

Question #282

Key: A

Let S = aggregate losses, X = severity
Since the frequency is Poisson,

$$\text{Var}(S) = \lambda E(X^2)$$

$$E(X^2) = \frac{2^2 \Gamma(3) \Gamma(1)}{\Gamma(3)} = 4 \quad (\text{table lookup})$$

$$\text{Var}(S) = 3 \times 4 = 12$$

You would get the same result if you used

$$\text{Var}(S) = E(N)\text{Var}(X) + \text{Var}(N)(E(X))^2$$