

Probability Assignment 1 (10.13.2.11)

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Question

If you toss a coin 6 times it comes down heads on each occasion. Can you say that the probability of getting a head is 1? Give reasons.

Solution

No, we cannot say that probability of getting a head is 1. Let X denote the no. of heads appeared when 6 coins are tossed. Let P be the probability that head is an outcome.

$$P(X = x) = {}^nC_r P^r (1 - P)^{n-r} \quad (1)$$

For $X=6$

$$P(X = 6) = {}^6C_6 P^6 (1 - p)^{6-6} \quad (2)$$

$$P(X = 6) = P^6 \quad (3)$$

The given event has occurred with a probability of P^6 . From this we cannot infer that the value of P is 1 (assuming a non-biased coin). Hence, the given statement is false.