

Practice Is Key to Improving Math Achievement

Highest rated for progress-monitoring mastery measurement by the National Center on Response to Intervention, with perfect scores in all categories



After years of school-improvement efforts, why do so many K–12 students in the United States continue to fall short of math proficiency benchmarks? Upon examining the problem closely, two key reasons stand out: First, many curricula view math fact automaticity as supplemental rather than fundamental to improving math achievement. Second, most students simply are not given a sufficient amount of practice to attain automaticity.

The National Mathematics Advisory Panel has stressed the importance of every child committing math facts to memory: “Computational fluency with whole number operations is dependent on sufficient and appropriate practice to develop automatic recall of addition and related subtraction facts, and of multiplication and related division facts” (p. xix).¹

This is particularly important for students struggling with math. As stated in the federal What Works Clearinghouse (WWC) Practice Guide, “Quick retrieval of basic arithmetic facts is critical for success in mathematics. Yet research has found that many students with difficulties in mathematics are not fluent in such facts We recommend that about 10 minutes be devoted to building this proficiency during each intervention session” (p. 37).²

Proven effective through years of use, MathFacts in a Flash has been shown to help teachers significantly improve computational fluency by making math practice more productive and enjoyable for all students. Teachers using the software are able to give students targeted, concentrated practice on 71 levels of math facts, while detailed reports give teachers the feedback they need to assure that mastery is taking place.



Tablet support coming for 2013-2014 school year.

“Few curricula in the United States provide sufficient practice to ensure fast and efficient solving of basic fact combinations and execution of the standard algorithms.”

National Mathematics Advisory Panel, 2008, p. 27

¹ National Mathematics Advisory Panel. (2008). *Foundations for success: The final report of the national mathematics advisory panel*. Washington, DC: U.S. Department of Education.

² Gersten, R., Beckmann, S., Clarke, B., Foegen, A., Marsh, L., Star, J. R., & Witzel, B. (2009). *Assisting students struggling with mathematics: Response to intervention (RtI) for elementary and middle schools* (NCEE 2009-4060). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance.

MathFacts in a Flash Use Leads to Dramatic Gains

A growing body of research shows that dramatic improvement in math achievement occurs when students develop automatic recall of math facts through appropriate practice. And no other tool provides that practice as effectively as MathFacts in a Flash.

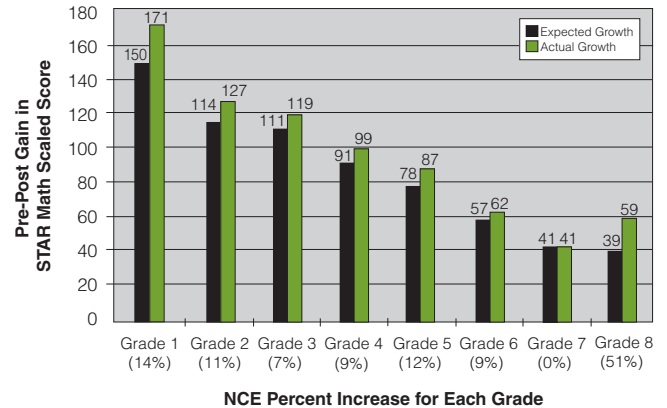
During the 2009–2010 school year, more than 400,000 K–12 students across the country used MathFacts in a Flash software through Renaissance Learning’s web-based Renaissance Place hosted platform. Many students used the program intermittently or casually, but more than 100,000 students in grades 1–8 were classified as “active” users—completing a minimum of 10 tests in the program within 30 days. Researchers examined the scores of these students on the nationally normed STAR Math assessment at the beginning and end of the school year.

Figure 1 shows annual pre–post growth for students actively using MathFacts in a Flash. Actual rates of growth (in STAR Math scaled scores) by grade are presented in comparison to expected rates of growth. Expected growth was determined by using Growth Norms for STAR Math, which are average weekly growth rates based on students’ starting pretest percentile rank. Growth Norms were determined based on a national math achievement database of more than 3 million students.

Figure 2 shows average spring percentile rank scores for 67,162 students meeting grade-level benchmarks using MathFacts in a Flash. As shown in the chart, students who met the benchmarks in grades 2 through 6 demonstrated high achievement, experiencing accelerated average fall to spring gains of 21 percentile rank points on the nationally normed STAR Math assessment.

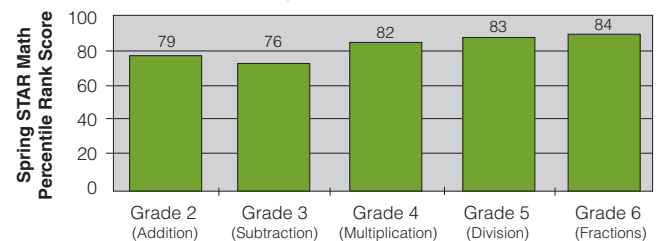
Figure 3 shows average spring percentile rank scores for 61,134 students meeting grade-level benchmarks using MathFacts in a Flash during the 2010–2011 school year. Students were placed into one of three categories based on their best time on the benchmarks: below 60 seconds, between 60 and 100 seconds, or above 100 seconds. As shown in the chart, students with quicker best times on the MathFacts benchmarks also had better STAR Math percentile rank scores, suggesting that improved general math ability is associated with quicker, more automatic, recall of basic math facts.

Figure 1: Students Using MathFacts in a Flash Surpass Expected Growth
(n = 101,143; Active Users Grades 1–8)



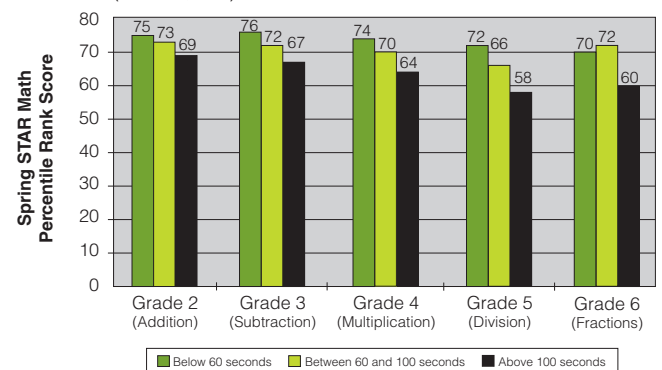
Students classified as active MathFacts in a Flash users exceeded norm-based growth expectations for similar students.

Figure 2: Students Who Master Math Facts Score Near 80th Percentile in Math
(n = 67,162; Average Fall to Spring Percentile Rank Gain = +21)



Students who met the MathFacts in a Flash research-based benchmarks in grades 2 through 6 demonstrated high general mathematics achievement.

Figure 3: Students With Faster Math Facts Times Score Higher Overall
(n = 61,134)



Students with faster best times on their research-based benchmark levels also demonstrated higher general mathematics achievement.

For more information about MathFacts in a Flash, call **(800) 338-4204** or visit **www.renlearn.com/mf**

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