

## Required Fluencies in the Common Core State Standards for Mathematics

When it comes to measuring the full range of the Standards, usually the first things that come to mind are the mathematical practices, or perhaps the content standards that call for conceptual understanding. However, the Standards also address another aspect of mathematical attainment that is seldom measured at scale either: namely, whether students can perform calculations and solve problems quickly and accurately. At each grade level in the Standards, one or two fluencies are expected:

Grade	Required Fluency
K	Add/subtract within 5
1	Add/subtract within 10
2	Add/subtract within 20 <sup>1</sup> Add/subtract within 100 (pencil and paper)
3	Multiply/divide within 100 <sup>2</sup> Add/subtract within 1000
4	Add/subtract within 1,000,000
5	Multi-digit multiplication
6	Multi-digit division Multi-digit decimal operations
7	Solve $px + q = r$ , $p(x + q) = r$
8	Solve simple 2×2 systems by inspection

*Fluent* in the Standards means “fast and accurate.” It might also help to think of fluency as meaning the same thing as when we say that somebody is fluent in a foreign language: when you’re fluent, you flow. Fluent isn’t halting, stumbling, or reversing oneself. Assessing fluency requires attending to issues of time (and even perhaps rhythm, which could be achieved with technology).

The word *fluency* was used judiciously in the Standards to mark the endpoints of progressions of learning that begin with solid underpinnings and then pass upward through stages of growing maturity. In fact, the rarity of the word itself might easily lead to fluency becoming invisible in the Standards—one more among 25 things in a grade, easily overlooked. Assessing fluency could remedy this, and at the same time allow data collection that could eventually shed light on whether the progressions toward fluency in the Standards are realistic and appropriate.

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<sup>1</sup> By end of year, know from memory all sums of two one-digit numbers

<sup>2</sup> By end of year, know from memory all products of two one-digit numbers