

Dear California State Board of Education,

I am writing to ask you to REJECT the Mathematics Framework Revised Draft (CMF) proposed for the July 12-13, 2023 meeting. If the CMF vision is implemented, our Black and Brown students will suffer the most. It is well known that being proficient in mathematics is a strong indicator of later economic success in life, and yet, Black or African American and Brown (Latino or Hispanic) students in California are failing math at historic rates. Black or African American students are down to 16% proficient or advanced on CAASPP in 2021-22 from their high of 21% in 2019, and Latino or Hispanic students are down to 21% proficient or advanced in 2021-22 from their high of 28% in 2019. (Ch 2, line 54) The majority of teachers go into education to better the lives of students, regardless of their skin color; in mathematics, this means helping all their students achieve proficiency in math content standards. What does the CMF suggest to teachers to help increase the proficiency of these ethnic groups? Does the CMF devote extensive time to discussing successful intervention and tutoring programs which raise test scores for these students? Unfortunately, the CMF is instead focused on ensuring these students have “authentic experiences” and that teachers “center contributions that historically marginalized people have made to mathematics.” (Ch 2 line 513) This is akin to saying you will help someone get better at soccer by showing them people from their ethnic group who are experts and then getting them excited about soccer; who thinks that will help? Everyone knows you get better at soccer (and in our case, math) by learning and practicing. Rather than assume our black and brown students need some type of “show” to help them learn, let’s support them to put in the hard work to master math content standards and achieve proficiency on the CAASPP.

Following are the major ways in which the CMF will harm black and brown students.

1. The CMF proposes all content fit within 4 “Content Connections” (CC’s), two of which are NOT MAJOR according to the 2013 California Content Standards. Students with teachers who focus on these 4 CC’s will lose ground compared with their peers who have teachers who ignore this advice and instead teach the content standards or those who will get tutors or outside support.
 - a. In the 2013 CA Math Framework (and also noted in the Blueprint for the CAASPP exam), standards are labeled as the “major” work of the grade level or labeled as “additional” or “supporting” standards. It is explained that the additional/supporting standards provide context and opportunities for students to practice and apply what is major, but the learning of those standards is not as important in and of themselves. In all grade levels, K-8 the major work includes all facts and operations with whole numbers, fractions, decimals and integers, place value, algebraic thinking (including expressions and equations), and ratios and proportions. Additional or supporting standards include all standards related to data, statistics or probability as well as all standards related to Geometry. The 4 CC’s, which the CMF describe as the “what” of teaching math are as follows: 1) Reasoning with Data; 2) Exploring Changing Quantities; 3) Taking wholes apart, putting wholes together; and 4) Discovering shape and space (Ch 1 Line 457).

So two of the four CC's (50%) are topics which the California Common Core Content Standards for Mathematics (as evidenced in the 2013 CA math framework and the SBAC blueprint) says are NOT MAJOR WORK of ANY GRADE LEVEL. How will 50% of the "what" of math being focused on standards that are not major support struggling students? As the CMF says repeatedly, it might be more "engaging" and help them develop "positive math identities", but this will leave them further behind. The 4 CC's are then connected to "Big Ideas", which the CMF tells teachers to "teach from" instead of "individual content standards" (even though some content standards, such as grade 5 NBT 7, include students adding, subtract, multiplying decimals to the hundredths). Why can't a teacher spend a month or more on that **major**, individual standard?

2. The CMF focuses on "engagement" through "authentic tasks" over mastery of content.

- a. The CMF uses the phrase "Engaging" or "student engagement" in reference to ensuring students are "engaged" by the math 120 times. For comparison, the use of "proficiency" in math content appears 11 times and "mastery" of math content 9 times. How disappointing that the CMF is more concerned with engagement than the learning of math content standards.

Following is a description of what engaging math is according to the authors of the CMF. "Research shows that students achieve at higher levels when they are actively engaged in the learning process (Boaler, 2016; CAST, n.d.). Educators can increase student engagement by selecting **challenging mathematics problems** that invite *all* learners . . .

