



MATH FOR BERKELEY
FAMILY GUIDE

A Path to Math Equity:

A Toolkit for Grades K-12

We hope this guide helps families, teachers, and school leaders partner together to support equitable math outcomes for all students in Berkeley. This guide aims to help families check on their student's learning by offering information about best practices, questions to ask, as well as resources & tips to support further learning.



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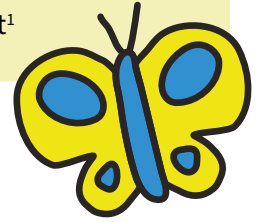
Please note that while this toolkit is geared toward families who have students in Kindergarten through Grade 12 in Berkeley Unified School District (BUSD), much of this resource applies to any school in California. This guide is not to be construed as legal advice.

Math is a social justice issue



“Math literacy will be a liberation tool for people trying to get out of poverty and the best hope for people trying not to get left behind.”

Bob Moses, The Algebra Project¹



All students deserve access to high quality math instruction and appropriate supports to achieve their highest potential in math

Math-related occupations generally earn up to twice as much other occupations. The opportunities for working in math-related fields are expected to increase by 25% from 2025 to 2035, compared with 3% across all occupations.²

And it starts early. Math skills at the start of school are the strongest predictor of later school and life success, stronger even than early reading.^{3,4}

In an increasingly automated world, mathematical reasoning is a gatekeeper of truth, power, and agency. When we fail to provide equitable math instruction, we lock students out of the language shaping our global future. True math equity means giving every child the tools to not just live in an AI-driven economy, but to actively lead and design it.

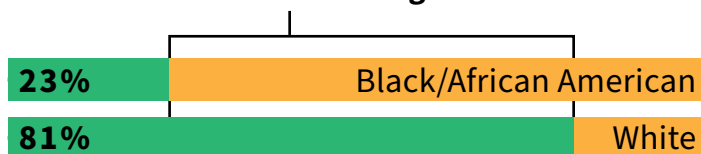
1. <https://algebra.org/bob-moses/> 2. U.S. Bureau of Labor Statistics (2026). Occupational Outlook Handbook: Data Scientists, Pay and Job Outlook tabs. <https://www.bls.gov/ooh/math/data-scientists.htm> 3. Duncan, G. J., et. al., (2007). School readiness and later achievement. Developmental Psychology, 43(6), 1428–1446. <https://doi.org/10.1037/0012-1649.43.6.1428> 4. Ritchie, et. al., (2013). Enduring Links From Childhood Mathematics and Reading Achievement to Adult Socioeconomic Status. Psychological Science. 24. 1301-1308. [10.1177/0956797612466268](https://doi.org/10.1177/0956797612466268).

Toolkit summary

We invite families to join us on the path to math equity, ensuring every student gets a fair chance to learn and thrive.

Berkeley Unified School District (BUSD) has one of the worst math achievement gaps in California

This 58 point gap between racial groups in BUSD is **one of the state's largest**.¹



This math achievement gap has persisted over the past ten years at around 60 percentage points, with 23% of black students achieving math proficiency, compared to 81% of white students at BUSD in 2026.

We don't have to accept these outcomes as inevitable

Our current math practices emphasize exploration before the basics are secure. But learning math well is just like learning a sport, a foreign language, or an instrument: first you are taught the basics, then you practice until it becomes second nature, and finally you use those skills to tackle new challenges.²

Take three steps on the path to math equity:

1

Know what to look for

Effective math instruction

Set high standards for clear step-by-step math lessons. Explicit, carefully sequenced instruction optimizes students' thinking power, promotes a positive mindset, and is the most effective way to teach math, especially for struggling learners^{3,4}

2

Take action for your student

Use data to know if your student is on track

Gather and interpret data about student math understanding and progress. Use that data to meet your student where they're at, to help them stay on track towards achieving their math goals.

Get extra help if needed

There are many ways to support math learning, whether your child needs more practice or more challenge. Access services through school. Know how to tell if supports are working, and what to do next.

3

Advocate for all

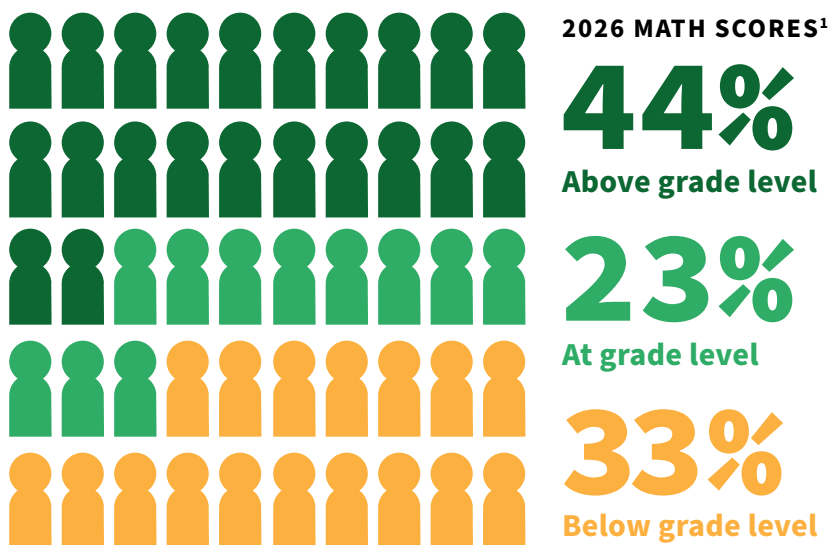
Better systems and policies

Families should expect and ask for good core instruction for everyone; effective intervention that happens as soon as gaps start to appear; and equitable paths to advancement that help students reach their full potential.

1. California Assessment for Student Performance and Progress <https://caaspp-elpac.ets.org/caaspp/> 2. Haring, N. G., & Eaton, M. D. (1978). Systematic instructional technology: An instructional hierarchy. The fourth R: Research in the classroom (pp. 23–40). Charles E. Merrill. 3. National Mathematics Advisory Panel. (2008). *Foundations for Success: The Final Report of the National Mathematics Advisory Panel*. Washington, DC: U.S. Department of Education. 4. Rosenshine, B. (2012). *Principles of Instruction: Research-Based Strategies That All Teachers Should Know*. American Educator, 36(1), 12–19, 39.

BUSD's systemic math challenges

Most BUSD students are either far ahead or far behind in math

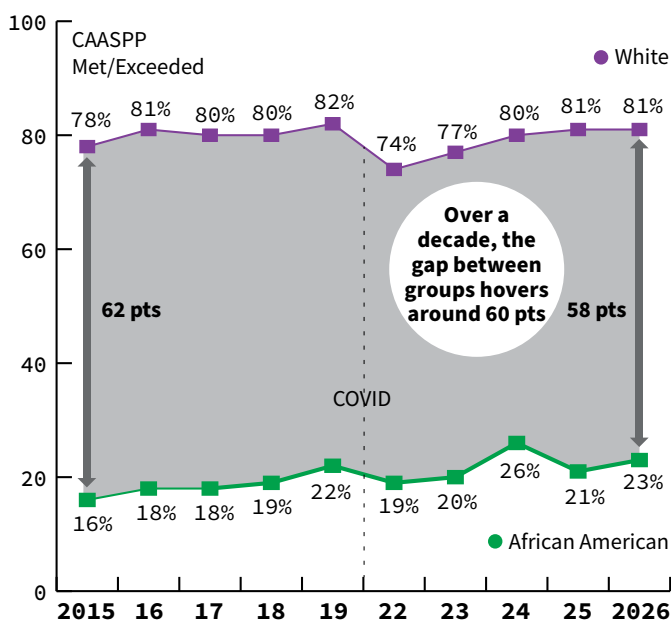


BUSD classrooms present a challenging situation: about one-third of students are falling behind and require help to fill in gaps. But nearly half likely need more challenging materials. If a teacher tried to “teach to the middle,” they would be missing the instructional needs of 77% of the classroom.

Without embedded diagnostic systems or daily intervention math blocks, teachers are left to create their own solutions. Trapped by limited time and resources, they are forced into an impossible decision: who gets the support they need?

