

Answer on Question #43780 – Math – Statistics and Probability

Flaws in a carpet tend to occur randomly and independently at a rate of one every 200 square feet. What is the probability that a carpet that is 8 feet by 10 feet contains no flaws?

Solution:

The area of a carpet is $8 \times 10 = 80$. Notice that $X \sim \text{Poisson}(\frac{80}{200} = \frac{2}{5} = 0.4)$. Then the probability that the carpet contains no flaws is $P(X = 0) = \frac{0.4^0 e^{-0.4}}{0!} = 0.67$.

Answer. 0.67