DELAWARE VALLEY SCHOOL DISTRICT

PLANNED INSTRUCTION

A PLANNED COURSE FOR:

Algebra I

Grade Level: 9, 10

Date of Board Approval: _____

DELAWARE VALLEY SCHOOL DISTRICT

Course Weighting

Marking Period	Quiz	Test	Constructed Response Assignments	Homework/Participation	Total Points
MP1 points	150	200	32	42	424
MP2 points	150	200	32	42	424
MP3 points	150	200	32	42	424
MP4 points	150	200	32	42	424
Total points	600	800	128	168	1696
Total percentages	35%	47%	8%	10%	100%

Curriculum Map

Overview:
This academically demanding course provides a strong foundation in algebra for further study in science and mathematics. All content is aligned for students to be successful on the Algebra 1 Keystone exam. This course will cover the theoretical aspects of algebra and the applications to real world scenarios. Topics include operations and properties of real numbers, linear equations and inequalities, linear functions, systems of equations, properties of exponents, factoring quadratics, solving quadratic equations, data analysis and probability, polynomial expressions, and radical functions.

Time/Credit for the Course:

FULL YEAR, 1 CREDIT, 1 PERIOD/DAY

Curriculum Writing Committee:
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Goals:

Marking Period One 45 Days - Understanding of:
- Simplifying numerical expressions using the order of operations.
- Constructing and evaluating algebraic expressions.
- Simplifying radical expressions.
- Classifying, graphing, and comparing real numbers.
- Identifying and using properties of real numbers.
- Combining like terms.
- Solving equations: one step, two step, multi-step. Emphasis on special solutions.
- Solving literal equations.
- Constructing equations from real world applications and interpreting their solutions.

Marking Period Two 45 Days - Understanding of:
- Solving linear inequalities: one step, two step, multi-step. Emphasis on special solutions.
- Constructing inequalities from real world applications and interpreting their solutions.
- Graphing inequalities on a number line. Writing inequalities from graphs.
- Solving compound inequalities and graphing their solutions on a number line.
- Constructing compound inequalities from real world applications and interpretation their solutions.
- Solving absolute value equations and inequalities. Graphing their solutions on a number line.
- Representing relations in various forms.
- Representing functions in tables, graphs, coordinates, and real-world applications.
- Interpreting the domain and range from various forms.
- Determining if a relation is a function.
- Using function notation to evaluate expressions.
- Constructing functions using function notation from real world applications.
- Interpreting the solutions of a function in the given context.

Marking Period Three 45 Days - Understanding of:
- Finding the rate of change/slope from a table, graph, two points, or a word problem.
- Graphing linear functions using a table and/or intercepts.
- Graphing in slope intercept form, point slope and standard form.
- Converting equations from point slope form to slope intercept form.
- Writing equations in point slope or slope intercept form from real life applications.
- Interpreting scatterplots - identify a correlation, predict a value and follow a trend.
- Making a scatter plot and draw the line of best fit.
- Writing the equation of the line of best fit by using point slope.
- Predicting a value using the line of best fit.
- Solving a system of linear equations using substitution or elimination.
- Solving a system of linear equations by graphing.
- Constructing a system of linear equations from a real-life application. Interpret its solution.
- Graphing a system of linear inequalities and interpret its solution set.

- Constructing a system of linear inequalities from a real-life application. Interpret its solution set.

Marking Period Four 45 Days - Understanding of:
- Reviewing key properties of exponents.
- Classifying polynomials by degree and number of terms.
- Add/Subtracting Polynomial expressions.
- Multiplying and dividing polynomial expressions.
- Factoring polynomials including GCF (where a=1).
- Simplifying rational expressions by factoring.
- Solving quadratic equations by factoring.
- Finding measures of central tendency (mean, median, mode).
- Identifying measures of spread: range and interquartile range.
- Constructing a box plot using the 5 number summary [finding quartiles].
- Interpreting categorical data: pie charts and bar graphs.
- Interpreting quantitative data: dot plots, histograms, and box plots.
- Determining theoretical and experimental probabilities.
- Finding probabilities for independent and dependent events.
- Performing operations with radicals: add, subtracting, multiply, divide.
- Solving radical equations and interpret their solution.