Achievement gaps have persisted for decades

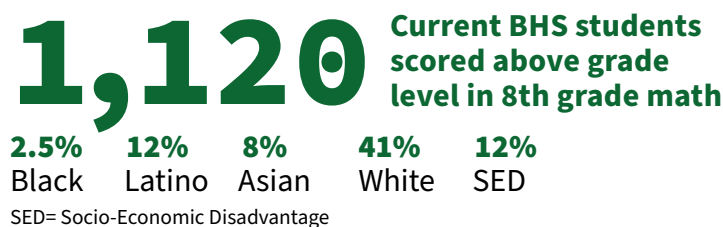
For decades, BUSD has relied on structural and programmatic fixes—detracking, after-school tutoring, focal-student funding, and equity training. While culturally relevant practices are vital, they are not sufficient to solve the underlying issue: ineffective instructional practices and the lack of data-driven in-school intervention systems.



The two-tiered system dominates math achievement

Without consistent in-school support and advancement options, BUSD hasn't leveled the playing field—it has simply pushed math intervention and acceleration into the private market. Families with time or money get help or enrichment elsewhere, while those who stand to benefit the most are left behind, making the system even more unequal.

2023-26 8TH GRADE MATH SCORES¹ VS. ADVANCED MATH ENROLLMENT AT BHS



ONLY ≈ 40% of ready students get the opportunity to be in advanced math classes

15 advanced math² classes are offered at BHS

1. California Assessment for Student Performance and Progress <https://caaspp-elpac.ets.org/caaspp/> 2. 2025 Berkeley HS SARC

Issues with the current approach

Good instruction bypasses the “math wars”

Arguments about “explicit instruction” and “inquiry-based” methods present unhelpful false choices. Instead, we need to explore what good instruction should actually do for students. Instruction that reaches the most students is carefully designed and explicitly sequenced, something that most of the popular math curriculum doesn't focus its efforts on, creating confusion and leaving gaps.

Student-led inquiry math programs have worthwhile goals. Programs like Bridges, Desmos, Illustrative Math, College Preparatory Mathematics (CPM), and the Math Vision Project (MVP) want students to deeply understand math, talk about it, and solve tough problems. But so much time is spent exploring that practice gets crowded out.

The way these programs are built is broken.

- They often expect beginners to figure out new math concepts on their own through hard tasks and class discussions.
- They don't give students enough clear explanations, step-by-step examples, or organized practice.

Because of this, whether a student learns depends too much on their individual teacher. Students shouldn't have to choose between knowing how to do math and understanding why it works.

A better program is not “drill and kill”

Instead, it combines clear, interactive teaching with deep understanding, a focus on strong math skills, regular practice with immediate corrective feedback, and problem-solving.

BEST PRACTICES ¹	CURRENT APPROACH
Good core instruction for everyone, supporting a strong foundation	Heavily dependent on teacher expertise and student's prior knowledge. Teaching methods and curriculum inconsistent across grades and classrooms. ²
Effective intervention that happens as soon as gaps start to appear	Screeners exist in grades 3-10, missing opportunities to help earlier struggling students. There are no consistent, reliable diagnostic tools to identify gaps, or effective system-wide interventions.
Expand equitable paths to advancement that help students reach potential	Students are grouped in classrooms that contain a full range of struggling and advanced learners. Options for advancement are restrictive and opaque.

IN SURVEYS² AND FOCAL GROUPS COMPLETED BY BUSD IN 2024 AND 2025:

Teachers express concerns that **teaching methods vary too much from school to school** and grade to grade, causing gaps in student skills

High schoolers in a focus group also pointed to inconsistent quality in instruction: “students struggle more based on their math history because of their previous teacher,” and called out the need for an accelerated “regular” class

Families did not think BUSD math covers the basics well:

60% of families felt that BUSD math experiences DO NOT build strong understanding & skills

65% Black and 58% of Latino families felt that BUSD did not cover the basics well.

1. [Connecting the Dots: Inclusive Academic Instruction and California MTSS](#) (2025) Orange County Office of Education 2. [BUSD 2025 Math Survey Summary](#), (n=676) 3. [BUSD Student Perspectives](#) (2024 - 2025)

Effective math instruction

Set high standards for clear and connected math lessons

Decades of solid research show that students learn best when teachers clearly explain new concepts first. Once kids understand the basics and manipulate numbers quickly and accurately, they are ready to tackle open-ended problems and hands-on discovery activities.¹

Direct, step-by-step teaching works best because it fits how our brains process new information. It helps all students learn math faster, especially those who find math hard.^{2,3} Our brains can only handle a few new pieces of information at once. When students

are asked to figure out math through trial and error, their brains get overloaded and they struggle to learn the core concept.

The example shown combines two teaching models that slowly build student independence without overloading their brains. The “I do, we do, you do” Gradual Release Model⁴ allows for group-practice and collaborative learning, while the Instructional Hierarchy model⁵ emphasizes students independently transferring knowledge/skills to new situations as the goal for mastery.

Research shows how to organize learning

FIRST:

Acquisition

Goal: Learning how, accurately

The first stage of learning for all skills. Students are inaccurate and slow. They are not sure why something is correct or incorrect.

Effective instruction includes modeling, frequent prompting, guided practice, and immediate and elaborate error correction.

NEXT:

Fluency-building

Goal: Practicing to be fast

Students are accurate but responses are effortful or labored. Students practice until responses become accurate and speeded.

Effective instruction includes intervals of timed practice, with goals for performance. Corrective feedback can be delayed and less elaborate.

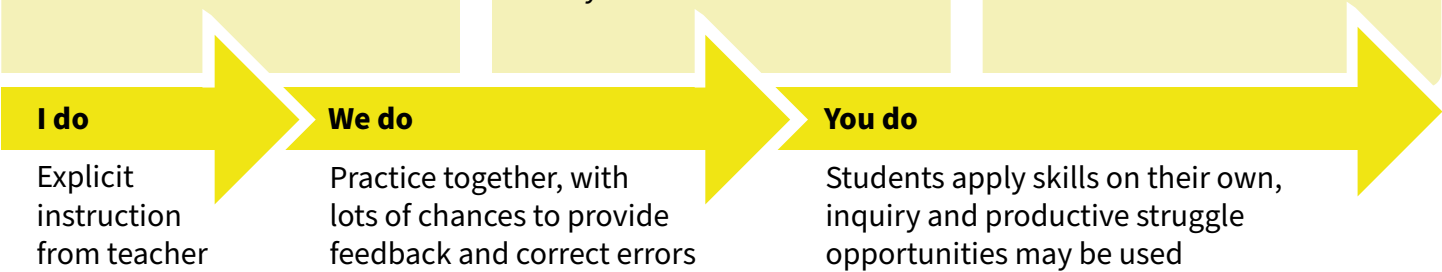
LAST:

Generalization

Goal: Using it everywhere

The final stage of learning for all skills. Creative, flexible skill performance occurs.

Effective instruction includes providing novel or “challenge” problem types and incentivizing students to find different ways to solve problems that may be more efficient.



1. Haring, N. G., & Eaton, M. D. (1978). Systematic instructional technology: An instructional hierarchy. The fourth R: Research in the classroom (pp. 23–40). Charles E. Merrill. 2. National Mathematics Advisory Panel. (2008). *Foundations for Success: The Final Report of the National Mathematics Advisory Panel*. Washington, DC: U.S. Department of Education. 3. Rosenshine, B. (2012). *Principles of Instruction: Research-Based Strategies That All Teachers Should Know*. American Educator, 36(1), 12–19, 39. 4. Archer, A. L., & Hughes, C. A. (2011). *Explicit instruction: Effective and efficient teaching*. Guilford Press. 5. Kovaleski, J. F., et. al., (2022). *The RTI approach to evaluating learning disabilities* (2nd ed.). Guilford Press.

Look for evidence of these best practices:

1. *Direct, clear instruction* from the teacher before tasks are assigned
2. *Spaced and retrieval practice*, in which students study topics over time, allowing time to forget and then recall information, spacing it out instead of cramming before a quiz or a test (especially for math, science, and history). Knowledge stored in long-term memory is the key to understanding what we read, as well as creativity and critical thinking.
3. *Incorporating vocabulary* (and morphology) into every subject
4. *Plenty of time practicing foundational skills*, like ways to create 10 and multiplication. Many of the skills children learn in school must be taught and practiced over years in order to master. This is different from learning to walk and talk.
5. *Employing both images and text* to help brains process information better. In math, this is often called Concrete-representational-abstract sequencing. New mathematic skills are introduced with more concrete modeling, moving toward the use of numbers alone later.

