REDLANDS UNIFIED SCHOOL DISTRICT
HIGH SCHOOL COURSE APPROVAL REQUEST FORM
GRADES 9-12

THIS SECTION IS TO BE COMPLETED BY A SCHOOL DISTRICT REPRESENTATIVE:

School Submitting Information

School: All RUSD High Schools _____ Department Secondary Education - Math

<small>(course offerings will be made available for all schools)</small>

Contact Information

Contact Person: Whitney Carnes _____ Phone: 909-307-5300 (ext 20363)

Email: whitney_carnes@redlands.k12.ca.us

Summer Contact Person: Secondary Ed Director

Phone (home or cell): 909-307-5300 _____ Email: erika_devilliers@redlands.k12.ca.us

Course Information

Course Title: SAI Integrated Math II _____ Transcript Name (15 Max): SAI Math II

Length of course: one year _____ Amount of Units: 10

<small>(one semester, two semesters, or one-year course)</small>

Area of Credit: Math

<small>(How will this course satisfy graduation requirements? Math, English, Elective, etc. Will it roll to a secondary credit if any?)</small>

Teacher Requirements

Credential Required: Special Ed and/or Math _____ Additional Training: _____

Department Review Date: March 20, 2024 _____ Dept. Signature: _____

Site Administrator Signature: _____

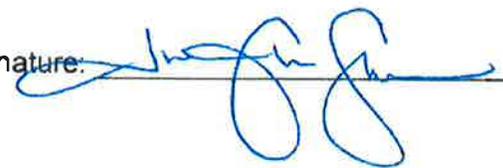### *THIS SECTION IS RESERVED FOR DISTRICT USE:*

Assigned Reviewer Section

Reviewed by: Julie Swan _____ Date reviewed: March 20, 2024

■ District section of this form is appropriately completed

■ All required attachments are affixed and appropriate

■ Site signatures current and appropriate

Recommendation: ■Approve ☐Do Not Approve Signature: _____

Course Approval Curriculum Committee

Approved by: Unanimous Decision _____ Date approved: 04/17/24

Date approval/disapproval notification letter sent: 04/19/24

Signature: _____

Board Submission Date: May 7, 2024 Board Approved Date: _____

SAI Math II Course

COURSE OUTLINE

The purpose of this course is to provide all students access to the Integrated Math II CCSSM during their 10th grade year. Integrated Math II continues to build on the foundational concepts introduced in Integrated Math I and further develop students' mathematical proficiency and problem-solving abilities. Through exploratory learning, problem-solving and real-world applications, students will delve into topics such as algebra, geometry, trigonometry, and statistics. By exploring mathematical relationship and connections across multiple domains, students will gain a deeper appreciation for the beauty and utility of mathematics. The course also aims to promote inclusivity by providing diverse learning opportunities and ensuring all students have access to rigorous mathematical content throughout their high school careers.

Teacher Credential

Single Subject Special Education Credential

PREREQUISITES & CO-REQUISITES & TARGETED STUDENT POPULATION

No prerequisites.

Target population: Incoming SAI 10th graders

COURSE CONTENT

This course aligns with the Integrated Math II Common Core Standards for Mathematics. These standards include:

- Reasoning with Equations and Inequalities (CCSS.MATH.HSA.REI)
- Linear and Exponential Relationships (CCSS.MATH.HSA.CED)
- Rational Number System (CCSS.MATH.HSA.RN)
- Complex Number System (CCSS.MATH.HSA.CN)
- Quadratic Functions and Modeling (CCSS.MATH.HSA.IF, CCSS.MATH.HSA.SSE, CCSS.MATH.HSA.BF)
- Geometry (CCSS.MATH.HSA.GPE, CCSS.MATH.HSA.G-SRT, CCSS.MATH.HSA.G-CO)
- Statistics and Probability (CCSS.MATH.HSS.S-CP)

Unit 1: Extending the Number System

Description: Students will explore extensions of the number system, including rational and irrational numbers, complex numbers, and operations with radicals. They will engage in critical thinking by analyzing the properties of these numbers, solving equations involving radicals and complex numbers, and evaluating the reasonableness of solutions. Problem-solving tasks will involve applying properties of the number system to real-world situations and mathematical proofs.

Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. When introducing this topic, teachers will build on the student's prior knowledge of the number system and introduce the non-real number system where the imaginary unit "i" and explain its properties. Once students feel confident with imaginary numbers, they will learn operations with complex numbers, including addition, subtraction, multiplication, and division.

