

A Math State of Mind

A Roadmap for Reversing New York's Math Decline

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Executive Summary

New York is facing an urgent, but solvable math crisis. For more than a decade, student math performance has remained unchanged or declined, with the greatest harm falling on Black and Latinx students, multilingual learners, students with disabilities and those from low-income backgrounds.

New York ranks only [36th in fourth-grade math](#) and [26th in eighth-grade math](#) on the 2024 National Assessment of Educational Progress (NAEP), with 42% of eighth graders scoring Below Basic, meaning they lack the foundational knowledge and skills necessary for success in higher-level coursework. The average 8th grade NAEP Math score for New York students in 2024 was the [same level](#) as 2000.

Key Indicators of New York's Math Crisis

New York ranks

36th

nationally in fourth-grade math and

New York ranks

26th

in eighth-grade math proficiency

42%

[scored Below Basic on the eighth-grade NAEP.](#)



Large racial and ethnic disparities persist across grade levels and assessments. For instance, students scored proficient on the Algebra II Regents exam in 2024-25:



Enrollment disparities were clear across socioeconomic status and race. Access to Algebra I and other advanced math opportunities gaps remain.

75%

of all students

52%

of Black students

57%

of Latinx students

80%

of families, and a large majority of educators support stronger, more coherent statewide action.

58%

[of seventh graders qualified for Algebra 1 in 2023-24](#)

37%

of eighth graders were enrolled in the course in 2024-25.

These outcomes are not simply the result of pandemic-related learning loss nor the responsibility of individual students or educators. They reflect inequitable access to high-quality instruction, effective intervention, rigorous¹ coursework, and well-prepared educators. At the same time, families, educators and economic indicators are signaling that the system is not meeting students' needs and preparing them for future success.

This report draws on research, educator and family input, national best practices, and successful state and local initiatives to identify four essential pillars for a comprehensive state-wide mathematics strategy that can strengthen core instruction while ensuring targeted support for students who need it. These pillars are designed to reinforce one another rather than operate as disconnected initiatives.

¹ Rigorous pedagogy is often referenced but rarely defined. In this report we define mathematical rigor as: engaging students in critical thinking that develops conceptual understanding and procedural fluency while requiring students to reason, make sense of problems, and justify their thinking in real-world situations

While New York faces significant challenges with math outcomes, state and district leaders can take a major step forward by thoughtfully and coherently developing math policies that incorporate these four pillars across the state.

- 1 High-quality instructional materials paired with targeted interventions**
- 2 Job-embedded professional learning for teachers**
- 3 Equitable student access to accelerated and advanced math pathways**
- 4 Evidence-based educator preparation programs.**

In this report we examine state and national assessment data demonstrating math learning challenges across the state, highlight qualitative data from parents and educators of their views of the state of math instruction in New York and conclude with four policy pillars that are essential to solving this crisis. We pair this analysis with a case study of two community school districts in New York City that have made systemic changes to achieve significant improvements in math.



Introduction

New York has made improved literacy outcomes a priority in recent years. Yet an equally urgent challenge has received far less attention: mathematics achievement. While reading has become the focus of significant attention, math proficiency has stagnated, [achievement gaps by race and income have widened](#), and many students lack the foundational skills needed for future success.

New York's math outcomes have been moving in the wrong direction for more than a decade; well before the COVID-19 pandemic and the emergence of concerns about learning loss. Despite investing more per student than any other state in the nation, New York ranks only 36th nationally in fourth grade math and 26th nationally in eighth grade math on the 2024 NAEP. Even more concerning, [42% of New York eighth graders](#) scored Below Basic, indicating that they lack the foundational math knowledge and skills necessary for success in higher-level coursework.

These challenges are not experienced equally. Black and Latinx students, multilingual learners, students with disabilities, and students from low-income backgrounds consistently face fewer opportunities to receive high-quality instruction and engage in advanced math learning opportunities, which has consistently resulted in lower achievement outcomes. These outcomes represent hundreds of thousands of New York students losing access to academic and economic opportunity.

Math is a gateway to advanced coursework, college opportunity, and careers in high-growth fields such as engineering, health care, technology, and advanced manufacturing. Without significant shifts in state policy, classroom instruction, and teacher preparation, too many students — particularly those from underserved communities — will remain excluded from these life changing pathways.

In response, Governor Hochul and the Legislature enacted the Back to Basics in Math initiative in 2026, a multi-million dollar investment designed to strengthen mathematics instruction across New York State. While this represents an important first step, meaningful and sustained improvement will require a longer, more comprehensive strategy centered on equity, excellence, and evidence-based practices.

The success of this strategy will ultimately hinge on ensuring the state's investment prioritizes allocating funds to advancing four researched and proven interconnected pillars: high-quality curriculum and interventions, professional learning, accelerated and advanced math pathways, and teacher preparation.

New York has the resources, knowledge, and opportunity to become a national leader in mathematics achievement. The question is whether the state, districts, and communities will act with the urgency that this moment demands.

Strong math skills [predict](#) future academic success, college completion, earnings, and long-term economic mobility. High school students who struggle with mathematics are less likely to graduate prepared for college and careers, and more likely to face barriers to economic security throughout adulthood. Like literacy, access to high-quality math instruction is not a privilege for the few but a civil right for all.

The Math Crisis by the Numbers

In analyzing math outcomes, it is important to recognize math is a skill-cumulative subject, in which one standard is required to master the next. When a student scores below basic on any one standard, learning gaps can compound rapidly.

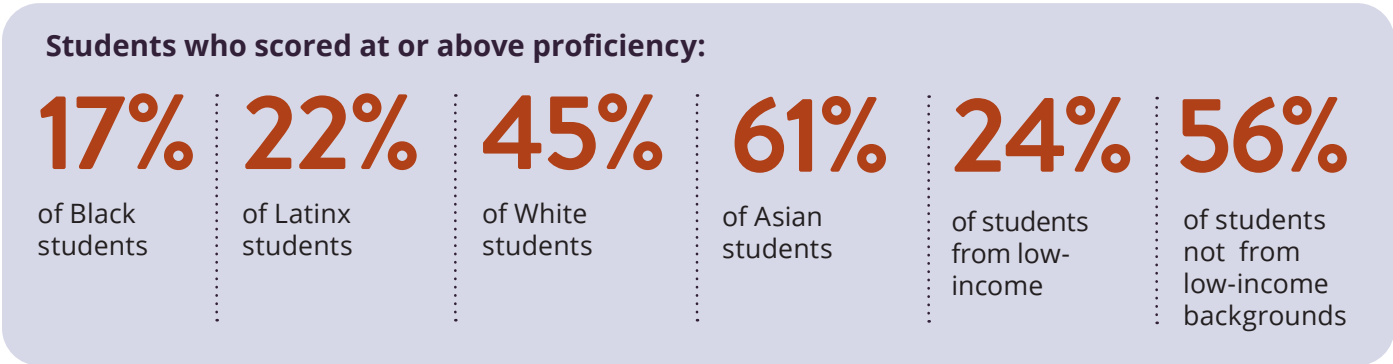
This is one of the major contributing factors as to why the number of eighth graders scoring Below Basic on the NAEP is nearly double that of fourth graders. It also helps explain why students so often lose the opportunity to develop a strong “math identity” early on and why the decline in math learning requires urgent action, starting in elementary school.

New York State NAEP Fourth-Grade Proficiency Rates Signal a Lack of Foundational Skills

On the 2024 National Assessment of Educational Progress (NAEP), only [37%](#) of New York fourth graders scored at or above Proficient in math, while 28% scored Below Basic, meaning more than one in four students lack at least partial mastery of prerequisite skills.



