

Mathematics
Unit 2: Computation

Essential Understandings	<ul style="list-style-type: none"> ▪ Computation can be used to solve problems. ▪ Operations create relationships between numbers.
Essential Questions	<ul style="list-style-type: none"> ▪ Why does one need to multiply? ▪ Why does one need to divide? ▪ What strategies aid in mastering multiplication and division facts? ▪ What is the relationship between multiplication and division? ▪ What numbers or symbols are needed to make number sentences true? ▪ How does one determine the correct type of computation needed to solve a word problem?
Essential Knowledge	<ul style="list-style-type: none"> ▪ Knowing basic multiplication and division facts allows one to work flexibly, efficiently, and accurately. ▪ Estimation is used to determine the reasonableness of results. ▪ Patterns exist in related fact families. ▪ There is a relationship between multiplication and division. ▪ One must select the correct type of computation needed to solve word problems. ▪ Multiplication can be represented in different ways.
Vocabulary	<ul style="list-style-type: none"> ▪ <u>Terms:</u> <ul style="list-style-type: none"> ○ dividend, divisor, quotient, remainder, computation, commutative, associative, inverse relationship, division, multiplication, repeated addition, product, multiple, array, one-step and two step (in reference to word problems)

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Essential Skills	<ul style="list-style-type: none"> ▪ Use procedures to add and subtract whole numbers with up to four digits. (I, R, A) ▪ Identify, explain and use the terms: factor, multiple, and product. (I) ▪ Identify, explain and use the terms: dividend, divisor, quotient, and remainder. (I) ▪ Identify products and their related division facts to 100 with automaticity (0s, 1s, 2s, 5s, and 10s) in vertical and horizontal form. (I, R, A) ▪ Identify products and their related division facts to 144 (3s, 4s, 6s, 7s, 8s, 9s, 11s, 12s). (I) ▪ Multiply using factors to 12 and their related division facts using repeated addition or other strategies. (I, R, A) ▪ Use estimation to determine the reasonableness of an answer. (R, A) ▪ Use patterns to solve multiplication (repeated addition) and division (repeated subtraction) problems. (I, R, A) ▪ Recognize and use models for multiplication and division (e.g., array, repeated addition, groups of, shared by). (I, R, A) ▪ Use basic properties of numbers (associative and commutative). (I, R) ▪ Write fact families with products ≤ 144 and the related division fact. (I, R) ▪ Distinguish between important and unimportant information when solving one-step and two-step word problems. (I) ▪ Determine which operation is necessary to effectively solve a one-step and two-step story problem and explain why. (I) ▪ Solve one step and two-step word problems using basic operations with whole numbers. (I) ▪ Write and solve one-step and two-step word problems. (I, R, A) ▪ Create a word problem using addition and subtraction for a given number sentence to 1000. (I, R, A) ▪ Identify and write the missing operation when given incomplete number sentences. (I) ▪ Use related facts (+ and -) to prove that a sum or difference is accurate (R, A). ▪ Use related facts (\times and \div) to prove that a product or quotient is accurate (I). ▪ Add fractions with like denominators using area, set, and length models. (I, R, A) ▪ Add decimals in the context of money using area, set, and length models. (I, R, A)
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Related Maine Learning Results	<p>A. Number Whole Number A2.Students understand and use procedures to add and subtract whole numbers with up to four digits.</p> <ol style="list-style-type: none"> a. Display an understanding of the base ten place value system. b. Use an operation appropriate to a given situation. <p>A3.Students understand and apply meanings of multiplication and division.</p> <ol style="list-style-type: none"> a. Multiply single-digit numbers and divide using single-digit divisors and up to two-digit dividends (division facts only, but remainders may be present). b. Use an operation appropriate to a given situation. c. Recognize and use models for multiplication and division situations. d. Use multiple strategies for multiplication and division. <p>D. Algebra Functions and Relations D3.Students understand arithmetic relationships among positive whole numbers.</p> <ol style="list-style-type: none"> a. Use the inverse relationships between addition and subtraction and between multiplication and division and the commutative laws of multiplication and addition to solve problems. b. Be able to show that for whole numbers subtraction and division are not commutative and show that multiplication and addition are commutative.
NECAP	<p>NECAP Number and Operations M (N & O) 3-3 Demonstrates conceptual understanding of mathematical operations by describing or illustrating the inverse relationship between addition and subtraction of whole numbers; and the relationship between repeated addition and multiplication using models, number lines, or explanations.</p> <p>M (N & O) 3-4 Accurately solves problems involving addition and subtraction of decimals (in the context of money).</p>