Sacramento City Unified School District

Updated 2024

Mathematics Course Placement Guidelines for Middle Schools and High Schools

This document outlines the progression of mathematics courses offered in middle schools and high schools in SCUSD, placement guidelines for entering into our accelerated/advanced math courses, and placement recommendations for out-of-district transfer students.

For questions or assistance, contact:

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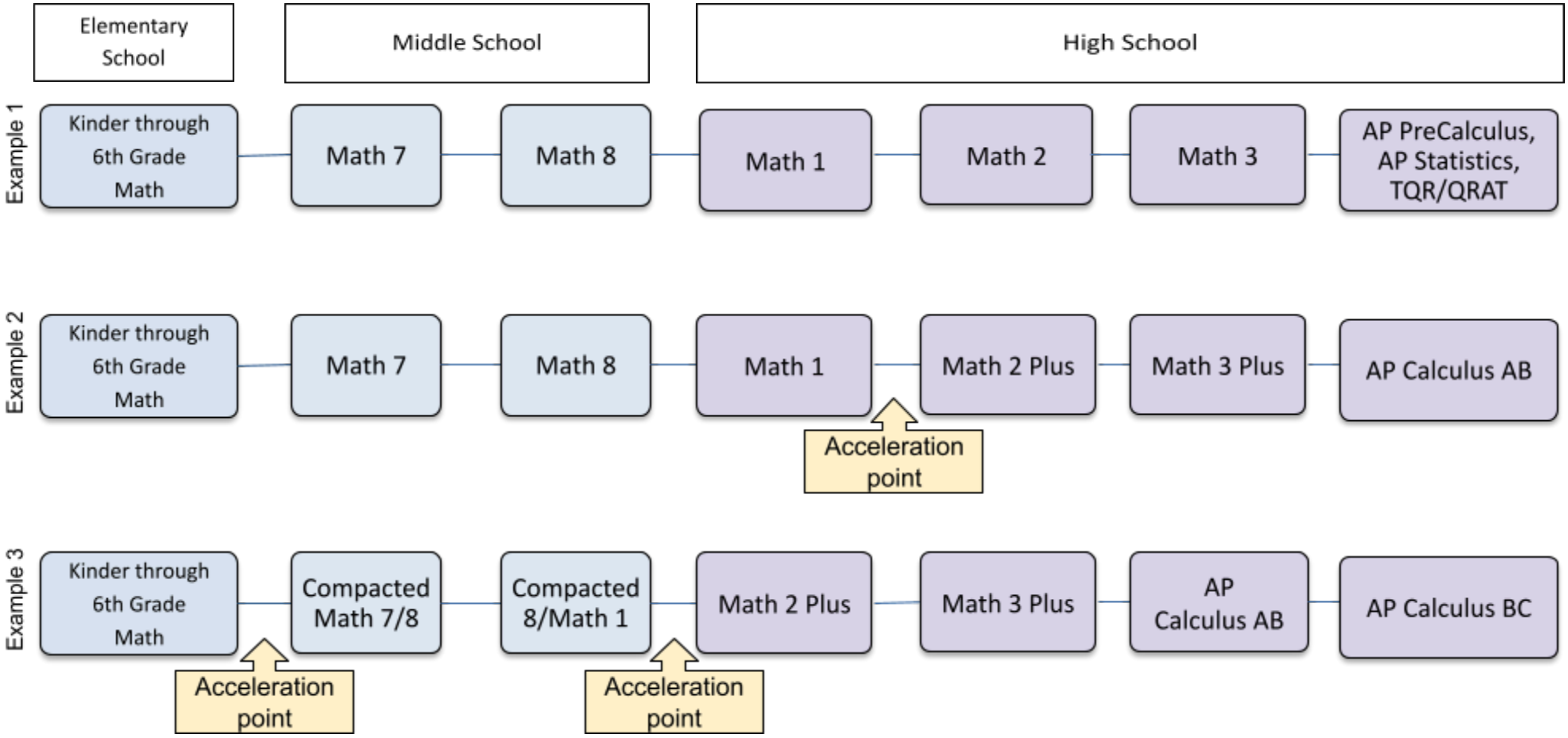
Overview

The California Common Core State Standards for Mathematics (CA CCSS-M) ensure all students are ready for success after high school by establishing clear, consistent guidelines for what every student should know and be able to do from kindergarten through 12th grade. The standards outline the knowledge, skills, and behavioral expectations that are necessary for students to be college and career ready upon high school graduation, with each grade-level's standards building upon the previous grade-level.

SCUSD has created opportunities for placement into accelerated/advanced courses at 2 "decision points" within the regular course progression from kindergarten through high school. ***Below are 3 examples of common course progressions.***



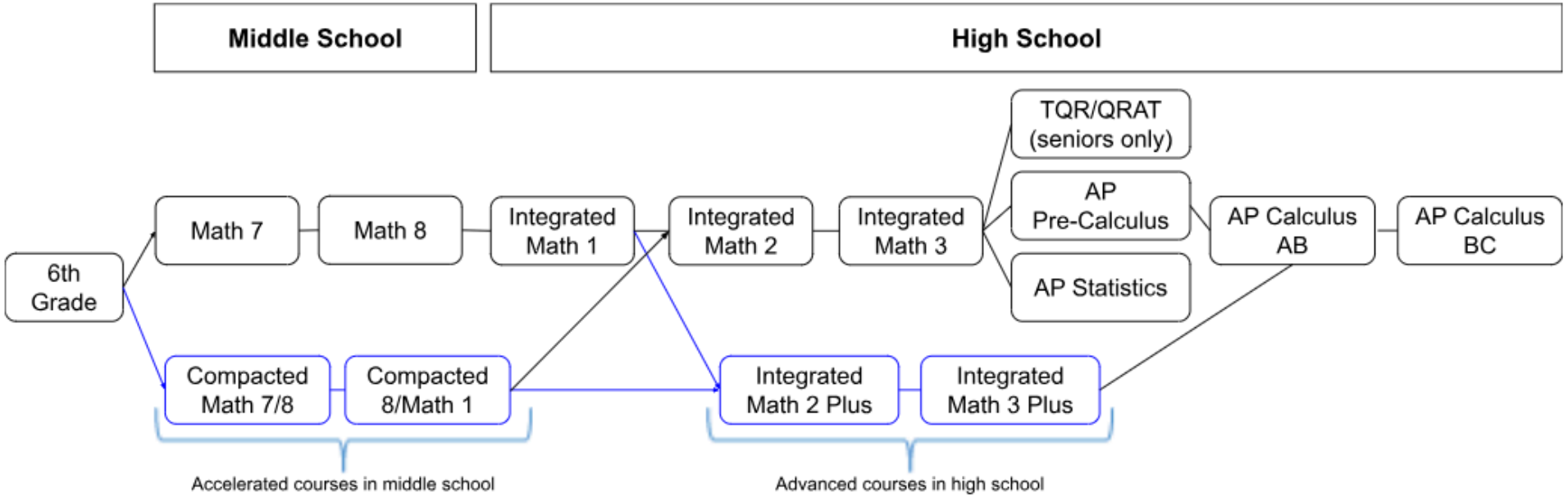
All students in SCUSD have the opportunity to take accelerated/advanced mathematics courses, at either or both decision points.
The first decision point comes after 6th grade as students enter middle school and the second decision point comes after students have completed Math 1 (in either middle school or high school).

District-wide placement criteria have been established for both decision points in order to determine the most appropriate course for students.
See Placement Guidelines for Entering Compacted Math 7/8 and Placement Guidelines for Entering Math 2 Plus

Students can advance in middle school by compacting 3 years of math (Grade 7, Grade 8, and Integrated Math 1) into 2 years.

