The
Problem Solver
Mathematical Problem-Solving Newsletter for High School Students and Teachers
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New Mathematics Teachers Receive Teaching Credentials

This Spring, ten new mathematics teachers from the California State University, Fullerton (CSUF) Secondary Education Cooperative Teacher Education Program (SECTEP) received their Single Subject Teaching Credential in Mathematics. SECTEP is a year-long program where prospective teachers participate as "externs" during the fall and are "interns" as student teachers in the spring. As an "extern" these students help in three mathematics classes at the high school or middle school level. They often teach lessons and practice methods of delivery and classroom management.

As student teacher "interns", they are responsible for teaching three mathematics courses and their responsibilities conclude when they have assigned the end-of-semester grades to their students. Various CSUF Mathematics Department faculty members, as well as experienced retired mathematics teachers, supervise the student teachers while Dr. Cherie Ichinose oversees the credentialing process for the mathematics students. The student teachers are also mentored by at least one Master Teacher at their school site.

All students in the program were honored by the Mathematics Department at the first class meeting of the student teaching seminar course. We, along with their master teachers, are proud of these students and want to share some information about each of them with the following photos and biographies. All new credential candidates are registered with EDJOIN (www.edjoin.org). If you have a math opening and one of these candidates interests you, feel free to contact EDJOIN to learn more about their qualifications.

Asseel Alnuaimi

Asseel Alnuaimi graduated with a Bachelor of Arts Degree in Mathematics with a Concentration in Education from California State University, Fullerton in the Spring 2020. She obtained her Single Subject Credential in Mathematics in May 2023. During the three-year break, Ms. Alnuaimi enrolled at Fullerton College and pursued a career in Architecture.

As a student teacher candidate, Ms. Alnuaimi had the pleasure to teach Integrated Math 1 and Integrated Math 3 Enhanced at Corona High School. During the student teaching days at Corona High School, Ms. Alnuaimi collaborated with the Math 1 and the Math 3 teams to create lesson plans, create formal assessments, analyze data of formal assessments, and discuss ways to increase students' collaboration and critical thinking.

One of the main goals Ms. Alnuaimi would love to achieve is to encourage and inspire more Arab women to pursue a career in Education of Mathematics because she, herself, is a proud Arab Mathematician.

Grant Barksdale

Grant Barksdale earned a Bachelor of Arts Degree in Mathematics in May 2022 from California State University, Fullerton. Grant proceeded to enter the Single Subject Credential Program for Mathematics in August 2022, completing his credential year in May 2023.

Grant began his time at CSUF as a Computer Science major, but switched to Math Education after one semester, following his love for teaching and working with the youth. He then joined the Transitioning Math Majors into Teaching (TMMT) scholarship program, where he gained valuable experience in the college mathematics classroom serving as an apprentice to various mathematics instructors at CSUF.

Grant served as a student teacher at Anaheim High School for the entire 2022-2023 school year. At Anaheim High School, he student-taught two sections of Integrated Math I and one section of Integrated Math II. The two sections of Integrated Math I were both inclusion classes, thus Grant had the opportunity to collaborate with his mentor teacher and the co-teacher for the course. He also had the opportunity to learn and develop equitable instructional strategies to teach a wide range of students, including English Learning Students and students with learning disabilities.

Although Grant loves the subject of mathematics, his favorite part of the job is working with and relating to the high school students. He believes that the high school years are a very formative time for young people, and he has a passion for supporting them through these years by creating a classroom environment in which all students feel valued and seen.

Kobe Bradford

Kobe Bradford graduated Magna Cum Lade from California State University, Fullerton in Spring 2022, earning a Bachelor of Arts Degree in Mathematics with a concentration in teaching. While at CSUF, Mr. Bradford was a member of the Transitioning Math Majors into Teaching (TMMT) Program, which gave him the opportunity to attend Mathematics conferences, teaching webinars, as well as gave him his first experience leading a class as a TA for a college algebra course. Mr. Bradford received his Single Subject Teaching Credential through the two-semester credential program at CSUF in May 2023.

