William Rowen Elementary School
Curriculum Map for Grade 5 Mathematics

Grade 5 – Quarter 2

Standards of Mathematical Practices: Students will be able to independently use their learning to…

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

School-wide Essential Question:
What do good problem solvers do when they get stuck?

Required Fluencies for Grade 5: 5.NBT.B.5 - Multi-digit multiplication

Cornerstone Assessment - Ms. Harley Rides to School (5.NBT.B.7) Students determine how many miles a teacher rides her motorcycle to school and back home again. Students also determine if the teacher stays within her gas budget if she rides to school and back five days a week for four weeks.

Major Clusters for Grade 5 (Displayed in Green)

PA Core	CCSS	Eligible Content	Enduring Understanding	Essential Question	Knowledge	Skills	IXL*	Exemplars*
CC.2.1.5.B.1 Apply place value concepts to show an understanding of operations and rounding as they pertain to whole numbers and decimals.	**5.NBT.A.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.	**M05.A-T.1.1.2** 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. Example 1: 4 × 102 = 400 Example 2: 0.05 ÷ 103 = 0.00005	Students will understand… 1. Numbers are related and compare to one another in regard to place value. 2. There are patterns in the number of zeros of the product and quotient when multiplying and dividing by powers of 10	1. Why do we use numbers, what are their properties, and how does our number system function? 2. Why do we use estimation and when is it appropriate? 3. What makes a strategy effective and efficient and the solution reasonable? 4. How do numbers relate and compare to one another?	Students will know… 1. Patterns 2. Number of Zeros of the product 3. Powers of 10 4. Placement of the decimal point. 5. Whole number exponents.	Students will be able to… 1. Explain patterns 2. Multiply by powers of 10 3. Divide by powers of 10 4. Represent powers of 10 with whole number exponents	**5.NBT.A.2** A.12 C.3 C.4 C.5 D.6 I.2 J.1 J.2	**A Light For Mike** Students determine how many days it will take Mike to ride a total of 20,000 meters.
CC.2.1.5.B.2 Extend an understanding of operations with whole numbers to perform operations including decimals.	**5.NBT.B.6**: Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value,	**M05.A-T.2.1.2** Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.	Students will understand… 1. The relationship between the quotient, dividend, and divisor. 2. The relationship between	1. Why do we use numbers, what are their properties, and how does our number system function? 2. Why do we use estimation and when is it	Students will know… 1. Whole number quotients 2. Dividends 3. Divisors 4. Properties of operations 5. Relationship between multiplication	Students will be able to… 1. 1. Find whole number quotients of whole numbers with up to 4 digit dividends and two-digit divisors	**5.NBT.B.6** C.6 D.1 D.2 D.3 D.4 D.7 D.8 D.11 D.12 D.13 D.14 D.16	

	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.		multiplication and division.	appropriate? 3. What makes a strategy effective and efficient and the solution reasonable? 4. How do numbers relate and compare to one another?	and division (inverses) 6. Equations 7. Rectangular arrays 8. Area models	For example: 1,323/21 = 63 2. Use strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. For example: 21 x 63 = 1,323 can be (20 x 63) + (1 x 63) = 1,323 3. Illustrate and explain the calculation by using equations, rectangular arrays, and area models. (The distributive property)		
	5.NBT.B.7: Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and	**M05.A-T.2.1.3** Add, subtract, multiply, and divide decimals to hundredths (no divisors with decimals).	Students will understand… 1. How concrete models or drawings relate to adding, subtracting,	1. Why do we use numbers, what are their properties, and how does our number system	Students will know… 1. decimals to hundredths 2. concrete models 3. cultural	Students will be able to… 1. Add, subtract, multiply, and divide decimals to	**5.NBT.B.7** B.4 D.15 H.1 H.2 H.3 H.4 H.5	

	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.		multiplying, and dividing decimals to hundredths.	function? 2. Why do we use estimation and when is it appropriate? 3. What makes a strategy effective and efficient and the solution reasonable? 4. How do numbers relate and compare to one another?	contexts 4. place value 5. properties of operations 6. relationship between addition and subtraction (inverse)	hundredths. 2. Use concrete drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. 3. Relate the strategy to a written method 4. Explain the reasoning used.	H.6 H.7 I.3 I.4 I.5 I.6 I.7 I.8 I.9 J.3 J.4 J.5 O.5 O.6 S.1 S.2	
CC.2.1.5.C.1 Use the understanding of equivalency to add and subtract fractions.	**5.NF.A.1** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example,	**M05.A-F.1.1.1** Add and subtract fractions (including mixed numbers) with unlike denominators. (May include multiple methods and representations.) Example: 2/3 + 5/4 = 8/12 + 15/12 = 23/12	Students will understand… 1. Every fraction has equivalent fractions that can be used to add or subtract.	1. Why do we use numbers, what are their properties, and how does our number system function? 2. Why do we use estimation and when is it appropriate? 3. What makes a strategy effective and efficient and the solution	Students will know… 1. Fractions 2. Unlike denominators 3. Mixed numbers 4. Equivalent fractions 5. Equivalent sum	Students will be able to… 1. Add and Subtract fractions with unlike denominators by using equivalent fractions with like denominators.	**5.NF.A.**1 K4 K.5 K.6 L.6 L.7 L.8 L.9 L.10 L.12 L.15 L.16 L.18 L.19 L.22 L.23	

