Grade: 5 **Subject:** Mathematics	**Unit 7: Multiplication and Division with Whole Numbers and Decimals**
Big Idea/Rationale	• This unit builds on the concepts of multiplication and division using whole numbers and decimals. The activities in this unit help students gain a practical understand of multiplication and division and the relationship between the two operations and the corresponding solution methods. Students are expected to apply their understanding of multiplication and division to numeric calculations and real-world problem-solving situations.
Enduring Understanding (Mastery Objective)	Students will understand that: • There are different methods for performing multi-digit multiplication and division. • Rounding does not always lead to numbers that divide easily. When this occurs, the most practical estimating method is to use compatible numbers; numbers that form and already known relationship. • There are different kinds of division situations. Since remainders can be interpreted differently, it is important to understand what the remainder means within the given context of a problem to help check if the answer is reasonable. • Place value patterns can be used to mentally multiply and divide decimals by 10, 100, and 1000. • Multiplying decimals by whole numbers can be developed by repeated addition. This shows why the number of decimal places in the product is the same as the number in the decimal factor. • The product, when multiplying two decimals less than one, is less than either factor. • To divide decimals, change to an equivalent calculation by multiplying the dividend and the divisor by a power of 10 so the divisor is a whole number. • Some problems can be solved by first finding and solving a sub-problem and then using that answer to solve the original problem.
Essential Questions (Instructional Objective)	• What are the rules for multiplying and dividing whole numbers and decimals? • What are some ways to estimate products and quotients with/without decimals? • Why use division? How can you divide mentally? How do you model division? • How can you estimate quotients? • How do hidden questions help solve problems? • How do you know if your answers are reasonable?
Content (Subject Matter)	• Understand the shift in places and the zeros pattern that result when one factor in a multiplication problem is 10, 100, or 1000. • Solve multiplication problems that have at least one factor that is a multiple

	of 10. • Understand how an area model can be sued to solve multi-digit multiplication problems. • Solve two-digit multiplication problems with numeric methods. • Solve two-digit multiplication problems using various methods. • Solve multiplication problems involving 2-digit x 3 digit numbers and 3 digit x 3 digit numbers. • Solve word problems involving multiplication of larger numbers. • Understand that multiples of 5 need extra attention in the zeros pattern. • Solve multiplication problems with up to 3 digits with one digit being 5. • Perform multi-digit multiplication up to 3 digit x 3 digit. • Solve word problems that relate to multi-digit multiplication. • Relate multiplication of a decimal number to money examples. • Solve multiplication problems in which one factor is a decimal number. • Understand the way places shift and the zeros pattern that results when the multiplier is 0.1, 0.01 or 0.001. • Solve multiplication problems with decimal multipliers when the other factor is either a whole number or a decimal number. • Understand and apply shift patterns when multiplying by 10, 100, 1000, 0.1, 0.01 or 0.001. • Solve multi-digit multiplication problems when one or both factors are decimal numbers. • Round whole numbers to the nearest ten or hundred, and round decimal numbers to the nearest tenth or hundredth. • Estimate to check the product in a multiplication problem. • Understand the necessity for a safe estimation in some situations. • Perform multi-digit multiplication with decimal numbers. • Solve word problems that require decimal multiplication. • Round decimal numbers to the nearest tenth or hundredth. • Divide multi-digit numbers by single-digit divisors. • Solve division problems with remainders and relate the size of the remainder to the divisor. • Divide multi-digit decimal numbers by single-digit divisors. • Relate the ungrouping in decimal division to the conversion of various money amounts. • Understand how to convert a fraction into a decimal number by using division. • Recognize repeating decimals and represent them with the appropriate math symbols. • Know how to estimate the unknown factor in problems with multi-digit divisors. • Adjust the estimated number when it is too large. • Solve division problems having two-digit divisors. • Understand several ways to adjust the estimated divisor when it is too small.

	• Solve a variety of two-digit division problems requiring adjustments in the estimated numbers. • Express and interpret remainders for a variety of problem types. • Use remainders to express division answers as mixed numbers or decimals. • Describe the place shifts and zeros pattern that results when a whole number is divided by 0.1, 0.01 and 0.001. • Solve division problems that have decimal divisors. • Describe the shift in places that results when a decimal number is divided by 0.1, 0.01 and 0.001. Understand why the result is a larger number. • Solve division problems when both numbers are decimals. • Solve division problems containing whole numbers and decimal numbers. • Solve word problems that combine a variety of division situations. • Predict the results of multiplying and dividing multi-digit whole numbers and decimal numbers. • Solve multiplication and division word problems. • Find the mean, median, mode and range for a set of data. • Solve statistic problems involving whole numbers and decimals. • Graph data and analyze how a graph changes when the data changes. • Solve a variety of problems using mathematical concepts and skills.
Skills/ Benchmarks (CCSS Standards)	• **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. • **5.NBT.B.5:** Fluently multiply multi-digit whole numbers using the standard algorithm • **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, 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. • **5.NBT.B.7:** Add, subtract, multiply and divide decimals to the 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. • **Mathematical Practices**
Materials and Resources	• Math Expressions, Student Journals, Manipulatives, Math themed literature, BrainPop, IXL Mathematics