

1014-O1-1483 **Kyeong Hah Roh*** (khroh@math.asu.edu), Department of Mathematics and Statistics, Arizona State University, Tempe, AZ 85287-1804. *Levels of understanding of the relation between ε and N in the definition of the limit of a sequence.*

This study explored how students conceptualize the relation between ε and N in the definition of the limit of a sequence. Through this study, students used tools, called ε -strips, which were specially developed to describe the relation between ε and N and to evaluate the validity of the following statements as a definition of the limit of a sequence: (A) L is a limit of a sequence when infinitely many points on the graph of the sequence are covered by any ε -strip as long as the ε -strip covers L ; (B) L is a limit of a sequence when only finitely many points on the graph of the sequence are NOT covered by any ε -strip as long as the ε -strip covers L . This study results that students' understanding of the relation between ε and N fell into 5 major levels. In the classification of levels, it was regarded as an important factor whether or not students understand the arbitrary choice of ε , the dynamic feature of ε to decrease to 0, and the dependency of N on ε . Results show that these levels implicitly reflect hierarchical structure in conceptualization of the definition of the limit of a sequence. (Received September 28, 2005)