	WHAT TO ASK	ENCOURAGING FEEDBACK	PROBLEMATIC FEEDBACK
Acquisition	“How do you introduce students to new math concepts?”	New learners are shown new math concepts and procedures with modeling, scaffolding, and worked examples	Students must come up with their own ideas to solve problems through unguided exploration
	“What has been tried in the classroom to help my student learn to do math?”	You are told which lesson or which “scope and sequence” your student has mastered and given examples of additional instruction to target your student's skills	There is not enough information or data to know how to help your student. The school believes your child will catch up, or to wait and see for more signs of struggle
Fluency-building	“Is my student expected to know math facts?”	Short, targeted practice sessions make learning math facts fun. Regular reviews solidify skills	Students rely on technology (like calculators) so school time focuses less on math facts, more on problem-solving
	“How much math practice is included in the school day?”	Repeated exposure & practice are provided for mastering math topics & progressing to higher levels	The teacher believes in the myth that practice turns kids off of math or that timed tests create anxiety (even when they aren't for a grade)
Generalization	“Is my student being challenged in math?”	— Kids are asked to explain their thinking — Math problems look different from one another	Your child says they are bored in math, and/or often finishes work early with nothing to do

Use data to know if your student is on track

Don't assume anything: Use data to figure out how your student is doing in school

National surveys show that 8 out of 10 parents believe their child is doing math at or above grade level,¹ even though in Berkeley, only 60% actually are. This happens because report cards don't always show if students have mastered grade-level skills.

Sometimes schools don't tell families early enough that their child may be having trouble with math. Some families might only find out that their child is behind after they've fallen far behind. Even though it may be uncomfortable, it's important to ask questions so you can understand what your child needs. Having all the information about your student's progress helps you to be a full member of your student's support team.

Early math intervention is essential: Catching problems early pays off in improved foundational skills and fewer special education referrals.²

There are several ways to understand how your student is doing in math, including talking to your child. Then you can advocate for support to keep your student achieving their goals:

- ☐ **Understand what your student should learn in math this year**
- ☐ **Gather school records**
- ☐ **Compare grades to standardized tests**
- ☐ **Interpret grades and report cards**
- ☐ **Visit the classroom, see instruction in action**

Information beyond report cards

STANDARDIZED TESTS GIVEN TO STUDENTS

GRADES	SUBJECT	HOW OFTEN	TEST NAME	WHAT IT'S FOR	LEARN MORE
K-5 (6-8 if needed)	Reading	3x per year <i>Began fall 2021</i>	DIBELS (Dynamic Indicators of Basic Early Literacy Skills)	Used as a 'universal screener' to find out who needs more help	DIBELS Family Guide Guía para los padres a la Evaluación DIBELS
	Math	N/A	N/A		N/A
3-10	Reading	3x per year	STAR Reading and STAR Math	Short tests that give info about a student's learning in math or reading	About STAR Family Q&A
1-10	Math				
3-8, 11	Reading and Math	1x per year, in May	CAASPP	Annual California standardized tests measuring student academic proficiency	Guide to understanding
5, 8	Science	1x per year			

Standardized scores are in color bands that show above, on, and below grade levels. Note that Star flips green and blue.

ON TRACK ZONES
Make sure your child remains on track and keeps growing.

WARNING ZONES
Dig deeper. Ask for a meeting to get more support.

1. Gallup, & Learning Heroes. (2023). B-flation: How good grades can sideline parents. [Gallup.com](#) 2. Fuchs, L. S., et. al., (2005). The early prevention of mathematics difficulty: Its power and limitations. *Journal of Learning Disabilities*, 38(1), 46–57. <https://pmc.ncbi.nlm.nih.gov/articles/PMC3366483/> 3. Under CA Senate Bill 1067, starting in the 2028-29 school year, all K-2 students must be screened for math difficulty in basic math and number skills once a year. Parents must be notified of the results. Students must be given support using evidence-based math interventions if they are struggling.

Take these 5 steps to see if your student is on track

□ Understand what your student should learn¹ in math this year

Expectations for what students should know and be able to do by the end of each grade are also called “math standards.” It is not always easy for families to figure out, but it is worth doing. This information should be available in your language.

1. Review your student’s class materials, such as what is taught and in what order
2. Compare against the math skills expected for each grade: <https://www.berkeleyschools.net/departments/educational-services/curriculum-and-instruction/>, or common core guides like <https://seekcommonground.org/family-guides>

□ Gather school records¹

Ask your teacher or principal for school records in writing (email is fine). The school will have 5 working days to get this to you. School records include:

- Samples of classroom work
- Current and past standardized test results. This can include the list on page 8, and in Kindergarten, you can request to review the “balanced beginning counting interview” and a “county-wide early diagnostic instrument”
- If your student is already receiving intervention, you may also request supplemental test data, including diagnostic tests. Example benchmarks can include: Base 10 understanding, numberlines, place value, adding/subtracting, multiplication, division, and fractions

□ Compare grades to standardized tests

In grades 3-8 and 11, you can get your student's state math and English scores (CAASPP) yourself.

1. Login to the [Infinite Campus Parent Portal](#). Email helpdesk@berkeley.net if you need help
2. Navigate to More and select Assessments
3. Select the desired language from the dropdown
4. Click the Generate button for a PDF report

¹. EDC § 49069.7 Pupil Records ². Gallup, & Learning Heroes. (2023). B-flation: How good grades can sideline parents. Gallup. [gallup.com](https://www.gallup.com) ³. EDC § 49091.10 Parent Visits to the Classroom

□ Interpret grades and report cards

Families need honest information about whether their students are learning. But report cards can tell a misleading story. Parents take action to help their kids when grades are low, but if grades are high, parents usually do nothing.²

For example, a student who gets a “3” on their report card may have earned 70%, which is closer to a D+ or “approaching proficiency.” This student may be struggling in school but families won't think to hire a tutor or meet with the teacher because their report card says they are “on grade level.”

Middle and high school families can get grade and attendance details from Infinite Campus.

STANDARDS BASED GRADING (SBP) EQUIVALENTS

4	3	2	1
advanced	proficient	approaching	below
100-90% A+ to A-	89-70% B+ to C-	69%-50% D+ to F	49-0% Below F
100-90%	89-79%	78-60%	59-0%
ON TRACK ZONES		WARNING ZONES	

CAASPP scores are in color bands that show above, on, and below grade levels and roughly correspond to grades. Note that students must get at least a 70% (or C-) to qualify to apply UCs/CSUs.

□ Visit the classroom,³ see instruction in action

This is a great way to understand how your child learns and engages with their education. It’s important to remember that you need to schedule an appointment with the teacher before coming in. When you visit, look for:

1. Teachers explicitly teaching skills, like: learning to count, add, and subtract (K–2), learning to multiply, divide, fractions (3–5), learning algebra, geometry, and how to solve complex real-world math problems (6+.)
2. Students have many chances to practice and show what they’ve learned
3. Students who need extra support receive it within the classroom, such as small group instruction or visual aids
4. A safe and supportive school environment

Dig deeper if your student is in a warning zone

If your child scored in the “on watch” (yellow) or “intervention needed” (red) zones, it’s time to investigate more. Some students might feel stressed during tests or have an off day, but if your child has a pattern of red/yellow zone scores, it’s important to ask questions about how they’re learning.

