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Neil Epstein* (neilme@umich.edu), 2074 East Hall, 530 Church Street, Ann Arbor, MI , and
Yongwei Yao. *An extension of Hilbert-Samuel and Hilbert-Kunz multiplicities to non-m-primary ideals.* Preliminary report.

We define multiplicities for arbitrary ideals in ways that reduce to the familiar multiplicities in the m-primary case. We get useful formulas in terms of standard Hilbert-Kunz and Hilbert-Samuel multiplicities, which generalize some known results. We define closure operations based on the multiplicities, which do not coincide with integral and tight closure, but with some ‘unmixed’ version of them. (Received September 21, 2007)