

Suppose you flip a fair coin six times. Let X be the number of Heads you get, and let Y be the number of Tails minus the number of Heads. What is the probability that $X = Y$?

- (a) $15/64$
- (b) $15/32$
- (c) $15/16$
- (d) $15/128$
- (e) $5/64$
- (f) $3/64$
- (g) $1/2$
- (h) $1/3$
- (i) $1/15$
- (j) None of these

Suppose you flip a fair coin two times. Let X be the number of Heads you get and let $Y = 2 - X$. Which of the following is correct?

- (a) X and Y have the same probability mass functions.
- (b) Y does not have a probability mass function.
- (c) Y is not a random variable.
- (d) X is not a random variable.
- (e) The probability that $X = Y$ is zero.
- (f) The probability that $XY = 0$ is zero.
- (g) The probability that $X + Y = 2$ is one half.
- (h) X and Y are the same random variable.
- (i) X and Y are events.
- (j) Y is always larger than X .
- (k) None of these

You have two fair dice, one red and the other blue, and each has the integers from 1 to 100, instead of the usual 1 to 6. Suppose you roll each die once. Let R and B be the numbers shown on the red and blue dice, respectively. What is the probability that $R > B$?

- (a) $99/200$
- (b) $99/100$
- (c) $99/400$
- (d) $1/2$
- (e) $9/10$
- (f) $2/5$
- (g) $49/100$
- (h) $51/100$
- (i) 0
- (j) None of these