

Please Note:

All standards are designed to be learned by the end of the course. This guide represents a recommended time line and sequence to be used voluntarily by teachers for planning purposes. Specific questions regarding when content will actually be addressed in a specific course are best answered by the individual teacher.

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Advanced Topics in Mathematics

2017 – 2018

| | Week | Major Concepts / Topics | Possible Resources |
|------------------------------|--------------------|--|---|
| Quarter 1 Aug 10 – Oct 13 | 1 8/10 - 8/11 | Chapter 1 – Equations and Inequalities <ul style="list-style-type: none"> • Lesson 1.1 – Graphs and Graphing Utilities | Lesson 1.1 – Graphing linear functions |
| | 2 8/14 – 8/18 | Chapter 1 – Equations and Inequalities <ul style="list-style-type: none"> • Lesson 1.2 – Linear Equations and Rational Equations • Lesson 1.3 – Models and Applications | Lesson 1.2 – Solving rational equations Interpreting graphs of linear and nonlinear functions Lesson 1.3 – Graphing word problems Modeling with combined functions |
| | 3 8/21 – 8/25 | Chapter 2 – Functions and Graphs <ul style="list-style-type: none"> • Lesson 2.1 – Basics of Functions and Their Graphs • Lesson 2.2 – More on Functions and Their Graphs | Lesson 2.1 – Even, odd functions Lesson 2.2 – Shifting and reflecting functions |
| | 4 8/28 – 9/1 | Chapter 2 – Functions and Graphs <ul style="list-style-type: none"> • Lesson 2.3 – Linear Functions and Slope • Lesson 2.4 – More on Slope | Lesson 2.3 – Graphing linear functions word problems Lesson 2.4 – Recognizing slope of curves |
| | 5 9/5 – 9/8 | Chapter 2 – Functions and Graphs <ul style="list-style-type: none"> • Lesson 2.5 – Transformations of Functions | Lesson 2.5 – Shifting and reflecting functions |
| | 6 9/11 – 9/15 | Chapter 2 – Functions and Graphs <ul style="list-style-type: none"> • Lesson 2.6 – Combinations of Functions; Composite Functions • Lesson 2.7 – Inverse Functions | Lesson 2.6 – Compose functions Lesson 2.7 – Inverses of linear functions |
| | 7 9/18 – 9/22 | Chapter 5 – Trigonometric Functions <ul style="list-style-type: none"> • Lesson 5.1 – Angles and Radian Measure • Lesson 5.2 – Right Triangle Trigonometry | Lesson 5.1 – Radians and arc length Lesson 5.2 – Right Triangles and Trigonometry |
| | 8 9/25 – 9/29 | Chapter 5 – Trigonometric Functions <ul style="list-style-type: none"> • Lesson 5.2 – Right Triangle Trigonometry • Lesson 5.8- Applications of Trigonometric Functions • Lesson 5.3 – Trigonometric Functions of Any Angle | Lesson 5.2 – Trig functions and side ratios in right triangles Lesson 5.8 – Modeling with trigonometric functions Lesson 5.3 – Unit circle trigonometry |
| | 9 10/2 – 10/6 | Chapter 5 – Trigonometric Functions <ul style="list-style-type: none"> • Lesson 5.4 – Trigonometric Functions of Real Numbers; Periodic Functions | Lesson 5.4 – Symmetry and periodicity of trigonometric functions |
| | 10 10/9 – 10/13 | Chapter 5 – Trigonometric Functions <ul style="list-style-type: none"> • Lesson 5.5 – Graphs of Other Trigonometric Functions | Lesson 5.5 – Graphs of trigonometric functions |