Students can advance in high school by taking Math 2 Plus and Math 3 Plus, which include the Pre-Calculus standards embedded over both years. Students who are successful in Math 2 Plus and Math 3 Plus will be prepared to take AP Calculus AB the following year.

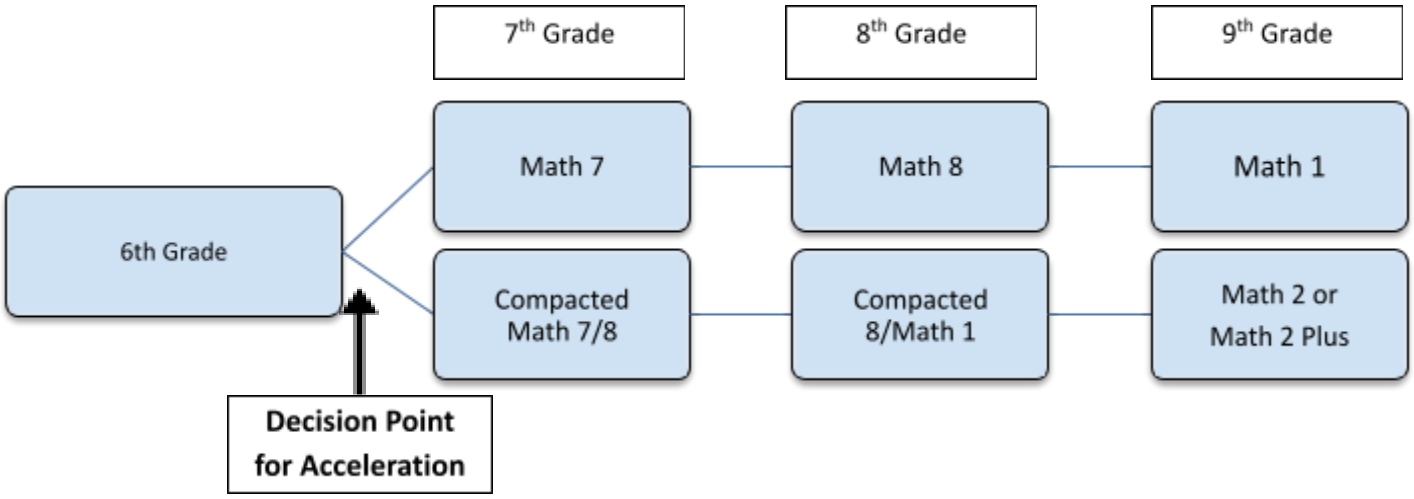
SCUSD Secondary Course Progression



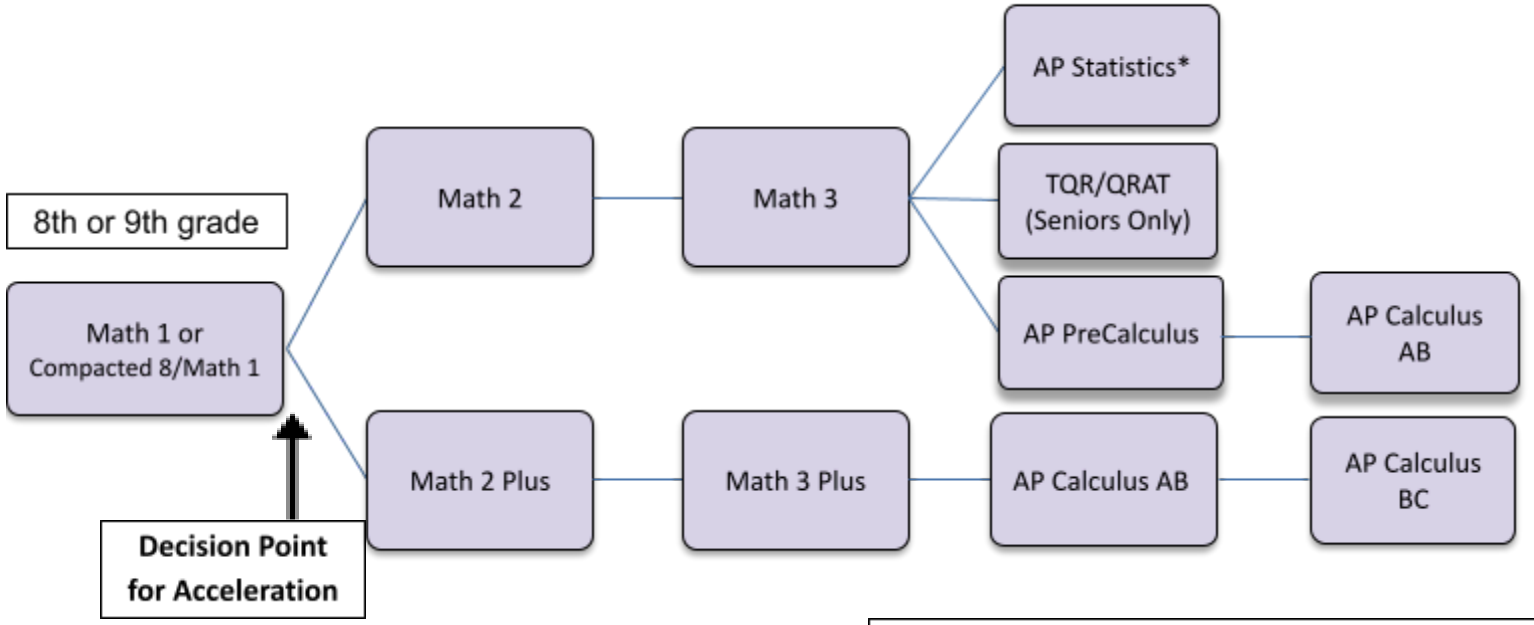
TQR is the Transition to Quantitative Reasoning *elective course*, designed for seniors who have successfully passed Math 1 – Math 3 and who are not prepared to take Pre-Calculus during their senior year. **QRAT** is the Quantitative Reasoning with Advanced Topics course (A-G approved *math course*), designed for seniors who have successfully passed Math 1 – Math 3 and who are not necessarily prepared or interested in taking Pre-Calculus during their senior year. Both TQR and QRAT focus on problem solving, patterns, writing in mathematics, and preparing students for college-level math courses.

AP Statistics may follow *any* course that is Math 3 or higher.

Flow Chart: Middle School Course Progression



Flow Chart: High School Course Progression



*AP Statistics may follow any course that is Math 3 or higher.

High School Mathematics Graduation Requirements for SCUSD

To graduate high school in SCUSD, students must take 2 years of mathematics courses in high school (grades 9 – 12), consisting of Integrated Math 1 and Integrated Math 2. *See college entrance and graduation requirements here*.

SCUSD only offers courses from the Integrated Pathway (Math 1, Math 2, Math 3), though students who transfer to SCUSD from out-of-district may have taken mathematics courses from the Traditional Pathway (Algebra 1, Geometry, Algebra 2).

For students who have taken a **combination** of Traditional Pathway courses (Algebra 1, Geometry, Algebra 2) and Integrated Pathway courses (Math 1, Math 2, Math 3), they must have the following courses in order to graduate:

Year 1* Math Course	**Year 2*** Math Course	Does this count as **2 years of math** towards HS graduation? (Yes/No)
Algebra 1	Math 1	No
Algebra 1	Math 2	Yes
Geometry	Math 1	Yes
Geometry	Math 2	Yes
Math 2	Algebra 2	Yes
Math 3	Algebra 2	Yes
Math 3 or Algebra 2	Any course *above* Math 3 (e.g. Pre-Calculus, IB Math, AP Calculus, Statistics)	Yes

**Or vice versa*

High School Transfer Students from Out-of-District

For students who transfer to SCUSD from outside the district and have taken mathematics courses from the Traditional Pathway (Algebra 1, Geometry, Algebra 2), consult the chart below for placement recommendations.

