

SSFUSD Mathematics Overview Board Study Session Presentation 8.29.2024



Agenda

1

Math Warm Up

2

Overview of the Updated Ca Math Framework
San Mateo County Office of Education

3

Imagine Learning Illustrative Mathematics
Ca Framework Connections
Imagine Learning Professional Learning Team

4

Learner Centered Adoption Process
Educational Services

5

A-G Math Requirements
Educational Services



Tonights Outcomes

- ❑ Develop a deeper understanding of the 2023 California Mathematics Framework and the expected instructional shifts
- ❑ Explore how Illustrative Math aligns with the 2023 Ca. Mathematics Framework, highlighting the key instructional shifts and connections to the learner-centered model
- ❑ Review the curriculum adoption process and professional learning plan
- ❑ Review SSFUSD graduation requirements and UC/CSU eligibility requirements in the context of math performance

Our strategic plan describes our **Core Values** & the **Strategic Priorities** we will focus on to bring our **Portrait of a Graduate** to life

Core Values

C

Community is our strength

A

Authentic relationships matter

R

Resilience propels us forward

E

Equity is our north star

Strategic Priorities / LCAP Goals



Exceptional Instruction



Engaged Students



Purposeful Partnerships

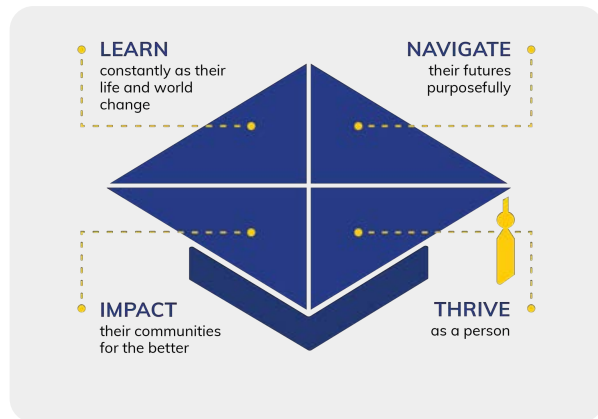


Empowered Educators



Equity-Centered Systems

Portrait of a Graduate



Key Strategic Plan Initiatives: Ways to Get Involved This Year

Key Initiatives for SY24-25	All	Some
Priority 1A: Co-create our learner-centered Instructional Vision (“South City Way”)	-All admin will give input on “South City Way” during Admin Retreat	-Some admin, educators & others will design via a Guiding Coalition (opt-in)
Priority 1B: Adopt high-quality curriculum & assessments with implementation support	-All admin will receive IM Math training -All sites will complete Science roll-out	-Some teachers will participate in Math pilot





As an educational community united in our commitment to equity, we work together to build relationships and ensure that every graduate has the essential academic and social-emotional skills, knowledge, and habits to:

SSFUSD's Portrait of a Graduate

GRADUATE AIM

CHARACTERISTIC

DESCRIPTION

LEARN

constantly as their life
and world change

Intellectual curiosity and
critical thinking

Academic excellence

Creativity and
resourcefulness

- Embraces a growth mindset and love of learning by seeking understanding, asking questions, and using data and evidence
- Demonstrates mastery of all academic disciplines needed for post-secondary success
- Explores their creativity and finds new and innovative ways to solve problems

THRIVE

as a person

Self-awareness

Wellness

Real-world readiness

- Confidently embraces their identities and understands their values, intentions, and impact on others
- Lives a healthy lifestyle that promotes their physical, mental, and emotional well-being
- Uses life skills including time management, goal setting, self-discipline, motivation, and self-advocacy to navigate day-to-day responsibilities, overcome obstacles, and feel successful

NAVIGATE

their future purposefully

Career and/or college
readiness

Technology skills

Financial literacy

- Understands their options after high school (education, careers, entrepreneurship), and is prepared for success in whatever path they choose
- Uses current technologies fluently to meet their needs and solve problems
- Understands the importance of money management and has the skills to make informed short and long-term financial decisions

IMPACT

their community
for the better

Collaboration

Community service and
engagement

- Demonstrates empathy, compassion, kindness, teamwork, effective communication, and respect to collaborate effectively toward a common goal
- Finds opportunities to support others and be involved in their communities



Our Strategic Plan defines 5 priorities for the next 5 years



Exceptional Instruction

Every student experiences exceptional instruction aligned with our Portrait of Graduate (PoG)



Engaged Students

Every student is a holistically-supported, self-directed learner



Purposeful Partnerships

Every student benefits from trusting, high-impact partnerships with families & community in support of realizing our PoG



Empowered Educators

SSFUSD is the Bay Area's leading organization for mission-driven educators



Equity-Centered Systems

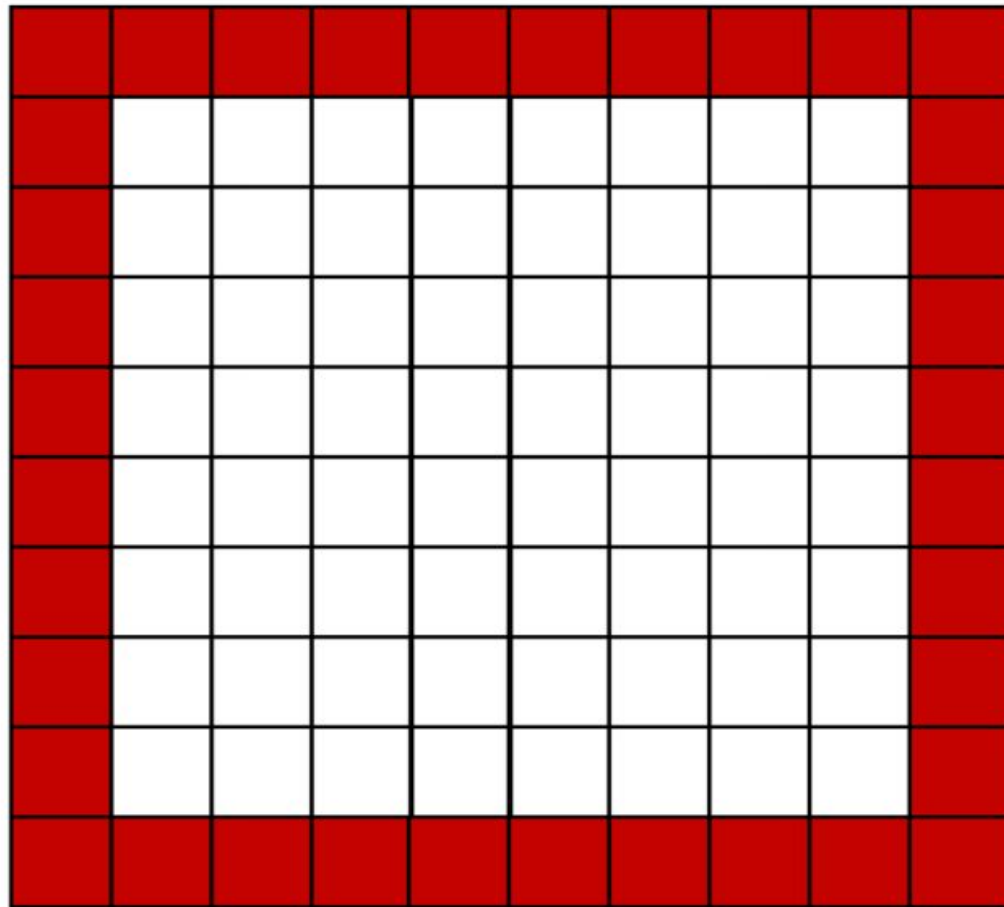
Our decisions, actions & resources reflect SSFUSD's commitment to equity



