NSCAS NEBRASKA STUDENT-CENTERED ASSESSMENT SYSTEM

Summative Assessment
Mathematics Grade 4 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.			
4.N.1 Numeric Relationships: Students will demonstrate and represent multi-digit numbers using relationships with the base-ten number system.			
4.N.1.a Read, write, and demonstrate multiple equivalent representations for whole numbers up to 1,000,000 and decimals to the hundredths using visual representations, standard form, and expanded form.	Determines another form/representation (standard, word, visual) for a whole number from 10,000 up to 1,000,000 given the standard form, word form, or a visual representation (includes objects) of the number. DOK: 1 Determines the expanded form/notation for a whole number from 10,000 up to 1,000,000 given the standard form or a visual representation (includes objects) of the number. DOK: 1 Determines another form/representation (standard, word, visual) for numbers containing decimals to the tenths (0.1 to 9,999.9) given the standard form or a visual representation (includes objects) of the number. DOK: 1 Determines the standard form for numbers containing decimals to the tenths (0.1 to 9,999.9) given the word form of the number. DOK: 1 (Refer to 3.N.1.a for numbers within the range of 1,000–10,000.) Max DOK: 1	Determines the expanded form/notation or a visual representation (includes objects) for a whole number from 10,000 up to 1,000,000 given the word form of the number. DOK: 1 Determines another form/representation (standard, word, visual) for numbers containing decimals to the hundredths (0.01 to 999,999.99) given the standard form or a visual representation (includes objects) of the number. DOK: 1 Determines the standard form for numbers containing decimals to the hundredths (0.01 to 999,999.99) given the word form of the number. DOK: 1 Determines another form/representation (standard, word, visual, objects) for numbers containing decimals to the tenths or hundredths (0.01 to 999,999.99) given the expanded form/notation of the number. DOK: 1 Max DOK: 1	Determines the expanded form/notation or a visual representation (includes objects) of numbers containing decimals to the tenths or hundredths (0.01 to 999,999.99) given the word form of the number. DOK: 1 Analyzes representations of whole numbers between 10,000 and 1,000,000 and numbers containing decimals to the tenths or hundredths (0.01 to 999,999.99). DOK: 2 Ex: Explain whether (9 x 100) + (2 x 1/10) represents 900.2. Max DOK: 2

4.N.1.b Represent and justify comparisons of whole numbers up to 1,000,000 and decimals through the hundredths place using number lines and reasoning strategies.	Uses symbols or number lines to represent comparisons between two whole numbers with at least one between 10,000 and 1,000,000. DOK: 1 Orders three or more whole numbers with at least one value being between 10,000 and 1,000,000 (may or may not use symbols). DOK: 1 Uses symbols or number lines to represent comparisons of two numbers when one value is a whole number up to 1,000,000 and the other value is a decimal to the tenths or hundredths. DOK: 1 Uses symbols or number lines to represent comparisons of two decimals between 0.01 and 999,999.99 when only comparing whole number portions and/or tenths is necessary (e.g., compare 1.8 and 2.7 or compare 1.32 and 1.41). DOK: 1 Orders three or more decimals between 0.01 and 999,999.99 when each number has the same place values (e.g., orders 23.04, 10.99, 30.66 from least to greatest or orders 0.1, 0.9, 0.4 from greatest to least). DOK: 1 (Refer to 3.N.1.b for numbers between 1,000 and 10,000.) Max DOK: 1	Uses symbols or number lines to represent comparisons of two decimals between 0.01 and 999,999.99 when comparing hundredths is necessary (e.g., compare 1.54 and 1.52). DOK: 1 Orders three or more decimals between 0.01 and 999,999.99 when the numbers have different place values (e.g., orders 0.06, 1.5, 1.06, 0.5 from least to greatest or orders 7.0, 7.5, 7.15, 7.05 from greatest to least). DOK: 1 Max DOK: 1	Analyzes comparisons between two numbers up to 1,000,000 where at least one value is a decimal to the tenths or hundredths using number lines and reasoning strategies (e.g., explain why 1.6 equals 1.60). DOK: 2 Max DOK: 2
4.N.1.c Recognize a digit in one place represents ten times what it represents in the place to its right.	Assessed at the local level		
