WMS Math Course Descriptions

Math 6 continues to build on concepts learned in elementary school through student discourse and the use of visual and concrete models. A major focus in 6th grade is the development of ratios, equivalent ratios, and unit rates. Multiple representations such as discrete diagrams, double number lines, and ratio tables are used as tools to interpret and solve ratio problems. These strategies are then extended to the study of percentages. Students extend their work with multiplying fractions in 5th grade to develop an understanding of the division of fractions using both tape diagrams and ratio tables. Students then build upon strategies from 5th grade to develop efficient algorithms for multiplying and dividing multi-digit numbers including decimals.   Expressions, equations, and inequalities with variables are also introduced in 6th grade. Students use visual representations such as tape diagrams and hanger models to first reason about and solve equations. Then students learn to use variables to represent an unknown and write and solve one-step equations. Geometry topics include hands-on activities to develop the area formulas of triangles and other quadrilaterals, the volume of rectangular prisms, and utilizing nets to find surface areas of three-dimensional figures. Students also learn about statistical variability as well as display and summarize data in dot plots, histograms, and box plots.

 Math 7 continues to emphasize visual representations of mathematical situations to deepen conceptual understanding.   Students explore more deeply the concepts of ratios and rates through the topics of scaled copies, proportional relationships, and percents. Students use tables, graphs, and equations to analyze proportional relationships and solve real-world and mathematical problems. Students investigate and develop the formulas for the circumference and area of a circle applying the knowledge of proportional and nonproportional relationships. Students build upon the introduction of integers in the 6th grade to include arithmetic with positive and negative numbers. Students then further the work started in 6th grade with expressions, equations, and inequalities to solve multi-step equations. In the final 2 units, students apply their arithmetic and algebraic skills to the study of triangles, angle relationships, volume and surface area of prisms, probability, and sampling.

Advanced Math 7 covers some 8th-grade topics in addition to all of the 7th grade standards described above. 8th-grade topics include the concept of transformations (rotations, reflections, translation, and dilations), similarity, and congruence in 2-dimensional shapes. Students are also introduced to the slope of a line in preparation for further study of linear functions in Algebra. Students must be highly motivated, willing to work at a faster pace, and demonstrate strength and perseverance in 6th grade standards including algebraic reasoning and numeracy.

Math 8 continues to set a strong foundation in mathematics to prepare students for success in Algebra in high school. Students begin 8th grade with the concept of congruence and transformations such as rotations and translations. Next students build upon their study of scaled copies in 7th grade to include the concept of similarity which leads to understanding the slope of a line. Students expand upon the study of rates and proportional relationships in an introduction to linear functions and an introduction to solving systems of linear equations. Students further develop the concept of a function in mathematics through analyzing tables, graphs, and equations. Students also work with bi-variate data and learn to analyze associations using scatterplots and fitted lines for numerical data and tables, and bar graphs for categorical data. In addition, students learn about the volume of cylinders, cones and spheres, rules of exponents, scientific notation and are introduced to irrational numbers with the application of the Pythagorean Theorem.

Advanced Math 8 is a high school Algebra course that also includes completing the 8th-grade math standards. Students in this class must be highly motivated, demonstrate strength of the 7th grade standards including algebraic reasoning and numeracy and perseverance while working at a faster pace. In algebra, students learn to model the real world through the study of linear, exponential, and quadratic functions. Students learn to represent real-world situations through tables, graphs, and equations and analyze these models to solve problems and make decisions. Students will be expected to clearly communicate in writing and orally using mathematical evidence to support answers. In addition to the standard Algebra curriculum, students will cover many of the 8th-grade topics such as similarity and congruence in 2-dimensional shapes, number systems including irrational numbers, the volume of cylinders, cones, and spheres, bivariate data, and probability in the form of two-way frequency tables, rules of exponents and scientific notation, a study of right triangles and the Pythagorean theorem.

Throughout each course the Standards for Mathematical Practice (6-8) are reinforced;

- 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 and make use of structure.
- Look for and express regularity in repeated reasoning.