Abington Heights School District
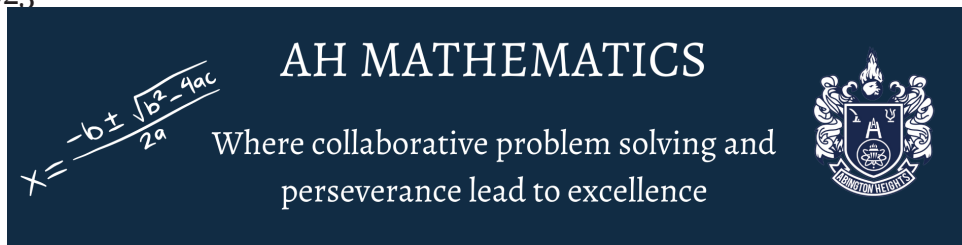# Algebra Foundations Curriculum

In Algebra Foundations, students develop their numeracy skills through the following areas of study:

1. Operations with Integers and Variables
2. Inequalities
3. Graphing on Coordinate Plane
4. Geometry
5. Solving Linear Equations and Inequalities
6. Polynomials
7. Systems of Equations and Inequalities
8. Exponents and Radicals
9. Consumer Math & Financial Literacy

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Adoption: 2023 - 2024 SY
Review Date:

AH MATHEMATICS

Where collaborative problem solving and perseverance lead to excellence

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Abington Heights Math Framework

Stakeholders	Actions
Students	★ Engage in mathematical discussions, share their ideas openly, be inquisitive, seek to understand and learn more about mathematical concepts, and try their best daily. ★ Exhibit creativity and curiosity in problem solving individually and collaboratively. ★ Persevere in engaging and challenging daily mathematical practice. ★ Come prepared to learn every day.
Teachers	★ Create a safe and collaborative classroom environment where students feel vested in a shared vision for mathematical excellence. ★ Develop high quality instruction that meets the needs of all learners through differentiation. ★ Use a variety of 21st century methodologies to advance learning. ★ Partner with parents and guardians to support student success. ★ Establish a collaborative community within the building and amongst grade levels to ensure a cohesive level of instruction.

Building Leaders	★ Deeply understand the needs of teachers, students, the instructional materials being used, programs being implemented, and the expectations for state-level assessment scores
	  ○ Knowledgeable about program and grade level standards
	  ○ Ensure consistent and equal access to high-quality instructional materials and resources, building.
	★ Be partners with teachers, students and families:
	  ○ Provide guidance and support to the mathematical community.
	  ○ Understand needs of teachers, students and families.
	★ Trust the educators to make professional decisions based on program, student, and district needs.

Central Admin	★ Effectively communicate to the school board and community specific areas of need and how to support teachers and building leaders in a quest for mathematical excellence
	★ Deeply understand the needs of teachers, students, the instructional materials being used, programs being implemented, and the expectations for state-level assessment scores
	  ○ Have a common metric for mathematical excellence.
	  ○ Ensure consistent and equal access to high-quality instructional materials and resources, district.
	  ○ Re-examine best practices/curriculum routinely (6 years).
	★ Support a culture of collaboration between the other stakeholder groups to maintain the standard of excellence of the Abington Heights
	★ Trust the educators to make professional decisions based on program, student, and district needs.

Parents/ Community	★ Be a strong support system and contribute by building a positive math community for students. ★ Encourage a positive math mindset. ★ Have conversations with their children about school and ask what they are learning about in school. ★ Be open, receptive to the district's ideas about student learning and reach out to teachers/school to learn more about how they can support. ★ Trust the educators to make professional decisions based on program, student, and district needs.

School Board	★ Provide the fiscal resources to support:
	  ○ Highly qualified professionals for mathematics
	  ○ High-quality instructional materials
	  ○ Effective and efficient math interventions for remediation
	  ○ Professional development for math content and instructional practices
	★ Trust the educators to make professional decisions based on program, student, and district needs.

