EXAM MLC QUESTIONS OF THE WEEK

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Week of March 26/07

A fully discrete whole life insurance issued to (x) on a one-decrement basis with face amount 1000 has percentage of premium expenses of a% in the first year, b% in the second through 5-th years, c% in the 6-th through 15-th year and d% in the 16-th year and later. There are per policy expenses of 10 in the first year and 2 in the second year and after. The expense-loaded premium is $G = \frac{1000A_x + 8 + 2\ddot{a}_x}{.92\ddot{a}_x - .04\ddot{a}_{x:\overline{5}|} - .03\ddot{a}_{x:\overline{15}|} - .55}$. Find $a - d$.

A) 55 B) 56 C) 58 D) 59 E) 62

The solution can be found below.

Week of March 26/07 - Solution

$G\ddot{a}_x = 1000A_x + 10 + 2a_x + G[.01a + .01b(\ddot{a}_{x:\overline{5}|} - 1) + .01c(\ddot{a}_{x:1\overline{5}|} - \ddot{a}_{x:\overline{5}|}) + .01d(\ddot{a}_x - \ddot{a}_{x:1\overline{5}|})]$

$$G = \frac{1000A_x + 8 + 2\ddot{a}_x}{(1 - .01d)\ddot{a}_x - (.01)(c - d)\ddot{a}_{x:1\overline{5}|} - (.01)(b - c)\ddot{a}_{x:\overline{5}|} - (.01)(a - b)}$$

$\rightarrow$ $.01d = .08$, $d = 8$, $c - d = 4$, $c = 12$, $b - c = 3$, $b = 15$, $a - b = 55$, $a = 70$

Answer: E.