

A matching problem inspired by a reality television show

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In Season 1 of The Challenge USA, contestants are divided into pairs each week of the competition. At the end of each episode, one pair is eliminated and then new pairs are formed by an undisclosed algorithm. The host promises that, so that as long as it is possible, no contestant will be paired with a past partner. We explore the following question. Given n pairs initially, how many times can new pairs be assigned, without repeating a partner, assuming one pair is eliminated after each round.

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