These outcomes are also deeply inequitable: only 17% of Black and 22% of Latinx students scored at or above proficiency, compared with 45% of White and 61% of their Asian peers. Furthermore, only 24% of students from low-income backgrounds scored at or above proficient compared to 56% of their more affluent peers. Overall, New York ranked [36th in the nation](#) in fourth grade math.

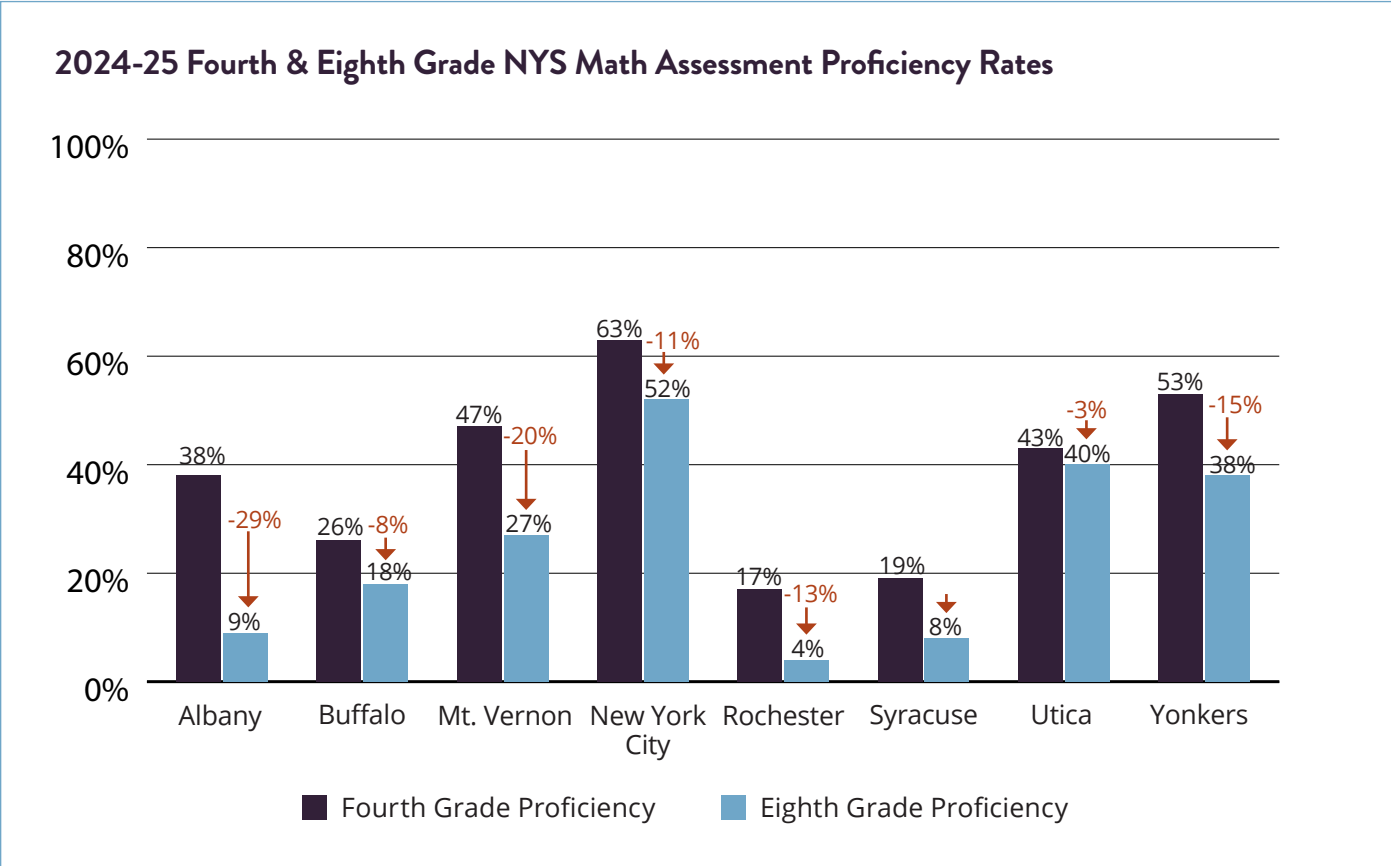


New York State NAEP Eighth-Grade Proficiency Rates Reflect Persistent and Deep Inequities

The 2024 eighth grade NAEP outcomes are even more concerning. Only [26%](#) of New York eighth graders scored at or above Proficient, with the average score unchanged since 2000, emphasizing the state’s long-term lack of progress for more than two decades. Proficiency rates remain sharply different across student groups: only 16% of Black students and 12% of Latinx students reached proficiency, compared to 35% of White students and 57% of Asian students. Only 17% of students from low-income backgrounds scored at or above proficient, as compared to 38% of their more affluent peers. Overall, 42% of all eighth graders scored Below Basic.

The Big 8: Math Proficiency Rates on the New York State Math Assessments Drop Sharply Between Fourth and Eighth Grade

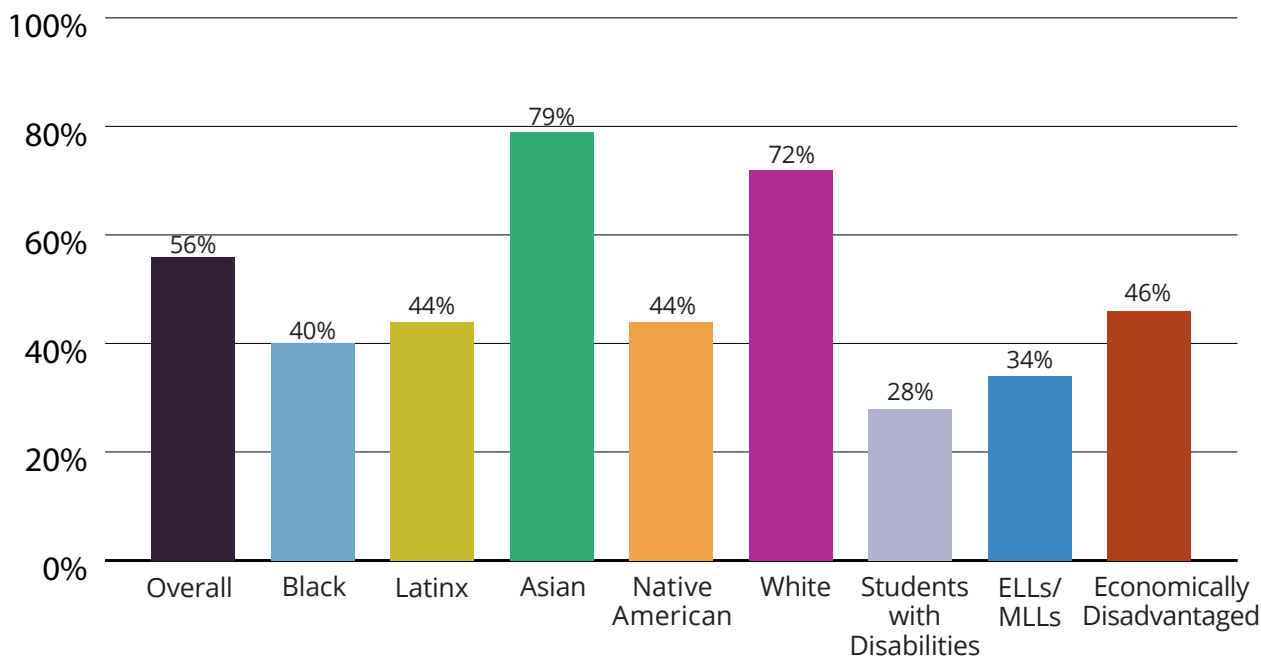
Similar math challenges are revealed on state level assessments. On the NYS Math Assessments, Math proficiency is generally lower in eighth grade than in fourth grade across the [Big 8 districts](#), with particularly low eighth grade outcomes in several cities. In [Buffalo](#), 26% of fourth-grade students meet proficiency, compared with 18% of eighth-grade students. In [Rochester](#) and [Syracuse](#), 17% and 19% of fourth-grade students meet proficiency, compared with 4% and 8% of eighth-grade students, respectively. In [Albany](#), 38% of fourth grade students meet proficiency, compared to just 9% in eighth grade.



