Grade 4 Mathematics
Prince William County Pacing Guide
2019-2020

Teacher focus groups have assigned a given number of days to each unit based on their experiences and knowledge of the curriculum. It is critical that teachers stay as close as possible to the pacing guidelines to ensure that all Standards of Learning have been taught prior to the SOL assessment, and that, as children move within the Division, their math instruction remains coherent. Ongoing review should occur throughout the year.

Prince William County Regulation 602-1 describes the organization of the instructional day. Mathematics is allotted 75 minutes in grade 4. This should include an uninterrupted 60-minute block of time for the lesson and an additional 15-minute block to be used for classroom routines, number talks, ten-minute math, and/or other selected review activities. These types of activities are a critical element of mathematics instruction that provide essential practice and maintenance of key concepts and skills.

Teachers may find the full wording of the objectives, along with the essential knowledge and skills to be learned, in the Unit Guides. The Unit Guides were created by the Teacher Focus Groups and provide suggestions for learning experiences, assessments, and resources. These documents are available on the Mathematics Staff Communities page for each grade level.

Important Note – Some of the measurement Standards of Learning for mathematics and science are to be taught during science time throughout the year, **beginning in the first quarter**.

August 26- May 1 (Ongoing) Unit 0: Measurement Integrated Math/Science Standards	
Focus Topics: Taught throughout the year during science. See this summary chart for further details	**Standards of Learning**
Math/Science: *1st Quarter* Estimate, measure and solve practical problems involving length and describe the result in U.S. Customary and metric units - measuring to the nearest part of an inch ($\frac{1}{2}$. $\frac{1}{4}$, $\frac{1}{8}$. **Math/Science: *2nd Quarter*** Estimate, measure and solve practical problems involving weight/mass and describe the result in U.S. Customary and metric units (ounce, pound, gram, and kilogram). **Math/Science: *3rd Quarter*** Solve practical problems involving liquid volume **Math/Science: *4th t Quarter*** Solve practical problems involving elapsed time in hours and minutes within a 12-hour period.	4.8ad 4.8bd 4.8d 4.9
PWCS Measurement Assessments (Calculator Permitted for All)	**4.8abd, 4.9**
Objectives completed by 4th quarter	

August 26-September 27 (23 days) Unit 1: Place Value, Addition and Subtraction	
Focus Topics	**Standards of Learning**
Read, write, and identify the place and value of each digit in a nine-digit whole number. • Read nine-digit numbers, presented in standard form, and represent the same number in written form. • Write nine-digit whole numbers in standard form when the numbers are presented orally or in written form.	4.1a EKS 4.1a
Compare, and order whole numbers expressed through millions. • Compare numbers using words *is greater than*, *is less than*, *is equal to*, and *is not equal to* or using the symbols >, <, =, and ≠. • Order up to four whole numbers expressed through millions.	4.1b EKS 4.1b
Round whole numbers expressed through millions to the nearest thousand, ten thousand, and hundred thousand. • Identify the range of numbers that round to a given thousand, ten thousand, and hundred thousand.	4.1c EKS 4.1c
Estimate and determine sums, differences, and products of whole numbers. • Apply strategies, including place value and the properties of addition to determine the sum or difference of two whole numbers, each 999,999 or less. • Estimate whole number sums and differences with and without context.	4.4b (+ and -) EKS 4.4b
Create and solve single-step and multistep practical problems involving addition and subtraction with whole numbers.	4.4d
Recognize and demonstrate the meaning of equality.	4.16
PWCS End-of-Unit Common Formative Assessment (Parts A and B): **Place Value, Addition and Subtraction** **(No Calculator for 4.4b)**	**4.1abc** **4.4bd (+ and -)** **4.16**
Objectives completed	**4.1abc**

