SPRING GROVE AREA SCHOOL DISTRICT

PLANNED COURSE OVERVIEW

Course Title: Trigonometry Honors with Precalculus	**Length of Course:** 30 cycles
Grade Level(s): 10-12	**Periods Per Cycle:** 6
Units of Credit: 1	**Length of Period:** 43 minutes
Classification: Elective	**Total Instructional Time:** 129 hours

Course Description

This is an advanced course designed to prepare students for the Advanced Placement Calculus AB course. The course incorporates a rigorous algebraic analysis of functions and their graphs and the study and application of trigonometric ratios, identities, and functions. In addition, this course covers exponential and logarithmic functions, matrices, and sequences and series.

Prerequisite: Successful completion of Algebra 2 or Algebra 2 Honors

Instructional Strategies, Learning Practices, Activities, and Experiences

Anticipatory Sets	Flexible Groups	Projects
Assessments	Graphic Organizers	Teacher Demonstrations
Bell Ringers	Guided Practice	Technology Integration
Class Discussions	High-Level Questioning	Videos/DVD's
Closure	Homework	Wait Time
Critical Thinking	Posted Objectives	

Assessments

Assessments (Teacher-Created, College Board)	Classwork	Independent Study Projects
Collaborative Group Work	Homework	

Materials/Resources

Text: *Precalculus*, Edition 10E Larson, Copyright 2018	Graphing Calculator	Internet Resources
	Notes/PowerPoints	

Adopted: 9/17/03
Revised: 8/17/09; 5/19/14; 5/20/2019

The Number System

The Standards of Mathematical Practices

Make sense of problems and persevere in solving them.	**Reason abstractly and quantitatively.**
Construct viable arguments and critique the reasoning of others.	**Model with mathematics.**
Use appropriate tools strategically.	**Attend to precision.**
Look for and make use of structure.	**Look for and express regularity in repeated reasoning.**

CONTENT/KEY CONCEPTS	OBJECTIVES/STANDARDS
A. Simplifying Radicals • Add, subtract, multiply, divide, and simplify radicals • Solve radical equations **B. Factoring** • Factor algebraic expressions greatest common factor (GCF), difference of squares, trinomials, factor by grouping **C. Rectangular Coordinates** • Plot points in the Cartesian plane • Use the distance formula to find the distance between points • Use the midpoint formula to find the midpoint of a line segment **D. Graphs of Equations** • Sketch graphs of equations • Find x- and y-intercepts of graphs of equations • Find symmetry of a graph algebraically • Find equations circles in standard form and sketch their graphs **E. Linear Equations in Two Variables** • Use slope to identify parallel and perpendicular lines • Use slope and equations of lines to solve real-life problems	**CC.2.3.HS.A.10** - Translate between the geometric description and the equation for a conic section. **CC.2.4.HS.B.2** - Summarize, represent, and interpret data on two categorical and quantitative variables. **CC.2.2.HS.C.1** - Use the concept and notation of functions to interpret and apply them in terms of their context. **CC.2.2.HS.C.2** - Graph and analyze functions and use their properties to make connections between the different representations. **CC.2.2.HS.C.3** - Write functions or sequences that model relationships between two quantities. **CC.2.2.HS.C.4** - Interpret the effects transformations have on functions and find the inverses of functions. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.C.6** - Interpret functions in terms of the situations they model. **CC.2.2.HS.D.2** - Write expressions in equivalent forms to solve problems. **CC.2.2.HS.D.3** - Extend the knowledge of arithmetic operations and apply to polynomials. **CC.2.2.HS.D.5** - Use polynomial identities to solve problems. **CC.2.2.HS.D.6** - Extend the knowledge of rational functions to rewrite in equivalent forms. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.2.HS.D.8** - Apply inverse operations to solve equations or formulas for a given variable. **CC.2.2.HS.D.9** - Use reasoning to solve equations and justify the solution method. **CC.2.2.HS.D.10** - Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

