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. In the past decade, the United States has failed our students in reading instruction with a move away from phonics and towards "whole language". This past year, volumes of research have come out showing how harmful this was and recommending we move back towards phonics based instruction (now called the "science of reading"). The guidance given in the CMF about math instruction is essentially a repeat of the same FAILED EXPERIMENT we did to our children with the removal of phonics. The CMF guidance is akin to removing a focus on phonics: in math, that means removing procedural fluency, memorization and the sequential teaching of mathematics. The CMF guidance is to replace these "phonics" with instruction similar to whole language; in math that is called "open tasks", "engaging tasks", and "authentic experiences". Whole language, in and of itself, is not bad; it was the removal of phonics based instruction and the sole focus on whole language that led to massive reading drops in reading scores. The removal of phonics-based instruction in reading claimed, "If you immerse children in beautiful stories, they'll be motivated to crack the code, to recognize each word." That experiment did NOT work and has now left CA with only 35% of 4th graders (21% of low income students) proficient in reading. Likewise, many would not argue against making math engaging and authentic; however, the CMF is proposing changes that REPLACE content standards-based instruction (phonics) with "big ideas" and "open tasks" (the math equivalent of whole language)..

One of the major issues with reading instruction came from the "war" of pitting phonics-based instruction ***against*** whole language. For reading, it had to be one way (memorization and procedures) or the other (engaging texts). In mathematics, Californians were much wiser as the 2013 CA Math Framework clearly called for a balance between conceptual learning (the what and why), procedural fluency (the how), and problem solving (applying the concepts and procedures). Of these three components, "procedural fluency" most closely mimics "phonics" and "problem-solving'" most closely mimics "whole language". The approach in California was to have BOTH and have them in balance.
The 2013 CA Math Framework DEFINED Rigor as follows:

"*Rigor* has three aspects: *conceptual understanding*, *proce-dural skill and fluency*, and *application*. Educators need to pursue, **with equal intensity**, all three aspects of rigor in the major work of each grade." The 2013 CA Math Framework goes on to describe what each of these three aspects are as follows:

"*Conceptual understanding.* Teachers need to teach more than how to "get the right answer," and instead should support students' ability to acquire concepts from several perspectives so that students are able to see mathematics as more than a set of mnemonics or discrete procedures. Students demonstrate solid conceptual understanding of core mathematical concepts by applying these concepts to new situations as well as writing and speaking about their understanding. When students learn mathematics conceptually, they understand *why* procedures and algorithms work, and doing mathematics becomes meaningful because it makes sense.

Procedural skill and fluency. Conceptual understanding is not the only goal; teachers must also structure class time and homework time for students to practice procedural skills. Students develop fluency in core areas such as addition, subtraction, multiplication, and division so that they are able to understand and manipulate more complex concepts. Note that fluency is *not* memorization without understanding; it is the outcome of a carefully laid-out learning progression that requires planning and practice.

Application. The CA CCSSM require application of mathematical concepts and procedures throughout all grade levels. Students are expected to use mathematics and choose the appropriate concepts for application even when they are not prompted to do so. Teachers should provide opportunities in all grade levels for students to apply mathematical concepts in real-world situations, as this motivates students to learn mathematics and enables them to transfer their mathematical knowledge into their daily lives and future careers. Teachers in content areas outside mathematics (particularly science) ensure that students use grade-level-appropriate mathematics to make meaning of and access content.

The 2013 CA Math Framework summarizes this, saying, "These three aspects of rigor **should be taught in a balanced way**. Over the years, many people have taken sides in a perceived struggle between teaching for conceptual understanding and teaching procedural skill and fluency. The CA CCSSM present a balanced approach: teaching *both*, understanding that each informs the other. Application helps make mathematics relevant to the world and meaningful for students, enabling them to maintain a productive disposition toward the subject so as to stay engaged in their own learning." (2013 CA Math Framework, Instructional Strategies Chapter, Pages 2-3).

