EXAM MLC QUESTIONS OF THE WEEK

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Week of October 1/07

Historical data from the Actuarial School of Hard Knocks (ASHK) shows the following information about when a graduating student gets their first job during the three years after graduation. Decrement 1 refers to the first job being an actuarial job and decrement 2 refers to the first job being a non-actuarial job. Graduation occurs at time $x = 0$.

x	$q_x^{(1)}$	$q_x^{(2)}$
0	.25	.1
1	.5	.3
2	.2	.5

For a group of 80 graduates from ASHK, find the expected number whose first job is an actuarial job within three years after graduating.

The solution can be found below.

Week of October 1/07 - Solution

The expected number is $80(q_0^{(1)} + {}_{1|}q_0^{(1)} + {}_{2|}q_0^{(1)})$.
$q_0^{(1)} = .25$,
${}_{1|}q_0^{(1)} = p_0^{(\tau)} \cdot q_1^{(1)} = (1 - .25 - .1)(.5) = .325$,
${}_{2|}q_0^{(1)} = {}_2p_0^{(\tau)} \cdot q_1^{(1)} = (1 - .25 - .1)(1 - .5 - .3)(.2) = .026$.

The expected number is $80(.25 + .325 + .026) = 48.08$.