

① A bag contains 4 white and 5 black balls.  
Another bag contains 9 white and 7 black balls.  
A ball is transferred from the first bag to the second and then a ball is drawn at random from the second bag. Find the probability that the ball drawn is white.

-  $E_1$  = event that ball transferred from first bag is white.

$E_2$  = \_\_\_\_\_ black

$E$  = \_\_\_\_\_ second bag is white

$$P(E_1) = \frac{4}{9}$$

$$P(E_2) = \frac{5}{9}$$

$$P(E|E_1) = \frac{10}{17}$$

$$P(E|E_2) = \frac{9}{17}$$

$$P(E) = P(E_1)P(E|E_1) + P(E_2)P(E|E_2)$$

$$= \frac{4}{9} \cdot \frac{10}{17} + \frac{5}{9} \cdot \frac{9}{17} = \frac{85}{153} = \frac{5}{9}$$