The current proposed CMF, which I ask you to reject, has re-defined rigor: "Rigor refers to an integrated way in which conceptual understanding, strategies for problem-solving and computation, and applications are learned, so that each supports the other. The challenge posed by the principle of rigor is to provide all students with experiences that interweave concepts, problem-solving (including appropriate computation), and application, such that each supports the other." (Ch 13 line 134) Note how procedural skill and fluency (the phonics of math) have been reduced down to "appropriate problem-solving (including appropriate computation) in this new definition. A second, new, definition of rigor in the proposed CMF reads, "Rigor. This framework interprets rigor to mean that conceptual understanding can be used to analyze a novel situation encountered in the world. Rigor means that students understand and can flexibly apply methods to different situations, connect mathematical ideas, approaches, and representations." (Ch 14, line 396). The CMF's re-defining "rigor" is clearly a repeat of the failed experiment to remove phonics based instruction, as teachers can no longer focus on procedural fluency just to increase student fluency, but can only do the "whole language' approach of things being embedded in real world contexts. In fact, the 2013 CA Math Framework wanted AGAINST exactly what the proposed CMF is asking educators to do. Following is a quote about rigor from the National Governors Association as part of the Council of Chief State School Officers:

"**Rigor in the Curricular Materials**

> "To date, curricula have not always been balanced in their approach to these three aspects of rigor. Some curricula stress fluency in computation without acknowledging the role of conceptual understanding in attaining fluency and making algorithms more learnable. Some stress conceptual understanding without acknowledging that fluency requires separate classroom work of a different

> nature. Some stress pure mathematics without acknowledging that applications can be highly motivating for students and that a mathematical education should make students fit for more than just their next mathematics course. At another extreme, some curricula focus on applications, without acknowledging that math doesn't teach itself. The standards do not take sides in these ways, but rather they set high expectations for all three components of rigor in the major work of each grade. Of course, that makes it necessary that we focus—otherwise we are asking teachers and students to do more with less."
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> —National Governors Association Center for Best Practices, Council of Chief State School Officers (NGA/CCSSO) 2013, 4

Note how they describe "At another extreme, some curricula focus on applications, without acknowledging that math doesn't teach itself." That is precisely what the proposed CMF is doing- what the 2013 CA Math Framework warned against! Application (called "authentic tasks", "Open tasks", "Engaging tasks", "Culturally Relevant Tasks", etc in the proposed CMF) is the only thing that matters: "Teachers are to "plan for a preponderance of student time to be spent on authentic problems. (Ch 1 Line 672) Does "preponderance of student time" sound like "balance"? Surely this guidance is in direct opposition to the 2013 CA Math Framework, and instead, is directing Californians to the extreme side of the "war" (application instead of procedural fluency) described above which the 2013 Framework explicitly warned against. Do not allow CA to repeat the same failed experiment!!!

We can appreciate the intention behind wanting to make math more engaging and relevant. Back to what was learned about the failed experiment to remove a focus on phonics,we read a recent article in Time Magazine which highlights the journey of Oakland Unified educator Kareem Weaver. As a progressive, he had worked to REMOVE phonics based reading curriculum with what he thought was more "progressive" as he saw himself fighting for "social justice". After years of implementing this progressive curriculum, culminating in massive declines in reading ability, he is now petitioning OUSD to ***go back to the phonics based curriculum***. Kareem says, "Those who wanted to fight for social justice, they figured that this new progressive way of teaching reading was the way." The data on this "progressive" shift away from explicit phonics-based reading instruction to the more "experienced based", whole language approach led to Oakland Unified having a dismal 19% proficiency rate in reading for Black kids. Weaver notes, "We abandoned what worked because we didn't like how it felt to us as adults, when actually, the social-justice thing to do is to teach them explicitly how to read."

I beg of you to reject this CMF so that our next generations of students do not go down this same failed path of math instruction that we did with reading. CA students are already far behind in math, with only 33.38% proficient or advanced on the 2021-22 CAASPP (Ch 2 line 46). Let's learn from the science of reading and KEEP what the 2013 CA Math Framework clearly required: BALANCE between conceptual understanding, procedural skill and fluency and application. Following is evidence from the CMF (in addition to their "redefining rigor" to remove procedural skill and fluency) to clearly show their goal of replacing memorization of facts and procedural skill and fluency with the primary goal of authentic and engaging tasks.

