

Key Standards for Algebra I

Kentucky High School Mathematics Diagnostic Assessments

1. Students will solve a graph (on a number line) **ONE-VARIABLE EQUATIONS AND INEQUALITIES**, including absolute value, and use ratios and proportions, real number properties, and equivalence relations to reason mathematically and solve real-world and mathematical problems.

Key skills: solve one-variable equations and inequalities, write ratios and proportions from real-world contexts; solve and graph (on a number line) absolute value equations and inequalities; solve literal equations for one variable

Key Concepts: equation; inequality; ratio; proportion; absolute value

Key Principles: real number properties; equivalence relations

2. Students will graph (on a coordinate plane) and use **LINES** to solve real-world and mathematical problems.

Key skills: use linear equations and inequalities; graph linear equations and inequalities on coordinate plane; write linear equations in slope-intercept form; write linear equations describing real-world situations

Key Concepts: linear equation; linear inequality; x-intercept; y-intercept; slope/rate of change; slope-intercept form; parallel; perpendicular

3. Students will identify, model, and use **LINEAR FUNCTIONS** and arithmetic sequences to reason mathematically and solve real-world and mathematical problems.

Key skills: determine domain and range of linear functions; identify linear functions from graphs, equations, and tables; model functions using coordinate pairs, graphs, mapping, and algebraic functions

Key Concepts: function; relation; domain; range; graphs; equations; tables; coordinate pairs; mapping; arithmetic sequences

4. Students will simplify, add, subtract, multiply, and factor **POLYNOMIAL EXPRESSIONS** and use laws of exponents to reason mathematically and solve real-world and mathematical problems.

Key skills: simplify expressions; add, subtract, and multiply polynomial expressions; factor polynomial expressions

Key Concepts: expression; polynomial; factor; factoring by grouping; greatest common monomial factor

Key Principles: laws of exponents

5. Students will solve **SYSTEMS OF EQUATIONS** by graphing, substitution, or elimination to solve real-world and mathematical problems.

Key skills: write and solve systems of two linear equations by graphing, substitution, or elimination

Key Concepts: system of equations; intersection; parallel lines; intersecting lines