IRVINE UNIFIED SCHOOL DISTRICT

Year at a Glance - Math 8
Link to Grade 8 Mathematics Standards

What Students Learn
Math 8 is when arithmetic matures into algebra. Students fuse all of their arithmetic skills with their growing knowledge of number relationships, equations, the coordinate plane, and spatial reasoning. By the end of middle school, foundations have been laid for further exploration of statistics and geometry in high school. Students should attain conceptual and procedural fluency with regard to single-variable linear equations, and become familiar with how to use them to model and solve problems. They also begin to solve pairs of two-variable equations and commence the foundational work on defining, evaluating and comparing functions. The concept of a function is a critical area of instruction in grade eight. Students are introduced to functions and learn that proportional relationships are part of a broader group of linear functions. Geometric transformations (translations, rotations, reflections and dilations), a major emphasis in 8th grade, are explored and used to build toward an understanding of the concepts of congruence and similarity. Another topic of Grade 8 is the Pythagorean Theorem, and applying it to solve problems involving right triangles. Students are introduced to irrational numbers and radicals and learn to place them on the number line, as well as beginning a study of operations with exponents. Students will investigate patterns of association in bivariate data. Finally, eighth graders augment their knowledge of three-dimensional figures by studying cylinders, cones and spheres.

Unit Titles (Time Frame*)	All Students Will Demonstrate Proficiency in These Essential Standards
1. Congruence and Similarity Through Transformations (4 weeks)	**Essential (High Priority) Standards:** ● Understanding congruence and similarity through rotations, reflections, translations, and dilations [8.G.2,4] ● Solving single variable equations [8.EE.7] ● Defining and comparing linear functions in multiple representations [8.F.2] ● Evaluating and using functions as they model relationships between quantities [8.F.4] ● Calculating and comparing rates of change of linear functions [8.EE.5] ● Using similar triangles to explain why the slope m is the same between two distinct points on a non-vertical line in the coordinate plane [8.EE.6] ● Simplifying expressions with integer exponents (positive, negative, and zero)[8.EE.1] ● Understanding and applying the Pythagorean Theorem to solve real world problems including the use and knowledge of radicals [8.G.7 & 8.EE.2] ● Applying the Pythagorean Theorem to find the distance between two points in a coordinate system [8.G.8]
2. Solving Single Variable Linear Equations (4 weeks)	
3. Linear Functions (and Non-Linear Functions) (7 weeks)	
4. Bivariate Data (2 weeks)	
5. Solving Systems of Linear Equations (5 weeks)	**Students Will Work Toward Proficiency in These Supporting Standards**
6. Rational & Irrational (3 weeks)	**Supporting Standards:** ● Using coordinates to describe how to do dilations, translations, rotations, and reflections on two-dimensional figures [8.G.3] ● Understanding if data represents a function and if it is linear or non-linear [8.F.3] ● Solving systems of linear equations [8.EE.8] ● Recognizing patterns of association in bivariate data with scatter plots and informally fit a straight line [8.SP.1,2] ● Knowing that there are numbers that are not rational, and approximate them by rational numbers [8.NS.1,2] ● Performing operations with scientific notation [8.EE.4] ● Calculating volumes of cylinders, cones, and spheres [8.G.9]
7. Rules of Exponents & Scientific Notation (4 weeks)	
8. Pythagorean Theorem (4 weeks)	
9. Volume of Cylinders, Cones & Spheres (3 weeks)	

*All time frames are approximations based on student progress and understanding.   **Revised January 2024**