CA Math Framework and Expected Instructional Shifts

San Mateo County Office of Education





Video: 6th Grade Math Class



Translating between Fractions, Decimals, and Percents

Grade: 6th

CCSSM: 6.NS. Apply and extend previous understandings of numbers to the system of rational numbers.

Standards for Mathematical Practice:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
6. Attend to precision.
7. Look for and make use of structure

CCSSM: CA Common Core State Standards, Mathematics

Translating between Fractions, Decimals, and Percents

Students take turns:

1. Fill in the missing decimals and percents.
2. Place the cards in order of size.
3. Check that you agree.

0.05 5%	0.125 12.5%	0.2 20%	0.375 37.5%	0.5 50%	0.6 60%	0.75 75%	0.8 80%	1.25 125%
1	1	1	3	1	6	3	4	5

Mathematical goals

This lesson unit is intended to help students to:

- Compare, convert between and order fractions, decimals, and percents.
- Use area and linear models of fractions, decimals, and percents to understand equivalence.

The gray cards are the

Translating between Fractions, Decimals & Percents, 6th Grade



Translating between Fractions, Decimals, and Percents

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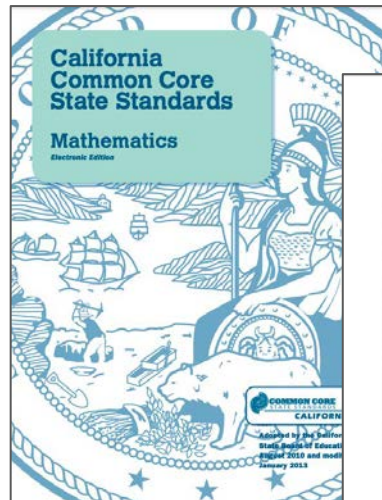
CCSSM: CA Common Core State Standards, Mathematics

Math UPDATE



STANDARDS AND FRAMEWORK – WHY BOTH?

The Standards are not a roadmap for teaching, they list content topics and mathematical practices, but not instructional goals.



The California Mathematics Framework: Summary

What is the Mathematics Framework?

The purpose of the 2023 Mathematics Framework for California Public Schools (Mathematics Framework) is to support implementation of the California Common Core State Standards for Mathematics (CA-CCSSM). Adopted in 2010 and updated in 2013, the standards put forth the state's vision for mathematics, kindergarten through grade twelve (K–12), mapping out what students need to know and be able to do in math by the end of each grade level. The framework offers guidance for enacting the standards through curriculum and instructional approaches grounded in research and reflecting best practices across the globe. The goal is to ensure equity and excellence in math learning so that all California students become powerful users of mathematics to better understand and positively impact the world—in their careers, in college, and in civic life.

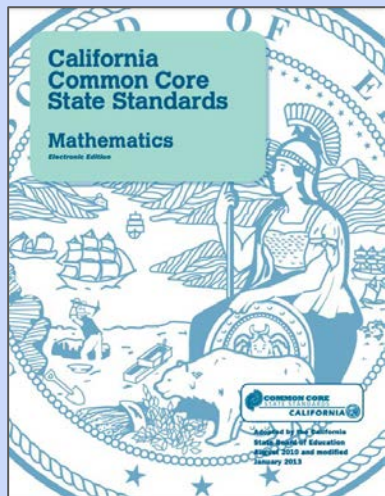
Why a New Framework?

Given the status of mathematics access and achievement, California and the United States (US) need to develop new approaches for deepening math learning, addressing achievement gaps, and modernizing instruction to meet the demands of a fast-changing world. The US has long rated below the international average in mathematics on the Programme for International Student Assessment (PISA), and scores have declined since PISA began in 2000. Currently, US 15-year-olds score lower than those in 30 other education systems. And California students score below the US average in mathematics with greatly inequitable achievement outcomes for historically underserved students of color and those from low-income families.

To address the urgency to improve mathematics learning, the framework provides new guidance for curriculum and instruction that builds on a body of research on effective mathematics teaching and learning and the successful approaches used in nations that produce high and equitable achievement in math. Helping students develop the thinking skills and content knowledge necessary to master the standards is critical to improving academic performance and creating conditions for later success. The 2023 Mathematics Framework includes strategies to support educators to integrate California's Standards for Mathematical Practices in ways that challenge, engage, and support all students in deep and relevant math content learning. Drawing on the experiences of educators who have worked for years to develop successful strategies for teaching California's rigorous standards, the framework's strategies and practices aim to ensure that all students develop deep skills and a love of mathematics and that many more choose to pursue a science, technology, engineering, or math (STEM) major in college or pursue other careers that benefit from quantitative knowledge and reasoning. Strong mathematical knowledge will better enable all of California's students to thrive as citizens in a complex world.

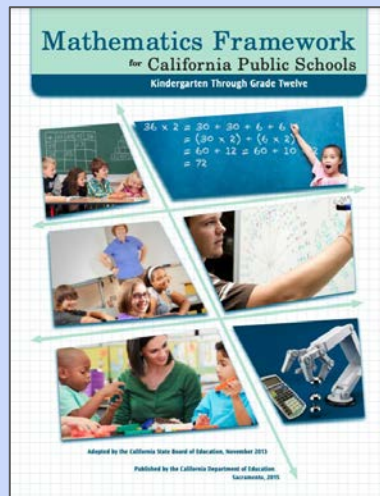
CA Common Core, Mathematics

Standards

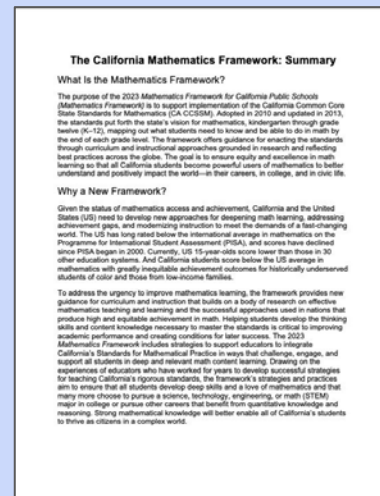


Adopted August 2010
Revised April 2013

Frameworks



Adopted November 2013



Adopted July 2023



The Promise of the Common Core State Standards

To prepare each and every student to be college- and career-ready



Two Types of Standards

- **Standards for Mathematical Practice**

Eight standards common to all grade levels K-12

- **Mathematical Content Standards**

Standards that vary by grade level and conceptual category



Standards for Mathematical Practice (SMPs)

aka Mathematical Practices

Mathematically
proficient
students...



Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Domains and Conceptual Categories

K	1	2	3	4	5	6	7	8	HS
Counting & Cardinality									
Number & Operations Base Ten						Ratios & Proportional Relationships			Number & Quantity
			Number & Operations Fractions			The Number System			
Operations & Algebraic Thinking						Expressions & Equations			Algebra
								Functions	Functions
Geometry									Geometry
Measurement & Data						Statistics & Probability			Statistics & Probability

The 2023 California Mathematics Framework



A society without **mathematical affection** is like a city without concerts, parks, or museums. To miss out on mathematics is to live without an opportunity to play with beautiful ideas and see the world in a new light.

—Francis Su (2020)



NEWS RELEASE

TONY THURMOND
STATE SUPERINTENDENT OF
PUBLIC INSTRUCTION

CDE/SSDE Joint Release: #23-54
July 12, 2023

Contact: Communications
E-mail: communications@cde.ca.gov
Phone: 916-319-5818

California Approves Revised Math Framework as a Step Forward for Equity and Excellence

SACRAMENTO—The California State Board of Education today approved the 2023 Mathematics Framework for California Public Schools, instructional guidance for educators that affirms California's commitment to ensuring equity and excellence in math learning for all students.

"I'm thankful for everyone who worked tirelessly to develop this framework to ensure California's students have equitable access to rigorous and high-quality math instruction that will prepare them for the future. The framework has struck a great balance in new ways to engage students in developing a love for math while supporting those on an accelerated path," said Mary Nicely, Chief Deputy Superintendent of Public Instruction. "Our State Superintendent is a champion of equity and excellence, and it is our core mission that every child—regardless of race, ZIP code, or background—has access to a quality education. The approval of the revised Math Framework is one more step forward to meeting the needs of all California's students."

The vote today concludes four years of work to update math instructional guidance aligned with the [California Common Core State Standards for Mathematics](#) (CCSS), which are rigorous learning standards that detail what every student should know and be able to do at every grade level. The framework approved today is the third iteration and reflects revisions responsive to thousands of public comments fielded over two 60-day public comment periods and two public hearings.

The draft was presented by Dr. Mike Torres, Executive Director of the Instructional Quality Commission and a former high school math teacher. Others who participated in the presentation include Dr. Krystal Brown, Executive Director of the California Mathematics Project at the University of California, Los Angeles; Omwale Moses, Founder and Chief Executive Officer of Math Talks; Dr. Adrian Mims, Founder of The Calculus Project; Ellen Berger, Chair of the Curriculum and Improvement Support Committee of the California County Superintendents; and Dr. Lindsey Gotanda, Vice Chair of the Instructional Quality Commission.

"This framework provides strategies to challenge, engage, and support all students in deep and relevant math learning by building on successful approaches used in nations that produce high and equitable achievement in math," said State Board President Linda Darling-Hammond. "It also draws on the experiences of educators who have worked for a decade to develop successful strategies for teaching California's rigorous standards, carrying those lessons to others across the state. This framework provides teachers and schools with a path to greater excellence with greater equity."

The guidance includes strategies to:

- Structure the teaching of the state's math standards around "big ideas" that integrate rather than isolate math concepts—a best practice in high-performing countries.
- Increase focus on developing student mathematical expertise as described in California's Standards for Mathematical Practice, which include the ability to make sense of problems and persevere to solve them; to reason abstractly and quantitatively; to attend to precision; and to apply the mathematics they know to solve problems arising in everyday life, society, and the workplace.
- Connect learning to the "real world" through authentic examples and use of data, prompting students to ask and answer meaningful questions. Adding authenticity to lessons helps teachers answer students' questions around "why do I need to learn this?"
- Allow students to "see themselves" in curriculum and in math-related careers by making math instruction culturally relevant and empowering.
- Stimulate deep learning by sparking student curiosity through lessons that encourage inquiry and problem-solving.
- Ensure that students develop both appreciation of math concepts and fluency in using math efficiently through the productive use of algorithms and mastery of math facts they have come to understand.
- Integrate and align math concepts taught at the elementary, middle, and high school levels.
- Ensure that all high school math pathways are open to all students.
- Support multiple ways to get more students to higher-level mathematics—ranging from successful acceleration to differentiated instruction, personalized supports, extra lab sections, and additional coursework offered at multiple junctures—augmenting more effective core instruction.
- Expand high school math course options to encourage more students to go beyond minimum course requirements.
- Encourage students across age spans to become proficient at understanding and using data—a key skill in the 21st century job market.
- Help students to identify misleading uses of data and use data to make decisions in their roles as global citizens.
- Develop in students a "growth mindset" about mathematics, in line with the groundbreaking research of Stanford's Dr. Carol Dweck, that supports effort and perseverance.
- Build confidence in learners by dispelling myths about who can and cannot learn math.
- Develop instruction and curriculum that is "multi-dimensional" and employs the use of visuals, graphics, and words in addition to numbers and equations.

More information is available on the [California Department of Education's Mathematics Frameworks page](#), which includes frequently asked questions, an overview, and a timeline of events in the framework's development.

Tony Thurmond – State Superintendent of Public Instruction
Communications Division, Room 5825, 916-319-5818, Fax 916-319-0100

Last Reviewed: Wednesday, July 12, 2023

- CDE Press Release about the Mathematics Framework
- California Mathematics Framework Summary



What does “Equity” mean in the Framework?

- All students deserve powerful mathematics instruction. High-level mathematics achievement is not dependent on rare natural gifts, but rather can be cultivated.
- All students, regardless of background, language of origin, learning differences, or foundational knowledge are capable and deserving of depth of understanding and engagement in rich mathematics tasks.
- Student engagement must be a goal in designing mathematics curriculum, alongside critical content goals.
- Students’ cultural backgrounds, experiences, and languages are resources for teaching and learning mathematics.



