

Probability Distribution Based on Empirical Probabilities - Step-by-Step Lesson

Mark dealt a hand of seven cards from a standard deck of playing cards. The number of possible hands is 133, 784, 560. The number of possible hands consisting entirely of black cards (spades and clubs) is 65, 7800, and the number of possible hands consisting entirely of spade is 1,716.

What is the probability of being dealt a hand that does not consist entirely of black cards?
(Approximately)

**Explanation:**

The sample space is the set of all possible hands of seven cards.

$$n(S) = 133,784,560$$

The event E is the set of all possible hands of seven cards excluding the hands of seven black cards.

$$n(E) = 133,784,560 - 65,7800 = 133126760$$

Therefore,

$$P(E) = \frac{n(E)}{n(S)} = \frac{133126760}{133784560} = 0.9951$$