Algebra Foundations (Year 1 of 2) Scope and Sequence

Month	Unit	Estimated Number of Weeks
September	Operations with Integers	4
October	Operations with Variables	4
November	Inequalities	4
December	Graphing on Coordinate Plane	3
January	Graphing on Coordinate Plane	3
February	Graphing on Coordinate Plane	2
	Selected Topics	2
March	Selected Topics	4
April	Selected Topics	4
May	Geometry	4
June	Final Exam Review	1

Algebra Foundations (Year 2 of 2) Scope and Sequence

Month	Unit	Estimated Number of Weeks
September	Solving Linear Equations	4
October	Solving Linear Equations	2
	Solving Linear Inequalities	2
November	Solving Linear Inequalities	2
	Graphing on Coordinate Plane	1
December	Graphing on Coordinate Plane	3
January	Graphing on Coordinate Plane	3
February	Polynomials	4
March	Systems of Equations	4
April	Exponents, Radicals, Systems of Inequalities	4
May	Consumer Math & Financial Literacy	4
June	Final Exam Review	1

Algebra Foundations (Year 1 of 2) Curriculum

	Essential Questions	Content	Skills	Related Standards / Eligible Content	Activities	Assessment/Evidence of Learning
Unit 1 Operations with Integers	How can I use a number line to determine a number's opposite? What is the absolute value of a number? When evaluating an expression, in what order do you perform the operations?	Commutative and associative properties Exponents Positive and negative numbers Absolute value Order of operations	Apply the properties of operations to generate equivalent numerical expressions Write and evaluate numerical expressions involving whole-number exponents Represent numerical quantities in real-world contexts using positive and negative numbers and zero in each situation Determine the opposite of a number Find the absolute value of a number	M06.B-E.1.1.1 M06.A-N.2.1.1 M06.A-N.3.1.2 M06.A-N.3.1.3 M06.A-N.3.2.1 M06.A-N.3.2.2 M06.A-N.3.2.3 M07.A-N.1.1.1	Flipcharts Note packets Khan Academy Delta Math WeBWorK Class Discussions	Homework Delta Math Quizzes Unit Test

	Essential Questions	Content	Skills	Related Standards / Eligible Content	Activities	Assessment/Evidence of Learning
Unit 1 Operations with Integers (continued)			Use order of operations to evaluate numerical expressions			
Unit 2 Operations with Variables	What is an expression? When evaluating an expression, in what order do you perform the operations? How can I determine if expressions are equivalent? What is the absolute value of a number? How can I apply the order of operations to evaluate an expression?	Simplify expressions Commutative and associative properties Exponents Positive and negative numbers Absolute value Order of operations	Evaluate expressions at specific values of their variables Apply the properties of operations to generate equivalent expressions with variables Write and evaluate expressions with variables involving whole-number exponents Represent quantities with variables in real-world contexts using positive and negative numbers and zero in each situation	M06.B-E.1.1.4 M06.B-E.1.1.5 M06.A-N.3.1.2 M06.A-N.3.2.2 M07.A-N.1.1.1 M07.B-E.1.1.1	Flipcharts Note packets Khan Academy Delta Math WeBWorK Class Discussions	Homework Delta Math Quizzes Unit Test

	Essential Questions	Content	Skills	Related Standards / Eligible Content	Activities	Assessment/Evidence of Learning
Unit 2 Operations with Variables (continued)			Determine the opposite of a number and recognize that the opposite of the opposite of a number is the number itself Find the absolute value of a number involving variables Use order of operations to simplify algebraic expressions			
Unit 3 Inequalities	What is an inequality? How do I graph an inequality on a number line? How do I solve inequalities?	Construct number lines One variable inequalities	Locate and plot simple inequalities on a number line Solve one-variable inequalities and plot solution set on a horizontal number line	M06.A-N.3.1.3 M07.B-E.2.2.2	Flipcharts Note packets Khan Academy Delta Math WeBWorK Class Discussions	Homework Delta Math Quizzes Unit Test
Unit 4 Graphing on Coordinate Plane	What is a coordinate plane?	Coordinate plane Plot points	Identify parts of coordinate plane (x-axis, y-axis, origin, ordered pair)	M06.A-N.3.1.3	Flipcharts Note packets Khan Academy	Homework Delta Math Quizzes

