

Question #197**Answer: C**

$$\begin{aligned} E(Z) &= \sum_{k=0}^2 \left(v^{k+1} b_{k+1} \right) {}_k p_x q_{x+k} \\ &= \left[v(300) \times 0.02 + v^2(350)(0.98)(0.04) + v^3 400(0.98)(0.96)(0.06) \right] \\ &= 36.8 \end{aligned}$$

$$\begin{aligned} E(Z^2) &= \sum_{k=0}^2 \left(v^{k+1} b_{k+1} \right)^2 {}_k p_x q_{x+k} \\ &= v^2(300)^2 \times 0.02 + v^4(350)^2(0.98)(0.04) + v^6 400^2(0.98)(0.96)0.06 \\ &= 11,773 \end{aligned}$$

$$\begin{aligned} \text{Var}[Z] &= E(Z^2) - E(Z)^2 \\ &= 11,773 - 36.8^2 \\ &= 10,419 \end{aligned}$$