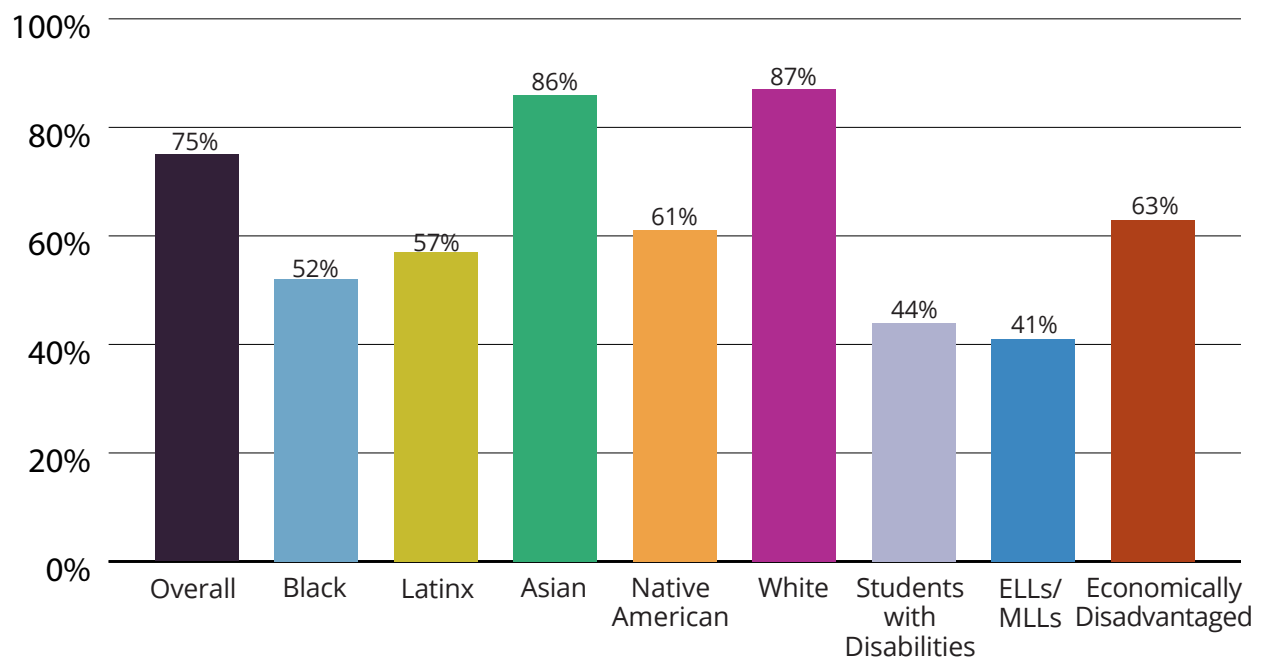
High School Outcomes on 2024-25 Regents Exams Remain Uneven

Proficiency rates on Regents math exams are higher than on NAEP and grades 3-8 assessments, but major disparities remain across race, ELLs/MLLs, and geography.

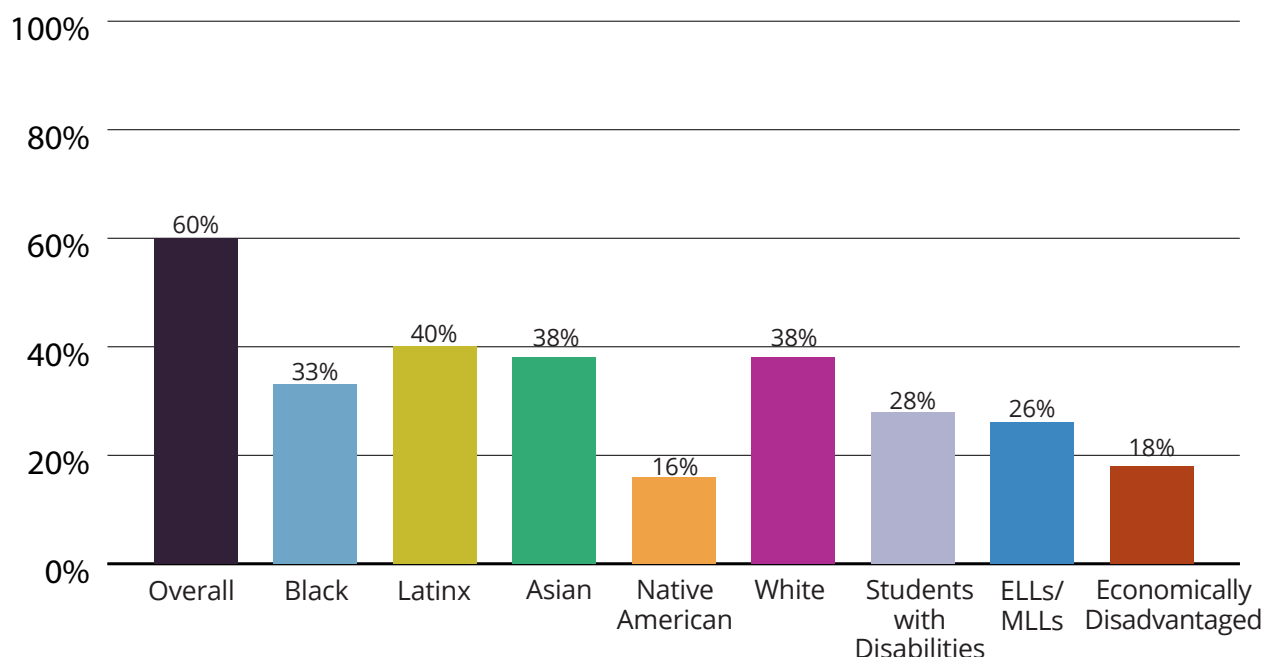
Statewide 2024-25 Regents Exams Proficiency Rates: Algebra I



Statewide 2024-25 Regents Exams Proficiency Rates: Algebra II



Statewide 2024-25 Regents Exams Proficiency Rates: Geometry



[Regents results](#) show persistent inequities. 56% of students statewide were proficient on the Algebra I Regents exam, compared with 40% of Black students, 44% of Latinx students, 34% of ELLs/MLLs and 28% of students with disabilities. Similar disparities appear in Geometry and Algebra II, where statewide proficiency rates remain substantially higher than outcomes for underserved student groups.

District-level Regents outcomes also vary widely. For the Algebra I Regents exam, the statewide proficiency rate was [56%](#). In Rochester, it was [18%](#), and Syracuse [24%](#). Modestly higher rates are seen in Buffalo [30%](#), Albany [33%](#), and New York City [48%](#).

Together, these patterns reveal a critical dynamic: while early Regents benchmarks may suggest strong performance at the state level, a sharp decline in high school proficiency indicates that many students, particularly students of color and students from low-income backgrounds, are not consistently building the skills needed for long-term math success.

What's at Stake

Poor math outcomes as early as [four and a half years old](#) can signal long-term academic risk that can be tracked as early as [fourth grade](#). Fourth grade marks a critical turning point in math, when students shift from basic arithmetic to more abstract reasoning and problem-solving. At this stage ([often referred to as the "fourth-grade slump"](#)) foundational gaps begin to surface and widen, making fourth-grade proficiency a key indicator of whether students will demonstrate mathematical progress in middle school and beyond.

