When we roll two fair dice, the eleven possible sums are the integers 2, 3, . . . , 12 with probabilities 1/36, 2/36, 3/36, 4/36, 5/36, 6/36, 5/36, 4/36, 3/36, 2/36, 1/36, respectively. Is it possible to load the dice in such a way that these eleven outcomes are equally probable? Please mathematically justify your answer.

[Remark. “Loading” the dice means assigning probabilities to each of the six sides coming up. The two dice do not have to be loaded in the same way.]