Name: _____   School Grade: _____

Central Florida Math Circle

University of Central Florida
Department of Mathematics

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Try your best to challenge yourself but do not worry if you cannot complete all of them. Good luck and have fun!

Problem 1 (Evaluate to 100)   Using the number 8 and the operations of addition, subtraction, multiplication, division, and exponentiation (and parentheses), write a mathematical equation that evaluates to 100. What is the smallest number of 8's that you can use? Write down your equation.

For example, a silly solution using 200 8's is the following:

$$(8 \div 8) + (8 \div 8) + (8 \div 8) + \cdots + (8 \div 8) \quad \text{(100 times)}$$

Problem 2 (Student Seating)   On December 8th, 2018, Central Florida Math Circle will host an end-of-the-year Celebration to recognize students' achievement. Among them, 13 students will be arranged to sit in one row to receive the prize.

   (a) In how many different ways can 13 students be seated in a row?

   (b) In how many different ways can 13 students be seated in a row if 3 of these students – Alpha, Beta, and Gamma – would like to sit next to each other? (They can sit next to each other in any order.)

   (c) In how many different ways can 13 students be seated in a row if 2 of these students – Theta and Delta – do not want to sit next to each other?

Please submit your solutions to all or part of problems to ucfmathcircle@gmail.com by November 16th and we will announce the best solutions on November 17th. Please feel free to use additional papers if necessary.