As a student teacher at John F. Kennedy High School, Mr. Bradford worked with a diverse group of students with differing cultures, backgrounds, and experiences that they brought to the classroom. During the second semester of his student teaching, Mr. Bradford was the main instructional leader of an Honors Math I class, a standard Math II class, and a co-taught RSP Math II class. Teaching these three levels of classes taught him how important it was to differentiate his content to meet the needs of a wide array of students.

One of the most valued components in Mr. Bradfords classroom is collaboration. He believes that the best ways to learn is by hearing from others, embracing different perspectives, seeing new ways of going about problem solving, and creating a strong sense of classroom community.

Christine Kim

Christine Kim earned a Bachelor of Arts in Mathematics at California State University, Fullerton. Following her graduation, she was admitted to the single-subject credential program for mathematics. She was placed at Capistrano Valley High School as a student teacher and taught Algebra 1 and Algebra 2.

While student teaching, Ms. Kim found her passion for students and learned the importance of equity in classrooms. In order to have an inclusive and equitable classroom, she made sure that she was scaffolding and using different strategies that could guide students to success. She also built a strong relationship with the students and ensured that every student felt welcomed when walking into the classroom.

Ms. Kim has participated in the AVID program at her placement which is a college preparation program for average students in advanced classes. AVID levels the playing field for minority, rural, low-income, and other students without a college-going tradition in their families. AVID targets students in the academic middle – B, C, and even D students – who have the desire to go to college and the willingness to work hard. Ms. Kim hopes to continue to help with AVID and hopes that she can have a positive influence on her students.

Sam Lopez

Sam Lopez is a first-generation Latina in STEM who has demonstrated incredible resilience and determination in achieving her academic goals. At just 17 years old, Sam moved out of her hometown to pursue her dream of higher education. Her hard work and dedication paid off when she graduated from California State University, Fullerton in May 2022, where she majored in Mathematics with a concentration in teaching.

Ms. Lopez continued her journey in education by being accepted into the Single Subject Credential Program at CSUF and began her student teaching journey at Buena Park High School, where she fell in love with teaching Geometry and Business Finance.

Ms. Lopez believes that education is not just about transmitting knowledge but also about fostering critical thinking and personal growth. She believes in creating a safe and inclusive learning environment where all students feel valued and respected.

As a scholar in the Transitioning Math Majors into Teaching (TMMT) program and an instructor in the Mathematics Intensive Summer Session (MISS) program, Ms. Lopez learned valuable teaching strategies and developed her ability to differentiate instruction to meet the diverse needs of her students. She is excited to bring this experience and knowledge to her own classroom and make a positive impact on the lives of her students.

Madeline Negrelli

Madeline Negrelli graduated with a Bachelor of Arts Degree in Mathematics, with a concentration in teaching, from California State University, Fullerton in the Spring of 2022. Ms. Negrelli completed her Bachelor's within 3 years with a GPA of 3.92. She completed her Single Subject Mathematics Credential Program in the Spring of 2023.

Ms. Negrelli previously worked at Buena Park High School as a Teacher Candidate teaching Algebra 1 and Algebra 2. Ms. Negrelli's goal in teaching mathematics is that students remember concepts because these concepts apply to their lives. Too often, math teachers ask students to memorize math concepts without any meaningful background. Ms. Negrelli wants to give students a meaningful background in the mathematics content they are learning. Ms. Negrelli creates lessons incorporating technology, cooperative learning, and real-life applications. She uses various programs such as GoFormative, Pear Deck, Desmos, Gimkit, Kahoot, Google applications among many others to design lessons that incorporate students' interests as they learn the content.

Ms. Negrelli's hard work goes beyond the classroom. She helps many of the students individually during tutorial periods and lunch, spending a lot of her free time. In addition, she will go out of her way to gather information either via the computer system (Aeries) or by visiting the school liaison to learn more about students. Ms. Negrelli overall fosters a classroom community where students feel comfortable, feel heard, and where students can grow as humans.

Marilyn Ortiz

Marilyn Ortiz earned a Bachelor of Arts Degree in Mathematics in May 2022 from California State University, Fullerton. Following graduation, she entered the Credential Program at CSUF and completed her Single Subject Teaching Credential in May 2023. As a teacher candidate, Miss Ortiz was placed at Colton High School for the 2022-2023 school year, where she taught Algebra 1 and Mathematical Reasoning With Connections (MRWC).