4.N.1.d Use decimal notation for fractions with denominators of 10 or 100. (e.g. 43/100 = 0.43)	None at this this level. Max DOK: 1	Determines the decimal notation for a fraction with a denominator of 10, when the numerator is between 0 and 10 (e.g., determine the decimal notation for 4/10). DOK: 1 Determines the decimal notation for a fraction with a denominator of 100, when the numerator is between 0 and 100. DOK: 1 Determines the decimal notation for mixed numbers where the fractional component is a fraction with a denominator of 10, when the numerator is between 0 and 10, or with a denominator of 100, when the numerator is between 0 and 100 (e.g., determine the decimal notation for 2 1/10). DOK: 1 Max DOK: 1	Determines the decimal notation for a fraction with a denominator of 10, when the numerator is between 10 and 100 but not a multiple of 10. DOK: 1 When given a decimal, determines the fraction with a denominator of 10 and a whole number numerator between 10 and 100 but not a multiple of 10. DOK: 1 Determines the decimal notation for a fraction with a denominator of 100, when the numerator is between 100 and 1,000 but not a multiple of 100. DOK: 1 When given a decimal, determines the fraction with a denominator of 100 and a whole number numerator between 100 and 1,000 but not a multiple of 100. DOK: 1 Analyzes conversions between decimals and fractions with denominators of 10 or 100 and a whole number numerator. DOK: 2 Ex: Are 0.5 and 50/100 equivalent? Explain your reasoning. Max DOK: 2

4.N.2 Fractions and Decimals: Students will extend understanding of fractions by equivalence and ordering and will develop an understanding of decimals.			
4.N.2.a Explain and demonstrate how a mixed number is equivalent to a fraction greater than one and how a fraction greater than one is equivalent to a mixed number using visual fraction models and reasoning strategies.	Assessed at the local level		
4.N.2.b Explain and demonstrate how equivalent fractions are generated by multiplying by a fraction equivalent to 1 using visual fraction models and the Identify Property of Multiplication.	Assessed at the local level		
4.N.2.c Compare and order fractions having unlike numerators or denominators using number lines, benchmarks, reasoning strategies, and/or equivalence.	Compares two fractions of the same whole with unlike numerators and denominators when shown on a number line and records the comparison with symbols. DOK: 1 Orders three or more fractions with unlike numerators and/or denominators given a visual representation of the fractions. DOK: 2 Determines the fraction that is greater than a given fraction and less than another given fraction given a visual representation of the fractions or a number line. DOK: 2 (Refer to 3.N.2.f for like numerators or denominators.) Max DOK: 2	Uses symbols to record comparisons between two fractions of the same whole with unlike numerators and denominators. DOK: 2 Orders three or more fractions with unlike numerators and/or denominators, with at least one fraction being a benchmark fraction (e.g., 1/2) or one fraction that has the same numerator or denominator as one of the other fractions (e.g., 2/5, 1/2, 4/6 or 2/5, 4/6, 4/5). DOK: 2 Orders three or more fractions of the same whole with at least two having the same numerator but different denominators and at least two having the same denominator but different numerators (e.g., 2/3, 2/4, 3/4) given a visual representation of the fractions or a number line. DOK: 2 Determines the fraction with the least or greatest value from a set of fractions when the set can be divided based on comparisons with a benchmark fraction (e.g., 1/2) or one fraction that has the same numerator or denominator as one of the other fractions (e.g., 2/5, 1/2, 4/6 or 2/5, 4/6, 4/5). DOK: 2 Determines the fraction that is greater than a given fraction and less than another given fraction, with at least one fraction being a benchmark fraction (e.g., 1/2) or one fraction that has the same numerator or denominator as one of the other fractions. DOK: 2 Max DOK: 2	Analyzes comparisons of two fractions with unlike numerators and/or denominators using visual representations or verbal reasoning (e.g., explains why 1/2 is less than 2/3). DOK: 3 Analyzes ordered sequences of three or more fractions with unlike numerators and/or denominators using verbal reasoning and/or visual representations/number line (e.g., explains ordering 3/7, 6/12, and 8/9 from least to greatest based on comparisons with 1/2). DOK: 3 Max DOK: 3
4.N.3 Operations with Fractions: Students will understand and demonstrate fractional computation.			
