Mathematics **Brunswick School Department**

Grade 4
Algebra Concepts

Essential Understandings	▪ Patterns can be found in many forms.
Essential Questions	▪ How do patterns change? ▪ What is a variable? ▪ How does one solve for unknowns? ▪ How can one check one's answers? ▪ What is the commutative property?
Essential Knowledge	▪ Patterns change by a constant or varying amount. ▪ Lists, tables and diagrams can be used to solve problems. ▪ A variable is a symbol or letter used to represent or model quantity. ▪ Number patterns and relationships can be represented using variables. ▪ The inverse relationship between addition and subtraction can be used to solve and check problems. ▪ The inverse relationship between multiplication and division can be used to solve and check problems. ▪ The commutative property states that numbers can be added or multiplied in any order.
Vocabulary	▪ <u>Terms</u>: o constant and varying amounts, algebraic expression, evaluate
Essential Skills	▪ Recognize and explain patterns that change by a constant or varying amount. (I, R) ▪ Use tables, rules, diagrams, and patterns to represent the relationship between quantities and to extend sequences. (I, R) ▪ Identify and write the missing addend and/or subtrahend with sums to 1000. (R, A) ▪ Identify and write the missing factor, dividend, or divisor. (R) ▪ Use symbols or letters (variables) to represent or model quantity. (R) ▪ Create and use organized lists, tables, or diagrams to solve problems. (R, A) ▪ Use the inverse relationships between addition and subtraction and between multiplication and division to check and solve problems. (R, A) ▪ Recognize and show how the commutative property only applies to addition and multiplication. (I, R) ▪ Use algebraic expressions to complete an input/output table. (I, R)

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Related Maine Learning Results	D. Algebra Symbols and Expressions D1. Students create and evaluate simple expressions in the context of numbers and operations. a. Create and evaluate expressions with no more than two variables. b. Create and evaluate expressions with no more than two variables Equations and Inequalities D2. Students find the unknown in simple equations in the context of numbers and operations such as: 3 x b = 12 3 + 4 = x + 5 6 x 5 = 3 x [ ] Functions and Relations D3. Students use tables, rules, diagrams, and patterns to represent the relationship between quantities and to extend sequences.
NECAP	NECAP Functions and Algebra M (N & O) 4-3 Demonstrates conceptual understanding of mathematical operations by describing or illustrating the relationship between repeated subtraction and division (no remainder); the inverse relationship between multiplication and division of whole numbers; or the addition or subtraction of positive fractional numbers with like denominators using models, number lines, or explanations.