

**West Linn-Wilsonville School District
Mathematics Curriculum Content Standards
Grades 6-8**

ODE Content Standard	Grade 8 Algebra (Part 2)
8.1	<p><u>Algebra</u>: Analyze and represent linear functions, and solve linear equations and systems of linear equations.</p> <ul style="list-style-type: none"> • Translate among contextual, verbal, tabular, graphical, and algebraic representations of linear functions. • Determine the slope of a line and understand that it is a constant rate of change. • Identify and interpret the properties (i.e. slope, intercepts, continuity, and discreteness) of linear relationships as they are shown in the different representations and recognize proportional relationships ($y/x = k$ or $y = kx$) as a special case. • Use linear functions and equations to represent, analyze and solve problems, and to make predictions and inferences. • Relate systems of two linear equations in two variables and their solutions to pairs of lines that are intersecting, parallel, or the same line. • Use informal strategies (e.g., graphs or tables) to solve problems involving systems of linear equations in two variables.
H.1A H.1A.4 & H.1A.5	<p><u>Algebra</u> and <u>Numeracy</u>: Demonstrate a deep understanding of real numbers and algebraic symbols by fluently creating, manipulating, computing with, and determining equivalent expressions, both numeric and symbolic.</p> <ul style="list-style-type: none"> • Develop, identify, and/or justify equivalent algebraic expressions, equations, and inequalities using the properties of exponents, equality and inequality, as well as the commutative, associative, inverse, identity, and distributive properties. • Factor quadratic expressions limited to factoring common monomial terms, perfect-square trinomials, differences of squares, and quadratics of the form $x^2 + bx + c$ that factor over the integers.
H.2A H.2A.3 thru H.2A.8	<p><u>Algebra</u>: Use linear equations and functions to represent relationships and solve linear equations, linear inequalities, systems of linear equations, and systems of linear inequalities.</p> <ul style="list-style-type: none"> • Determine the equation of a line given any of the following information: two points on the line, its slope and one point on the line, or its graph. Also, determine an equation of a new line, parallel or perpendicular to a given line, through a given point. • Fluently convert among representations of linear relationships given in the form of a graph of a line, a table of values, or an equation of a line in slope intercept and standard form. • Given a linear function, interpret and analyze the relationship between the independent and dependent variables. Solve for x given $f(x)$ or solve for $f(x)$ given x. • Analyze how changing the parameters transforms the graph of $f(x) = mx + b$. • Write, use, and solve linear equations and inequalities using graphical and symbolic methods with one or two variables. Represent solutions on a coordinate graph or number line. • Solve systems of two linear equations graphically and algebraically, and solve systems of two linear inequalities graphically.

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8.2	<p><u>Data Analysis</u> and <u>Algebra</u>: Analyze and summarize data sets.</p> <ul style="list-style-type: none"> • Organize and display data (e.g., histograms, box-and-whisker plots, scatter plots) to pose and answer questions; and justify the reasonableness of the choice of display. • Use measures of center and spread to summarize and compare data sets. • Interpret and analyze displays of data and descriptive statistics. • Compare descriptive statistics and evaluate how changes in data affect those statistics. • Describe the strengths and limitations of a particular statistical measure, and justify or critique its use in a given situation. • Use sample data to make predictions regarding a population. • Identify claims based on statistical data and evaluate the reasonableness of those claims. • Use data to estimate the likelihood of future events and evaluate the reasonableness of predictions.
H.3A H.3A.1 thru H.3A.5	<p>The following content standards are introduced in middle school Algebra. They are reviewed and covered in more depth in the high school Advanced Algebra course.</p> <p><u>Algebra</u>: Use quadratic and exponential equations and functions to represent relationships.</p> <ul style="list-style-type: none"> • Given a quadratic or exponential function, identify or determine a corresponding table or graph. • Given a table or graph that represents a quadratic or exponential function, extend the pattern to make predictions. • Compare the characteristics of and distinguish among linear, quadratic, and exponential functions that are expressed in a table of values, a sequence, a context, algebraically, and/or graphically, and interpret the domain and range of each as it applies to a given context. • Given a quadratic or exponential function, interpret and analyze the relationship between the independent and dependent variables, and evaluate the function for specific values of the domain. • Given a quadratic equation of the form $x^2 + bx + c = 0$ with integral roots, determine and interpret the roots, the vertex of the parabola that is the graph of $y = x^2 + bx + c$, and an equation of its axis of symmetry graphically and algebraically.

It is essential that these standards be addressed in contexts that promote problem solving, reasoning, communication, making connections, and designing and analyzing representations.