CMF guidance to focus solely on “experiences”

- Teachers “plan for a preponderance of student time to be spent on authentic problems.” (Ch 1 Line 686). Preponderance is clearly not ⅓ (as would be suggested by “balanced”.)
- “In this framework, *rigor* refers to an integrated way in which conceptual understanding, strategies for problem-solving and computation, and applications are learned so that each supports the other.[1] Using this definition, **conceptual understanding cannot be considered rigorous if it cannot be *used* to analyze a novel situation encountered in a real-world application** or within mathematics itself (for new examples and phenomena). **Computational speed and accuracy cannot be called rigorous unless it is accompanied by conceptual understanding of the strategy being used, including why it is appropriate in a given situation.** And a correct answer to an application problem is not rigorous if the solver cannot explain both the ideas of the model used and the methods of calculation.” (Ch 1 line 708) So we can have NO conceptual understanding and NO procedural skill and fluency unless they appear in applications- this is NOT balanced! This is akin to saying no phonics instruction unless it occurs within “whole language; by stating that procedural fluency is not rigorous when practiced outside of real world applications, the CMF is asking us to repeat the failed experiment of phonics removal but now with math. Will it be 10-20 years of students increasing their failure rates in math before we reverse this guidance, or will you, the SBE, reject this framework now?
- “In the classroom, teachers teach their grade level’s big ideas by designing instruction around student investigations of intriguing, authentic problems.” (Ch 1 line 436). Here we are told that instruction centers around authentic problems.
- “While more research and empirical testing of assets-based pedagogies is needed (NCTM Research Committee, 2018), existing research suggests that using students’ funds of knowledge can help capture students’ imaginations and foster deeper understanding of domain knowledge (Lee, 2001; Rogoff, 2003). It can also help new learning “stick” (Hammond, 2021), increase student motivation, and perhaps support more equitable student achievement.” (Ch 2 line 133) If more research and empirical testing is needed, then do NOT approve this CMF until we have clear evidence! “Perhaps support more equitable student achievement” is NOT sufficient to ask all of CA to make drastic changes that go AGAINST what the 2013 CA MAth Framework proposed.
- “Moreover, a focus on big ideas helps teachers identify and utilize the assets that learners bring to the classroom and helps students see how the range of their responses fit within a big idea.” (Ch 2 line 292) This is a great goal, but where is fluency?
- “Authentic activities, or projects that are the backbone of teaching the big ideas.” (Ch 2 line 298)
- “Open tasks allow all students to work at levels that are appropriately challenging for them.” (Ch 2 line 308) This sounds great, but where is mastery of grade level content standards? This description is akin to the theory of whole language; e.g. just expose them to lots of engaging texts and they will learn phonics as they go (except most CA students did NOT learn it!).

- “Real-world problems rooted in local context matter when supporting students’ understanding of mathematics content. Memorizing rules about whether to round up or down based on the last digits of a number may produce correct responses some of the time, but little conceptual development is accomplished with such rules.” (Ch 3 line 772) Where is the BALANCE here? Can’t students memorize rules and practice them in context? And what if there is not “local context” for some procedures, such as rewriting rational exponents?
- “The critical element of success continues to be piquing students’ curiosity and interest through engagement with meaningful and relevant math activities and experiences. As this chapter discusses, students’ middle school experiences are pivotal in shaping their attitudes toward math and self-perceptions as math learners. Combined with the guidance they receive, those experiences determine whether or not students get on a pathway to high level math, crucially affecting their mathematics futures in high school and beyond.” (Ch 7 line 40) Again where is the balance in this advice? Many educators would argue that being proficient in procedural skill and fluency would shape self-perception. How did students ever make it into STEM careers in the past if math was so boring and hard? How do students in countries far outperforming the US make it? By teachers’ focusing on “self-perceptions”?
- “In this vision, lessons begin with authentic problems of interest to students. Students learn solution methods as they work to solve those intriguing problems, rather than learning facts and processes unconnected to real world application. Teachers’ instructional design incorporates the five components of equitable, engaging teaching: plan teaching around big ideas; use open, engaging tasks; teach toward social justice; invite student questions and conjectures; and center reasoning and justification.” (Ch 8 line 1286) This is again another description of the “whole language” failure- assuming students will learn procedures (phonics) as they work on “intriguing problems” (whole language) ande insisting that the don’t learn “facts and procedures unconnected to real world application”.