Students who are not proficient in elementary math are far less likely to be prepared to take Algebra I in the eighth grade. [Research](#) from New Classrooms found that students need to master [170 grade level math skills](#) before entering Algebra I. These gaps [compound over time](#), with missed foundational skills making it increasingly difficult to engage with grade-level content.

Similarly, 8th grade [math achievement](#) is a strong predictor of high school graduation, higher income, and increased educational attainment. At the same time, being proficient in 8th grade math increases the likelihood of enrolling in advanced math courses, which in turn open doors to college and career opportunities.

The financial consequences of this crisis are also substantial. Median salaries in math-intensive fields remain substantially higher than in other sectors, and [STEM-related jobs are projected to grow 2-3 times faster](#) than non-STEM jobs over the next decade. This is playing out in Central New York, as [Micron's new](#) \$100 billion investment is estimated to create nearly 50,000 jobs, with many STEM roles paying at least \$100,000 annually. Students who complete advanced math in high school earn [22% higher wages on average](#) (even without a college degree) and gain access to a wide range of [middle-wage, high-growth careers](#) such as electricians, plumbers, and medical technicians, all of which rely on strong math skills.

Students who complete advanced math in high school earn an average of

22% 
higher wages

Young people who have access to high-quality mathematics instruction and academic support are better positioned to pursue high-demand, well-paying careers. Inequitable access to these opportunities can contribute to persistent earnings disparities for Black and Latinx communities.



Voices from the Field

To understand how families and educators experience our current state of math in New York, we combined statewide parent polling with parent and educator focus groups. The [statewide parent poll](#), conducted by The MassINC Polling Group, surveyed 1,208 New York parents of K–12 students, including oversamples of Black, Latinx, and Asian parents to ensure at least 250 respondents from each group. Conducted in September and October 2025, the survey explored families’ perspectives on their children’s math experiences, confidence, and challenges. The MassINC Polling Group also conducted a focus group with 11 parents from communities across New York, including Albany, New York City, Syracuse, Copenhagen, and New Hartford.

We also gathered educator perspectives through focus groups conducted in partnership with Educators for Excellence (E4E) and Teach For America (TFA). E4E conducted two NYC focus groups with 16 educators (eight educators who teach grades K–5 and eight educators who teach grades 6–12), and two upstate focus group with 10 educators (five educators who teach grades K–5 and five educators who teach grades 6–12) total. These conversations captured insights from 26 educators across New York State.

While the focus groups are not representative of all New York educators, the consistency of themes across regions—and their alignment with the parent poll—provides a useful picture of the challenges facing math education and the supports families and educators believe are needed.

Family and Educator Perspectives on Math Learning



Students are entering grades without the math foundations they need.

“

I actually just brought this up in the past parent-teacher conference. How do they expect her to do this homework? It’s, I’m doing the homework, but she doesn’t understand it, and she needs to go back to the basics, like, try to learn the basics first before you expect her to learn the next level.” – A parent of a first and third grader in Manhattan



Parents

43%

[of parents worry their child is falling behind in math, including](#)

64%

[of parents of students with disabilities](#) and

66%

[of multilingual learner families.](#)



Educators

Teachers across grade levels reported students entering classrooms without foundational number sense, fluency, and prerequisite skills.

“Students who are still learning counting, number sense, very very basic skills.” – A third grade teacher in NYC

“They don’t have the foundational skills necessary to access middle school math.” – A sixth grade teacher in Buffalo



The current system widens inequities.



Parents

86% of parents say their child receives math support at school, 39% seek outside help, primarily

40% tutors, 35% online tools, 39% math applications.

Access to these resources is uneven and depends on family income and education:

50% of parents with advanced degrees seek outside help, vs. 32% of those with a high school diploma or less, 57% of families earning under \$50,000 cite cost as the main barrier.

“...most people couldn’t afford to spend \$300, \$400 a month or something like that out of their pocket for just a tutor for their kid.” – A parent of a seventh and twelfth grader in Rochester

“We’ve been working on like those third and fourth grade topics for the whole year.” – A seventh-grade teacher in Upstate New York

“How do we teach grade level content to students who are far below that?” – An NYC fifth grade teacher



Educators

Teachers describe spending significant instructional time addressing unfinished learning instead of grade-level content.



Students need stronger foundations before they can tackle challenging mathematics.

“

“[Math] it’s a pyramid, you know? It’s built one after the other. Right. One little part, and you’re gonna have an issue for the rest of the year.” – A parent of one middle school and two high school students in Long Island



Parents

Parents recognize that confidence in basic math does not guarantee long-term success.



Educators

Teachers consistently said students need procedural fluency and number sense before they can engage deeply in conceptual mathematics.

“

“The ones that have struggled and still struggled to this day are the ones that don’t have those computational facts down.” – A seventh grade Buffalo teacher

“

“The gaps keep getting bigger and bigger and bigger.” – A third grade Buffalo teacher

“

“[F]act fluency, it’s not there” – A fourth grade Buffalo teacher



Literacy is a critical part of math success.



Parents

Parents worry about long-term readiness across subjects.

“

“...she’s normally really good at math, but she gets tied up with the word problems.” – A parent of a second grader in Brooklyn



Educators

Teachers consistently described reading comprehension and academic vocabulary as major barriers to math learning.

“

If they can't read, they don't understand.”

– A Buffalo fifth grade teacher

“

“how well can they comprehend a problem is going to determine how they could do it” – A sixth grade teacher in Rochester



Families and educators agree on the need for statewide reform.

“

“We shouldn't have to wait till a parent-teacher conference to know that your child is struggling. There should be either some progress report, or just something that to say, hey, I've noticed this, you know, can we work on that more?” – A parent of a tenth, sixth and second grader in Brooklyn



Parents

80%

support required evidence-based curricula and

75%

support a state-approved list of high-quality instructional materials.

“

“My curriculum is supposed to be aligned with the Next Generation Math Standards, but I find that a lot of the practice materials don't resemble a lot of the questions that I see on the New York State math test.” – An eleventh-grade teacher in Troy



Educators

Teachers called for better curriculum, more intervention time, and structured supports rather than expecting grade-level instruction alone to close gaps.

Parents and educators identified the same underlying challenges: too many students lack foundational math skills, uneven access to effective instructional materials and supports, inequitable access to advanced coursework and math placement information. Their perspectives also confirm that New York's math crisis is urgent, inequitable, and solvable; they are ready for bold, statewide action.

Educator Priorities for Successful Implementation

Teachers in districts like New York City attempting to shift curriculum and instruction emphasized the need for stronger implementation support, including coaching, professional learning, and intervention systems.

Educators generally identified greater instructional coherence and access to stronger materials as important improvements, while emphasizing that successful implementation requires sustained support over time. In particular, teachers called for continued coaching, stronger intervention systems, and clearer feedback loops as districts move from initial adoption to long-term implementation.

What Educators Need	What We Heard	Voices from the Classroom
Provide sustained, job-embedded, content-focused professional learning.	Teachers described professional learning as inconsistent and insufficient to support lasting changes.	"There is definitely a backtracking in how much professional learning is happening." – A NYC eighth grade teacher
Create feedback loops between coaches and curriculum developers that improve curriculum and implementation.	Teachers appreciated opportunities to share feedback but said they rarely saw it lead to meaningful adjustments.	"They are asking us what our thoughts are, but I'm not really seeing adjustments." – A sixth grade teacher in NYC
Invest in ongoing instructional coaching.	Teachers consistently identified coaching as one of the most valuable supports, but said it is often spread too thin.	"The first year you get a lot more coaching days... by second or third year it does dwindle down." – A tenth grade teacher in NYC "[Our coach is] split amongst 18 schools" – A tenth grade teacher in NYC "There's been a push to move some more instructional coaches into the elementary school realm." – An eighth grade teacher in Northern Westchester County "[T]he curriculum's just lesson after lesson after lesson" we very rarely have time to just go over anything if there was a need after an assessment." – A third grade teacher in Buffalo Public Schools
Connect high-quality materials with implementation supports.	Teachers viewed new high-quality materials as a valuable tool to improve instruction but stressed that curriculum alone is not sufficient to improve student outcomes.	"These lessons are really packed...they leave very little wiggle room to make the adjustments" – A ninth grade teacher in NYC For students with disabilities and MLLs...the supports don't match. I have to be really creative on my own." – A ninth grade teacher in NYC "Having someone come into your classroom and work alongside you makes a huge difference." – A fourth grade teacher in Hannibal

In addition to the educator perspectives gathered from focus groups held across the state, E4E's 2025 [nation-wide survey of educators](#), provided even more evidence that reinforces the desire, and need, for HQIM amongst educators in New York:

94%

of NY teachers believe teachers should use high-quality, evidence-based instructional materials

49%

of NY teachers say materials are adequate (rating 5–7 on a 7-point scale) for helping all students master state academic standards.

27%

of NY teachers say their curriculum materials are adequate for accelerating the learning of students performing below grade level.

22%

say materials are adequate for meeting the needs of multilingual learners — the lowest-rated response.

30%

say materials are adequate for meeting the needs of students with disabilities (e.g. those with IEPs or 504 plans).

Families Raise Concerns About Access to Advanced Math Opportunities

While educators focused primarily on strengthening instruction in the classroom, parents consistently raised a related concern: whether students have equitable access to accelerated and advanced mathematics pathways². Families described uncertainty about course pathways, inconsistent communication from schools, and concerns that their children are not prepared for higher-level mathematics.

These concerns were reflected in EdTrust-New York's [statewide parent poll](#). Although most parents believe advanced math courses are important for future success, many reported receiving limited information about how students access those opportunities. Only 39% of middle school parents said their school had discussed the sequence of high school math courses with them, and just 60% reported receiving information about advanced coursework opportunities as required under New York State law. Awareness of the importance of taking Algebra I by eighth grade was also significantly lower among families with lower incomes and lower levels of educational attainment.

Together, the polling and focus group findings suggest that improving math outcomes requires more than strengthening classroom instruction. Families need clear, timely information about math pathways, and students need equitable access to advanced coursework that is supported by strong foundational instruction. A key factor for making this happen relies on [schools strengthening their family engagement practices and systems](#) to ensure parents are engaged consistently enough that critical math communication doesn't fall through the cracks.

In sum, we heard from parents and educators that improving math outcomes will require more than curriculum changes alone. New York must strengthen the instructional systems that build early math foundations, support educators, expand equitable access to high quality learning opportunities, and ensure every student is better equipped to understand, communicate, and apply mathematical concepts with proficiency.

² Accelerated math pathways refer to course sequences that allow students to complete foundational coursework, such as Algebra I, earlier than the traditional schedule. Advanced math pathways refer to the higher-level courses students take such as precalculus, calculus and statistics.

Four Essential Pillars to Solve New York's Math Crisis

To drive system change in our math instruction and outcomes, there are four essential pillars to support a state-wide comprehensive mathematics strategy.



Adopt High-Quality Grade-Level Materials Paired with Targeted Interventions

High-Quality Instructional Materials



Student outcomes improve when they have access to [High-Quality Instructional Materials \(HQIM\)](#). High-quality materials support evidence-based ways of learning and teaching grade level mathematics, including opportunities for educators and students to build rich understandings of mathematical principles and procedures and ways to apply math to everyday life situations.

In 2001, the National Research Council's [Adding It Up](#), established the Five Strands of Mathematical Proficiency, the foundation on which modern HQIM is built. These five strands should be interwoven to ensure math instruction builds reasoning, identity, and flexibility, and not just speed and correctness.

- ❖ Conceptual Understanding: grasping mathematical ideas and relationships
- ❖ Procedural Fluency: knowing how to carry out procedures efficiently and accurately
- ❖ Strategic Competence: formulating and solving mathematical problems
- ❖ Adaptive Reasoning: logical thought, reflection, and justification
- ❖ Productive Disposition: seeing oneself as a capable math learner

Many classrooms, however, default solely to test-driven teaching: [procedural drill, narrow test prep, and fragmented skills instruction](#). This leaves little room for sensemaking, reasoning, collaboration, and conceptual understanding. As New York develops a definition and guidance for HQIM, it is essential that stakeholders avoid the ["Math Wars"](#) and focus on instructional resources that integrate all five strands of math proficiency, blending conceptual understanding and real world applications of math skills with the explicit instruction on foundational skills necessary for student success.

HQIM also reinforces the idea that students should be exposed to grade level content, even when they are behind. This requires providing students with the scaffolds, interventions, and just in time supports to help students access grade level content.

State policymakers can ensure districts adopt evidence-based, standards-aligned curricula. Currently, only four states require districts to choose math curricula from a state-approved list, while twenty-two publish a list of recommended curricula that districts may adopt that have been vetted either by the state or an external partner. Notably, South Carolina and Tennessee both fund materials statewide and require adoption from an approved list, increasing the likelihood that public dollars are spent on effective curricula.

It is important that any state or district approved HQIM resources are curated using research and the input of district leaders, seasoned teachers, curriculum experts, students and families.

New York leaves most instructional decisions to districts, making it difficult to ensure consistent evidence-based instruction across the state. While New York does not currently collect data on district math curriculum usage, the [Center for Education Market Dynamics \(CEMD\)](#) conducted a scan of 62 districts that serve 66% of New York students to determine what math curriculum they were using. They found that only 26% of districts outside of NYC were using a core math curriculum aligned with Ed Reports standards (the most widely used review platform) for evidence-based curricula like HQIM, revealing the need for more holistically informed state guidance, transparency, and accountability on district curriculum use across the state.

Governor Hochul has recognized the challenges with math instruction across the state and in 2026 passed a Back-to-Basics Math initiative that will:

- ❖ Require the New York State Education Department (NYSED) to provide best practices in math instruction by January 2027
- ❖ Require all districts to review their instructional resources for alignment with the NYSED identified best practices by September 2027
- ❖ Develop micro credentials in evidence-based math instruction at SUNY and CUNY
- ❖ Develop regional professional learning hubs through BOCES
- ❖ Provide funding for high impact tutoring in math and reading

An important next step will be to monitor the implementation of Back to Basics to ensure alignment with evidence based practices and strong transparency and accountability on district curriculum use.

Pair High-Quality Materials with Tiered Interventions



HQIM alone will not improve math outcomes. Our focus groups reveal teachers expressing serious concerns about access and implementation to instructional supports for students who are grade levels behind, while parents communicate concerns about their children falling further behind on broader proficiency benchmarks.

New York, however, has not built or sufficiently funded the infrastructure needed to support all learners, particularly those who have fallen behind on essential early math standards. A comprehensive Multi-Tiered System of Supports (MTSS) provides the framework to do so.

MTSS [organizes instruction](#) into tiers based on student need.

