Mathematics **Brunswick School Department**

Pre-Calculus A
Systems of Linear Equations and Inequalities

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 systems? ▪ What types of data are modeled by linear systems? ▪ How do you solve a system of linear equations? ▪ How do you solve and graph linear inequalities?
Essential Knowledge	▪ The solution to a linear system is the point of intersection of the lines. ▪ Linear systems can be solved by graphing. ▪ Linear systems can be solved by substitution. ▪ Linear systems can be solved by linear combinations. ▪ Linear system can be solved using matrix algebra. ▪ Systems may have no solution or infinitely many solutions.
Vocabulary	▪ Terms: o linear system of equations, point of intersection, ordered pairs, substitution, elimination, independent, dependent and inconsistent system, linear programming, linear system of inequalities
Essential Skills	▪ Graph linear equations. ▪ Use Algebraic properties and the substitution principle. ▪ Use the technique of linear combinations. ▪ Solve a system of linear equations. ▪ Graph systems of linear inequalities and determine the feasible region.
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.

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Related Maine Learning Results	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 systems of linear equations using a variety of techniques. These include graphing, substitution, and linear combinations. ▪ Solve linear programming problems by finding a maximum or minimum value of a function that satisfies a given set of condition known as constraints.
Sample Classroom Assessment Methods	▪ Evaluate homework Quizzes. ▪ Chapter test
Sample Resources	▪ <u>Publications:</u> o <u>Advanced Mathematical Concepts</u> - Glencoe ▪ <u>Other Resources:</u> o Graphing calculators o The A+ learning system for remediation