- involve multiple content areas;
- highlight contributions of diverse cultural groups;
- invite curiosity;
- allow for multiple approaches, collaboration, and representations in multiple languages; and
- "carry the expectation that students will use mathematical reasoning" (Ch 6 Line 170)

If you have ever known or worked with a struggling math student (which, again, is roughly 67% of all CA students and 80-85% of black and brown students), you know they are not engaged by "challenging math problems", they do not have time to work on "multiple content areas" when so far behind, and highlighting contributions of diverse cultural groups does not make the learning of the math any easier.

- b. The CMF uses the phrase "authentic" to describe the types of tasks they want teachers to create or use 109 times; again, compare this with the 11 times proficiency in math appears, the 9 times mastery of math appears or even the 71 times "fluency" appears (of which many times the CMF discusses "fluency" in a negative light.) It is clear the CMF prioritizes "authentic" tasks over student mastery of content standards. While most would agree that it is wonderful to have students see the need for mathematics and experience the application of

math in relevant contexts, this can not be the sole focus of a teacher. For our struggling students to improve, there needs to be a strong emphasis in a CA Math Framework on also having students achieve procedural fluency and memorization of facts (even if not via “authentic” tasks).

Authentic tasks are defined in the CMF: “An authentic activity or problem is one in which students investigate or struggle with situations or questions about which they actually wonder. Lesson design should be built to elicit that wondering. In contrast, an activity is inauthentic if students recognize it as straightforward practice of recently learned techniques or procedures, including the repackaging of standard exercises in forced “real-world” contexts.” (Ch 10, line 92).

Additionally, the CMF states, “Authentic describes a problem, activity, or context in which students investigate or struggle with situations or questions about which they actually wonder.” (Ch 14 line 40)

So, what do “authentic, engaging tasks” look like? In a Vignette of a grade 4 classroom (Appendix C, Line 2001) we read of this engaging task: “He begins the lesson by showing students the image of a rectangle with each length side labeled L and each width side labeled W. He asks them to write an expression for the perimeter of this rectangle using the given variables.” How is this “a question about which a student actually wonders”? How is this engaging?

The CMF is also full of other examples that do involve real world contexts, but then involve little to no math learning. For example, Chapter 7 line 832 discusses how a teacher has her students understand bird houses being built. After learning about the houses and then working with partners to draft their own questions to study, the CMF explains, “Four questions in particular seem fruitful to explore mathematically. After the class helps her further clarify them, she writes the final questions on the board and has each student pair choose one that the partners will investigate. She gives them 20 minutes, after which they will report their findings to the class by making a small poster. The questions are:

1. Why do the birds like to build nests in the houses like this? Why not all single chamber houses, for example?”

How is this “fruitful to explore” mathematically? This is a middle school class. How will spending an entire class period on this help black and brown students to increase their math proficiency?

3. The CMF rejects any focus on procedural fluency and memorization of math facts, though at times the CMF even notes that this is needed for success in other math topics.
 - a. In regards to students being given steps to follow, the CMF states, “Lists of steps should only be provided when generated by students themselves in describing their steps on particular problems, lest students trade active reasoning from intrinsic properties to a reliance upon rote procedural skills.” (Ch 3, line 1340) What about students who do not “generate” the “list of steps” by themselves?

Are they just left further behind? This will not help our students who are below proficient already. The CMF also states, “They must also avoid any temptation to conflate fluency and speed.” (Ch 6, Line 1650) Without speed in multiplication facts, black and brown students (and all students) will continue to fail as they matriculate into middle and high school. In one more example, the CMF states, “Exercises (i.e., tasks for which students already have the tools) should either be embedded in a larger problem that is motivating (e.g., an authentic problem, perhaps involving patterns, games, or real-world contexts, such as environmental or social justice), or should address strategies whose improvement will help students accomplish some motivating goal.” (Ch 1 line 616) So, the CMF is proposing students don’t just practice flashcards (like most of us did for decades) or do worksheets or listen to songs to help them memorize unless these relate to a real world context? In a similar vein, the CMF states, “In contrast, an activity is inauthentic if students recognize it as a straightforward practice of recently-learned techniques or procedures, including the repackaging of standard exercises in forced real-world contexts (Ch 14 line 46). So clearly all of us who did “straightforward practice” must have not learned math. Again, this type of language from the CMF will cause harm to our already struggling black and brown students. The CMF claims, “By engaging in meaningful activities and explorations, students gain fluency with multiplication and division with numbers up to 10.” (Ch 6 line 1413). Where is the evidence to support this, especially against the traditional methods that have helped students memorize multiplication facts for decades?