Mid-Year Transfer Students			
At his/her previous high school, student was enrolled in:	Recommended Placement in SCUSD	To confirm placement, consult:	Other Options (if recommended placement is unsuccessful)
Algebra 1	Math 1	Math 1 Readiness Assessment*; Teacher/student/parent recommendation	
Geometry	Math 2	Math 2 Readiness Assessment; Teacher/student/parent recommendation	Math 1
Algebra 2	Math 3	Math 3 Readiness Assessment; Teacher/student/parent recommendation	Math 2 or Math 2 Plus

Beginning of the Year Transfer Students			
At his/her previous high school, student *passed:*	Recommended Placement in SCUSD	To confirm placement, consult:	Other Options (if recommended placement is unsuccessful)
Algebra 1	Math 2	Math 2 Readiness Assessment; Teacher/student/parent recommendation	Math 1 (*Note:* this will not count as 2nd year math course towards graduation)
Geometry	Math 3	Math 3 Readiness Assessment; Teacher/student/parent recommendation	Math 2
Algebra 2	Pre-Calculus, TQR/QRAT (seniors only), or other available option	Consult placement criteria for TQR and QRAT; Teacher/student/parent recommendation	Math 3

*Students may take the MDTP Readiness Assessment through Illuminate. Contact Suzie-Craig@scusd.edu for assistance.

Parent Guides for MS Mathematics Courses

Click the images below to access Parent Guides for each course, which outlines essential learning and guidance for supporting students at home.

Parent Guide for Grade 7 Mathematics

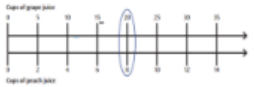
Major Learning Targets for This Course

Ratios and Proportional Relationships		
Students will understand and analyze proportional relationships and use them to solve problems.		
"I can recognize a situation that describes a proportional relationship."	"I can use proportional reasoning to solve problems."	"I can use different visual representations to solve problems about proportions."

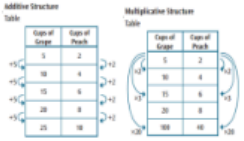
Example Task:
Situation: A juice mixture calls for 5 cups of grape juice for every 2 cups of peach juice.
How much peach juice would you need to add to 20 cups of grape juice?
Does your answer make sense? How do you know?

Use Tape Diagrams

Use a Double Number Line



Use a Table



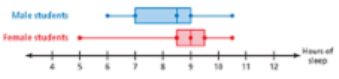
Expressions and Equations		
Students will write expressions and equations in one variable and use these equations to solve problems.		
"I can use variables to represent quantities in a real-world or mathematical problem."	"I can write equations and inequalities to solve problems."	"I can use different visual representations to solve equations."

$52.50			
p	p	p	$11.25

Example Task:
The youth group is going on a trip to the state fair. The trip costs $52.50 per student. Included in that price is $11.25 for a concert ticket and the cost of 3 passes, 2 for rides and 1 for game booths. Each of the passes costs the same price.
Write an equation representing the cost of the trip, and determine the price of 1 pass.

Statistics		
Students will make inferences about populations based on samples and develop, use, and evaluate probability models.		
"I understand that we can use data from a representative sample of a population to make predictions."	"I can use median, mean, interquartile range, and mean absolute deviation to infer about comparisons of two populations."	"I can use organized lists, tables, tree diagrams, and simulations to find probabilities of compound events."

Example Task:



Given the distributions shown, what inferences can be made about the amount of sleep that students are getting each night? Use measures of center and variability to support your conclusions.

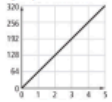
Parent Guide for Grade 8 Math

Major Learning Targets for This Course

Functions		
Students will define, evaluate and compare functions and will use functions to model relationships.		
"I understand that a function is a rule that assigns exactly one output to each input."	*"I can compare functions represented in different ways."*	"I can use a function to model a linear relationship between two quantities."

Example Task:
Which function below has the greatest rate of change? Which one has the greatest initial value? Explain how you know.

Function 1:
The function represented by the graph shown.



Function 2:
The function whose input and output are related by the equation $y = 40x + 70$.

Function 3:
The function which produced the table below.

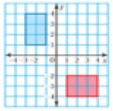
x	y
0	50
10	150
20	250
30	350

Expressions and Equations		
Students will understand the connection between proportional relationships, lines, and linear equations and they will solve linear equations and systems of linear equations.		
"I can graph proportional relationships and interpret unit rate as the slope of the graph."	"I can recognize whether a linear equation has one solution, infinitely many solutions, or no solutions."	"I can solve systems of linear equations and approximate solutions by graphing."

Example Task:
Suppose you know that the cost of 3 gift cards and 4 movie tickets is $168, while 2 gift cards and 3 movie tickets cost $116.
1. Explain how to use this information to find the cost of 1 gift card and 1 movie ticket.
2. Next, explain how you could find the cost of 1 movie ticket.
3. Explain how you would find the cost of 1 gift card.

Geometry		
Students will use physical models, transparencies, or technology to understand congruence and similarity of figures.		
"I can use tools to rotate, reflect, translate, and dilate figures in the coordinate plane."	"I can determine whether two figures are congruent or not."	"I can use coordinates to describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures."

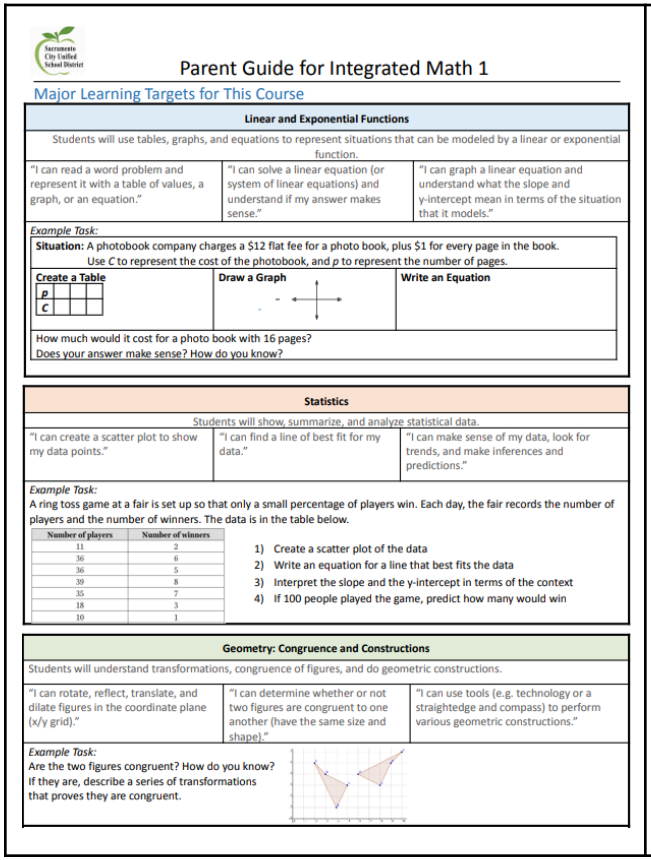
Example Task:



Are the two figures congruent?
How do you know?
If they are, describe a sequence of transformations that shows the congruence.

