

1086-N1-2326

**Sybilla Beckmann\*** (sybilla@math.uga.edu), Department of Mathematics, 200 D. W. Brooks Drive, University of Georgia, Athens, GA 30602, and **Andrew Izsak, Erik Jacobson, Eun Jung and Eun Kyung Kang**. *How prospective grades 6 - 8 teachers use two definitions of ratio*. Preliminary report.

Although there is a substantial body of research on children's thinking and learning of ratio and proportional relationships, much less is known about how teachers or prospective teachers think about this important domain. It is known to be difficult to decide whether a ratio relationship does or does not appropriately model a given situation. However, the literature has gaps concerning what ratio means. We describe two distinct ways to specify what it means for two quantities to be in the ratio A to B, a "variable numbers of fixed measurements" definition and a "fixed numbers of variable parts" definition. These two definitions fit with the Common Core State Standards for Mathematics and parallel two common definitions of division, which indicate what  $A \div B$  means in terms of quantities, namely, "how many in each group?" or "how many groups?". The literature also has gaps concerning how and whether definitions of ratio could be useful in understanding ratio as a measure of intensive quantities and in determining appropriateness of a ratio relationship to a situation. We describe some preliminary results on how prospective teachers use the definitions together with drawn models, especially double number lines and tape diagrams, to reason about ratio relationships. (Received September 25, 2012)