Mathematics
Unit 1: 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? ▪ What is the commutative property? ▪ What is an algebraic equation?
Essential Knowledge	▪ Patterns change by a constant or varying amount. ▪ Lists, tables, diagrams, patterns and graphs can be used to solve problems and extend sequences. ▪ A variable is a symbol or letter used to represent or model quantity. ▪ Number patterns and relationships can be represented using variables. ▪ The commutative property states that numbers can be added or multiplied in any order. ▪ An algebraic equation is an equation that involves numbers and variables.
Vocabulary	▪ <u>Terms</u>: ○ constant change, linear and non-linear relationships
Essential Skills	▪ Recognize and explain patterns that change by a constant or varying amount. (R, A) ▪ Use tables, rules, diagrams, patterns, and graphs to represent and analyze the relationship between quantities and to extend sequences. (I, R, A) ▪ Identify and write the missing factor, dividend, or divisor. (A) ▪ Use symbols or letters (variables) to represent or model quantity. (A) ▪ Recognize and show how the commutative property only applies to addition and multiplication. (R, A) ▪ Use algebraic expressions to complete an input/output table. (R, A) ▪ Write and solve a one-step algebraic equation for a word problem. (I, R) ▪ Find solutions for unknown quantities in one variable equations. (I)

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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 three variables. Equations and Inequalities D2.Students find the unknown in simple equations in the context of numbers and operations as such as: 39 – k = 39 – 40 78 + b = 57 + 79 30 x A = 276 (3 + 4) x 6 = 6 x [ ] 3 x 15 = 3 x (10 + [ ]) Functions and Relations D3.Students use tables, rules, diagrams, and graphs to represent and analyze the relationship between quantities.
NECAP	NECAP Functions and Algebra M (F & A) 5-1 Identifies and extends to specific cases a variety of patterns (linear and nonlinear) represented in models, tables, sequences, or in problem situations; and writes a rule in words or symbols for finding specific cases of a linear relationship. M (F & A) 5-3 Demonstrates conceptual understanding of algebraic expressions by using letters to represent unknown quantities to write linear algebraic expressions involving any two of the four operations or by evaluating linear algebraic expressions using whole numbers. M (F & A) 5-4 Demonstrate conceptual understanding of equality by showing evidence between two expressions using models or different representations of the expressions, by solving one-step linear equations in the form ax $\pm$ b = c, where a, b, and c are whole number with a not equal to 0; or by determining which values of a replacement set make the equation (multi-step of the form ax $\pm$ b = c where a, b, and c are whole numbers with a not equal to 0) a true statement (e.g., 2x + 3 = 11, {x: x = 2, 3, 4, 5}.