4.N.3.a Decompose a fraction into a sum of fractions with the same denominator in more than one way and record each decomposition with an equation and a visual representation.	Assessed at the local level		

4.N.3.b Explain the meaning of addition and subtraction of fractions with like denominators using visual fraction models, properties of operations, and reasoning strategies.	Assessed at the local level		
4.N.3.c Add and subtract fractions and mixed numbers with like denominators.	Adds and subtracts fractions with like denominators without regrouping. May include visual models. DOK: 1 Adds and subtracts mixed numbers with like denominators without regrouping. May include visual models. DOK: 1 Items may include improper fractions. Max DOK: 1	Adds and subtracts fractions with like denominators with regrouping. May include visual models. DOK: 1 Adds mixed numbers with like denominators with regrouping. May include visual models. DOK: 1 Adds one fraction and one mixed number with like denominators with and without regrouping. DOK: 2 Items may include improper fractions. Max DOK: 2	Subtracts mixed numbers with like denominators with regrouping required. May include visual models. DOK: 2 Subtracts one fraction and one mixed number with like denominators with and without regrouping. Includes subtracting a fraction from a mixed number where the numerator of the fraction is greater than the numerator of the fractional portion of the mixed number. May include visual models. DOK: 2 Items may include improper fractions. Max DOK: 2
4.N.3.d Solve authentic problems involving addition and subtraction of fractions and mixed numbers with like denominators.	Solves authentic problems involving addition and/or subtraction of fractions with like denominators, with no regrouping the fraction into whole numbers required. DOK: 1 Max DOK: 1	Solves authentic problems involving the addition of fractions with like denominators, with regrouping the sum into mixed numbers required. DOK: 2 Solves authentic problems involving the addition of mixed numbers with like denominators or the addition of fractions and mixed numbers with like denominators, with and without regrouping the sum into mixed numbers required. DOK: 2 Solves authentic problems involving subtraction of mixed numbers with like denominators or the subtraction of fractions and mixed numbers with like denominators, with or without regrouping required (e.g., 5 1/8 – 2 7/8 or 6 4/5 – 4 2/5). DOK: 2 Solves authentic problems involving both addition and subtraction with a mix of fractions and/or mixed numbers with like denominators, with or without regrouping required for the subtraction (e.g., 1/4 + 3 1/4 – 1 3/4 or 1 7/10 + 4 9/10 – 2 3/10). DOK: 2 Max DOK: 2	Explains how to translate relevant information of a problem involving fractions and mixed numbers into mathematical steps. DOK: 3 Explains or justifies solutions to authentic addition and/or subtraction problems with fractions and mixed numbers with like denominators. DOK: 3 Max DOK: 3
4.N.3.e Multiply a fraction by a whole number using visual fraction models and properties of operations.	Multiplies a unit fraction by a whole number with a model. DOK: 1 Multiplies a non-unit fraction by a whole number resulting in a product less than one or a product equivalent to a whole number with a model. DOK: 1 Max DOK: 1	Multiplies a non-unit fraction by a whole number resulting in a product greater than one represented as a mixed number or fraction greater than one with a model. DOK: 2 Max DOK: 2	Analyzes multiplication of a fraction by a whole number (e.g., explain why the product of 2 and 3/4 will be less than 2). DOK: 2 Max DOK: 2
4.N.4 Factors and Multiples: Students will find factors and multiples and classify numbers as prime or composite.			

