

## A Mathematician's Proof of GCD3

Fact A implies that every divisor of  $m$  and  $n$  is a divisor of  $n - m$ . Conversely, because  $n = m + (n - m)$ , Fact A implies that every divisor of  $m$  and  $n - m$  is a divisor of  $n$ . Hence  $m$  and  $n$  have the same common divisors as  $m$  and  $n - m$ , so they have the same gcd.

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