

EXAM MLC QUESTIONS OF THE WEEK

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You are given information about two different single benefit premium insurance policies. Both policies are based on the same mortality table and the same interest rate.

Policy 1: Discrete whole life insurance of 1 plus return of premium at the end of the year of death if death occurs within n years.

Policy 2: Discrete whole life insurance with death benefit of 2 if death occurs within n years, and with death benefit 1 if death occurs after n years.

The single benefit premium is .4 for policy 1 and .55 for policy 2.

Find the single benefit premium for a discrete n -year deferred insurance of 1.

The solution can be found below.

Week of January 21/08 - Solution

Policy 1: Premium Q satisfies $Q = A_x + QA_{\overline{x:\bar{n}}|}$, so that $Q = .4 = \frac{A_x}{1 - A_{\overline{x:\bar{n}}|}}$.

Policy 2: Premium R satisfies $R = .55 = A_x + A_{\overline{x:\bar{n}}|}$.

From the equation for Policy 1 we get $A_x + .4A_{\overline{x:\bar{n}}|} = .4$.

Solving these two equations results in $A_{\overline{x:\bar{n}}|} = .25$ and $A_x = .3$.

Then ${}_n|A_x = A_x - A_{\overline{x:\bar{n}}|} = .05$.