<u>CMF guidance AWAY from memorizing or focusing on procedural skill and fluency</u>

- “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 teachers can’t just use a worksheet to help students increase in procedural skill and fluency?
- “Ensure that computation serves students’ genuine need to know, typically in a problem-solving or application context.” (Ch 1 line 788) Again, this is like advising against teaching phonics unless it is situated in text.
- “Rather than seeking only to understand whether students can accurately demonstrate algorithmic proficiency on a single problem type, teachers hold a broader view of how students might demonstrate their mathematical knowledge and understanding.” (Ch 2 line 237) While demonstrating math knowledge is important, what is wrong with assessing if students have algorithmic proficiency on a single problem type, as the

standards still do have required fluency, such as fluent add and subtract using a standard algorithm in grade 4.

- "It also helps teachers move beyond the unproductive notions that mathematical ideas and understandings should be sequentially organized in the same manner for all students or that algorithms that must be memorized." (Ch 2 line 276) This is clearly an argument like the removal of phonics. How can requiring students to memorize algorithms be considered unproductive? It is precisely because people have memorized these that the US made it to the moon and that we have bridges and fly planes, etc.
- "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) So what happens when a student does not "generate" the list by themself? Do they not get to attain any procedural fluency? How will that help our failing math students?
- "They must also avoid any temptation to conflate fluency and speed. . . . and for many students can lead to persistent, generalized anxiety." (Ch 6 line 1650) Did the authors of the CMF also consider the anxiety students feel when they repeatedly fail math in grades 6-12 as they have not yet memorized their multiplication facts? Where is the balance?

<u>CMF's view on "fluency"</u>

- According to the CMF, "Fluency means that students use strategies that are flexible, efficient, and accurate to solve problems in mathematics." (Ch 3 line 191)
- Additionally, we read, "Fluency, which means without any drawings or physical supports." (Ch 6 line 1544)
- Content standard 3.OA.7, for example, calls for third graders to "fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division … or properties of operations." Fluency means that students use strategies that are *flexible, efficient,* and *accurate* to solve problems in mathematics. Students who are comfortable with numbers and who have learned to compose and decompose numbers strategically develop fluency along with conceptual understanding. They can use known facts, including those drawn from memory, to determine unknown facts. They understand, for example, that the product of 4 × 6 will be twice the product of 2 × 6, so that if they know 2 × 6 = 12, then 4 × 6 = 2 × 12, or 24." (Ch 6, Line 1604).

  Note that this is FALSE ADVERTISING as the CMF LEFT OFF THE REST OF THE STANDARD, which reads "By the end of Grade 3, know from memory all products of two one-digit numbers."
- It is well known how crucial the memoization of single-digit multiplication facts is for success in math, and yet the CMF has WRONG information about this (in addition to leaving it off when the other part of the standard was described above).
    - In Chapter 6 line 1623, we read, "Attaining fluency with multiplication and division within 100 accounts for a major portion of <u>upper elementary</u> grade students' work."

    - In Chapter 6 line 1645 we read, “Acquiring fluency with multiplication facts begins in third grade and development continues in grades four and five.”

  Both of these statements are WRONG. As stated above, the actual standard in GRADE 3 is “**by the end of Grade 3**, know from memory all products of two one-digit numbers.” (3. OA, 7) Following the CMF’s advice will put California’s failing math students even further behind as the bar has been lowered from requiring memorization of multiplication facts by the end of grade 3 to now expecting that by the end of grade 5.
- In the one place in which the CMF explicitly mentions ANY required fluencies (Ch 7 page 77) (of which there was an entire table in the 2013 CA Math Framework, shown below), the CMF LEAVES OFF all of the mental math (memorization) fluencies. Specifically, the CMF fails to mention that by the end of Kindergarten, students should be fluent with addition and subtraction within 5. By the end of grade 1 students should be fluent in addition and subtraction within 10. By the end of grade 2 students should be fluent in addition and subtraction into 20, and as noted above, by the end of 3rd grade, students should have memorized all single digit multiplication facts.