[California Mathematics Framework Summary](#)

[Chapter 1: Mathematics for All: Purpose, Understanding, and Connection](#)

[Chapter 2: Teaching for Equity and Engagement](#)

**SBE Adopted
on July 12, 2023**

[Chapter 3: Number Sense](#)

[Chapter 4: Exploring, Discovering, and Reasoning With and About Mathematics](#)

[Chapter 5: Mathematical Foundations for Data Science](#)

[Chapter 6: Mathematics: Investigating and Connecting, Transitional Kindergarten through Grade Five](#)

[Chapter 7: Mathematics: Investigating and Connecting, Grades Six through Eight](#)

[Chapter 8: Mathematics: Investigating and Connecting, High School](#)

[Chapter 9: Structuring School Experiences for Equity and Engagement](#)

[Chapter 10: Supporting Educators in Offering Equitable and Engaging Mathematics Instruction](#)

[Chapter 11: Technology and Distance Learning in the Teaching of Mathematics](#)

[Chapter 12: Mathematics Assessment in the 21st Century](#)

[Chapter 13: Instructional Materials to Support Equitable and Engaging Learning of the CA CCSSM](#)

[Chapter 14: Glossary: Acronyms and Terms](#)

[Appendix A: Mathematical Progressions within the High School Pathways and Key Mathematical](#)

[Ideas to Promote Student Success in Introductory University Courses in Quantitative Fields](#)

[Appendix B: Works Cited](#)

[Appendix C: Vignettes](#)

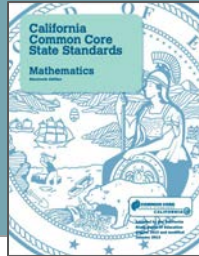
Chapters, 2023 CA Mathematics Framework



2023 CA Mathematics Framework

What has stayed the same?

- Content Standards
- Standards for Mathematical Practice



What has changed?

- Drivers of Investigations
- Content Connections
- Big Ideas

Five Components of Equitable and Engaging Teaching for All Students

One: Plan teaching around big ideas

Two: Use open, engaging tasks

Three: Teach toward social justice

Four: Invite student questions and conjectures

Five: Prioritize reasoning and justification



THANK YOU



Imagine Learning Illustrative Mathematics Imagine Learning Math Team



Let's imagine equitable and
engaging mathematics.



From Vision to Impact

Connecting Imagine IM to the California
Math Framework



A world where ALL learners
know, use, and enjoy mathematics.

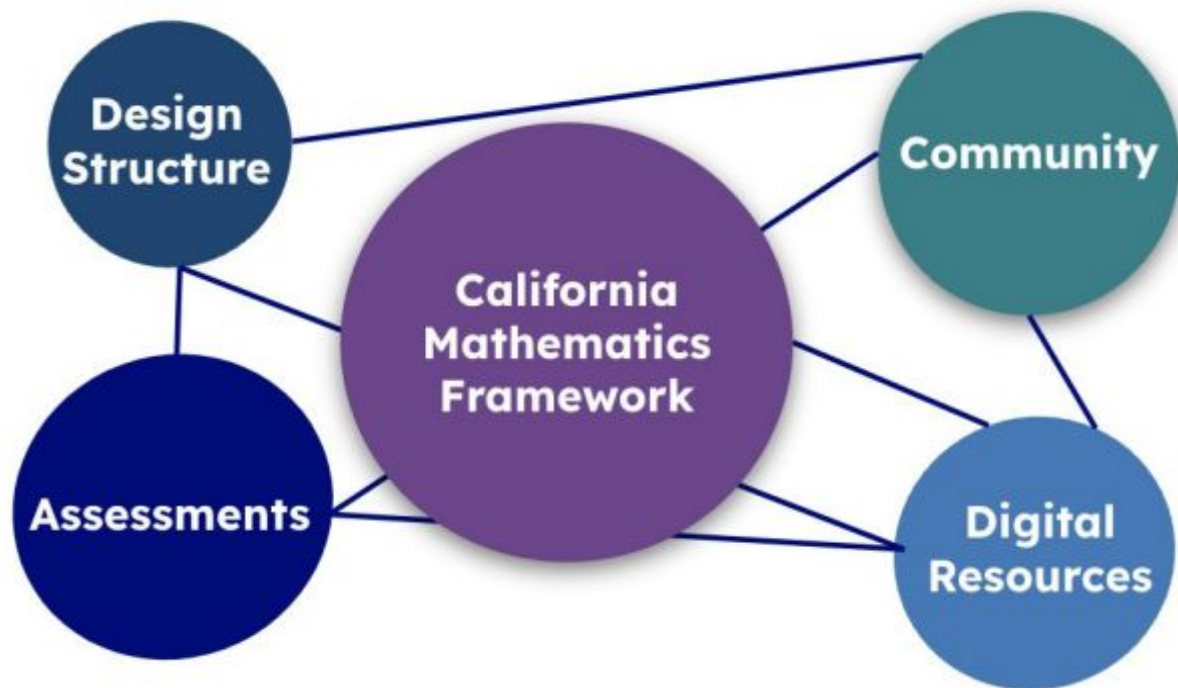
California
Content
Standards



Standards for
Mathematical
Practices



Shifting Teaching, Learning, and Mindsets

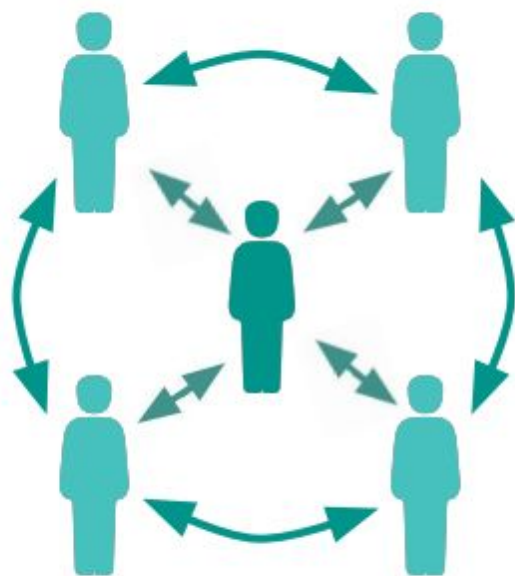
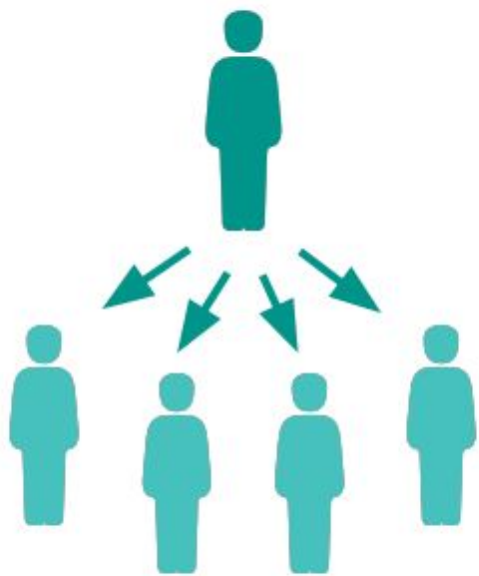


Three Dimensions of Systemic Change that Support Mathematics Instruction

- ❑ Asset-based approach to learning
- ❑ Active engagement through investigation and connection
- ❑ Culture and personal relevance

