Problem of the Fortnight
September 11, 2018

"Skewing the average"

Suppose the numbers $1, 2, 3, 4, \ldots, 2018$ are all written on a piece of paper. You are allowed to perform the following operation: choose two numbers, erase both of them from the piece of paper, and then write the average (mean) of the two numbers on the paper. For example, you could choose the numbers 2 and 4 and then after this operation the paper would have $1, 3, 3, 5, \ldots, 2018$ written on it.

You may then apply this operation to the new list of numbers (erasing two of them and then writing the mean of the two erased numbers), and keep going until there is only one number written on the paper. Is it possible that the final number on the paper is 2? Justify your answer.

Please turn in your solutions to Dr. Patrick Bennett, by noon on **Friday, September 21**. Strive for clarity, neatness and legibility! Solutions may be turned into the Math Dept office in 3319 Everett Tower. Electronic submissions may be sent to patrick.bennett@wmich.edu. Please include your name and email address. If you are currently taking a math class, please include the instructor's name and the course number.

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