

Basic Math I		Scope and Sequence
Unit	Lesson	Objectives
<b>Strategies for Operations</b>		
	Addition and Subtraction as Inverse Operations	<p>Add and subtract using whole numbers to create sums up to 20.</p> <p>Use the inverse relationship between addition and subtraction to solve one-step equations.</p> <p>Real-World Application: Apply the inverse relationship between addition and subtraction to model and solve real-world problems.</p>
	Using Addition and Subtraction to Make Comparisons	<p>Recognize that in the equation <math>a = b + c</math>, <math>a</math> is <math>c</math> larger than <math>b</math>, <math>c</math> is <math>b</math> less than <math>a</math>, etc., and apply this understanding to problems. (Note: <math>a</math>, <math>b</math>, and <math>c</math> are all whole numbers.)</p> <p>Interpret <math>p - q</math> as the amount by which <math>p</math> exceeds <math>q</math>, and apply this understanding to problems.</p> <p>Real-World Application: Solve real-world addition and subtraction problems involving comparison.</p>
	Addition and Subtraction: Fact Fluency	<p>Use mental strategies to add and subtract two whole numbers within 20 that do not involve regrouping in order to increase fact fluency.</p> <p>Real-World Application: Solve real-world problems in which fact fluency can be used to quickly solve problems.</p>
	Multiplication and Division: Repeated Addition and Subtraction	<p>Identify arithmetic patterns that connect multiplication to repeated addition and division to repeated subtraction.</p> <p>Use the inverse relationship between multiplication and division to find missing numbers in number sentences and basic one-step equations.</p> <p>Real-World Application: Solve real-world multiplication and division problems using repeated addition and subtraction.</p>
	Multiplication and Division: Arrays and	

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Remainders

Model multiplication and division using rectangular arrays as a visual model.

Calculate basic multiplication and division problems not involving remainders using rectangular arrays.

Use arrays to show the relationship between multiplication and division calculations involving remainders, understanding that if  $t \div f = q$  with a remainder  $r$ , then  $t = q \times f + r$ .

Real-World Application: Use arrays to represent real-world problems involving rows and columns, and solve them using multiplication and division.

Multiplication and Division: Equal Groups

Model multiplication and division problems using equal groups, and relate back to repeated addition and subtraction.

Interpret whole-number products and quotients in terms of equal groups, and connect to the standard place-value strategies for multiplying whole numbers.

Real-World Application: Solve real-world problems involving equal groups not naturally occurring in an array-like form that can be solved using multiplication and division.

Unit Test

**Whole Number Relationships**

Factors and Multiples

Describe numbers according to their characteristics (factors, multiples, prime, and composite).

Compare and contrast the characteristics of factors and multiples.

Connect the ideas of factors and multiples to multiplication and division.

Real-World Application: Solve real-world problems in which it is necessary to find factors or multiples.

Using Multiplication and Division to Make Comparisons

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Explain the role of multiplication and division in making comparisons, e.g., in  $mn = p$  and in  $p \div n = m$ , the number  $p$  is  $m$  times the size of  $n$ . (NOTE: Do not address relationships such as  $m$  is  $1/n$ th of  $p$ .)

Use multiplication and division to make such comparisons and interpret a multiplication or division equation in terms of size comparisons.

Identify the difference between addition and subtraction comparisons vs. multiplication and division comparisons, both numerically and in real-world applications.

Real-World Application: Solve real-world problems involving comparisons using all four operations.

The Four Operations: Summary and Word Problems

Compare and contrast the meanings of all four operations.

Real-World Application: Use both keywords and an understanding of the context in word problems to choose the right mathematical operation.

Real-World Application: Create (or finish creating) real-world contexts for expressions involving two whole numbers and a single operation.

Multiplication and Division: Fact Fluency

Use mental strategies to multiply and divide two whole numbers within 100 to increase fact fluency.

Real-World Application: Solve real-world problems in which fact fluency can be used to quickly solve problems.