WHAT TO ASK	ENCOURAGING FEEDBACK	PROBLEMATIC FEEDBACK
“I’d like to come and visit the classroom to see how my student is responding to instruction. Can I observe?”	You are offered a few times to visit that work for the teacher	You are told that it is too distracting to have observers in the classroom during instruction
“Is my child doing better, about the same, or worse than what’s expected for their grade level?”	The teacher offered to show you some examples of what students are expected to know and also provided some examples of your child’s work	The teacher mentioned that math is based on conceptual understanding and “uses student-generated strategies in solving problems,” but didn’t provide an assessment of your child’s specific strengths and areas for improvement
“How can I help my child with the areas in math where they are struggling?”	You are told which lesson or which “scope and sequence” your student has mastered and given suggestions of what to practice at home to reinforce what is done in class	— You are told there is not enough information or data to know how to help your student — You are told to wait and see, or that they will improve soon
“Is my child making a good effort in class?”	Attendance and homework completion is good, your child is paying attention in class	Your child is missing a lot of class and not turning in homework. They are disengaged in class
“I’ve noticed that my child’s scores are in the yellow/red zones. Besides Star, what other assessments are you using to track my student’s math skills?”	— You are offered info on other diagnostic tests that can be given to see which skills need more work — Your student gets more help in the classroom — Your student is selected for small group instruction by a math specialist — Your student is referred for further evaluation for special education eligibility	— You are told that only STAR is available to track skills — You are told that math is mainly tracked by observations rather than objective skill measures — You are told to disregard the Star scores or that the report card is more important — Your teacher does not offer any meaningful changes to instruction to target your student’s needs

Note: If your student has an Individual Education Program (IEP) and does not take the Star, ask your case manager for the results of the California State Alternative Assessment (grades 3-8 and 11) or the quarterly monitoring report of your student’s math intervention program.

In the green? Make sure your student remains on track

If your child scored in the “on track” (green) or “advanced” (blue) zones, that's good news. It's not the whole story. The scores don't tell you if they're growing, if they're bored, or if small gaps are building up. Schools should still be providing instruction and support to continue growth and provide challenging material.

WHAT TO ASK	ENCOURAGING FEEDBACK	PROBLEMATIC FEEDBACK
“Even with a good score, are there any skills my child is weaker in?”	The teacher points to specific areas, like fractions or word problems, using test reports or classwork, and suggests ways to strengthen them	You're told there's nothing to work on because the overall score is high
“Can I meet with you to discuss how my child will be challenged in math this year?”	The teacher makes time and comes prepared with your child's scores, work samples, and a plan	You're told there's no need to meet because your child is doing fine
“When my child already knows the lesson, what do they work on instead?”	— The teacher describes specific extension work, like harder problems on the same topic or a small group that goes deeper, and names the materials used — The work is done in class with instruction, not self-taught — Groups change as students progress and new data is gathered, they are not stagnant or labeled	— You're told all students work on the same problems “at their own depth,” with no examples — You're told your child helps other students when they finish. Or they get more problems at the same level. Or free reading time — The teacher expects students to ask for more challenging problems on their own
“How do you decide which students get extension work?”	The teacher uses test data or classwork to group students, and groups change as kids progress	There's no clear process. Or extension is only offered to students who finish first
“How often does my child practice without a calculator?”	Students regularly work problems by hand, including fractions, negative numbers, and equations	Calculators are used for most work, and your child relies on them
“Does my child's grade match their test scores?”	The teacher can explain how the grade is calculated and why it lines up with Star and state test results	Your child's grade is high, but their percentile is slipping. Or the grade relies mostly on homework completion and participation rather than mastery

Don't forget to talk to your child

Your student is the one experiencing math learning, so it's important to check on how they are feeling and use that information to guide your next steps.

WHAT TO ASK YOUR STUDENT	WHY THIS QUESTION?	WHAT TO DO IF CONCERNED
“Do you find it hard or easy to pay attention in class? Why do you think that is?”	Sometimes the design or pacing of the math program unveils a foundational gap in math understanding, or misses explanations. This can cause some students to give up	If your student reports feeling overloaded and confused, figure out if gaps or instruction design causing the issue — each needs a different kind of tutoring support
“Does math class take a lot of effort? Do you feel confident to tackle homework?”	Without a decent level of attention in class, your student will fall further and further behind, and homework will become more frustrating	Make sure that attendance data and homework scores on Infinite Campus align with your student's assurances. Brainstorm solutions with your student to help them make an effort
“How do you feel in math class? Do you feel like you are learning a lot? What do you enjoy the most? What makes you frustrated?”	Because Berkeley does not let students advance based on mastery, students may be covering material they already know. You might need to find ways for them to enjoy math outside of school	There are many events and activities in the Bay Area for your family to enjoy. Books and games are also a great resource to keep the engagement with math strong. Check out Math at home on page 20 for ideas
“Do you know any ways to get additional help? Who can you ask? What resources do you have?”	Younger kids might need the extra confidence boost to ask for help. There are lots of resources, especially in middle and high school. Teachers offer tutoring after school, but often, students have to seek out help	Role play how to ask for help, or what might happen if your student seeks out help. Look up resources together to see what might be the best fit for your student's schedule.
“I’ve noticed you don’t seem to like math anymore. Do you know why that might be?”	Some classes assign bulk practice on digital tools. Check in to see if the questions have been specially assigned to work on what your student needs the most practice on, or if they are not aligned to your student’s needs	Talk to your student's teacher to ask how to help your student reignite their love of math

The building blocks of math

Schools should have a plan to find and fill the gaps that prevent a student from succeeding in later math classes, but if you feel comfortable, and your student is willing, pinpoint issues with these free paper-based quick checks for grade-readiness <https://rebrand.ly/delta-math>

Number sense

Students start to learn what numbers mean. (Gr K)

Numberlines

See how numbers relate to each other. (Gr. K-7)

Place value

Understand that a digit's worth depends on its position (the 3 in 34 represents 30, not 3) (Gr. K-4)

Addition/Subtraction

Starts with counting forward and backward, moves to regrouping/borrowing, then fluency and automatic recall of basic facts (Gr. K-3+)

Multiplication/Division

Starts with repeated addition/subtraction ($3 + 3 + 3 = 9$), moves to fluency with fact families up to 12, then working with multi-digit numbers (Gr 2-5)

Fractions

Begins with basic concept (cutting a cake into equal parts), then comparison, problem solving, add/subtract unlike fractions ($\frac{3}{4} + \frac{5}{8}$) (Gr 1-5)

Decimals

Estimation (4.2×1.9 is about 8), place value (.01 is hundredths), representation (to dollar system), comparison ($0.4 < 0.43$) (Gr. 5)

Proportions/Ratios

Students learn how to scale quantities up or down while keeping relationships constant, then expand to changing quantities and deriving linear equations (Gr 6-8)

Expressions

Apply the order of operations (Parentheses, Exponents, Multiplication, Division, Addition, Subtraction) to evaluate multi-step numerical expressions with and without variables (Gr. 6+)

Get extra help if needed

Use the Multi-Tiered System of Support to help your student

Math instruction must meet students where they are. Some students need more time and practice. Others have already mastered the lesson and need more challenge. If your student is struggling, bored, or checked out in math, you have the right to ask for more information and help.

The sooner a student gets the right support, the better. For students who are behind, early help keeps small gaps from becoming large ones. This is called early intervention, and it matters especially for students with specific learning disabilities (SLD). For students who are ahead, boredom is a warning sign too. A student who spends months waiting for classmates to catch up can stop engaging, and may still have gaps no one notices.

California's framework for this support is called MTSS.¹ It is not only for students who are struggling. The state explicitly includes gifted and high-achieving students.

To get support for your student through the MTSS Framework:

- ☐ **Ask for further screening in math**
- ☐ **Get extra help if needed**
- ☐ **Meet with the teacher, principal, or both**
- ☐ **Monitor progress**

EDUCATION WORDS:

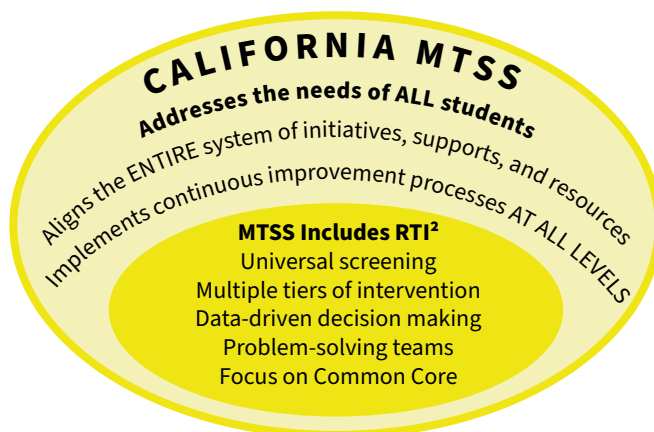
MTSS (Multi-Tiered System of Support):

A framework for matching instruction to what each student needs, from students who are behind to students who are ahead. Schools use data to identify needs early and respond quickly.

Tier 1: Universal or main instruction with the whole class or in small groups.

