

1155-11-200

Keith A Pardue* (kapardu@nsa.gov). *Ideals and Congruences for the Natural Numbers*. Preliminary report.

In a ring, every congruence – an equivalence relation compatible with addition and multiplication – is given by an ideal, and vice versa. This correspondence breaks in semirings, such as the semiring of natural numbers under ordinary addition and multiplication. I will explain the ideal and congruence theory for the natural numbers, paying special attention to prime ideals and congruences. Aside from prime ideals and congruences coming from the integers, the natural numbers enjoy one extra prime ideal and one extra prime congruence. We will see that congruences for the natural numbers factor uniquely into prime congruences! (Received January 13, 2020)