



MATH PRACTICE MYTHS

For many of us, the term “math practice” conjures childhood memories of solving pages of equations, racing to finish math drills in which the same algorithm is used over and over again, and blindly applying tricks and shortcuts to solve problems. However, research¹ now suggests that effective math practice must include more than just memorizing facts and procedures.

Here are the top five math practice myths we encounter as well as the truth behind each one.



MYTH 1: Practice activities should mainly include tasks that require basic recall and following procedures.



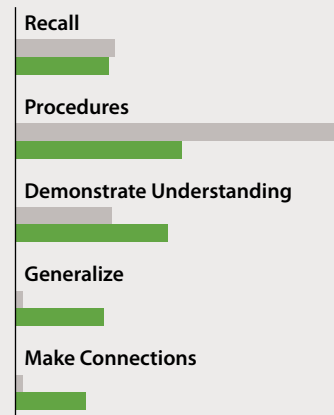
FACT: Practice should match the rigorous expectations of the standards. While some practice activities should include procedures, students should spend a significant amount of their practice time on problems that allow them to develop deeper-level learning skills such as demonstrating understanding, generalizing, and making connections.



TIP: Math practice should help students understand the “why” behind math concepts and flexibly apply their understanding before building fluency.

[Blogs.EdWeek.org/EdWeek/Curriculum/2019/02/Report_Cap_Homework_Quality.html](https://blogs.edweek.org/edweek/curriculum/2019/02/report_cap_homework_quality.html)

Typical Student Work
Common Core Expectations



MYTH 2: If students can remember *how* to apply rules and procedures, then they will be successful in math.



FACT: Students who are taught both *how* to do the procedures AND *why* the procedures work are more likely to retain their understanding longer, more likely to connect new learning with previous learning, and less likely to make careless mistakes. Students who are taught to focus only on the *how* view math as isolated pieces of knowledge and have a harder time making connections between concepts and learning new skills.



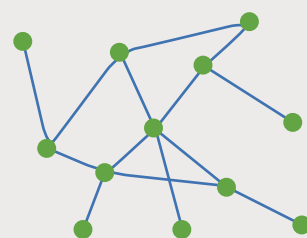
TIP: When planning, start with students’ current understandings in mind, instead of with rules and procedures. Provide practice that allows students to enter the problem with whatever level of skill and understanding they have.

[NCTM.org/Publications/Mathematics-Teaching-in-Middle-School/2006/Vol12/Issue2/Relational-Understanding-and-Instrumental-Understanding](https://nctm.org/Publications/Mathematics-Teaching-in-Middle-School/2006/Vol12/Issue2/Relational-Understanding-and-Instrumental-Understanding)

How



How and Why



¹ NCTM.org/Standards-and-Positions/Position-Statements/Procedural-Fluency-in-Mathematics



MYTH 3: The main purpose of math practice is to increase procedural fluency.

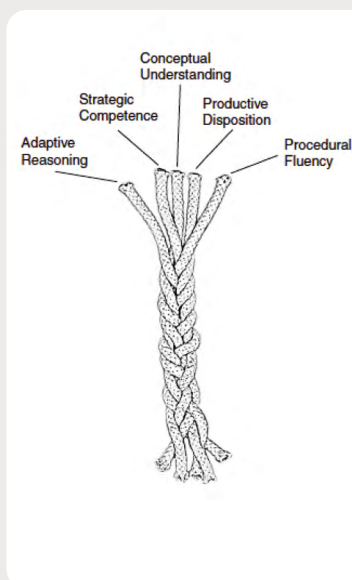


FACT: For students to be proficient in math, they need daily practice on all five of the strands of mathematical proficiency—not just procedural fluency. These five strands are interdependent and equally important for students to meet the demands of the standards. How students connect pieces of mathematical knowledge is a critical factor in whether they will develop deep understanding.



TIP: Practice should incorporate contexts that are relevant to students' lives and encourage them to make connections between mathematical concepts.

National Research Council. (2001). Adding it up: Helping children learn mathematics. J. Kilpatrick, J. Swafford, & B. Findell (Eds.).



MYTH 4: We only need to teach students the traditional algorithm. With enough practice, students will understand the math concepts and will be able to apply them long-term.



FACT: If students do not understand the underlying concepts and why an algorithm works, the math will not make sense, no matter how much they practice—and could reinforce misconceptions or errors.



TIP: Provide practice opportunities that require students to demonstrate the full depth of knowledge required of the content standards.

[NCTM.org/Standards-and-Positions/Principles-and-Standards](https://www.nctm.org/Standards-and-Positions/Principles-and-Standards)

Name: _____ Score: _____
Teacher: _____ Date: _____

35 X 40	21 X 54	81 X 99	89 X 25	85 X 59	81 X 60
16 X 73	97 X 78	39 X 21	57 X 48	25 X 67	10 X 47
58 X 26	41 X 97	41 X 85	10 X 23	41 X 98	16 X 74
54 X 81	84 X 36	39 X 93	46 X 68	44 X 18	10 X 62



MYTH 5: Practicing math in an “I do, we do, you do” method leads to long-term understanding.



FACT: Initiate/Response/Evaluate routines of teaching (e.g., the “I do, we do, you do” method) only develop short-term procedural fluency because they do not require students to develop conceptual understanding—students are acting as “math mimickers” rather than “math thinkers.”



TIP: Incorporate practice tasks that foster mathematical discourse, which encourages students to take ownership of their learning and develop conceptual understanding.

[NCTM.org/News-and-Calendar/Messages-from-the-President/Archive/Robert-Q-Berry-III/Thinking-about-Instructional-Routines-in-Mathematics-Teaching-and-Learning](https://www.nctm.org/News-and-Calendar/Messages-from-the-President/Archive/Robert-Q-Berry-III/Thinking-about-Instructional-Routines-in-Mathematics-Teaching-and-Learning)

