Mohawk Local Schools 5th Grade Math

Quarter 3 Curriculum Guide

Mathematical Practices

1. Make Sense of Problems and Persevere in Solving them
2. Reasoning Abstractly & 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

Critical Areas of Focus Being Addressed:

- Fractions
- Decimals
- Geometry

Content Statements Addressed and Whether they are Knowledge, Reasoning, Performance Skill, or Product: (DOK1) (DOK2) (DOK3) (DOK4)	Underpinning Targets Corresponding with Standards and Whether they are Knowledge, Reasoning, Performance Skill, or Product: "I can…..", "Students Will Be Able To……."
5 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. (DOK1) 5 NBT 2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and	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. Represent powers of 10 using whole number exponents Fluently translate between powers of ten written as ten raised

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. (DOK2)	to a whole number exponent, the expanded form, and standard notation (103 = 10 x 10 x 10 = 1000) Explain the patterns in the number of zeros of the product when multiplying a number by powers of 10. Explain the relationship of the placement of the decimal point when a decimal is multiplied or divided by a power of 10.
5 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. (DOK 2)	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 to solve decimal operation calculations.
5 NF 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, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.) (DOK2)	Generate equivalent fractions to find the like denominator Solve addition and subtraction problems involving fractions (including mixed numbers) with like and unlike denominators using an equivalent fraction strategy
5 NF 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 + ½ = 3/7, by observing that 3/7 < ½. Apply and extend previous understandings of multiplication and division to multiply and divide fractions. (DOK2)	Generate equivalent fractions to find like denominators Solve word problems involving addition and subtraction of fractions with unlike denominators referring to the same whole (e.g. by using visual fraction models or equations to represent the problem) Evaluate the reasonableness of an answer, using fractional number sense, by comparing it to a benchmark fraction.
5 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. For	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. using visual fraction models or equations to represent the problem.) Interpret the

example, interpret ¾ as the result of dividing 3 by 4, noting that ¾ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size ¾. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie? (DOK2)	remainder as a fractional part of the problem.
5 NF 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 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. (DOK2)	Multiply fractions by whole numbers. Multiply fractions by fractions Interpret the product of a fraction times a whole number as total number of parts of the whole. (for example ¾ x 3 = ¾ + ¾ + ¾ = 9/4) Determine the sequence of operations that result in the total number of parts of the whole. (for example ¾ x 3 = (3 x 3)/4 = 9/4) Interpret the product of a fraction times a fraction as the total number of parts of the whole
5 NF 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. (DOK2)	Represent word problems involving multiplication of fractions and mixed numbers (e.g., by using visual fraction models or equations to represent the problem.) Solve real world problems involving multiplication of fractions and mixed numbers.
5 NF 7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.1 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. b. Interpret division of a whole number by a unit fraction, and compute	Know the relationship between multiplication and division Interpret division of a unit fraction by a whole number and justify your answer using the relationship between multiplication and division, and by creating story problems, using visual models, and relationship to multiplication, etc. Interpret division of a whole number by a unit fraction and justify your answer using the relationship between multiplication and division, and by representing the quotient with a visual fraction model. Solve real world problems

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. 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. For example, how much chocolate will each person get if 3 people share ½ lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins? (DOK 3)	involving division of unit fractions by whole numbers other than 0 and division of whole numbers by unit fractions using strategies such as visual fractions models and equations.
5 MD 3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. (DOK1)	Recognize that volume is the measurement of the space inside a solid three-dimensional figure. Recognize a unit cube has 1 cubic unit of volume and is used to measure volume of three dimensional shapes. Recognize any solid figure packed without gaps or overlaps and filled with (n) "unit cubes" indicates the total cubic units or volume.
5 MD 4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. (DOK 1)	Measure volume by counting unit cubes, cubic cm, cubic in., cubic ft., and improvised units.
5 MD 5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. 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. Represent threefold whole number products as volumes, e.g., to represent the associative property of multiplication. b. Apply the formulas V = l × w × h and V = b × h for rectangular prisms to find volumes of right rectangular prisms with whole- number edge lengths in the context of solving real world and mathematical problems. c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes	Identify a right rectangular prism. Multiply the three dimensions in any order to calculate volume (Commutative and associative properties) Develop volume formula for a rectangle prism by comparing volume when filled with cubes to volume by multiplying the height by the area of the base, or when multiplying the edge lengths (LxWxH) Find the volume of a right rectangular prism with whole number side lengths by packing it with unit cubes. Know that "B" is the area of the base Apply the following formulas to right rectangular prisms having whole number edge lengths in the context of real world mathematical problems: Volume = length x width x height Volume = area of base x height. Recognize volume as additive. Solve real world problems by decomposing a solid figure into two non-overlapping right rectangular prisms and adding their volumes.

of the non-overlapping parts, applying this technique to solve real world problems. 1 Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade. (DOK 3)	
5 OA 1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. (DOK 2)	Use order of operations including parenthesis, brackets, or braces. Evaluate expressions using the order of operations (including using parenthesis, brackets, or braces.)
5 OA 2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product. Analyze patterns and relationships. (DOK2)	Write numerical expressions for given numbers with operation words. Write operation words to describe a given numerical expression. Interpret numerical expressions without evaluating them
5 OA 3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so. (DOK2)	Generate two numerical patterns using two given rules. Form ordered pairs consisting of corresponding terms for the two patterns Graph generated ordered pairs on a coordinate plane Analyze and explain the relationships between corresponding terms in the two numerical patterns