

EXAM MLC QUESTIONS OF THE WEEK

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Week of April 2/07

A whole life insurance policy issued at age x has face amount 1,000,000 .

The policy expenses are:

1st year - 20% of premium plus 5,000

renewal years - 5% of premium plus 1,000

There is no settlement expense. The policy interest rate is 6% and ${}_0AS = 0$.

The policy has the following mortality (d) and lapse (w) rates in the first 2 years:

$$q_x^{(d)} = .014 , q_{x+1}^{(d)} = .015 , q_x^{(w)} = .2 , q_{x+1}^{(w)} = .05 .$$

In this question, "surviving policyholder at the end of the year" is one who didn't die during the year and who didn't cancel the policy at the end of the year.

Suppose that the annual contract premium is 40,000 . The insurer pays no cash value in the first year for policy lapses (but the lapses still occur). The company wishes to have an expected asset share of 45,000 per surviving policy at the end of the second year, after death and laps benefits are paid. Find the cash value can be paid at the end of the 2nd year to policyholders who cancel.

The solution can be found below.

Week of April 2/07 - Solution

$$[40,000(.8) - 5000](1.06) - 1,000,000(.014) = (1 - .014 - .2) {}_1AS$$
$$\rightarrow {}_1AS = 18,601$$

$$[18,601 + 40,000(.95) - 1000](1.06) - 1,000,000(.015) - {}_2CV \cdot (.05)$$
$$= (1 - .015 - .05)(45,000) \rightarrow {}_2CV = 37,251 .$$