

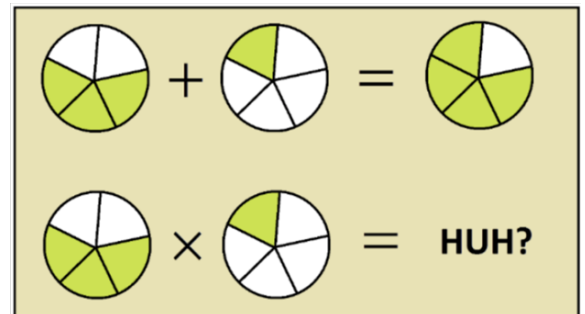
Online Seminar on Undergraduate Mathematics Education

Fractions Are Hard! A Mathematical Overview of a Troublesome Topic James Tanton, Outsmart Education

The school curriculum is shaped by a fundamental tension: while much of mathematics is motivated by real-world intuition, the mathematics that emerges ultimately outgrows any single model that inspired it.

Fractions sit squarely in this tension, and it is never fully resolved in the curriculum. Students first meet fractions as commands—circle a third of the kittens—and then as concrete parts of a whole—a third of a pie. Fractions are not numbers per se until we place them on the number line and suggest that they are. Questions about multiplication and division then pull us back toward real-world thinking—“of means multiply,” portions of portions, and the area model—further blurring what a fraction seems to be.

Where do students land after all this on what a fraction is and why its arithmetic works? No wonder so many students reach high school and college mathematics disliking, or even hating, fractions. Let’s see if we can turn that around!



Noon ET, September 8, 2026

Zoom link: <https://cornell.zoom.us/j/92415199317>, passcode olsume

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