In stark contrast to proposed CMF, the 2013 CA MAth Framework defined fluency as follows: “*The word fluent is used in the standards to mean “reasonably fast and accurate”and possessing the ability to use certain facts and procedures with enough facility that using such knowledge does not slow down or derail the problem solver as he or she works on more complex problems. Procedural fluency requires skill in carrying out procedures flexibly, accurately, efficiently, and appropriately..”* (Gr 3 page 22)

Required Fluencies as noted in the 2013 CA-CCSS-M

Grade	Standard	Required Fluency
K	K.OA.5	Add/subtract within 5
1	1.OA.6	Add/subtract within 10
2	2.OA.2	Add/subtract within 20 (know single-digit sums from memory)
	2.NBT.5	Add/subtract within 100
3	3.OA.7	Multiply/divide within 100 (know single-digit products from memory)
	3.NBT.2	Add/subtract within 1000
4	4.NBT.4	Add/subtract within 1,000,000
5	5.NBT.5	Multi-digit multiplication
6	6.NS.2,3	Multi-digit division
		Multi-digit decimal operations

The CMF guidance is centered around authentic and engaging tasks as the means by which students will develop conceptual understanding, procedural skill and fluency and applications, but the evidence cited does not support this.

- In Chapter 1, beginning at line 162, we read, “Active-learning experiences enable students to engage in a full range of mathematical activities—exploring, noticing, questioning, solving, justifying, explaining, representing, and analyzing. Through these experiences, students develop identities as powerful math learners and users. Decades of neuroscience research have revealed that there is no single “math area” in the brain, but rather sets of interconnected brain areas that support mathematical learning and performance” (Feigenson, Dehaene, and Spelke, 2004; Hyde, 2011). When the study cited is read, one sees that there was a sample size of 30 participants (apparently the CMF authors did not learn their data science well even though they devoted an entire chapter to it and made it 1 of the 4 Content Connections). In addition, the “treatment” that worked to help students increase in math involved conceptual understanding and procedural practice! Thes students in the study USED FLASHCARDS to open each tutoring session. It is unacceptable to have the CMF be adopted when it comes out against memorization and things like flashcards and yet they cite a study that has evidence-based outcomes (albeit with a small sample size) that involved the use of the very methods they recommend against.
- In Chapter 8, line 465 we read, “Reforms over the last decade have focused more intently on experiential and project-based learning and applications to real-world problems by adding data uses to each grade level (Ministry of Education, 2010).” So the CMF is using high performing Japan and their “experiential and project-based learning” as a reason to suggest California should do the same. The problem is that the link provided in the appendix to the “Ministry of Education” is to a Japan Style school that offers classes and TUTORING (link). This was pointed out in public comments over a year ago and it is an absolute disgrace that CA would consider adopting a framework that makes such a claim and the support for the “Ministry of Education” is a private school/tutoring center. The authors of the CMF need to work on their Math Practice Standard 6- Attend to precision, and ensure accurate supporting research is cited.
- In Chapter 11 beginning in Line 609, we read of strategies that worked during distance learning. We read,

  > “Distance learning that has the following features is often more effective than traditional in-classroom learning alone (US Department of Education, 2010; see also Policy Analysis for California Education, 2020).
  > Characteristics of this better learning:
  > A strategic combination of synchronous and asynchronous instruction
  > Synchronous time should be set for reasonable amounts of time, punctuated with other activities to avoid attention fatigue. It can be used for **short mini-lectures** and for many kinds of student-to-student and student-to-teacher interaction as described below. Many students also benefit from synchronous individual or small-group support in addition to whole-group distance instruction.
  >
  > Student control over how they engage with asynchronous instruction. Research shows that students do better when they can go at their own pace and on their own time, when they have some choice over the learning materials to use and the learning strategies that work best for them, and when materials are set up to enable them to engage deeply and critically with course content by managing how they use videos or print materials. As one successful online teacher explains:

Rather than assigning only worksheets or reading questions that can often lead to frustration and disengagement, offer students approaches that are universally designed so they can build and apply knowledge based on their interests and readiness levels. For example, **provide a recorded lecture, two or three videos, and two readings about the topic.** The students can listen or watch the lecture and then choose to complete a combination of the remaining content options."

This is the first appearance (and only mention) of "lectures" in the CMF. This approach described above, which is said to be MORE effective than what happens in classrooms, has a BALANCE between investigations, lectures, and independent practice time.

