2022-2023 Scope and Sequence
Mathematics – Grade 8

Cycle 1	29 Days Aug. 22-Sept. 30, 2022	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
		The Mathematical Process Standards are integrated throughout the course in all activities and lessons. Teachers should refer to these standards for instructional strategies and depth of rigor. Specific process standards have been highlighted for each unit, but these process standards should not be the only process standards associated with the daily lessons. **Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1A** Apply mathematics to problems arising in everyday life, society, and the workplace. Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟⓢ **MATH.8.1C** Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. Ⓟⓢ **MATH.8.1D** Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. Ⓟⓢ **MATH.8.1E** Create and use representations to organize, record, and communicate mathematical ideas. Ⓟⓢ **MATH.8.1F** Analyze mathematical relationships to connect and communicate mathematical ideas. Ⓟⓢ **MATH.8.1G** Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.
Unit 1: Rigid Motion Transformations Students generalize the properties of orientation and congruence of translations, reflections, and rotations. They make conjectures about congruence, investigate their conjectures, and	**7** class periods (90-min. each) or **14** class periods (45-min. each) *Teachers Report to Campuses Aug. 8* *Teacher Service Days Aug. 8-12,*	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1C** Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. Ⓟⓢ **MATH.8.1F** Analyze mathematical relationships to connect and communicate mathematical ideas. **Two-dimensional Shapes.** The student applies mathematical process standards to develop transformational geometry concepts. The student is expected to:

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Cycle 1	29 Days Aug. 22-Sept. 30, 2022	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
justify their conjectures using informal transformation language.	*Aug. 16-19* *Teacher Prep Day (no students) Aug. 15* *Labor Day Sept. 5*	Ⓢ **MATH.8.10A Generalize the properties of orientation and congruence of rotations, reflections, translations,** and dilations **of two-dimensional shapes on a coordinate plane.** Ⓢ **MATH.8.10B** Differentiate between transformations that preserve congruence and those that do not. Ⓡ **MATH.8.10C** Explain the effect of translations, reflections over the *x*- or *y*-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation.
Unit 2: Similarity Students compare and contrast the attributes of similar figures. They use dilations to verify that figures are similar. They also model and analyze the effect dilation has on the area and perimeter of two-dimensional figures.	**4** class periods (90-min. each) or **8** class periods (45-min. each)	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1C** Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. Ⓟⓢ **MATH.8.1F** Analyze mathematical relationships to connect and communicate mathematical ideas. **Proportionality.** The student applies mathematical process standards to use proportional relationships to describe dilations. The student is expected to: Ⓢ **MATH.8.3A Generalize that the ratio of corresponding sides of similar shapes are proportional,** including a shape and its dilation. Ⓢ **MATH.8.3B** Compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane. Ⓡ **MATH.8.3C** Use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation. **Two-dimensional Shapes.** The student applies mathematical process standards to develop transformational geometry concepts. The student is expected to: Ⓢ **MATH.8.10A** Generalize the properties of orientation and congruence of rotations, reflections, translations, and dilations of two-dimensional shapes on a coordinate plane. Ⓢ **MATH.8.10B** Differentiate between transformations that preserve congruence and those that do not.

Cycle 1	29 Days Aug. 22-Sept. 30, 2022	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
		Ⓡ **MATH.8.10C** Explain the effect of translations, reflections over the *x*- or *y*-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation. Ⓢ **MATH.8.10D** Model the effect on linear and area measurements of dilated two-dimensional shapes.

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Cycle 2	23 Days Oct. 3 - Nov. 4, 2022	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
Unit 3: Line and Angle Relationships Students use informal arguments to connect mathematical relationships about angles, triangles, parallel lines, and transversals.	**3** class periods (90-min. each) or **6** class periods (45-min. each) *Teacher Service Day (no students) Oct. 4* *Fall Holiday Oct. 5*	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟⓢ **MATH.8.1F** Analyze mathematical relationships to connect and communicate mathematical ideas. **Expressions, Equations, and Relationships.** The student applies mathematical process standards to use one-variable equations or inequalities in problem situations. The student is expected to: Ⓢ **MATH.8.8D** Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.
Unit 4: From Proportions to Linear Relationships Students use proportional and nonproportional relationships to recognize that the slope of a line is constant and use direct variation to write and solve real-world problems.	**6** class periods (90-min. each) or **12** class periods (45-min. each)	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟⓢ **MATH.8.1F** Analyze mathematical relationships to connect and communicate mathematical ideas. **Proportionality.** The student applies mathematical process standards to use proportional relationships to describe dilations. The student is expected to: Ⓡ **MATH.8.3C** Use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation. **Proportionality.** The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: Ⓢ **MATH.8.4A** Use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/(x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line.

