Course Overview

Content Area: **Mathematics**
Course(s): **Advanced Math 7**
Time Period: **Year**
Length: **180**
Status: **Published**

Course Overview

Aligned to Standards: NJSLS 2023
Revision Date: 2024
In compliance with the NJ Student Learning Standards, climate change, career readiness, DEI (Diversity, Equity, & Inclusivity), as well as other standards have been integrated within the NBCRSD curricula (NJ Administrative Code Title 6A: chapter 8; Title 18A: chapter 35).
Course Overview
Sequence- Unit Titles, Summaries, and Number of Days per unit (total = 180 days)

Unit 01: Proportional Relationships - 10 days

- GOAL: Analyze multiple representations of proportional relationships (tables, graphs, and equations)
- In this module, students draw on their knowledge of ratios and rates to develop an understanding of proportional relationships. They use this understanding to build fluency with proportional relationships by representing them with tables, graphs, and equations, and finding the constant of proportionality.

Unit 02: Solve Percent Problems - 15 days

- GOAL: Solve multi-step percent problems.
- In this module, students draw on their understanding of proportional relationships to build fluency using ratio reasoning and properties of operations to solve algebraic equations involving percentages. They apply their fluency to solve multistep ratio and percent problems.

Unit 03: Operations with Integers and Rational Numbers - 20 days

- GOAL: Add, subtract, multiply, and divide integers and rational numbers.
- In this module, students draw on their knowledge of rational numbers (gained in grade 6) to develop an understanding of operations with integers and rational numbers. They use this understanding to build fluency with rational number operations and the order of operations. They will apply their fluency to solve multi-step problems involving integers and rational numbers.

Unit 04: Exponents and Scientific Notation - 15 days

- Develop and use the Laws of Exponents to evaluate, simplify, and perform computations with expressions with powers.
- In this module, students draw on tier knowledge of exponents to develop an understanding of the properties of exponents and scientific notation. They use this understanding to build fluency with simplifying algebraic expressions involving powers and computing with scientific notation. They apply their fluency to solve multi-step real-world problems.

Unit 05: Real Numbers - 10 days

- GOAL: Learn about the real numbers systems by identifying, calculating, and estimating irrational numbers and comparing them to rational numbers.
- In this module, students draw on their knowledge of the set of rational numbers to develop an understanding of the set of real numbers. They use this understanding to build fluency in determining if numbers are rational or irrational, finding the roots of perfect squares and cubes, and estimating the roots of numbers. They apply their fluency to solve multi-step real-world problems.

Unit 06: Algebraic Expression - 11 days

- GOAL: Use properties of operations to simplify algebraic expressions.

- In this module, students draw on their knowledge of operations with algebraic expressions, greatest common factors, and the distributive property (all gained in grade 6) to gain an understanding of simplifying algebraic expressions which includes distributing integers across algebraic expressions, adding and subtracting algebraic expressions, combining like terms, and factoring algebraic expressions.

Unit 07: Equations and Inequalities - 18 days

- GOAL: Write and solve equations and inequalities

- In this module, students will draw on their knowledge of solving one-step equations (gained in grade 6) to develop an understanding of solving equations and inequalities. They will use this understanding to gain fluency in writing and solving equations and inequalities. They will apply their understanding to solve real-world problems.

Unit 08: Linear Relationship and Slope - 14 days

- GOAL: Graph and write equations to represent linear relationships. Analyze and use similar and congruent figures.

- In this module, students draw on their knowledge of proportional relationships to develop an understanding of the concept of slope. They use this understanding to build fluency with finding the slope of a line, and writing and graphing linear equations. They develop an understanding of when two figures are congruent or similar.
- They apply their fluency to solve multi-step real-world problems as well as real-world indirect measurement problems.

Unit 09: Probability - 13 days

- Unit Goal: Students will understand probability, find probability of simple events and compound events, and design simulations.

- In this unit, students will develop an understanding of the probability of simple and compound events. They will use this understanding to develop fluency in finding likelihoods, relative frequencies, and determining the sample space for compound events. They will also compare probabilities, design simulations, and apply their understanding of probability to solve real-world problems.

Unit 10: Sampling and Statistics - 8 days

- GOAL: Analyze samples and interpret the data.

- In this module, students draw upon their knowledge of measures of center, measures of variation, and ratios to develop an understanding of statistical sampling and making inferences and predictions. Students come to an understanding that taking multiple samples can help them gauge the variation in their predictions. Students build fluency in using ratio reasoning to make predictions about a population and in using the measures of center and variation to compare two sample distributions.

Unit 11: Angles & Triangles 16 days

- GOAL: Draw, describe, and solve problems involving geometric figures.
- In this module, students will draw on their knowledge of lines and angles, equivalent ratios, and three-dimensional figures to gain an understanding of angles, parallel lines, and triangles. They will use this understanding to develop fluency with vertical, adjacent, complementary, and supplementary angles, angle relationships, and triangles, as well as classifying and drawing triangles. They will apply their fluency to solve real-world problems.

Unit 12: Volume & Surface Area - 11 days

- GOAL: Solve real-world and mathematical problems involving area, surface area, and volume.
- In this module, students will develop an understanding of radius and diameter, and find the circumference and area of circles. They will also gain fluency in finding the area of composite figures, volume, and surface area. They will use this knowledge to gain fluency in finding the volume and surface area of composite three-dimensional solids. They will also apply their fluency to solve real-world problems.

Reporting Student Progress **(link to NB's Assessment System)**

All courses follow a balanced assessment system with Practice and Assessments.
Each category includes formative, summative and alternative assessments.

Accommodations and Modifications **(link to menu)**

Integrated accommodations and modifications for special education students, English language learners, students at risk of school failure, gifted and talented students, and students with 504 plans.