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| Quarter 2 Oct 16 – Dec 21 | 1 10/16 – 10/20 | Chapter 5 – Trigonometric Functions <ul style="list-style-type: none"> • Lesson 5.6 – Graphs of Other Trigonometric Functions • Lesson 5.7 – Inverse Trigonometric Functions | Lesson 5.6 – Symmetry and periodicity of trigonometric functions Lesson 5.7 - Inverse trig word problems |
| | 2 10/23 – 10/27 | Chapter 5 – Trigonometric Functions <ul style="list-style-type: none"> • Lesson 5.7 – Inverse Trigonometric Functions • Lesson 5.8 – Applications of Trigonometric Functions • Assessment Chapter 6- Analytic Trigonometry <ul style="list-style-type: none"> • Lesson 6.1 – Verifying Trigonometric Identities | Lesson 5.8 – Modeling with trigonometric functions Lesson 6.1 – Manipulating trig expressions with Pythagorean identities |
| | 3 10/30 – 11/3 | Chapter 6 – Analytic Trigonometry <ul style="list-style-type: none"> • Lesson 6.2 – Sum and Difference Formulas • Lesson 6.3 – Double-Angle, Power-Reducing, and Half-Angle Formulas • Assessment | Lesson 6.2 – Addition and subtracting trig identities Lesson 6.3 – Applying angle addition formulas Trigonometric Identity Review |
| | 4 11/6 – 11/9 | Chapter 6 – Analytic Trigonometry <ul style="list-style-type: none"> • Lesson 6.5- Trigonometric Equations | Lesson 6.5- Solving Trigonometric Equations |
| | 5 11/13 – 11/17 | Chapter 6- Analytic Trigonometry <ul style="list-style-type: none"> • Lesson 6.5- Trigonometric Equations Chapter 1- Equations and Inequalities <ul style="list-style-type: none"> • Lesson 1.4 – Complex Numbers | Lesson 1.4 – The imaginary unit and complex numbers |
| | 6 11/20 – 11/21 | Chapter 7 – Additional Topics in Trigonometry <ul style="list-style-type: none"> • Lesson 7.3 – Polar Coordinates | Lesson 7.3 – Polar coordinates |
| | 7 11/27 – 12/1 | Chapter 7 – Additional Topics in Trigonometry <ul style="list-style-type: none"> • Lesson 7.5 – Complex Numbers in Polar Form; DeMoivre’s Thoerem | Lesson 7.5 – DeMoivre’s Theorem - YouTube |
| | 8 12/4 – 12/8 | Chapter 7 – Additional Topics in Trigonometry <ul style="list-style-type: none"> • Lesson 7.4 – Graphs and Polar Equations | Lesson 7.4 – Complex numbers; Polar form |
| | 9 12/11 – 12/15 | Chapter 7 – Additional Topics in Trigonometry <ul style="list-style-type: none"> • Lesson 7.4 – Graphs and Polar Equations | |
| | 10 12/18 – 12/21 | <ul style="list-style-type: none"> • District Exams | |

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| Quarter 3 Jan 8 – Mar 10 | 1 1/8 – 1/12 | Chapter 1 – Equations and Inequalities <ul style="list-style-type: none"> Lesson 1.4 – Complex Numbers Lesson 1.5 – Quadratic Equations Chapter 3 – Polynomial and Rational Functions <ul style="list-style-type: none"> Lesson 3.1 – Quadratic Functions | Lesson 1.5 – Understanding the process for solving quadratic equations |
| | 2 1/16 – 1/19 | Chapter 3 – Polynomial and Rational Functions <ul style="list-style-type: none"> Lesson 3.2 – Polynomial Functions and Their Graphs Lesson 3.3 – Dividing Polynomials; Remainder and Factor Theorems | Lesson 3.1 – Quadratic functions-Vertex Form; Quadratic Functions-Standard Form Lesson 3.2 – Polynomial graphs |
| | 3 1/22 – 1/26 | Chapter 3 – Polynomial and Rational Functions <ul style="list-style-type: none"> Lesson 3.3 – Dividing Polynomials; Remainder and Factor Theorems Lesson 3.4 – Zeros of Polynomial Functions | Lesson 3.3 – Dividing polynomials; Remainder Theorem Lesson 3.4 – Zeros of Polynomials |
| | 4 1/30 – 2/2 | Chapter 3 – Polynomial and Rational Functions <ul style="list-style-type: none"> Lesson 3.5 – Rational Functions and Their Graphs | Lesson 3.5 – Graphs of rational functions |
| | 5 2/5 – 2/9 | Chapter 4 – Exponential and Logarithmic Functions <ul style="list-style-type: none"> Lesson 4.1 – Exponential Functions Lesson 4.2 – Logarithmic Functions Lesson 4.3 – Properties of Logarithms | Lesson 4.1 – Exponential Expressions; Exponential Functions Lesson 4.2 – Using logarithms to solve exponential equations Lesson 4.2 – Logarithms Lesson 4.3 – Logarithm properties |
| | 6 2/12 – 2/16 | Chapter 4 – Exponential and Logarithmic Functions <ul style="list-style-type: none"> Lesson 4.3 – Properties of Logarithms Lesson 4.4 – Exponential and Logarithmic Equations Lesson 4.5 – Exponential Growth and Decay; Modeling Data | Lesson 4.4 – Modeling with exponential functions Lesson 4.5 – Exponential growth and decay |
| | 7 2/20 – 2/23 | Chapter 4 – Exponential and Logarithmic Functions <ul style="list-style-type: none"> Lesson 4.5 – Exponential Growth and Decay; Modeling Data | Lesson 4.5 – Exponential growth and decay word problems |
| | 8 2/26 – 3/2 | Chapter 9 – Matrices and Determinants <ul style="list-style-type: none"> Lesson 9.3 – Matrix Operations and Their Applications Lesson 9.5 – Determinants and Cramer’s Rule Lesson 9.4 – Multiplicative Inverses of Matrices and Matrix Equations | Lesson 9.3 – Representing relationships with matrices Lesson 9.5 – Cramer’s Rule |
| | 9 3/5 – 3/9 | Chapter 9 – Matrices and Determinants <ul style="list-style-type: none"> Lesson 9.4 – Multiplicative Inverses of Matrices and Matrix Equations | Lesson 9.4 – Zero and identity matrices; Multiplying a matrix by a vector |

