

## Mathematics

### Unit 2: Computation

<b>Essential Understandings</b>	<ul style="list-style-type: none"> <li>▪ Mathematics is a language.</li> <li>▪ Computation can be used to solve problems.</li> <li>▪ Operations create relationships between numbers.</li> </ul>
<b>Essential Questions</b>	<ul style="list-style-type: none"> <li>▪ What strategies aid in mastering multiplication and division facts?</li> <li>▪ What is the relationship between multiplication and division?</li> <li>▪ What numbers or symbols are needed to make number sentences true?</li> <li>▪ How can a number be broken down into its smallest factors?</li> <li>▪ How can multiples be used to solve problems?</li> <li>▪ How does one find the prime factors and multiples of a number?</li> <li>▪ How are repeated addition and multiplication related?</li> <li>▪ What is the Order of Operations?</li> <li>▪ How does one use the Order of Operations to solve a problem?</li> <li>▪ How does the Distributive Property relate to multiplication?</li> </ul>
<b>Essential Knowledge</b>	<ul style="list-style-type: none"> <li>▪ Knowing basic multiplication and division facts allows one to work flexibly, efficiently, and accurately.</li> <li>▪ Multiplication and division can be used to solve problems.</li> <li>▪ Fraction names and symbols are used to describe fractional parts of whole objects or sets of objects.</li> <li>▪ Estimation is used to determine the reasonableness of results.</li> <li>▪ Patterns exist in related fact families.</li> <li>▪ There is a relationship between multiplication and division.</li> <li>▪ One must select the correct type of computation needed to solve word problems.</li> <li>▪ Multiplication can be represented in different ways.</li> <li>▪ Problems involving multiple types of computation are solved in a specific order.</li> </ul>
<b>Vocabulary</b>	<ul style="list-style-type: none"> <li>▪ <u>Terms:</u> <ul style="list-style-type: none"> <li>○ multi-step problems, order of operations, distributive, simplify, simplest form</li> </ul> </li> </ul>

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<b>Essential Skills</b>	<ul style="list-style-type: none"> <li>▪ Identify products and their related division facts (11s, 12s) to 144 with automaticity in vertical and horizontal form. (I, R, A)</li> <li>▪ Multiply and divide numbers up to four digits by numbers up to two digits, and by tens, hundreds, and thousands. (I, R, A)</li> <li>▪ Use estimation to determine the reasonableness of an answer. (A)</li> <li>▪ Use basic properties of numbers (distributive). (I)</li> <li>▪ Use Order of Operations to solve multi-step problems with whole numbers. (PMDAS) (I, R)</li> <li>▪ Distinguish between important and unimportant information when solving one-step and two-step word problems. (A)</li> <li>▪ Determine which operation is necessary to efficiently solve a one-step and two-step story problem and explain why. (A)</li> <li>▪ Solve one-step and two-step word problems using basic operations with whole numbers. (A)</li> <li>▪ Write and solve one-step and two-step word problems using the four basic operations with whole numbers. (R, A)</li> <li>▪ Create a word problem for a given number sentence using all operations. (A)</li> <li>▪ Find the greatest common factor (GCF) and least common multiple (LCM) of two numbers to 100. (R, A)</li> <li>▪ Identify and write the missing operation when given incomplete number sentences. (R, A)</li> <li>▪ Express remainders as fractions and decimals. (I, R, A)</li> <li>▪ Use related facts (<math>\times</math> and <math>\div</math>) to prove that a product or quotient is accurate. (A)</li> <li>▪ Add and subtract fractions with unlike denominators up to 100 using area, set, and length models. (I, R, A)</li> <li>▪ Multiply a fraction by a whole number or a fraction using area, set, and length models. (I, R, A)</li> <li>▪ Add and subtract decimals to the thousandths using area, set, and length models. (I, R, A)</li> <li>▪ Multiply and divide decimals to the thousandths by a two-digit whole number using area, set, and length models. (I, R, A)</li> </ul>
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<p><b>Related Maine Learning Results</b></p>	<p>A. Number</p> <p>Whole Number</p> <p>A1.Students understand and use number notation to 10 million in numeral and words.</p> <ul style="list-style-type: none"><li>a. Read and write numbers to 10 million in numbers.</li><li>b. Round numbers to the place value appropriate for given contexts.</li><li>c. Compare and order numbers up to 10 million.</li></ul> <p>A2.Students multiply and divide numbers up to four digits by numbers up to two digits, and by tens, hundreds and thousands and interpret any remainders.</p> <p>A3.Students solve problems requiring multiple operations (addition, subtraction, multiplication, and division and use the conventions of order of operations (no exponents expected).</p> <p>Rational Number</p> <p>A4.Students understand, name, compare, illustrate, compute with, and use fractions.</p> <ul style="list-style-type: none"><li>a. Add and subtract fractions with unlike denominators.</li><li>b. Multiply a fraction by a whole number.</li></ul> <p>A5.Students understand and use number notation and place value in numbers with three decimal places.</p> <ul style="list-style-type: none"><li>a. Compare, order, read, round, and interpret decimals with up to three decimal places.</li><li>b. Add and subtract decimals with up to three decimal places.</li><li>c. Multiply and divide decimals with up to three decimal places by a two-digit number.</li><li>d. Develop the concept of a fraction as division through expression fractions with denominators of two, four, five, and 10, as decimals and decimals as fractions.</li></ul> <p>A6.Students understand concepts of positive and negative integers.</p> <ul style="list-style-type: none"><li>a. Place positive and negative integers on a number line or scale.</li><li>b. Compare and order positive and negative integers.</li><li>c. Find the distance between two integers and a context.</li></ul>
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