



Park Hill School District

Building Successful Futures • Each Student • Every Day

High School Algebra Skills Curriculum

Course Description: Algebra 1 Intervention is a freshman-level mathematics course aligned to the Missouri Learning Standards for Algebra I. This course is designed to support students in developing the foundational skills and conceptual understanding necessary to reach proficiency with grade-level algebra standards. Rather than following a traditional unit-based pacing guide, instruction is organized around learning progressions that identify and address unfinished learning while building toward mastery of Algebra I expectations.

Students engage in targeted skill development in expressions, equations, functions, and quantitative reasoning. Emphasis is placed on interpreting mathematical structure, solving and modeling real-world problems, and explaining reasoning with precision. The course integrates Mathematical Practices to strengthen students' ability to reason abstractly and quantitatively, make sense of problems, construct arguments, and communicate mathematical thinking clearly.

Instruction is flexible and data-driven, allowing teachers to adjust pacing, provide focused intervention, and extend learning as students demonstrate mastery. Through progression scales, formative assessment, and structured opportunities for productive struggle, students build confidence and competence in algebraic reasoning to prepare for success in Algebra I and subsequent mathematics courses.

Student Placement Criteria:

- NWEA Overall Math Scores (current and previous)
- 8th grade Math course grades

Course Standards: Missouri Department of Elementary and Secondary Education (DESE)
Algebra 1 Missouri Learning Standards

Proficiency Levels:

Each skill is broken into three levels to show progression from understanding to application and reasoning. Level 1 builds foundational understanding, Level 2 focuses on applying skills and recognizing structure, and Level 3 emphasizes evaluation and reasoning. This structure supports targeted intervention and helps move students toward grade-level expectations.

Level 1: Foundational Readiness	Students develop a basic understanding of key concepts and build foundational knowledge. The focus is on making sense of ideas, vocabulary, and relationships needed to begin working with the skill.
Level 2: Structural Understanding with Basic Context	Students apply their understanding to perform skills and begin to recognize patterns and structure. They connect their work to simple contexts and develop flexibility with different representations.
Level 3: Standard Mastery	Students demonstrate accuracy and independence while analyzing and reasoning about their work. They use structure, make connections, and determine whether solutions are reasonable, showing readiness for grade-level expectations.

Course Emphasis:

Skill	Levels
Application of Real Numbers	Level 1: Understand Numbers and Their Relationships Level 2: Apply Operations and Analyze Expressions Level 3: Evaluate Expressions and Reason About Solutions
Variable and Algebraic Expressions	Level 1: Identify and Describe Parts of Expressions Level 2: Simplify and Rewrite Algebraic Expressions Level 3: Write and Interpret Expressions in Context
Equations with One Variable	Level 1: Understand Equations as Balanced Relationships Level 2: Solve One-Variable Equations Level 3: Solve and Interpret Equations in Context
Inequalities with One Variable	Level 1: Understand Inequalities and Their Meaning Level 2: Solve and Graph Inequalities Level 3: Write and Interpret Inequalities in Context
Linear Relationships	Level 1: Understand Graphs and Key Features of Linear Relationships Level 2: Represent Linear Relationships Level 3: Write and Interpret Linear Models

Skill 1: Application of Real Numbers

Overview of Skill: This skill builds foundational number sense and prepares students for algebra by developing understanding of real numbers, their relationships, and operations. Students move from understanding and representing numbers to applying operations and analyzing expressions, and finally to evaluating and reasoning about solutions in preparation for Algebra 1 concepts.

Priority Standards related to skill:

- A1.SSE.A Interpret and use structure.
- A1.CED.A Create equations that describe linear relationships.
- A1. REI.A Understand solving equations as a process, and solve equations in one variable.
- A1.REI.C Represent and solve linear equations graphically.

Key Vocabulary related to skill:

- | | |
|--------------------------------|-----------------------|
| ● Real Number | ● Unit Rate |
| ● Integer | ● Exponent |
| ● Rational Number | ● Expanded Form |
| ● Decimal | ● Operation |
| ● Percent | ● Sum |
| ● Opposite | ● Difference |
| ● Absolute Value | ● Product |
| ● Factor | ● Quotient |
| ● Factored Form | ● Inverse |
| ● Greatest Common Factor (GCF) | ● Order of Operations |
| ● Multiple | ● Grouping Symbols |
| ● Least Common Multiple (LCM) | ● Expression |
| ● Fraction | ● Inequality |
| ● Numerator | ● Equivalent |
| ● Denominator | ● Simplify |
| ● Ratio | ● Convert |
| ● Rate | ● Estimate |

Level 1: Understand Numbers and Their Relationships

Students will:

