Moon Area School District Curriculum Map

Course: Trigonometry/Pre-Calculus
Grade Level: 10-12
Content Area: Mathematics
Frequency: Full-Year Course

Big Ideas

1. Trigonometric Functions
2. Trigonometric Identities and Equations
3. Functions from a Calculus Perspective

Essential Questions

4. Why are graphs useful?
5. How can graphs of trigonometric functions be useful?
6. How can representing the same mathematical relationship in different ways be useful?
7. Why would it be helpful to replace an expression with an equivalent expression?
8. How can mathematical ideas be represented?
9. How are symbols useful in mathematics?
10. Why is mathematics used to model real-work situations?

Primary Resource(s) & Technology:
Glencoe Precalculus ISBN: 978-0-07-664183-3
Microsoft Teams, Promethean Boards, Student Laptops

Big Ideas/ EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
1, 8, 10	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	• Find values of trigonometric functions for acute angles of right triangles. • Solve right triangles	August - September (9 days)

	involving right triangles.		
1, 6, 9,10	CC.2.2.HS.C.7 Apply radian measure of an angle and the unit circle to analyze the trigonometric functions CC.2.3.HS.A.9 Extend the concept of similarity to determine arc lengths and areas of sectors of circles.	• Convert degree measures of angles to radian measures, and vice versa. • Use angle measures to solve real-world problems.	September (7 days)
1, 6	CC.2.2. HS.C.7 Apply radian measure of an angle and the unit circle to analyze the trigonometric functions.	• Find values of trigonometric functions for any angle. • Find values of trigonometric functions using the unit circle.	September (7 days)
1, 4, 5,10	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.6 Interpret functions in terms of the situations they model	• Graph transformations of the sine and cosine functions. • Use sinusoidal functions to solve problems.	September-October (7 days)

1, 4, 5	CC.2.2.HS.C.8 Choose trigonometric functions to model periodic phenomena and describe the properties of the graphs.	• Graph tangent and reciprocal trigonometric functions	October (6 days)
1, 4, 9	CC.2.2.HS.C.4 Interpret the effects transformations have on functions and find the inverses of functions.	• Evaluate and graph inverse trigonometric functions • Find compositions of trigonometric functions	October-November (6 days)
1, 10		• Solve oblique triangles by using the Law of Sines or the Law of Cosines • Find areas of oblique triangles	November-December (7 days)
2, 6, 7	CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems.	• Identify and use basic trigonometric identities to find trigonometric values • Use basic trigonometric identities to simplify and rewrite trigonometric expressions	December (7 days)
2, 6, 7	CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems.	• Verify trigonometric identities	December-January (7 days)
2, 6, 7	CC.2.2.HS.D.2 Write expressions in equivalent forms to solve problems.	• Solve trigonometric equations using algebraic techniques • Solve trigonometric equations using basic identities • Use double-angle identities to evaluate expressions, solve trigonometric equations and to rewrite expressions	January (10 days)

3, 8, 9	CC.2.2.HS.C.1 Use the concept and notation of functions to interpret and apply them in terms of their context	• Use set notation to denote elements, subsets, and complements • Find intersections and unions of sets • Describe subsets of real numbers • Identify and evaluate functions and state their domains	February (10 days)
3, 4	CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between the different representations.	• Use graphs of functions to estimate function values and find domains, ranges, y-intercepts and zeros of functions • Explore symmetries of graphs, and identify even and odd functions	February (10 days)
3, 4		• Use limits to determine the continuity of a function, and apply the Intermediate Value Theorem to continuous functions • Use limits to describe end behavior of functions	March (10 days)
3, 4, 10	CC.2.2.HS.C.2 Graph and analyze functions and use their properties to make connections between the different representations.	• Determine intervals on which functions are increasing, constant, or decreasing, and determine maxima and minima of functions • Determine the average rate of change of a function	March (10 days)
3, 4	CC.2.2.HS.C.4 Interpret the effects transformations have on functions and find the inverses of functions	• Identify, graph, and describe parent functions • Identify and graph transformations of parent functions	March-April (10 days)
3, 4, 9		• Perform operations with functions • Find compositions of functions	April-May (10 days)

3, 4	CC.2.2.HS.C.4 Interpret the effects transformations have on functions and find the inverses of functions	• Use the horizontal line test to determine inverse functions • Find inverse functions algebraically and graphically	May (10 days)