Department of Mathematics and Statistics Colloquium

Divisibility Tests Unified: Stacking the Trimmings for Sums

Edwin O'Shea, JMU

Abstract: Divisibility Tests are algorithms that can quickly decide if one integer is divisible by another. These tests first appeared in the Babylonian Talmud and have drawn the affections of such mathematical luminaries as Fibonacci, Pascal, Lagrange and many others. Our first aim in this talk is to introduce divisibility tests to the uninitiated by drawing on familiar tests like the last-digit test for 2 and 5, and the summing-the-digits test for 3 and 9. Less familiar tests include the trimming test for 7. Our second aim is to discuss the many other tests beyond the well known cases and show that, at their heart, most tests are either of the "trimming" or "summing" variety. The trimming and summing families of tests are thought of as two distinct techniques but we will show that they are effectively the same.

We introduce the notion of "stacking" and use only the most basic of divisibility properties to achieve our aims. With this being the first colloquium of the academic year, this talk will be especially suitable for freshmen and sophomores and everyone else is welcome too.

Monday, September 1 at 3:45 in Roop 103

refreshments at 3:30