

Name: _____

Student ID: _____

Section: _____

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

Please email your solutions to hensh@msu.edu by 12:30PM on Saturday (2025-07-12). Please use the subject line: **Math 481 - Quiz 05** and make sure that your name appears on your solution and that you follow the file naming convention.

1. (8 points) How many lottery tickets are possible in following the modified version of MI47? Each ticket has 6 numbers between 1 and 47, but now a ticket can match any number at most three times. For example, $\{1, 2, 3, 6, 34, 42\}$, $\{2, 5, 5, 17, 31, 46\}$, and $\{4, 4, 19, 19, 19, 36\}$ are valid tickets, but $\{6, 6, 12, 12, 12, 12\}$ is not. *Express your answer as an integer and include the calculation.*

2. (5 points) Today I went to the market to pick up a selection of apples, oranges, and peaches. Assuming the fruits within each of the three groups are indistinguishable, in how many ways can I return with 13 items? For example, I could have bought 5 apples and 8 peaches. *Express your answer as an integer and include the calculation..*

3. (7 points) Find the number of compositions of n into an even number of parts.