Berlin Brothersvalley School District
Berlin Brothersvalley High School
Year at a Glance Curriculum

Math Department
Honors Geometry/Trigonometry
9th Grade

Course Description:
Honors Geometry/Trigonometry topics in this year-long course include Pythagorean relationships, functions and their graphs, trigonometric functions, right triangle trigonometry, angles of rotation and radian measure, graphs of trigonometric functions, and trigonometric formulas. Students will explore characteristics of one, two and three-dimensional objects. The course emphasizes coordinate plane geometry, relationships of parallel and perpendicular lines, similar and congruent figures, properties of quadrilaterals, area and perimeter, surface area and volume, and circles Projects typically require students to research topics beyond the scope of the textbook as well as across the curriculum and require the application of the concepts studied in the class to solve real world problems. Please see below for a concise outline of the course.

Units of Study	Competencies	Approximate Time Frame	Standards
Unit 1: Definitions and Properties and Unit 2: Lines and Angle Relations in a Plane	Students will be able to describe points, lines and planes, solve relationships using the segment addition postulate, compute midpoint and distance, identify, classify and measure angles and pairs of angles, solve angles' relationships formed by intersecting lines, sketch, identify and solve relationships for angles formed by parallel lines and transversals, and separate the various angle types to solve for angle measures in complex situations.	6 weeks	CC.2.3.HS.A.11
Unit 3: Constructions	Students will be able to construct line segments, angles, and points of intersection, equilateral and isosceles triangles, and regular polygons using a compass or online application.	2 weeks	CC.2.3.HS.A.4
Unit 4: Congruence and Proofs Triangle Congruence Statements and Unit 5: Similarity	Students will be able to summarize and apply the corresponding parts of congruent figures theorem, plan and generate non-overlapping and overlapping triangle proofs, apply the concept of proportional thinking to similar polygons, deduce and use the similar triangles theorems, and	5 weeks	CC.2.3.HS.A.6 CC.2.3.HS.A.1 CC.2.3.HS.A.2 CC.2.3.HS.A.5

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	apply the concept of proportionality to polygons.		
Unit 6: Trigonometry	Students will be able to discover and practice the use of the Pythagorean theorem, the relationships associated with special right triangles, and the three right triangle trigonometry relationships and apply them to problem situations, use the law of cosine and law of sines to solve for missing parts of a triangle, and modify the area of a triangle formula to find the area of a triangle when given two sides and the angle between them and three sides of a triangle.	7 weeks	CC.2.3.HS.A.3 CC.2.3.HS.A.7 CC.2.2.HS.C.9
Unit 7: Perimeter and Area of Polygons	Students will be able to compute the perimeter and area of parallelograms, rectangles and squares, compute the perimeter and area of trapezoids and kites, compute the circumference and area of a circle, and deconstruct figures to calculate composite area.	3 weeks	CC.2.3.HS.A.9 CC.2.2.HS.C.1
Unit 8: Circles	Students will be able to identify the basic concepts associated with circles, analyze and measure central, inscribed, interior and exterior angles for their relationships independently and to each other, and compute values for chord, secant, and tangent lengths.	3 weeks	CC.2.3.HS.A.8 CC.2.3.HS.A.13
Unit 9: Coordinate Geometry and Unit 11: Circular Functions and Their Graphs	Students will be able to transfer between degrees and radians, apply triangle relationships to the unit circle and find exact values for sinusoidal functions, deconstruct equations of circles to understand the various concepts within them, discover the various concepts associated with the graph sine and cosine functions, graph sinusoidal functions with different amplitude, periods, and shifts,	5 weeks	CC.2.3.HS.A.10

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	write equations for sinusoidal functions from their graphs, and apply circular functions to solve circular motion problems.		
Unit 10: Surface Area and Volume of Polyhedra	Students will be able to identify prisms, cylinders, pyramids, cones and spheres and calculate their volume and surface area and construct or deconstruct composite figures and calculate their volume and surface area.	5 weeks	CC.2.3.HS.A.12 CC.2.3.HS.A.14

*Please visit pdesas.org for a complete list of standards taught in this course and for more information regarding PA State Standards for this course.

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