4.N.4.a Determine whether a given whole number up to 100 is a multiple of a given one-digit number.	Determines whether a whole number up to 100 is a multiple of a single number from 2–10. DOK: 1 Max DOK: 1	Determines whether a whole number up to 100 is a multiple of more than one different one-digit number from 2–5 and 10. Must include at least one from 3 or 4 (e.g., Which number is a multiple of both 2 and 3?). DOK: 1 Max DOK: 1	Determines whether a whole number up to 100 is a multiple of more than one different one-digit number from 6–9 and 2–5 or 10. Must include at least one from 6–9 (e.g., Which number is a multiple of both 2 and 7?). DOK: 1 Analyzes statements about multiples of one-digit whole numbers. DOK: 2 Ex: John says that 20 is a multiple of 2 and 5. Jane says that 20 is a multiple of 4 and 5. Explain why each statement about the number 20 is correct or incorrect. Max DOK: 2
4.N.4.b Determine factors of any whole number up to 100 and classify a number up to 100 as prime or composite.	Identifies the meaning of prime and composite. DOK: 1 Determines some factors for composite numbers up to 100. DOK: 1 Max DOK: 1	Determines whether two-digit numbers other than multiples of 10 are factors of other whole numbers up to 100 (e.g., 15 is a factor of 30). DOK: 1 Determines all factors for composite numbers up to 100. DOK: 1 Determines prime numbers up to 100. DOK: 1 Determines composite numbers up to 100. DOK: 1 Max DOK: 1	Analyzes statements about factors of whole numbers up to 100. DOK: 2 Ex: When 2 is a factor of a number, does that mean 4 must also be a factor? Justify your answer. Analyzes the classification of prime/composite numbers from 2 through 100 (e.g., explain why even numbers greater than 2 are composite numbers). DOK: 2 Max DOK: 2
ALGEBRA: Students will solve problems and reason with algebra using multiple representations, make connections within math and across disciplines, and communicate their ideas.			
4.A.1 Operations and Algebraic Thinking: Students will extend understanding of multiplication and division and apply operational properties to solve problems involving variables.			
4.A.1.a Add and subtract multi-digit numbers using an algorithm.	Assessed at the local level		

4.A.1.b Multiply up to a four-digit whole number by a one-digit whole number and multiply a two-digit whole number by a two-digit whole number using strategies based on place value, properties of operations, and algorithms.	Multiplies a two-, three-, or four-digit whole number by a one-digit whole number. DOK: 1 Identifies the product of two two-digit whole numbers using an algorithm. DOK: 1 Max DOK: 1	Analyzes multiplication of a two-, three-, or four-digit whole number by a one-digit number. Can include the role of place value. 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. Writes the product of two two-digit whole numbers using an algorithm. DOK: 1 Analyzes multiplication of a pair of two-digit numbers using an algorithm. Can include the role of place value. DOK: 2 Ex: When shown the steps for calculating the product using an algorithm, determine the step where an error occurred in multiplying two two-digit whole numbers and calculate the correct product. Max DOK: 2	Compares the product of two different four-digit whole numbers and the same one-digit whole number (e.g., the product of 1,234 x 5 is less than the product of 2,345 x 5). DOK: 2 Compares the product of a four-digit whole number and two different one-digit whole numbers (e.g., the product of 1,234 x 4 is twice the product of 1,234 x 2). DOK: 2 Compares the product of two two-digit whole numbers when one factor is the same (e.g., 30 x 24 is twice the product of 15 x 24 or 46 x 15 is greater than the product of 46 x 11). DOK: 2 Max DOK: 2
4.A.1.c Divide up to a four-digit whole number by a one-digit divisor with and without a remainder using strategies based on place value.	None at this level.	Divides a two-, three-, or four-digit whole number by a one-digit divisor, with and without a remainder. DOK: 1 Analyzes division of two-, three-, or four-digit whole numbers by a one-digit whole number. Can include explaining the meaning of a remainder in division and how it relates to multiplication (not within a context). DOK: 2 Ex: When shown the steps for calculating the quotient using the standard algorithm, determine the step where an error occurred in dividing two whole numbers and calculate the correct quotient. Max DOK: 2	Compares the quotient of two different two-, three-, or four-digit whole numbers and the same one-digit whole number (e.g., the quotient of 175 divided by 5 is less than the quotient of 225 divided by 5). DOK: 2 Compares the quotient of a two-, three-, or four-digit whole number and two different one-digit whole numbers (e.g., the quotient of 120 divided by 4 is greater than the quotient of 120 divided by 8). DOK: 2 Max DOK: 2
4.A.1.d Determine the reasonableness of whole number products and quotients using estimations and number sense.	Assessed at the local level		
