Mathematics
Pre-Calculus A
Unit 1: Linear Relations and Functions

Essential Understandings	▪ Mathematics can be used to model real-life situations.
Essential Questions	▪ What are the properties of Algebra and how are these used to solve linear equations? ▪ What types of data are modeled by linear equations? ▪ What are the properties of inequalities? ▪ How is slope calculated and what does it represent?
Essential Knowledge	▪ The associative, commutative, and distributive properties along with the addition and multiplication properties of equality are used to solve linear equations. ▪ Linear regression is used to find the line of best fit for various data sets. ▪ An inequality is a statement that compares two expressions by using symbols ▪ Multiplication or division by a negative number reverses the inequality. ▪ Slope is the ratio of the change in the dependent variable to the independent variable.
Vocabulary	▪ <u>Terms</u>: ○ Associative, distributive, commutative properties ○ Addition and multiplication properties of equalities and inequalities ○ Linear function ○ Slope, ratio and rate of change ○ Y-intercept, X-intercept ○ Slope-intercept form of a linear equation ○ Point-slope form of a linear equation ○ General or standard form of a linear equation ○ Correlation and line of best fit ○ Linear regression
Essential Skills	▪ Apply order of operation. ▪ Use properties of equalities and inequalities to write and solve linear equations. ▪ Graph linear equations and inequalities. ▪ Interpret the real world meaning to the slope and Y-intercept. ▪ Analyze and graph data using technology.

Mathematics
Pre-Calculus A
Unit 1: Linear Relations and Functions

Related Maine Learning Results	Mathematics D. Algebra Equations and Inequalities D2. Students solve families of equations and inequalities. a. Solve systems of linear equations and inequalities in two unknowns and interpret their graphs. b. Solve quadratic equations graphically, by factoring in cases where factoring is efficient, and by applying the quadratic formula. c. Solve simple rational equations. d. Solve absolute value equations and inequalities and interpret the results. e. Apply the understanding that the solution(s) to equations of the form f(x) = g(x) are x-value(s) of the point(s) of intersection of the graphs of f(x) and g(x) and common outputs in table of values. f. Explain why the coordinates of the point of intersection of the lines represented by a system of equations is its solution and apply this understanding to solving problems. Functions and Relations D4. Students understand and interpret the characteristics of functions using graphs, tables, and algebraic techniques. a. Recognize the graphs and sketch graphs of the basic functions. b. Apply functions from these families to problem situations. c. Use concepts such as domain, range, zeros, intercepts, and maximum and minimum values. d. Use the concepts of average rate of change (table of values) and increasing and decreasing over intervals, and use these characteristics to compare functions.
Sample Lessons And Activities	▪ Solve equations and inequalities with variables on both sides using properties of Algebra. Identity identities and contradictions. ▪ Use a data set to make a scatter plot, find the correlation coefficient and the line of best fit. ▪ Graph and determine the equation of a line using slope-intercept, point-slope and general form.
Sample Classroom Assessment Methods	▪ Evaluate homework ▪ Quizzes ▪ Chapter test
Sample Resources	▪ Publications: ○ Advanced Mathematical Concepts - Glencoe ▪ Other Resources: ○ Graphing calculators

Mathematics
Pre-Calculus A
Unit 1: Linear Relations and Functions

	○ The A+ learning system for remediation