**Bloomsburg Area School District**

**Course Overview**

**Mathematics – Algebra I**

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| **Course Name:** Algebra I | **Teacher(s):** Dan Sevison, Terri Drucker, Bob Horn | **Course Text:** Prentice Hall Mathematics; Algebra 1: Pennsylvania (PSSA resources) |
| **Course Introduction:** Algebra I is the first of two Algebra courses which are aligned to the Pennsylvania State Keystone Anchors. Topics will build on concepts previously learned in Pre-Algebra.  |
| **Units of Study:** | **Student Learning Objectives:** | **PA Common Core Standards/Anchors:** |
| **Linear Equations and Inequalities** |
| * Solving Equations (Review)
* Algebraic Properties
* Solving Linear Inequalities
* Solving Absolute Value Equations and Inequalities
 | Students will be able to* Write and solve linear equations and apply them to real world applications
* Write, solve and graph (on a number line) inequalities and apply them in real world applications
* Write, solve and graph (on a number line) compound inequalities and apply them in real world applications
* Solve absolute value equations and inequalities and apply them in real world applications
* Use and/or identify an algebraic property to justify any step in a linear equation
 | **Standards*** CC.2.2.HS.D.7
* CC.2.2.HS.D.8
* CC.2.2.HS.D.9
* CC.2.2.HS.D.10
* 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.2.2.8.B.3 \*
* CC.2.2.8.C.1 \*
* CC.2.2.8.C.2 \*
 | **Anchors*** A1.1.2
* A1.1.2.1
* A1.1.2.1.1
* A1.1.2.1.2
* A1.1.2.1.3

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| **Functions** |
| * Relations and Functions
* Function Rules, Tables, and Graphs
* Number Patterns
 | Students will be able to * Identify the domain or range of a relation (giving as an ordered pair, graph, or table)
* Determine if a relation is a function given a set of points or a graph
* Analyze a set of data for a pattern and represent it algebraically (write an equation) or graphically
* Translate between tables, graphs, and equations
 | **Standards*** 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 \*
* CC.2.4.HS.B.2 \*
* CC.2.1.HS.F.3 \*
* CC.2.1.HS.F.4 \*
* CC.2.2.8.B.2 \*
 | **Anchors*** A1.2.1
* A1.2.1.2
* A1.2.1.2.1
* A1.2.1.2.2
* A1.2.1.1
* A1.2.1.1.1
* A1.2.1.1.2
* A1.2.1.1.3

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| **Coordinate Geometry** |
| * Rates of Change and Slope
* Graphing and Writing Equations
* Scatter Plots and Lines of Best Fit
 | Students will be able to* Identify, describe, and/or use constant rates of change (slope) and apply to real world applications
* Write or identify linear equations given a graph, 2 points on a line, or slope and a point (equations can be written in slope-intercept, standard form, or point-slope)
* Determine the slope and y-intercept when given an equation or a graph
* Draw, identify, find and/or write an equation for a line of best fit given a scatter plot
* Make predictions after drawing or being given a line of best fit
 | **Standards*** CC.2.2.8.C.2\*
* CC.2.4.8.B.1\*
* CC.2.2.HS.C.1\*
* CC.2.2.HS.C.2\*
* CC.2.2.HS.C.3\*
* CC.2.2.HS.C.5\*
* CC.2.2.HS.C.6\*
* CC.2.4.HS.B.1\*
* CC.2.4.HS.B.2\*
* CC.2.4.HS.B.3\*
 | **Anchors*** A1.2.2
* A1.2.2.1
* A1.2.2.1.1
* A1.2.2.1.2
* A1.2.2.1.3
* A1.2.2.1.4
* A1.2.2.2
* A1.2.2.2.1
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| **Solving Systems of Equations and Inequalities** |
| * Solving Systems by Graphing
* Solving Systems by Substitution
* Solving Systems by Elimination
* Applications of Linear Systems
* Graphing Systems of Inequalities
 | Students will be able to * Write and/or solve systems by graphing, substitution, and elimination and apply to real world applications
* Interpret the solution of system (explain what the solution means)
* Write and/or solve a system of linear inequalities by graphing
* Interpret the solution of a linear inequality
 | **Standards*** CC.2.2.HS.D.7\*
* CC.2.2.HS.D.9\*
* CC.2.2.HS.D.10
* CC.2.1.HS.F.5\*
* CC.2.2.8.B.3\*