Cycle 2	23 Days Oct. 3 - Nov. 4, 2022	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
		Ⓡ **MATH.8.4B** Graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship. Ⓡ **MATH.8.4C** Use data from a table or graph to determine the rate of change or slope and *y*-intercept in mathematical and real-world problems. **Proportionality.** The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: Ⓢ **MATH.8.5A** Represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$. Ⓢ **MATH.8.5E** Solve problems involving direct variation. Ⓢ **MATH.8.5F** Distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$. Ⓢ **MATH.8.5H** Identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems. **Two-dimensional Shapes.** The student applies mathematical process standards to develop transformational geometry concepts. The student is expected to: Ⓡ **MATH.8.10C** Explain the effect of translations, reflections over the *x*- or *y*-axis, and rotations limited to 90°, 180°, 270°, and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation. Ⓢ **MATH.8.10D** Model the effect on linear and area measurements of dilated two-dimensional shapes.

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Cycle 3	28 Days Nov. 15-Dec. 21, 2022	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
Unit 5: Linear Relationships Students investigate and explore linear relationships in multiple representations.	**5** class periods (90-min. each) or **10** class periods (45-min. each) *Thanksgiving Break* *Nov. 21-25* *Winter Break (students)* *Dec. 22 - Jan. 6* *Winter Break (teachers)* *Dec. 22 - Jan. 4*	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟⓢ **MATH.8.1F** Analyze mathematical relationships to connect and communicate mathematical ideas. **Proportionality.** The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: Ⓢ **MATH.8.4A** Use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 - y_1)/(x_2 - x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line. Ⓡ **MATH.8.4C** Use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems. **Proportionality.** The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: Ⓢ **MATH.8.5B** Represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, $b \neq 0$. Ⓢ **MATH.8.5F** Distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$. Ⓡ **MATH.8.5I** Write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations.

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Cycle 3	28 Days Nov. 15-Dec. 21, 2022	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
Unit 6: Introduction to Functions Students analyze the characteristics of functions and identify functional relationships from multiple representations.	**6** class periods (90-min. each) or **12** class periods (45-min. each)	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟⓢ **MATH.8.1D** Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. **Proportionality.** The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: Ⓡ **MATH.8.4C** Use data from a table or graph to determine the rate of change or slope and *y*-intercept in mathematical and real-world problems. **Proportionality.** The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: Ⓢ **MATH.8.5B** Represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, $b \neq 0$. Ⓢ **MATH.8.5F** Distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$. Ⓡ **MATH.8.5G** Identify functions using sets of ordered pairs, tables, mappings, and graphs. Ⓡ **MATH.8.5I** Write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations.

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Cycle 4	33 Days Jan. 9 - Feb. 24, 2023	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
Unit 7: Patterns in Bivariate Data Students construct and describe scatterplots, use trend lines to fit lines to data and analyze linear relationships to make predictions.	**3** class periods (90-min. each) or **6** class periods (45-min. each) *Winter Break (students) Dec. 22 - Jan. 6* *Winter Break (teachers) Dec. 22 - Jan. 4* *MLK Jr. Day Jan. 16* *Teacher Prep Day (no students) Jan. 5* *Teacher Service Day (no students) Jan. 6, Feb. 20*	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1A** Apply mathematics to problems arising in everyday life, society, and the workplace. Ⓟⓢ **MATH.8.1G** Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. **Proportionality.** The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: Ⓢ **MATH.8.5C** Contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation. Ⓡ **MATH.8.5D** Use a trend line that approximates the linear relationship between bivariate sets of data to make predictions. Ⓡ **MATH.8.5I** Write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations. **Measurement and Data.** The student applies mathematical process standards to use statistical procedures to describe data. The student is expected to: Ⓢ **MATH.8.11A** Construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data.
Unit 8: Variability and Sampling Students use bivariate sets of data to determine the mean absolute deviation and analyze linear relationships to make predictions.	**4** class periods (90-min. each) or **8** class periods (45-min. each)	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟⓢ **MATH.8.1D** Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. **Measurement and Data.** The student applies mathematical process standards to use statistical procedures to describe data. The student is expected to:

Cycle 4	33 Days Jan. 9 - Feb. 24, 2023	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
		Ⓢ **MATH.8.11B** Determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points. Ⓢ **MATH.8.11C** Simulate generating random samples of the same size from a population with known characteristics to develop the notion of a random sample being representative of the population from which it was selected.
Unit 9: Solving Linear Equations Students use the properties of real numbers, including the distributive property, to simplify expressions, equations, and inequalities.	**3** class periods (90-min. each) or **6** class periods (45-min. each)	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1C** Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. Ⓟⓢ **MATH.8.1G** Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication. **Expressions, Equations, and Relationships.** The student applies mathematical process standards to use one-variable equations or inequalities in problem situations. The student is expected to: Ⓢ **MATH.8.8A Write one-variable equations or inequalities** with variables on both sides **that represent problems using rational number coefficients and constants.** Ⓢ **MATH.8.8B Write a corresponding real-world problem when given a one-variable equation or inequality** with variables on both sides of the equal sign **using rational number coefficients and constants**. Ⓡ **MATH.8.8C Model and solve one-variable equations** with variables on both sides of the equal sign **that represent mathematical and real-world problems using rational number coefficients and constants**.
Unit 10: Systems of Linear Equations Students use the intersections of graphed lines to determine the values of *x* and *y* that simultaneously satisfy two linear equations.	**3** class periods (90-min. each) or **6** class periods (45-min. each)	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.

Cycle 4	33 Days Jan. 9 - Feb. 24, 2023	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
		Ⓟⓢ **MATH.8.1D** Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. **Proportionality.** The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: Ⓢ **MATH.8.5B** Represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, $b \neq 0$. **Expressions, Equations, and Relationships.** The student applies mathematical process standards to use multiple representations to develop foundational concepts of simultaneous linear equations. The student is expected to: Ⓢ **MATH.8.9A** Identify and verify 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.

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Cycle 5	28 Days Feb. 27 - Apr. 14, 2023	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
Unit 11: Real Numbers Students focus on the set of real numbers and its various subsets, including integers and rational numbers. Students convert between standard notation and scientific notation, as well as approximate the value of irrational numbers and locate those values on a number line.	**4** class periods (90-min. each) or **8** class periods (45-min. each) *Spring Break Mar. 13-17* *Chávez-Huerta Day Mar. 31* *Spring Holiday Apr. 7*	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1A** Apply mathematics to problems arising in everyday life, society, and the workplace. Ⓟⓢ **MATH.8.1E** Create and use representations to organize, record, and communicate mathematical ideas. **Numbers and Operations.** The student applies mathematical process standards to represent and use real numbers in a variety of forms. The student is expected to: Ⓢ **MATH.8.2A** Extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers. Ⓢ **MATH.8.2B Approximate the value of an irrational number,** including π and **square roots of numbers less than 225, and locate that rational number approximation on a number line.** Ⓢ **MATH.8.2C** Convert between standard decimal notation and scientific notation. Ⓡ **MATH.8.2D** Order a set of real numbers arising from mathematical and real-world contexts.
Unit 12: The Pythagorean Theorem Students use models and diagrams to explain the Pythagorean theorem. They also use the Pythagorean theorem and its converse to solve problems, as well as calculate the distance between two coordinate points on the coordinate plane.	**5** class periods (90-min. each) or **10** class periods (45-min. each)	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟⓢ **MATH.8.1F** Analyze mathematical relationships to connect and communicate mathematical ideas. **Expressions, Equations, and Relationships.** The student applies mathematical process standards to develop mathematical relationships and make connections to geometric formulas. The student is expected to: Ⓢ **MATH.8.6C** Use models and diagrams to explain the Pythagorean theorem. **Expressions, Equations, and Relationships.** The student applies mathematical process standards to use geometry to solve problems. The student is expected to:

Cycle 5	28 Days Feb. 27 - Apr. 14, 2023	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
		Ⓡ **MATH.8.7C** Use the Pythagorean theorem and its converse to solve problems. Ⓢ **MATH.8.7D** Determine the distance between two points on a coordinate plane using the Pythagorean theorem.
Unit 13: Financial Literacy: Your Financial Future Students apply financial literacy concepts to calculate simple and compound interest earnings, while making decisions on future plans, including attending a 2-year or 4-year college. (continued in cycle 6)	**3** class periods (90-min. each) or **6** class periods (45-min. each)	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1A** Apply mathematics to problems arising in everyday life, society, and the workplace. Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟⓢ **MATH.8.1E** Create and use representations to organize, record, and communicate mathematical ideas. **Personal Financial Literacy.** The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to: Ⓢ **MATH.8.12A** Solve real-world problems comparing how interest rate and loan length affect the cost of credit. Ⓢ **MATH.8.12B** Calculate the total cost of repaying a loan, including credit cards and easy access loans, under various rates of interest and over different periods using an online calculator. Ⓢ **MATH.8.12C** Explain how small amounts of money invested regularly, including money saved for college and retirement, grow over time. Ⓡ **MATH.8.12D** Calculate and compare simple interest and compound interest earnings. Ⓢ **MATH.8.12E** Identify and explain the advantages and disadvantages of different payment methods. Ⓢ **MATH.8.12F** Analyze situations to determine if they represent a financially responsible decision and identify the benefits of financial responsibility and the costs of financial irresponsibility Ⓢ **MATH.8.12G** Estimate the cost of a 2-year and 4-year college education including family contribution and devise a periodic savings plan for accumulating the money needed to contribute to the total cost of attendance for at least the first year of college.