As a student teacher, she gained experience creating lessons encouraging students to collaborate and problem-solve through investigation. She enhanced student engagement and collaboration by implementing the ideas and techniques in Building Thinking Classrooms. Her bilingual abilities allowed her to create more connections between students, support social and interpersonal relationships with Emergent Bilingual students, and talk about math in English and Spanish. She made a safe learning environment where students felt comfortable participating, engaging, and communicating freely.

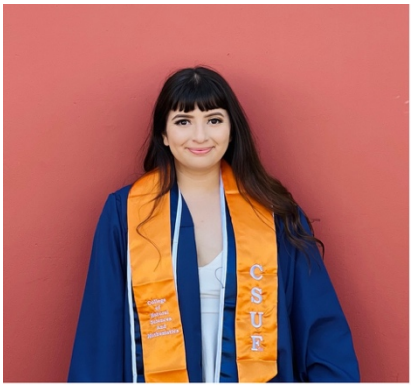
Marilyn's ultimate goal is to help students create better relationships with mathematics. She believes that anyone is capable of doing math. She hopes to help students gain the confidence to approach a problem, leaving math anxiety behind and seeing mistakes as an opportunity for growth. Additionally, she strives to make her classroom a safe space for all students and develop relationships with students that will make them feel supported, seen and heard.

Alexis Reyes

Alexis Reyes Cruz graduated Cum Laude from California State University, Fullerton and earned his Bachelor of Arts Degree in Mathematics with a concentration in Teaching Mathematics during Spring 2022. He then started the Single Subject Credential Program for Mathematics in Fall 2022.

During his time as a student teacher, Mr. Reyes taught Integrated Math 1-2 Honors and Integrated Math 2 at Savanna High School in Anaheim. During his second semester of the program, he took on a long-term substitute teacher position and taught Integrated Math 1 and Integrated Math 2-3 Honors. Mr. Reyes made it a top priority to get to know and build connections with all 200 students he worked with as a student teacher and continuously received feedback from them to better understand their needs and to better plan out future lessons. During this time, Mr. Reyes also saw immense growth in himself as an educator as he explored various types of teaching strategies and employed various types of learning activities that catered to different types of learners.

As a first-generation high school and college graduate, Mr. Reyes knows the importance that educators play in the lives of students. He received amazing support from his teachers and will work to go even further with his own students. Mr. Reyes looks forward to continuing to support all his students meet their goals and show them how capable they are of learning and succeeding in class and beyond.



Yessenia Villalobos

Yessenia Villalobos is a passionate educator who completed her Single Subject Credential program at California State University, Fullerton in May 2023. She holds a Bachelor of Arts Degree in Mathematics with a concentration in teaching from CSUF.

Yessenia has demonstrated a strong commitment to education and teaching. She has taken on leadership roles in math programs, such as the Mathematics Intensive Summer Session, where she has helped students develop a deeper understanding and appreciation for mathematics. She also values being a part of the Transitioning Math Majors into Teaching Program.

Yessenia was placed at Corona High School for the 2022-2023 school year, where she has worked with students from diverse backgrounds and helped them develop their math skills. She collaborated with a variety of Math educators and participated in various Professional Learning Community meetings that have provided her with collaboration and data analysis skills.

Yessenia's ultimate goal is to show students how math can be used to solve practical problems and make a difference in the world. She believes that by making math relevant and meaningful, she can inspire her students to see its value and importance in their lives. She believes that every student has the potential to succeed and is committed to creating a safe, supportive, and engaging learning environment that fosters academic growth and personal development. Yessenia is excited about the opportunity to inspire and motivate her students to achieve their full potential in math and beyond.

Phillip Vo

Phillip Vo graduated with a Bachelor of Science Degree from California State University, Fullerton with a focus on Computer Science. While working as a software developer for a few years, he had the opportunity to tutor his cousin in math over a few weekends. Having seen his cousin grow in both academic ability and confidence, Mr. Vo discovered his passion for teaching and decided to shift his focus to pursue a career in education. Mr. Vo joined the CSUF Single Subject Teaching credential program in Fall 2022.

