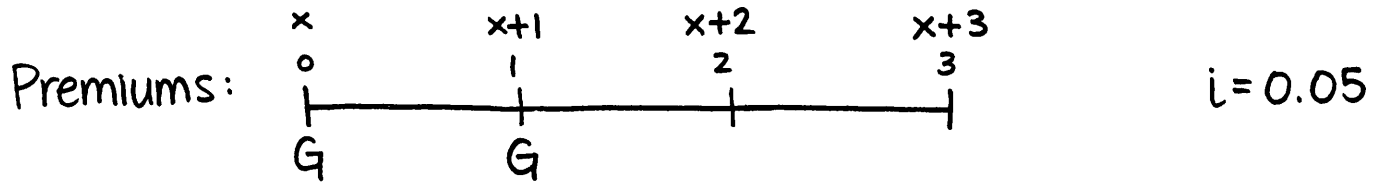
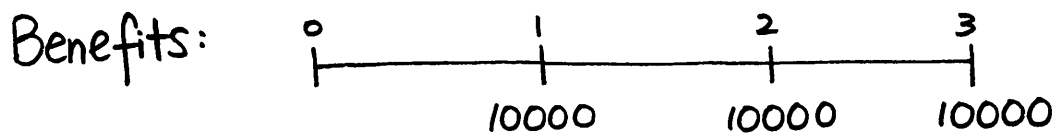


MLC #247

Equivalence Principle: $EPV(\text{Premium}) = EPV(\text{Benefit}) + EPV(\text{Expense})$



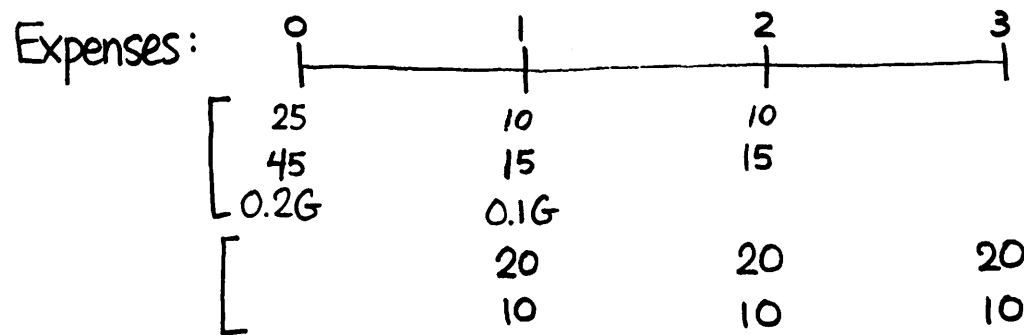
$$EPV(\text{Prem}) = G + G(p_x)v = G + G(0.9)/1.05 = 1.8571G$$



$$EPV(\text{Benefits}) = 10000 (vq_x + v^2 p_x q_{x+1} + v^3 p_x p_{x+1} q_{x+2})$$

$$= 10000 (0.10/1.05 + 0.9 \times 0.15/1.05^2 + 0.9 \times 0.85 \times 0.2/1.05^3)$$

$$= 3499 \text{ (Given)}$$



$$EPV(\text{Non-settlement Expenses}) = (25 + 45 + 0.2G) + (10 + 15 + 0.1G)v p_x$$

$$+ (10 + 15)v^2 p_x p_{x+1}$$

$$= (70 + 0.2G) + \frac{(25 + 0.1G)(0.9)}{1.05} + \frac{(25)(.9)(.85)}{1.05^2}$$

$$= 108.776 + 0.2857G$$

$$\text{EPV(Settlement Expenses)} = \left(\frac{30}{10000}\right)(3499) = 10.50$$

$$\begin{aligned}\text{OR} &= 30 \left(\frac{0.10}{1.05} + \frac{0.9 \times 0.15}{1.05^2} + \frac{0.9 \times 0.85 \times 0.2}{1.05^3} \right) \\ &= 10.50\end{aligned}$$

$$1.8571G = 3499 + 108.776 + 0.2857G + 10.50$$

$$1.5714G = 3618.276$$

$$G = 2302.59 \text{ (C)}$$