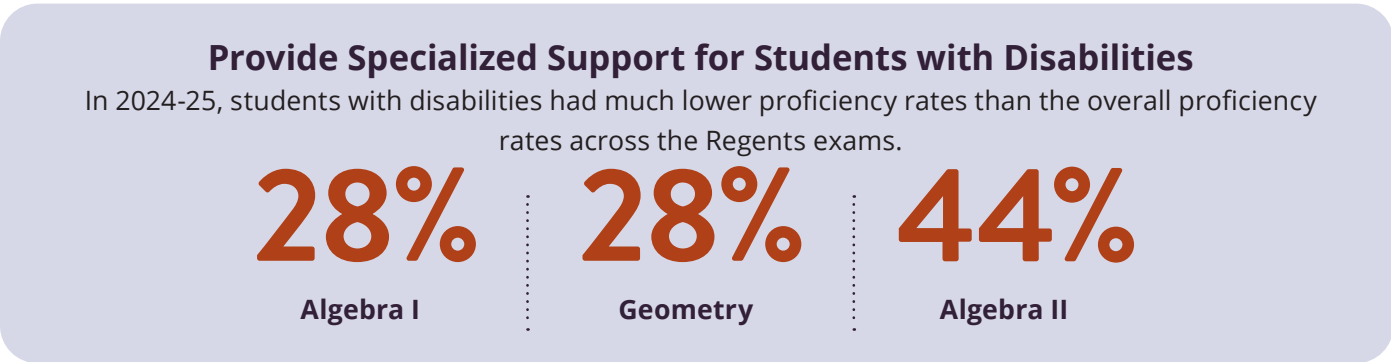
- ❖ **Tier 1:** grade-level instruction delivered to all students through HQIM.
- ❖ **Tier 2:** targeted, additional support for students who need help accessing grade level content. Ongoing diagnostics identify gaps early and match students with the right level of support.
- ❖ **Tier 3:** intensive, individualized interventions for students with the greatest needs, including those with persistent learning gaps or disabilities. Frequent, data-driven instruction is tailored to specific skills students have not yet mastered.

Mathematics learning is cumulative, therefore students may need targeted intervention to build prerequisite skills while remaining engaged in grade level instruction. Effective Tier 2 and Tier 3 interventions include:

- ❖ High-impact tutoring (small-group or 1:1 tutoring aligned to classroom instruction),
- ❖ Just-in-time skill building alongside grade-level work,
- ❖ Diagnostic-driven small group instruction,
- ❖ Personalized learning tools that target specific prerequisite skills.

Adopting and supporting an MTSS framework statewide would ensure that high-quality instruction and targeted support are not separate initiatives, but part of a [cohesive system](#) designed to meet the needs of all learners.

The most recent state budget begins to move New York in this direction by investing \$9 million in high impact tutoring for reading and math, providing an opportunity for the development and expansion of evidence-based interventions that can be studied and replicated across the state.



This cohort is often excluded from discussions about math instruction and must be prioritized to improve outcomes for all students.

To address this challenge, the state should explore [statewide universal math screening](#) and progress monitoring in grades K–8, paired with [clear guidance](#) and educator training on data driven instruction. Currently, the absence of consistent requirements leads to uneven identification of student need and delayed intervention, disproportionately impacting students with disabilities.

In developing universal screening, equity must be a primary consideration to ensure it does not result in tracking students in ways that can disproportionately affect students of color, but rather identifying areas where students need targeted interventions in their existing classrooms.

[Systematic screening and data-informed decision-making](#) are essential to improving outcomes and advancing equity, ensuring students are identified based on the level of support needed. Screeners are especially critical for identifying conditions like dyscalculia, a math-specific learning disability that affects a student's ability to understand numbers and mathematical concepts. Without early screening and monitoring, many families and educators may never recognize it, delaying the targeted support students need.

The state should provide guidance to ensure that selected screening instruments are culturally responsive and incorporate the unique needs of multilingual learners. It should also clarify that screeners should be embedded within a MTSS framework that is paired with coaching that prepares teachers to interpret screening data so they can effectively identify appropriate interventions.

The state and districts should also ensure that scaffolds and supports for students with disabilities are integrated into HQIM. Without these built in supports, teachers often struggle to use the materials provided for students with disabilities, as one of the teachers in our focus group noted above.

Provide Targeted Support for Multilingual Learners

Multilingual learners also have lower proficiency rates on the Regents exams than the overall proficiency rates.

34%

Algebra I

26%

Geometry

41%

Algebra II

Again, [screening and progress monitoring](#) should be paired with instruction that integrates mathematical reasoning and academic language development.

Within [MTSS](#) frameworks, integrating language and content supports ensures students receive grade-level instruction alongside appropriate linguistic scaffolds, rather than being tracked into less rigorous coursework. Supports for multilingual learners in math include:

- ❖ Leveraging home language as a resource and asset for mathematical sense making. Educators should support students to engage in deeper reasoning and explanations through academic discussions in their home language.
- ❖ Ensuring instructional materials include ample guidance to teachers on supporting language development so that students can engage in academic discourse for mathematical sense making, regardless of their level of English language proficiency.
- ❖ Creating co-teaching programs to provide Integrated English as a New Language instruction within mathematics. To do this well, programs should provide teachers with dedicated time for co-planning focused on creating access and identifying instructional objectives for simultaneous math content and language development.
- ❖ Providing training for math content teachers so that they can anticipate and formatively assess the language development needs associated with grade-level mathematical concepts, and effectively implement math language routines that bolster content and language learning in tandem.

State Examples of High-Quality Instructional Materials & Effective Curriculum Implementation



Louisiana made HQIM a core part of its strategy to improve math instruction. Through the [Louisiana Department of Education's curriculum review process](#), the state identified standards-aligned materials that support rigorous math learning and helped districts move away from inconsistent or low-quality resources. Louisiana also invested in implementation support, including professional learning, teacher resources, and instructional guidance through tools like [Louisiana Guidebooks](#). By pairing strong curricula with ongoing support, Louisiana helped educators build the knowledge and skills needed to deliver effective math instruction. This has helped Louisiana to improve reading outcomes across the state, becoming [the first state](#) to pass pre-pandemic student performance levels in math and reading in 2025.



Massachusetts has strengthened math instruction by combining rigorous academic standards with support for educators. Through the [Massachusetts Department of Elementary and Secondary Education](#), the state provides districts with guidance on selecting high-quality, standards-aligned materials and supports professional learning to strengthen classroom practice. Rather than focusing only on curriculum adoption, Massachusetts invests in building teacher capacity, so educators can help students engage in meaningful, grade-level math learning.



For students with disabilities and multilingual learners, state models like [North Dakota's ND COUNTS](#) show that integrating screening, instruction, intervention, and professional learning create a more responsive system.

Recommendations for Essential Pillar 1

Recommendation	Key Actions
 Define HQIM for math	Establish a statewide HQIM definition aligned to the Five Strands of Math Proficiency, that builds both math knowledge and skills, and is grounded in coherent learning progressions.
 Create a State-Approved List of HQIM	- Developing a State approved or recommended list of Math HQIM. This approach can help ensure coherence and quality across the state's more than 700 school districts. - Ensure all curriculum on the list are from vendors who provide evidence that their materials improve student outcomes across all student groups, including students with disabilities and multilingual learners.
 Strengthen District Curriculum Review	- Update the state's curriculum review guide aligned to the state's HQIM definition. - Provide districts with the tools and resources to help evaluate and select HQIM.
 MTSS—Tier 2 and 3	- Provide funding for math coaches and interventionists that can support screening and the use of other diagnostic tools - Provide guidance and funding for evidence-based interventions that align with core curriculum, including tutoring
 Invest in HQIM Implementation	Create a competitive grant program for districts to replace a non-HQIM math curriculum with an HQIM curriculum.
 Increase Curriculum Transparency	- Require districts to publicly post their math curriculum. - Create a statewide public database of district curriculum selections.
 Align Back to Basics Accountability with HQIM implementation	- Vet all approved resources for evidence of effectiveness and HQIM. - Monitor implementation and establish accountability for districts that do not meet state expectations.



Provide Job-Embedded Professional Learning for Teachers

HQIM and tiered interventions can only improve outcomes when teachers know how to use them well. Yet, New York's Educator Preparation Programs (EPPs) received an overall "weak" ranking by [the National Council on Teachers Quality \(NCTQ\)](#), reflecting significant shortcomings in how the state's teacher preparation programs prepare future educators to deliver evidence-based-math instruction.