Unit 2: Expressions and Equations

Description: Students will explore expressions and equations in depth, including polynomial expressions, rational expressions, and systems of equations. They will apply critical thinking to skills to simplify expressions, solve equations, and inequalities, and analyze the structure of mathematical expressions. Problem-solving tasks will involve translating real-world problems into algebraic expressions, solving systems of equations graphically and algebraically, and interpreting solutions within the context of the problem.

Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. During this unit students will be able to investigate open-ended problems that will require students to explore different factoring methods, analyze the behavior of quadratic functions, and make conjectures about quadratic patterns.

Unit 3: Quadratic Functions and Modeling

Description: In this unit, students will study quadratic functions, their properties, and their applications. They will deepen their understanding of quadratic equations, graphing parabolas, solving quadratic inequalities, and modeling quadratic relationships. Critical thinking skills will be applied to analyze quadratic patterns, make predictions based on quadratic models, and interpret solutions in context. Problem-solving activities will involve optimizing quadratic functions, solving real-world problems, and exploring quadratic relationships in different contexts.

Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. One of the lessons that will show student's knowledge is taking a word problem and then write a quadratic equation in standard form and be able to graph it, find the axis of symmetry, the vertex, the extremum values and the domain and range based on the parameters of the word problem given. Predicting future values based on the equation students create will help them see the importance of attending to precision.

Unit 4: Interpreting Functions

Description: In this unit, students will engage in critical thinking and problem-solving activities that require them to analyze function behavior, make connections between different representations of functions, and apply mathematical reasoning to solve problems. They will explore various types of functions, including linear, quadratic, exponential, logarithmic, and piecewise functions.

Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. They will be giving a series of graphs and algebraic equations and using technology tools, they will be able to state the key characteristics of each function. This includes stating intervals of increase and decrease, concavity, asymptotes, intercepts, and the inverse function for each function type.

Unit 5: Similarity, Right Triangle Trigonometry, and Proof

Description: Students will investigate geometric concepts related to similarity, right triangle trigonometry, and geometric proof. They will apply critical thinking skills to prove geometric relationships, solve problems involving similar triangles and use trigonometric ratios to solve right triangle problems. Problem-solving tasks will involve constructing geometric proofs, applying trigonometric concepts to real-world situations, and analyzing the validity of geometric arguments.

Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. Starting with a blank unit circle, students can calculate the sine, cosine, and tangent which will allow them to visually see the relationships between trigonometric ratios for different angles. Once they see these patterns, then you are able to have the student's use interactive software, like DESMOS, to manipulate angles and encourage students to explore different trigonometric identities by changing angle measures, observing graphical representations, and verifying identities numerically.

Unit 6: Circles with and without Coordinates

Description: In this unit, students will study circles and their properties, including equations of circles, arc length, sector area, and circle theorems. They will engage in critical thinking by analyzing circle properties, solving problems involving circles, and applying circle concepts to geometric proofs. Problem-solving activities will involve using coordinates to represent circle equations, determining geometric relationships within circles, and applying circle theorems to solve complex problems.

Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. While building on prior knowledge, students will be able to take their understanding of the area and circumference of a circle to introduce the standard form equation of a circle. Students will be able to solve problems where there is a center and radius and have students write the equation of those circles, or move from the equation to find the center and radius and then visually show what the circles look like.

Unit 7: Applications of Probability

Description: In this unit, students will delve into probability concepts and their applications. They will explore theoretical and experimental probability, conditional probability, and probability distributions. Critical thinking skills will be applied to analyze and interpret probability models, make predictions based on probability calculations, and evaluate the reliability of data. Problem-solving activities will involve designing experiments, collecting, and analyzing data, and making informed decisions based on probability analysis.

Student Learning Task: There will be a wide-range of activities and assignments, both summative and formative, throughout the unit for the students to engage in and showcase their learning progression on the topics. Students begin to learn more about the difference between experimental and theoretical probability. They are able to use multiple hands-on experiments, with manipulatives like coin tosses, dice rolls, and card draws, to demonstrate each of these probability types and how you can compare the experimental results to theoretical predictions.

COURSE MATERIALS

- Walch Integrated Math Textbook and Student Workbooks (6 Units)
- Integrated Math II Scope and Sequence (Mathematics Shared Google Drive)