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What strategies do adults use to solve fraction arithmetic problems?

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Abstract

When children perform fraction arithmetic, they generate a variety of solutions. In this study, we extended this research to adults. We report that adults performance is best for addition and subtraction, worse for division, and is susceptible to the same kinds of strategy errors observed in 6th grade children. Specifically, solvers common strategy errors involved maintaining the values of fractions with common denominators even when that strategy was not appropriate. We also present two other findings that were not observed in children. First, adults applied an incorrect division algorithm; they incorrectly inverted the first, rather than the second operand in fraction division problems. Second, adults applied reduction procedures for fraction multiplication and division in order to simplify numerator-denominator pairs during fraction arithmetic. Our results suggest that strategy selection was cued by identifying common fraction components within problems.