Assignment 1
AI1110: Probability and Random Variables
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11.16.3.4: A card is selected from a pack of 52 cards.

(a) How many points are there in the sample space?

(b) Calculate the probability that the card is an ace of spades.

(c) Calculate the probability that the card is (i) an ace and (ii) black card.

Solution:

S is a sample space of given cards ,

Event	card choosen is	with Probability
A	an ace	1/13
B	spade	13/52
C	black card	26/52

(a) Since no.of cards in the pack is 52 ,

$$n(S) = 52. \tag{1}$$

(b) The probability when the card choosen is an ace of spades ,

$$\Pr(AB) = \Pr(A)\Pr(B) \tag{2}$$

$$= \left(\frac{1}{13}\right)\left(\frac{1}{4}\right) \tag{3}$$

$$= \frac{1}{52}. \tag{4}$$

(c) The probability when the card choosen is ,

  (a) an ace

$$\Pr(A) = \frac{1}{13}. \tag{5}$$

  (b) black card

$$\Pr(C) = \frac{1}{2}. \tag{6}$$