Big Ideas:

BIG IDEA 1: Mathematical relationships among numbers can be represented, compared, and communicated.

BIG IDEA 2: Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations.

BIG IDEA 3: Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.

BIG IDEA 4: Patterns exhibit relationships that can be extended, described, and generalized.

Textbook and Supplemental Resources:

Name of Textbook: Reveal Algebra 1
Textbook ISBN #: 978-0-07695907-5
Textbook Publisher & Year of Publication: McGraw Hill 2020
 Curriculum Textbook is utilized in: Algebra 1

Supplemental Resources:

- **https://www.ixl.com/**
- **https://www.stapplet.com/**
- **https://www.desmos.com**
- **https://www.deltamath.com/**
- **TI 84 Graphing calculator**

Curriculum Plan

UNIT 1: Foundations for Algebra and Solving Equations   **Time Range in Days: 45 Days**

Standards: Pennsylvania Core State Standards for Mathematics
Link to Standards in SAS:
https://www.pdesas.org/module/sas/curriculumframework/?SectionPageItemId=1155

Standards Addressed: CC.2.1.HS.D.1, CC.2.2.HS.D.2, CC.2.2.HS.D.7, CC.2.2.HS.D.8, CC.2.2.HS.D.9, CC2.1.HS.F.2, CC.2.1.HS.F.4

Anchors Addressed: A1.1.1.1.1, A1.1.1.1.2, A1.1.1.3.1, A1.1.2.1.1, A1.1.2.1.2, A1.1.2.1.3, A1.2.1.2.1 A1.2.1.2.2, A1.1.3.1.1, A1.1.3.1.2, A1.1.3.1.3, A1.1.3.2.1, A1.1.3.2.2

Eligible Content:
- Compare and/or order any real numbers. Note: Rational and irrational may be mixed.
- Simplify square roots.
- Utilize algebraic properties and processes to solve problems.
- Utilize algebraic properties and processes in mathematical situations and apply them to solve real world problems.
- There are some mathematical relationships that are always true and these relationships are used as the rules of arithmetic and algebra and are useful for writing equivalent forms of expressions and solving equations.
- Use algebraic properties and processes in mathematical situations and apply them to solve real world problems.
- Write, solve, graph, and interpret linear equations to model relationships between quantities.
- Students will be able to write and solve equations using their understanding of operations with and properties of real numbers. Students will apply these skills to solve real-world problems.

Objectives:
1. Students will be able to construct algebraic expressions given a word phrase or by identifying a pattern. (DOK – Level One)
2. Students will be able to evaluate expressions by applying the order of operations which includes grouping symbols and exponents. (DOK – Level One)
3. Students will be able to classify, graph and compare real numbers which includes square roots. (DOK – Level Two)
4. Students will be able to represent and use numbers in equivalent forms. (DOK – Level Two)

5. Students apply number theory concepts to show relationships between real numbers in problem-solving settings. (DOK – Level Three)

6. Students will be able to identify and apply properties of real numbers. (DOK – Level Two)

7. Students will be able to create their own examples of properties of real numbers. (DOK- Level Four)

8. Students will be able to calculate the sum, difference, product, and quotient of real numbers. (DOK – Level One)

9. Students will be able to use tables, equations, and graphs to describe relationships. (DOK – Level Two)

10. Students will be able to solve equations (one-step in one variable, two-step in one variable, multi-step in one variable which includes equations with variables on both sides, identities and equations with no solution, and literal equations). (DOK – Level Two)

11. Students will be able to reason and critique what a solution represents in context. (DOK - Level Three)

12. Students will be able to create equations based on real world situations. (DOK – Level Four)

Core Activities and Corresponding Instructional Methods:

1. Expose students' prior knowledge of the real number system, including operations with and properties of real numbers, as well as other pre-algebra skills (simplifying and/or evaluating algebraic expressions).
   - Engage students through use of personal whiteboards.
   - Engage students through use of vertical whiteboard surfaces in the room.
   - IXL as supplemental resource.
   - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
   - Practice Keystone Constructed Response Questions relating to this topic.