- Compare real numbers.
- Recognize inequality symbols ($<$, $>$, $\leq$, $\geq$) and describe their meanings.
- Understand and interpret number lines.
- Identify opposites.
- Understand the concept of absolute value.
- Understand the definition of a factor and the greatest common factor between numbers.
- Understand the definition of a multiple and the least common multiple/denominator between numbers.
- Understand the concept of a fraction.
- Understand the concept of a ratio.
- Identify a rate and a unit rate.
- Understand the relationship between integers and rational numbers.
- Understand the concept of a decimal.
- Understand the concept of a percent/percentage.
- Represent exponential terms using their expanded form.
- Represent percents as parts of a whole or as multiplication.
- Identify inverse operations.
- Explain what quantities and operations represent in context.

Level 2: Apply Operations and Analyze Expressions

Students will:

- Add, subtract, multiply, and divide integers.
- Multiply and divide fractions.
- Add and subtract fractions with common denominators.
- Add, subtract, multiply, and divide rational numbers.
- List factors of real numbers.
- Rewrite real numbers in factored form.
- Find the greatest common factor between numbers.
- Find the least common multiple between numbers.
- Simplify fractions using common factors.
- Write equivalent fractions using the least common multiple.
- Add and subtract fractions with uncommon denominators.
- Create equivalent forms of rational numbers.
- Convert between rational numbers (fractions, decimals, and percents).
- Apply properties of operations to rewrite numerical expressions.
- Evaluate expressions involving fractions, decimals, and percents.
- Evaluate expressions involving exponents.
- Apply a variety of symbols to represent mathematical operations.
- Find the absolute value of a real number.

Level 3: Evaluate Expressions and Reason About Solutions

Students will

- Evaluate numerical expressions using the correct order of operations.
- Estimate answers using familiar reference numbers to determine whether solutions are reasonable in context.
- Analyze how grouping symbols (parentheses, brackets, braces, and absolute value bars) affect the order of operations and influence the outcome of mathematical calculations.

Skill 2: Variables & Algebraic Expressions

Overview of Skill: This skill develops students' understanding of variables and algebraic expressions as a foundation for representing and reasoning about relationships. Students learn to interpret the meaning of variables, terms, and coefficients, and to recognize structure within expressions. They progress from identifying and understanding components of expressions to applying operations and properties to simplify and rewrite them, and ultimately to creating and interpreting expressions in context. This progression supports students in using structure, representing relationships, and preparing for solving equations in Algebra 1.

Priority Standards related to skill:

- A1.SSE.A Interpret and use structure.
- A1.SSE.A.1 Interpret the contextual meaning of individual terms or factors from a given problem that utilizes formulas or expressions.
- A1.CED.A Create equations that describe linear relationships.
- A1.REI.A Understand solving equations as a process, and solve equations in one variable.
- A1.REI.C Represent and solve linear equations graphically.

Key Vocabulary related to skill:

- | | |
|------------------------|-------------------------|
| ● Variable | ● Substitute |
| ● Term | ● Evaluate |
| ● Variable Term | ● Translate |
| ● Constant Term | ● Associative Property |
| ● Coefficient | ● Commutative Property |
| ● Implicit Coefficient | ● Distributive Property |
| ● Variable Expression | ● Identity Property |
| ● Like Terms | ● Inverse Property |
| ● Combine | ● Zero Product Property |
| ● Distribute | |

Level 1: Identify and Describe Parts of Expressions

Students will:

- Recognize variables as representing unknown or changing quantities.
- Recognize variable terms vs constant terms in algebraic expressions.
- Identify terms, coefficients, and constants in algebraic expressions.
- Identify like terms in algebraic expressions.
- Recognize multiplication written using coefficients (e.g., $5x$).
- Understand the implicit coefficient i.e.
- $1x = x^1 = \frac{x}{1}$
- Identify key words and vocabulary to represent mathematical operations.
- Understand the definition of the greatest common factor between variable terms.

Level 2: Simplify and Rewrite Algebraic Expressions

Students will:

- Substitute numerical values into expressions correctly.
- Combine like terms when using addition and subtraction in variable expressions.
- Apply the order of operations correctly when simplifying variable expressions.
- Apply distribution to a grouped expression by multiplying the factor to each term.
- Apply the algebraic properties to rewrite variable expressions.
 - Associative, commutative, distributive, identity, inverse, zero product
- Find the greatest common factor between algebraic terms.
- Rewrite variable expressions in factored form (using the greatest common factor).

Level 3: Write and Interpret Expressions in Context

Students will

- Translate verbal phrases and situations into algebraic expressions.
- Create expressions to represent relationships between quantities.
- Describe/interpret the meaning of variable terms, constant terms, and coefficients within contextual expressions/real-world situations.
- Represent real-world situations using algebraic expressions.