Tier 2: Targeted instruction/ intervention/ supports tailored for a small group of students with similar skills, supplemental to Tier 1 instruction. These can be groups that reteach, or a group that moves faster or goes deeper.

Tier 3: Individualized instruction/ intervention/ supports given with increased intensity (more dedicated time, smaller group size, or 1:1).



Specific learning disabilities (SLD):

A condition where someone has trouble understanding or using spoken or written language, and can include trouble with math, also known as dyscalculia.

RTI/RTI² (Response to Intervention, or Response to Instruction and Intervention):

A way to help students who are having trouble with reading or math. It's part of MTSS, which helps students succeed in school.

1. California Department of Education. Definition of MTSS. <https://www.cde.ca.gov/ci/cr/ri/mtsscompri2.asp>

Take 4 steps to get support from school

□ Ask for further screening in math

Students in grades 1-10 in BUSD are tested three times a year with Star to see if their math progress is on track or if they are at risk for math difficulty. But Star only flags that there might be an issue, it doesn't tell you exactly what a student needs.

Ask the school to evaluate why your student might be struggling to do math at grade level. You can use "Child Find" at any age. This is a rule under the Individuals with Disabilities Education Act (IDEA) law that says schools must find and test all students who may have a disability that makes it harder for them to learn, even if their report cards are fine.¹

If your student seems bored or often finishes early, ask whether they can take the end-of-unit test at the start of the unit. Students who show mastery should move on to new or deeper material, not repeat what they already know.

□ Get extra help if needed

Based on the data, the classroom teacher should adjust instruction for students who need more support and for students who are ready for more. If that doesn't work quickly, the school should gather more data and place students in more intensive Tier 2 or Tier 3 groups. You do not need to qualify for special education to receive RTI services. Options could be:

1. Evidence-based additional instruction within the regular math class
2. Small-group instruction during math period, either to reteach skills, an extra dosage, more practice, or to move faster and go deeper
3. Small-group or individual instruction at another time, with a specialist or in an advanced group
4. Pretesting and compacting, so students skip material they have already mastered. Curriculum compacting means skipping the material a student has already mastered and using the saved time on new or deeper work

¹. Individuals with Disabilities Education Improvement Act (IDEA) (20 U.S.C. § 1400 et. seq) and EDC §§ 56300–56303 Child Find **2.** [EDC § 51101](#) Parental Involvement

□ Meet with the teacher, principal, or both²

Ask for a type of meeting called a Student Success Team (SST) meeting. At this meeting, you, the principal, your student's teacher, and other school staff (like the Response to Intervention, or RTI, teacher or the math coach) will discuss how to best help your student learn.

You should expect:

- A chance to give input on your student's strengths and weaknesses
- A plan to be made to support your student in the general classroom with intervention or extension, and if needed, within a small student group in a separate classroom led by the RTI teacher, or another staff member
- A follow-up meeting to be scheduled to make sure the plan to support learning is working

If not enough progress is being made, or if you do not feel like your concerns were heard, you can request further testing or request an evaluation for special education ([see page 17](#)).

□ Monitor progress

Intervention works best when:

- Progress is checked often to make sure learning is on track
- Quantitative data are used to modify the intervention or how often extra help is given
- Families are frequently told what is happening and invited to help make decisions

EXAMPLE EMAIL:

Dear Principal,

I am concerned about my student's progress in math. (Add an example of what you see at home, and list things that have been tried.)

I am requesting a Student Success Team meeting to discuss the current progress of my student and determine interventions and supports which may be helpful in the immediate future. I look forward to hearing from you and working with you and your staff.

Sincerely, Your name

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Make sure math help includes best practices

When core math instruction is systematic, explicit, and well-designed, struggling students do not need a completely different method of teaching — they need more chances to practice until they are accurate and fast. Support should be given as early as possible and be based in the best research. (See *Research Spotlight* on page 15.) How long and how often a program is used can affect how well it works.

WHAT TO ASK	ENCOURAGING FEEDBACK	PROBLEMATIC FEEDBACK
“What program is being used to help my student learn to do math?”	They are using a program that has strong evidence for success and can show you the effect size as listed on https://charts.intensiveintervention.org/aintervention	Your student is offered more attention using an inquiry-based curriculum, or technology/AI is being used without first trying an evidence-aligned program
“Do the frequency and intensity of pullout match the recommendation or best practices of the program used?”	Your child is getting at least the amount of time recommended. For example, the program requires 30 minutes, 3 times a week for 12 weeks	— There is no amount of time recommended by the program — The services are much less than what is recommended
“What class period(s) is my student missing?”	Math interventions taking place during before or after school, independent working time and/or within the classroom at a time when math skills are being independently practiced	Frequent pullout services scheduled during reading, science, music, or other subjects that build knowledge and vocabulary, which are key for reading comprehension
“What tool is being used to assess my student’s progress?”	You are shown research validated data from Curriculum-Based Measurement (CBM), Curriculum-Based Assessment (CBA), or from a highly-rated program https://charts.intensiveintervention.org/aprogressmonitoring on your student	You are shown results from teacher-made tests or assessments from Teachers Pay Teachers
“How often is my student being assessed to measure progress? Which skills are being assessed?”	You are given assessment timelines and regular progress reports	— Your student’s teacher offers to meet only during parent-teacher conference time. — You never or rarely hear from your student’s special education teacher or case manager about progress except at the annual IEP meeting or the scheduled 504 Plan meeting.

RESEARCH SPOTLIGHT:

What are the most effective practices to help elementary students who are struggling in math?

Rigorous research shows that the following teaching methods can help diverse elementary school children who are struggling with math.⁴

Systematic Instruction is the incremental, intentional approach where instructional elements build student knowledge over time toward a specific learning goal. Every lesson intentionally builds on the last one, guiding your child step-by-step toward a learning goal.

Mathematical Language is when students use math language to communicate their understanding of mathematical concepts. Supporting students' use of mathematical language requires clear and concise teaching of math language.

Representations support students' learning of mathematical concepts and procedures. They must be well-chosen, and include concrete and semiconcrete representations. For example, students may use physical objects that they can touch and move, such as base-10 blocks, or square tiles, as well as two-dimensional models, such as number lines, graphs, and sketches.

Number Lines are used to facilitate the learning of mathematical concepts and procedures builds understanding of grade-level material, and prepares students for advanced mathematics, such as fractions/decimals.

Word Problems deepen students' mathematical understanding and supports their capacity to apply mathematical ideas; provided deliberate instruction on word problem categories.

Timed Activities build fluency in mathematics through regular inclusion in class.

The What Works Clearinghouse (WWC) is a central, trusted source of evidence-based research on education programs, policies, practices, and products, helping teachers, administrators, and policymakers decide what works in classrooms.

EDUCATION WORDS:

Special Education (SPED):

The federal IDEA law protects students with learning differences and needs that affect their learning. If you suspect your student may have problems learning because of dyscalculia or other learning differences, even if they are not below grade-level,¹ you can start the special education process. The first step is to [request an evaluation](#).² Learn more with this [guide from Disability Rights CA](#).³

504 Plan: A plan that a school makes to help a student with a disability. This plan says what the school will do to make sure the student can learn.

IEP (Individualized Education Program):

A legal document that lays out the program of special education instruction, supports, and services a student needs to make progress in school.

Students with IEPs/504 Plans have a right under federal law to: Related services (like speech or occupational therapy); Accommodations including, but not limited to, accessible materials; Modifications like shorter assignments or instructions in small steps; Other supplementary aids or services like training or planning/teamwork time to support your student.

1. IDEA regulations (Sec 300.301) state: "FAPE (free appropriate public education) is available to any individual child with a disability who needs special education and related services even though the child has not failed or been retained in a course or grade and is advancing from grade to grade."