2. Expose students' prior knowledge of irrational numbers as well as perfect squares and the inverse relationship between squaring and taking the square root. Introduce simplifying radicals involving perfect squares or prime factorization.
   - Engage students through use of personal whiteboards.
   - Engage students through use of vertical whiteboard surfaces in the room.
   - IXL as supplemental resource.
   - Practice Keystone Constructed Response Questions relating to this topic.
   - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.

3. Build math language/vocabulary.
   - Teachers will use appropriate language to identify algebraic terms and processes.
   - Writing activities incorporating appropriate math language.

- Practice writing and interpreting vocabulary terms from Keystone Constructed Response Questions.
- Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.

4. Develop students' skills in solving equations
   - Use "hanger" models to visual interpret equations.
   - Engage students through use of personal whiteboards.
   - Engage students through use of vertical whiteboard surfaces in the room.
   - Practice Keystone Constructed Response Questions relating to this topic.
   - IXL as supplemental resource.
   - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.

5. Develop students' ability to solve and interpret problems by applying algebraic processes.
   - Engage students through use of personal whiteboards.
   - Engage students through use of vertical whiteboard surfaces in the room.
   - Practice Keystone Constructed Response Questions relating to this topic.
   - IXL as supplemental resource.
   - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.

Assessments:

Diagnostic:
- Teacher prepared diagnostic test, teacher questioning and observation

Formative:
- Teacher observations, questioning techniques
- Group activities and classwork
- Homework – example problems from the textbook for each section.
- Teacher prepared Quizzes
- Weekly Constructed Response Questions

Summative:
- Common Assessment Chapter Exams 1-2 (Consists of both Multiple Choice and Constructed Questions).

DELAWARE VALLEY SCHOOL DISTRICT

UNIT 2: Linear Inequalities and Functions   **Time Range in Days: 45 Days**

Standards: Pennsylvania Core State Standards for Mathematics
Link to Standards in SAS:

http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20PreK-12%20March%202014.pdf

Standards Addressed: CC.2.1.HS.F.3 CC.2.1.HS.F.4 CC.2.1.HS.F.5 CC.2.2.HS.C.1 CC.2.2.HS.C.2 CC.2.2.HS.C.3 CC.2.2.HS.C.4 CC.2.2.HS.C.6

Anchors Addressed: A1.2.1.1.1 A1.2.1.1.2 A1.2.1.1.3 A1.2.2.1.1 A1.2.2.1.2 A1.2.2.1.3 A1.2.2.1.4 A1.2.1.2.1 A1.2.1.2.2 A1.1.2.1.1 A1.1.2.1.2 A1.1.2.1.3

Eligible Content:
- Write, solve, graph, and interpret inequalities to model relationships between quantities.
- Identify or graph the solution set to a linear inequality on a number line.
- Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities.
- Solve and interpret absolute value equations and inequalities.
- Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table.
- Determine whether a relation is a function, given a set of points or a graph.
- Students will decide which functional representation to choose when modeling a real-world situation and explain the solution to the problem.
- Relations and functions are mathematical relationships that can be represented and analyzed using words, tables, graphs, and equations.
- Represent functions (linear) in multiple ways, including tables, algebraic rules, graphs, and contextual situations and make connections among these representations.
- Choose the appropriate functional representation to model a real-world situation and solve problems relating to that situation.

Objectives:
1. Students will be able to write, graph, and identify solutions of inequalities. (DOK – Level Two)
2. Students will be able to solve inequalities, compound inequalities, and absolute value equations and inequalities. (DOK – Level One and Two)
3. Students will be able to critique the solutions to inequalities and justify their responses. (DOK - Level Four)
4. Students will be able to represent mathematical relationships using graphs, coordinates, or tables. (DOK – Level Two)

5. Students will be able to identify and represent patterns that describe linear functions. (DOK – Level Two)
6. Students will be able to evaluate expressions using function notation. (DOK - Level Two)
7. Students will be able to write equations that represent functions using function notation. (DOK – Level Three)
8. Students will be able to determine whether a relation is a function, find the domain and range. (DOK – Level One)
9. Students will be able to analyze the domain and range of a given function in a given context. (DOK - Level Two)
10. Students will be able to model functions in a real-life application. (DOK Level Three and Four)

