Northern York County School District

Curriculum Overview

Course: Math 8	
Grade Level: 8th	
Approval Date: Spring 2024	**Length of Time:** 180 days

Course Description:

The 8th grade math curriculum is designed to develop resourceful and prepared math learners capable of authentic problem solving. Instruction and assessments focus on numbers and operations, algebraic concepts, geometry, and data analysis. This course is designed to provide students with foundational skills necessary for success in Algebra 1 and other future math courses. Students are provided opportunities to apply skills related to real-life situations. The course is aligned to the Pennsylvania State Standards for Mathematics and the eighth grade Math PSSA (Pennsylvania System of School Assessment).

Course Objectives:

- Evaluate, order, and compare real numbers
- Understand, write, identify, and solve linear equations and functions.
- Demonstrate an understanding of proportional relationships represented in different ways
- Understand and apply properties of exponents
- Demonstrate an understanding of geometric relationships
- Investigate patterns of association in bivariate data

Related Standards:

- CC.2.1.8.E.1 Distinguish between rational and irrational numbers using their properties.
- CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers.
- CC.2.2.8.B.1Apply concepts of radicals and integer exponents to generate equivalent expressions.
- CC.2.2.8.B.2 Understand the connections between proportional relationships, lines, and linear equations.
- CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.
- CC.2.2.8.C.1 Define, evaluate, and compare functions.
- CC.2.2.8.C.2 Use concepts of functions to model relationships between quantities.
- CC.2.3.8.A.2 Understand and apply congruence, similarity, and geometric transformations using various tools.
- CC.2.3.8.A.3 Understand and apply the Pythagorean Theorem to solve problems.
- CC.2.3.8.A.1Apply the concepts of volume of cylinders, cones, and spheres to solve real-world and mathematical problems.
- CC.2.4.8.B.1Analyze and/or interpret bivariate data displayed in multiple representations.
- CC.2.4.8.B.2 Understand that patterns of association can be seen in bivariate data utilizing frequencies.

Units:

- Real Number System
- Exponent Properties and Scientific Notation
- Solving One Variable Equations
- Linear Relationships
- Functions

- Scatter Plots & Bivariate Data Analysis
- Systems of Linear Equations
- Pythagorean Theorem
- Volume
- Transformations

Concepts:

- Real numbers
- Linear equations and functions.
- Proportional relationships
- Properties of exponents
- Geometric relationships
- Bivariate data

Competencies:

- Evaluate, estimate, and compare rational and irrational numbers
- Graph and write linear equations
- Solve systems of equations graphically and algebraically
- Represent and interpret proportional relationships with tables, graphs, and equations.
- Simplify expressions using properties of exponents
- Perform operations with numbers expressed in scientific notation
- Use volume formulas for cylinders, cones, and spheres.
- Use Pythagorean Theorem and its converse to solve problems
- Construct and interpret a two-way table
- Construct and interpret scatter plots

Learning Activities:

- Demonstration and modeling
- Classroom discussions
- Inquiry based learning
- Error analysis
- Guided and independent Practice
- Game-based learning opportunities
- Collaborative problem solving
- Student self-reflection

Performance Tasks:

- Formative assessments such as student discussion, questioning, peer collaborative activities, reflections, and online interactive learning activities and assignments.
- Summative assessments such as quizzes, end of unit tests, and projects.

Other Assessment Measures:

8th Grade Math PSSA end-of-course state assessment, benchmark assessment, diagnostic tools, teacher and/or student generated rubrics

Textbook/Primary Resource:

ISBN 978-0547647036 Larson Pre-Algebra by Larson, Boswell, Kanold, and Stiff

Supplemental Resource Materials:

Digital resources such as PDESAS, PSSA released items, IXL