square m, square in, square ft, and improvised units). Max DOK: 2	Shows and explains why the area of a rectangle with fractional side lengths can be found by both counting the unit squares and by multiplying the side lengths and uses appropriate units (may include context). DOK: 2 Max DOK: 2
5.G.4.b Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	Applies the area formula to determine the area of a rectangle when one side is a whole number and the other is a fraction (may include context). DOK: 1 Max DOK: 1	Applies the area formula to determine the area of a rectangle when both dimensions are fractional (may include context). DOK: 1 Identifies the rectangular models that have an area which represents a product of fractions. DOK: 1 Max DOK: 1	Determines the missing side length of a rectangle when given the area and an image of the rectangle with one missing dimension. One of the dimensions should be fractional (may include context). DOK: 2 Describes an area model to represent a product of fractions. DOK: 2 Max DOK: 2

5.G.4.c Use concrete models to measure the volume of rectangular prisms by counting cubic units.	Determines the volume of rectangular prisms with cubic units by counting the cubic units (may include context). DOK: 1 Appropriate units should be used (cubic cm, cubic in, cubic ft, and improvised units). Max DOK: 1	Determines the image(s) of rectangular prisms with cubic units shown that result in a given volume (may include context). DOK: 2 Compares the volumes of rectangular prisms with cubic units shown (may include context). DOK: 2 Appropriate units should be used (cubic cm, cubic in, cubic ft, and improvised units). Max DOK: 2	Explains or justifies that the volume of a rectangular prism can also be obtained by multiplying the whole-number dimensions of the rectangular prism (may include context). DOK: 3 Appropriate units should be used (cubic cm, cubic in, cubic ft, and improvised units). Max DOK: 3
5.G.4.d Find the volume of a rectangular prism with whole-number side lengths by modeling with unit cubes, and show that volume can be additive and is the same as would be found by multiplying the area of the base times height.	Uses a diagram of a right rectangular prism with whole number side lengths given to determine the volume of the prism as length x width x height (more than one correct answer). DOK: 1 Represents the volume of a right rectangular prism with whole number side lengths as length x width x height given the diagram and unit cubes drawn. DOK: 2 Avoid exponents in units. Appropriate units should be used (cubic cm, cubic in, cubic ft, and improvised units). Max DOK: 2	Uses a diagram of a right rectangular prism with whole number side lengths given to determine the volume of the prism as area of the base x height (more than one correct answer). DOK: 1 Represents the volume of a right rectangular prism with whole number side lengths as area of the base x height given the diagram and unit cubes drawn. DOK: 2 Avoid exponents in units. Appropriate units should be used (cubic cm, cubic in, cubic ft, and improvised units). Max DOK: 2	Determines right rectangular prisms that have the same volume based on the associative property (e.g., identifies (3 m x 2 m) x 1 m as having the same volume as 3 m x (2 m x 1 m)). Can be represented in a diagram or with multiplication. Does not need to know the term “associative property.” DOK: 2 Avoid exponents in units. Appropriate units should be used (cubic cm, cubic in, cubic ft, and improvised units). Max DOK: 2
5.G.4.e Solve authentic problems by applying the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of rectangular prisms with whole number edge lengths.	Determines the volume of rectangular prisms when given whole number length, width, and height (may include an image and must include context). DOK: 1 Determines the volume of rectangular prisms when given the area of the base and height (may include image and must include context). Prism must have whole number edge lengths. DOK: 1 Max DOK: 1	Determines an unknown dimension when given the volume and two dimensions of a rectangular prism (must include context). Dimensions must be whole number lengths. DOK: 2 Determines which dimensions (length, width, and height) result in the desired volume when given the volume of a rectangular prism (must include context). Dimensions must be whole number lengths. DOK: 2 Determines if rectangular prisms have the same volume when given rectangular prisms of different dimensions (must include context). Prisms must have whole number edge lengths. DOK: 2 Compares the volumes of rectangular prisms when given the dimensions of the prisms (must include context). Dimensions must be whole number lengths. DOK: 2 Max DOK: 2	Determines multiple sets of dimensions (length, width, and height) that result in the desired volume when given the volume of a rectangular prism (must include context). Dimensions must be whole number lengths. DOK: 3 Ex: A box has a volume of 24 cubic feet. What are the dimensions of the box? Max DOK: 3

DATA: Students will solve problems and reason with data/probability using multiple representations, make connections within math and across disciplines, and communicate their ideas.			
5.D.1 Data Collection: Students will formulate questions to collect, organize, and represent data. No additional indicators at this level.			
5.D.2 Analyze Data and Interpret Results: Students will analyze the data and interpret the results.			
5.D.2.a Represent, analyze, and solve authentic problems using information presented in one or more tables or line plots including whole numbers and fractions.	Determines the line plot that represents given data from observations, surveys, or experiments and vice versa. Includes answering questions about quantity differences in the graph or accuracy of the plot. DOK: 2 Determines the difference or sum of data that includes only whole numbers presented in a table. DOK: 2 Max DOK: 2	Draws conclusions about trends in data from observations, surveys, or experiments that are related to data given in a data list or a line plot of data. DOK: 3 Determines the frequency chart that represents given data from observations, surveys, or experiments and vice versa. Includes answering questions about quantity differences in the frequency chart or accuracy of the chart. DOK: 2 Compares the change of data from observations, surveys, or experiments presented in a table or line plot (e.g., Between which two hours did the greatest change in temperature occur?). DOK: 2 Max DOK: 3	Explains or justifies conclusions about trends in data from observations, surveys, or experiments. DOK: 3 Explains or justifies a representation of data or interpretations of data from observations, surveys, or experiments. Includes data represented in frequency charts, tables, or line plots, and data represented in multiple ways. DOK: 3 Max DOK: 3