Core Activities and Corresponding Instructional Methods:
1. Build math language/vocabulary relating to linear inequalities.
    ● Teachers will use appropriate language to identify algebraic terms and processes.
    ● Writing activities incorporating appropriate math language.
    ● Practice writing and interpreting vocabulary terms from Keystone Constructed Response Questions.
    ● Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
2. Develop students' skills in solving inequalities.
    ● Use "hanger" models to visual interpret inequalities.
    ● Engage students through use of personal whiteboards.
    ● Engage students through use of vertical whiteboard surfaces in the room.
    ● Practice Keystone Constructed Response Questions relating to this topic.
    ● IXL as supplemental resource.
    ● Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
3. Develop students' ability to solve and interpret problems by applying algebraic processes.
    ● Engage students through use of personal whiteboards.
    ● Engage students through use of vertical whiteboard surfaces in the room.
    ● Practice Keystone Constructed Response Questions relating to this topic.
    ● IXL as supplemental resource.
    ● Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
4. Develop students' skills in solving absolute values equations and inequalities.
    ● Use the physical space in the room to create a real-life model of distance.
    ● Have students think through what it means to be less than or greater than a specific distance from each other or objects.

- Engage students through use of personal whiteboards.
- Engage students through use of vertical whiteboard surfaces in the room.
- Practice Keystone Constructed Response Questions relating to this topic.
- IXL as supplemental resource.
- Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.

5. Build math language/vocabulary, specifically *relation, function, domain, range.*
   - Engage students through use of personal whiteboards.
   - Engage students through use of vertical whiteboard surfaces in the room.
   - Practice writing and interpreting vocabulary terms from Keystone Constructed Response Questions.
   - IXL as supplemental resource.
   - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
   - Use Desmos to supplement as a visual resource when investigating domain and range.

Assessments:

Diagnostic:
- Teacher prepared diagnostic test, teacher questioning and observation

Formative:
- Teacher observations, questioning techniques
- Group activities and classwork
- Homework – example problems from the textbook for each section.
- Teacher prepared Quizzes
- Weekly Constructed Response Questions

Summative:

- Common Assessment Chapter Exams 3 and 6 (Consists of both Multiple Choice and Constructed Questions).

DELAWARE VALLEY SCHOOL DISTRICT

UNIT 3:   Linear Functions and   **Time Range in Days: 45 Days**
Systems of Equations & Inequalities

Standards: Pennsylvania Core State Standards for Mathematics
Link to Standards in SAS:

http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20PreK-12%20March%202014.pdf

Standards Addressed: CC.2.2.7.B.3, CC.2.2.8.B.3, CC.2.2.HS.D.7, CC.2.2.HS.D.10

Anchors Addressed: A1.1.2.1.1, A1.1.2.1.2, A1.1.2.1.3, A1.1.2.2.1, A1.1.2.2.2, A1.1.3.1.1, A1.1.3.1.2, A1.1.3.1.3, A1.1.3.2.1, A1.1.3.2.2, A2.1.3.1.1, A2.1.3.1.2, A2.1.3.1.3, A2.1.3.1.4, A1.1.2, A1.1.3

Eligible Content:
- Write, solve and/or apply a linear equation (including problem situations).
- Use and/or identify an algebraic property to justify any step in an equation solving process (linear equations only).
- Interpret solutions to problems in the context of the problem situation (linear equations only).
- Write, solve and/or graph systems of linear equations using various methods.
- Write and/or solve a system of linear equations (including problem situations) using graphing, substitution and/or elimination (limit systems to 2 linear equations).
- Interpret solutions to problems in the context of the problem situation (systems of 2 linear equations only).
- Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).
- Identify or graph the solution set to a linear inequality on a number line.
- Interpret solutions to problems in the context of the problem situation (limit to linear inequalities).
- Write and/or solve a system of linear inequalities using graphing (limit systems to 2 linear inequalities).
- Interpret solutions to problems in the context of the problem situation (systems of 2 linear inequalities only).

