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Math 115B

Problem Set 2.13

7. Working mod 27 you have to exclude the multiples of 3 since  $\gcd(27, m) \neq 1$ . There are 9 multiples of 3 between 1 and 27 (3, 6, 9, 12, 15, 18, 21, 24, 27). So  $27 - 9 = 18$  so there are  $27 * 18 = 486$  total keys.

Working mod 29 values between 1 and 28 all have  $\gcd(29, m) = 1$ . So there are 28 choices, thus there are  $28 * 29 = 812$  total keys.