

ZMATH 2016e.00581

Park, Jungeun; Flores, Alfinio; Hohensee, Charles

Fractions as numbers and extensions of the number system: developing activities based on research.

Ohio J. Sch. Math. 73, 13-21 (2016).

Summary: Existing studies have shown fractions present significant challenges for K–8 students and pre-service teachers. They suggest that students may fail to see fractions as numbers and have difficulty moving beyond the part-whole realization, and thus they often think of fractions as objects disconnected from the number system. To address this issue, the current study proposes several activities that can be used in mathematics courses for pre-service elementary/secondary teachers or students to help them recognize fractions as numbers with the same visual representations as whole numbers (e.g., the number line) and on which the same kinds of operations can be used. Along with a description of the activities, the paper also provides observations about what happened when we gave the activities to a group of 28 prospective elementary teachers, highlighting evidence of their understanding of fractions as numbers.

Classification: F40

Keywords: number concepts; number sense; fractions; research; history of mathematics; extension of the number domain; common core state standards; number line; paper folding; preservice teacher education; primary education; lower secondary; visualization; student activities; zooming in; averages; means; error bounds; approximation