Objectives:
1. Students will learn to solve a system of equations by graphing or by using the substitution or elimination methods. (DOK – Level One)
2. Students will review and practice the graphing techniques for linear functions taught in Pre-Algebra and extend the concept to systems of linear equations and inequalities. Solution

techniques include graphing, substitution, and elimination. Emphasis is placed on the solution of a system being the intersection of two lines or planar regions. (DOK – Level One)

3. Students will graph two lines on the same coordinate grid to find the point of intersection. (DOK – Level Two)
4. Students will apply the substitution or elimination method to solve a system. (DOK – Level Two)
5. Students will compare each method and determine which method for solving a system of equations is most efficient. (DOK – Level Three)
6. Students will analyze whether a system has a unique solution, no solutions, or infinitely many solutions. (DOK – Level Two)
7. Students will find solutions to real-world systems of linear equations and inequalities. (DOK – Level Two)
8. Students will design real-world problems that utilize systems of linear equations and inequalities. (DOK – Level Four)
9. Students will solve a system of inequalities by recalling prior knowledge from prior lessons and apply their new knowledge to some real-world linear programming-type situations. (DOK – Level One)
10. Students will design real-world problems that utilize systems of linear inequalities. (DOK – Level Four)

Core Activities and Corresponding Instructional Methods:
1. Expose students' prior knowledge of the coordinate plane and plotting points. Review graphing a line using a table of values. Identify and represent patterns that form a line.
   a. Diagnostic assessment, questioning.
   b. Cooperative learning groups
   c. Direct instruction as needed using Smart Technology and online textbook and resources.
   d. Guided practice
2. Develop students' skills in graphing linear functions and writing equations of lines in slope-intercept form, point-slope form, and standard form, including the line of best fit being sure to incorporate word problems.
   a. Direct instruction using Smart Technology and online textbooks and resources.
   b. Engage students through use of personal whiteboard.
   c. Engage students through use of vertical whiteboard surfaces in the room.
   d. Practice Keystone Constructed Response Questions relating to this topic.
   e. IXL as supplemental resource.
   f. Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.

3. Develop students' skills in solving a system of linear equations both graphically and algebraically as well as a system of linear inequalities (graphically).
    ○ Direct instruction using Smart Technology and online textbook and resources.
    ○ Engage students through use of personal whiteboards.
    ○ Engage students through use of vertical whiteboard surfaces in the room.
    ○ Practice Keystone Constructed Response Questions relating to this topic.
    ○ IXL as supplemental resource.
    ○ Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
4. Develop students' ability to solve real world problems by applying their understanding of linear functions, systems of linear equations and inequalities. Guided practice
    ○ Cooperative learning groups.
    ○ Engage students in a classroom discussion on the difference between the type of line that is graphed and shaded area (inequalities).
    ○ Engage students through use of personal whiteboards.
    ○ Engage students through use of vertical whiteboard surfaces in the room.
    ○ Practice Keystone Constructed Response Questions relating to this topic.
    ○ IXL as supplemental resource.
    ○ Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.

Assessments:

Diagnostic:
- Teacher prepared diagnostic test, teacher questioning and observation

Formative:
- Teacher observations, questioning techniques
- Group activities and classwork
- Homework – example problems from the textbook for each section.
- Teacher prepared Quizzes
- Weekly Constructed Response Questions

Summative:
- Common Assessment Chapter Exams 4/5 and 7 (Consists of both Multiple Choice and Constructed Questions).