The Number System	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
F. Functions • Evaluate functions • Find the domains of functions • Find the zeros of a function • Evaluate difference quotients **G. Analyzing Graphs of Functions** • Determine on what intervals a function is increasing, decreasing, or constant. • Determine if a function is even or odd **H. Parent Functions and Transformations** • Evaluate the greatest integer function • Identify and sketch parent functions • Translate graphs of parent functions by reflecting them and shifting them vertically and horizontally **I. Combinations of Functions: Composite Functions** • Evaluate combinations of functions • Evaluate composite functions **J. Inverse Functions** • Verify inverse functions formally • Find inverse functions algebraically **K. Mathematical Modeling and Variation** • Write mathematical models for direct, inverse, and joint variation	**CC.2.3.HS.A.10** - Translate between the geometric description and the equation for a conic section. **CC.2.4.HS.B.2** - Summarize, represent, and interpret data on two categorical and quantitative variables. **CC.2.2.HS.C.1** - Use the concept and notation of functions to interpret and apply them in terms of their context. **CC.2.2.HS.C.2** - Graph and analyze functions and use their properties to make connections between the different representations. **CC.2.2.HS.C.3** - Write functions or sequences that model relationships between two quantities. **CC.2.2.HS.C.4** - Interpret the effects transformations have on functions and find the inverses of functions. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.C.6** - Interpret functions in terms of the situations they model. **CC.2.2.HS.D.2** - Write expressions in equivalent forms to solve problems. **CC.2.2.HS.D.3** - Extend the knowledge of arithmetic operations and apply to polynomials. **CC.2.2.HS.D.5** - Use polynomial identities to solve problems. **CC.2.2.HS.D.6** - Extend the knowledge of rational functions to rewrite in equivalent forms. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.2.HS.D.8** - Apply inverse operations to solve equations or formulas for a given variable. **CC.2.2.HS.D.9** - Use reasoning to solve equations and justify the solution method. **CC.2.2.HS.D.10** - Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

Solving Equations	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Quadratic Functions and Models • Write quadratic equations in standard form given a graph of the function or given an equation that is not in standard form **B. Polynomial Functions of Higher Degree** • Determine end behavior of polynomial functions • Sketch graphs of polynomial functions **C. Polynomial and Synthetic Division** • Divide polynomials using long division and synthetic division • Use synthetic division to determine factors of polynomials **D. Complex Numbers** • Perform standard operations with complex numbers • Apply complex numbers to real-world problems **E. Zeros of Polynomial Functions** • Use the rational zero test to determine zeros of polynomials • Use the Linear Factorization Theorem to determine zeros of polynomials • Apply Descartes' Rule of Signs to polynomials **F. Rational Functions** • Analyze and sketch the graphs of rational functions	**CC.2.2.HS.C.2** - Graph and analyze functions and use their properties to make connections between the different representations. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.D.3** - Extend the knowledge of arithmetic operations and apply to polynomials. **CC.2.2.HS.D.4** - Understand the relationship between zeros and factors of polynomials to make generalizations about functions and their graphs. **CC.2.2.HS.D.8** - Apply inverse operations to solve equations or formulas for a given variable. **CC.2.1.HS.F.6** - Extend the knowledge of arithmetic operations and apply to complex numbers.

Trigonometry	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Radian and Degree Measure • Describe angles. • Use radian measure • Use degree measure • Use angles to model and solve real-life problems	**CC.2.2.HS.C.7** - Apply radian measure of an angle and the unit circle to analyze the trigonometric functions. **CC.2.2.HS.C.8** - Choose trigonometric functions to model periodic phenomena and describe the properties of the graphs.
B. The Unit Circle • Identify a unit circle and describe its relationship to real numbers • Evaluate trigonometric functions using the unit circle • Use the domain and period to evaluate sine and cosine functions • Use a calculator to evaluate trigonometric functions	**CC.2.2.HS.C.7** - Apply radian measure of an angle and the unit circle to analyze the trigonometric functions. **CC.2.2.HS.C.8** - Choose trigonometric functions to model periodic phenomena and describe the properties of the graphs.
C. Right Triangle Trigonometry • Evaluate trigonometric functions of acute angles • Use the fundamental trigonometric identities • Use a calculator to evaluate trigonometric functions • Use trigonometric functions to model and solve real-life problems	**CC.2.2.HS.C.9** - Prove the Pythagorean identity and use it to calculate trigonometric ratios. **CC.2.3.HS.A.7** - Apply trigonometric ratios to solve problems involving right triangles.
D. Trigonometric Functions of Any Angle • Evaluate trigonometric functions of any angle • Use reference angles to evaluate trigonometric functions • Evaluate trigonometric functions of real numbers	**CC.2.2.HS.C.9** - Prove the Pythagorean identity and use it to calculate trigonometric ratios. **CC.2.3.HS.A.7** - Apply trigonometric ratios to solve problems involving right triangles.

