Two different ways students might understand slope and other constants of proportionality are discussed. One way is to think of a slope or constant of proportionality \( m \) as meaning that for every 1 unit change in the independent variable there corresponds an \( m \) unit change in the dependent variable. A second way is to understand that regardless of the change in the independent variable, the change in the dependent variable is \( m \) times as much. We discuss why the second way of understanding slope and constants of proportionality is a better foundation for calculus as well as for interpreting situations involving geometric similarity, including trigonometry. We also discuss an approach to fostering the second understanding that until recently had been largely overlooked in the mathematics education literature. (Received January 27, 2019)