- The standardized exam that CA students take in math in grades 3-8 & 11 (SBAC) has 4 claims they assess students on. Claim 1 comprises 50% of the students' overall score and is titled "Concepts and Procedures". According to the CMF, "This claim addresses procedural skill." (Ch 12 line 1002). So where is the focus on LEARNING procedural skill in the CMF? Like phonics, procedural skill is being thrown out because it's less engaging; however, like phonics which is the building block of reading, procedural skill is necessary in mathematics and cannot be devalued.
- The CMF oftentimes (likely by accident) acknowledges that students must be fluent in certain skills to be successful in other areas. In Chapter 6 starting at line 1720 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." So this proficiency is needed, but where does the CMF ever describe or say students will gain this proficiency? Where are teachers ever explicitly told to focus on this?
- Finally, the CMF's recommendation for teachers to "plan for a preponderance of student time to be spent on authentic problems" (Ch 1 line 672), has incredibly weak evidence to support what this looks like. Two examples below are good examples of what "authentic problems" look like and what "math" gets learned during these experiences.
    - In Chapter 6, line 6170 we read of the authentic, engaging, and culturally relevant task of students measuring the diameter of buttons and displaying the data on a line plot. What students are curious about the diameters of buttons? In line 2001 of Appendix C (which has Vignettes) , we read of the engaging, authentic and culturally relevant task for grade 6 students: "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 engaging or culturally relevant? The CMF devotes so much attention to supposed incredibly rich tasks that theoretically engage all students and allow all students to become proficient in math, but when examples are given, they are often weak and not connected to either student lives or they are connected to student interest, but then produce almost no math.
    - The CMF repeatedly states that math should center around "real life issues students actually wonder about." (Ch 2 line 355) In one Vignette (Appendix C line 732), we read of the following "real life issue": "Without checking on a calculator, is 186 divisible by 3?" Before they begin, she asks for a reminder of what

"divisible" means. One student observes that "you can divide into it." Another student questions this, as "you can divide any number by another number, it just keeps going." The class eventually arrives at a reasonable definition of divisible as "b is divisible by c if you can divide b by c without any leftover remainder." Although this definition could be clarified further, Ms. G decides this will suffice for now."

To be fair, there are many examples that are more real life, but are they actually things students wonder about (and who assumes in a class of 30+ students, all of them will wonder about the same things)? In a major example provided in the CMF, a teacher has an elaborate lesson about a swimmer who is out in the ocean and sees a baby whale (Appendix C line 1613). Note first that the lesson is listed for grades 5-8, so which grade level teaches this? Should students do the same engaging task for 4 years in a row? Then we learn how the teacher reads them a book, each day dressed up as a swimmer to help them understand the story. When they finally get to the task, students must figure out if the swimmer should guide the baby whale to an oil rig where the mommy whale is likely to be or should the swimmer return to shore, knowing that the baby whale might follow and get breached. First, how many students see this as a real life issue? How many students would even consider trying to guide a baby whale out further in the ocean? This is a death wish, not to mention a violation of the Marine Mammal Protection Act. Nevertheless, the CMF describes that through this authentic task, 'The students analyze proportional relationships, add fractions, use ratio reasoning to solve problems, compare two different functions, and make use of data." (Appendix C, Line 1659). When did the students learn to add fractions? What about the students who can't add fractions (the well over 65% who are below proficient)? Was it worth the multiple weeks the teachers spent reading the book and building ocean scenes on the classroom wall for this little bit of mathematics? Are students in CA so proficient in math that they have time to add all of this into their learning? It would be great if they did, but, unfortunately, our students are failing at historic rates and we need a CMF that has evidence-based methods to increase math proficiency.

The CMF states, "Yet most of us did not get the chance to wonder mathematically in school. Instead, young children's joy and fascination are too often replaced by dread and dislike when mathematics is introduced as a fixed set of methods to accept and remember." (Ch 1 line 115) Is this enough of an argument to forgo the clear advice given in the 2013 CA MAth Framework to ensure a BALANCED approach to math with equal intensity in conceptual understanding, procedural skill and fluency and application? Have we not, as a country, been the leader in nearly all STEM fields, with the workforce powered by students who did not get the chance to wonder mathematically in school and who were introduced to math as a fixed set of methods? This quote from the CMF is akin to the reasoning behind removing phonics instruction in place of whole language- that experiment FAILED, and our students are the recipients of that wrong

thinning. Let's not repeat the same failed experiment with mathematics- removing any focus on procedural skill and fluency all for the goal of children's "joy and fascination". Reject this CMF and require one that enforces the BALANCE needed for success.