Trigonometry	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
E. Graphs of Sine and Cosine • Sketch the graphs of basic sine and cosine functions • Use amplitude and period to help sketch the graphs of sine and cosine functions • Use sine and cosine functions to model real-life data	**CC.2.2.HS.C.2** - Graph and analyze functions and use their properties to make connections between the different representations. **CC.2.2.HS.C.8** - Choose trigonometric functions to model periodic phenomena and describe the properties of the graphs. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.2.HS.D.8** - Apply inverse operations to solve equations or formulas for a given variable. **CC.2.2.HS.D.10** - Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.
F. Graphs of Other Trigonometric Functions • Sketch the graphs of tangent functions • Sketch the graphs of cotangent functions • Sketch the graphs of secant and cosecant functions	**CC.2.2.HS.C.2** - Graph and analyze functions and use their properties to make connections between the different representations. **CC.2.2.HS.C.8** - Choose trigonometric functions to model periodic phenomena and describe the properties of the graphs. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.2.HS.D.8** - Apply inverse operations to solve equations or formulas for a given variable. **CC.2.2.HS.D.10** - Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.
G. Inverse Trigonometric Functions • Evaluate and graph the inverse sine function • Evaluate and graph the other inverse trigonometric functions • Evaluate and graph the compositions of trigonometric functions	**CC.2.2.HS.C.4** - Interpret the effects transformations have on functions and find the inverses of functions. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.C.6** - Interpret functions in terms of the situations they model.

Trigonometry	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
H. Applications and Models • Solve real-life problems involving right triangles • Solve real-life problems involving directional bearings • Solve real-life problems involving harmonic motion	**CC.2.2.HS.C.2** - Graph and analyze functions and use their properties to make connections between the different representations. **CC.2.2.HS.C.3** - Write functions or sequences that model relationships between two quantities. **CC.2.2.HS.C.4** - Interpret the effects transformations have on functions and find the inverses of functions. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.C.6** - Interpret functions in terms of the situations they model. **CC.2.2.HS.C.8** - Choose trigonometric functions to model periodic phenomena and describe the properties of the graphs. **CC.2.2.HS.C.9** - Prove the Pythagorean identity and use it to calculate trigonometric ratios. **CC.2.2.HS.D.5** - Use polynomial identities to solve problems. **CC.2.2.HS.D.6** - Extend the knowledge of rational functions to rewrite in equivalent forms. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.2.HS.D.8** - Apply inverse operations to solve equations or formulas for a given variable. **CC.2.2.HS.D.9** - Use reasoning to solve equations and justify the solution method. **CC.2.2.HS.D.10** - Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

Analytic Trigonometry	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Using Fundamental Identities • Recognize and write the fundamental trigonometric identities • Use the fundamental trigonometric identities to evaluate trig functions, simplify trigonometric expressions, and rewrite trigonometric expressions	**CC.2.3.HS.A.2** - Apply rigid transformations to determine and explain congruence.
B. Verifying Trigonometric Identities • Verify trigonometric identities	**CC.2.3.HS.A.2** - Apply rigid transformations to determine and explain congruence.
C. Solving Trigonometric Equations • Use standard algebraic techniques to solve trigonometric equations • Solve trigonometric equations of the quadratic type • Solve trigonometric equations involving multiple angles • Use inverse trigonometric functions to solve trigonometric equations	**CC.2.2.HS.C.2** - Graph and analyze functions and use their properties to make connections between the different representations. **CC.2.2.HS.C.3** - Write functions or sequences that model relationships between two quantities. **CC.2.2.HS.C.4** - Interpret the effects transformations have on functions and find the inverses of functions. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.C.6** - Interpret functions in terms of the situations they model. **CC.2.2.HS.D.5** - Use polynomial identities to solve problems. **CC.2.2.HS.D.6** - Extend the knowledge of rational functions to rewrite in equivalent forms. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.2.HS.D.8** - Apply inverse operations to solve equations or formulas for a given variable. **CC.2.2.HS.D.9** - Use reasoning to solve equations and justify the solution method. **CC.2.2.HS.D.10** - Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

