WARREN COUNTY SCHOOL DISTRICT

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Trigonometry
Course Number: 00275
Course Prerequisites: Recommended grade of at least 75% in Algebra 1 CP, Algebra 2 CP, and Geometry CP

Course Description: Trigonometry is a specialist branch of geometry that deals with the study of triangles. In trigonometry, mathematicians study the relationships between the sides and angles of triangles. Right triangles are a key area of study in this area of mathematics. The content of this course includes functions and graphs, Pythagorean Theorem, the six trigonometric functions and their graphs, trigonometric identities, the Law of Sine and Cosine applied to triangles, inverse functions and equations, and a review of Algebra 2. Applications of this branch of mathematics and algebra in real life are many and varied. This course is recommended for students interested in pursuing careers in engineering, surveying, astronomy, architecture, and aeronautical studies.

Suggested Grade Level: Grades 11-12
Length of Course: Two Semesters
Units of Credit: 1
PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:
Mathematics #50
To find the CSPG information, go to CSPG
Certification verified by the WCSD Human Resources Department: ☒Yes ☐No

WCSD STUDENT DATA SYSTEM INFORMATION

Course Level: Academic
Mark Types: Check all that apply.
☒F – Final Average ☒MP – Marking Period ☒EXM – Final Exam

GPA Type: ☐ GPAEL-GPA Elementary ☐ GPAML-GPA for Middle Level ☒ NHS-National Honor Society
☒ UGPA-Non-Weighted Grade Point Average ☒ GPA-Weighted Grade Point Average

State Course Code: 02106
To find the State Course Code, go to State Course Code, download the Excel file for *SCED*, click on SCED 6.0 tab, and chose the correct code that corresponds with the course.

TEXTBOOKS AND SUPPLEMENTAL MATERIALS

Board Approved Textbooks, Software, and Materials:
   Title: Trigonometry
   Publisher: Pearson
   ISBN #:   9780136763451
   Copyright Date: 2021
   WCSD Board Approval Date: 6/29/2020

Supplemental Materials: Click or tap here to enter text.

Curriculum Document

WCSD Board Approval:
   Date Finalized: 6/5/2020
   Date Approved: 6/29/2020
   Implementation Year: 2020-2021

SPECIAL EDUCATION, 504, and GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP), Chapter 15 Section 504 Plan (504), and/or Gifted Individual Education Plan (GIEP).

SCOPE AND SEQUENCE OF CONTENT, CONCEPTS, AND SKILLS

Performance Indicator	PA Core Standard and/or Eligible Content	Month Taught and Assessed for Mastery
Solve linear equations.	2.2	September Choose an item.
Identify types of equations.	2.2	September Choose an item.
Use the Zero-Product Property.	2.2	September Choose an item.
Use the Quadratic Formula.	2.2	September Choose an item.
Solve a linear inequality.	2.2	September Choose an item.
Find ordered-pair solutions of equations.	2.2	September Choose an item.
Graph equations.	2.2	September Choose an item.
Find the Center-Radius Form.	2.2	September Choose an item.
Graph circles.	2.2	September Choose an item.
Decide whether relations define functions.	2.2	September Choose an item.
Find domains and ranges of relations.	2.2	September Choose an item.
Find domains and ranges from graphs.	2.2	September Choose an item.
Use the Vertical Line Test.	2.2	September Choose an item.
Identify functions, domains, and ranges.	2.2	September Choose an item.
Use function notation.	2.2	September Choose an item.
Determine open intervals of a domain.	2.2	September Choose an item.
Stretch or shrink graphs.	2.2	September Choose an item.
Reflect graphs across axes.	2.2	September Choose an item.
Test for symmetry with respect to an axis.	2.2	September Choose an item.
Test for symmetry with respect to an origin.	2.2	September Choose an item.
Translate a graph vertically.	2.2	September Choose an item.
Translate a graph horizontally.	2.2	September Choose an item.
Use more than one transformation.	2.2	September Choose an item.

Find the complement and the supplement of an angle.	2.3	October Choose an item.
Find measures of complementary and supplementary angles.	2.3	October Choose an item.
Calculate with degrees, minutes, and seconds.	2.2	October Choose an item.
Convert between angles measures.	2.2	October Choose an item.
Find measures of coterminal angles.	2.2	October Choose an item.
Find angle measures.	2.3	October Choose an item.
Apply the Angle Sum of a Triangle Property.	2.3	October Choose an item.
Find angle measures in similar triangles.	2.3	October Choose an item.
Find side lengths in similar triangles.	2.3	October Choose an item.
Find function values of an angle.	2.2	October Choose an item.
Find function values of quadrantal angles.	2.2	October Choose an item.
Use the reciprocal identities.	2.2	October Choose an item.
Determine signs of functions of non quadrantal angles.	2.2	October Choose an item.
Identify the quadrant of an angle.	2.2	October Choose an item.
Determine whether a value is in the range of a trigonometric function.	2.2	October Choose an item.
Find all function values given one value and the quadrant.	2.2	October Choose an item.
Use identities to find function values.	2.2	Choose an item. October
Find trigonometric function values of an acute angle.	2.2	November December
Write functions in terms of cofunctions	2.2	November December
Solve equations using cofunction identities.	2.2	November December
Compare function values of acute angles.	2.2	November December
Find reference angles.	2.2	November December
Find trigonometric function values using reference angles.	2.2	November December
Use function values of special angles.	2.2	November December
Using coterminal angles to find function values.	2.2	November December
Find angle measures given an interval and a function value.	2.2	November December

