7th Grade Math Advanced/GT
2022-23 Year at a Glance (YAG)

First Semester		Second Semester	
1st Nine Weeks – 41 days (August 15th – October 12th) *(September 5th – No School)* *(October 10th – No School)*		**3rd Nine Weeks – 47 days** (January 3rd – March 10th) *(January 18th – No School)* *(February 20th – PD Day)* *(March 13th – 17th – Spring Break)* *(March 20th – Teacher Workday)*	
TEKS 8.2A, 8.2B, 8.2C*, **8.2D**	**Unit 1: Real Number System & Scientific Notation (8 Days)** Students continue to examine the sets and subsets of real numbers and use a visual representation, such as a Venn diagram, to describe the relationships between the sets and subsets. Real numbers are the focus of this unit as students order a set of real numbers that arise from mathematical and real-world situations. Students extend previous understandings of the relationships within the base-10 place value system as they convert between standard decimal notation and scientific notation.	**TEKS** 7.4A, 7.4C, **8.4A,** 8.4B, **8.4C,** 8.5A, 8.5B, 8.5C, 8.5D, 8.5E, 8.5F, 8.5G, 8.5H, **8.5I***, 8.9A,8.11A, 8.11B, 8.11C	**Unit 7: Linear Relationships: Scatterplots & Functions, (and MAD 4 Representations (slope-intercept form) Systems of Equations Proportional and Nonproportional Relationships (40 Days)** Students must identify functions using sets of ordered pairs, tables, mappings, and graphs. Students contrast graphical representations of bivariate sets of data that suggest linear relationships with bivariate sets of data that do not suggest a linear relationship. Scatterplots are constructed from bivariate sets of data and used to describe the observed data. Observations include questions of association such as linear (positive or negative trend), non-linear, or no association. Students use similar right triangles to develop an understanding of slope. This approach lends itself to the development of the formula for slope by determining the ratio of the change in *y*-values compared to the change in *x*-values is the same for any two points on the same line. Students use data from a table or graph to determine the rate of change or slope and the *y*-intercept. Students extend their previous understandings of slope and *y*-intercept to represent proportional and non-proportional linear situations with tables, graphs, and equations. These representations are used as students distinguish between proportional and non-proportional linear situations. Students specifically examine the relationship between the unit rate and slope of a line that represents a proportional linear situation. Problem situations involving direct variation are included within this unit as they are also proportional linear situations. Graphical representations of linear equations are examined closely as students begin to develop the understanding of systems of equations. Students are expected to identify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations. Students must also verify these values algebraically with the equations that represent the two graphed linear equations **Interim Assessments (4 Days)** **Buffer time (3 Days)**
8.2B 8.6C, **8.7C**, 8.7D	**Unit 2: Pythagorean Theorem (7 Days)** Students will examine right triangles closely within this unit as students use models to explain the Pythagorean Theorem. Students use the Pythagorean Theorem and its converse to solve problems and apply these understandings to the coordinate plane as they determine the distance between two points on the coordinate plane.		
7.9A*, 8.6A, 8.6B, **8.7A***	**Unit 3: Volume (10 Days)** Students blend previous understandings of the volume of a prism with calculating the area of a circle to determine the volume of a cylinder in terms of its base area and height. As with previous grade level investigations of the volume of three-dimensional figures, students are expected to model the relationship between the volume of a cylinder and a cone having both congruent bases and heights. Students connect these models to the actual formulas for determining the volume of a cylinder and cone, which directly coincides with formulas used for determining the volume of prisms and pyramids on the STAAR Grade 8 Mathematics Reference Materials. Students solve problems involving the volume of cylinders, cones, and spheres.		
7.9C, 7,9D*, **8.7B***	**Unit 4: Surface Area (10 Days)** Students solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net. The concept of surface area is extended from finding the sum of the areas of the faces from the net to abstract formulas for lateral and total surface area. Students are expected to use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders. **Beginning of the School Year (1 Day)** **BOY Screener (2 Days)** **Buffer time (3 Days)** All units emphasize the use of real numbers and their subsets while building up to solving multistep equations with the use of formulas through Geometry concepts.		This unit is a multi-summative assessment unit that will be chunked into at least 2 major assessments. This unit is foundational to Algebra I concepts with an emphasis on linear relationships specifically in slope-intercept form.