Analytic Trigonometry	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
D. Sum and Difference Formulas • Use sum and difference formulas to evaluate trigonometric functions, verify trigonometric identities, and solve trigonometric equations **E. Multiple Angle and Sum-to-Product Formulas** • Use multiple-angle formulas to rewrite and evaluate trigonometric functions • Use half-angle formulas to rewrite and evaluate trigonometric functions • Use sum-to-product formulas to rewrite and evaluate trigonometric functions	**CC.2.2.HS.C.2** - Graph and analyze functions and use their properties to make connections between the different representations. **CC.2.2.HS.C.3** - Write functions or sequences that model relationships between two quantities. **CC.2.2.HS.C.4** - Interpret the effects transformations have on functions and find the inverses of functions. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.C.6** - Interpret functions in terms of the situations they model. **CC.2.2.HS.D.5** - Use polynomial identities to solve problems. **CC.2.2.HS.D.6** - Extend the knowledge of rational functions to rewrite in equivalent forms. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.2.HS.D.8** - Apply inverse operations to solve equations or formulas for a given variable. **CC.2.2.HS.D.9** - Use reasoning to solve equations and justify the solution method. **CC.2.2.HS.D.10** - Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

Additional Topics in Trigonometry	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Law of Sines • Use the Law of Sines to solve oblique triangles (angle, angle, side (AAS) or angle, side, angle (ASA)) • Use the Law of Sines to solve oblique triangles side, side, angle (SSA) • Find the areas of oblique triangles • Use the Law of Sines to model and solve real-life problems **B. Law of Cosines** • Use the Law of Cosines to solve oblique triangles (side, side, side (SSS) or side, angle, side (SAS)) • Use the Law of Cosines to model and solve real-life problems • Use Heron's Area Formula to find the areas of a triangle	**CC.2.2.HS.C.2** - Graph and analyze functions and use their properties to make connections between the different representations. **CC.2.2.HS.C.3** - Write functions or sequences that model relationships between two quantities. **CC.2.2.HS.C.4** - Interpret the effects transformations have on functions and find the inverses of functions. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.C.6** - Interpret functions in terms of the situations they model. **CC.2.2.HS.D.5** - Use polynomial identities to solve problems. **CC.2.2.HS.D.6** - Extend the knowledge of rational functions to rewrite in equivalent forms. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.2.HS.D.8** - Apply inverse operations to solve equations or formulas for a given variable. **CC.2.2.HS.D.9** - Use reasoning to solve equations and justify the solution method. **CC.2.2.HS.D.10** - Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

Systems of Equations	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Linear and Non-linear Systems of Equations • Use the method of substitution to solve systems of linear equations in two variables • Use the method of elimination to solve systems of non-linear equations in two variables • Use a graphical approach to solve systems of equations in two variables • Use systems of equations to model and solve real-life problems **B. Two-Variable Linear Systems** • Use the method of elimination to solve systems of linear equations in two variables • Interpret graphically the numbers of solutions of systems of linear equations in two variables • Use systems of linear equations in two variables • Use systems of linear equations in two variables to model and solve real-life problems	**CC.2.2.HS.D.9** - Use reasoning to solve equations and justify the solution method.

Matrices and Determinants	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Matrices and Systems of Equations • Write matrices and identify their orders • Perform elementary row operations on matrices • Use matrices and Gaussian Elimination to solve systems of linear equations • Use matrices and Gauss-Jordan Elimination to solve systems of linear equations **B. Operations with Matrices** • Decide whether two matrices are equal • Add and subtract matrices by scalars • Multiply two matrices • Use matrix operations to model and solve real-life problems	• Write matrices and identify their orders. • Perform elementary row operations on matrices. • Solve systems of linear equations by using matrices and Gaussian Elimination. • Solve systems of linear equations by using matrices and Gauss-Jordan Elimination. • Perform addition and subtraction with matrices. • Perform multiplication with matrices. • Use matrices to solve real-world problems.

