

Gwinnett County Public Schools Mathematics: Grade 4 CCGPS – At A Glance 2014-2015

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: Unit 1

Unit 1: Whole Numbers

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.

- **9.NBT.1** explain that in a multi-digit whole number, a digit on one place represents ten times what it represents in the place to its right. Numbers in standard form are written using commas to separate periods.
- **10.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 $>$, $=$, $<$ symbols to record the results of comparisons.
- **12.NBT.3** use place value understanding to round whole numbers to any place using tools such as a number line and/or charts.

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.

- **13.NBT.4** add and subtract multi-digit whole numbers fluently using the standard algorithm
- **14.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
- **16.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.

Use the four operations with whole numbers to solve problems

- **1.OA.1** explain a multiplication equation as a comparison and 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
- **3.OA.3** solve multistep word problems posed 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 letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

2nd 9 weeks: Unit 1 Continued- Unit 3

Unit 1 Continued: Whole Numbers

Understanding factors and multiples including prime and composite numbers

- **AKS: 6.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.

Generate and explain patterns and rules

- **AKS: 8.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

Unit 2: Fraction Equivalents

Understanding equivalent fractions

- **AKS: 18.NF.1** Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models with attention to 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.

Comparing fractions

- **AKS: 19.NF.2** Compare two fractions with different numerators and different denominators, e.g. by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to

Unit 3: Fractions, Adding and Subtracting

Adding and Subtracting fractions

- **AKS: 21.NF.3** Recognize that a fraction a/b with $a > 1$ as a sum of fractions $1/b$
- **AKS: 22.NF.3_a** Model and explain addition and subtraction of fractions as joining and separating parts referring to the same whole
- **AKS: 23.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 fractions models

Adding and subtracting mixed numbers

- **AKS: 24.NF.3_c** Add and subtract mixed numbers with like denominators

Solving real world problems with fractions and mixed numbers

- **AKS: 25.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

3rd 9 weeks: Units 4-6

Unit 4 Part 2: Fractions, Multiply and Divide

Multiplying a fraction by a whole number

- **AKS: 26.NF.4** apply and extend previous understanding of multiplication to multiply a fraction by a whole number
- **AKS: 27.NF.4_a.** recognize a fraction a/b as a multiple of $1/b$
- **AKS: 28.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

Solving real-world problems by multiplying a fraction by a whole number

- **AKS: 29.NF.4_c.** solve word problems involving multiplication of a fraction by a whole

Unit 5: Fractions and Decimals

Understand the relationship between fractions and decimals

- **AKS: 30.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
- **AKS: 31.NF.6** use decimal notation for fractions with denominators 10 or 100

Compare decimals

- **AKS: 32.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.

Unit 6: Geometry

Know basic terms and identify attributes of plane figures

- **AKS: 46.G.1** draw points, lines, line segments, rays, angles, and perpendicular and parallel lines and identify these in two-dimensional figures

Classify plane figures based on attributes

- **AKS: 47.G.2** classify two-dimensional figures based on the presence or absence of parallel or perpendicular line segments, or the presence or absence of angles of a specified size and identify right triangles

Identify and draw lines of symmetry in plane figures

- **AKS: 49.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

4th 9 weeks: Unit 7

Unit 7: Measurement

Compare units of measure within a system

- **AKS: 33.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. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two column table.

Solve word problems using various forms of measurement

- **AKS: 36.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.

Area and perimeter

- **AKS: 38.MD.3** Apply the area and perimeter formulas for rectangles in real world and mathematical problems

Analyze and create line plots

- **AKS: 39.MD.4** make a line plot to display a data set of measurements in fractions of a unit. Solve problems involving addition and subtraction of fractions by using information presented in line plots.

Understand angle measurement

- **AKS: 40.MD.5** Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand concepts of angle measurement.
- **AKS: 42.MD.5_b.** Recognize that an angle that turns through "n" one-degree angles is said to have an angle measure of "n" degrees.
- **AKS: 43.MD.6** Measure and draw angles using tools such as a protractor or angle ruler.
- **AKS: 44.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 for the unknown angle measure.