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2nd Nine Weeks – 42 days (October 13th – December 16st) *(November 21st – 25th – Thanksgiving Break)* *(December 19th – January 1st – Holiday Break)* *(January 2nd – Teacher Workday)*		**4th Nine Weeks – 45 days** (March 21st – May 24th) *(April 7th – No School)* (*April 28th – No School)*	
TEKS 8.3A, 8.3B, 8.3C, 8.10A, 8.10B, **8.10C**, 8.10D*	**Unit 5: Transformations (15 Days)** Students develop transformational geometry concepts as they examine orientation and congruence of transformations. Students extend concepts of similarity to dilations on a coordinate plane as they compare and contrast a shape and its dilation(s). The concept of proportionality is revisited as students generalize the ratio of corresponding sides of a shape and its dilation as well as use an algebraic representation to explain the effect of dilation(s) on a coordinate plane. Students must distinguish between transformations that preserve congruence and those that do not. Students are expected to use an algebraic representation to explain the effect of translations, reflections over the *x*- or *y*- axis, dilations when a positive rational number scale factor is applied to a shape, and rotations limited to 90°, 180°, 270°, and 360°. The relationship between linear and area measurements of a shape and its dilation are also examined as students model the relationship and determine that the measurements are affected by both the scale factor and the dimension (one- or two-dimensional) of the measurement. Students are expected to generalize when a scale factor is applied to all of the dimensions of a two-dimensional shape, the perimeter is multiplied by the same scale factor while the area is multiplied by the scale factor squared.	**TEKS** 8.8D*	**Unit 8: Angle Relationships (10 Days)** Students are expected to use informal arguments to establish facts about the angle sum and exterior angle of triangles, the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.
		7.4D, 8.12A, 8.12B, 8.12C, **8.12D**, 8.12E, 8.12F, 8.12G, 7.13B, 7.13E	**Unit 9: Financial Literacy (10 Days)** Students extend their understanding of percent and formulas to compare interest rates, including simple and compound interest, and loan lengths. Students investigate the effect of the cost of credit and the total cost of repaying that credit, whether it be with credit cards or loans.Students compare the advantages and disadvantages of various payment methods and analyze situations that constitute financial responsibility and irresponsibility. Lastly, students estimate the cost of college and devise a savings plan to pay for the total estimated costs for at least the first year of attendance.
			Unit 10: STAAR Review (10 Days)
			Unit 11: Algebra Prep (7 Days)
8.8A*, 8.8B, **8.8C**	**Unit 6: One Variable Equations & Inequalities (20 Days)** Students extend their understanding of modeling and solving one-variable equations that represent mathematical and real-world problems from variables on one-side of the equality sign to variables on both sides of the equality sign using rational number coefficients and constants. When solving one-variable equations with variables on both sides of the equality sign, students distinguish between types of solutions as one solution, no solution, and infinite solutions (all real numbers). Students also extend their knowledge of writing one-variable equations or inequalities from variables on one-side of the equality sign to variables on both sides of the equality sign to represent problems using rational number coefficients and constants.		**EOY Screener (2 Days)** **Final Exams (2 Days)** **STAAR Testing are allotted (4 Days)** Each unit builds on algebraic equations solving concepts and rules, including the use of formulas. In addition the Personal Financial Literacy unit introduces important financial literacy concepts to help students build a baseline for financial planning. STAAR review time will provide an opportunity for students to revisit material learned in the beginning of the year.
	MOY Screener (2 Days) **Final Exams (2 Days)** **Buffer time (3 Days)** Each unit continues with the use of real numbers, with an emphasis on rational numbers, and further extends Algebraic concepts to solve equations, write equations and inequalities, and identify rules of transformations with use of algebraic variables.		

Process Standards: 8.1A, 8.1B, 8.1C, 8.1D, 8.1E, 8.1F, 8.1G

The process standards describe ways in which students are expected to engage in the content. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use mathematics efficiently and effectively in daily life. When possible, students will apply mathematics to problems arising in everyday life, society, and the workplace.