Billy and Crystal each have a bag containing 9 balls. The balls in each bag are numbered from 1 to 9. Billy and Crystal each remove one ball from their own bag. Let $b$ be the sum of the numbers on the 8 balls remaining in Billy’s bag. Let $c$ be the sum of the numbers on the 8 balls remaining in Crystal’s bag.

Determine the probability that $b$ and $c$ differ by a multiple of 4.