A Planned Course of Study

Honors Algebra 2 and Trigonometry

ASHS Course #330

Abington School District

Abington, Pennsylvania

September, 2017

Honors Algebra 2 and Trigonometry

I. Objectives

Students will demonstrate a level of proficiency in each of the following areas of mathematics:

A. Numbers, Number systems and Number Relationships
B. Computation and Estimation
C. Measurement and Estimation
D. Mathematical Reasoning and Connections
E. Mathematical Problem Solving and Communication
F. Statistics and Data Analysis
G. Probability and Predictions
H. Algebra and Functions
I. Geometry
J. Trigonometry
K. Concepts of Calculus

II. Major Concepts

Students will demonstrate the appropriate level of proficiency in each of the following areas:

A. Numbers, Number systems and Number Relationships
- i. Graphs of equations
- ii. Complex numbers
- iii. Real numbers and their properties

B. Computation and Estimation
- i. Exponents and radicals
- ii. Polynomials and special products
- iii. Factoring
- iv. Linear equations in one variable
- v. Modeling with linear equations
- vi. Quadratic equations
- vii. Linear Inequalities in one variable

C. Measurement and Estimation
- i. Real numbers and their properties
- ii. Graphs of sine and cosine
- iii. Law of sines and cosines

D. Mathematical Reasoning and Connections
- i. Rational expressions
- ii. Graphical representation of data
- iii. Analyzing graphs of functions
- iv. Shifting, reflecting, stretching of graphs
- v. Combinations of functions
- vi. Inverse functions
- vii. Mathematical modeling

E. Mathematical Problem Solving and Communication
- i. Polynomials and special products
- ii. Factoring
- iii. Solving systems of equations
- iv. Linear systems

v. Sequences and series
vi. Arithmetic sequences and partial sums
vii. Geometric sequences and series

F. Statistics and Data Analysis

i. Measures of Central Tendency
ii. Measures of Dispersion
iii. Statistical Graphs
iv. Normal Distributions
v. Binomial Distributions

G. Probability and Predictions

i. Counting principle
ii. Probability

H. Algebra and Functions

i. Analyzing graphs of functions
ii. Shifting, reflecting, stretching of graphs
iii. Combinations of functions
iv. Inverse functions
v. Quadratic functions
vi. Polynomial functions of higher degree
vii. Zeros of polynomial functions
viii. Rational functions and asymptotes
ix. Graphs of rational functions
x. Partial fractions

I. Geometry

i. Angles and their measurements

J. Trigonometry

i. Right angle trigonometry
ii. Trig functions of any angle
iii. Graphs of sine and cosine
iv. Graphs of tangent, secant, cosecant, and co tangent
v. Inverse Trig functions
vi. Using Fundamental trig Identities
vii. Verifying trig identities

viii. Solving trig identities
ix. Sum and difference formulas
x. Law of sines
xi. Law of cosines

K. Concepts of Calculus

i. Errors and the Algebra of Calculus

III. Instruction

A. Course Schedule

a. 5 days a week
b. 48 minute classes

B. Pacing

a. Marking Period 1
   i. Real Numbers, Exponents, Radicals, Factoring, Rational Expressions (Chapter P Test)

b. Marking Period 2
   i. Graphs of Equations, Linear Equations, Quadratic Equations, Complex Numbers (Chapter 1 Test)
   ii. Transformations of Graphs and Functions (Chapter 2 Test)
   iii. Quadratic Functions, Finding Roots of Polynomial Functions (Chapter 3 Test)
   iv. Rational Functions, Asymptotes, Partial Fraction Decomposition (Chapter 4 Test)

c. Marking Period 3
   i. Exponential and Logarithmic Functions (Chapter 5 Test)
   ii. Probability and Statistics
   iii. Trigonometry (Chapter 6 Test)

d. Marking Period 4
   i. Analytic Trigonometry (Chapter 7 Test)

ii. Law of Sines and Law of Cosines (Chapter 8 Test)
iii. Sequences, Series, and Probability (Chapter 11 Test)

C. Methods

a. Lecture
b. Mathematics software and internet resources such as applets and math websites will be incorporated into the course using computers and Chromebooks.
c. Exploration and discovery lessons with and without technology
d. Cooperative learning activities
e. Homework
f. Pre-class assignments
g. Graphing calculator activities
h. Formative assessments and differentiation
i. Summative assessments
j. Data analysis of student results

D. Technology

a. Use of computers will be incorporated into the course
b. Websites will be utilized as a source of pictures, models, data, and other online student resources connected to the course concepts.

E. Resources

a. Larson, R., Hostetler, R., Falvo, D. *Algebra and Trigonometry*. Houghton Mifflin Company: Boston, Massachusetts, 2004.Ancillary materials from the text
b. Teacher made presentations, handouts, activities, practice, quizzes
c. Departmental chapter tests, midterm and final exam
d. Reference materials available in the mathematics office and the school library
e. Computer labs

f. Chromebooks
g. Websites such as Study Island, Khan Academy, Wolfram Alpha, Desmos, etc.
h. Google Classroom and Skyward
i. Graphing calculator class sets
j. Scientific calculators
k. Apperson scan sheets and software for test analysis
l. Google Classrooms

IV. Assessment

A. Procedures for Evaluation

a. Summative Assessments
   i. A departmental common assessment will be administered at the end of each chapter.
   ii. A departmental common assessment will be administered at the end of each semester.

b. Formative assessments will be administered in a variety of formats.

c. Accommodations aligned with those permitted for the PSSA/Keystone Exams and included in IEP's will be provided for Special Education students who are enrolled in this course.

B. Expected Levels of Achievement

Students are expected to achieve at least a minimum level of proficiency. Proficiency and related grades are defined as follows:

A……	90 - 100%
B……	80 - 89%
C……	70 - 79%
D……	60 - 69%