Parent Guides for HS Mathematics Courses

Click the images below to access Parent Guides for each course, which outlines essential learning and guidance for supporting students at home.



Parent Guide for Integrated Math 1

Major Learning Targets for This Course

Linear and Exponential Functions

Students will use tables, graphs, and equations to represent situations that can be modeled by a linear or exponential function.

"I can read a word problem and represent it with a table of values, a graph, or an equation."	"I can solve a linear equation (or system of linear equations) and understand if my answer makes sense."	"I can graph a linear equation and understand what the slope and y-intercept mean in terms of the situation that it models."

Example Task:

Situation: A photobook company charges a $12 flat fee for a photo book, plus $1 for every page in the book. Use *C* to represent the cost of the photobook, and *p* to represent the number of pages.

Create a Table	Draw a Graph	Write an Equation
p | C		

How much would it cost for a photo book with 16 pages?
Does your answer make sense? How do you know?

Statistics

Students will show, summarize, and analyze statistical data.

"I can create a scatter plot to show my data points."	"I can find a line of best fit for my data."	"I can make sense of my data, look for trends, and make inferences and predictions."

Example Task:

A ring toss game at a fair is set up so that only a small percentage of players win. Each day, the fair records the number of players and the number of winners. The data is in the table below.

Number of players	Number of winners
11	2
36	6
36	5
39	8
35	7
18	3
10	1

1) Create a scatter plot of the data
2) Write an equation for a line that best fits the data
3) Interpret the slope and the y-intercept in terms of the context
4) If 100 people played the game, predict how many would win

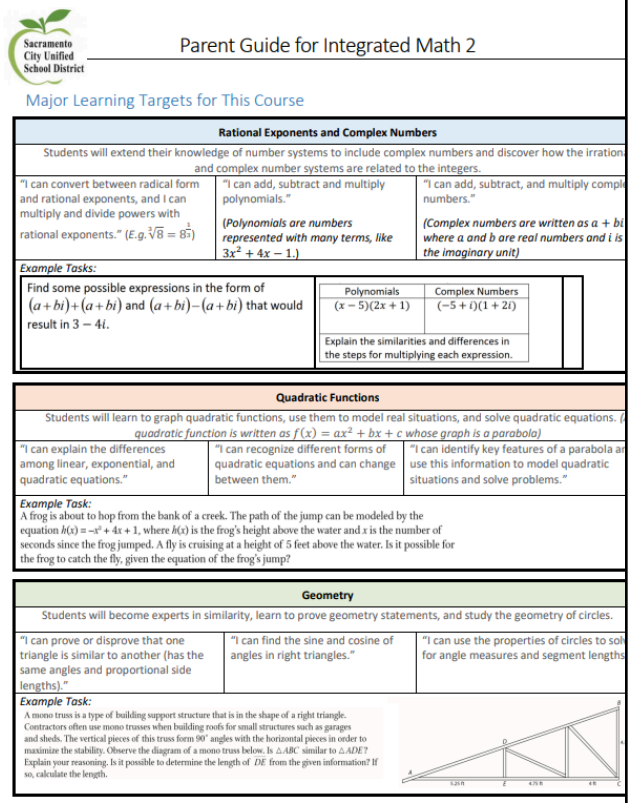
Geometry: Congruence and Constructions

Students will understand transformations, congruence of figures, and do geometric constructions.

"I can rotate, reflect, translate, and dilate figures in the coordinate plane (x/y grid)."	"I can determine whether or not two figures are congruent to one another (have the same size and shape)."	"I can use tools (e.g. technology or a straightedge and compass) to perform various geometric constructions."

Example Task:

Are the two figures congruent? How do you know? If they are, describe a series of transformations that proves they are congruent.



Parent Guide for Integrated Math 2

Major Learning Targets for This Course

Rational Exponents and Complex Numbers

Students will extend their knowledge of number systems to include complex numbers and discover how the irration and complex number systems are related to the integers.

"I can convert between radical form and rational exponents, and I can multiply and divide powers with rational exponents." ($E.g. \sqrt[3]{8} = 8^{\frac{1}{3}}$)	"I can add, subtract and multiply polynomials." *(Polynomials are numbers represented with many terms, like $3x^2 + 4x - 1$.)*	"I can add, subtract, and multiply compl numbers." *(Complex numbers are written as $a + bi$ where a and b are real numbers and i is the imaginary unit)*

Example Tasks:

Find some possible expressions in the form of $(a+bi)+(a+bi)$ and $(a+bi)-(a+bi)$ that would result in $3-4i$.

Polynomials	Complex Numbers
$(x-5)(2x+1)$	$(-5+i)(1+2i)$
Explain the similarities and differences in the steps for multiplying each expression.	

Quadratic Functions

Students will learn to graph quadratic functions, use them to model real situations, and solve quadratic equations. *(A quadratic function is written as $f(x) = ax^2 + bx + c$ whose graph is a parabola)*

"I can explain the differences among linear, exponential, and quadratic equations."	"I can recognize different forms of quadratic equations and can change between them."	"I can identify key features of a parabola a use this information to model quadratic situations and solve problems."

Example Task:

A frog is about to hop from the bank of a creek. The path of the jump can be modeled by the equation $h(x) = -x^2 + 4x + 1$, where $h(x)$ is the frog's height above the water and x is the number of seconds since the frog jumped. A fly is cruising at a height of 5 feet above the water. Is it possible for the frog to catch the fly, given the equation of the frog's jump?

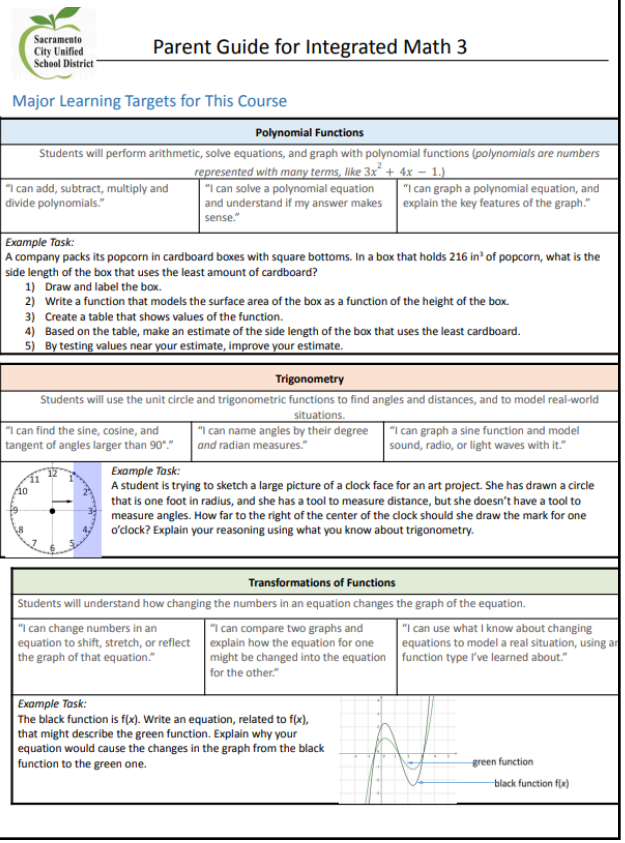
Geometry

Students will become experts in similarity, learn to prove geometry statements, and study the geometry of circles.

