Name: _____ Student ID: _____ Section: _____

Instructions. Grading is based on method. SHOW ALL WORK.

Please email your solutions to hensh@msu.edu by 12:30PM (before class) on Wednesday (2024-07-02). Please use the subject line: **Math 481 - Quiz 01** and make sure that your name appears on your solution.

1. (20 points) Two positive integers are called *relatively prime* if their greatest common divisor is 1. For example, 12 and 25 are relatively prime but 18 and 21 are not. Now select $n+1$ different integers from the set $[2n] = \{1, 2, 3, \ldots, 2n\}$. Show that there are always two (at least) among the selection that are relatively prime.

   Note: We often write $\gcd(m, n)$ or simply (m, n) to identify the greatest *greatest common divisor* of the integers m and n. The latter notation is used when the context is clear. So the equation $(m, n) = 1$ is another way to indicate that m and n are relatively prime.