Gwinnett County Public Schools Mathematics: Grade 5 – Instructional Calendar 2021-2022

= AKS taught concurrently

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.

1st 9 weeks: Units 1-2

Unit 1: Whole Numbers (3.5 weeks)

Big Idea #1: Perform operations with multi-digit whole numbers

9.NBT.5 multiply multi-digit whole numbers fluently using the standard algorithm (or other strategies demonstrating understanding of multiplication) up to a 3 digit by a 2 digit factor

10.NBT.6 find whole-number quotients of whole numbers with up to four-digit dividends and two-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 or concrete models (e.g., rectangular arrays and/or area models)

Big Idea #2: Write and interpret numerical expressions

1.OA.1 use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols

2.OA.2 write simple expressions that record calculations with numbers and interpret numerical expressions without evaluating them (e.g., express the calculation "add 8 and 7, then multiply by 2" as 2 x (8 + 7)) and recognize that 3 x (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product)

Unit 2: Decimals (5.5 weeks)

Big Idea #1: Understand the place value system

4.NBT.1 recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left

5.NBT.2 explain patterns in the number of zeros of the product when multiplying a number by powers of 10 and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10; use whole-number exponents to denote powers of 10

6. NBT.3_a. read, write, order, and compare place value of decimals to thousandths using base ten numerals, number names, and expanded form (e.g., 347.392 = 3 x 100 + 4 x 10 + 7 x 1 + 3 x (1/10) + 9 x (1/100) + 2 x (1/1000))

7.NBT.3_b. compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons

8.NBT.4 use place value understanding to round decimals to any place

Big Idea #2: Decimal operations

11.NBT.7 add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used

2nd 9 weeks: Unit 3

Unit 3, Part 1: Fractions (9 weeks)

Big Idea #1: Understanding fractions

14. NF.3 interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. Example: 3/5 can be interpreted as "3 divided by 5 and as 3 shared by 5"

Big Idea #2: Use equivalent fractions as a strategy to add and subtract fractions

12.NF.1 add and subtract fractions and mixed numbers with unlike denominators by finding a common denominator and equivalent fractions to produce like denominators

13. NF.2 solve word problems involving addition and subtraction of fractions including cases of unlike denominators (e.g., by using visual fraction models or equations to represent the problem); use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers (e.g., recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2)

Unit 3, Part 1: continued

Big Idea #3: Apply and extend previous understandings of multiplication to multiply fractions

21.NF.6 solve real world problems involving multiplication of fractions and mixed numbers by using visual fraction models or equations to represent the problem [Embed in AKS 15-21]

15.NF.4 apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction

16.NF.4_a. Apply and use the understanding of multiplication to multiply a fraction or whole number by a fraction. Examples: (a/b) x q as (a/b) x (q/1) and (a/b) x (c/d) = ac/bd

17. NF.4_b. find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths.

18.NF.5 relate the principle of fraction equivalence, a/b = (n x a)/(n x b), to the effect of multiplying a/b by 1

19.NF.5_a. interpret multiplication as scaling by comparing the size of the product to the sizes of the factors without multiplying

20. NF.5_b. explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number and why multiplying a given number by a fraction less than 1 results in a product smaller than the given number

3rd 9 weeks: Unit 3/Part 2-Unit 4

Unit 3 Part 2: Fractions (4 weeks)

Big Idea #1: Apply and extend previous understandings of division to divide fractions

23. NF.7_b. apply and extend previous understanding of division to interpret the quotient of a whole number by a unit fraction and compute such quotients (e.g., create a story context for 4 ÷ (1/5) and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 x (1/5) = 4)

22. NF.7_a. interpret division of a unit fraction by a non-zero whole number and compute such quotients (e.g., create a story context for (1/3) ÷ 4 and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) x 4 = 1/3)

24. NF.7_c. solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem, (e.g., how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?)

Unit 4: Volume and Measurement (5 weeks)

Big Idea #1: Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition

27. MD.3_a. use words, pictures, or numbers to show a cubic unit is represented by a cube in which each edge has a length of one unit

28.MD.3_b. apply concepts of volume measurement to explain volume as an attribute of solid figures packed without gaps or overlaps using "n" unit cubes

29.MD.4 measure volume as cubic centimeters, cubic meters, cubic inches, cubic feet and improvised units

30.MD.5 relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume

31.MD.5_a. find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base and represent threefold number products as volumes; associative property

32. MD.5_b. estimate, derive and apply the formula(V= l x w x h and V= B x h) for the volume of a cube and a right rectangular prism using manipulatives and relate volume to the operations of multiplication and addition to solve real world and mathematical problems

33.MD.5_c. recognize and calculate volume as additive when volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems

Big Idea #2: Convert like measurement units within a given measurement system

25.MD.1 convert among different-sized standard measurement units (mass, weight, length, time, etc.) within a given measurement system (customary and metric), and use these conversions in solving multi-step, real world problems (e.g., convert 5 cm to 0.05 m)

Big Idea #3: Represent and interpret data

26.MD.2 make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8) and solve problems using the line plot data, e.g., given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally

4th 9 weeks: Units 5-6

Unit 5: Geometry and Coordinate Plane (6 weeks)

Big Idea #1: Graph points on the coordinate plane to solve real-world and mathematical problems

34.G.1 create, label, and use a coordinate grid system

35.G.2 represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation

Big Idea #2: Analyze patterns and relationships

3.OA.3 generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms by completing a function table or input/output table. Using the terms created, form, and graph ordered pairs on a coordinate plane.

Unit 6: 2D Figures (3 weeks)

Big Idea #1: Classify two-dimensional figures into categories based on their properties

36.G.3 demonstrate that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category (e.g., all rectangles have four right angles and squares are rectangles so all squares have four right angles)

37.G.4 classify two-dimensional figures in a hierarchy based on properties (polygons, triangles, and quadrilaterals)

With the assistance of Achieve the Core, 5th grade AKS are bolded to signify foundational understanding within the grade level. Bolded AKS should be taught in differentiated small groups as well as through rich mathematical tasks.