Clever Coins

Throw four coins in the air. Then, you “expect” two heads and two tails to come up. But would you bet on it?

There are $2^4 = 16$ different ways the coins can fall. And, only 6 of these ways result in exactly two heads and two tails. So, the probability is $6/16 = 3/8$. A bad bet!

Sneaky Note

Every Australian banknote has eight digits in its serial number. Your opponent has a banknote, and you have to think of two distinct digits. Would you bet that your two digits appear on the banknote?

If all eight digits on the banknote are distinct, then the probability that your two digits are included is $28/45$. But overall, the probability is 0.31. A bad bet!

Dodgy Dice

A pair of dice is thrown over and over. You want a total of 7 to appear twice. Your opponent is waiting until a total of 6 and a total of 8 have appeared. Would you bet that you can get there first?

On any given roll, a total of 7 is most likely, with a $1/6$ probability of occurring. But the probability of either a 6 or an 8 occurring is $10/36 = 5/18$. Overall, the probability of getting your two 7’s first is $3519/7744$. A bad bet!

Ripper Reference

How to Cheat at Everything, Simon Lovell, 2007

Thunder’s Mouth