As a teacher candidate, Mr. Vo was placed at Pacifica High School in the Garden Grove Unified School District. There, he spent one year teaching both Algebra 1 and Algebra 2. During his time as a teacher candidate, Mr. Vo strived to create lessons that emphasized student collaboration. Mr. Vo also worked hard to build strong relationships and trust with his students.

Mr. Vo believes in creating a classroom environment where students should feel safe to take risks, ask questions, and be willing to make mistakes as part of learning math. In doing so, he hopes to inspire his students to appreciate what math offers to them, and to critically think and analyze the world around them from a mathematical perspective.

Free Mathematics Diagnostic Testing Service at California State University, Fullerton

The California State University, Fullerton Mathematics Department is one of eight sites in California for the Mathematics Diagnostic Testing Project (MDTP). MDTP is funded by the California Academic Partnership Program (CAPP) with the goal of informing secondary school students and teachers of the critical math skills and concepts needed to succeed in College Preparatory Mathematics courses. MDTP test items are aligned with the California Math Standards. MDTP tests, answer sheets and scoring services are offered at no charge to teachers in California public or private schools.

The Mathematics Diagnostic Testing Project tests are the only tests (other than teacher-made and scored) that have the option of providing each student a personal digital printout! The printout, which can be accessed online, contains topic-by-topic feedback to students on their understanding of basic concepts in college preparatory mathematics. Both students and parents respect and appreciate this kind of feedback.

In addition to the individual digital student printout, the MDTP service provides each teacher with an item analysis of the class results, showing items that all students did well on, as well as items many students missed. It gives teachers insight into the content the students understand versus what they do not understand. Using distracters on the test items that students choose gives the teacher insight into students' misconceptions. In addition, the teacher has a printout of each student's results, allowing him/her to chart an individual's progress across various mathematical topics. All this data is provided to educators through our online testing platform.

MDTP diagnostic tests answer choices are purposely designed to illuminate misconceptions and can be used to identify unfinished learning and gaps of content knowledge.

Please contact our office for assistance in setting up diagnostic testing: mdtp@fullerton.edu.

Paper Test Scoring

MDTP will no longer support the use of the green and blue scantrons. We will continue to ship out test booklets, but Student Scantrons will be printed through the MDTP online platform and Class Info Sheets will no longer be needed. With this update, student results for paper tests will now be available online – accessible any time and allows educators to create combined reports and email students and parents MDTP results.

MDTP Diagnostic and Open Response Items Field Tests

MDTP is pleased to offer a new diagnostic test and four field-tests:

Assessment of Preparedness for Grade 7 Mathematics Field Test (7M40D23) – This second-year diagnostic field test revision aligns the content and topic progressions from the 6M through the 8M to the expectations of the California State Standards.

Parallel versions of the Algebra I/Integrated Math 1 Readiness Field Tests (AM45D22, AM45E22, AM45F22) – This is our third year of field testing three different versions that are parallel to the current Algebra 1/Integrated Math 1 Readiness test released in 2019 (AMR45A19). These parallel tests are designed to provide the same diagnostic assessment of students' readiness in foundational topics necessary for success in an Algebra 1 or Integrated Math 1 course aligned to the California State Standards. Field testing should occur in Algebra 1 or Integrated Math 1 classes. We request for teachers to assign all three versions to the same class and randomly assign each student to one of the three versions to obtain data from comparable samples (i.e., students from the same class and with the same teacher).

Quantitative Reasoning Diagnostic Field Test (QR45D23) – This second-year diagnostic field test is the first test assesses foundational topics necessary for success in a 12th-grade quantitative reasoning course or other non-precalculus courses following Algebra 2 or Integrated Math 3.

Calculus Readiness Field Test (CR45D23) – This diagnostic field test assesses students' readiness in foundational topics necessary for success in a first year or entry-level calculus course.

MDTP invites secondary math educators to field test new versions of open response items aligned to MDTP topics and test questions.

MDTP Formative Constructed Response Items (FCRIs) are aligned to specific problems found on MDTP diagnostic tests by topic.

MDTP Written Response Items (WRIs) are designed to elicit student thinking and quantitative reasoning around foundational mathematical topics and concepts.

Please contact our office if you are interested in field testing: mdtp@fullerton.edu.

