Mathematics

Course: Math 8
Middle School: Liberty and Roosevelt Middle Schools

Essential Course Information

- Revised Curriculum
- Full Year - 6 Credits

Course Overview

This course is the third and final required course in the 6-8 grade-band. In Grade 8, instructional time focuses on three critical areas: (1) formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, and solving linear equations and systems of linear equations; (2) grasping the concept of a function and using functions to describe quantitative relationships; (3) analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

Unit	Estimated Class Time	Overview
Unit 1- Expressions and Equations	3 weeks	In this unit, students will use their knowledge of solving equations of the form x + p = q and px = q to solve one-variable equations with rational coefficients and variables on both sides, including equations that require the distributive property and combining like terms. Students will also extend their understanding of solving equations to learn that not all equations have only one solution: some many have infinitely many solutions and some have no solution.
Unit 2- Functions	8 weeks	In this unit, students will use their knowledge of proportional relationships to interpret the slope of a graph as a quotient of the vertical change to the horizontal change. Students will then derive the equations y=mx and y=mx+b and graph linear equations. More generally, students explore input-output rules and the meaning of a function, which can be analyzed in the representative forms of equations, graphs, tables of values, or verbal rules. Linear functions can be derived from a graph, from two points, or from a verbal description. As an extension, students compare initial values and rates of change of linear functions, then qualitatively describe functions based on their graphs, indicating how graphs increase, decrease, vary, or remain constant.
Unit 3- Systems of Linear Equations	4 weeks	In this unit, students will use their knowledge of linear functions to consider systems of two linear equations. Systems will be analyzed to have one solution, infinitely many solutions, or no solutions, and will be represented and solved both graphically and algebraically. Students will also write and solve systems of two linear equations that model real-world situations.
Unit 4- Number System	4-5 weeks	In this unit, students will use their knowledge of the number system to explore rational and irrational numbers, perfect squares and cubes, and square roots and cube roots. Students will apply their number sense to solve equations, to approximate values, and to locate irrational numbers on the number line.
Unit 5- Pythagorean Theorem	4-5 weeks	In this unit, students will use their knowledge of triangles to analyze right triangles and their special relationship among side lengths: the Pythagorean Theorem. Students will analyze various proofs of the Pythagorean Theorem and its converse. Students will then apply the theorem to solve for missing side lengths of right triangles in real world problems, for distance between two points on the coordinate plane, and for lengths of diagonals of three dimensional figures.
Unit 6- Transformations	7 Weeks	In this unit, students will use their knowledge of polygons and the coordinate plane to explore and perform rigid transformations and dilations. Students will analyze the effects of transformations on coordinate points and compare original figures to their images to discover the position may change, but size and shape do not for rigid transformations. Students will also illustrate and describe sequences of transformations and dilations.
Unit 7- Geometry and Angle Relationships	3 Weeks	In this unit, students will establish facts about the relationships among the measures of angles formed by parallel lines cut by a transversal. Students will use this knowledge to discover relationships among the measures of the interior and exterior angles of a triangle.
Unit 8- Statistical Analysis	4-5 Weeks	In this unit, students will use their knowledge of one-variable sets of data to organize and analyze two-variable sets of data. Students will interpret slope and y-intercepts of lines of best fit in terms of real world sets of data and make predictions. Students will also represent categorical data using relative frequencies to determine associations in the quantities.
		In this unit, students will use their knowledge of writing powers as products of repeated factors to develop

Content Continuum

Course before..

Math 7- The course focuses on developing understanding of and applying proportional relationships, developing understanding of operations with rational numbers and working with expressions and linear equations, solving problems involving scale drawings and informal geometric constructions, and working with two- and three-dimensional shapes to solve problems involving area, surface area, and volume, and drawing inferences about populations based on samples.

Current Course

Current Course

Course after..

Algebra I- In this course, students will extend the properties of exponents to rational exponents and use properties of rational and irrational numbers to solve and analyze linear and nonlinear equations and functions. The course begins with writing notations for functions and equations, evaluating functions for inputs in their domains, interpret statements that use function notations in terms of the context, relate the domain of a function to its graph, and write a function that relates two quantities. The course covers topics related linear functions, systems of equations, statistical analysis of data, operations with polynomials, quadratic functions, and exponential and radical functions.

INSTRUCTIONAL / SUPPLEMENTAL MATERIALS

1. i-Ready Classroom Mathematics
2. Online resources and supplemental to enhance understanding of course content and skills

All existing resources will be evaluated for alignment to new curriculum.

KEY FEATURES OF REVISION

- Student access to digital resources, diagnostic assessments, online instruction
- Integration of performance based assessments, common writing tasks, and projects.
- Incorporations of activities and assessments that develop 21st century skills.

Special Education sections of ----- are offered.

Differentiation strategies will be included (DATE)

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