Agile Mind Texas Advanced Mathematics 7 Scope and Sequence, 2025-2026

Texas Essential Knowledge and Skills for Mathematics

With Corequisite Supports

Prior to this course, students have written and interpreted expressions, solved one-step equations and inequalities, explored quantitative relationships between dependent and independent variables, and solved problems involving area of 2-D figures and volume of right rectangular prisms. Students have also begun to develop an understanding of statistical thinking.

In this Accelerated Mathematics 7 course, students apply their previous understandings of ratio and proportional reasoning to the study of linear functions, equations, and systems, including a deep understanding of slope. They explore applications involving scientific notation, and they deepen their understanding of geometric concepts by investigating and applying the Pythagorean theorem. Students also explore congruence transformations of the coordinate plane, followed by exploration of similarity and dilations. This work with similarity contributes to students' conceptual understanding of slope.

This course provides students the opportunity for a deep study of linear functions and their graphs, and problems involving linear functions and equations. Students also investigate bivariate numerical data. Work with numerical data builds on students' learning from earlier units around linear functions and modeling. Students also investigate and interpret the representations of non-linear functions and compare them to linear functions. Finally, students extend their work in geometry to include angle relationships in parallel lines and triangles and the surface area and volume of 3-D solids.

Throughout this course, students use mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

(A) apply mathematics to problems arising in everyday life, society, and the workplace;

(B) 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;

(C) 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;

(D) communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;

(E) create and use representations to organize, record, and communicate mathematical ideas;

(F) analyze mathematical relationships to connect and communicate mathematical ideas; and

(G) display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

These processes should become the natural way in which students come to understand and do mathematics. While, depending on the content to be understood or on the problem to be solved, a variety of processes might be brought to bear, some processes may prove more useful than others. In this course, analyzing mathematical relationships and making connections to mathematical ideas is particularly important, as are modeling and problem solving, the developing viable arguments, and precision of language.

These course materials are designed to support 141-170 lessons (1 lesson equals 45 minutes).

Agile Mind Topics	Topic Descriptions	Texas Essential Knowledge and Skills for Mathematics • Standards in black are the primary instructional focus of the topic. • Standards in gray support topic content or indicate foundations for future work.
Transformations		
1: Transformational geometry and similarity 11 lessons +2 additional lessons before Lesson 8 from the next topic, **Using ratios**	This topic introduces coordinate geometry as a tool for exploring transformations. Using ordered pairs and algebraic rules to describe reflections, translations, rotations, and dilations, students become more adept at solving problems in the coordinate plane. The work with congruence and similarity in this topic provides a foundation for the development of the formal definition of slope later in the course.	**(8.3) Proportionality.** The student applies mathematical process standards to use proportional relationships to describe dilations. The student is expected to: (A) generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation ***Supporting Standard*** (B) compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane ***Supporting Standard*** (C) 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 ***Readiness Standard*** **(8.8) 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: (D) 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 ***Supporting Standard*** **(8.10) Two-dimensional shapes.** The student applies mathematical process standards to develop transformational geometry concepts. The student is expected to: (A) generalize the properties of orientation and congruence of rotations, reflections, translations, and dilations of two-dimensional shapes on a coordinate plane ***Supporting Standard*** (B) differentiate between transformations that preserve congruence and those that do not ***Supporting Standard*** (C) 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 ***Readiness Standard*** **ELPS:** 1.B, 1.D, 1.F, 3.C, 3.J, 4.C, 4.E, 5.B **Corequisite standards:** 7.5.A, 7.5.C
2. Using ratios Lessons 2 and 3 can be used before lesson 8 of the previous topic, **Transformational geometry and similarity**, to address similar shapes, scale drawings, and ratios between	This topic explores and applies proportional reasoning through multiple representations. Students interactively use ratios and proportional reasoning to enlarge and reduce images. They explore attributes of similarity and solve problems involving similar figures. They also apply ratios and proportional reasoning in a variety of contexts. Real-world applications	**(7.5) Proportionality.** The student applies mathematical process standards to use geometry to describe or solve problems involving proportional relationships. The student is expected to: (A) generalize the critical attributes of similarity, including ratios within and between similar shapes; **Supporting Standard** **(7.5) Proportionality.** The student applies mathematical process standards to use geometry to describe or solve problems involving proportional relationships. The student is expected to:

and within similar shapes before students move to the 8th grade work of dilations.	engage students to explore and make reasonable conjectures while testing their predictions.	(C) solve mathematical and real-world problems involving similar shape and scale drawings **Readiness Standard**
Working with real numbers and exponents		
3: Real numbers 9 lessons	This topic explores the set of real numbers by investigating the idea that some numbers are not rational. The number line and the coordinate grid are used as models. Areas of squares drawn on grid or dot paper form the first set of key images in this topic. Students discover the relationship between a square's side length and area to estimate irrational numbers. Students also use scientific notation to describe very large and very small quantities and convert between standard decimal notation and scientific notation.	**(8.2) Number and operations.** The student applies mathematical process standards to represent and use real numbers in a variety of forms. The student is expected to: (A) extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers ***Supporting Standard*** (B) 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 ***Supporting Standard*** (C) convert between standard decimal notation and scientific notation ***Supporting Standard*** (D) order a set of real numbers arising from mathematical and real-world contexts ***Readiness Standard*** **ELPS:** 1.E, 2.C, 3.D, 3.J, 4.F, 5.G
4: Pythagorean Theorem 7-9 lessons Lessons 3 and 7 are optional extension lessons addressing additional proofs of the Pythagorean Theorem and similar triangles within right triangles.	This topic explores proofs of the Pythagorean Theorem and its converse, using concrete models and algebraic representations. Students then solve real-world problems using the Pythagorean Theorem and its converse. Students also apply the Pythagorean Theorem to calculate distance between two points in the coordinate plane.	**(8.6) 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: (C) use models and diagrams to explain the Pythagorean theorem ***Supporting Standard*** **(8.7) Expressions, equations, and relationships.** The student applies mathematical process standards to use geometry to solve problems. The student is expected to: (C) use the Pythagorean Theorem and its converse to solve problems ***Readiness Standard*** (D) determine the distance between two points on a coordinate plane using the Pythagorean Theorem ***Supporting Standard*** **ELPS:** 2.E, 2.I, 3.D, 3.E, 4.F
Introduction to linear and nonlinear functions		
5: Patterns in proportional relationships 6 lessons	Students will build on their understanding of proportional relationships, rates, and unit rates in additional algebraic contexts and represent those relationships in multiple ways. Students will interpret the meaning of specific points on the graph of a proportional relationship in terms of the scenario represented. Students will write and solve simple equations to ask and answer questions involving proportional relationships.	**(7.4) Proportionality.** The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to: (B) calculate unit rates from rates in mathematical and real-world problems **Supporting Standard** (C) determine the constant of proportionality (***k*** = ***y/x***) within mathematical and real-world problems **Supporting Standard** **(7.7) Expressions, equations, and relationships.** The student applies mathematical process standards to represent linear relationships using multiple representations. The student is expected to represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form ***y*** = ***mx*** + ***b*****. Readiness Standard**