"I can prove or disprove that one triangle is similar to another (has the same angles and proportional side lengths)."	"I can find the sine and cosine of angles in right triangles."	"I can use the properties of circles to sol for angle measures and segment lengths

Example Task:

A mono truss is a type of building support structure that is in the shape of a right triangle. Contractors often use mono trusses when building roofs for small structures such as garages and sheds. The vertical pieces of this truss form 90° angles with the horizontal pieces in order to maximize the stability. Observe the diagram of a mono truss below. Is $\triangle ABC$ similar to $\triangle ADE$? Explain your reasoning. Is it possible to determine the length of DE from the given information? If so, calculate the length.



Parent Guide for Integrated Math 3

Major Learning Targets for This Course

Polynomial Functions

Students will perform arithmetic, solve equations, and graph with polynomial functions (*polynomials are numbers represented with many terms, like $3x^2 + 4x - 1$.*)

"I can add, subtract, multiply and divide polynomials."	"I can solve a polynomial equation and understand if my answer makes sense."	"I can graph a polynomial equation, and explain the key features of the graph."

Example Task:

A company packs its popcorn in cardboard boxes with square bottoms. In a box that holds 216 in^3 of popcorn, what is the side length of the box that uses the least amount of cardboard?

1) Draw and label the box.
2) Write a function that models the surface area of the box as a function of the height of the box.
3) Create a table that shows values of the function.
4) Based on the table, make an estimate of the side length of the box that uses the least cardboard.
5) By testing values near your estimate, improve your estimate.

Trigonometry

Students will use the unit circle and trigonometric functions to find angles and distances, and to model real-world situations.

"I can find the sine, cosine, and tangent of angles larger than 90°."	"I can name angles by their degree *and* radian measures."	"I can graph a sine function and model sound, radio, or light waves with it."

Example Task:

A student is trying to sketch a large picture of a clock face for an art project. She has drawn a circle that is one foot in radius, and she has a tool to measure distance, but she doesn't have a tool to measure angles. How far to the right of the center of the clock should she draw the mark for one o'clock? Explain your reasoning using what you know about trigonometry.

Transformations of Functions

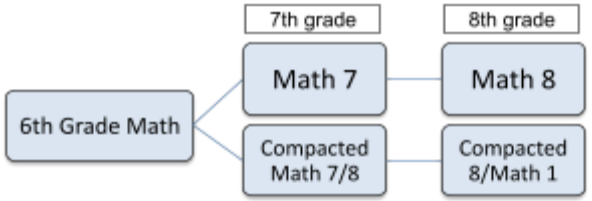
Students will understand how changing the numbers in an equation changes the graph of the equation.

"I can change numbers in an equation to shift, stretch, or reflect the graph of that equation."	"I can compare two graphs and explain how the equation for one might be changed into the equation for the other."	"I can use what I know about changing equations to model a real situation, using ar function type I've learned about."

Example Task:

The black function is f(*x*). Write an equation, related to f(*x*), that might describe the green function. Explain why your equation would cause the changes in the graph from the black function to the green one.

Middle School Mathematics Courses



Math 7

Grade Level: 7
Course Code: MAM007
In grade seven, instructional time is focused in four critical areas:

1. Understanding and applying proportional relationships.
2. Operations with rational numbers and working with expressions and linear equations.
3. Solving problems involving scale drawings, informal geometric constructions, and working with two- and three-dimensional shapes.
4. Drawing inferences about populations based on samples.

Standards: Grade 7 CA Standards
Textbook: *Big Ideas Math Course 2*
Prerequisites: Completion of 6th grade math
Placement options for the *following* academic year: Math 8

The majority of students in 7th grade take Math 7. Students who do not qualify for Compacted Math 7/8 will take Math 7.

Compacted Math 7/8

accelerated math course

Grade Level: 7
Course Code: MAM078
This course compacts all of the standards in grade 7 with approximately half of the grade 8 standards into one school year. Instructional time is focused in six critical areas:

1. Understanding and applying proportional relationships.
2. Operations with rational numbers and working with expressions and linear equations.
3. Formulating and reasoning about expressions and equations, including solving linear equations and systems of linear equations.
4. Solving problems involving scale drawings, informal geometric constructions, and working with two- and three-dimensional shapes.
5. Drawing inferences about populations based on samples.
6. Understanding and applying the Pythagorean Theorem.

Standards: All of Grade 7 CA Standards and about half of Grade 8 CA Standards
Textbooks: *Big Ideas Math Course 2* and *Big Ideas Math Course 3*
Prerequisites: Student placement will be determined at the district level by a combination of:

- Report card scores in 6th grade math
- 6th Grade Placement Assessment scores (multiple choice and open-ended tasks)
- Optional recommendation form

Placement options for the *following* academic year: Compacted 8/Math 1 (recommended). Students who received a D or F in Compacted Math 7/8 may be recommended to take Math 8 the following year, following a conversation with the student, parent, teacher, and counselor..

About 17% of students district-wide qualify for Compacted Math 7/8.
See specific Placement Guidelines for Entering Compacted Math 7/8.

Math 8

Grade Level: 8
Course Code: MAM008
In grade eight, instructional time is focused in 3 critical areas:

1. Formulating and reasoning about expressions and equations, including modeling an association in bivariate data with a linear equation, as well as solving linear equations and systems of linear equations
2. Grasping the concept of a function and using functions to describe quantitative relationships
3. Analyzing two- and three-dimensional space and figures using distance, angle, similarity, and congruence, and understanding and applying the Pythagorean Theorem.

Standards: Grade 8 CA Standards
Textbook: *Big Ideas Math Course 2*
Prerequisites: Completion of 6th grade math
Placement options for the *following* academic year: Math 8

The majority of students in 7th grade take Math 7. Students who do not qualify for Compacted Math 7/8 will take Math 7.

Compacted 8/Math 1

accelerated math course

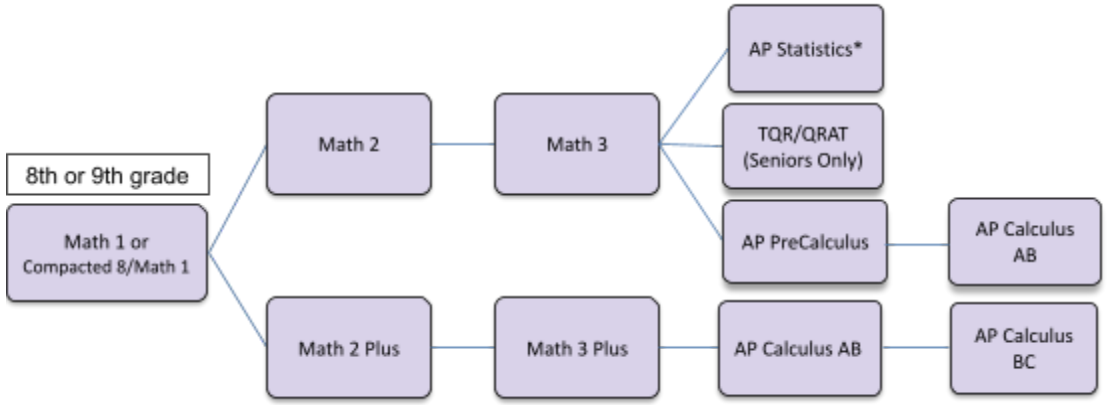
Grade Level: 8
Course Code: MAM811
Integrated Math 1 is typically a 9th grade course. In Compacted 8/Math 1, students learn all of the Math 1 standards and the remainder of 8th grade standards that were not taught in Math 7/8.. Instructional time is focused in six critical areas:

1. Extend understanding of numerical manipulation to algebraic manipulation
2. Synthesize understanding of functions.
3. Deepen and extend understanding of linear relationships.
4. Apply linear models to data that exhibit a linear trend.
5. Establish criteria for congruence based on rigid motions.
6. Apply the Pythagorean Theorem to the coordinate plane.

