GRADE 5 UNIT 1 – UNDERSTANDING THE PLACE VALUE SYSTEM

Established Goals:

Standards

5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

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.

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.

5.NBT.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.3 Read, write, and compare decimals to thousandths.

a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).

Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

5.NBT.4 Use place value understanding to round decimals to any place.

5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.

5.NBT.6 Find whole number quotients of

Transfer

Students will be able to:

- Evaluate numerical expressions with parentheses, brackets or braces.
- Write numerical expressions when given a word problem or a scenario in words and use words to interpret numerical expressions.
- Explain the "ten times" or 1/10 relationships for place values in multi-digit numbers moving right or left across the places.
- Recognize and explain patterns of the number of zeros and the placement of the decimal point in a product or quotient when a number is multiplied or divided by powers of 10.
- Compare decimals to thousandths based on the value of the digits in each place using the symbols >, =, < when presented as base ten numerals, number names, or expanded form.
- Round a decimal to any place.
- Use the standard algorithm to multiply 3-digit whole numbers by 1-digit whole numbers.
- Calculate whole number quotients with 4-digit dividends and 2-digit divisors and explain answers with equations, rectangular arrays, and area models.

Meaning

ENDURING UNDERSTANDING

- There is an agreed upon order for which operations in a numerical expression are performed.
- Some mathematical phrases can be represented using a numerical expression.
- In a multi-digit number, a digit in the ones place represents ten times what it would represent immediately to its right and one tenth what it would represent in the place immediately to its left.
- Patterns can be used to mentally multiply and divide decimals by 10, 100, 1000.
- Place value can be used to compare and order whole numbers and decimals.
- A number line can be used to round decimals.
- The properties of multiplication can be used to simplify computation and to verify mental math and paper and pencil algorithms.
- The standard division algorithm breaks apart the calculation into simpler calculations using basic facts, place value, the relationship between multiplication and division, and estimation.

ESSENTIAL QUESTIONS

- How can you evaluate a numerical expression involving more than one operation?
- How can you translate words into expressions?
- How do the digits in a multi-digit number relate to each other?
- What is the rule for dividing decimals by 10, 100, 1000?
- What is the rule for multiplying decimals by 10, 100, 1000?
- How can you represent a decimal in a place value chart?
- How can you compare decimals?
- How can you round decimals?
- How can you multiply multi-digit numbers?
- How can you divide multi-digit numbers?

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.	**Acquisition**	
	KNOWLEDGE	SKILLS
	Students will know how to…	*Students will be skilled at…*
	• Evaluate a numerical expression with more than one operation. • Translate word phrases into algebraic expressions. • Name the values of digits. • Mentally multiply and divide decimals by 10, 100, 1000. • Write decimals in standard, expanded, and word form. • Compare and order decimals through thousandths. • Use a number line to round decimals to the nearest whole number. • Use and area model and the standard algorithm to multiply multi-digit who numbers. • Divide whole numbers and use reasonableness to check the quotients.	• Using parentheses in numerical expressions and evaluating expressions with these symbols. • Writing numerical expressions that record calculations with numbers, and interpreting numerical expressions without evaluating them. • Explaining the relationship between values of given digits. • Recognizing and explaining patterns of the number of zeros and the placement of the decimal point in a product or quotient when a number is multiplied or divided by powers of 10. • Understanding the place value system. • Representing decimals in a place value chart. • Ordering decimals. • Rounding decimals. • Multiplying multi-digit whole numbers. • Finding the quotient of two decimals. • Dividing whole numbers by divisors.

Vocabulary		**Instruction and Pacing**	
order of operations	standard form	**Place Value and Place Value Relationships**	**2 weeks**
numerical expression	expanded form	**Multiplying Whole Numbers and Decimals**	**2 weeks**
digits	word form	**Order or Operations/Variables and Expressions**	**2 weeks**
value	equivalent decimals	**Rounding and Comparing Decimals**	**1 week**
rounding	partial product	**Dividing Whole Numbers and Decimals**	**2 weeks**

Resources

Common Core Standards, New Jersey Model Curriculum

Envisions Math Program Suggested Topics

- Topic 1 Place Value
- Topic 2 Adding and Subtracting Decimals
- Topic 3 Multiplying Whole Numbers
- Topic 6 Multiplying Decimals
- Topic 7 Dividing Decimals
- Topic 8 Numerical Expressions, Patterns, and Relationships

Differentiation and Accommodations
Provide graphic organizers Provide additional examples and opportunities for additional problems for repetition Provide tutoring opportunities Provide retesting opportunities after remediation (up to teacher and district discretion) Teach for mastery not test Teaching concepts in different modalities Adjust pace and homework assignments

21st Century Skills	Critical Thinking, Creative Thinking, Collaborating, Communicating, and Technology Literacy
Instructional Strategies	Fairfield Township School recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson: • Communicating with students • Using questioning and discussion techniques • Engaging students in learning • Using assessment in instruction • Demonstrating Flexibility and Responsiveness
Interdisciplinary Connections	Science, Technology, ELA

Common Misconceptions	Proper Conceptions
Students may believe the order in which a problem with mixed operations is written is the order to solve the problem.	There is an agreed upon order for which operations in a numerical expression are performed.
As you move to the left of the decimal point, the number increases in value.	In a multi-digit number, a digit in the ones place represents ten times what it would represent immediately to its right and one tenth what it would represent in the place immediately to its left.

Performance Task
Bob sells hot dogs for $2.75 at the local baseball games. During the first game of the season, Bob sold 10 hot dogs. At the second game, he sold 100 hot dogs. At the third game, he sold 1,000 hot dogs. • How much money did Bob earn during the first game? • How much money did Bob earn during the second game? • How much money did Bob earn during the third game? • Explain the pattern you notice in Bob's earnings.

- If Bob pays $1.25 for each hot dog, how much profit did he make at each game?

Rubric

1 point for each correct bullet

ASSESSMENTS

Suggested Formative Assessment

Problem of the Day

Lesson Quizzes

Exit Ticket

Anecdotal Records (Topic Observation Checklist)

Suggested Summative Assessment

Grade level developed Unit/Envisions Topic Tests

Ed-Connect Express Tests /State Unit Benchmark Assessment/Performance Task