

Question #105

Key: A

Using the conditional mean and variance formulas:

$$E[N] = E_{\Lambda}(N|\Lambda)$$

$$\text{Var}[N] = \text{Var}_{\Lambda}(E(N|\Lambda)) + E_{\Lambda}(\text{Var}(N|\Lambda))$$

Since N , given Λ , is just a Poisson distribution, this simplifies to:

$$E[N] = E_{\Lambda}(\Lambda)$$

$$\text{Var}[N] = \text{Var}_{\Lambda}(\Lambda) + E_{\Lambda}(\Lambda)$$

We are given that $E[N] = 0.2$ and $\text{Var}[N] = 0.4$, subtraction gives $\text{Var}(\Lambda) = 0.2$