Example

A box contains 2 white balls and 3 red balls. Two balls are drawn from the box without replacement. What is the probability that the first ball is red and the second ball is white?

SOLUTION:

The probability of drawing a red ball first is \( \frac{3}{5} \) since there are 3 red balls and 5 balls total. After a red ball is drawn, there are 2 white balls and 4 balls total, so the probability of drawing a white ball second is \( \frac{2}{4} = \frac{1}{2} \).

So then the probability of drawing a red ball first and a white ball second is \( \frac{3}{5} \cdot \frac{1}{2} = \frac{3}{10} \).