6: Analyzing graphs 0-7 lessons Depending on the level of support your students need with interpreting graphs, this topic can be optional.	This topic is designed to enable students to understand clearly what is happening on a graph and to develop their ability to interpret information from axis labels and axis scales and, depending on the information desired, a graph's direction or graph intersections.	**(8.4) Proportionality.** The student applies mathematical process standards to explain proportional and non-proportional relationships involving slope. The student is expected to: (C) use data from a ~~table or~~ graph to determine the rate of change ~~or slope~~ and y-intercept in ~~mathematical and~~ real-world problems ***Readiness Standard*** **ELPS:** 2.D, 2.F, 3.B, 3.F, 4.D, 4.E, 5.G
7: Exploring rate of change in motion problems 7 lessons	Understanding the rate at which one quantity changes with respect to another is key to understanding how the two quantities are related. In this topic, students explore the concept of rate by analyzing motion over time. Students investigate the rate at which distance changes numerically and graphically.	**(8.4) Proportionality.** The student applies mathematical process standards to explain proportional and non-proportional relationships involving slope. The student is expected to: (C) use data from a table or graph to determine the rate of change ~~or slope~~ and y-intercept in mathematical and real-world problems ***Readiness Standard*** **ELPS:** 1.B, 2.F, 3.B, 3.E, 3.H, 5.F
8: Linear patterns and functions 10 lessons	In this topic, students explore patterns through problems, using multiple representations, such as tables, graphs, models, and algebraic rules, and develop the formal definition of a function. They generate algebraic rules and make predictions based on the situations. Additionally, students connect how a function rule relates to a physical model.	**(8.4) Proportionality.** The student applies mathematical process standards to explain proportional and non-proportional relationships involving slope. The student is expected to: (C) use data from a table or graph to determine the rate of change ~~or slope~~ and y-intercept in mathematical and real-world problems ***Readiness Standard*** **(8.5) 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: (B) represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$ ***Supporting Standard*** (G) identify functions using sets of ordered pairs, tables, mappings, and graphs ***Readiness Standard*** (I) write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations ***Readiness Standard*** **ELPS:** 1.D, 2.C, 2.E, 3.F, 3.G
9: Understanding slope and y-intercept 10 lessons	This topic solidifies students' understanding of the concepts of slope and ***y***-intercept. It connects the constant rate of change of a linear function, the slope of the line that is the linear function's graph, and the slope-intercept form for the equation of a line, $y = mx + b$.	**(7.4) Proportionality.** The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to: (C) determine the constant of proportionality ($k = y/x$) within mathematical and real-world problems **Supporting Standard** **(7.7) Expressions, equations, and relationships.** The student applies mathematical process standards to represent linear relationships using multiple representations. The student is expected to represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$**. Readiness Standard** **(8.4) Proportionality.** The student applies mathematical process standards to explain proportional and non-proportional relationships involving slope. The student is expected to:

		(A) 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 ***Supporting Standard*** (B) graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship ***Readiness Standard*** (C) use data from a table or graph to determine the rate of change or slope and *y*-intercept in mathematical and real-world problems ***Readiness Standard*** **(8.5) 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: (A) represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$ ***Supporting Standard*** (B) represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$ ***Supporting Standard*** (E) solve problems involving direct variation ***Supporting Standard*** (F) distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$ ***Supporting Standard*** (H) identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems ***Supporting Standard*** (I) write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations ***Readiness Standard*** **ELPS:** 1.A, 2.F, 2.I, 4.C, 4.F **Corequisite standards:** 7.4.A, 7.4.C
10: Exploring data 13 lessons **Corequisite support** 0-2 lessons **APPENDIX:** **Representing and interpreting data**	This topic explores data that are approximately linear in scatter plots. Students graph and write equations of trend lines. Students learn characteristics of scatterplots and trend lines including the fit of a trend line to data, negative and positive associations, and outliers. They use the trend line to make predictions about the data and draw conclusions. Students also work with simulations to develop the notion that randomly sampled values are likely to be representative of the population values. Lastly, students calculate the mean absolute deviation (MAD) to quantify the spread of a data set.	**(8.5) 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: (B) represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$ ***Supporting Standard*** (C) 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 ***Supporting Standard*** (D) use a trend line that approximates the linear relationship between bivariate sets of data to make predictions ***Readiness Standard*** (I) write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations ***Readiness Standard*** **(8.11) Measurement and data.** The student applies mathematical process standards to use statistical procedures to describe data. The student is expected to:

		(A) construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data ***Supporting Standard*** (B) 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 ***Supporting Standard*** (C) 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 ***Not Assessed*** **ELPS:** 1.E, 2.C, 2.D, 2.F, 3.G, 4.C, 4.F **Corequisite standards:** 7.6.F, 7.6.G, 7.12.A, 7.12.B
Financial literacy		
11: Managing your finances 5 lessons The simple and compound interest pages of Lesson 3 can be omitted. Simple and compound interest will be more fully covered in the next topic.	In this topic, students analyze income and expenses. They calculate federal tax withholdings from typical paychecks and estimate net worth. Students also analyze household budgets and consider an hourly wage that will meet a family's basic needs in various cities. Students compare simple and compound interest earnings for savings and for incentives such as sales, clearances, coupons, and rebates for smart spending.	**(7.13) 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: (A) calculate the sales tax for a given purchase and calculate income tax for earned wages **Supporting Standard** (B) identify the components of a personal budget, including income; planned savings for college, retirement, and emergencies; taxes; and fixed and variable expenses, and calculate what percentage each category comprises of the total budget **Supporting Standard** (C) create and organize a financial assets and liabilities record and construct a net worth statement **Supporting Standard** (D) use a family budget estimator to determine the minimum household budget and average hourly wage needed for a family to meet its basic needs in the student's city or another large city nearby **Supporting Standard** (F) analyze and compare monetary incentives, including sales, rebates, and coupons **Supporting Standard**
12: Financial decision making 7 lessons	This topic presents students with opportunities to develop financial literacy related to investing and borrowing money. Students analyze financial situations, compare various savings and borrowing options, and consider financially responsible decisions. They calculate and compare simple interest and compound interest earnings and compare how interest rate and loan length affect the cost of credit. Financial technology, such as spreadsheets and financial	**(7.13) 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: (E) calculate and compare simple interest and compound interest earnings **Supporting Standard** **(8.12) 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: (A) solve real-world problems comparing how interest rate and loan length affect the cost of credit ***Supporting Standard***

	calculators (many of which are available free online or as apps for a smart phone or tablet), is an important part of this topic. It will help students analyze situations quickly and compare options to make strong financial decisions. An online financial calculator is provided within the topic.	(B) 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 ***Not Assessed*** (C) explain how small amounts of money invested regularly, including money saved for college and retirement, grow over time ***Supporting Standard*** (D) calculate and compare simple interest and compound interest earnings ***Readiness Standard*** (E) identify and explain the advantages and disadvantages of different payment methods ***Not Assessed*** (F) analyze situations to determine if they represent financially responsible decisions and identify the benefits of financial responsibility and the costs of financial irresponsibility ***Not Assessed*** (G) estimate the cost of a two-year and four-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 ***Supporting Standard*** **ELPS:** 1.F, 2.I, 3.D, 4.C
Solving linear equations, inequalities and systems of equations		
13: Equations, and inequalities 11 lessons	In this topic, students will build on their understanding of proportional relationships to include other linear relationships and linear inequalities. Students will represent linear relationships with verbal descriptions, tables, graphs, and equations. They will also broaden their understanding of algebraic expressions by applying properties of operations to solve problems with linear equations and inequalities. Throughout this topic, students will interpret their symbolic representations in relation to the contexts they are investigating.	**(7.7) Expressions, equations, and relationships.** The student applies mathematical process standards to represent linear relationships using multiple representations. The student is expected to represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form ***y*** = ***mx*** + ***b.*** **Readiness Standard** **(7.10) Expressions, equations, and relationships.** The student applies mathematical process standards to use one-variable equations and inequalities to represent situations. The student is expected to: (A) write one-variable, two-step equations and inequalities to represent constraints or conditions within problems **Supporting Standard** (B) represent solutions for one-variable, two-step equations and inequalities on number lines **Supporting Standard** (C) write a corresponding real-world problem given a one-variable, two-step equation or inequality **Supporting Standard** **(7.11) Expressions, equations, and relationships.** The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to: (A) model and solve one-variable, two-step equations and inequalities Readiness Standard (B) determine if the given value(s) make(s) one-variable, two-step equations and inequalities true **Supporting Standard**