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| | 10 3/12-3/15 | <p>Chapter 2 – Functions and Graphs</p> <ul style="list-style-type: none">• Lesson 2.8 – Distance and Midpoint Formulas; Circles <p>Chapter 10 – Conic Sections and Analytic Geometry</p> <ul style="list-style-type: none">• Lesson 10.1 – The Ellipse | <p>Lesson 2.8 – Distance formula; Midpoint formula</p> <p>Lesson 10.1 - Ellipses</p> |
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| Quarter 4 Mar 21 – May 24 | 1 3/19 – 3/23 | Chapter 10 – Conic Sections and Analytic Geometry <ul style="list-style-type: none"> • Lesson 10.1 – The Ellipse • Lesson 10.2 – The Hyperbola | Lesson 10.1 - Ellipses Lesson 10.2 – Hyperbolas |
| | 2 4/2 – 4/6 | Chapter 10 – Conic Sections and Analytic Geometry <ul style="list-style-type: none"> • Lesson 10.3 – The Parabola • Topic - Cavalieri’s Principle | Lesson 10.3 – Parabolas Cavalieri’s Principle – Cavalieri’s Principle ; Cavalieri’s Principle YouTube |
| | 3 4/9 – 4/13 | Chapter 11 – Sequences, Induction, and Probability <ul style="list-style-type: none"> • Lesson 11.1 – Sequences and Summation Notation • Lesson 11.2 – Arithmetic Sequences | Lesson 11.1 – Sequences and Series |
| | 4 4/16 – 4/20 | Chapter 11 – Sequences, Induction, and Probability <ul style="list-style-type: none"> • Lesson 11.2 – Arithmetic Sequences • Lesson 11.3 – Geometric Sequences and Series | Lesson 11.2 – Arithmetic sequences Lesson 11.3 – Geometric series |
| | 5 4/23 – 4/27 | Chapter 11 – Sequences, Induction, and Probability <ul style="list-style-type: none"> • Lesson 11.6 – Counting Principles, Permutations, and Combinations • Lesson 11.7 – Probability | Lesson 11.6 – Combinations and Permutations Lesson 11.7 – Probability - Dependent ; Categorical data ; Adding probabilities |
| | 6 4/30 – 5/4 | Chapter 11 – Sequences, Induction, and Probability <ul style="list-style-type: none"> • Lesson 11.7 – Probability | |
| | 7 5/7 – 5/11 | <ul style="list-style-type: none"> • Topic - Random Variables | |
| | 8 5/14 – 5/18 | <ul style="list-style-type: none"> • Standards Based Performance Tasks | |
| | 9 5/21 – 5/24 | <ul style="list-style-type: none"> • Final Exams | |

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