Five Components of Equitable and Engaging Teaching for All Students

- ❑ Plan teaching around big idea
- ❑ Use open ended tasks
- ❑ Teach towards social justice
- ❑ Invite student questions and conjectures
- ❑ Prioritize reasoning and justification



Launch

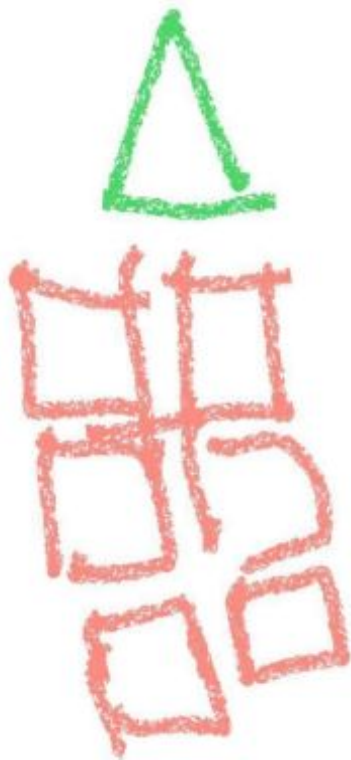
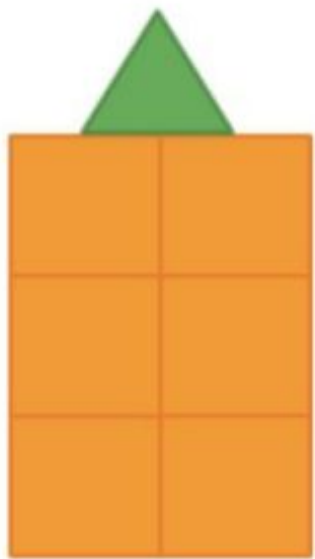
Engage,
Connect &
Build
Community

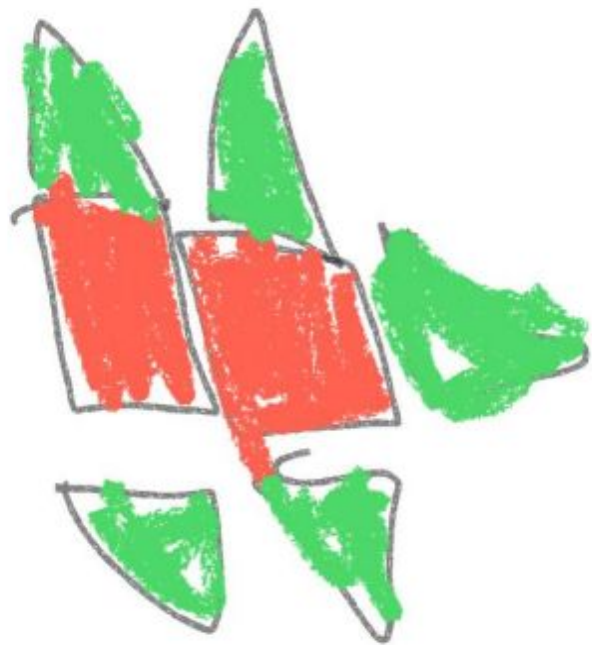
Worktime

Think, Explore,
Solve &
Collaborate

Synthesis

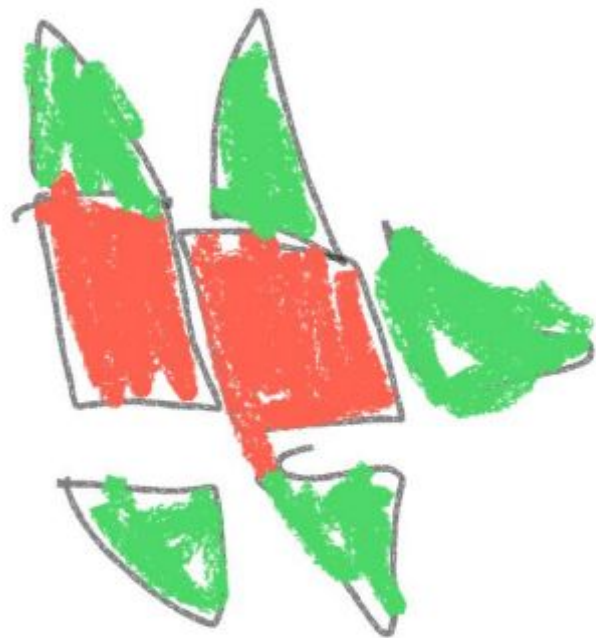
Connect, Apply
& Consolidate





$$5 + 2$$





Shifting Teaching, Learning & Mindsets



$$7 + 3$$



K.5 Unit Launch: Learning Narrative Video

The Unit Launch: Learning Narrative video for Grade K, Unit 5 gives insight into the unit objectives, models and representations, possible student errors and misconceptions, and tips that might be used to help support student und...



IMAGINE IM



K.5 Learning Progressions Video

The Unit Launch: Learning Progressions video for Kindergarten, Unit 5 details how the content of a unit builds upon prior knowledge, and how the understanding of the content provides students with readiness for future learning. T...



IMAGINE IM



5



K.5 Learning Supports Video

The Unit Launch: Learning Supports video for Kindergarten, Unit 5 gives an in-depth look into the models and representations used in this unit to help support student understanding. The Learning Supports video is ideal for teache...



IMAGINE IM



$$10 = 4 + 6$$



K.5 Unit Launch: Family Support Video

The Unit Launch: Family Support video for Grade K, Unit 5 provides the background a family could need to support student learning throughout this unit. The Family Support video includes prior learning, vocabulary explanations, ma...



IMAGINE IM

$$17 - 9$$

$$17 - 7 = 10$$

$$10 - 2 = 8$$



Shifting Teaching, Learning & Mindsets



Inspire Math
Videos

Find the value of each expression mentally.

$$2\frac{3}{4} - 1\frac{1}{4}$$

$$1\frac{1}{4} - \frac{3}{4}$$

$$5\frac{1}{8} - 2\frac{3}{8}$$

$$3\frac{2}{10} - 2\frac{7}{10}$$



Diego and Jada are both trying to write an expression with fewer terms that is equivalent to:

$$6j + 4d - 2j + 3d$$

- Jada thinks $8j + 1d$ is equivalent to the original expression.
- Diego thinks $4j + 7d$ is equivalent to the original expression.



Shifting Teaching, Learning & Mindsets



Family Support Hub: Imagine IM K-8

A centralized hub for K-8 Family Support Materials. The Family Support Hub is a one-stop destination for parents and guardians seeking educational resources tailored to their child's Imagine IM learning journey.

