

Unit 2: Mathematics - Numbers and Operations in Base Ten (Grade: 4)

Content Area: **Mathematics**
Course(s): **Math 4**
Time Period: **Marking Period 2**
Length: **October-February**
Status: **Published**

Established Goals/Standards

Please choose the appropriate Goals/Standards from the Standards tab above.

MA.4.OA.A.2	Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
MA.4.OA.A.3	Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.
MA.4.NBT.A	Generalize place value understanding for multi-digit whole numbers.
MA.4.NBT.A.1	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
MA.4.NBT.A.2	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.
MA.4.NBT.A.3	Use place value understanding to round multi-digit whole numbers to any place.
MA.4.NBT.B	Use place value understanding and properties of operations to perform multi-digit arithmetic.
MA.4.NBT.B.4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.
MA.4.NBT.B.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
MA.4.NBT.B.6	Find whole-number quotients and remainders with up to four-digit dividends and one-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.
SEL.PK-12.2.2	Recognize the skills needed to establish and achieve personal and educational goals
SEL.PK-12.2.3	Identify and apply ways to persevere or overcome barriers through alternative methods to achieve one's goals
SEL.PK-12.3.4	Demonstrate an awareness of the expectations for social interactions in a variety of settings
SEL.PK-12.4.1	Develop, implement and model effective problem-solving, and critical thinking skills
SEL.PK-12.5.1	Establish and maintain healthy relationships
SEL.PK-12.5.2	Utilize positive communication and social skills to interact effectively with others

Essential Questions

Please add your Essential Questions by clicking on the Lists tab above.

- How are greater numbers read and written?
- How can arrays be used to find greater products?
- How can arrays be used to find products?
- How can greater products be estimated?
- How can greater products be found mentally?
- How can mental math and estimation be used to divide?
- How can products be estimated?
- How can repeated subtraction be used to model division?
- How can some products be found mentally?
- How can sums and differences of whole numbers be estimated?
- How can whole numbers be compared and ordered?
- What are standard procedures for adding and subtracting whole numbers?
- What is a standard procedure for multiplying multi-digit numbers?
- What is a standard procedure for multiplying multi-digit numbers?
- What is the standard procedure for dividing multi-digit numbers?

Enduring Understanding

Please add your Enduring Understandings by clicking on the Lists tab above.

- Arrays can be broken into partial products to help students visualize and find products for multi-digit multiplication.
- Arrays help us to visualize the factors and product of a multiplication sentence.
- Basic facts and place value patterns can be used to divide multiples of 10 and 100 by 1-digit numbers.
- Making arrays and using basic facts and place-value patterns can be used to mentally multiply a two-digit number by a multiple of 10 or 100.
- Our number system is based on groups of ten. The place value periods ones, thousands, millions, and so forth are used to read and write large numbers.
- Place value can be used to compare and order numbers.
- Products can be estimated by replacing numbers with the closest multiple of 10 or 100, or with compatible numbers.
- Rounding is one way to estimate products.
- The standard addition and subtraction algorithms for multi-digit numbers break the calculation into simpler calculations using place value starting with the ones, then the tens, and so on.
- The standard algorithm for multiplication involves breaking apart numbers using place value, finding partial products, and then adding partial products to get the final product.
- The standard algorithm for multiplying a 2-digit number by another 2-digit number is an extension of multiplying by a 1 digit number.
- The standard division algorithm breaks the calculation into simpler calculations using basic facts,

place-value, the relationship between multiplication and division, and estimation.

- There is more than one way to do a mental calculation. Techniques for doing multiplication calculations mentally involve changing the numbers or the expression so the calculation is easy to do mentally.
- There is more than one way to estimate a quotient. Using compatible numbers and multiplying mentally by different powers of 10 will help you arrive at an estimate.
- There is more than one way to estimate a sum or difference. Each estimation technique gives a way to replace numbers with other numbers that are close and easy to compute with mentally.
- When repeated subtraction is used to divide, the number of times you subtract will be the quotient.

Content

Students will be able to:

- read and write 3-digit and 4-digit numbers.
- understand how digits in a multi-digit whole number relate to each other by their place value.
- compare whole numbers through hundred thousands.
- apply their knowledge of place value to compare and order numbers.
- use place value to round whole numbers.
- systematically find and record all possible outcomes for a situation.
- apply various methods to add and subtract whole numbers mentally.
- round whole numbers to estimate sums and differences.
- add and subtract numbers to hundred thousands with and without regrouping.
- use a picture or diagram to translate an everyday situation into an equation.
- use arrays to multiply and divide.
- use basic multiplication facts and number patterns to multiply by multiples of 10 and 100.
- use compensation to multiply and divide numbers mentally.
- use rounding and compatible numbers to estimate solutions to multiplication and division problems.
- record multiplication using both the expanded and standard algorithms.
- identify missing or extra information in word problems.
- identify and answer hidden questions to solve multi-step problems with operations.
- use basic facts and patterns of zeros to solve division problems with 1-digit divisors.
- draw pictures and write related number sentences to solve problems.
- use repeated subtraction to model division.
- divide by 1-digit divisors using the standard algorithm (with and without remainders).

Vocabulary students will know:

digits

place value

standard form

expanded form

word form

compare

breaking apart

compensation

counting on

Commutative Property of Addition

Associative Property of Addition

Identity Property of Addition

inverse operations

partial products

compensation

compatible numbers

remainder

Resources

Envision2020 Resources:

- Textbook
- <https://reader.savvasrealize.com/#/login>
- Lesson Flipcharts
- Daily Common Core Review
- Quick Checks
- Mad Minutes
- Envision Topic Tests
- Manipulatives
- Reteaching Pages
- Practice Pages
- Enrichment Pages
- Math Centers