The Place Value System of Whole Numbers

Model whole numbers to the thousands place and relate the models to the standard form of that number.

Identify that the value of a base 10 unit is 10 times the next smallest base ten unit

Use place value to determine the value of a digit based on its position in a whole number.

Real-World Application: Solve real-world problems involving whole number place value and regrouping.

## Unit Lesson

## Objectives

Composing, Decomposing, and  
Ordering Numbers Using Place Value

Write whole numbers in standard form, word form, and expanded form, e.g.  $467 = 400 + 60 + 7 = 4 \text{ hundreds} + 6 \text{ tens} + 7 \text{ ones} = \text{four hundred sixty-seven}$ .

Compare and order numbers by using place value.

Real-World Application: Compose and/or decompose numbers to represent real-world situations that can be modeled using place value.

The Number Line and Rounding  
Numbers

Round numbers by identifying the nearest number of a given place value, using the number line as an aid.

Relate rounding to expanded form (e.g., 291 rounds to 300 because  $200 + 91$  almost has another hundred.)

Use standard rules to round multi-digit numbers to a given place value.

Real World Application: Use rounding in real-world situations.

Unit Test

## Multi-Digit Computations: Part One

Multi-Digit Addition

Apply the standard algorithm for adding multi-digit whole numbers.

Use estimation strategies based on an understanding of place value to predict and check sums.

Use various grouping strategies for doing addition mentally.

Real-World Application: Add multi-digit numbers that model real-world situations.

Multi-Digit Subtraction

Apply the standard algorithm for subtracting multi-digit whole numbers.

Use estimation strategies to predict and check differences.

Use various grouping strategies to accurately subtract.

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Real-World Application: Subtract multi-digit numbers that model real-world situations.

## Multiplying with Powers of 10

Interpret the change in position of a digit as a number is multiplied by a power of 10.

Multiply whole numbers by powers of 10 using place value strategies.

Use strategies for mentally multiplying by a power of 10.

Real-World Application: Multiply a number with a power of 10 to represent a variety of real-world situations.

## Dividing with Powers of 10

Interpret the change in position of a digit as a change of value by a power of 10 using division.

Divide whole numbers by powers of 10 by thinking about the change to place values.

Use strategies for mentally dividing by a power of 10.

Real-World Application: Divide a number by a power of 10 to represent a variety of real-world situations.

## Unit Test

**Multi-Digit Computations: Part Two**

## Multi-Digit Multiplication

Apply the standard algorithm for multiplying multi-digit whole numbers.

Use estimation strategies to predict and check products.

Use various grouping strategies to multiply multi-digit numbers.

Real-World Application: Multiply multi-digit numbers that model real-world situations.

## Multiplying Whole Numbers

Multiply whole numbers.

## Multi-Digit Division

Apply the standard algorithm for dividing multi-digit whole numbers.

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Use estimation strategies to predict and check quotients.

Use place value strategies to divide multi-digit numbers.

Real-World Application: Divide multi-digit numbers that model real-world situations.

## Dividing Whole Numbers

Divide whole numbers.

Write remainders as terminating or repeating decimals.

## Multi-Digit Arithmetic: Comparing the Four Operations

Correctly use place value in the standard algorithms for the four basic mathematical operations.

Relate and/or contrast the standard algorithms for the pairings of  $+/ -$   $\times / \div$   $\pm / \times \div$ , and use their relationships to check answers.

Real-World Application: Solve one-step real-world problems using any of the four operations and whole numbers.

## Interpreting and Simplifying Multistep Expressions

Order the operations for solving a multistep problem.

Evaluate expressions with multiple operations, including parentheses and brackets.

Real-World Application: Solve real-world problems involving multistep operations, including identifying expressions that model the problem.

## Multistep Word Problems

Identify key information for solving two-step word problems involving whole numbers and any of the four operations, including question, problem type, and order of operations needed.

Use estimation to determine if a solution is reasonable.

Real-World Application: Solve real-world problems with two operations involving whole numbers.

## Unit Test

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Cumulative Exam Review

Cumulative Exam