In particular, NCTQ found New York's math standards for teacher preparation programs to be ["unacceptable" because they lack the specificity needed to ensure candidates are prepared to teach math effectively](#). As a result, too many new teachers are entering the classroom without strong math skills, making strong professional learning critical for all current educators.

Teachers who receive [content-specific professional learning](#) improve both their instructional practice and student outcomes, and nearly [60%](#) of the impact of HQIM depends on teachers' ability to implement instruction effectively. As we learned through our focus groups, educators note that HQIM alone is not enough; it must be paired with ongoing, job-embedded professional learning that helps teachers use materials in real classroom conditions.

Nearly 60%
of the impact of HQIM depends on teachers' ability to implement instruction effectively.

One way to support professional learning is through coaches.

Teachers consistently identified coaching as one of the most valuable forms of professional support. Effective math coaching is not simply a one-time training; evidence suggests that coaching is most impactful when it is ongoing, job-embedded, tied to curriculum and classroom practice, and provides teachers with opportunities to plan, observe, and reflect on instruction.



High-quality micro credentials can strengthen teachers' math knowledge.

The analysis by the NCTQ study suggests that many teachers have not been fully prepared to teach the range of mathematical content and differentiation now required, particularly under more rigorous and discourse-based instructional models.



Math micro credentials could serve as a bridge between preparation and practice, allowing teachers to:

- deepen content knowledge in specific domains (e.g., algebraic thinking, numeracy development)
- build skill in targeted instructional strategies (e.g., scaffolding, intervention, fluency development)
- receive recognition for demonstrated competency tied directly to classroom practice

Unlike traditional professional development, micro credentials offer a flexible, competency-based approach that aligns with the realities of teachers described as most valuable – learning through doing, refining, and applying over time.

New York’s Back to Basics investment is providing funding for SUNY and CUNY to develop math microcredentials. As a next step it will be important to monitor implementation to ensure they are built on evidence-based practices that will support classroom instruction.

State Examples:

While many states fund professional learning, only a few such as (Alabama, Kentucky, and North Carolina) have [built systems](#) that align coaching directly to curriculum and classroom practice.



Alabama’s investment demonstrates New York can build statewide instructional capacity by pairing high-quality mathematics guidance with sustained coaching and support for educators. Serving more than 900 K-5 schools across the state, the initiative received a [\\$68 million](#) allocation in 2024. Building on this investment, the legislature increased funding in 2025 to support 220 math coaches, bringing the total investment in the Numeracy act to [\\$95 million](#).

The investment is driving results. The state moved from near the bottom of national rankings to one of the largest gains in fourth-grade math on NAEP, underscoring how aligned systems of curriculum, coaching, and assessment can accelerate learning.

Recommendations for Essential Pillar 2

Recommendation	Key Actions
Incentivize the use of evidence-based professional learning	❖ Provide guidance and funding for districts to select evidence-based professional learning opportunities that are job-embedded, sustained, and aligned with HQIM ❖ Include teachers (i.e., general, specialized, multilingual), principals, instructional coaches, and district mathematics specialists.
Invest in Math Coaches and Specialists	❖ Provide dedicated funding for districts with low math outcomes to hire math coaches and specialists to help teachers refine their instructional practices and direct interventions for students who need it. ❖ Teacher coaching should be job-embedded, tied to curriculum and classroom practice, and provides teachers with opportunities to plan, observe, and reflect on instruction.
Target Support to Districts with the Greatest Need	❖ Target and/or require professional learning for districts and schools struggling with math outcomes as part of the ESSA school improvement process.



Increase Access to Accelerated and Advanced Math Pathways

In addition to improving core instruction and tiered intervention, New York must ensure that students have equitable access to accelerated mathematics pathways. These pathways should begin with opportunities to take Algebra I earlier and progress to advanced course work including precalculus, calculus and statistics. Year after year, too many students in New York who are qualified for more challenging math courses are not given the opportunity to enroll in them.

Through the New York Equity Coalition, EdTrust-New York's recent ["Proficient and Passed Over" analysis](#) found that 58% of New York seventh graders were proficient on the Math 7 assessment in 2023–24, yet only 37% of eighth graders were enrolled in Algebra I the following year. That gap represents roughly 20,000 students statewide who demonstrated proficiency in Grade 7 math that year, but were not automatically enrolled in Algebra I the following year raising questions about whether access is consistently based on demonstrated readiness.

Critically, EdTrust-New York estimates that 55% of those students are from low-income backgrounds and 44% are students of color. The analysis also found that:

- ❖ Students from low-income backgrounds made up 58% of all eighth graders but only 48% of students enrolled in Algebra I; students from more affluent backgrounds were just 41% of eighth graders but 51% of Algebra I enrollment.
- ❖ Access is also constrained by opportunity itself: 27% of schools serving both grades 7 and 8 do not offer Algebra I at all. Black and Latinx students, and those from low-income backgrounds are more likely to attend those schools. In other words, the problem is not simply readiness. It is a system that routinely passes over students who have already demonstrated it.

To address this challenge, [states across the nation are adopting policies](#) designed to ensure that, starting in middle school and extending through high school, students who demonstrate readiness are guaranteed access to accelerated pathways leading to advanced math coursework. These policies [typically use state assessments or other indicators of readiness](#) to identify eligible students and automatically enroll them in accelerated pathways, with an "opt-out" provision allowing parents to choose a different pathway for their child.

To ensure students are prepared to take advantage of these opportunities, several states are developing accelerated math pathways that identify students demonstrating math readiness as early as fifth grade. This policy ensures such students are on track to enroll and succeed in Algebra 1 by the eighth grade and complete at least one college-credit bearing math course—such as AP, IB, and college in high school—during high school.

Similar to universal screenings, strict parameters will need to be applied to avoid perpetuating [tracking-like inequities](#), and accelerated math pathways must be intentional in the ways students who demonstrate readiness are identified to ensure equitable access for all students.

State and District Examples:



In Washington State, following the adoption of automatic enrollment policies, the share of Black and Latinx students taking an advanced course rose from [35% to 61%](#) in one year, while the pass rate remained high at 94%.



[North Carolina](#) expanded access to advanced course work in 2018, resulting in significant increases in both eligibility and enrollment in advanced math courses, with 94% of eligible students enrolled in an advanced math course in the 2022-23 school year.



In central Texas, after districts implemented automatic enrollment and more equitable advising, nearly 80% of Black and Latinx students who had scored at the highest level in fifth grade were enrolled in Algebra I by eighth grade. Participation rose by 20 percentage points for high-performing Latinx students and by more than 30 points for high-performing Black students. In Dallas ISD, shifting from opt-in to opt-out produced a [40-point increase](#) in Algebra I enrollment.

Recommendations for Essential Pillar 3

Recommendation	Key Actions
Establish Statewide Accelerated and Advanced Mathematics Pathways 	- Establish clear statewide math pathways aligned to the math standards, connecting accelerated middle school coursework to advanced high school mathematics. - Define consistent course sequences, prerequisites and supports across grade levels. - Set statewide milestones, such as increased enrollment in Algebra I by Grade 8 for qualified students and increased completion of at least one college-credit-bearing math course (AP, IB, or dual enrollment) before graduation.
Implement Auto Enrollment Policies 	- Require districts statewide to automatically enroll students who meet readiness criteria, with an opt-out option, starting in Grade 5. - Criteria should use multiple measures such as state assessment performance, grades in prerequisite courses, student interest and other relevant indicators. Teacher recommendations may be considered, but should not serve as the sole criterion. - Identify middle schools that do not offer Algebra I and expand access to accelerated and advanced math pathways in middle school and advanced math courses in high school — prioritizing these schools — while providing incentives for qualified educators to teach these courses. - Transition to “opt out” policies by automatically enrolling qualified seventh graders into Algebra 1 in the eighth grade. - Invest in professional learning, licensure and micro credentialing to ensure that every middle school has at least one teacher qualified to teach Algebra I and other advanced math courses.
Engage Families and Students 	- Communicate early and often with families about math placement policies (e.g., automatic enrollment), available pathways, eligibility requirements for high school graduation and college admissions, course expectations, academic supports and the benefits of advanced coursework. - Create inclusive learning environments where students feel supported and that they belong in accelerated and advanced math courses. - Remove participation barriers for families such as fees, transportation challenges and scheduling conflicts that inhibit participation in parent engagement programming led by schools
Support Student Success 	Provide high-impact tutoring and summer and afterschool programs to prepare and support students in accelerated pathways and advanced coursework.



