Answer on Question #63065 – Math – Statistics and Probability

Question

A soldier is firing at a moving target. He fires four shots. The probability of hitting the target at 1st, 2nd, 3rd and 4th shots are 0.6, 0.4, 0.2, 0.1 respectively. What is the probability that he hits the target?

A) 517/625
B)3/625
C)105/625

Solution

Probability that a soldier does not hit a target at 1st, 2nd, 3rd and 4th shots are $1-0.6=04,\ 1-0.4=0.6,\ 1-0.2=0.8,\ 1-0.1=0.9$ respectively.

So the probability that he does not hit a target at all equals

$$0.4*0.6*0.8*0.9=\frac{2}{5}*\frac{3}{5}*\frac{4}{5}*\frac{9}{10}=\frac{216}{1250}=\frac{108}{625}$$

Thus, the probability that he hits a target at all (that is, at least once) is

$$P=1-\frac{108}{625}=\frac{517}{625}.$$

The probability that he constantly hits a target (that is, four times, namely, at 1st, 2nd, 3rd and 4th shots) is

$$0.6\cdot 0.4\cdot 0.2\cdot 0.1=\frac{3}{625}=0.0048.$$

Answer: A) $\frac{517}{625}$.