West Linn–Wilsonville School District

Mathematics – Course Statement

Course Title: Algebra

Length of Course: Year
Number of Credits: 1
Grade Level: 9, 10, 11, 12
Prerequisites: Placement by previous math teacher

Date of Description/Revision: 2013

Course Overview

This course provides a basic approach to Algebra and is the foundation course for high school mathematics. Topics covered include number systems, signed numbers, equations, monomials, polynomials, problem-solving, graphing of linear functions and linear inequalities, solution of systems of equations, factoring, rational expressions and simple radicals. At the completion of the course, students should be able to simplify expressions, solve linear equations, graph linear functions and apply basic problem solving skills.

Essential Questions

Concepts providing focus for student learning

- How is algebra used to solve problems in the real-world?
- What mathematical models are used to describe any cause and effect relationship?
- What are the different mathematical ways to record and analyze the models that describe these relationships?
- How do we communicate and use these algebraic models effectively, accurately and efficiently?

Proficiency Statements

Upon completion of course, students will be able to:

- See structure in expressions
- Create and interpret linear, exponential, and quadratic equations
- Reason with equations and inequalities
- Interpret and build functions

Course Standards/Units

Unit 1 Relationships between quantities and reasoning with equations	• Reason quantitatively and use units to solve problems • Interpret the structure of expressions • Create equations that describe numbers or relationships • Understand solving equations as a process of reasoning and explain the reasoning • Solve equations and inequalities in one variable	

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Unit 2 Linear and exponential relationships	• Extend the properties of exponents to rational exponents • Solve systems of equations • Represent and solve equations and inequalities graphically • Understand the concept of a function and use function notation • Interpret functions that arise in applications in terms of context • Analyze functions using different representations • Build a function that models a relationship between two quantities • Build new functions from existing functions • Construct and compare linear and exponential models and solve problems • Interpret expressions for functions in terms of the situation they model	Make sense of problems and persevere in solving them. Reason abstractly and quantitatively. Construct viable arguments and critique the reasoning of others. Model with mathematics. Use appropriate tools strategically. Attend to precision Look for make use of structure. Look for and express regularity in repeated reasoning.
Unit 3 Descriptive statistics	• Summarize, represent, and interpret data on a single count or measurement variable • Summarize, represent, and interpret data on two categorical and quantitative variables • Interpret linear models	
Unit 4 Expressions and equations	• Interpret the structure of expressions • Write expressions in equivalent forms to solve problems • Perform arithmetic operations on polynomials • Create equations that describe numbers or relationships • Solve equations and inequalities in one variable • Solve systems of equations	
Unit 5 Quadratic functions and modeling	• Use properties of rational and irrational numbers • Interpret functions arise in applications in terms of a context • Analyze functions using different representations • Build a function that models a relationship between two quantities • Build new functions from existing functions • Construct and compare linear, quadratic, and exponential models and solve problems	

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Above table adopted from: National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common Core State Standards for Mathematics.* Washington, DC: Authors.

Resources	
• Text: *Algebra 1*, Larson, Holt McDougal, 2010	