September 30 – October 29 (21 days) Unit 2: Foundations of Multiplication and Division	
Focus Topics	**Standards of Learning**
Demonstrate fluency with multiplication facts through 12 x 12, and the corresponding division facts. (***Note**: 3rd grade has representations through 10 x 10 and fluency with facts for 0, 1, 2, 5, and 10.)*	4.4a
Estimate and determine sums, differences and products of whole numbers. • Apply strategies, including place value and the properties of multiplication and/or addition, to determine the product of two whole numbers when both factors have two digits or fewer.	4.4b EKS 4.4b
Estimate and determine quotients of whole numbers with and without remainders. • Apply strategies, including place value and the properties of multiplication and/or addition, to determine the quotient of two whole numbers, given a one-digit divisor and a two- or three-digit dividend, with and without remainders. ***Note:** 3-digit dividends will be addressed in Unit 4 and problems will include remainders.*	4.4c EKS 4.4c
Create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication, and single-step practical problems involving division with whole numbers.	4,4d
Determine common factors and multiples, including least common multiples and greatest common factor. ***Note**: Common factors and multiples, including LCM and GCF will be addressed Unit 5 in context with fractions.*	4.5a
Recognize and demonstrate the meaning of equality.	4.16
PWCS End-of-Unit Common Formative Assessment (Parts A and B): Foundations of Multiplication and Division (No Calculator for 4.4abc)	**4.4abcd, 4.5a, 4.16**
Objectives completed: ***Full mastery of SOL 4.4abcd is not expected until the end of Unit 4*** ***Full mastery of SOL 4.16 is not expected until the end of Unit 4*** ***Full mastery of SOL 4.5a is not expected until the end of Unit 4***	***none***

October 30 – November 15 (10 ½ days) Unit 3: Geometry	
Focus Topics	**Standards of Learning**
Solve practical problems that involve determining perimeter and area in U.S. Customary and metric units. • Determine the perimeter of a polygon with no more than eight sides, when the lengths of the sides are given, with diagrams. • Determine the perimeter and area of a rectangle when given the measure of two adjacent sides, with and without diagrams. • Determine the perimeter and area of a square when the measure of one side is given, with and without diagrams.	4.7 EKS 4.7
Identify and describe points, lines, line segments, rays, and angles, including endpoints and vertices. • Use symbolic notations to name points, lines, line segments, rays, and angles.	4.10a EKS 4.10a
Identify and describe intersecting, parallel, and perpendicular lines in plane and solid figures. • Use symbolic notation to describe parallel and perpendicular lines.	4.10b EKS 4.10b
Identify, describe, compare, and contrast plane and solid figures according to their characteristics (number of angles, vertices, edges, and the number and shape of faces), using concrete models and pictorial representations. • Identify and describe solid figures (cube, rectangular prism, square pyramid, and sphere) according to their characteristics (number of angles, vertices, edges, and by the number and shape of faces). • Compare and contrast plane and solid figures (circle/sphere, square/cube, triangle/square pyramid, and rectangle/ rectangular prism) according to their characteristics (number of sides, angles, vertices, edges, and the number and shape of faces).	4.11 EKS 4.11
Classify quadrilaterals as parallelograms, rectangles, squares, rhombi, and/or trapezoids. • Develop definitions for parallelograms, rectangles, squares, rhombi, and trapezoids. • Identify properties of quadrilaterals, including parallel, perpendicular, and congruent sides. • Compare and contrast the properties of quadrilaterals. • Identify parallel sides, congruent sides, and right angles using geometric markings to denote properties of quadrilaterals.	4.12 EKS 4.12
PWCS End-of-Unit Common Formative Assessment (Parts A and B): Geometry (Calculator Permitted for all) **Objectives completed**	**4.7, 4.10ab, 4.11, 4.12**

