

Unit 1- Chapter 01 Place Value, Multiplication, and Expressions

Content Area: **Mathematics**
Course(s): **Math 5**
Time Period: **September**
Length: **4 weeks**
Status: **Published**

Unit Summary

Being fluent in the words or terms associated with the operations; such as sum, addends, difference, product, factors, quotient, remainder, more than, less than, equal to, etc., can help students to translate from words to expressions. It is also helpful to ask students to describe, in their own words, the information given or what they know. To succeed in division, students must have a good understanding of the relationship between multiplication and division.

Students explore multiplication and division by focusing on the relationship that one operation is the inverse of the other. The students look for and make use of structure when they find patterns that connect the operations. This relationship is an extension of the related facts students learned in previous grades. Order of Operations is a strategy to solve mathematical expressions. Students will understand that parentheses are used for emphasis or clarification.

Standards

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.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.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.
TECH.8.1.5.A.1	Select and use the appropriate digital tools and resources to accomplish a variety of tasks including solving problems.
TECH.8.1.5.A.CS2	Select and use applications effectively and productively.

Student Learning Objectives

Students will learn to...

- recognize the 10 to 1 relationship among place value positions.
- read and write whole numbers through hundred millions.
- use Properties of Operations to solve problems.
- write and evaluate repeated factors in exponent form.

- use a basic fact and a pattern to multiply mentally by multiples of 10, 100, and 1000.
- multiply by 1 digit numbers.
- multiply by multi-digit numbers.
- use the strategy *solve a simpler problem* to solve problems.
- write numerical expressions.
- use the Order of Operations to evaluate numerical expressions.
- evaluate numerical expressions with parentheses brackets and braces.

Essential Questions

How can you describe the relationship between two place-value positions?
How do you read, write, and represent whole numbers through hundred millions?
How can you use properties of operations to solve problems?
How can you use an exponent to show powers of 10?
How can you use a basic fact and a pattern to multiply by a two digit number?
How do you multiply by 1 digit numbers?
How do you multiply by multi digit numbers?
How is multiplication used to solve a division problem?
How can you use the strategy *solve a simpler problem* to solve a division problem.
How can you use a numerical expression to describe a situation?
In what order must operations be evaluated to find the solution to a problem?

Enduring Understandings

Students will understand that:

- order of operations (including parentheses, brackets, or braces) tell the order in which to solve a numerical expression.
- real life situations can be described using numerical expressions.
- Any place-value position is 10 times greater than the position to its right and $1/10$ of the position to its left.
- when multiplying a number by powers of 10, patterns will occur in the number of zeros of the product.
- multiplying multi-digit whole numbers (up to four digits by two digits) involves place value, regrouping and the combining of partial products.
- sometimes solving a simpler problem can help solve division problems by breaking apart the dividend into smaller numbers that are simpler to divide.

Application

Students will be able to independently use their learning to:

- recognize the 10 to 1 to $1/10$ relationship among place value positions.
- read and write whole numbers through hundred millions.
- write and evaluate repeated factors in exponent form.
- multiply by 1 digit numbers.
- multiply by multi-digit numbers.
- use the *solve a simpler problem* strategy to solve problems.
- write numerical expressions.
- use Order of Operations to evaluate numerical expressions.

Skills

Students will be skilled at:

- recognizing the 10 to 1 relationship among place-value positions.
- reading and writing whole numbers through hundred millions.
- using properties of operations to solve problems.
- writing and evaluating repeated factors in exponent form.
- using a basic fact and a pattern to multiply mentally by multiples of 10, 100, & 1,000.
- multiplying by 1-digit numbers.
- multiplying by 2-digit numbers.
- using multiplication to solve division problems.
- using the strategy Solve a Simpler Problem to solve problems.
- writing numerical expressions.
- using the order of operations to evaluate numerical expressions.
- evaluating numerical expressions with parentheses, brackets, and braces.