27

Cool-down

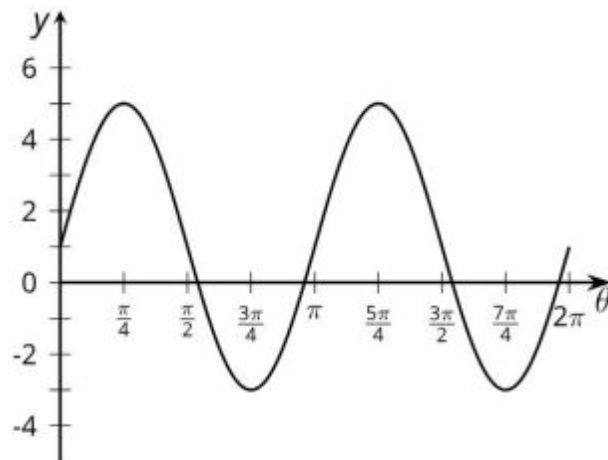


Write each expression with fewer terms. Show your work or explain your reasoning.

1) $10x - 2x$

2) $10x - 3y + 2x$

Here is the graph of a trigonometric function.



a. What are the midline and amplitude of this function?

Type the answers in the boxes below.

The midline is , the amplitude is .

How to play

 Add within 20



The game interface features a central 3x3 grid of numbers on a desert background. The numbers are arranged as follows:

17	15	16
12	13	14
18	19	20

On the left side, Player 1's information is displayed:

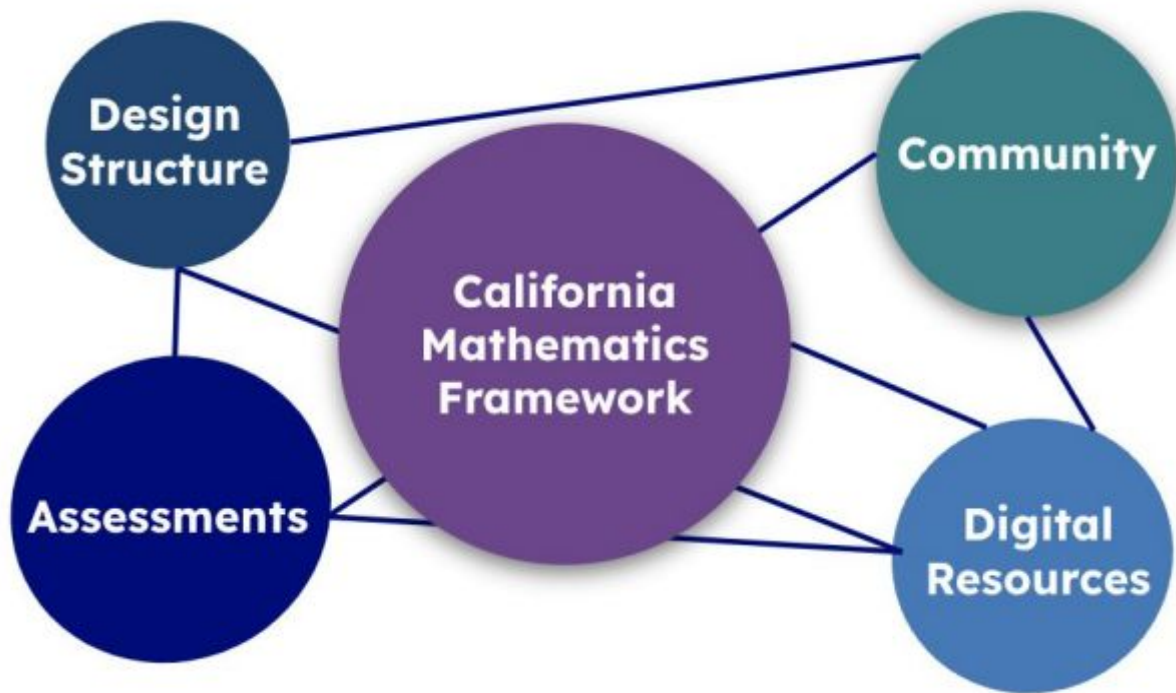
- Player 1 icon (purple face)
- Captured Squares: 3 green squares

On the right side, Player 2's information is displayed:

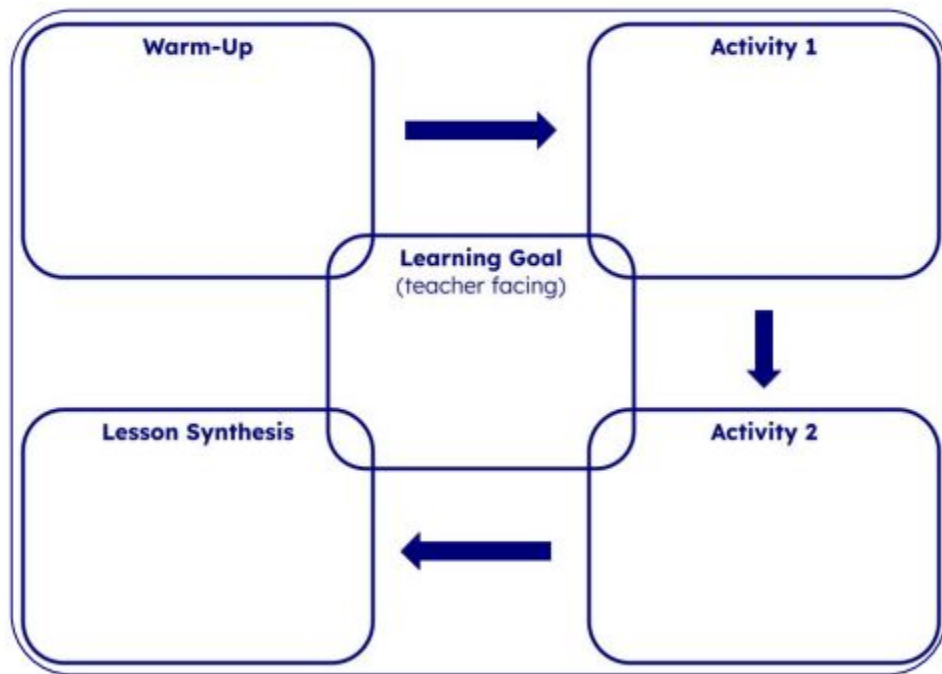
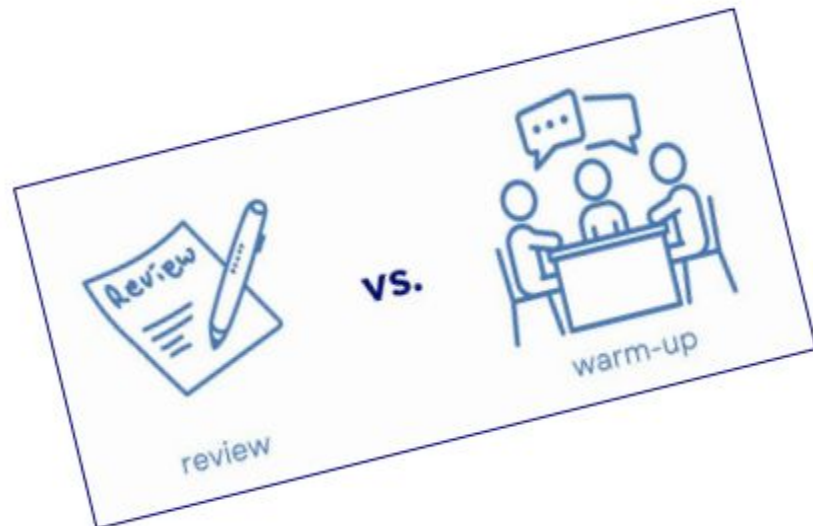
- Captured Squares: 3 blue squares
- Player 2 icon (blue face)

At the bottom center, there is a purple square button with a white checkmark. The bottom of the interface includes a play button, a progress bar, and a speaker icon.