Exponential and Logarithmic Functions	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Exponential Functions and Their Graphs • Recognize and evaluate exponential functions with base *a* • Graph exponential functions and use the One-to-One Property • Recognize, evaluate, and graph exponential functions with base *e* • Use exponential functions to solve real-life problems	**CC.2.1.HS.F.3** - Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays. **CC.2.1.HS.F.4** - Use units as a way to understand problems and to guide the solution of multi-step problems. **CC.2.2.HS.C.3** - Write functions or sequences that model relationships between two quantities. **CC.2.2.HS.C.4** - Interpret the effects transformations have on functions and find the inverses of functions. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.C.6** - Interpret functions in terms of the situations they model. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.3.HS.A.10** - Translate between the geometric description and the equation for a conic section.
B. Logarithmic Functions and Their Graphs • Recognize and evaluate logarithmic functions with base a • Graph logarithmic functions • Recognize, evaluate, and graph natural logarithmic functions • Use logarithmic functions to model and solve real-life problems	**CC.2.1.HS.F.3** - Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays. **CC.2.1.HS.F.4** - Use units as a way to understand problems and to guide the solution of multi-step problems. **CC.2.2.HS.C.3** - Write functions or sequences that model relationships between two quantities. **CC.2.2.HS.C.4** - Interpret the effects transformations have on functions and find the inverses of functions. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.C.6** - Interpret functions in terms of the situations they model. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.3.HS.A.10** - Translate between the geometric description and the equation for a conic section.

Exponential and Logarithmic Functions	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
C. Properties of Logarithms • Use the change-of-base formula to rewrite and evaluate logarithmic expressions • Use properties of logarithms to evaluate or rewrite logarithmic expressions • Use properties of logarithms to expand or condense logarithmic expressions • Use logarithmic functions to model and solve real-life problems	**CC.2.1.HS.F.3** - Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays. **CC.2.1.HS.F.4** - Use units as a way to understand problems and to guide the solution of multi-step problems. **CC.2.2.HS.C.3** - Write functions or sequences that model relationships between two quantities. **CC.2.2.HS.C.4** - Interpret the effects transformations have on functions and find the inverses of functions. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.C.6** - Interpret functions in terms of the situations they model. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.3.HS.A.10** - Translate between the geometric description and the equation for a conic section.
D. Solving Exponential and Logarithmic Equations • Solve simple exponential and logarithmic equations • Solve more complicated exponential equations • Solve more complicated logarithmic equations • Use exponential and logarithmic equations to model and solve real-life problems	**CC.2.1.HS.F.3** - Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays. **CC.2.1.HS.F.4** - Use units as a way to understand problems and to guide the solution of multi-step problems. **CC.2.2.HS.C.3** - Write functions or sequences that model relationships between two quantities. **CC.2.2.HS.C.4** - Interpret the effects transformations have on functions and find the inverses of functions. **CC.2.2.HS.C.5** - Construct and compare linear, quadratic, and exponential models to solve problems. **CC.2.2.HS.C.6** - Interpret functions in terms of the situations they model. **CC.2.2.HS.D.7** - Create and graph equations or inequalities to describe numbers or relationships. **CC.2.3.HS.A.10** - Translate between the geometric description and the equation for a conic section.

Sequences and Series	
CONTENT/KEY CONCEPTS	**OBJECTIVES/STANDARDS**
A. Sequences and Series • Use sequence notation to write the terms of sequences • Use factorial notation • Use summation notation to write sums • Find the sums of infinite series • Use sequences and series to model and solve real-life problems **B. Arithmetic Sequences and Partial Sums** • Recognize, write, and find the n^{th} terms of arithmetic sequences • Find n^{th} partial sums of arithmetic sequences • Use arithmetic sequences to model and solve real-life problems **C. Geometric Sequences and Series** • Recognize, write, and find the n^{th} terms of geometric sequences • Find n^{th} partial sums of geometric sequences • Find the sum of an infinite geometric series • Use geometric sequences to model and solve real-life problems	• Use sequence notation to write the terms of sequences. • Use factorial notation to write the terms of sequences. • Find the sums of infinite series. • Use sequences and series to model and solve real-world problems. • Recognize, write, and find the n^{th} terms of arithmetic sequences. • Find n^{th} partial sums of arithmetic sequences. • Use arithmetic sequences to model and solve real-world problems. • Recognize, write, and find the n^{th} terms of geometric sequences. • Find the sum of an infinite geometric series.