

Question #228**Answer: C**

$$\bar{P}(\bar{A}_x) = \frac{\bar{A}_x}{\bar{a}_x} = \frac{\bar{A}_x}{\left(\frac{1-\bar{A}_x}{\delta}\right)} = \frac{\delta\bar{A}_x}{1-\bar{A}_x} = \frac{(0.1)(\frac{1}{3})}{(1-\frac{1}{3})} = 0.05$$

$$\text{Var}(L) = \left(1 + \frac{\bar{P}(\bar{A}_x)}{\delta}\right)^2 \left({}^2\bar{A}_x - \bar{A}_x^2\right)$$

$$\frac{1}{5} = \left(1 + \frac{0.05}{0.10}\right)^2 \left({}^2\bar{A}_x - \bar{A}_x^2\right)$$

$$\left({}^2\bar{A}_x - \bar{A}_x^2\right) = 0.08888$$

$$\text{Var}[L'] = \left(1 + \frac{\pi}{\delta}\right)^2 \left({}^2\bar{A}_x - \bar{A}_x^2\right)$$

$$\frac{16}{45} = \left(1 + \frac{\pi}{0.1}\right)^2 (0.08888)$$

$$\left(1 + \frac{\pi}{0.1}\right)^2 = 4$$

$$\pi = 0.1$$