Strengthen Elementary Teacher Preparation for Mathematics Instruction

Sustaining these improvements in instruction and expanding students' access to accelerated and advanced math pathways requires preparing future elementary teachers before they enter the classroom.

As noted, a [recent analysis by NCTQ](#) underscores significant gaps in New York's approach to preparing elementary teachers to deliver challenging, standards-aligned mathematics instruction.

NCTQ's evaluation of 89 elementary teacher preparation programs in New York reveals a systemic shortfall in both the depth and allocation of instructional time devoted to mathematics content and pedagogy. Only 3 percent of programs earned an A or A+ rating, reflecting sufficient instructional hours across core math domains and teaching methods.

Only **3%**
of programs earned an A or
A+ rating

According to NCTQ's analysis, most New York programs do not provide sufficient preparation across math content and pedagogy.

This gap has direct implications for classroom instruction. Effective mathematics teaching requires not only a strong grasp of content—such as numbers and operations, algebraic thinking, geometry and measurement, and data analysis; but also specialized pedagogical knowledge that enables teachers to translate that content into meaningful learning experiences for students. Without sufficient preparation in both areas, teachers may enter the classroom without the knowledge and instructional tools needed to support students' mathematical development.

Compared to other states, New York's undergraduate teacher preparation programs collectively devote the [fifth and sixth-lowest](#) amount of instructional time to mathematics across both pedagogy and content, respectively.

This is due in part to state policy. [New York requires](#) elementary teacher candidates to complete a "content core" — a major or concentration in the liberal arts and sciences — but this requirement is not math-specific. As a result, candidates can meet the program requirements without concentrating in math, meaning the depth of math preparation elementary teachers receive can vary significantly by program.

The scope and sequence of teacher preparation programs vary across dozens of campuses — even those within the same systems, making it difficult to clarify the exact training teacher candidates are receiving. This wide variation in program ratings also points to the need for stronger state oversight, clearer preparation requirements and greater transparency about program outcomes.

State Examples:



New Jersey recently enacted reforms to address similar challenges. Beginning in September 2025, elementary teacher preparation programs in New Jersey received an additional 30 credits of instructional flexibility, with a requirement that 6–9 of those credits be dedicated to specialized mathematics coursework. While not sufficient on its own, this policy shift reflects a clear recognition of the need to prioritize mathematics within teacher preparation.

Recommendations for Essential Pillar 4

Recommendation	Key Actions
Strengthen Elementary Teacher Preparation in Mathematics 	- Define required content within the four core mathematics domains to ensure consistency and rigor across programs. - Require coursework in math content and pedagogy that equips teachers to be proficient in content knowledge and pedagogical skill most relevant to elementary teaching, while ensuring candidates develop sufficient conceptual depth.
Strengthen Program Approval and Oversight 	- Ensure NYSED’s program approval and <u>registration</u> process closely examines syllabi and coursework, giving institutions actionable feedback on math preparation. - Support programs in demonstrating alignment with state math content and pedagogy standards, while preserving institutional flexibility in how that’s achieved. - Include math-content and pedagogy experts alongside institutional faculty in program evaluations and on-site reviews.
Increase Transparency and Accountability 	- Require NYSED to publish annually, in a centralized and accessible format, first attempt and best-attempt pass rates on elementary mathematics certification assessments by institution and where data permit, by preparation program. - Use program outcome data to identify effective preparation practices and target improvement requirements for lower-performing programs.



NYC Solves Demonstrates the Importance of HQIM and Implementation

New York City Public School's "[NYC Solves](#)" illustrates the potential of a more coherent approach to math instruction. Experiences in two Bronx districts show how HQIM, sustained professional learning, leadership alignment and family engagement can work together to strengthen classroom practice.

District 11

After the district adopted [Illustrative Mathematics \(IM\)](#) (one of the three HQIM curriculums made available to the district) in 2022 to create instructional coherence across schools, math proficiency among students in grades 3–8 increased from [28%](#) in 2022 to [49%](#) in 2025.

IM is a problem-based curriculum that centers student reasoning and mathematical sense-making. This structure allows students to engage with cognitively demanding tasks that have a "[low floor and high ceiling](#)," meaning all learners can enter the problem while still allowing for deeper mathematical thinking.

[Improvements](#) were also notable among underserved groups, including a 3.4% point increase for students with disabilities and a 5.4% point increase for Multilingual Learners in math proficiency in school year 2024-25, suggesting that HQIM can support improved outcomes across student populations.

[District 11](#) supported implementation through ongoing professional learning, math coaching, and leadership alignment, helping the curriculum translate into more consistent classroom practice across schools.

This improvement is a strong example of effectively applied HQIM. It is also a result of strong professional learning programming designed for teachers, a [targeted use of technology](#), and intentional interventions — like 12 days of job-embedded coaching for teachers and additional training throughout the year — highlight the interconnected nature of the four essential pillars *and* a system-wide commitment to fundamentally tackle this issue.

Math proficiency among students in grades 3–8 increased from

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in 2022 to

49%

in 2025



District 8

Leaders in the district spent nearly two years preparing for NYC Solves implementation, piloting materials and engaging educators in a deliberate selection process before adopting [Amplify](#) (like District 11, they were offered three HQIM curriculum and chose Amplify). The district paired HQIM with job-embedded coaching, collaborative planning, and monthly principal learning summits, to support consistent classroom implementation.

The district also used [Amplify's](#) caregiver hub and family-facing materials to explain shifts in math instruction and invite parents in the learning process. Town halls and community conversations helped build understanding, trust, and transparency around how students were learning math.

District 8's eighth grade math proficiency rates increased from [17%](#) before the initiative's full rollout in 2021-22 to [39%](#) in 2024-25. Although these descriptive results do not establish causation, they suggest that coherent curriculum and sustained implementation supports may be contributing to continued improvement.

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Conclusion

The evidence is clear: New York is in the midst of a math learning crisis that has persisted for over a decade, with the greatest consequences impacting students and families in underserved communities. Gaps in math opportunity and achievement can affect graduation rates, college and career readiness, and long-term economic mobility.

Fortunately, state leadership, educators, families and advocates spanning across classrooms and dinner tables agree that New York must act. Governor Hochul's Back to Basics Math initiative represents an important first step. The next phase should focus on strengthening all four pillars of New York's mathematics system:

- ❖ **High-quality instructional materials paired with targeted interventions**
- ❖ **Job-embedded professional learning for teachers**
- ❖ **Equitable access to accelerated and advanced math pathways coursework, and**
- ❖ **Stronger educator preparation programs.**

New York has an opportunity to become a national leader in mathematics achievement—not through isolated reforms, but by building a comprehensive system that gives every student access to high quality instruction and the support needed to succeed. Doing so will require policymakers, educators, families, and communities to work together around a shared commitment: ensuring that every student, regardless of race, income, disability, language, or zip code, develops the mathematical knowledge and confidence needed to thrive in college, careers, and civic life.

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