	2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)			reasonable? 4. How do numbers relate and compare to one another?				
	5.NF.A.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, 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. For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.	No Eligible Content associated with this standard	Students will understand… 1. Fractions relate to a whole. 2. Benchmark fractions can be used to compare.	1. Why do we use numbers, what are their properties, and how does our number system function? 2. Why do we use estimation and when is it appropriate? 3. What makes a strategy effective and efficient and the solution reasonable? 4. How do numbers relate and compare to one another?	Students will know… 1. Fractions 2. Denominators 3. Benchmark fractions 4. estimate	Students will be able to… 1. Solve word problems with addition and subtraction of fractions. 2. Use visual fraction models and equations. 3. Estimate using benchmark fractions and number sense of fractions.	**5.NF.A.2** L.4 L.11 L.13 L.14 L.20 L.21	

CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	**5.NF.B.4** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.) 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	**M05.A-F.2.1.2** Multiply a fraction (including mixed numbers) by a fraction.	Students will understand… 1. a/b x c/d = ac/bd 2. Interpret the product (a/b) x q as parts of partition of q into b = parts; equivalently, as a result of a sequence of operations a x q/b, where q is the whole number	1. Why do we use numbers, what are their properties, and how does our number system function? 2. Why do we use estimation and when is it appropriate? 3. What makes a strategy effective and efficient and the solution reasonable? 4. How do numbers relate and compare to one another?	Students will know… 1. multiplication of fractions and whole numbers by fractions. 2. Product 3. Partition 4. Operations 5. Visual fraction models 6. Numerator 7. Denominator 8. Fractions are division problems 9. Properties of multiplication 10. Relationship between multiplication and division (inverse).	Students will be able to… 1. Apply understanding of multiplication to multiply a fraction or a whole number by a fraction. 2. Extend previous understanding of multiplication to multiply a fraction or a whole number by a fraction, specifically to be able to create a story context for the equation.	**5.NF.B.4b** M.8 M.9 M.11 **5.NF.B.4b** M.12 M.13 M.14 EE.4 EE.10	

	same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.							
CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	**5.NF.B.6** Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.		Students will understand… 1. Multiplication can be represented in the real world	1. Why do we use numbers, what are their properties, and how does our number system function? 2. Why do we use estimation and when is it appropriate? 3. What makes a strategy effective and efficient and the solution reasonable? 4. How do numbers relate and compare to one another?	Students will know… 1. Multiplication of fractions and mixed numbers 2. Equations 3. Fraction models	Students will be able to… 1. Solve real world problems involving multiplication of fractions and mixed numbers 2. Use visual fractions models or equations	**5.NF.B.6** M.10 M.15 M.16 M.23-M.25 M.27 M.28 O.7 O.8	**Time for Exercise** Students determine how many fifth graders are exercising outside, and how many are playing each sport.

CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	**5.NF.B.5.A** Interpret multiplication as scaling (resizing), by: A. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	**M05.A-F.2.1.3** Demonstrate an understanding of multiplication as scaling (resizing). Example 1: Comparing the size of a product to the size of one factor on the basis of the size of the other factor without performing the indicated multiplication. Example 2: Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product	Students will understand… 1. The scaling relationship between multiplying whole numbers, proper fractions, and improper fractions	1. Why do we use numbers, what are their properties, and how does our number system function? 2. Why do we use estimation and when is it appropriate? 3. What makes a strategy effective and efficient and the solution reasonable? 4. How do numbers relate and compare to one another?	Students will know… 1. Scaling in regards to multiplication using whole number and fractions including improper and proper fractions 2. Factors 3. Products	Students will be able to… 1. Understand that multiplying 2 whole numbers or a whole number by an improper fraction results in a larger whole product 2. Understand that multiplying proper fractions by whole numbers or improper fractions result in a smaller product.	**5.NF.B.5.A** M.17-M.19	

		smaller than the given number.						
CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	**5.NF.B.5.B** Interpret multiplication as scaling (resizing), by: (resizing), by: B. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.	Same as 5.NF.B.5.A	Same as 5.NF.B.5.A	Same as 5.NF.B.5.A	Same as 5.NF.B.5.A	Same as 5.NF.B.5.A	**5.NF.B.5.B** M.14	

CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	**5.NF.B.7.A** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. A. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, 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) × 4 = 1/3.*	**M05.A-F.2.1.4** Divide unit fractions by whole numbers and whole numbers by unit fractions.	Students will understand… 1. Relationship between unit fractions and whole numbers 2. Division means to put into equal groups so fractions divided by whole numbers result in smaller quotients while fraction divided by fractions result in a larger quotient	1. Why do we use numbers, what are their properties, and how does our number system function? 2. Why do we use estimation and when is it appropriate? 3. What makes a strategy effective and efficient and the solution reasonable? 4. How do numbers relate and compare to one another?	Students will know… 1. Division of unit fraction by whole numbers 2. Division of whole numbers by unit fractions 3. The concept of unit fraction is a fraction that has a one in the numerator. For example, the fraction ⅗ is 3 copies of the unit fraction ⅕. ⅕ + ⅕ + ⅕ = ⅗ = ⅕ x 3 or 3 x ⅕	Students will be able to… 1. Divide fractions by whole numbers and whole numbers by fractions 2. Apply the inverse relationship of multiplication to divide fractions. For example, (⅕) / 3 is the same as (⅕) x (⅓)	**5.NF.B.7.A** N.1 N.5	
CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide	**5.NF.B.7.B** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole		Same as 5.NF.B.7.A	Same as 5.NF.B.7.A	Same as 5.NF.B.7.A	Same as 5.NF.B.7.A	**5.NF.B.7.B** N.2 N.3 N.8	

fractions.	numbers by unit fractions. B. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, 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 × (1/5) = 4*.							