Standards: All of Integrated Math 1 CA Standards and the remainder of Grade 8 CA Standards
Textbooks: *Big Ideas Math Course 3* and *Walch Integrated Math 1*
Prerequisites: Successful completion of Compacted Math 7/8.
Placement options for the *following* academic year: Integrated Math 2 or Integrated Math 2 Plus.

The majority of students who take Compacted 8/Math 1 progress to Integrated Math 2 Plus in 9th grade.
See specific Placement Guidelines for Entering Math 2 Plus

High School Mathematics Courses



2 years of math in high school are required for graduation from SCUSD. To be admitted to most 4-year universities (including CSU and UC schools), students must take at least 3 years of math in high school, and 4 years is recommended.

Integrated Math 1 (IM 1)

Grade Level: 9
Course Codes: MIS101/MIS102 (GenEd), MIS 103/104 (ELD), ZIS 131/132 (SpEd)
Integrated Math 1 is the starting point for high school mathematics. Though some students may take this course in 8th grade via "Compacted 8/Math 1", this is traditionally a 9th grade course. Instructional time is focused in six critical areas:

1. Extend understanding of numerical manipulation to algebraic manipulation
2. Synthesize understanding of functions.
3. Deepen and extend understanding of linear relationships.
4. Apply linear models to data that exhibit a linear trend.
5. Establish criteria for congruence based on rigid motions.
6. Apply the Pythagorean Theorem to the coordinate plane.

Standards: Integrated Math 1 CA Standards
Textbook: *Walch Integrated Math 1*
Prerequisites: Completion of 7th and 8th grade math
Placement options for the *following* academic year: Math 2 or Math 2 Plus (advanced course)

The majority of students in 9th grade take Integrated Math 1.
Students will take the Math 1 End-of-Course Exam towards the end of the school year. Scores from this assessment, along with report card grades and an optional recommendation form, will inform placement decisions for the following year.

Integrated Math 2

Grade Levels: 9, 10
Course Codes: MIS201/MIS202 (GenEd), MIS 211/212 (ELD), ZIS 231/232 (SpEd)
Integrated Math 2 builds on the concepts and big ideas from Integrated Math 1. Instructional time is focused in five critical areas:

1. Extend the laws of exponents to rational exponents
2. Compare key characteristics of quadratic functions with those of linear and exponential functions
3. Create and solve equations and inequalities involving linear, exponential, and quadratic expressions
4. Extend work with probability
5. Establish criteria for similarity of triangles based on dilations and proportional reasoning

Standards: Integrated Math 2 CA Standards
Textbook: *Walch Integrated Math 2*
Prerequisites: Passing grade in Integrated Math 1
Placement options for the *following* academic year: Math 3

The majority of students in 10th grade take Math 2. Students who pass Math 1 and who do not qualify for Math 2 Plus will take Math 2.

Integrated Math 2 Plus

advanced math course

Grade Levels: 9, 10
Course Codes: MIS203/MIS204
Integrated Math 2 Plus builds on the concepts and big ideas from Integrated Math 1, with the addition of some Precalculus concepts in order to prepare students for Math 3 Plus and subsequently AP Calculus AB. Instructional time is focused in eight critical areas:

1. Extend the laws of exponents to rational exponents
2. Compare key characteristics of quadratic functions with those of linear and exponential functions
3. Create and solve equations and inequalities involving linear, exponential, and quadratic expressions
4. Extend work with probability
5. Establish criteria for similarity of triangles based on dilations and proportional reasoning
6. Extend work with complex numbers to their representation in the Cartesian plane
7. Begin work with vectors, representing them geometrically and performing operations with them
8. Derive equations of ellipses and hyperbolas and graph them from standard form

Standards: All of Integrated Math 2 CA Standards and about one-third of PreCalculus CA Standards
Textbooks: *Walch Integrated Math 2* and *Walch Honors Supplement*
Prerequisites: Student placement will be determined at the district level by a combination of:

- Report card scores in Integrated Math 1
- Math 1 End-of-Course Exam score
- Optional recommendation form

Placement options for the *following* academic year: Math 3 Plus (recommended).
Students who received a C or lower in Math 2 Plus may be recommended to take Math 3 the following year, following a conversation with the student, parent, teacher, and counselor.

About 18% of students district-wide qualify for Math 2 Plus.
See specific Placement Guidelines for Entering Math 2 Plus

Integrated Math 3

Grade Levels: 9, 10, 11
Course Codes: MIS301/MIS302
Integrated Math 3 builds on the concepts and big ideas from Integrated Math 2. Instructional time is focused in four critical areas:

1. Apply methods from probability and statistics to draw inferences and conclusions from data
2. Expand understanding of functions to include polynomial, rational, and radical functions
3. Expand right triangle trigonometry to include general triangles
4. Consolidate functions and geometry to create models and solve contextual problems

Standards: Integrated Math 3 CA Standards
Textbook: *Walch Integrated Math 3*
Prerequisites: Passing grade in Integrated Math 2
Placement options for the *following* academic year: AP PreCalculus, QRAT, or TQR (elective math course)

The majority of students in 11th grade take Math 3.

Integrated Math 3 Plus

advanced math course

Grade Levels: 9, 10, 11
Course Codes: MIS303/MIS304
Integrated Math 3 Plus builds on the concepts and big ideas from Integrated Math 2 Plus, with the addition of Precalculus concepts in order to prepare students for AP Calculus AB. Instructional time is focused in eight critical areas:

1. Apply methods from probability and statistics to draw inferences and conclusions from data
2. Expand understanding of functions to include polynomial, rational, and radical functions
3. Expand right triangle trigonometry to include general triangles
4. Consolidate functions and geometry to create models and solve contextual problems
5. Use matrices to represent and solve a system of linear equations
6. Graph rational functions to identify zeros, asymptotes and end behavior in mathematical and real-world contexts
7. Expand understanding of trigonometric functions to graph polar coordinates and curves and prove trigonometric identities
8. Understand the inverse relationships between functions to solve problems

Standards: All of Integrated Math 3 CA Standards and the remaining PreCalculus CA Standards
Textbooks: *Walch Integrated Math 3* and *Walch Honors Supplement*
Prerequisites: Successful completion of Integrated Math 2 Plus
Placement options for the *following* academic year: AP Calculus AB (recommended).
Other options include AP PreCalculus, AP Statistics, QRAT, and TQR (elective math course).

Course Options Following Math 3 and Math 3 Plus

continued on next page

TQR

Transition to Quantitative Reasoning

Grade Level: 12
Course Codes: MQR 401/402

The TQR units of study revisit previous math concepts, such as functions, inequalities, and exponents to provide opportunities for students to develop a greater perspective of the underlying structures of mathematics and how to connect mathematical topics. This enables students to continue to persevere through problem solving and begin to develop their quantitative reasoning skills for success in college-level courses or the workplace. Through a facilitative teaching approach, the lessons and tasks provide students with opportunities to solve challenging problems in which they gather, analyze, and evaluate information, work effectively in groups to make decisions using critical reasoning skills, as well as communicate their thinking orally and in writing.

Standards: Review of selected standards from Math 1, Math 2, and Math 3.
Textbook: *TQR Curriculum Units vis CSUS Portal*
Prerequisites: Passing grades in Math 1, 2, and 3. Desire to take an elective course during 12th grade in preparation for college-level mathematics.