4.A.1.e Create a simple algebraic expression or equation using a variable for an unknown number to represent an authentic mathematical situation (e.g., $3 + n = 15$, $81 \div n = 9$).	Determines an equation with a variable for an unknown to represent a situation when given a simple math process or context. DOK: 2 Determines a one-step algebraic expression with a variable for an unknown to represent a math process or context when the numbers and variables are presented in the same order as the expression. DOK: 2 Max DOK: 2	Determines a one-step algebraic expression with a variable for an unknown to represent a math process or context when the numbers and variables are presented in a different order than the expression. DOK: 2 Max DOK: 2	Determines multiple one-step algebraic expressions or equations that represent the same relationship between an unknown and two quantities (e.g., $6 - n = 2$ and $n + 2 = 6$). DOK: 2 Max DOK: 2

4.A.1.f Solve one- and two-step authentic problems using the four operations, including interpreting remainders and the use of a letter to represent the unknown quantity.	Solves one-step authentic problems which use any of the four basic operations and include the use of a letter to represent the unknown quantity. DOK: 1 Max DOK: 1	Determines the step necessary to solve a one-step authentic problem which uses any of the four basic operations and includes the use of a letter to represent the unknown quantity. DOK: 1 Determines the steps necessary to solve a two-step authentic problem that uses any of the four basic operations and includes the use of a letter to represent the unknown quantity. DOK: 2 Solves two-step authentic whole number problems that use any of the four basic operations and include the use of a letter to represent the unknown quantity. If division is used, the unknown quantity should not be the divisor. DOK: 2 Interprets the remainder of a one- or two-step authentic problem which uses any of the four basic operations and includes the use of a letter to represent the unknown quantity. The unknown quantity should not be the divisor. DOK: 2 Max DOK: 2	Solves two-step authentic problems with whole number equations that include the use of a letter to represent the unknown quantity and use division with the unknown quantity as the divisor (e.g., $a/x = b + c$ where a, b, and c are whole numbers). DOK: 2 Determines two or more two-step authentic whole number equations that have the same value for the unknown. DOK: 2 Explains or justifies solutions to two-step authentic whole number equations. 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.			
4.G.1 Shapes and Their Attributes: Students will draw and identify lines and angles, and classify shapes by properties of their lines and angles.			
4.G.1.a Identify, create, and describe points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines.	Classifies one or more images as a point, line, line segment, ray, angle, or parallel lines. DOK: 2 Max DOK: 2	Classifies one or more images as perpendicular lines or intersecting lines. DOK: 2 Recognizes points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines in two-dimensional figures. DOK: 1 Draws points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines as stand-alone images. DOK: 1 Max DOK: 2	Describes similarities or differences between points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines. DOK: 2 Draws points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines in two-dimensional figures. DOK: 1 Max DOK: 2
4.G.1.b Justify the classification of angles as acute, obtuse, or right.	Classifies a single angle as acute, obtuse, or right. DOK: 2 Classifies angles within an image containing multiple angles (e.g., a polygon) as acute, obtuse, or right. DOK: 2 Max DOK: 2	Compares and justifies angle sizes based on the angle classifications (e.g., determines that an angle classified as acute is smaller than an angle that measures 90 degrees). DOK: 2 Max DOK: 2	Analyzes similarities or differences between acute, obtuse, and right angles (e.g., explains that there is only one measure for a right angle, but acute and obtuse angles may be drawn with different measurements). DOK: 3 Max DOK: 3

4.G.1.c Justify the classification of two-dimensional shapes based on the presence or absence of parallel and perpendicular lines, or the presence or absence of specific angles.	Identifies similarities or differences between squares and rectangles with or without visuals. DOK: 2 Max DOK: 2	Identifies similarities or differences between rectangles, including squares, and other quadrilaterals, with or without a visual. DOK: 2 Classifies the images of quadrilaterals and/or triangles based on the presence or absence of parallel and perpendicular lines, or the presence or absence of specific angles. DOK: 2 Classifies two-dimensional shapes in terms of whether they must or can possess parallel or perpendicular sides when given only the name(s) of the shapes. DOK: 2 Classifies two-dimensional shapes in terms of specific angles present in the shape given only the name(s) of the shapes. DOK: 2 Describes the presence or absence of parallel and perpendicular lines and/or the presence or absence of specific angles given the classification of two-dimensional shapes. DOK: 2 Max DOK: 2	Classifies the images of two-dimensional shapes based on the presence or absence of parallel and perpendicular lines, or the presence or absence of specific angles, when at least one shape has 5 or more sides. DOK: 2 Identifies multiple statements about descriptions, similarities, and/or differences among types of two-dimensional shapes based upon the presence or absence of parallel or perpendicular lines and/or the presence or absence of specific angles. DOK: 2 Describes similarities or differences among types of two-dimensional shapes based upon the presence or absence of parallel or perpendicular lines and/or the presence or absence of specific angles. DOK: 3 Explains and/or justifies why an image of a two-dimensional shape has a particular classification. DOK: 3 Max DOK: 3
4.G.1.d Recognize, draw, and justify lines of symmetry in two-dimensional shapes.	Determines a line of symmetry for a two-dimensional shape. DOK: 1 Max DOK: 1	Determines all lines of symmetry for a two-dimensional shape with multiple lines of symmetry. DOK: 2 Creates one or more lines of symmetry for a two-dimensional shape. DOK: 2 Determines two-dimensional shapes that do not have lines of symmetry. DOK: 2 Max DOK: 2	Analyzes and justifies properties of lines of symmetry (e.g., makes a connection between the number of sides of a regular figure and the number of lines of symmetry, or explains why a line is or is not a line of symmetry). DOK: 3 Compares the lines of symmetry in two or more two-dimensional shapes. DOK: 2 Max DOK: 3
4.G.2 Measurement: Students will generate simple conversions from a larger unit to a smaller unit to solve authentic problems and measure angles.			
4.G.2.a Identify and use the appropriate tools, operations, and units of measurement, both customary and metric, to solve authentic problems involving time, length, weight, mass, and capacity.	Assessed at the local level		
4.G.2.b Determine the reasonableness of measurements involving time, length, weight, mass, capacity, and angles.	Determines the most appropriate unit to use in a context (e.g., measuring a road trip in miles rather than inches). DOK: 1 Max DOK: 1	Estimates measurements in context involving time, length, weight, mass, capacity, and angles. DOK: 1 Max DOK: 1	Explains why a measurement estimate involving time, length, weight, mass, capacity, or angles is reasonable or unreasonable. DOK: 2 Max DOK: 2

4.G.2.c Generate simple conversions from a larger unit to a smaller unit within the customary and metric systems of measurement.	Determines equivalent measurements from a larger to smaller unit within a system of measurement using one step or one degree of change (e.g., yards to feet or centimeters to millimeters) (may include context). DOK: 2 Max DOK: 2	Determines equivalent measurements from a larger to smaller unit within a system of measurement using two or more steps or two or more degrees of change (e.g., yards to inches or meters to millimeters) (may include context). DOK: 2 Uses one- or two-step conversions from a larger unit to a smaller unit within a system of measurement to compare measurements within the same system (may include context). DOK: 2 Max DOK: 2	Explains how to determine equivalent measurements from a larger to smaller unit within a system of measurement using two or more steps or two or more degrees of change (e.g., yards to inches or meters to millimeters) (may include context). DOK: 2 Max DOK: 2
4.G.2.d Measure angles in whole number degrees using a protractor and relate benchmark angle measurements to their rotation through a circle (e.g., 180° = 1/2 of a circle).	Measures an angle to the nearest whole degree when the protractor is placed in the diagram. DOK: 1 Max DOK: 1	Uses a protractor to measure an angle to the nearest whole degree when the protractor is not placed in the diagram. DOK: 2 Max DOK: 2	Uses a protractor to measure an angle to the nearest whole degree when the angle is part of a figure and the protractor is not placed in the diagram. DOK: 2 Max DOK: 2
4.G.2.e Recognize angle measures as additive and solve problems involving addition and subtraction to find unknown angles on a diagram.	Represents a composite angle measure as the sum of its parts given a diagram with degree measures (e.g., given a diagram with angle A measuring 90 degrees and defined as made up of angle 1 and angle 2 each measuring 45 degrees, determines that the measure of angle A can be represented as 45 + 45 = 90). DOK: 1 Limited to whole number degrees. Max DOK: 1	Solves mathematical and authentic problems involving composite angles that can be solved with addition and subtraction given a diagram. DOK: 2 Limited to whole number degrees. Max DOK: 2	Represent angle measures in authentic and mathematical problems as an equation with a letter or symbol for an unknown angle measure. DOK: 2 Limited to whole number degrees. Max DOK: 2
4.G.3 Area and Perimeter: Students will apply perimeter and area formulas for rectangles.			
4.G.3.a Apply perimeter and area formulas for rectangles to solve authentic problems.	Applies the area formula to determine the area of a rectangle when the length and width are given and are one-digit whole numbers (must include context). DOK: 1 Applies the perimeter formula to determine the perimeter of a rectangle when the length and width are given (must include context). DOK: 1 Max DOK: 1	Applies the area formula to determine the area of a rectangle when the length and width are given and at least one dimension is a two-digit whole number (must include context). DOK: 1 Applies both the area and perimeter formulas to determine the area and the perimeter of a rectangle when the length and width are given (must include context). DOK: 1 Applies the perimeter and/or area formula to determine the perimeter and/or area of a square when given the length of one side of the square (must include context). DOK: 1 Determines the missing side lengths of a rectangle when given the perimeter or area and an image of the rectangle with one or more missing dimensions (must include context). DOK: 2 Max DOK: 2	Determines the missing side lengths of a rectangle when given area and a description of the rectangle with one or more missing dimensions (must include context). DOK: 2 Analyzes how changing one or more dimensions affects the perimeter and/or area of a rectangle (e.g., increasing the length by 3 inches increases the perimeter by 6 inches) (must include context). DOK: 3 Compares the perimeters and/or areas of rectangles (e.g., the area of the second rectangle is 4 times the area of the first rectangle) (must include context). DOK: 2 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.			
4.D.1 Data Collection: Students will formulate questions to collect, organize, and represent data.			
4.D.1.a Generate and represent data using line plots where the horizontal scale is marked off in appropriate units—whole numbers, halves, fourths, or eighths.	None at this level. See 3.D.1.b for line plots involving whole numbers and halves and without quarters or eighths.	Determines a line plot that represents data, given data that includes quarters or eighths. Data may include whole numbers and halves. May also include answering a question about a step in creating the line plot. DOK: 2 Max DOK: 2	Answers multiple questions about the creation of a line plot that represents data, given data that includes quarters or eighths. Data may include whole numbers and halves. DOK: 2 Analyzes line plots with a scale of 1/8 or 1/4 in relation to their corresponding data (e.g., explain why using a scale from 4–5 marked in eighths on a line plot is a good fit for the data). DOK: 3 Max DOK: 3
4.D.2 Analyze Data and Interpret Results: Students will analyze the data and interpret the results.			
4.D.2.a Solve authentic problems and analyze data involving addition or subtraction of fractions presented in line plots.	Solves authentic problems involving addition and/or subtraction without regrouping given data containing fractions and/or mixed numbers with like denominators represented in a line plot. DOK: 2 Max DOK: 2	Solves authentic problems involving addition and/or subtraction with regrouping given data containing fractions with like denominators represented in a line plot. DOK: 2 Solves authentic problems involving only addition with regrouping given data containing mixed numbers with like denominators represented in a line plot when understanding least/greatest based on the number of *x* ’s is not required (e.g., determine the total length of the ribbon represented in the line plot). DOK: 2 Max DOK: 2	Solves authentic problems involving only subtraction with like denominators given data containing mixed numbers represented in a line plot when understanding least/greatest based on the number of *x* ’s is not required (e.g., determine difference between the length of a ribbon represented in the line plot and a given length). DOK: 2 Solves authentic problems involving both addition and subtraction with like denominators given data containing fractions or mixed numbers represented in a line plot when understanding least/greatest based on the number of *x* 's is required (e.g., determine the difference between the lightest and heaviest rocks when the lightest rocks do not have the fewest *x* ’s and/or the heaviest rocks do not have the most *x* ’s) DOK: 2 Explains or justifies answers to authentic problems requiring addition and subtraction of fractions and/or mixed numbers in data represented on a line plot. Analysis should be limited to data interpretation or general process of solving the problem and not analysis of addition/subtraction. DOK: 3 Max DOK: 3