Cycle 6	31 Days Apr. 17 - May 31, 2023	*The recommended number of class periods is less than the number of days in the grading cycle to accommodate differentiated instruction, extended learning time, and assessment days. Complete instructional planning information and support are in the HISD Curriculum documents.*
Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
Unit 13: Financial Literacy: Your Financial Future Students apply financial literacy concepts to calculate simple and compound interest earnings, while making decisions on future plans, including attending a 2-year or 4-year college. (continued from cycle 5)	**3** class periods (90-min. each) or **6** class periods (45-min. each)	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1A** Apply mathematics to problems arising in everyday life, society, and the workplace. Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟⓢ **MATH.8.1E** Create and use representations to organize, record, and communicate mathematical ideas. **Personal Financial Literacy.** The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to: Ⓢ **MATH.8.12A** Solve real-world problems comparing how interest rate and loan length affect the cost of credit. Ⓢ **MATH.8.12B** Calculate the total cost of repaying a loan, including credit cards and easy access loans, under various rates of interest and over different periods using an online calculator. Ⓢ **MATH.8.12C** Explain how small amounts of money invested regularly, including money saved for college and retirement, grow over time. Ⓡ **MATH.8.12D** Calculate and compare simple interest and compound interest earnings. Ⓢ **MATH.8.12E** Identify and explain the advantages and disadvantages of different payment methods. Ⓢ **MATH.8.12F** Analyze situations to determine if they represent a financially responsible decision and identify the benefits of financial responsibility and the costs of financial irresponsibility Ⓢ **MATH.8.12G** Estimate the cost of a 2-year and 4-year college education including family contribution and devise a periodic savings plan for accumulating the money needed to contribute to the total cost of attendance for at least the first year of college.

2022-2023 Scope and Sequence
Mathematics – Grade 8

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Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
Unit 14: Surface Area and Volume Students solve problems involving surface area and volume in mathematical and real-world situations.	**6** class periods (90-min. each) or **12** class periods (45-min. each) *Memorial Day* *May 29* *Teacher Prep Day (no students)* *June 1*	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟⓢ **MATH.8.1D** Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate. **Expressions, Equations, and Relationships.** The student applies mathematical process standards to develop mathematical relationships and make connections to geometric formulas. The student is expected to: Ⓢ **MATH.8.6A** Describe the volume formula $V = Bh$ of a cylinder in terms of its base area and its height. Ⓢ **MATH.8.6B** Model the relationship between the volume of a cylinder and a cone having both congruent bases and heights and connect that relationship to the formulas. **Expressions, Equations, and Relationships.** The student applies mathematical process standards to use geometry to solve problems. The student is expected to: Ⓡ **MATH.8.7A** Solve problems involving the volume of cylinders, cones, and spheres. Ⓡ **MATH.8.7B** 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.
Unit 15: End of Course Topic Students review linear relationships and communicate mathematical ideas using through problem-solving models.	**4** class periods (90-min. each) or **8** class periods (45-min. each)	**Mathematical Process Standards.** The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to: Ⓟⓢ **MATH.8.1B** Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Ⓟⓢ **MATH.8.1C** Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems. Ⓟⓢ **MATH.8.1G** Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

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Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
		Proportionality. The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: Ⓢ **MATH.8.4A** Use similar right triangles to develop an understanding that slope, m, given as the rate comparing the change in y-values to the change in x-values, $(y_2 – y_1)/(x_2 – x_1)$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line. Ⓡ **MATH.8.4B** Graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship. Ⓡ **MATH.8.4C** Use data from a table or graph to determine the rate of change or slope and y-intercept in mathematical and real-world problems. **Proportionality.** The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to: Ⓢ **MATH.8.5A** Represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$. Ⓢ **MATH.8.5B** Represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, $b \neq 0$. Ⓢ **MATH.8.5F** Distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$. Ⓡ **MATH.8.5I** Write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations. **Expressions, Equations, and Relationships.** The student applies mathematical process standards to use one-variable equations or inequalities in problem situations. The student is expected to: Ⓢ **MATH.8.8A** Write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants. Ⓢ **MATH.8.8B** Write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants.

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Unit	**# Class Periods**	**Texas Essential Knowledge and Skills/Student Expectations (TEKS/SEs)** The **bold face** words in the TEKS/SEs indicate concepts addressed specifically in this unit; the unbolded concepts are addressed in other units of this course. **The student will:**
		Ⓡ **MATH.8.8C** Model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants.