

Question #112

Key: A

N = number of physicians

$$E(N) = 3$$

$$\text{Var}(N) = 2$$

X = visits per physician

$$E(X) = 30$$

$$\text{Var}(X) = 30$$

S = total visits

$$E(S) = E(N) E(X) = 90$$

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

$$= 3 \cdot 30 + 900 \cdot 2 = 1890$$

$$\text{Standard deviation (S)} = 43.5$$

$$\Pr(S > 119.5) = \Pr\left(\frac{S - 90}{43.5} > \frac{119.5 - 90}{43.5}\right) = 1 - \Phi(0.68)$$

Course 3: November 2000