14: Linear equations and inequalities 10 lessons	In this topic, students learn how linear equations are related to functions. The topic explores how different representations of a function lead to techniques to solve linear equations, including tables, graphs, concrete models, algebraic operations, and "undoing" (reasoning backwards). Students solve on-variable equations with variables on both sides of the equation with rational number coefficients. They also write one-variable equations and inequalities with variables on both sides. Finally, students will investigate situations in which there are no solutions or infinitely many solutions.	**(8.8) 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: (A) write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants ***Supporting Standard*** (B) 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 ***Supporting Standard*** (C) 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 ***Readiness Standard*** **(8.9) 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 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. ***Supporting Standard*** **ELPS:** 1.A, 2.I. 3.B, 4.F **Corequisite standards:** 6.10.A, 7.11.A
Geometry		
15: Exploring geometric relationships 7 lessons	This topic explores lines, transversals, and special angles associated with them. Students learn about properties of corresponding angles, alternate interior angles, and consecutive interior angles formed when parallel lines are cut by a transversal. They learn how to use angle congruence to establish that lines are parallel and explore the relationships among interior and exterior angles of a triangle.	**(8.8) 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: (D) 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~~ ***Supporting Standard*** **ELPS:** 1.A, 1.E, 2.F, 3.B, 4.D, 4.E, 4.F, 4.G, 5.B **Corequisite standards:** 7.11.C
16: Solving problems with 2D shapes 8-9 lessons Lesson 3 is optional content on estimating areas.	In this topic students investigate angle relationships, including vertical angles and use two-step equations to solve problems involving geometry concepts. Students will expand their understanding of measurement with two-dimensional shapes as they investigate the relationships among circumference, area, radius and diameter in circles. They will also develop the formulas for circumference and area of circles, and areas of special quadrilaterals. They will apply formulas to solve problems in a	**(7.5) Proportionality.** The student applies mathematical process standards to use geometry to describe or solve problems involving proportional relationships. The student is expected to: (B) describe π as the ratio of the circumference of a circle to its diameter **Supporting Standard** **(7.8) Expressions, equations, and relationships.** The student applies mathematical process standards to develop geometric relationships with volume. The student is expected to: (C) use models to determine the approximate formulas for the circumference and area of a circle and connect the models to the actual formulas **Not assessed** **(7.9) Expressions, equations, and relationships.** The student applies mathematical

	variety of contexts involving circles and polygons.	process standards to solve geometric problems. The student is expected to: (B) determine the circumference and area of circles **Readiness Standard** (C) determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles **Readiness Standard** **(7.11) Expressions, equations, and relationships.** The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to: (C) write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships **Supporting Standard**
17: Prisms, pyramids, and plane sections 7-8 lessons Lesson 7 is an optional lesson on plane sections and is not required by the standards.	This topic will extend students' understanding of volume and surface area as they work with more complex three-dimensional shapes including right prisms and pyramids. Students will develop general formulas for finding volume of rights prisms and right pyramids. Students will also investigate plane sections of right prisms and pyramids.	**(7.8) Expressions, equations, and relationships.** The student applies mathematical process standards to develop geometric relationships with volume. The student is expected to: (A) model the relationship between the volume of a rectangular prism and a rectangular pyramid having both congruent bases and heights and connect that relationship to the formulas **Not assessed** (B) explain verbally and symbolically the relationship between the volume of a triangular prism and a triangular pyramid having both congruent bases and heights and connect that relationship to the formulas **Not assessed** **(7.9) Expressions, equations, and relationships.** The student applies mathematical process standards to solve geometric problems. The student is expected to: (A) solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids **Readiness Standard** (D) 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 **Supporting Standard** **(7.11) Expressions, equations, and relationships.** The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to: (C) write and solve equations using geometry concepts~~, including the sum of the angles in a triangle, and angle relationships~~ **Supporting Standard**
18: Cylinders, cones, and spheres 6-7 lessons Lesson 5 can be used as an optional extension lesson.	This topic builds on students' work with surface area of prisms to develop formulas for the surface area of cylinders and volume of three-dimensional shapes with curved surfaces, including cylinders, cones, and spheres. By connecting models of these figures to the derivation of these formulas, students deepen their understanding of three-dimensional shapes, and the relationships among these shapes.	**(8.6) 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: (A) describe the volume formula ***V*** = ***Bh*** of a cylinder in terms of its base area and its height ***Supporting Standard*** (B) 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 ***Not Assessed*** **(8.7) Expressions, equations, and relationships.** The student applies mathematical process standards to use geometry to solve problems. The student is expected to:

		(A) solve problems involving the volume of cylinders, cones, and spheres ***Readiness Standard*** (B) 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 ***Readiness Standard*** **ELPS:** 1.A, 1.E, 2.C, 3.E, 3.H **Corequisite standards:** 7.8.A, 7.8.B, 7.8.C, 7.9.A, 7.9.B, 7.9.D
19: Effects of change 5-7 lessons Lessons 5 and 6 are optional extension lessons on changes to surface area and volume.	In this topic, students explore the effects of proportional change on perimeters and areas of two-dimensional figures and on surface areas and volumes of three-dimensional figures. Students also use estimation to solve problems involving volume and surface area.	**(8.10) Two-dimensional shapes.** The student applies mathematical process standards to develop transformational geometry concepts. The student is expected to: (D) model the effect on linear and area measurements of dilated two-dimensional shapes ***Supporting Standard*** **ELPS:** 1.A, 1.F, 3.C, 4.F, 4.G
20: Probability 0-14 lessons If this topic was taught in Advanced Math 6, omit in Advanced Math 7.	In this topic, students investigate simple and compound events using proportional reasoning through several different models. Games of a probabilistic nature are developed as tools to test conjectures and the idea of fairness. Vocabulary and appropriate terminology are emphasized throughout the topic.	**(7.6) Proportionality.** The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to: (A) represent sample spaces for simple and compound events using lists and tree diagrams **Supporting Standard** (B) select and use different simulations to represent simple and compound events with and without technology **Not assessed** (C) make predictions and determine solutions using experimental data for simple and compound events **Supporting Standard** (D) make predictions and determine solutions using theoretical probability for simple and compound events **Supporting Standard** (E) find the probabilities of a simple event and its complement and describe the relationship between the two **Supporting Standard** (H) solve problems using qualitative and quantitative predictions and comparisons from simple experiments **Readiness Standard** (I) determine experimental and theoretical probabilities related to simple and compound events using data and sample spaces **Readiness Standard** **ELPS:** 2.C, 2.F, 3.D, 3.E, 3.F, 3.H

APPENDIX: Key Learning from Earlier Grades

The topics in this section provide support for key learning and skills from earlier grades that students may need to be successful with concepts in this course. We have provided this set of lessons and problem-solving resources that can be used for differentiated practice and review. Specific guidance on how to use these topics is provided in the accompanying co-requisite guide, however, teachers may choose to use these topics in the way that serves their students best. Teachers may choose to assign these resources to students for independent review and practice, or they may choose to use them in facilitating small-group instruction.