Skill 3: Equations with One Variable

Overview of Skill: This skill develops students' understanding of equations as tools for representing and solving relationships between quantities. Students learn to interpret equations as statements of equality and understand solving as a process of maintaining balance using inverse operations. They progress from modeling and interpreting equations to applying properties of equality to solve increasingly complex equations, and ultimately to creating, analyzing, and justifying solutions in context. This progression supports students in representing relationships, solving problems, and reasoning about solutions in Algebra 1.

Priority Standards related to skill:

- A1.CED.A Create equations that describe linear relationships.
- A1.CED.A.1 Create equations in one variable and use them to model and/or solve problems.
- A1.REI.A Understand solving equations as a process, and solve equations in one variable.
- A1.REI.C Represent and solve linear equations graphically.

Key Vocabulary related to skill:

- | | |
|-------------------------|-----------------------------|
| ● Equation | ● Infinitely Many Solutions |
| ● Linear Equation | ● Inverse Operation |
| ● Tape Diagram | ● Scale Factor |
| ● Statement of Equality | ● Cross-Multiplication |
| ● Proportion | ● Solve |
| ● Solution | ● Model |
| ● No Real Solutions | ● Isolate |
| ● All Real Numbers | |

Level 1: Understand Equations as Balanced Relationships

Students will:

- Compare and contrast expressions and equations.
- Identify variables, constants, coefficients, and operation symbols within equations.
- Understand the difference between simplifying an expression and solving an equation.
- Model one-variable equations using tape diagrams.
- Recognize an equation as a statement showing two expressions are equal.
- Understand that a proportion is a statement of equivalent ratios.
- Understand that a percent is an amount out of 100.
- Explain solving equations as a process of undoing operations while maintaining equality.
- Understand that solving an equation means finding values that make the equation true.

Level 2: Solve One-Variable Equations

Students will:

- Rewrite equations using the properties of equality.
- Use substitution to determine whether a given value makes an equation true.
- Apply properties of equality to maintain equivalence while solving equations.
- Solve one-step equations using inverse operations to isolate a variable.
- Solve two-step equations using the correct order of inverse operations.
- Solve multi-step equations with variables on one side.
- Solve proportions using scale factors.
- Translate verbal phrases and situations into algebraic equations.
- Translate verbal phrases and situations into percent equations.
- Translate verbal phrases and situations into proportions.

Level 3: Solve and Interpret Equations in Context

Students will

- Solve multi-step equations with variables on both sides.
- Solve proportions using cross-multiplication.
- Use substitution to verify the accuracy of solutions.
- Create one-variable equations from verbal descriptions and real-world situations.
- Describe/interpret the meaning of solutions within contextual equations/real-world situations.
- Identify errors in solution processes and explain corrections.
- Justify solution steps using properties of equality.
- Determine whether equations have one solution, no solution, or infinitely many solutions.

Skill 4: Inequalities with One Variable

Overview of Skill: This skill develops students' understanding of inequalities as a way to represent and reason about relationships with multiple possible solutions. Students learn to interpret inequality notation and distinguish inequalities from equations, recognizing that solutions form a range of values rather than a single answer. They progress from understanding and representing inequalities to solving them using properties of equality and inverse operations, and ultimately to creating, analyzing, and interpreting inequalities in context. This progression supports students in modeling constraints, reasoning about solution sets, and preparing for algebraic and graphical representations in Algebra 1.

Priority Standards related to skill:

- A1.CED.A.1 Create equations and inequalities in one variable and use them to model and/or solve problems.
- A1.REI.A Understand solving equations and inequalities as a process, and solve equations and inequalities in one variable.
- A1.REI.C Represent and solve linear equations and inequalities graphically.

Key Vocabulary related to skill:

- Inequality Notation
- Linear Inequality
- Solution Set
- Constraint

Level 1: Understand Inequalities and Their Meaning

Students will:

- Recognize inequality notation and describe the meaning within a variable context.
- Distinguish between equations and inequalities.
- Compare and contrast solutions to equations and inequalities
- Understand that if a is greater than b then b is less than a .

Level 2: Solve and Graph Inequalities

Students will:

- Represent inequality solutions using numbers and verbal descriptions.
- Identify a solution of a set on a number line.
- Determine whether a given value makes an inequality true.
- Graph the solution set for a given inequality statement.
- Write an inequality statement from its graph.
- Solve one-step & two-step inequalities using inverse operations.
- Apply the concept of reversing the inequality symbol when multiplying or dividing by a negative number.

