

## Question #118

Key: D

$$\mu'_{n1} = E[N] = 25$$

$$\mu_{x2} = \text{Var}[X] = 675$$

$$\mu_{N2} = \text{Var}[N] = 25$$

$$E[X] = 50$$

$$E[S] = E[X]E[N] = 25 \times 50 = 1250$$

$$\begin{aligned}\text{Var}[S] &= E[N]\text{Var}[X] + \text{Var}[N]E[X]^2 \\ &= 25 \times 675 + 25 \times 2500 = 79,375\end{aligned}$$

$$\text{Standard Deviation}[S] = \sqrt{79,375} = 281.74$$

$$\Pr(S > 2000) = \Pr[(S - 1250) / 281.74 > (2000 - 1250) / 281.74] = 1 - \Phi(2.66)$$