Available Diagnostic Tests

1. **Assessment of Preparedness for 6th Grade Mathematics (6M35A20)**
   - Assesses preparedness in foundational topics necessary for success in a CACC Grade 6 mathematics course
   - Field-testing should occur in Grade 6 classrooms
2. **Assessment of Preparedness for 7th Grade Mathematics *Field-Test (7M40D23)**
   - A second-year diagnostic assessment of students' preparedness in foundational topics necessary for success in a Grade 7 mathematics course aligned to the CA State Standards.
3. **Assessment of Preparedness for 7th Grade Mathematics (7M40A15)**
   - Assesses preparedness in foundational topics necessary for success in a CACC Grade 7 mathematics course
   - Given near the beginning of a Grade 7 Math course or near the end of a Grade 6 Math course
   - Formerly known as the Grade 7 Math Readiness Test (7R40A15)
4. **Grade 8 Math Readiness (8M40A15)**
   - Assesses preparedness in foundational topics necessary for success in a CACC Grade 8 mathematics course
   - Given near the beginning of a Grade 8 Math course or near the end of a Grade 7 Math course
   - Formerly known as the Grade 8 Math Readiness Test (8R40A15)
5. **Parallel Versions Algebra 1/Integrated Math 1 Readiness *Field-Tests (AM45DEF23)**
   - These third-year diagnostic parallel tests are designed to provide the same diagnostic assessment of students' readiness in foundational topics necessary for success in a CACC entry-level Algebra 1 or Integrated Math 1 course as defined in the Mathematics Framework for CA Schools
6. **Algebra 1/Integrated Math 1 Readiness (AMR45A19)**
   - Assesses readiness in foundational topics necessary for success in a CACC entry-level Algebra I or Integrated Math 1 course as defined in the Mathematics Framework for CA schools
   - Replaces the High School Math Readiness Test (HS45A15) and Algebra Readiness Test (AR45A10)
7. **Geometry Readiness (GR45A19)**
   - Assesses readiness in foundational topics necessary for success in a CACC Geometry course as defined in the Traditional Pathway in the Mathematics Framework for CA schools
   - Given near the end of an Algebra I course
8. **Integrated Second Year Readiness (ISR45A20)**
   - Assesses readiness in foundational topics necessary for success in a CACC second-year integrated mathematics course as defined in the Mathematics Framework for CA schools
   - Given near the end of a Geometry course
9. **Second Year Algebra Readiness (SR45A19)**
   - Assesses readiness in foundational topics necessary for success in a CACC second year Algebra course as defined in the Traditional Pathway in the Mathematics Framework for CA schools
   - Given near the end of a Geometry course
10. **Integrated Third Year Readiness (ITR45A20)**
    - Assesses readiness in foundational topics necessary for success in a CACC third-year integrated mathematics course as defined in the Mathematics Framework for CA schools
    - Given near the end of an Algebra II course
11. **Quantitative Reasoning Diagnostic *Field-Test (QR45D23)**
    - This is a second-year diagnostic field test to assess students' readiness in foundational topics necessary for success in a 12th Grade quantitative reasoning or other courses at that level after completing an Algebra 2 or Integrated Math 3 course aligned to CA State Standards

12. Pre-Calculus Readiness (PR45A22)

- Assesses readiness in foundational topics necessary for success in a pre-calculus course or other courses at that level after completing a CACC Integrated Math 3 or Algebra 2 course as defined in the Mathematics Framework for CA Schools
- Given in Pre-calculus or Math Analysis courses
- This test replaces the Math Analysis Readiness Test (MR45A08)

13. Calculus Readiness *Field-Test (CR45D23)

- A first-year diagnostic field test assessing students' readiness in foundational topics necessary for success in a first year or entry-level calculus course

14. Calculus Readiness (CR45A12)

- Assesses readiness in foundational topics necessary for success in a first-year entry-level calculus course
- Given near the end of a Pre-Calculus course

MDTP tests can also be given in the fall to diagnose areas that need remediation and again in the spring to show increased understanding over time.

An order form for MDTP tests can be placed on CSUF's MDTP website http://mdtp.fullerton.edu.