	Essential Questions	Content	Skills	Related Standards / Eligible Content	Activities	Assessment/Evidence of Learning
Unit 4 Graphing on Coordinate Plane (continued)	How can I find, identify or place a point on the coordinate plane?	Graph equations (vertical and horizontal lines only)	Plot points in all four quadrants of coordinate plane Graph equations of vertical and horizontal lines on coordinate plane Understand relationships between parallel and perpendicular lines		Delta Math WeBWorK Class Discussions	Unit Test
Unit 5 Selected Topics	What is a factor? What are a common factor and the greatest common factor (GCF)? What is a rate and unit rate? What is a variable? What is a coefficient? What is a term?	Factors GCF Unit rate Solve 1-step equations	Identify factors of a whole number Find the greatest common factor of two whole numbers Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships	M06.A-N.2.2.1 M06.A-N.2.2.2 M07.A-R.1.1.3 M08.B-E.3.1.2	Flipcharts Note packets Khan Academy Delta Math WeBWorK Class Discussions	Homework Delta Math Quizzes Unit Test

	Essential Questions	Content	Skills	Related Standards / Eligible Content	Activities	Assessment/Evidence of Learning
Unit 5 Selected Topics (continued)	How can I solve an equation?		Solve one-step equations (variables on only one side of equation)			
Unit 6 Geometry	How can I use geometry in real-world situations?	Area of two-dimensional figures Scale drawings	Calculate area of triangles and special quadrilaterals Calculate area of irregular or compound figures Solve problems involving scale drawings of geometric figures, finding lengths and area	M06.C-G.1.1.1 M06.C-G.1.1.2 M07.C-G.1.1.1	Flipcharts Note packets Khan Academy Delta Math WeBWorK Class Discussions	Garden Project

Algebra Foundations (Year 2 of 2) Curriculum

	Essential Questions	Content	Skills	Related Standards / Eligible Content	Activities	Assessment / Evidence of Learning
Unit 1 Solving Linear Equations	How are the properties of real numbers useful when solving equations and simplifying expressions?	Solve linear equations Solve absolute value equations Solve proportions	Solve one-step equations Solve two-step equations Write and solve one- and two-step equations when given a scenario Solve multi-step equations that include distribution Solve multi-step equations that include combining like terms only Solve multi-step equations that include combining like terms and distribution Solve equations with variables on both sides of the equation	M06.A-N.3.2.2 M07.B-E.1.1.1 M07.B-E.2.2.1 M07.A-R.1.1.2 M07.A-R.1.1.3 M07.A-R.1.1.4 M08.B-E.3.1.1 M08.B-E.3.1.2 M08.B-E.3.1.1 A1.1.2.1.1 A1.1.2.1.2 A1.1.2.1.3	Flipcharts Note packets Khan Academy Delta Math WeBWorK Class Discussions	Homework Delta Math Quizzes Unit Test

	Essential Questions	Content	Skills	Related Standards / Eligible Content	Activities	Assessment / Evidence of Learning
Unit 1 Solving Linear Equations (continued)			Solve equations with distribution and variables on both sides of the equation Solve basic absolute value equations Solve simple proportional equations Solve proportional equations with distribution Write and solve proportional equations when given a scenario			
Unit 2 Solving Linear Inequalities	What are the similarities and differences in the procedures for solving and expressing the solutions of equations and inequalities?	Graph inequalities Solve inequalities	Graph inequalities on a number line From a number line, write an inequality Solve 2-step inequalities Solve 2-step compound inequalities	M06.B-E.2.1.4 M07.B-E.2.2.2 A1.1.3.1.1 A1.1.3.1.2 A1.1.3.1.3	Flipcharts Note packets Khan Academy Delta Math WeBWorK Class Discussions	Homework Delta Math Quizzes Unit Test

