

Question #110

Key: E

$$E[N] = (0.8)(1) + (0.2)(2) = 1.2$$

$$E[N^2] = (0.8)1 + (0.2)(4) = 1.6$$

$$\text{Var}(N) = 1.6 - 1.2^2 = 0.16$$

$$E[X] = 70 + 100 = 170$$

$$\text{Var}(X) = E[X^2] - E[X]^2 = (7000 + 100,000) - 170^2 = 78,100$$

$$E[S] = E[N]E[X] = 1.2(170) = 204$$

$$\text{Var}(S) = E[N]\text{Var}(X) + E[X]^2\text{Var}(N) = 1.2(78,100) + 170^2(0.16) = 98,344$$

$$\text{Std dev } (S) = \sqrt{98,344} = 313.6$$

$$\text{So } B = 204 + 314 = 518$$