2. <https://serr.disabilityrightscalifornia.org/serr-manual/appendix/a-sample-letter-referral-for-assessment/>

3. <https://serr.disabilityrightscalifornia.org/> 4. Fuchs, L. S., et. al., (2021). Assisting students struggling with mathematics: Intervention in the elementary grades (WWC 2021006). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance. <https://whatworks.ed.gov>

Better systems and policies

In order to reach math equity, families should expect best practices in instruction, help, and opportunity

BUSD is adopting a new math curriculum in TK-5 (2027) and has promised that the middle schools are next. This opens up a window to train teachers in effective math instruction based in replicated research principles, not ideology. Any professional development program and curriculum should support:

Good core instruction for everyone, supporting a strong foundation

- Direct teaching:* Model new concepts and procedures step-by-step (“I Do, We Do, You Do”).
- Daily fluency practice:* Spend 5–10 minutes daily practicing basic math facts.
- Retrieval warm-ups:* Start lessons with short practice on prior skills.
- Regular standard curriculum based skills checks:* Use 1–3 minute assessments three times a year to track progress.
- Targeted support:* Use data to run daily 10–15 minute group practice on missing skills to help students fill foundational gaps.

Effective intervention that happens as soon as gaps start to appear

- In literacy, BUSD uses programs that experts have tested and proven to work for more students. We do not have the same structure in math. There is no coherent system to help students who have trouble with math, such as:
- Giving diagnostic tests to pinpoint gaps in foundational math understanding from the earliest grades
 - Using systematic and effective ways to help students get better at math (also called intervention)
 - Keeping track of student progress and sharing those results with families

Expanded equitable paths to advancement that help more students reach their potential¹

- The current system of restricting student growth based on age and a high-stakes test is unjust. We envision a way for all students to meet their learning needs:
- Automatic (opt-out) system:* Every student who shows readiness, based on multiple data points, is placed. Access does not depend on test prep or number of seats. Families who want a different pace can decline.
 - Multiple entry points:* Students are re-screened each spring, and data moves them forward. One single test no longer decides the path and cohorts are diverse.

Note: According to [EDC § 51224.7](#) BUSD must use multiple, objective measures for math placement and publish data and criteria. We were unable to find these data points.

EXAMPLE EMAIL:

Dear Director of Curriculum,

I am concerned that my student is not getting the support they need in math because of longstanding issues with how BUSD approaches math. We need classroom instruction that matches research on how people learn, daily effective intervention, and fair opportunities to advance.

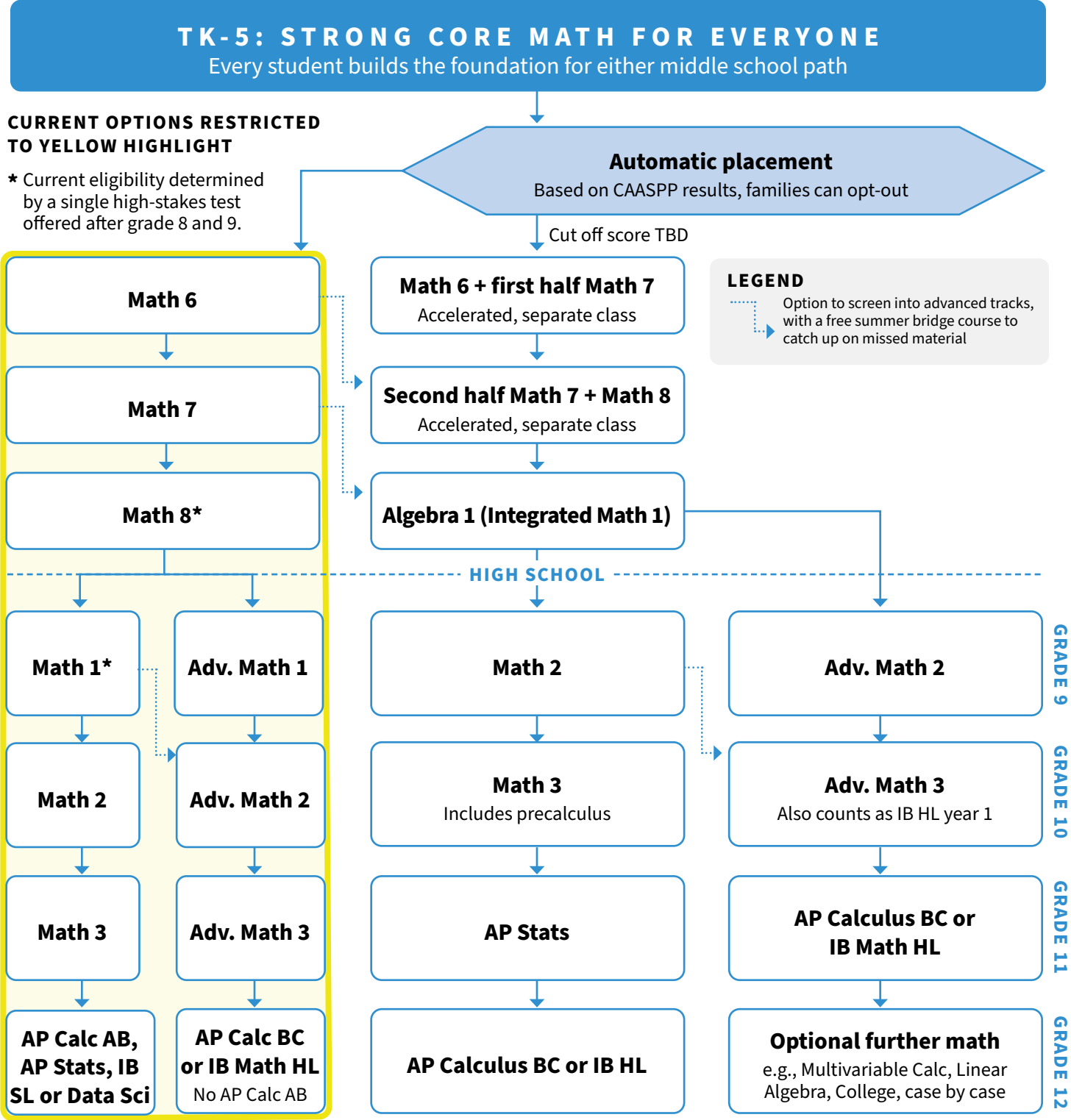
I am requesting that you start a transparent public process that addresses the needs of all students.

Sincerely, Your name

1. ExcelinEd (2026) [K-8 Math Guaranteed Access to Advanced Math](#)

A more equitable path to expanded math opportunity

Since 2015, Berkeley has restricted opportunity for students with a single high-stakes advanced placement test taken at the end of 8th or 9th grade. This strategy has resulted in continued, wide math disparities. Students in the advanced track cover topics more deeply in high school and can take AP Calculus BC senior year. Other districts and states take a different approach that has resulted in more and more diverse students in advanced math pathways. Below is our recommended approach.



Math at home

We’ve collected a few resources from reputable sources to practice math skills. Build regular practice into your daily life. Celebrate [number sense](#) in [daily routines](#), and find strengths and interests to build upon. Try to make math enjoyable at home and expand what math can look like through puzzles and games. Even a little time can help! **Not sure where to start?** [Learn about what children should know.](#)

Support with foundational skills

GAMES AND BOOKS	ASSESSMENTS
— Family Math Toolkit (K-12) reviewed activities, Center for Family Math — Math for Love (K-8) Game ideas & supplements — Family Math Games, Workbooks, and Apps (Ages 2-5) PBS SoCal — Math skills and related picture books, (PreK+) books and activities, Meadows Center	— 5 question grade readiness checks (K-5) free online quiz by Learning Heroes — Math Assessments (K-5) free complete PDF tests for counting through fractions from NCII — MDTP Online Test (Grades 10+) for precalc and calculus readiness, by UC San Diego — Delta Math RTI (K-10) free paper-based quick checks for grade-readiness, and more
APPS AND PROGRAMS	EXTRA PRACTICE
— Khan Academy (K-12) free online app — Pirate Math Equation Quest (Grades 3-5) free word problem intervention by Sarah Powell — Beast Academy, by AoPS, free lesson overviews, online subscription app \$100/yr — Math Academy, WASC accredited \$49/mo	— Common Core Worksheets (K-7) free PDF worksheets, games, flashcard generator — Math for Love (K-7) free fact fluency digital practice: counting, add, subtract, multiply, divide, integers (Amplify version)

Support older students

RESOURCES
— MVP Math Supplements (Grades 9-12) companion lessons by Samantha Cooper — Paul's Math Notes (Grades 9-12) Algebra through Calculus, by Paul Dawkins, Lamar Univ — Professor Leonard's YouTube (Grades 7-12) Prealgebra to Calculus and Statistics

