

High School—SREB Math Ready

The Southern Region Education Board (SREB) Math Ready Course, a one-credit course, is designed to assist students who are in need of a fourth year mathematics preparatory course prior to entering college. This course is best suited for students who have not mastered skills needed for Advanced Placement courses. The course is built with rigor, innovative instructional strategies, and a concentration on contextual learning that departs from procedural memorization and focuses on engaging the students in a real-world context. In short, this course targets students with weaknesses and college-ready skill gaps and re-educates them in new ways to ensure they are prepared for postsecondary-level mathematics.

The Math Ready course focuses on the key readiness standards from the *MS CCRS*, as well as, the eight Standards for Mathematical Practice needed for students to be ready to undertake postsecondary academic or career preparation in non-STEM fields or majors. The course addresses content standards taught throughout high school, including content from Algebra I, Geometry, and Algebra II that are essential for college and careers.

The SREB Math Ready Course consists of seven mandatory modules (or units): algebraic expressions, equations, measurement and proportional reasoning, linear functions, linear systems of equations, quadratic functions, exponential functions, and an optional module on summarizing and interpreting statistical data. While this course covers the basics in math practices and reviews the procedural steps needed to be successful in math, it is designed to be taught in a new, engaging way based heavily on conceptual teaching and learning. Eight units comprise this course. They are described below.

Unit 1: Algebraic Expressions

The algebraic expressions unit was designed to solidify student understanding of expressions while providing the students with an opportunity to have success early in the course. The recurring theme integrated in this unit focuses on engaging students using and expanding the concepts found within purposefully chosen activities. Through guided lessons, students will manipulate, create and analyze algebraic expressions, and look at the idea of whether different sets of numbers are closed under certain operations.

Unit 2: Equations

The equations unit calls for students to construct and evaluate problems that involve one or two steps while seeking understanding of how and why equations and inequalities are used in their daily lives. Students also use the structure of word problems and equations to rewrite and solve equations in different forms revealing different relationships.

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Unit 3: Measurement and Proportional Reasoning

This unit deals with unit conversions, using proportions for scaling, and area and volume. The unit requires higher-order thinking and number sense in order to get to the true intent of the standards covered. It is useful in helping students make connections with math and science or other subjects.

Unit 4: Linear Functions

This unit takes students back to the foundation of all high school mathematics—an in-depth study of linear functions. Along with allowing students to differentiate between relations that are functions and those that are not, the unit helps students specifically examine characteristics of linear functions. By looking closely at linear functions in multiple forms, students are expected to graph and write equations, as well as interpret their meaning in context of the slope and y-intercept. Students conclude with a project allowing them to collect their own data and write a line of best fit from that data.

Unit 5: Linear Systems of Equations

The systems unit deals with solving systems of linear equations. This involves helping students classify solutions (one, none or infinitely many), as well as set up and solve problems using systems of equations. Students also choose the best way to solve a system of equations and explain their solutions.

Unit 6: Quadratic Functions

This unit is an expansive look at quadratic functions: their graphs, tables and algebraic functions. It stresses multiple approaches to graphing, solving and understanding quadratics, as students explore, make conjectures and draw conclusions in group-work settings. In this unit, students explore and learn from multiple applications of quadratics. The unit assumes students have seen quadratics before but may not have a concrete, transferrable understanding of quadratic functions. The unit does not cover algebraic manipulations (multiplying and factoring), as these are addressed in previous units.

Unit 7: Exponential Functions

This unit develops students' fluency in exponential functions through varying real-life financial applications/inquiries.

Unit 8: Summarizing and Interpreting Statistical Data (optional)

In this unit, students further develop skills to read, analyze, and communicate (using words, tables, and graphs) relationships and patterns found in data sets of one or more variables. Students learn how to choose the appropriate statistical tools and measurements to assist in analysis, communicate results, and read and interpret graphs, measurements, and formulas which are crucial skills in a world overflowing with data. Students explore these concepts while modeling real contexts based on data they collect.

School districts that are interested in offering this course should visit http://www.sreb.org/page/1684/math_ready.html to review and download course materials.