- b. The CMF, ironically makes statements about things students need to be fluent in to be successful. We read, “Proficiency with rational numbers written in fraction notation is essential for success in more advanced mathematics such as percentages, ratios and proportions, and algebra.” (Ch 6 Line 1720). In another example, the CMF states, “A third-grade student’s ability to add and subtract numbers to 1000 fluently (3.NBT.2) is largely dependent on their ability to think of numbers flexibly, to compose and decompose numbers (CC3), and to recognize the inverse relationship between addition and subtraction. For example, a third-grader mentally adds $67 + 84$, decomposing by place value, and recognizing that $67 + 84 = (60 + 80) + (7 + 4) = 140 + 11 = 151$. Another student, noting that 67 is close to 70, adjusts both addends: $67 + 84 = 70 + 81$. Choosing to solve the easier problem, the student computes $70 + 81 = 151$ ” (Ch 3 line 643). First, note that grade 3 students depend upon fluency from K-2; more importantly, though, this “required fluency” to add and subtract numbers within 1000 should be done with pencil and paper as is clearly noted in the 2013 CA Math Framework back when grade 2 students were to be fluent in adding and subtracting within 100. Why is the CMF so against procedural math? Why are we forcing our non-proficient students to do all of this mentally when many will experience more success with pencil and paper?

4. The CMF proposes that teachers also teach The Environmental Principles and Content (EP & C's), other content areas (such as science and history) and focus on seeking inequities and problematizing the world instead of mastering math content. While engaging contexts and cross-curricular explorations are beneficial for sure, the burden should not be on the math teacher to also make sure to embed other content areas when students are so far below grade level after school closures in California. The CMF states, "Teachers must be mindful of other considerations that are a high priority for California's education system. These include the EP&Cs, which allow students to examine issues of environmental and social justice." (Ch 1 Line 861) Continuing in that line of thinking, the CMF says, "For example, environmental issues on the school campus or in the local community provide rich contexts for student investigations and mathematical analysis, which, concurrently, help students develop their understanding of California's Environmental Principles and Concepts." (Ch 7 line 237). There is simply not enough time for students to make up for learning loss, learn the current year's math standards and then have time to explore the EP & C's.
5. The CMF has "vignettes" (descriptions of classrooms) which are unrealistic and which will leave struggling students further behind.
 - a. Some vignettes give examples of things not close to grade level standards. For example, Chapter 3 line 389 describes a question to pose to a class: "How many numbers can you create that have values between 1 and 20 using exactly four 4s and any operation?" While this might be a great investigation, the CMF lists as a possible content standard: "K – Being flexible within 10 (OA.1, OA.3)", meaning KINDERGARTEN. Grade 1 works with 3 addends; 4 addends are not until grade 2, and this task really is about multiple operations including multiplication and division. Students who are struggling in math will not benefit from teachers posing problems 2-3 years above grade level.
 - b. Some vignettes just describe things that are not realistic in a class, especially one comprised of mostly below proficient students. For example, the CMF says, "The teacher called for the class to explore this conjecture and to see whether they could find a way to prove whether it is always true or not. Now the whole class was interested and trying to prove or disprove Ryan's and Anen's conjecture." (Ch 2 line 709) Really, the whole class is trying to prove a conjecture in elementary school? It's very realistic to expect a good percent of the class to be engaged in this, but those who do not like math and are far behind might find better things to consider (like the bird flying outside or what's in their backpack). For a middle school example of this, the CMF states, "Students can be sure that p times x is another rational number because they have built an intuition about the closure property of multiplication through their prior work in multiplying specific rational numbers together and seeing the answers that are arrived at." (Ch 3 line 1328) We know some of the CMF authors have classroom experience, but lines like this make that hard to believe. "Building an intuition about the closure property of multiplication" is not the typical thinking in a classroom comprised of mostly black and brown students (or any classroom).