Find function values with a calculator.	2.2	November December
Use inverse trigonometric functions to find angles.	2.2	November December
Solve a right triangle given an angle and a side.	2.3	November December
Solve a right triangle given two sides.	2.2, 2.3	November December
Find a length given the angle of elevation or angle of depression.	2.2	November December
Find the angle of elevation or angle of depression.	2.2	November December
Solve a problem involving bearing.	2.2	November December
Use trigonometry to measure a distance.	2.2	November December
Convert degrees to radians and radians to degrees.	2.2	December January
Find function values of angles in radian measure.	2.2	December January
Find arc length.	2.3	December January
Find the area of a sector.	2.3	December January
Find exact circular function values suing the unit circle.	2.2	December January
Apply circular functions to real-world problems.	2.2	December January
Find lengths of line segments.	2.2	December January
Use linear and angular speed formulas.	2.2	December January
Graph sine and cosine functions.	2.2	January February
Determine the sine or cosine function of a graph.	2.2	January February
Interpret a sine or cosine function model.	2.2	January February
Translate the graphs of sine and cosine.	2.2	January February
Apply the sine and cosine functions using a model.	2.2	January February
Graph tangent and cotangent functions.	2.2	January February
Translate tangent and cotangent functions.	2.2	January February
Determine the equation for a graph using tangent and cotangent.	2.2	January February
Graph secant and cosecant functions.	2.2	January February
Determine the equation for a graph using secant and cosecant.	2.2	January February

Translate the graphs of secant and cosecant.	2.2	January February
Model trigonometric functions.	2.2	January February
Analyze harmonic motion.	2.2	January February
Analyze damped oscillatory motion.	2.2	January February
Find trigonometric function values given one value and the quadrant.	2.2	February March
Write one trigonometric function in terms of another.	2.2	February March
Rewrite an expression in terms of sine and cosine.	2.2	February March
Use the fundamental identities.	2.2	February March
Verify trigonometric identities.	2.2	February March
Simplify expressions using sum and difference identities for cosine.	2.2	February March
Find exact cosine function values.	2.2	February March
Use cofunction identities to find an angle.	2.2	February March
Apply the cosine sum and difference identities to real-world problems.	2.2	February March
Simplify expressions using sum and difference identities for sine and tangent.	2.2	February March
Find exact sine and tangent function values.	2.2	February March
Apply the sine and tangent sum and difference identities to real-world problems.	2.2	February March
Simplify expressions using double angle identities.	2.2	February March
Find function values of double angles given information about the angle.	2.2	February March
Find function values of an angle given information about the double angle.	2.2	February March
Derive a multiple-angle identity.	2.2	February March
Apply double angle identities to real-world problems.	2.2	February March
Simplify expressions using the product-to-sum identity.	2.2	February March
Simplify expressions using the sum-to-product identity.	2.2	February March
Simplify expressions using the half-angle identities.	2.2	February March
Apply half-angle identities to real-world problems.	2.2	February March
Use a half-angle identity to find an exact value.	2.2	February March
Find inverse sine values.	2.2	March April

Find inverse cosine values.	2.2	March April
Find inverse function values.	2.2	March April
Find invers function values with a calculator.	2.2	March April
Find function values using definitions of the trigonometric functions.	2.2	March April
Find functions values using identities.	2.2	March April
Write function values in terms of an angle.	2.2	March April
Apply inverse function values to real-world problems.	2.2	March April
Solve trigonometric equations using the Zero-Factor Method.	2.2	March April
Solve trigonometric equations using linear methods.	2.2	March April
Solve trigonometric equations using the Quadratic Formula.	2.2	March April
Solve trigonometric equations using the squaring method.	2.2	March April
Solve trigonometric equations using trigonometric identity substitutions.	2.2	March April
Solve applications of trigonometric equations.	2.2	March April
Solve an equation with a half-angle.	2.2	March April
Solve an equation using a double-angle identity.	2.2	March April
Solve an equation with a multiple angle.	2.2	March April
Solve an equation for a specified variable.	2.2	March April
Solve an equation involving an inverse trigonometric function.	2.2	March April
Solve an inverse trigonometric equation using an identity.	2.2	March April
Apply the Law of Sines.	2.2	April May
Find the area of a triangle.	2.2	April May
Solve an ambiguous case using the Law of Sines.	2.2	April May
Analyze data involving an obtuse angle.	2.2	April May
Apply the Law of Cosines.	2.2	April May
Use Heron's Area Formula to find an area of an oblique triangle.	2.2	April May
Solve a triangle using the Law of Sines and Law of Cosines.	2.2	April May
Find the magnitude of a resultant.	2.2	April May

Find the magnitude and direction of an equilibrant.	2.2	April May
Find a required force.	2.2	April May
Find an incline angle.	2.2	April May
Apply vectors to a navigation problem.	2.2	April May
Find magnitude and direction angle.	2.2	April May
Find horizontal and vertical components.	2.2	April May
Write vectors in the form <a, b>.	2.2	April May
Perform vector operations.	2.2	April May
Find dot products.	2.2	April May
Find the angle between two vectors.	2.2	April May

ASSESSMENTS

PSSA Academic Standards, Assessment Anchors, and Eligible Content: The teacher must be knowledgeable of the PDE Academic Standards, Assessment Anchors, and Eligible Content and incorporate them regularly into planned instruction.

Formative Assessments: The teacher will utilize a variety of assessment methods to conduct in-process evaluations of student learning.

   Effective formative assessments for this course include: Suggested but not limited to: Bell Ringers, Exit Ticket, Cooperative Learning, Observations, Written work, Quizzes, Oral response, Self-evaluation, Homework

Summative Assessments: The teacher will utilize a variety of assessment methods to evaluate student learning at the end of an instructional task, lesson, and/or unit.

   Effective summative assessments for this course include: Suggested but not limited to: Performance Assessment, Tests