DELAWARE VALLEY SCHOOL DISTRICT

UNIT 4: Polynomials, Data Analysis,
Radical Expressions and Equations

Time Range in Days: 45 Days

Standards: Pennsylvania Core State Standards for Mathematics
Link to Standards in SAS:

http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20PreK-12%20March%202014.pdf

Standards Addressed:
CC.2.1.HS.F.1, CC.2.1.HS.F.2, CC.2.2.HS.D.6, CC.2.2.HS.D1, CC.2.2.HS.D2, CC.2.2.HS.D3, CC.2.2.HS.D4, CC.2.2.HS.D5

Anchors Addressed: A.1.1.1.5, A.1.1.1.3

Eligible Content:
- Apply and extend the properties of exponents [negative, positive and zero].
- Simplify/evaluate expressions involving properties/laws of exponents, roots.
- Add, subtract, and/or multiply polynomial expressions (express answers in simplest form).
- Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.
- Factor algebraic expressions, including difference of squares and trinomials.
- Simplify/reduce a rational algebraic expression by factoring.
- Analyze data, make predictions, and/or answer questions based on displayed data (box-and whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations
- Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.
- Calculate and/or interpret the range, quartiles, and interquartile range of data.
- Estimate or calculate to make predictions based on a circle, line, bar graph, measure of central tendency, or other representation.
- Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal, or percent.
- Apply operations with radical expressions.
- Solve radical equations and interpret their solutions.

Objectives:
1. Students will be able to simplify expressions involving zero and negative exponents (integer values from -10 to 0). (DOK – Level Two)
2. Students will understand and apply properties of exponents (integer values from -10 to 10 only). (DOK – Level Two)
3. Students will be able to classify, add and subtract polynomials. (DOK – Level Two)

4. Students will be able to multiply monomials and binomials, two binomials or a binomial by a trinomial. (DOK – Level Two)
5. Students will be able to factor trinomials, including those with a GCF. (DOK – Level Two)
6. Students will be able to simplify rational expressions using factoring. (DOK - Level Two)
7. Students will be able to solve quadratic equations by factoring. (DOK – Level Two)
8. Students will be able to make and interpret categorical charts (pie and bar graphs). (DOK - Level Two)
9. Students will be able to make and interpret frequency tables and histograms. (DOK – Level Two)
10. Students will be able to determine the mean, median, mode, and range. (DOK – Level One)
11. Students will be able to create and interpret box-and-whisker plots as well as find quartiles and percentiles. (DOK – Level Three)
12. Students will be able to estimate or calculate to make predictions based on charts, graphs and other representations. (DOK – Level Three)
13. Students will be able to determine theoretical and experimental probabilities. (DOK – Level Two)
14. Students will be able to find the probabilities of mutually exclusive and compound events as well as independent and dependent events. (DOK – Level Two)
15. Students will be able to add, subtract, multiply, and divide radical expressions. (DOK – Level Two)
16. Students will be able to solve equations involving radicals. (DOK – Level Two)
17. Students will be able to create equations based on real world situations. (DOK- Level Four)

Core Activities and Corresponding Instructional Methods:
1. Expose students' prior knowledge of exponents, specifically in scientific notation. Introduce (or review) zero and negative exponents. Guide students to develop the properties of exponents using the definition of an exponent.
   ● Use cross curricular examples in instruction.
   ● Engage students through use of personal whiteboards.
   ● IXL as supplemental resource
   ● Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
   ● Practice Keystone Constructed Response Questions relating to this topic.
   ● Direct instruction as needed using Smart Technology and online textbook and resources.
2. Build math language/vocabulary, specifically *monomial, binomial, trinomial,* and *polynomial.*
   ● Teachers will use appropriate language to identify algebraic terms.
   ● Writing activities incorporating appropriate math language

- Teachers will use vocabulary strategies to explicitly teach content-specific vocabulary.

3. Develop students' skills in adding and subtracting polynomials followed by multiplying polynomials (two binomials or a binomial by a trinomial).
   - Engage students through use of personal whiteboards.
   - Engage students through use of vertical whiteboard surfaces in the room.
   - IXL as supplemental resource
   - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
   - Practice Keystone Constructed Response Questions relating to this topic.
   - Direct instruction as needed using Smart Technology and online textbook and resources.

4. Develop students' ability to factor polynomials, including those with a GCF. Include trinomials where "a" is GCF.
   - Engage students through use of personal whiteboards.
   - Engage students through use of vertical whiteboard surfaces in the room.
   - IXL as supplemental resource
   - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
   - Practice Keystone Constructed Response Questions relating to this topic.
   - Direct instruction as needed using Smart Technology and online textbook and resources.

