



**StriveTogether®**

Every child. Cradle to career.

# Cradle-to-Career Outcomes Playbook: Middle Grade Math

Proficiency in middle grade math opens the door to a wide range of positive academic and life outcomes. Eighth grade math, in particular, is closely tied to future success, increasing students' chances of enrolling in advanced coursework, accessing college and career opportunities, and building a foundation for lifelong learning and achievement.

Despite its importance, national data shows troubling trends. The 2024 NAEP results revealed that eighth grade math scores stagnated after a historic drop in 2022, with widening gaps between high- and low-performing students. Disparities by race, income and access to advanced courses like Algebra I continue to grow, with Black, Latine and low-income students disproportionately affected.

Given its far-reaching impact, middle grade math presents a powerful opportunity for communities to come together in support of students' success. By collaborating to expand access to high-quality math instruction, educators, families and community leaders can help more students build a strong foundation for future academic and career achievement. The StriveTogether Outcomes Playbook: Middle Grade Math is a comprehensive guide to the latest research and best practices for this outcome, made possible by support from the Gates Foundation. Communities can use the playbook to identify local needs, prioritize areas for collective action and improve strategies.

## >>>>>> Why Middle Grade Math Matters

- **Essential skill development:** Middle school math builds critical thinking and problem-solving skills essential for future success.
- **Broader career trajectories:** Research shows that math support and success is a key factor in future career trajectories, with students with a positive attitude about math being more likely to pursue careers in STEM fields (University of Kansas).
- **Increased potential earnings:** According to the Center for Education Policy Research, recent declines in math proficiency represent a 1.6%, or \$19,400, decrease in present value of lifetime earnings for the average K-12 student.



## How to use the StriveTogether Outcomes Playbook: Middle Grade Math

Mathematica's Education-to-Workforce Framework is the inspiration behind the playbook's organization and content. The playbook provides research-based guidance to help community leaders:

- Identify priorities
- Track key indicators to measure community-level progress
- Design strategies with stakeholders
- Build collective support for investments in middle grade math outcomes



## Essential Questions for Middle Grade Math

The playbook addresses 23 essential questions to guide planning, offering actionable practices, policies and indicators for tracking progress. The essential questions are grouped into five focus areas:

### 1. Middle Grade Math Progress

- Are young learners demonstrating academic progress to be considered on track for math proficiency by eighth grade?
- Are young learners confident about their ability to do math?
- Are young learners taking rigorous math courses and on track to complete Algebra I by ninth grade?

### 2. Leadership for Mathematics

- Does the LEA have a clear vision and approach for ensuring excellent math instruction in every classroom?

- Has the LEA adopted rigorous grade-level standards and coherent, culturally relevant curricular materials aligned to the vision?
- Does the LEA use quality data and assessment resources consistently, coherently and strategically to drive instructional decision making for all students?
- Does the LEA ensure equitable access to an advanced mathematics pathway in middle grades and STEM experiences?

### 3. Teaching and Learning

- Does each school have a well-trained, vertically-aligned math team to ensure cohesive, high-quality math instruction across the middle grades?
- Are teachers and schools making significant contributions to academic math growth for students?
- Do students have effective, representative math teachers and leaders?
- Do students have access to affirming, high-quality instructional materials for math in middle grades?
- Do students attend schools in systems with adequate funding to support curriculum, professional learning and ongoing coaching needed to implement excellent math instruction?
- Do students have access to teachers trained, coached and supported to teach mathematics effectively?
- Are students who are behind grade level identified early and provided high-quality, aligned targeted supports?

### 4. Childhood Experiences and Neighborhood Conditions

- Do families live in well-resourced neighborhoods that enable students to succeed academically?
- Do families with children have access to public support?
- Do students have access to STEM and math enrichment opportunities to prevent learning loss and to connect to potential STEM careers?
- Do students have access to STEM and math-focused summer enrichment programming?

### 5. Positive School Environment

- Do young learners attend schools with safe, inclusive and supportive environments?
- Do young learners attend schools that support their social, emotional and physical development and well-being?
- Are young learners demonstrating consistent attendance?
- Are there young learners who disproportionately experience exclusionary discipline?
- Are young learners demonstrating positive behavior?