

# Student Performance in Math Domains

# Executive Summary

## How does math domain learning vary by school-level demographics, across grade levels, and over time?

Differences in academic performance across demographic groups are a well-documented and persistent feature of the U.S. education system.<sup>1</sup> School-level characteristics such as poverty levels and racial/ethnic composition consistently predict performance on achievement tests in all content areas, including math. While we know there are differences in math learning across school settings, we know less about how performance varies across specific learning domains within math, such as algebra and geometry.

This research brief provides a nuanced description of this phenomenon through the analysis of math assessment data from a national sample of elementary students. We report on the extent to which more than four million students in grades 1-5 met grade level expectations in various math domains from 2019 to 2022 on i-Ready's diagnostic assessment, a formative computer-adaptive test used across the country. We classify and compare schools by poverty status and racial/ethnic composition.

### Key Findings

- Across all math domains, students in schools with higher poverty levels and greater proportions of students of color are less likely to score on grade level in math.
- Regardless of setting, Geometry was the most challenging domain for students and Numbers & Operations was a bright spot.
- As students progress from first to fifth grade, those attending schools with higher poverty levels fall further behind their peers.
- Students attending schools with higher poverty levels and greater proportions of students of color were hardest hit by the pandemic.
- Within the Algebra & Algebraic Thinking domain, students tend to be particularly challenged by word problems and other higher-level thinking skills.

These findings shed light on widespread differences in math domain learning across school settings, grade levels, and time. Our future work will continue to explore struggle points and bright spots across math domains and consider the role of foundational reading skills in supporting math learning. By more clearly identifying the mathematical skills that students find challenging, we can more effectively address the broad inequities that exist across schools.

1. See, for example, Lucas, S. R., & Irwin, V. (2018). Race, class, and theories of inequality in the sociology of education. In B. Schneider (Ed.), *Handbook of sociology of education in the 21st century* (pp. 73-107); Reardon, S. F. (2011). The widening academic achievement gap between the rich and the poor: New evidence and possible explanations. In G. J. Duncan & R. J. Murnane (Eds.), *Whither opportunity? Rising inequality, schools, and children's life chances* (pp. 91-116).