5. Develop students' ability to solve quadratic equations by factoring.
   - Engage students through use of personal whiteboards.
   - Engage students through use of vertical whiteboard surfaces in the room.
   - IXL as supplemental resource
   - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
   - Practice Keystone Constructed Response Questions relating to this topic.
   - Direct instruction as needed using Smart Technology and online textbook and resources.

6. Develop students' skills in adding, subtracting, multiplying, and dividing rational expressions.
   - Engage students through use of personal whiteboards.
   - Engage students through use of vertical whiteboard surfaces in the room.
   - IXL as supplemental resource
   - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
   - Practice Keystone Constructed Response Questions relating to this topic.

- Direct instruction as needed using Smart Technology and online textbook and resources.
7. Build math language/vocabulary.
    - Teachers will use appropriate language to identify algebraic terms and processes.
    - Writing activities incorporating appropriate math language
    - Teachers will use vocabulary strategies to explicitly teach content-specific vocabulary.
8. Develop students' skills in adding, subtracting, multiplying, and dividing radical expressions.
    - Engage students through use of personal whiteboards.
    - Engage students through use of vertical whiteboard surfaces in the room.
    - IXL as supplemental resource
    - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
    - Practice Keystone Constructed Response Questions relating to this topic.
    - Direct instruction as needed using Smart Technology and online textbook and resources.
9. Expose students' prior knowledge of frequency tables, histograms, and measures of central tendency (mean, median and mode) as well as the range of a data set.
    - Engage students through use of personal whiteboards.
    - Engage students through use of vertical whiteboard surfaces in the room.
    - IXL as supplemental resource
    - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
    - Practice Keystone Constructed Response Questions relating to this topic.
    - Direct instruction as needed using Smart Technology and online textbook and resources.
    - Allow students to collect their own data to study and perform statistical analysis on
    - Use cross curricular resources and materials that can be used as data.
10. Develop students' skills in creating and interpreting box-and-whisker plots.
    - Engage students using personal whiteboards.
    - Engage students through use of vertical whiteboard surfaces in the room.
    - IXL as supplemental resource
    - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
    - Practice Keystone Constructed Response Questions relating to this topic.
    - Direct instruction as needed using Smart Technology and online textbook and resources.
    - Allow students to collect their own data to study and perform statistical analysis on
    - Use cross curricular resources and materials that can be used as data.

11. Develop students' ability to determine theoretical and experimental probabilities, including mutually exclusive and overlapping events as well as independent and dependent events.
    - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
    - Allow students to collect their own data to study and perform statistical analysis on
    - Use cross curricular resources and materials that can be used as data.
12. Develop students' ability to solve equations involving radicals.
    - Engage students through use of vertical whiteboard surfaces in the room.
    - Engage students using personal whiteboards.
    - IXL as supplemental resource
    - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
    - Practice Keystone Constructed Response Questions relating to this topic.
    - Direct instruction as needed using Smart Technology and online textbook and resources.
13. Expose students' prior knowledge of fractions, including simplifying fractions and operations with fractions. Guide students to simplify rational expressions.
    - Engage students through use of vertical whiteboard surfaces in the room.
    - Engage students using personal whiteboards.
    - IXL as supplemental resource
    - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.
    - Practice Keystone Constructed Response Questions relating to this topic.
    - Direct instruction as needed using Smart Technology and online textbook and resources.
14. Develop students' ability to solve rational equations.
    - Engage students through use of vertical whiteboard surfaces in the room.
    - Engage students using personal whiteboards.
    - IXL as supplemental resource.
    - Collaborative working groups will be used to practice interpreting and communicating math ideas with peers.

Assessments:

    Diagnostic:
- Teacher prepared diagnostic test, teacher questioning and observation

    Formative:
- Teacher observations, questioning techniques

- Group activities and classwork
- Homework – example problems from the textbook for each section.
- Teacher prepared Quizzes
- Weekly Constructed Response Questions

Summative:

- Common Assessment Chapter Exams 8, 10 and 12 (Consists of both Multiple Choice and Constructed Questions).

DELAWARE VALLEY SCHOOL DISTRICT