November 18 – December 20 (22 days) Unit 4: Multiplication and Division	
Focus Topics	**Standards of Learning**
Demonstrate fluency with multiplication facts through 12 x 12, and the corresponding division facts.	4.4a
Estimate and determine sums, differences and products of whole numbers. • Apply strategies, including place value and the properties of multiplication and/or addition, to determine the product of two whole numbers when both factors have two digits or fewer.	4.4b EKS 4.4b
Estimate and determine quotients of whole numbers, with and without remainders. • Apply strategies, including place value and the properties of multiplication and/or addition, to determine the quotient of two whole numbers, given a one-digit divisor and a two- or three-digit dividend, with and without remainders.	4.4c EKS 4.4c
Create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication, and single-step practical problems involving division with whole numbers. • Use the context in which a practical problem is situated to interpret the quotient and remainder.	4.4d EKS 4.4d
Given the equivalent measure of one unit, identify equivalent measures of length, weight/mass, and liquid volume between units within the U.S. Customary system.	4.8c
Solve practical problems that involve length, weight/mass, and liquid volume in U.S. Customary units.	4.8d
Recognize and demonstrate the meaning of equality.	4.16
PWCS End-of-Unit Common Formative Assessment (Parts A and B): Multiplication and Division (No Calculator for 4.4abc)	**4.4abcd 4.8cd, 4.16**
Objectives completed	**4.4bcd, 4.8cd**

January 6 - January 14 (7 days) Unit 5: Patterns, Functions, and Algebra	
Focus Topics	**Standards of Learning**
• Solve practical problems that involve identifying, describing, and extending single-operation input and output rules, limited to addition, subtraction, and multiplication of whole numbers. *(Note: Patterns with addition and subtraction of fractions with like denominators of 12 or less will be addressed in Unit 6)* • Identify the rule in a single-operation numerical pattern found in a list or table, limited to addition, subtraction, and multiplication of whole numbers.	4.15 EKS 4.15
Recognize and demonstrate the meaning of equality in an equation.	EKS 4.15 4.16
PWCS End-of-Unit Common Formative Assessment (Parts A and B): Patterns, Functions, and Algebra (Calculator Permitted for all)	**4.15** *(excluding fractions),* **4.16**

January 15 – February 25 (26 ½ days) Unit 6: Modeling and Computation of Fractions	
Focus Topics	**Standards of Learning**
Compare and order fractions and mixed numbers with and without models. • Compare and order no more than four fractions having like and unlike denominators of 12 or less, using concrete and pictorial models. • Use benchmarks (e.g., 0, $\frac{1}{2}$ or 1) to compare and order no more than four fractions having unlike denominators of 12 or less. • Compare and order no more than four fractions with like denominators of 12 or less by comparing number of parts (numerators) (e.g., $\frac{1}{5} < \frac{3}{5}$). • Compare and order no more than four fractions with like numerators and unlike denominators of 12 or less by comparing the size of the parts (e.g., $\frac{3}{9} < \frac{3}{5}$).	4.2a EKS 4.2a
Represent equivalent fractions through twelfths, using region/area models, set models, and measurement./length models.	4.2b
Identify the division statement that represents a fraction, with models and in context. • Identify the division statement that represents a fraction with models and in context (e.g., $\frac{3}{5}$ means the same as 3 divided by 5 or $\frac{3}{5}$ represents the amount of muffin each of five children will receive when sharing 3 muffins equally.	4.2c EKS 4.2c
Determine common factors and multiples, including least common multiple sand greatest common factor. • Determine the least common multiple and greatest common factor of no more than three numbers.	4.5a EKS 4.5a
Add and subtract fractions and mixed numbers, having like and unlike denominators. • Determine a common denominator for fractions, using common multiples. Common denominators should not exceed 60. • Estimate the sum or difference of two fractions. • Add and subtract fractions (proper or improper) and/or mixed numbers, having like and unlike denominators limited to 2, 3, 4, 5, 6, 8, 10, and 12, and simplify the resulting fraction. (Subtraction with fractions will be limited to problems that do not require regrouping).	4.5b EKS 4.5b
Solve <u>single-step</u> practical problems involving addition and subtraction with fractions and mixed numbers, and simplify the resulting fraction.	4.5c
Identify, describe, create, and extend patterns found in objects, pictures, numbers, and tables. • Solve practical problems the involve identifying, describing, and extending, single operation input and output rules limited to addition and subtraction of fractions with like denominators of 12 or less.	4.15 EKS 4.15
PWCS End-of-Unit Common Formative Assessment (Parts A and B): Modeling and Computation of Fractions (Calculator Permitted for 4.5ac ONLY)	**4.2abc, 4.5abc, 4.15**
Objectives completed	

