1145-L5-1466 **Daniel C. Sloughter*** (dan.sloughter@furman.edu), Department of Mathematics, Furman University, Greenville, SC 29613. *What is a measure?* Preliminary report.

Most mathematicians first see measures as functions defined on sets: given a sigma algebra Σ of subsets of $\mathbb{R}$, a measure is a function $\mu : \Sigma \to \mathbb{R}$ satisfying certain conditions. On the other hand, a functional analyst may find it more useful to think of a measure as a linear functional on the space $C_c(\mathbb{R})$, the set of all continuous functions on $\mathbb{R}$ with compact support. The notation changes accordingly: $\int f d\mu$ becomes $\langle \mu, f \rangle$. With the change of notation comes a change in view: for example, the latter motivates generalizations to linear functionals on related function spaces, such as distributions, or "generalized functions", as linear functionals on $C_c^\infty(\mathbb{R})$. What, then, is a measure? Poincaré wrote that "mathématique est l'art de donner le même nom à des choses différentes." But the other side of this: sometimes it's advantageous to give a different name to one thing. Or is there only one thing? How would we know? (Received September 22, 2018)