

1035-Z1-847      **L Franklin Kemp\*** (lfkemp@ccccd.edu), 3004 Pataula Lane, Plano, TX 75074-8765. *Pedagogy of Arithmetic*. Preliminary report.

This talk presents a detail but elementary approach to number sense and operations. All operations reduce to additions. Questions of existence and uniqueness guide the building of the counting numbers to the integers to the fractions. From tutoring students, I see formal symbol manipulation with shallow understanding of the semantics of the notation. This can be rectified at early arithmetic learning by demanding the memorization of the meaning of subtraction, multiplication, and division in terms of addition. I have devised a simple visual model ala Courant and Robbins that mirrors numbers and operations. I show the parallel between  $+$  and  $-$  with  $\times$  and  $/$  which yields the cancellation laws of subtraction and division that are the bases of algebraic equation solving. (Received September 16, 2007)