Challenge for all ages

RESOURCES
— Berkeley Math Circle (Grades 2-9) extension and instruction, events, festivals — Math Games with Bad Drawings book, all ages — National Museum of Math regular online events — Problem of the Week (Grades 3-12) free online archive of weekly challenges, Univ of Waterloo

DIVE INTO MATH BEST PRACTICES

[Sold a Story Season 2](#), an investigative podcast about how kids learn, APM

[Science of Success](#), evidence based math instruction webinars, SpringMath.org

[Chalk and Talk](#), long-running podcast about best practices, Anna Stokke

NYTimes: [30 Ideas for Fixing U.S. Schools, Ranked by Experts](#)

CALIFORNIA MATH FRAMEWORK ISSUES

Ed Week: [California Adopts Controversial New Math Framework. Here's What's in It](#)

New Yorker: [California Students Are Struggling in Math. Will Reforms Make the Problem Worse?](#)



Data tracker

Areas of strength:

Main areas of concern:

Instruction that is working and not working:

Essential test scores (such as Star/CBM):

Things I need more explanation on, from school:

Record of documents and/or requests

DATE	DOCUMENT REQUESTED	TO/FROM WHOM	RESPONSE DATE

Glossary of education words

504 Plan: Plan covered under Section 504 of the Rehabilitation Act, designed to remove any barriers limiting a disabled student’s ability to receive an education and provide the necessary support the student needs to learn alongside their peers. <https://www.understood.org/en/articles/what-is-a-504-plan>

Accelerated pathways: a way for students to finish standard curricula faster, they compress multiple years of content into a shorter teaching window (i.e.. two years instead of three).

Accommodations: change how students learn and access material; they change the “how” of learning. They are designed to remove disability-related barriers without lowering expectations or altering grade-level standards. Permitted in both IEPs and 504 plans.

Accuracy: getting the correct answer by using a reliable method for solving; part of procedural fluency.

Acquisition: the initial stage of teaching a new math concept or procedure where a student is first learning the skill, is often making errors, and requires heavy teacher support, modeling, task sequence, and immediate feedback.

Automaticity: the ability to recall basic math facts accurately and effortlessly without needing conscious thought or working memory access. Measures processing speed and rapid retrieval, built from number sense and conceptual strategies (making tens, using doubles, etc.) rather than rote memorization.

Balanced Math: A framework for math instruction that evolved out of the “math wars” of the 1980-90s (similar to the “reading wars” of the same time period) as a way to bridge the gap between procedural math (the phonics equivalent) and inquiry-based math (the whole language equivalent). Balanced math borrows the exact structural framework commonly used in balanced literacy to focus on fact fluency and automaticity, guided math circles, independent practice, and number talks. Critics argue that “balanced” curricula looks great on paper but over-emphasizes unguided, inquiry-based discovery at the expense of necessary, explicit procedural instruction.

CAASPP: California Assessment of Student Performance and Progress, including Smarter Balanced Summative Assessments, taken by students in grades 3-8 and 11 in English language arts/literacy (ELA) and mathematics. These assessments are administered online.

CBM/CBA: Curriculum-Based Measurement (CBM) or Curriculum-Based Assessment (CBA) is a brief, timed test given in repeated intervals based on what the student is learning in the school curriculum. CBM can help your student’s teacher find the type and amount of instruction your student needs to make enough progress toward meeting academic goals.

Child Find: By federal law, schools must “identify, locate and evaluate” all students with disabilities who may be eligible for special education. If the district has a reason to suspect that your student has a disability, it has an independent, proactive duty to conduct a full evaluation, with parents’ written consent, to determine their eligibility. The threshold for suspected disability to trigger an evaluation is relatively low.

Cognitive load: the amount of mental effort and working memory capacity used while learning or solving mathematical tasks. Based on Cognitive Load Theory by John Sweller, human working memory can only hold a small number of items at one time. Because math features multiple concept interactivity (numbers, operations, rules, visuals, etc.) – it easily overwhelms working memory if instruction is poorly designed.

Concrete-representational-abstract (CRA)

sequencing: a three-stage instructional model that helps build deep conceptual understanding before moving to procedural work. Students start through hands-on physical manipulatives (base-ten blocks, counters, fraction bars, etc.) to model math problems. Students transition from hands-on physical objects to visual models (graphs, diagrams, tallies, dots, bar models, etc.) to represent the physical items previously explored. In the final stage, students move to abstract representations (numbers, variables, math symbols, etc.) to solve problems without needing physical or visual aids.

Data: any collection of factual, numerical, or qualitative evidence gathered from students to measure understanding, to track progress, and guide teaching decisions.

— Quantitative data: measured scores and numbers (i.e. test scores, exam grades, exit tickets, problem-solving task scores, fluency tests, etc.)—

— Qualitative data: observations of how students are doing (i.e. notes during guided practice, whiteboard answers, student explanations, etc.)

DBI (data-based individualization): a research-based process for individualizing and intensifying interventions through the systemic use of assessment data, validated interventions, and research-based adaptation strategies. Intensive interventions are part of the Tier 3 interventions in MTSS and are developed by the NCII.

[Academic Intervention Tools Chart](#)

Dyscalculia: a specific learning disability with an impairment in math that affects a person's ability to understand number-based information, like number sense, problem solving, memorizing math facts, time, and accurate and fluent calculations. [An estimated 4-7% of students have dyscalculia.](#) Dyscalculia intervention relies on the *Concrete-Representational-Abstract (CRA)* approach.

Early Intervention: Getting help for learning problems as soon as possible to increase the chances of success. The mantra of early intervention is always “the sooner, the better,” which is supported across the board by research.

Ed Code: California Education Code is one of 29 Codes that contain state statutes or laws. The Ed Code contains 3 Titles. There are also numerous divisions, parts, chapters, and articles containing hundreds of code sections, or individual statutes.

ESEA: Elementary and Secondary Education Act, the main federal education law.

Explicit instruction: a clear, structured, and systematic teaching method that combines teacher modeling with guided and independent practice. Complex concepts are broken into small, logical chunks that build on prior knowledge and reduce cognitive load. Teachers model the math skills step-by-step using “think-alouds” to explain their reasoning. Students then practice the skills with immediate teacher support and corrective feedback. Finally, students have the opportunity to practice independently to build fluency and apply the knowledge to novel tasks. Also called direct instruction.

Fluency: The ability to apply math procedures and computations accurately and with speed.

Foundational numeracy: the core, fundamental concepts and skills that students must master before they can successfully learn more advanced mathematics. Foundational math skills include number sense, counting, understanding whole and rational numbers, pattern recognition, spatial reasoning, and computational proficiency.

Generalization: the ability to apply a learned math strategy or skill across new settings, different problem types, or real-life context.

Gradual Release Model: the “I Do, We Do, You Do” model where the teacher first models the problem-solving process, then students solve problems together as a class or in small groups, and finally students practice independently.

IDEA: The Individuals with Disabilities Education Act (IDEA) is a federal law that establishes a formal process for evaluating individuals with disabilities and providing individualized education programs (IEPs). The purpose of IDEA is to ensure individuals with disabilities receive a free appropriate education. <https://sites.ed.gov/idea/statute-chapter-33/subchapter-i/1401>

IEP (Individualized Education Program): a legal document that describes the student's present educational performance; annual goals for development; specific services to be delivered; dates and duration of services; service providers and locations; and procedures for evaluating whether those objectives are being met.

Intervention: See RTI.

Instructional Hierarchy Model: a model that matches a student's stage of learning in math to the right teaching strategy. The goal is to move the student from a novice to an expert through four stages: acquisition (accuracy and basic understanding), fluency (speed and automaticity), generalization (applying skills to different types of problems), adaptation (modifying and combining skills to solve novel problems).

IES (Institute of Education Sciences): the statistics, research, and evaluation arm of the U.S. Department of Education. It is their mission to provide scientific evidence on which to base education policy and practice for districts, educators, parents, policymakers, researchers, and the public.

LEA (Local Educational Agency): The organization that runs public schools in a city or town. The Berkeley Unified School District Board of Education is the LEA for Berkeley public schools.

Math Level: denotes a student's placement on standardized state tests (below, approaching, meeting, or exceeding grade-level expectations). However, the math level does not tell the full story of where the student is, what gaps might be forming, and whether the level correlates to in class performance. The math level should be one data point among many to give a true picture of math proficiency.