Shifting Teaching, Learning, and Mindsets



Professional Learning



Three Dimensions of Systemic Change that Support Mathematics Instruction

- ✓ Asset-based approach to learning
- ✓ Active engagement through investigation and connection
- ✓ Culture and personal relevance

Five Components of Equitable and Engaging Teaching for All Students

- ✓ Plan teaching around big idea
- ✓ Use open ended tasks
- ✓ Teach towards social justice
- ✓ Invite student questions and conjectures
- ✓ Prioritize reasoning and justification

REACH FULL

MATH POTENTIAL





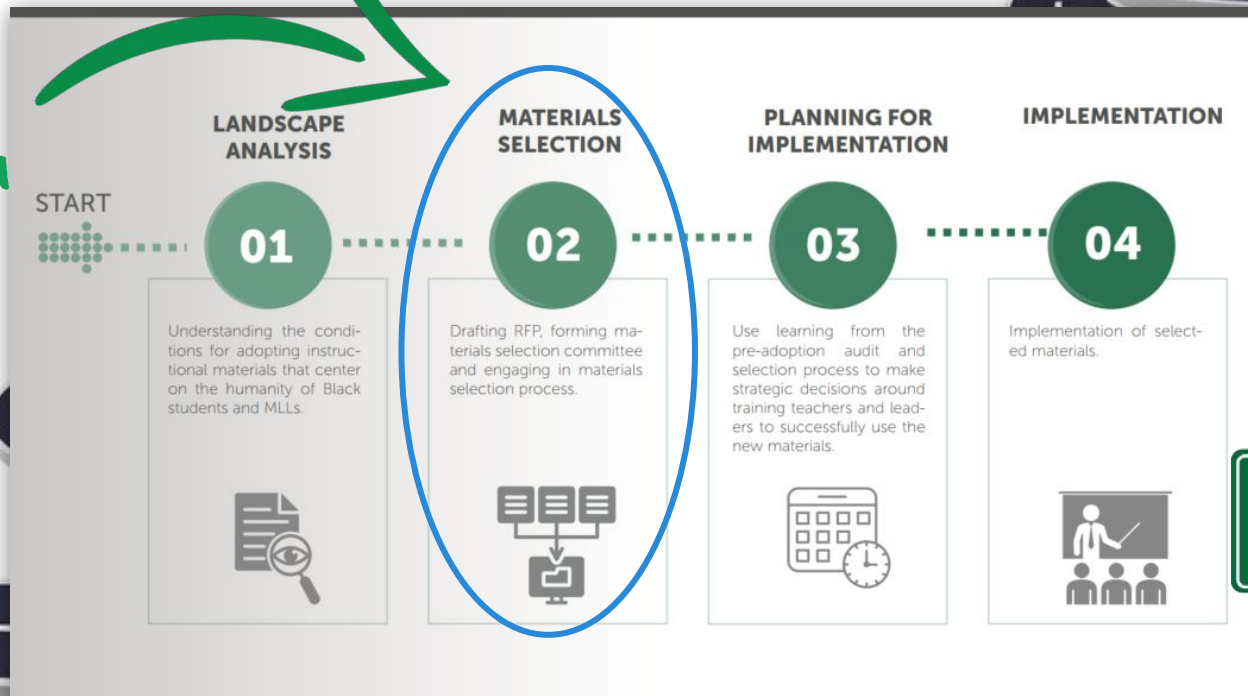
Math Adoption Process

SSFUSD Math Team



Adoption and Implementation of Instructional Materials

Our
Team



Journey

SSFUSD Adoption Priorities

- A. A focus on growth mindset and building student confidence
- B. Intervention material & supports for all learners are usable and included in the curriculum (accessible for struggling students and challenging for advanced students)
- C. Authentic student collaboration (structures for sharing) is built into lessons
- D. Hands-on math lessons that can be applied to the real world and is relevant to students
- E. Math instruction builds conceptual understanding
- F. Curriculum has language supports built in for ELs/all learners
- G. Parents are communicated with around curriculum and how to support

IM naturally guides students into collaboration because problems are of high ceiling and low floor.

With such natural collaboration, students have many opportunities to use mathematical language in their discussions

-HS Teacher

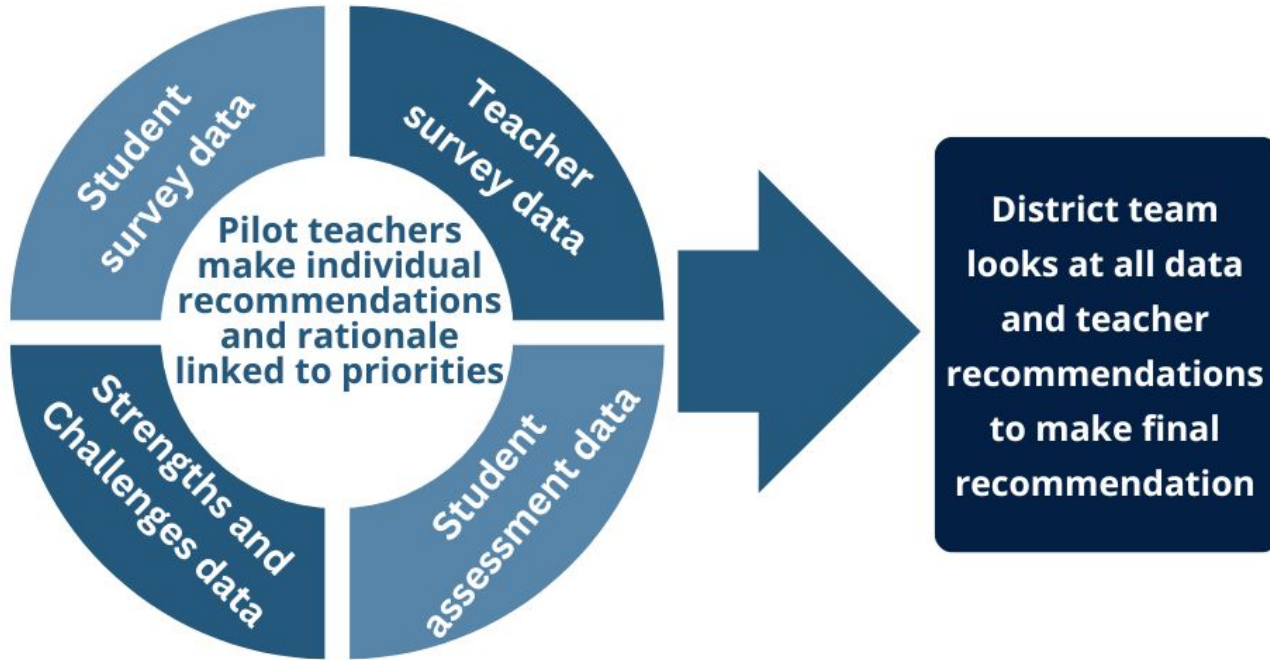
I cannot stress enough the importance of conceptual understanding in a math class. IM has that covered for me. It helps me as a teacher facilitate and guide students to that understanding. Only after student know that do they apply and practice with procedural knowledge.

