Answer on Question #42089 -Math -Statistics and Probability

A bag contains 3 red and 4 black balls and another bag has 4 red, 2 black and 3 green balls. The selection of the two bags are equiprobable. A bag is selected at random. From the selected bag a ball is taken out. The drawing of each ball is also equiprobable.

A is the event: "the first bag is selected"

B is the event: "the second bag is selected"

H is the event: "the ball drawn is red"

Then find P(A), P(B), P(H|A) and P(H|B).

Solution.

The selection of the two bags are equiprobable, so $P(A) = \frac{1}{2} = 0.5$.

Similarly, $P(B) = \frac{1}{2} = 0.5$.

P(H|A) is the probability of H provided first bag has already chosen. So, $P(H|A) = \frac{m}{n}$, m is amount of red balls in the bag, n is amount of balls in the bag. Then, $P(H|A) = \frac{3}{7}$.

Similarly, $P(H|B) = \frac{4}{9}$.

Answer: $P(A) = P(B) = \frac{1}{2}$, $P(H|A) = \frac{3}{7}$, $P(H|B) = \frac{4}{9}$.