This course receives A-G credit as an elective ("G")

QRAT

Quantitative Reasoning in Advanced Topics

Grade Level: 12
Course Codes: MHS 101/102

This course enables students to continue to persevere through problem solving and develop quantitative reasoning skills necessary for success in college-level courses. Polynomial and rational functions, as well as basic calculus concepts, advance the students' mathematical content knowledge through a quantitative reasoning lens. Through a facilitative teaching approach, the lessons and tasks provide students with opportunities to solve challenging problems in which they gather, analyze, and evaluate information, work effectively in groups to make decisions using critical reasoning skills, as well as communicate their thinking orally and in writing.

Standards: Review of selected standards from Math 1, Math 2, and Math 3. Some PreCalculus standards.
Textbook: *QRAT Curriculum Units vis CSUS Portal*
Prerequisites: Passing grades in Math 1, 2, and 3. Desire to receive Mathematics credit, but not fully prepared for AP PreCalculus.

This course receives A-G credit as a mathematics course ("C").

AP PreCalculus

new in 2024

Grade Levels: 11, 12
Course Codes:

AP Precalculus is designed to be the equivalent of a first semester college precalculus course. AP Precalculus provides students with an understanding of the concepts of college algebra, trigonometry, and additional topics that prepare students for further college-level mathematics courses. This course explores a variety of function types and their applications—polynomial, rational, exponential, logarithmic, trigonometric, polar, parametric, vector-valued, implicitly defined, and linear transformation functions using matrices.

Standards: AP Precalculus Course & Exam
Textbook: *Blitzer Precalculus, 6th edition*
Prerequisites: Passing grades in Integrated Math 3.

Course Options Following Math 3 and Math 3 Plus

AP Statistics

Grade Levels: 11,12
Course Codes: MSS 270/271

AP Statistics is designed to prepare students for the AP Exam. AP Statistics is a non-calculus-based introduction to statistics exposing students to four broad conceptual themes: (1) exploring data and observing patterns; (2) planning a study; (3) anticipating patterns in advance, introducing probability and simulation; (4) statistical inference, confirming models for explanation of patterns. Students are actively engaged in doing statistics with appropriate technological tools (e.g., TI-83 or TI-83 plus graphing calculators and statistical software) throughout the course. Projects are a significant portion of the course.

Standards: AP Statistics Course & Exam
Textbook: *The Practice of Statistics (2018)*
Prerequisites: Passing grades in Integrated Math 3

AP Calculus AB

Grade Levels: 11,12
Course Codes: MCS 201/202

AP Calculus AB is an honors course in mathematics consisting of differential and integral calculus. The class is instructed primarily through lecture and discussion. This course is designed for students who plan to enroll in the UC/CSU or equivalent system and major in one of the following areas: biology, social science, business administration, engineering, physical sciences, or medicine. A graphing calculator is recommended.

Standards: AP Calculus AB and BC Course & Exam
Textbook: *Calculus for AP (2017)*
Prerequisites: Passing grades in Integrated Math 3 Plus or AP PreCalculus.

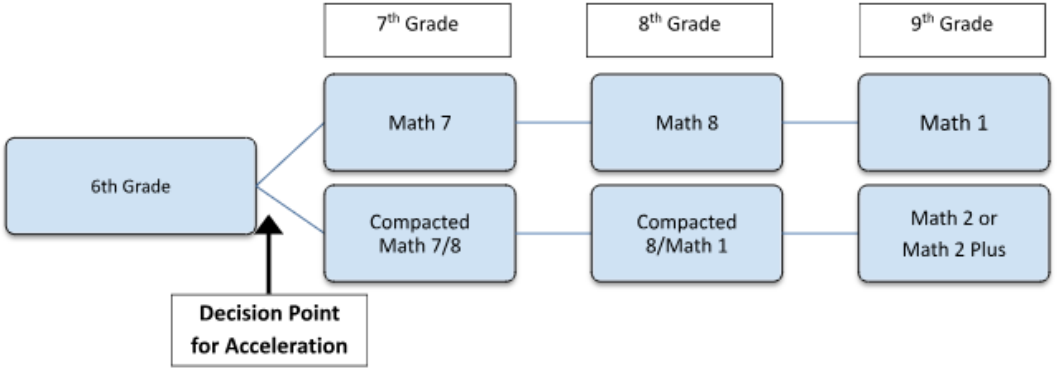
AP Calculus BC

Grade Levels: 12
Course Codes: MCS 203/204

Advanced Placement (AP) Calculus BC is a theory-based course covering all the AB topics as well as additional topics including series and sequences. It is approximately equivalent to the first year of a theoretical calculus college course. Students are expected to be familiar with the Calculus AB content since the AB content will be taught as a review only. A graphing calculator is required.

Standards: AP Calculus AB and BC Course & Exam
Textbook: *Calculus for AP (2017)*
Prerequisites: Passing grades in AP Calculus AB.

Entering Compacted Math 7/8: Placement Criteria Guidelines

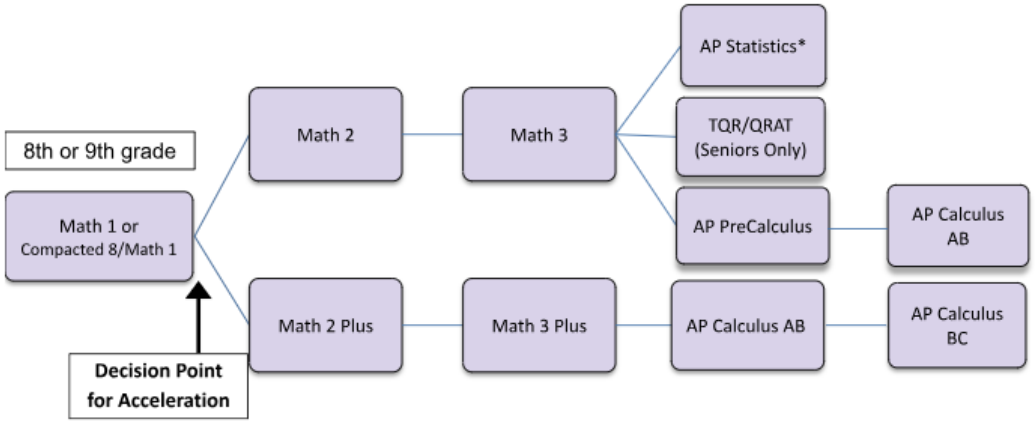


Students can accelerate in middle school by compacting 3 math courses into 2 years (Math 7, Math 8, and Math 1). Compacted Math 7/8 is a rigorous course that addresses all of the Grade 7 Math Standards and some of the Grade 8 Math Standards at an accelerated pace. Students who are successful in Math 7/8 will take Compacted 8/Math 1 the following year, which addresses the remainder of the Grade 8 Math Standards and all of the Integrated Math 1 Standards. Integrated Math 1 is traditionally a 9th grade high school course.

Placement for 7th Grade math course	**Point Value**	
Criteria	**0**	**1**
MDTP Multiple Choice Score	Less than 70%	70% and greater
Open-Ended Tasks Score (24 pts)	< average	≥ average
Trimester 2 Report Card Scores *in Mathematics Standards Achievement*	any Domains < 3	all Domains available ≥ 3
Recommendation Form Submitted *by teacher, admin, or parent/guardian*	No	Yes

- District math specialists automatically score the Open-Ended tasks for students who scored at least 70% on the MDTP Multiple Choice test and/or students who received a submitted recommendation form.
- **3 or more points** = recommended placement in Compacted Math 7/8 for 7th grade
- **0 – 2 points** = recommended placement in Math 7 for 7th grade
- *Less than 3 points* with a recommendation form = Review of available data for potential placement into Compacted Math 7/8.