Level 3: Write and Interpret Inequalities in Context

Students will

- Solve multi-step linear inequalities.
- Solve linear inequalities with variables on both sides.
- Use substitutions to verify the accuracy of solutions.
- Explain why inequalities represent multiple possible solutions.
- Justify why the inequality symbol reverses when multiplying or dividing by a negative number.
- Create one-variable inequalities from verbal descriptions and real-world situations.
- Interpret constraints and limits represented by inequalities in real-world problems.
- Interpret inequality solutions within the context of real-world scenarios.
- Determine whether given values satisfy modeled constraints.

Skill 5: Linear Relationships

Overview of Skill: This skill develops students' understanding of linear relationships as connections between two quantities represented through graphs, tables, equations, and data. Students learn to interpret the coordinate plane and recognize that points on a graph represent solutions to an equation. They progress from identifying key features such as slope and intercepts to graphing and writing equations, and ultimately to constructing and analyzing linear models in context. This progression supports students in connecting multiple representations, interpreting relationships, and using linear models to describe and solve real-world problems.

Priority Standards related to skill:

- A1.REI.C Represent and solve linear equations graphically.
- A1.REI.C.6 Explain that the graph of an equation in two variables is the set of all its solutions plotted in the Cartesian coordinate plane.
- A1.1F.B Interpret linear functions in terms of the context.
- A1.1F.B.3 Using tables, graphs and verbal descriptions, interpret key characteristics of a function that models the relationship between two quantities.
- A1.1F.C Analyze linear functions using different representations
- A1.1F.C.7 Graph functions expressed symbolically.
- A.1.LQE.A Construct and compare linear models and solve problems
- A1LQE.A.3 Construct linear equations given graphs, verbal descriptions or tables.
- A1.DS.A Summarize, represent and interpret data.
- A1.DS.A.1 Analyze and interpret graphical displays of data.

Key Vocabulary related to skill:

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|------------------|--------------------|--------------------|
| ● Cartesian | ● y-intercept | ● Independent |
| Coordinate Plane | ● Slope | Variable |
| ● Quadrant | ● Rate of Change | ● Dependent |
| ● Point | ● Rise | Variable |
| ● Origin | ● Run | ● Correlation |
| ● Ordered Pair | ● Positive Slope | ● Positive |
| ● Plot | ● Negative Slope | Correlation |
| ● Line | ● Slope of Zero | ● Negative |
| ● Axis | ● Undefined Slope | Correlation |
| ● x-axis | ● Standard Form | ● No Correlation |
| ● y-axis | ● Slope-Intercept | ● Data Set |
| ● Intercept | Form | ● Linear Model |
| ● x-intercept | ● Point-Slope Form | ● Line of Best Fit |

Level 1: Understand Graphs and Key Features of Linear Relationships

Students will:

- Understand the Cartesian Coordinate Plane (directionally).
- Label the key components of the coordinate plane.
- Recognize that every point on a graphed line represents a solution to its equation.
- Identify whether a coordinate pair is a solution to an equation given its graph.
- Identify the x-intercept and the y-intercept from a graph.
- Understand the idea of an intercept graphically.
- Define the relationship between x and y in terms of slope.
- Understand the different types of slope graphically (positive, negative, zero, and undefined).
- Identify the form (slope-intercept, point-slope, and standard) that is being represented given a linear equation.
- Identify whether two events are correlated given a verbal description.

Level 2: Represent Linear Relationships

Students will:

- Plot ordered pairs on the coordinate plane.
- Write ordered pairs for plotted points.
- Generate tables of values from linear equations.
- Find the x-intercept and the y-intercept algebraically.
- Find the slope of a linear equation from its graph.
- Calculate the slope algebraically given two points using the slope formula.
- Determine the rate of change given a table.
- Graph linear equations written in slope-intercept form.
- Write an equation of a graphed line using the slope and y-intercept.
- Identify the type of correlation (positive, negative, or none) between two types of data.

Level 3: Write and Interpret Linear Models

Students will

- Write an equation of a graphed line using the slope and a point.
- Write an equation of a line given two points on the line.
- Convert linear equations to slope-intercept form.
- Construct linear equations from graphs, tables, verbal descriptions, or data sets.
- Use linear models to solve real-world problems.
- Interpret key characteristics of linear relationships from data models.
- Graph linear relationships using tables.
- Graph a linear equation using its intercepts.
- Interpret the meaning of intercepts within real-world situations.
- Interpret slope as rate of change in tables, graphs, and contexts.
- Graph linear equations written in any form.
- Determine the strength of the correlation between two types of data.
- Analyze graphical displays of data to describe relationships between quantities.
- Explain which method of graphing is most effective given the form of the linear equation.
- Explain which form is most direct to use when writing the equation from its graph, depending on the given information.