

Unit Plan 1: Mathematics- Number and Operations in Base Ten (Grade 5)

Content Area: **Mathematics**
Course(s): **Math 5**
Time Period: **Marking Period 1**
Length: **September to November**
Status: **Published**

Established Goals/Standards

MA.5.OA.A	Write and interpret numerical expressions.
MA.5.OA.A.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
MA.5.OA.A.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.
MA.5.OA.B	Analyze patterns and relationships.
MA.5.NBT.A	Understand the place value system.
MA.5.NBT.A.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 $\frac{1}{10}$ of what it represents in the place to its left.
MA.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.
MA.5.NBT.A.3	Read, write, and compare decimals to thousandths.
MA.5.NBT.A.4	Use place value understanding to round decimals to any place.
MA.5.NBT.B.5	Fluently multiply multi-digit whole numbers using the standard algorithm.
MA.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.
MA.5.NBT.B.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.

Essential Questions

- How are whole numbers and decimals written, compared, and ordered?
- How can sums and differences of decimals be estimated?
- What are the standard procedures for adding and subtracting whole numbers and decimals?
- What are the standard procedures for estimating and finding products involving decimals?
- What are the standard procedures for estimating and finding quotients involving decimals?
- What are the standard procedures for estimating and multiplying whole numbers?
- What is standard procedure for division and why does it work?
- What is the standard procedures for dividing with two digit divisors?

Enduring Understanding

- Models and algorithms for adding or subtracting multi-digit decimals are just an extension of models and algorithms for adding and subtracting multi-digit whole numbers.
- Our number system is based on groups of ten. When we get ten in one place value, we move to the next place value. Place value can be used to compare and order numbers.
- Rounding and compatible numbers can be used to estimate the product of a decimal. Multiplying decimals is similar to multiplying whole numbers; place value determines the placement of the decimal point in a product.
- Some problems can be solved by first solving a sub problem and using that answer to solve the original question.
- There are a number of different ways to compute mentally, using Commutative and Associative Properties of Addition, compensation, and compatible numbers.
- There is more than one way to estimate a product. Each estimation technique gives one way to estimate by replacing numbers with other numbers that are close and easy to compute mentally. The standard multiplication algorithm breaks the calculation into simpler calculations using place value starting with the ones, then the tens, and so on.
- There is more than one way to estimate a quotient such as using compatible numbers. The standard division algorithm breaks the calculation into simpler calculations using basic facts, place value, the relationship between multiplication and division, and estimation.
- Use appropriate information to solve a problem and determine extra information or missing information.
- Using compatible numbers will help to estimate quotients. The standard algorithm for dividing whole numbers can be used for dividing decimals. The quotient of two decimal numbers can be found multiplying the dividend and divisor by a power of ten to make the divisor a whole number.

Content

Students will be able to:

- build on experience with whole numbers and decimals within the base 10 system and have knowledge of exponents with powers of 10.
- read, write, and compare decimals to thousandths using base-ten numerals, number names and expanded form.
- use place value understanding to round decimals to any place.
- represent decimals (tenths and hundredths) as fractions.
- standard algorithm and find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.
- recognize that the product is not always larger than its factors and that the quotient is not always smaller than the dividend.
- add, subtract, multiply, and divide decimals to hundredths.
- determine which information is missing and identify extraneous information in problems

Vocabulary students will know:

digits

value

standard form

expanded form

word form

equivalent decimals

Commutative Property

Associative Property

compensation

compatible numbers

rounding

dividend

divisor

quotient

Commutative Property of Multiplication

Associative Property of Multiplication

Identity Property of Multiplication

Zero Property of Multiplication

Distributive Property

facts

product

multiple

overestimate

underestimate

partial product

base

exponent

power

exponential notation

expanded form

standard form

squared

cubed

Resources

Envision Resources

- www.pearsonsuccessnet.com
- textbook
- student online resources
- Daily Common Core Review
- Quick Checks
- Reteaching/Practice
- Math Centers

Unit lesson flipcharts

Online Games from teacher website

Mad Minutes

Literature: *Math Curse* by Jon Scieszka and Lane Smith; *Remainder One* by Pinczes, Elinor J.