Entering Math 2 Plus: Placement Guidelines



Students can accelerate in high school by compacting 3 math courses into 2 years (Math 2, Math 3, and PreCalculus). Math 2 Plus and Math 3 Plus have the PreCalculus standards spread out between them, so students who successfully complete those courses will be prepared for AP Calculus AB the following year. Students who take Math 2 Plus and Math 3 Plus do not need to take PreCalculus as a separate course.

Placement following Integrated Math 1	**Point Value**		
Criteria	**0**	**1**	**2**
Math 1 EOC Exam Score (40 pts)	< 28	28 to less than 32	32 and greater
Term 2 Grade *and* Term 4 Grade in Math 1	F, I *In any semester*	Anything else	A and A A and B
Recommendation Form Submitted* *by teacher, admin, parent/legal guardian, or student (self)*	No	Yes	

- **3 or more points =** recommended placement in Math 2 Plus
- **1 - 2 points =** recommended for placement into Math 2, unless they failed Math 1.
- **0 points** and students who earn an F in Math 1 in any semester will be recommended to Repeat Math 1.
- *Less than 3 points* with a recommendation form = Review of available data for potential placement into Math 2 Plus.

Challenging/Skipping a Math Course

In an effort to provide district-wide guidelines and opportunities for all students to be appropriately placed in mathematics courses, we offer a process for students to challenge a math course when appropriate.

Some examples of "challenging" a math course, include:

- Seeking placement into Compacted 8/Math 1 as a 7th grader after completing 6th grade math
- Seeking placement into Compacted 8/Math 1 (8th grade) after completing Math 7 (7th grade)
- Seeking placement into Math 2 or Math 2 Plus (9th grade) after completing Math 8 (8th grade)

We do not recommend skipping a grade-level in mathematics because the Common Core Mathematics Standards progressively build concepts and skills from one grade-level to the next. Every grade-level is vital for a students' complete understanding of mathematics in the K – 8 progression, and each grade-level contains content that is only taught in that year and is a building block for future math classes. For more information on accelerating students in Middle School Common Core Mathematics and why skipping content is not encouraged, see Appendix A, pgs.80-81:
http://www.corestandards.org/assets/CCSSI_Mathematics_Appendix_A.pdf

We understand that some students have been given opportunities to compress 2 or 3 years of math in 1 year, have taken mathematics courses over the summer, or have studied independently in a math course above their grade level. In an effort to best place students in mathematics courses in SCUSD, we are piloting a "Challenge Process" for the 2018-19 school year and will continue to refine the process over the next few years to best serve our students.

Process and Guidelines for Challenging a Mathematics Course in SCUSD

STEP 1: A parent/guardian, teacher, administrator, or student (self) must submit a recommendation form here: tinyurl.com/MathChallengeRec

STEP 2: Once a recommendation comes in, district math specialists will review the recommendation and notify parents/guardians about the **Challenge Test.**

STEP 3: Students will be invited to take a Challenge Test to assess their ability to apply the skills and concepts from the math course they wish to challenge, as well as their preparedness for the course in which they are seeking placement. *Students will be expected to show proficiency in the math content and practice standards, as well as demonstrate critical-thinking and problem-solving skills.*

STEP 4: District math specialists will analyze each student's Challenge Test scores, report card grades, CAASPP scores, and recommendation form to make an appropriate math course recommendation. Parents/guardians and school site administrators will be notified of the results, and students will be placed in the appropriate math course.

For more information on challenging a mathematics course in SCUSD, visit: http://www.scusd.edu/post/mathematics-courses

Timeline for Placement Decisions

6th Grade Placement Assessment and Recommendation Timeline
for Math 7 vs. Compacted Math 7/8

Beginning of April	Assessments and supporting documents shared with school sites. Communication to parents regarding testing information and placement practices.
Mid April – End of April	Testing window for 6th grade placement assessment, administered by teachers in all 6th grade math classes.
Beginning of April – End of April	Submit optional Recommendation Forms for placement into advanced middle school classes at: tinyurl.com/SCUSDAdvCourses *Forms may be submitted by a teacher, administrator, or parent/legal guardian.*
By end of May	Scoring of placement assessments ● Multiple choice scored electronically ● Open-Response Tasks scored by district Math Training Specialists
End of May – Beginning of June	District math and advanced placement departments organize data from placement assessment, report cards, and recommendation forms to make placement recommendations for all 6th grade students as they enter middle school.
Beginning of June	Assessment results and placement recommendations shared with school site administrators and counselors.
Beginning of next school year	Course placement is verified; schedule changes are made as need

Math 1 Placement Assessment and Recommendation Timeline
for Math 2 vs. Math 2 Plus

Beginning of May	Assessments and supporting documents shared with school sites. Communication to parents regarding testing information and placement practices.
Mid May – end of school year	Testing window for Math 1 End-of-Course Exam, administered by teachers in all Math 1 and Compacted 8/Math 1 classes.
Mid May – end of school year	Submit optional Recommendation Forms for placement into Math 2 Plus online at: tinyurl.com/Math2PlusRec. *Forms may be submitted by a teacher, administrator, parent/legal guardian, or student (self).*
By last day of school	Teachers score the Extended Response questions from their own students' Math 1 EOC Exams and input scores into Illuminate.
By end of June	District math department organizes data from the placement assessment, report cards, and recommendation forms to make placement recommendations for all Math 1 and Compacted 8/Math 1 students.
End of June	Assessment results and placement recommendations shared with school site administrators and counselors.
Beginning of next school year	Course placement is verified; schedule changes are made as need

Understanding the Placement Assessments

The following assessments are given to all 6th grade students in the Spring, administered by their 6th grade math teacher. These assessments are used as part of the criteria for determining placement into either Math 7 or Compacted Math 7/8.

1) MDTP Assessment of Preparedness (multiple choice)
    - The UC Davis Math Diagnostic Testing Project (MDTP) Assessment of Preparedness for 7th Grade Mathematics is a 40-question multiple-choice exam that measures readiness for a Grade 7 math course.
    - The test assesses critical content from grades 3-6 and highlights gaps and misunderstandings commonly held by students.
    - The assessment is administered and scored electronically, and provides data on students' strengths and areas of growth related to specific topics.
    - Students who score 70% and above on this assessment are considered prepared for a Grade 7 math course without needing review or support on prior concepts.

2) Open-Ended Tasks, adapted from Silicon Valley Math Initiative (SVMI)
    - The Open-Ended Tasks contain 3 context-based tasks (each with 4-5 individual questions) based on 6th grade priority standards.
    - These tasks require students to show their work and often explain their response and/or their process for solving the problem.
    - This assessment is administered electronically, but hand-scored by SCUSD Mathematics Training Specialists.
    - Students who score 70% or higher on the MDTP Assessment and/or receive a Recommendation Form will automatically have their Open-Ended Tasks scored.
    - Cut score for open-ended tasks: average of all scores in that particular year (≈ 70%)

The following assessment is given to all Math 1 and Compacted 8/Math 1 students towards the end of the school year, administered by their math teacher. This assessment is used as part of the criteria for determining placement into either Math 2 or Math 2 Plus.

1) Math 1 End-of-Course (EOC) Exam
    - The Math 1 EOC Exam is a summative assessment of Math 1 standards containing a variety of item types, including multiple choice and open-ended tasks.
    - The exam has two parts and is scored out of 40 points:
        - Selected Response and Short Answer (25 points): taken online via Illuminate, scored electronically
        - Extended Response (15 points): taken paper/pencil or via Desmos (digital platform), hand-scored by the teacher