Agile Mind Topics	Topic Descriptions	Texas Essential Knowledge and Skills for Mathematics • Standards in black are the primary instructional focus of the topic. • Standards in gray support topic content or indicate foundations for future work.
Solidifying your skills with rational numbers	In this topic, students can review and strengthen their fluency with rational number operations as they work with positive whole numbers, decimals, and fractions. This topic also contains resources for review of signed number operations.	**(6.3) Number and operations.** The student applies mathematical process standards to represent addition, subtraction, multiplication, and division while solving problems and justifying solutions. The student is expected to: (D) add, subtract, multiply, and divide integers fluently; and multiply and divide positive rational numbers fluently (E) multiply and divide positive rational numbers fluently **(7.3) Number and operations.** The student applies mathematical process standards to add, subtract, multiply, and divide while solving problems and justifying solutions. The student is expected to: (A) add, subtract, multiply, and divide rational numbers fluently (B) apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers
Solidifying your skills with equations	In this topic, students can review and strengthen their fluency with solving one-step and two-step linear equations to ensure that they move to high school with well-developed equation solving skills.	**(6.10) Expressions, equations, and relationships.** The student applies mathematical process standards to use equations and inequalities to solve problems. The student is expected to: (A) model and solve one-variable, one-step equations ~~and inequalities that represent problems, including geometric concepts~~ **(7.11) Expressions, equations, and relationships.** The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to: (A) model and solve one-variable, two-step equations ~~and inequalities~~
Representing and interpreting data	This topic explores visual representations of data, including stem-and-leaf plots, box-and-whisker plots, histograms, bar graphs, circle graphs and dot plots. Students understand a variety of sampling methods and the benefits of each. Students learn that representations can be used to organize data, to compare data sets, and to express an opinion and imply conclusions. Students use data and	**(7.6) Proportionality.** The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to: (F) use data from a random sample to make inferences about a population **Supporting Standard** (G) solve problems using data represented in bar graphs, dot plots, and circle graphs, including part-to-whole and part-to-part comparisons and equivalents **Readiness Standard** (H) solve problems using qualitative and quantitative predictions and comparisons from simple experiments **Readiness Standard** **(7.12) Measurement and data.** The student applies mathematical process standards to use statistical representations to analyze data. The student is expected to:

	representations of data to investigate measures of center and variability. They see that representations can be manipulated and learn to carefully analyze the information contained in a graph.	(A) compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads **Readiness Standard** (B) use data from a random sample to make inferences about a population **Supporting Standard** (C) compare two populations based on data in random samples from these populations, including informal comparative inferences about differences between the two populations **Supporting Standard**
Rational numbers	This topic builds on students' prior work with applying properties of operations to solve problems with positive fractions and decimals, and with integers. Students will solve real- world and mathematical problems involving the four operations with positive and negative rational numbers including negative fractions and decimals. Students are given multiple opportunities to practice these skills and build their numerically fluency using these operations. Students will continue to strengthen fluency with rational numbers in future topics.	**(7.2) Number and operations.** The student is expected to extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers. **Supporting Standard** **(7.3) Number and operations.** The student applies mathematical process standards to add, subtract, multiply, and divide while solving problems and justifying solutions. The student is expected to: (A) add, subtract, multiply, and divide rational numbers fluently **Supporting Standard** (B) apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers **Readiness Standard** **(7.4) Proportionality.** The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to: (B) calculate unit rates from rates in mathematical and real-world problems **Supporting Standard** (E) convert between measurement systems, including the use of proportions and the use of unit rates **Supporting Standard** **ELPS:** 1.A, 2.E, 2.F, 3.B, 3.D, 3.J, 4.C, 4.F
Applications of percents	This topic investigates the various uses of percent in solving real-world problems. Applications include gratuities, commissions, fees, percent error, discount, markup, increases and decreases in value, and simple interest.	**(7.3) Number and operations.** The student applies mathematical process standards to add, subtract, multiply, and divide while solving problems and justifying solutions. The student is expected to: (B) apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers **Readiness Standard** **(7.4) Proportionality.** The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to: (D) solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems **Readiness Standard**

		(7.13) 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: (A) calculate the sales tax for a given purchase and calculate income tax for earned wages **Supporting Standard** (F) analyze and compare monetary incentives, including sales, rebates, and coupons **Supporting Standard** **ELPS:** 2.C, 2.I, 3.B, 3.C, 3.G, 3.J **Corequisite standards: 6.5.A, 6.5.B, 6.9.A, 6,9.B**