Gwinnett County Public Schools Mathematics: Grade 4 – Instructional Calendar 2022-2023

Standards for Mathematical Practice

1 Make sense of problems and persevere in solving them.
2 Reason abstractly and quantitatively.
3 Construct viable arguments and critique the reasoning of others.
4 Model with mathematics.
5 Use appropriate tools strategically.
6 Attend to precision.
7 Look for and make use of structure.
8 Look for and express regularity in repeated reasoning.

Please look to unit pacing guides for strategic clustering of AKS.

****AKS in bold are historically challenging for students. Additional resources to support can be found here.****

1st 9 weeks: Units 1a & 1b

Unit 1a: Whole Numbers (4 weeks)

Big Idea #1: Generalize place value understanding for multi-digit whole numbers. Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000

6.NBT.1 explain that in a multi-digit whole number, a digit in any one place represents ten times what it represents in the place to its right (e.g., recognize that 700 ÷ 70 = 10 by applying concepts of place value and division)

7.NBT.2 read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons

8.NBT.3 use place value understanding to round whole numbers to any place using tools such as a number line and/or charts

Big Idea #2: Use place value understanding and properties of operations to perform multi-digit arithmetic. Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000

9.NBT.4 add and subtract multi-digit whole numbers fluently using the standard algorithm

3.OA.3 solve multi-step word problems with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a symbol or letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies, including rounding

Unit 1b: Whole Numbers (5 weeks)

Big Idea #1: Use place value understanding and properties of operations to perform multi-digit arithmetic. Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000

10.NBT.5 multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain multiplication calculations by using equations, rectangular arrays, and/or area models

11.NBT.6 find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models

Big Idea #2: Use the four operations with whole numbers to solve problems

1.OA.1 explain that a multiplicative comparison is a situation in which one quantity is multiplied by a specified number to get another quantity; interpret a multiplication equation as a comparison; for example interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5; represent verbal statements of multiplicative comparisons as multiplication equations

2.OA.2 solve multiplication and division word problems involving multiplicative comparison using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison

3.OA.3 solve multi-step word problems with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a symbol or letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies, including rounding

2nd 9 weeks: Units 1c, 2, & 3

Unit 1c: Whole Numbers (2 weeks)

Big Idea #1: Understanding factors and multiples including prime and composite numbers

4.OA.4 find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite

Big Idea #2: Generate and explain patterns and rules

5.OA.5 generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. Explain informally why the numbers will continue to alternate in this way. For example, given the rule "ADD 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers

Unit 2: Fractions, Adding and Subtracting (4 weeks)

Big Idea #1: Adding and Subtracting fractions

14.NF.3 recognize that a fraction a/b with a > 1 as a sum of unit fractions 1/b

15.NF.3_a model and explain addition and subtraction of fractions as joining and separating parts referring to the same whole

16.NF.3_b decompose a fraction, by using a visual fraction model, into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation and justify reasoning using visual fraction models (e.g., 3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8; 8/8 = 7/8 + 1/8)

Big Idea #2: Adding and subtracting mixed numbers

17.NF.3_c add and subtract mixed numbers with like denominators (e.g., by replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction)

Big Idea #3: Solving real world problems with fractions and mixed numbers

18.NF.3_d solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators by using visual fraction models and equations to represent the problem

Unit 3: Fractions Equivalents (3 weeks)

Big Idea #1: Understanding equivalent fractions

12.NF.1 explain why two or more fractions are equivalent to a fraction (n x a/n x b), ex: 1/4 = (3 x 1)/(3 x 4) by using visual fraction models. Focus attention on how the number and size of the parts differ even though the two fractions themselves are the same size; use this principle to recognize and generate equivalent fractions

Big Idea #2: Comparing fractions

13.NF.2 compare two fractions with different numerators and different denominators (e.g., by using visual fraction models, by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2); recognize that comparisons are valid only when the two fractions refer to the same whole; record the results of comparisons with symbols >, =, or <, and justify the conclusions

3rd 9 weeks: Units 4, 5, & 6

Unit 4: Fraction Multiply (3 weeks)

Big Idea #1: Multiplying a fraction by a whole number

19.NF.4 apply and extend previous understanding of multiplication to multiply a fraction by a whole number (e.g., by using a visual such as a number line or area model)

20.NF.4_a. recognize a fraction a/b as a multiple of 1/b (e.g., use a visual fraction model to represent 5/4as the product of 5 x (1/4), recording the conclusion by the equation 5/4 = 5 x (1/4))

21.NF.4_b. understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number (e.g., use a visual fraction model to express 3 x (2/5) as 6 x (1/5), recognizing this product as 6/5 (In general, n x (a/b) = (n x a)/b)

Big Idea #2: Solving real-world problems by multiplying a fraction by a whole number

22.NF.4_c. solve word problems involving multiplication of a fraction by a whole number (e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?)

Unit 5: Fractions and Decimals (2 weeks)

Big Idea #1: Understand the relationship between fractions and decimals

23.NF.5 express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100 (e.g., express 3/10 as 30/100 and add 3/10 + 4/100 = 34/100)

24.NF.6 use decimal notation for fractions with denominators 10 or 100 (e.g., rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram)

Big Idea #2: Compare decimals

25.NF.7 compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions (e.g., by using a visual model)

Unit 6: Geometry (4 weeks)

Big Idea #1: Know basic terms and identify attributes of plane figures

36.G.1 draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines and identify these in two-dimensional figures

Big Idea #2: Classify plane figures based on attributes

37.G.2 classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles

Big Idea #3: Identify and draw lines of symmetry in plane figures

38.G.3 recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry

Big Idea #4: Understand angle measurement

30.MD.5 recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand concepts of angle measurement

31.MD.5_a. recognize that an angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle; an angle that turns through 1/360 of a circle is called a "one-degree angle", and can be used to measure angles

32.MD.5_b. recognize that an angle that turns through "n" one-degree angles is said to have an angle measure of "n" degrees

33.MD.6 measure and draw angles using tools such as a protractor or angle ruler

34.MD.7 recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems (e.g., by using an equation with a symbol or letter for the unknown angle measure)

4th 9 weeks: Unit 7

Unit 7: Measurement (4 weeks)

Big Idea #1: Compare units of measure within a system and solve word problems using various forms of measurement

26.MD.1 know relative sizes of measurement units within one system of units, including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Understand the relationship between gallons, cups, quarts and pints. Express larger units in terms of smaller units within the same measurement system. Record measurement equivalents in a two column table

27.MD.2 use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale

Big Idea #2: Area and perimeter

28.MD.3 apply the area and perimeter formulas for rectangles in real-world and mathematical problems (e.g., find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor)

35.MD.8 recognize area as additive; find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying the technique to solve real world problems

Big Idea #3: Analyze and create line plots

29.MD.4 make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8) Solve problems involving addition and subtraction of fractions with common denominators by using information presented in line plots (e.g., from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection)