

### Question #127

Answer: B

$$\begin{aligned}\text{Initial Benefit Prem} &= \frac{5A_{30} - 4(A_{30:\overline{20}|}^1)}{5\ddot{a}_{30:\overline{35}|} - 4\ddot{a}_{30:\overline{20}|}} \\ &= \frac{5(0.10248) - 4(0.02933)}{5(14.835) - 4(11.959)} \\ &= \frac{0.5124 - 0.11732}{74.175 - 47.836} = \frac{0.39508}{26.339} = 0.015\end{aligned}$$

Where

$$A_{30:\overline{20}|}^1 = (A_{30:\overline{20}|} - A_{30:\overline{20}|}^{\overline{1}}) = 0.32307 - 0.29374 = 0.02933$$

and

$$\ddot{a}_{30:\overline{20}|} = \frac{1 - A_{30:\overline{20}|}}{d} = \frac{1 - 0.32307}{\left(\frac{0.06}{1.06}\right)} = 11.959$$

Comment: the numerator could equally well have been calculated as

$$A_{30} + 4 {}_{20}E_{30} A_{50} = 0.10248 + (4) (0.29374) (0.24905) = 0.39510$$