For more information about the **M**athematics **D**iagnostic **T**esting **P**roject at California State University, Fullerton please contact Angela Hoang, MDTP Coordinator, by:
Email: mdtp@fullerton.edu
Phone: (657) 278-7248
Office hours:
Monday – Friday
8:00am – 5:00pm

Master of Arts in Mathematics

The Master of Arts in Mathematics provides advanced study for students with one or more of the following interests: a Ph.D. program in mathematics or mathematics education, teaching in high school or community college, or using mathematical analysis in government, business or industry. Three options are offered under the Master of Arts in Mathematics program: (1) Teaching, (2) Applied Mathematics, and (3) Statistics.

The **Teaching Mathematics** option is designed for those individuals who are presently teaching mathematics at the secondary or community college level. Students must have completed courses in linear algebra, modern algebra, and advanced calculus with at least a "B" (3.0) average. In addition, students should have completed a minimum of one year of full-time teaching.

The **Applied Mathematics** option is designed specifically for individuals who are seeking, or who currently hold positions that involve mathematics or quantitative applications. Students must have completed one semester of mathematical probability and one semester of advanced calculus with grade of "B" (3.0) or better in each course.

The **Statistics** program is designed for full-time and part-time students seeking to meet the growing demand for professionals with knowledge and training in data science and quantitative analysis. There are excellent job prospects for graduates of the program in industry, business, and government agencies. The courses must be selected from our regular course offerings at the undergraduate and graduate level.

For more information about the Masters of Arts in Mathematics program at California State University, Fullerton, write to the following coordinators at:

Department of Mathematics
California State University, Fullerton
800 N. State College Blvd.
Fullerton, CA 92831

(1) Teaching - Dr. Armando Martinez-Cruz
(2) Applied Mathematics - Dr. Charles Lee
(3) Statistics - Dr. Mori Jamshidian

Math Master's Degree Programs website:
http://math.fullerton.edu/programs/master-s-degree-programs

Enroll as a Mathematics Major at California State University, Fullerton

California State University, Fullerton offers several concentrations as mathematics major:

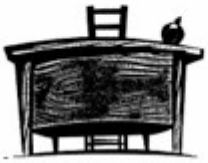
(1) Pure Mathematics Concentration, for the student planning on pursuing an advanced degree in mathematics.
(2) Applied Mathematics Concentration, for the student planning on a career in business, industry, or government
(3) Probability and Statistics Concentration, for the students planning on a career in an industry using mathematics as an analytic or descriptive tool, e.g. actuarial science.
(4) Teaching Mathematics Concentration, for the student planning to teach at the secondary school level.

For more information about applying at California State University, Fullerton as Mathematics major, write to:

Dr. Alfonso Agnew, Chair
Department of Mathematics
California State University, Fullerton
P.O. Box 6850
Fullerton, CA 92834-6850

Math Department website: http://math.fullerton.edu

MATHEMATICS TEACHERS NEEDED!!!



Make a difference; add to your enjoyment of life; multiply the benefits of teaching; divide your time along interesting math courses; and feel the power of accomplishment, thus bringing order to your life goals.

HIGH SCHOOL MATH TEACHERS:

If any of your senior students are planning to attend California State University, Fullerton as a Math major for the Fall 2025 semester and want to be a high school math teacher, let us know so that we can help them in the advising process. Either you or the students may contact Dr. Cherie Ichinose (**cichinose@fullerton.edu**) to convey this information. Please provide the names of interested students and their high schools. If they wish to be contacted, include their e-mail addresses.

Problem to Solve

The mean of 15 numbers is 22. An integer was added to the set of 15 numbers resulting in a new mean of 20. What integer was added?

Solution to Problem

By definition, the mean (average) of a set of numbers is the sum of the numbers in the set divided by the cardinality of the set (number of numbers in the set). Let T be the sum of the numbers in the set, n be the number of numbers in the set, and $\bar{x}$ be the mean (average). Then,
$\bar{x} = \frac{T}{n}$.
We know $\bar{x} = 22$ and n = 15, so we can write the equation, $22 = \frac{T}{15}$.

Solving for T, we have $T = (22)(15) = 330$.

Suppose we use x to represent the integer added to the total, so our new total is 330 + x. Our new mean is given to be 20, which yields the following equation:

$20 = \frac{330+x}{16}$. (We added one more number so now we have 16 numbers).

Solving for x, we get:

$(20)(16) = 330 + x$
$320 = 330 + x$
$-10 = x.$