

Question #115

Answer: B

Let K be the curtate future lifetime of $(x + k)$

$${}_kL = 1000v^{K+1} - 1000P_{x:\overline{3}|} \times \ddot{a}_{\overline{K+1}|}$$

When (as given in the problem), (x) dies in the second year from issue, the curtate future lifetime of $(x+1)$ is 0, so

$${}_1L = 1000v - 1000P_{x:\overline{3}|} \ddot{a}_{\overline{1}|}$$

$$= \frac{1000}{1.1} - 279.21$$

$$= 629.88 \approx 630$$

The premium came from

$$P_{x:\overline{3}|} = \frac{A_{x:\overline{3}|}}{\ddot{a}_{x:\overline{3}|}}$$

$$A_{x:\overline{3}|} = 1 - d \ddot{a}_{x:\overline{3}|}$$

$$P_{x:\overline{3}|} = 279.21 = \frac{1 - d \ddot{a}_{x:\overline{3}|}}{\ddot{a}_{x:\overline{3}|}} = \frac{1}{\ddot{a}_{x:\overline{3}|}} - d$$