Mathematics
Algebra II: CP
Unit 8: Sequences and Series

Essential Understandings	▪ Sequences and series can be used to model real-life situations.
Essential Questions	▪ What are sequences and series? ▪ How do you generate the nth term of a sequence? ▪ How do you differentiate between an Arithmetic sequence and a Geometric sequence?
Essential Knowledge	▪ Sequences are generated by an underlying pattern. ▪ The nth term of a sequence is calculated algebraically. ▪ The common difference or common ratio determines the type of sequence.
Vocabulary	▪ Terms: ○ arithmetic sequence, geometric sequence, common ratio, common difference, series
Essential Skills	▪ Calculate common differences and common ratios. ▪ Calculate the nth term of a sequence using the appropriate formula.
Related Maine Learning Results	Mathematics A. Number Real Number A1. Students will know how to represent and use real numbers. a. Use the concept of nth root. b. Estimate the value(s) of roots and use technology to approximate them. c. Compute using laws of exponents. d. Multiply and divide numbers expressed in scientific notation. e. Understand that some quadratic equations do not have real solutions and that there exist other number systems to allow for solutions to these equations. B. Data Measurement and Approximation B1. Students understand the relationship between precision and accuracy. a. Express answers to a reasonable degree of precision in the context of a given problem. b. Represent an approximate measurement using appropriate numbers of significant figures. c. Know that most measurements are approximations and explain why it is useful to take the mean of repeated measurements.

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Related Maine Learning Results	D. Algebra Symbols and Expressions D1. Students understand and use polynomials and expressions with rational exponents. a. Simplify expressions including those with rational numbers. b. Add, subtract, and multiply polynomials. c. Factor the common term out of polynomial expressions. d. Divide polynomials by (ax+b). 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. D3. Students understand and apply ideas of logarithms. a. Use and interpret logarithmic scales. b. Solve equations in the form of $x + b^y$ using the equivalent form $y = \log_b x$. 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	▪ Find the first five terms of a sequence. ▪ Find the nth term of a sequence.

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Sample Classroom Assessment Methods	▪ Evaluate homework. ▪ Quizzes. ▪ Chapter test.
Sample Resources	▪ Publications: o McDougal Littell Algebra 2 ▪ Other Resources: o Graphing calculators o The A+ learning system for remediation