 | **Anchors*** A1.1.2
* A1.1.2.2
* A1.1.2.2.1
* A1.1.2.2.2
* A1.1.3
* A1.1.3.2
* A1.1.3.2.1
* A1.1.3.2.2
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| **Operations With Real Numbers and Expressions** |
| * Simplifying Expressions (Monomials)
* GCF and LCM
* Polynomial Expressions
* Factoring by GCF, Different of Squares, and Simple Trinomials
* Simplifying Rational Expressions
* Simplifying Radicals
* Applications of Pythagorean Theorem
 | Students will be able to * Convert between integers, fractions, decimals, percents, square roots, and exponents
* Compare and order any form a real number
* Simplify square roots
* Simplify and evaluate expression (including exponents, roots, and absolute values)
* Use estimation to solve real world problems
* Find GCF and LCM for sets of monomials
* Add, subtract, multiply, and divide monomials
* Add, subtract, multiply polynomials
* Simplify a rational expression with polynomials (dividing)
* Factor polynomials by GCF, difference of squares, and trinomials (A=1 after GCF)
 | **Standards*** CC.2.1.8.E.1\*
* CC.2.1.8.E.4\*
* CC.2.1.HS.F.1\*
* CC.2.1.HS.F.2\*
* CC.2.1.6.E.3\*
* CC.2.2.8.B.1
* CC.2.2.7.B.3\*
* CC.2.2.HS.D.1
* CC.2.2.HS.D.2
* CC.2.2.HS.D.3
* CC.2.2.HS.D.5\*
* CC.2.2.HS.D.6\*
* CC.2.2.HS.D.9\*

 | **Anchors*** A1.1.1
* A1.1.1.1
* A1.1.1.1.1
* A1.1.1.1.2
* A1.1.1.2
* A1.1.1.2.1
* A1.1.1.3
* A1.1.1.3.1
* A1.1.1.4
* A1.1.1.4.1
* A1.1.1.5
* A1.1.1.5.1
* A1.1.1.5.2
* A1.1.1.5.3

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| **Data Analysis and Probability** |
| * Using Measures of Central Tendency
* Probability of Compound Events
* Data Plots
* Making Predictions
 | Students will be able to * Calculate and interpret range, quartiles, and interquartile range (box-whisker plot)
* Describe a set of data using mean, median, and mode
* Estimate or calculate to make predictions based on circle, line, or bar graph (or using mean, median, mode)
* Analyze data, make predictions, and answer questions based on box-whisker, stem-and-leaf, and scatter plots
* Find probability for compound events (represented as a fraction, decimal, or percent)
 | **Standards*** CC.2.4.7.B.3\*
* CC.2.4.HS.B.1
* CC.2.4.HS.B.3\*
* CC.2.4.HS.B.4\*
* CC.2.4.HS.B.5\*
* CC.2.4.HS.B.7\*

 | **Anchors*** A1.2.3
* A1.2.3.3
* A1.2.3.3.1
* A1.2.3.2
* A1.2.3.2.1
* A1.2.3.2.2
* A1.2.3.2.3
* A1.2.3.1
* A1.2.3.1.1
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| **Vocabulary/Terms** |
| BinomialBox-Whisker PlotCoefficientCompound Event Compound InequalityConstant Coordinate PlanDegree of a PolynomialDependent EventsDependent VariableDomain (of a relation)Elimination (system)Exponent Factor MonomialFactor Polynomial Frequency Function Greatest Common Factor (GCF)Independent Event Independent Variable Interquartile Range Irrational Numbers Least Common Multiple (LCM)Line of Best Fit (Trend Line)Linear EquationLinear Function Linear Inequality Mapping Measure of Central TendencyMeasure of Dispersion MonomialNegative Exponent Odds | OutlierPerfect Square Point-Slope Form Polynomial Power Power of a Power Power of a Product Probability Quartile Radical Expression Range (of a relation)Rate of Change Rational Expressions Relation Rise Run Scatter Plots Simple Event Simplest Form of an ExpressionSlope (of a line)Slope-Intercept Form Square Root (Radical)Standard Form (of a linear equation)Stem-and-Leaf Plot Substitution (system)System of Linear Equations System of Linear Inequalities Trinomial Variable X-axis X-interceptY-axis Y-intercept |