-MS Teacher

This curriculum is focused on building Conceptual understand for all learners. In teaching the IM lessons to my Special Education students, who are mostly Multi-Language learners, I found this curriculum to be extremely accessible. 4th grade students who were at a Kindergarten level on diagnostics have been able to access grade level standards and show understanding.

- Elementary Teacher

MATH PILOT ILC (IM)



Piloting Expectations and District Commitments

Participants in the math pilot will:

- Receive comprehensive professional development and all necessary instructional materials for the entire academic year
- Provide ongoing feedback during the evaluation phase to guide potential expansion and/or adoption of the pilot
- Commit to full participation throughout the duration of the pilot
- Commit to implement the curriculum with integrity
- Attend all scheduled professional development sessions. Participants unable to attend summer training must agree to complete make-up sessions for any missed days
- Collect and submit all required data, including assessments and student feedback, during the pilot
- Engage in professional growth activities, such as readings, reflections, and classroom observations
- Agree to allow classroom observations throughout the piloting process

Educational Services will:

- Supply all required materials and manipulatives, including centers for 3rd-5th grades, for the entire year of instruction
- Contract with ILC, who will provide professional development and implementation support for all participating teachers and administrators
- Cover the cost of substitutes and stipends for participating teachers
- Demonstrate the capability to offer meaningful and sustained support throughout the duration of the pilot
- Conduct regular site visits and check-ins with piloting teachers to monitor progress and provide ongoing support



2024/2025 EDS Pilot Outcomes

- Demonstrate the capability to offer meaningful and sustained support throughout the duration of the pilot
- Support all piloting educators in making individual recommendations based on strong evidence and reasoning aligned with math priorities.



2024-2025 Piloting Team

3rd	4th	5th	6th	7th	8th	Alg1	Geom	Alg2
Spruce	Buri	JS	ALMS	PHMS	PHMS	Baden	Baden	ECHS
Martin	JS	Monte Verde	PHMS	WMS	WMS	SSFHS	ECHS	SSFHS
Skyline	Monte Verde	Spruce	WMS				SSFHS	





A-G Math Requirements

Mr. Irish and Dr. Hew



Math Requirements for SSFUSD Graduation and UC/CSU

SSFUSD Graduation

3 years of math, must include
Algebra 1

30 credits of 220 total

UC/CSU Admission

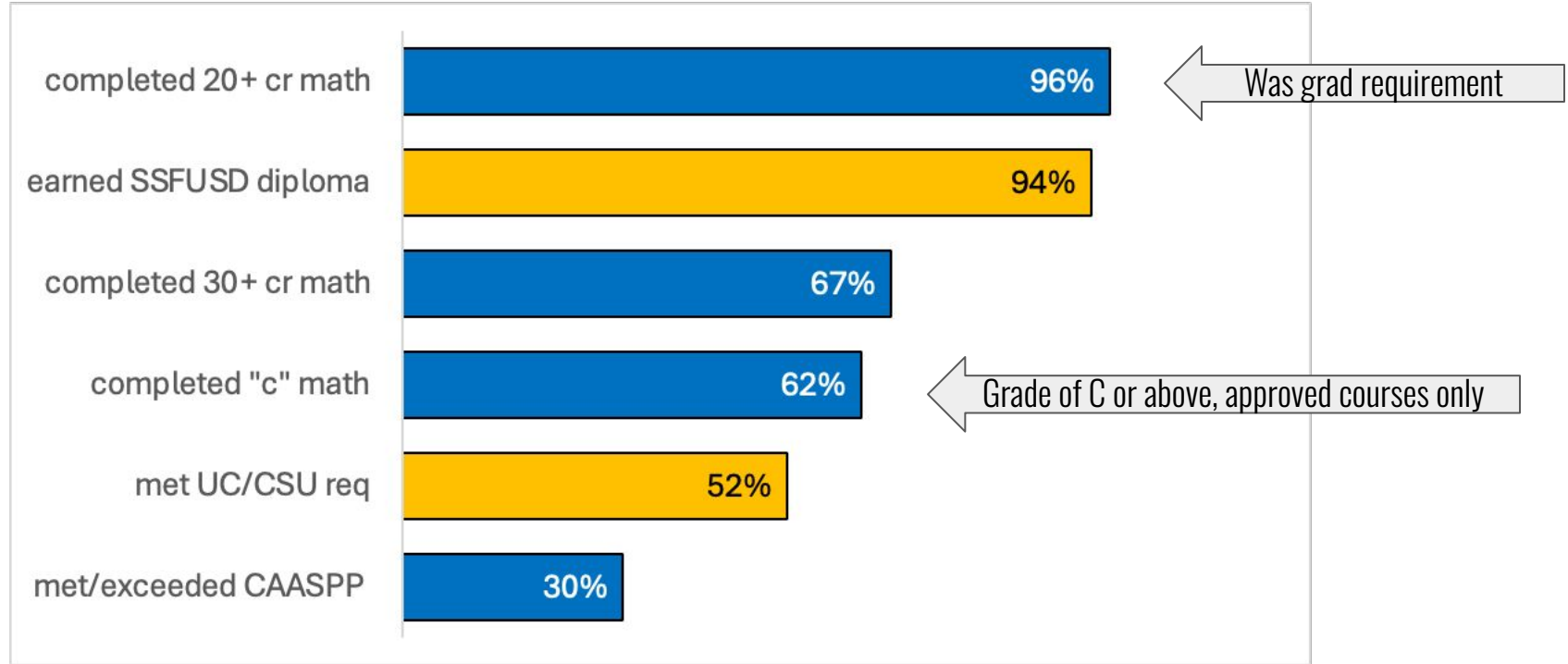
3 years of math, must
include Geometry and
Algebra 2 or equivalent

3 courses of 15 total



Recent Cohort and Math Attainment

Of students in the Class of 2024* (n=663)...



**data based on preliminary cohort analysis, not CDE certified*

