

Question #164

Key: B

(Referring to the number of losses, X , was a mistake. X is the random variable for the loss amount, the severity distribution).

Losses in excess of the deductible occur at a Poisson rate of $\lambda^* = (1 - F(30))\lambda = 0.75 \times 20 = 15$

$$E(X - 30 | X > 30) = \frac{70 - 25}{0.75} = \frac{45}{0.75} = 60$$

$$\begin{aligned} \text{Var}(S) &= \lambda^* \times E\left((X - 30)^2 | X > 30\right) \\ &= 15E\left(X^2 - 60X + 900 | X > 30\right) = 15E\left(X^2 - 60(X - 30) - 900 | X > 30\right) \\ &= 15(9,000 - 60 \times 60 - 900) \\ &= 67,500 \end{aligned}$$