

Question #146**Answer: D**

$$\begin{aligned} E[Y_{AGG}] &= 100E[Y] = 100(10,000)\bar{a}_x \\ &= 100(10,000)\left(\frac{(1 - \bar{A}_x)}{\delta}\right) = 10,000,000 \end{aligned}$$

$$\begin{aligned} \sigma_Y &= \sqrt{\text{Var}[Y]} = \sqrt{(10,000)^2 \frac{1}{\delta^2} ({}^2\bar{A}_x - \bar{A}_x^2)} \\ &= \frac{(10,000)}{\delta} \sqrt{(0.25) - (0.16)} = 50,000 \end{aligned}$$

$$\sigma_{AGG} = \sqrt{100}\sigma_Y = 10(50,000) = 500,000$$

$$0.90 = \Pr\left[\frac{F - E[Y_{AGG}]}{\sigma_{AGG}} > 0\right]$$

$$\Rightarrow 1.282 = \frac{F - E[Y_{AGG}]}{\sigma_{AGG}}$$

$$F = 1.282\sigma_{AGG} + E[Y_{AGG}]$$

$$F = 1.282(500,000) + 10,000,000 = 10,641,000$$