	Essential Questions	Content	Skills	Related Standards / Eligible Content	Activities	Assessment / Evidence of Learning
Unit 3 Graphing on Coordinate Plane	Why are tables, graphs, and equations useful for representing relationships? How can you show mathematical relationships? Why are linear functions useful in real-world settings? Why would you use multiple representations of linear equations?	Calculate slope Write equations of lines Convert between forms of equations of lines Graph lines	Find slope from a graph of a line Find slope from two points using the slope formula Graph linear equations in slope-intercept form Write the equation of a line when given a graph or a point and slope	M08.B-E.2.1.3 M08.B-F.1.1.3 A1.1.2.1.1 A1.2.1.2.1 A1.2.1.2.2 A1.2.2.1.1 A1.2.2.1.2 A1.2.2.1.3 A1.2.2.1.4	Flipcharts Note packets Khan Academy Delta Math WeBWorK Class Discussions	Homework Delta Math Quizzes Unit Test
Unit 4 Polynomials	How can you use the distributive property to multiply binomials by monomials? How can you multiply two binomials?	Distributive property with polynomials Binomial multiplication Factoring polynomials using GCF	Multiply binomials by monomials using the distributive property Multiply binomials by binomials using the distributive property	A1.1.1.2.1 A1.1.1.5.1 A1.1.1.5.2	Flipcharts Note packets Khan Academy Delta Math WeBWorK Class Discussions	Homework Delta Math Quizzes Unit Test

	Essential Questions	Content	Skills	Related Standards / Eligible Content	Activities	Assessment / Evidence of Learning
Unit 4 Polynomials (continued)	How can you use common factors to write a polynomial in factored form?		Multiply binomials by binomials using the FOIL method Find greatest common factor and use to factor polynomials			
Unit 5 Systems of Equations	How do you solve systems of equations? What does the solution to a system of equations mean?	Systems of 2 linear equations	Solve systems of linear equations by graphing Solve system of linear equations by elimination	M08.B-E.3.1.3 M08.B-E.3.1.4 M08.B-E.3.1.5 A1.1.2.2.1 A1.1.2.2.2	Flipcharts Note packets Khan Academy Delta Math WeBWorK Class Discussions	Homework Delta Math Quizzes Unit Test
Unit 6 Exponents, Radicals, Systems of Inequalities	How can you use inductive reasoning to observe patterns and write general rules involving the properties of exponents? What does it mean for a radical expression to be "simplified"?	Properties of Exponents Properties of Square Roots Graphing Systems of Linear Inequalities	Use basic properties of exponents (multiplication, division, power raised to power) to simplify algebraic expressions. SImplify radicals	M08.A-N.1.1.3 M08.A-N.1.1.4 M08.A-N.1.1.5 M08.B-E.1.1.1 A1.1.1.1.2 A1.1.1.3.1 A1.1.3.2.1 A1.1.3.2.2	Flipcharts Note packets Khan Academy Delta Math WeBWorK Class Discussions	Homework Delta Math Quizzes Unit Test

	Essential Questions	Content	Skills	Related Standards / Eligible Content	Activities	Assessment / Evidence of Learning
Unit 6 Exponents, Radicals, Systems of Inequalities (continued)	How do you solve systems of inequalities? What does the solution to a system of inequalities mean?		Graph linear inequalities in two variables			
Unit 7 Consumer Math & Financial Literacy	How do I create and follow through with a budget? What strategies should I use to save and invest my money?	Computing Interest Creating a Budget	Compute simple interest Perform calculations on loan information (monthly loan amounts, cost, etc.) Create a monthly and yearly budget		Computing Interest WKST Loan Information WKST Budgeting WKST Kahoot!, Blooket, Gimkit review activities	Computing Interest WKST Loan Information WKST Budgeting WKST Interest Quiz Loan Information & Budgeting Quiz