February 26 – March 6 (8 days) Unit 7: Probability	
Focus Topics	**Standards of Learning**
Determine the likelihood of an outcome of a simple event. • Model and determine all possible outcomes of a given simple event where there are no more than 24 possible outcomes, using a variety of manipulatives (e.g., coins, number cubes, and spinners). • Determine the outcome of an event that is least likely to occur or most likely to occur where there are no more than 24 possible outcomes.	4.13a EKS 4.13a
Represent probability as a number between 0 and 1 inclusive. • Write the probability of a given event as a fraction, where there are no more than 24 possible outcomes. • Determine the likelihood of an event occurring and relate it to its whole number or fractional representation (e.g., impossible or zero; equally likely; certain or one).	4.13b EKS 4.13b
Create a model or practical problem to represent a given probability.	4.13c
PWCS End-of-Unit Common Formative Assessment (Parts A and B): Probability (Calculator Permitted for all)	**4.13abc**
Objectives completed	

March 9 –March 27 (19 days) Unit 8: Modeling and Computation of Decimals	
Focus Topics	**Standards of Learning**
Read, write, represent, and identify decimals expressed through thousandths using base-ten manipulatives, drawings, and numerical symbols. • Investigate the ten-to-one place value relationship for decimals through thousandths, using base-ten manipulatives (e.g., place value mats/charts, decimal squares, and base-ten blocks).	4.3a EKS 4.3a
Round decimals expressed through thousandths to the nearest whole number.	4.3b
Compare and order decimals. • Compare two decimals expressed through thousandths using symbols (>, <, =, and ≠) and/or words (*is greater than, is less than, is equal to,* and *is not equal to).* • Order a set of up to four decimals, expressed through thousandths, from least to greatest or greatest to least.	4.3c EKS 4.3c
Given a model, write the decimal and fraction equivalents.	4.3d
Add and subtract decimals. • Estimate sums and differences of decimals. • .Add and subtract decimals through thousandths, using concrete materials, pictorial representations, and paper and pencil.	4.6a EKS 4.6a
Solve single-step and multi-step practical problems involving addition and subtraction with decimals through thousandths.	4.6b
PWCS End-of-Unit Common Formative Assessment (Parts A and B): Modeling and Computation of Decimals (No Calculator for 4.3d or 4.6a)	**4.3abcd, 4.6ab**

Objectives completed	

April 14 – May 1 (14 days) Unit 9: Data Analysis	
Focus Topics	**Standards of Learning**
Collect, organize, and represent data in bar graphs and line graphs. Interpret data represented in bar graphs and line graphs. Compare two different representations of the same data (e.g., a set of data displayed on a chart and a bar graph, a chart and a line graph, or a pictograph and a bar graph).	4.14a 4.14b 4.14c
-of-Unit Common Formative Assessment (Parts A and B): Data Analysis (Calculator Permitted for All)	**4.14abc**
Objectives completed	

May 4– May 22 (15 days) SOL Review and SOL Testing	
Focus Topics	**Standards of Learning**
All	All

May 26– June 12 (14 days) Post SOL Topics and SOL Test Retakes	
Focus Topics	**Standards of Learning**
Math and/or science topics should be taught based on teacher's judgment regarding what students need most in preparation for 5th grade. Suggestions will be provided in the unit guide.	TBD by teacher