Math Literacy: the ability to reason, communicate, and apply math concepts to solve real-world problems. A student can comprehend and decode math language, specialized vocabulary, and symbols. They can apply

concepts to real life situations such as cooking, budgeting, time management, data tracking, etc. And they can show and explain their thinking and reasoning about mathematical ideas.

Mathematical proficiency: the ability to understand, use, and apply math successfully. Math proficiency balances conceptual understanding (the “why” behind math rules), procedural fluency (carrying out calculations accurately, efficiently, and flexibly), strategic competence (choosing the correct tools or skills to use with novel or unfamiliar problems), adaptive reasoning (thinking logically and explaining the thought process), and a productive disposition (seeing math as worthwhile, useful, and sensible).

Math Standards: the official national and state benchmarks that define what mathematical knowledge, skills, and conceptual understanding students should master at each grade level from kindergarten through high school. The Berkeley United School District uses the [Common Core State Standards](#) for Mathematics (CCSSM) set forth by the State of California.

Modeling: an instructional strategy where the teacher explicitly demonstrates how to solve a math problem or use a skill while verbalizing their internal thought process (“think aloud”).

Modifications: alter the curriculum, reducing task requirements or altering learning objectives; they change the “what” of learning. Modifications provide an achievable level of instruction for students with significant learning needs. Permitted only in IEPs.

MTSS (Multi-Tiered System of Support): an integrated school framework or approach to identify struggling students early and intervene quickly. MTSS aligns the entire system of school initiatives and resources to address all students’ academic, behavioral, and social-emotional needs. MTSS is made up of three levels (Tiers 1, 2, and 3) where RTI2 and Positive Behavioral Interventions and Supports (PBIS) are delivered with increasing intensity and individual focus as the tier number increases.

Tier 1: Within MTSS, universal or main instruction with the whole class or in small groups within the general classroom.

Tier 2: Within MTSS, targeted instruction/ intervention/ supports tailored for a small group of students with similar skills, supplemental to Tier 1 instruction.

Tier 3: Within MTSS, individualized instruction/ intervention/supports given with increased intensity (more dedicated time, smaller group size or one-on-one)

and more individual attention (more targeted focus on a student’s unique need or skill), supplemental to or in place of Tier 1 instruction. Tier 3 is not the same as special education, as Tier 3 supports all students and special education is for students with an IEP. Tier 3 often involves special education staff, as students within Tier 3 may also receive services through an IEP.

NCII (National Center on Intensive Intervention): a research center that works to advance the field of intensive intervention. It is funded by the U.S. Department of Education’s Office of Special Education Programs. It is their mission to build knowledge and capacity of state and local leaders, educators, professional development providers, and other stakeholders to support the implementation of intensive interventions for students with learning and/or behavior needs using data-based individualization.

PBIS (Positive Behavioral Interventions and Supports): an approach that focuses on the emotional and behavioral learning of students, which leads to an increase in engagement and a decrease in problematic behavior over time. The LEA adopts and organizes evidence-based behavioral interventions that improve social and emotional behavior outcomes for all students.

Problem-solving: the process of engaging in a task for which the solution method is not known in advance, requiring learners to apply critical thinking, make sense of the situation, and develop a path to solving the problem. It should be an active experience of intellectual challenge rather than following a fixed set of steps.

Productive struggle: the optimal level of cognitive challenge where students work through novel or open-ended problems using prior knowledge and a flexible application of skills rather than receiving immediate answers or step-by-step procedures from the teacher. The task is right at the edge of a student’s current ability – the task requires mental exertion, but is achievable with effort and support.

Professional Development (PD): the ongoing, systematic process where educators deepen their math content knowledge, master research-based pedagogical strategies, receive peer feedback and support from instructional coaches.

RTI or RTI² Response to Intervention, or Response to Instruction and Intervention an approach that focuses on individual students who are struggling academically and pulls together resources from the LEA, school, and community to promote students’ success before they fall behind. It is systematic and data-driven with tiered levels of intervention to benefit every student.

Scaffolding: a temporary teaching strategy that breaks complex math concepts into smaller, manageable chunks, providing step-by-step support (a scaffold) so that students can solve problems just beyond their current independent level. The support is gradually removed (faded) as students build competence and confidence until they can solve the problems independently. The concept is rooted in Lev Vygotsky's *Zone of Proximal Development* – the “sweet spot” where a task is too hard for a student to do alone, but achievable with guidance.

Scope and Sequence: Evidence-based curriculum describes what is taught (scope) and when it is taught (sequence). Instruction follows a clear and intentional plan in which skills are taught systematically and cumulatively.

Special Education (SPED): the practice of educating students in a way that meets their individual differences, disabilities, and special needs. Governed by federal law (Individuals with Disabilities Education Act, IDEA), special education is defined as: “Specially designed instruction (SDI), at no cost to parents, to meet the unique needs of a child with a disability.” Special education services may be provided across a variety of educational environments to students who have an individualized education program (IEP).

Specific Learning Disability (SLD): Specific learning disability eligibility is one way to qualify for special education services under IDEA. The student must have difficulties in at least one of the following areas for at least six months despite targeted help: reading; understanding the meaning of what is read; spelling; writing; number facts; and/or math reasoning. Common SLDs include dyslexia and dyscalculia.

Star: BUSD's selected snapshot assessment for reading and math in grades 3-10, given 3 times a year. These tests are used to gain an understanding of a student's achievement and growth throughout the year. This is a computer-based, adaptive test — the questions that appear on the tests change in difficulty level depending on how a student answers the previous questions.

SST (Student Success Team): the purpose of this team is to provide an effective support system that will create effective interventions for students who are experiencing challenges in learning, behavioral, or social-emotional difficulties at school. The SST process begins with a request from a teacher, counselor, parent, agency representative, or student that a concern has been identified.

Science of Math Approach (or Evidence-Based Mathematics Instruction): is an objective, research-backed movement and body of knowledge that focuses on how students learn math. It uses empirical data from psychology, cognitive science, special education, and math education to guide effective teaching and policy decisions. The Science of Math focuses on the core principles of mathematical proficiency, explicit instruction, CRA continuum, and foundational numeracy. The method uses early universal screening and error analysis to diagnose conceptual gaps, rather than relying on final test scores, and should be a standard part of MTSS. The Science of Math features classwide mathematics intervention to supplement instruction and fits into MTSS Tier 1.5, between the universal screener and Tier 2 interventions. The classwide intervention protocol elevates the baseline performance of the whole group, isolates the true disabilities from instructional gaps, and provides data for implementation of Tier 2 and 3 interventions.

— Examples of Tier 1 universal curricula that are rooted in the Science of Math approach: JUMP Math, Connecting Math Concepts, Math with Confidence.
— Examples of Tier 2 or 3 intervention programs rooted in the Science of Math approach: SpringMath, ROOTS Math, Number Rockets, Do The Math, Pirate Math Equation Quest.

Systematic Instruction: an evidence-based teaching approach that presents mathematical concepts, skills, and procedures in a highly structured, carefully planned, and logical sequence. It ensures that students build foundational skills before moving on to advanced ideas.

Universal screener: An assessment that is brief, easy to administer, and tests students' critical skills and knowledge. The screener or diagnostic assessment is scientifically proven to be valid (accurately tests what it is supposed to test), predictive (shows a future outcome), and reliable (test and re-test results are generally the same).

Worked examples: a step-by-step demonstration that shows how to solve a problem. It includes all of the exact procedural steps used to solve it, and the final solution. It breaks down complex math problems into clear, sequential steps with explicitly stated explanations of the logic used in each step.

Zone of Proximal Development: the “sweet spot” of student learning, tasks are challenging and require visual models, or teacher/peer to help bridge the gap. If tasks are too easy, they offer no growth. If tasks are out of reach, they are too complex and lead to student frustration instead of learning.

About Learning for Berkeley

SIGN UP FOR OUR NEWSLETTER <https://bit.ly/R4B-news>

Learning for Berkeley is a group of parents, teachers, and partners promoting educational excellence and improved math and literacy policies and practices in BUSD in collaboration with organizations including Decoding Dyslexia CA, FULCRUM, and the CA Reading Coalition.



LEARNING FOR BERKELEY

LearningforBerkeley.org/math