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AI1110: Probability and Random Variable Assignment-2

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Question: 11.16.3.4

Problem Statement:

A card is selected from a pack of 52 cards.

- 1) How many points are there in the sample space?
- 2) Calculate the probability that the card is an ace of spades.
- 3) Calculate the probability that the card is
 - a) an ace
 - b) a black card

Solution:

It is given that there are 52 cards in the deck,

- 1) Number of points in the sample space = 52 (given) n(S) = 52
- 2) Let us assume 'A' be the event of drawing an ace of spades.

$$A = 1 \tag{1}$$

$$\implies n(A) = 1 \tag{2}$$

$$Pr(A) = n(A)/n(S) = 1/52$$
 (3)

(4)

3) a) Let us assume 'B' be the event of drawing an ace. There are four aces.

$$\implies n(B) = 4 \tag{5}$$

$$Pr(B) = n(B)/n(S) \tag{6}$$

$$=4/52\tag{7}$$

$$=1/13\tag{8}$$

(9)

b) Let us assume 'C' be the event of drawing a black card. There are 26 black cards.

$$n(C) = 26 \tag{10}$$

$$Pr(C) = n(C)/n(S)$$
(11)

$$= 26/52$$
 (12)

$$=1/2\tag{13}$$

(14)

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