A Planned Course of Study

for

Algebra II

Abington School District

Abington, Pennsylvania

September 2016

Algebra II

I. Objectives

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

A. Numbers and Operations
   1. Numbers and Quantity

B. Algebraic Concepts
   1. Functions
   2. Algebra

C. Measurement, Data and Probability
   1. Statistics and Probability

D. Mathematical Practice
   1. Make sense of problems and persevere in solving them
   2. Reason abstractly
   3. Model with mathematics
   4. Use appropriate tools strategically

II. Major Concepts*

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

A. Number and Operations
   1. Numbers and Quantity
      a. Apply and extend the properties of exponents to solve problems with rational exponents.
      b. Apply properties of rational and irrational numbers to solve real world or mathematical problems.
      c. Apply concepts of complex numbers in polynomial identities and quadratic equations to solve problems.

B. Algebraic Concepts
   1. Functions

a. Use the concept and notation of functions to interpret and apply them in terms of their context.
b. Graph and analyze functions and use their properties to make connections between the different representations.
c. Write functions or sequences that model relationships between two quantities.
d. Interpret the effects of transformations have on functions and find the inverses of functions.

2. Algebra
   a. Interpret the structure of expressions to represent a quantity in terms of its context.
   b. Write expressions in equivalent forms to solve problems.
   c. Extend the knowledge of arithmetic operations and apply to polynomials.
   d. Understand the relationship between zeros and factors of polynomials to make generalizations about functions and their graphs.
   e. Extend the knowledge of rational functions to rewrite in equivalent forms.
   f. Create and graph equations or inequalities to describe numbers or relationships.
   g. Apply inverse operations to solve equations for formulas for a given variable.
   h. Use reasoning to solve equations and justify the solution method.
   i. Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

C. Measurement, Data and Probability
   1. Statistics and Probability
      a. Summarize, represent, and interpret data on a single count or measurement variable.
      b. Model appropriate functions to data with and without technology.
      c. Use the concepts of independence and conditional probability to interpret data.
      d. Apply the rules of probability to compute probabilities of compound events in a uniform probability model.

E. Mathematical Practice
   1. Make sense of problems and persevere in solving them
   2. Reason abstractly
   3. Model with mathematics

4. Use appropriate tools strategically

III. Instruction

A. Course Schedule
   1. 5 days a week
   2. 47 minute classes

B. Pacing
   1. Marking Period 1
      a. Linear Equations, Inequalities, and Applications
      b. Graphs, Linear Equations, and Functions
   2. Marking Period 2
      a. Systems of Linear Equations
      b. Exponents, Polynomials, and Polynomial Functions
      c. Factoring
   3. Marking Period 3
      a. Rational Expressions and Functions
      b. Roots, Radicals, and Root Functions
      c. Quadratic Equations and Inequalities
   4. Marking Period 4
      a. Inverse, Exponential, Logarithmic, and Rational Functions
      b. Counting Methods, Probability, and Statistics

C. Methods
   1. Lecture
   2. Cooperative learning
   3. Exploration and discovery lessons with and without technology
   4. Graphing calculator activities
   5. Mathematics software and internet resources such as applets and math websites will be incorporated into the course using computers and Chromebooks.

6. Homework
7. Pre-Class assignments
8. Formative assessments and differentiation
9. Summative assessments
10. Data analysis of student results
11. Remediation

D. Resources
1. Larson, R., Boswell, L., Kanold, T., Stiff, L. *Algebra 2*. McDougall Littell: Evanston, Illinois, 2007.
2. Ancillary materials from the text
3. Teacher made presentations, handouts, activities, practice, quizzes
4. Departmental chapter tests, midterm and final exam
5. Reference materials available in the mathematics office or the school library
6. Computer labs
7. Chromebooks
8. Websites such as Study Island, Khan Academy, Wolfram Alpha, Desmos, etc.
9. Google Classroom and Skyward
10. Graphing calculator class sets
11. Scientific calculators
12. Apperson scan sheets and software for test analysis

IV. Assessment

A. Procedures for Evaluation
1. Formative assessments will be administered in a variety of formats including, but not limited to:
   a. Quizzes
   b. Homework
   c. Classwork
   d. Questioning, exit slips, pre-classes etc.
   e. Class participation

B. Summative Assessments

1. A departmental common assessment will be administered at the end of chapter.
2. A departmental common assessment will be administered at the end of each semester.

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

D. 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%
E-Failing – eligible for Summer School	40 - 59%
F-Failing – ineligible for Summer School….....	0 - 39%

The final grade will be calculated as follows:

Marking Period I……..	20%
Marking Period II……	20%
Midterm Exam……	10%
Marking Period III……..	20%
Marking Period IV……..	20%
Final Exam……..	10%