- c. The reason we know that our black and brown students are failing at higher rates is a result of standardized testing. Recognizing, as a state or nation, that our students or a specific sub-group of students are failing might not be possible if the CMF is adopted and followed. The CMF states, “Grades will NOT be based on percentages or averages but instead will be determined holistically.” (Ch 12, line 633) How will this approach to grading help us OBJECTIVELY identify needs and work to build supports?
6. The CMF suggests that teachers create all types of tasks to engage and teach their students while differentiating to meet all levels of needs; this leaves a students’ success in math up to the teacher; thus inequitable experiences will result.
 - a. The CMF states, in multiple places, that teachers will have to create tasks. “To teach the grade level’s big ideas, a **teacher will design instructional activities** that link one or more of the CCs with a DI.” (Ch 7 line 228) Teacher Unions are very strong in California. Teachers can not be expected to create tasks on their own time, so either they need to *volunteer to* be paid outside the school day or there needs to be built in time for teachers to do this work (keep in mind that most teachers either teach multiple subjects or have multiple math courses to prepare for). The CMF also states, “Teachers can poll their students to find out about their interests and build lessons about data visualization around those interests, both to motivate learning and to bridge cultural divides in the classroom.” (Ch 7 line 590) Again, wonderful idea to poll students and create experiences around their interests, but this is incredibly naive and unrealistic for all teachers. Additionally, this will harm black and brown students who are already struggling as only those who get the most amazing teachers who can create these tasks will get the best math experiences; those who get typical teachers will be getting sub-par experiences; furthermore, since the CMF says “maintaining beliefs such as “fidelity to the curriculum” can undermine the focus and coherence called for in chapter 1” (Ch 10 line 764), (thus making following curriculum a bad thing), struggling students will fall further behind.
 - b. The CMF relies upon students “hopefully” coming up with the questions to be able to study the math we want them to learn. The CMF states, “After the question has been raised (**hopefully by students**), students make some estimates, and then the development of the necessary mathematics is seen as having a purpose.” (Ch 8 line 177). What if a black or Latino student is in a class where no one raises the question? Do they just not learn that topic? This type of guidance will harm our most vulnerable students.
 - c. Some vignettes cite math content standards from multiple grade levels. While differentiating is great, if students are all learning different standards, how will next year’s teacher know who has learned what and then how wide is the gap they must address? For example, Appendix C line 2325 discusses a vignette entitled “Learning about shapes through sponge art”. It is listed as a grade 6 class. Following are the math content standards referenced with this task: ·
“6.G: Solve real-world and mathematical problems involving area, surface area, and volume.

- 7.G: Draw, construct, and describe geometrical figures and describe the relationship between them. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.
- 8.EE: Understand the connections between proportional relationships, lines and linear equations. Analyze and solve linear equations and pairs of simultaneous linear equations.
- 8.G: Understand congruence and similarity using physical models, transparencies, or geometry software. Understand and apply the Pythagorean Theorem. Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres
- 6.G: Solve real-world and mathematical problems involving area, surface area, and volume.
- 7.G: Draw, construct, and describe geometrical figures and describe the relationship between them. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.”

Having tasks with 3 years worth of standards that some students learn and others do not will lead to greater inequities for struggling students, not just during that course, but increasingly in subsequent years as students arrive with all different gaps as teachers were not focused on standards-based instruction.

With the focus of the CMF either things not essential in mathematics or upon making math authentic and engaging (over the goal of students mastering math standards, California’s black and brown students, who are the farthest below proficient, will continue their downward spiral. The SBE needs to reject this framework and instead provide proven strategies and resources (such as intensive tutoring) that will help black and brown students master math content standards and increase in proficiency.