

# Homework 7: Remainders, Primes and the Euclidean Algorithm

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**Problem 1.**

Let  $n$  be a positive integer. Find  $\gcd(n, n + 1)$ .

**Problem 2.**

A rectangle on the grid has area 31. Find its perimeter.

**Problem 3.**

Let  $a, b$  be positive integers, and  $r$  be the remainder of  $a$  when divided by  $b$ . Also let  $m$  be a positive integer. Is it always true that  $rm$  is the remainder of  $am$  when divided by  $b$ ?