Probability Assignment-2

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CONTENTS

I. PROBLEM

Two cards are drawn at random and without replacement from a pack of 52 playing cards. Find the probability that both the cards are black.

II. SOLUTION

Given,
Total number of cards in a pack = 52
Number of black cards in a pack of 52 cards = 26
Two cards are drawn at random without replacement,

Probability of 1st card drawn is black P(A) = $\frac{26}{52}$

if first card drawn is black, then
total number of cards in a pack = 51
number of black cards = 25

Probability of 2nd card drawn is black P(B) = $\frac{25}{51}$

Probability of both cards drawn are black,

$$P(AB) = P(A)P(B)$$
$$P(AB) = \frac{25}{102}$$