Conditions

A card is drawn at random from a card of well shuffled 52 cards. Find the following probabilities.

a.   The card is either a spade or heart.

b.   The card is not an ace.

Solution

The classic definition of probability claims, that the probability of some random event A is equal to a rate of all favorable outcomes for this event to all possible outcomes.

a) The probability of the event of drawing a spade or heart has 26 favorable outcomes (13 spades and 13 hearts) from all 52 outcomes. That's why the probability is:

$$P = \frac{13 + 13}{52} = \frac{1}{2}$$

b) The favorable outcomes for drawing not an ace is 52-4 (all cards without 4 aces) from all 52 possible outcomes. That's why the probability is:

$$P = \frac{48}{52} = 0,923076923076923076923076923076923076692$$