

Question #130

Answer: A

The person receives K per year guaranteed for 10 years $\Rightarrow K\ddot{a}_{\overline{10}|} = 8.4353K$

The person receives K per years alive starting 10 years from now $\Rightarrow {}_{10|}\ddot{a}_{40}K$

*Hence we have $10000 = (8.4353 + {}_{10}E_{40}\ddot{a}_{50})K$

Derive ${}_{10}E_{40}$:

$$A_{40} = A_{40:\overline{10}|}^1 + ({}_{10}E_{40})A_{50}$$
$${}_{10}E_{40} = \frac{A_{40} - A_{40:\overline{10}|}^1}{A_{50}} = \frac{0.30 - 0.09}{0.35} = 0.60$$

$$\text{Derive } \ddot{a}_{50} = \frac{1 - A_{50}}{d} = \frac{1 - 0.35}{\frac{.04}{1.04}} = 16.90$$

Plug in values:

$$\begin{aligned} 10,000 &= (8.4353 + (0.60)(16.90))K \\ &= 18.5753K \\ K &= 538.35 \end{aligned}$$