

BOGDAN AND WALLY

The probability of winning two games in a row if only two games are played is

$$0.85 \times 0.3 = 0.255$$

Using the combined events formula

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

where A is winning the first two games and B is winning the second and third games

$A \cap B$ is winning all three games

So the probability of A or B happening is:

OPTION A Bogden Wally Bogden

$$P(A \cup B) = 0.255 + 0.255 - 0.3 \times 0.85 \times 0.3 \\ = 0.4335$$

OPTION B Wally Bogden Wally

$$P(A \cup B) = 0.255 + 0.255 - 0.85 \times 0.3 \times 0.85 \\ = 0.29325$$